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The Effects of a Brief Mindfulness Intervention on Interracial Anxiety and Avoidance

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THE EFFECTS OF A BRIEF MINDFULNESS INTERVENTION

ON INTERRACIAL ANXIETY AND AVOIDANCE

by

L. WARD SCHAEFER

Under the Direction of Erin Tone, PhD

ABSTRACT

Interracial anxiety, psychological discomfort in the context of interactions with racial outgroup members, is associated with less satisfying interracial interactions and more avoidance of interracial contact. For White Americans, avoidance of interracial contact, especially with Black Americans, is an especially pernicious outcome, as it can perpetuate racial bias and anxiety. Mindfulness, the awareness and acceptance of present-moment experience, has potential as an intervention to reduce avoidance in interracial interactions given its theoretical mechanism of weakening the relationship between anxiety and avoidance behavior, necessarily reducing anxiety. The present study examined the effects of brief mindfulness training on anxiety and avoidance behavior in an impending interracial conversation. 59 White undergraduates were

presented with the image of a Black interaction partner with whom they would discuss a racially-charged topic, and their anxiety about the impending conversation was assessed. After listening to mindfulness meditation or distraction control instructions, participants were asked to arrange chairs in advance of the supposed conversation. Avoidance was measured by the distance participants placed between chairs, as well as the latency until participants' proposed reschedule date for the conversation, when they were told that the interaction had to be postponed. It was hypothesized that condition and anxiety would significantly interact, such that positive relationships between anxiety and avoidance behaviors in the control condition would be attenuated in the mindfulness condition. Results generally did not support these hypotheses and are discussed in the context of post-hoc analyses that suggested mindfulness instructions may have functioned to increase the salience of existing trait-level anxiety.

INDEX WORDS: Mindfulness, Interracial anxiety, Avoidance, Intergroup anxiety, Mindfulness-
            based interventions, Interpersonal distance

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L. WARD SCHAEFER

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L. WARD SCHAEFER

Committee Chair: Erin Tone

Committee: Wing Yi Chan

Kevin Swartout

Akihiko Masuda

Electronic Version Approved:

Office of Graduate Studies

College of Arts and Sciences

Georgia State University

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DEDICATION

This dissertation is dedicated to my wife, Emily Bird, whose love and support would buoy me in my moments of doubt on the journey to a PhD. It is also dedicated to our son, Max Bird Schaefer. May kindness and curiosity shape his future.

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1   INTRODUCTION

Despite significant advances in racial equality and race relations in the United States, interactions between White Americans and racial minorities remain fraught. Recent polling data from the Pew Research Center suggest that White and Black or Latino/a Americans have divergent views of the current state of race relations but are generally united in a pessimistic outlook on race relations in the future (Pew Research Center, 2016). Even more recent polling data suggest that regardless of their evaluation of race relations overall, a majority of Americans across races worries about race relations (Swift, 2017). These concerns and negative expectations about race relations at the societal level are borne out in the psychological literature, which confirms that interacting with people of a different race is distressing to many individuals (Trawalter, Richeson, & Shelton, 2009). Apart from overt bias and prejudice toward racial outgroups, subtler forms of discomfort with racial difference may influence the likelihood of individuals' engaging in intergroup contact. Paradoxically, such intergroup contact is ultimately likely to diminish prejudice and improve intergroup attitudes (Pettigrew & Tropp, 2006).

1.1   Intergroup Anxiety

As elaborated by Stephan (Stephan, 2014; Stephan & Stephan, 1985) *intergroup anxiety* refers to the anxiety associated with contact or interactions with outgroup members, including affective, cognitive, and physiological components. The affective component of intergroup anxiety encompasses various forms of negative affect (e.g., distress, unease, apprehension). Stephan and Stephan (1985) identified four aspects of the cognitive component of intergroup anxiety: fear of negative psychological consequences for the self (e.g., guilt, embarrassment, frustration, loss of group identity), fear of negative behavioral consequences (e.g., exploitation, discrimination, physical harm, verbal conflict), fear of negative evaluation by the outgroup (e.g.,

disapproval, negative stereotyping), and fear of negative evaluation by the ingroup (e.g., rejection, being identified with the outgroup).The physiological component of intergroup anxiety comprises a range of bodily responses, such as cortisol release and galvanic skin response, associated with stress arousal (Stephan, 2014).

Intergroup anxiety is associated with a number of potentially deleterious consequences. These include a lower self-reported likelihood of self-disclosure to outgroup members (Turner, Hewstone, & Voci, 2007), diminished cognitive control (Richeson & Shelton, 2003), less favorable behavioral intentions and less perceived outgroup variability (Hutchison & Rosenthal, 2011). Perhaps one of the most pernicious consequences of intergroup anxiety is simply the avoidance of future intergroup contact. Intergroup contact is one of the most robust mechanisms for decreasing intergroup prejudice (Pettigrew & Tropp, 2006), as well as intergroup anxiety. Thus, in a pattern similar to that of anxiety in other clinical contexts, avoidance of intergroup contact may actually perpetuate intergroup anxiety.

1.2   The Specific Case of Interracial Anxiety

Interracial interactions are a particular source of anxiety for White Americans (Plant & Devine, 2003). Interracial interactions elicit anxiety in much the same way as other common anxiogenic stressors, and avoidance of interracial interactions is a common coping response to this anxiety, although one that tends to perpetuate or even increase interracial anxiety (Trawalter et al., 2009). For White Americans, interracial anxiety associated with interacting with a Black person may involve a form of stereotype threat, the fear of confirming a stereotype of White people as racist (Goff, Steele, & Davies, 2008). This fear of appearing prejudiced, and the subsequent attempt to avoid such an appearance, has the paradoxical effect of making White people engage in briefer interracial interactions that are less enjoyable for Black interaction

partners (Plant & Butz, 2006). Interracial anxiety is an important target for potential intervention, as even popular methods of addressing racial prejudice, such as enhancing people's awareness of their own bias, may not be effective in promoting interracial contact without concurrent efforts to reduce interracial anxiety (Perry, Dovidio, Murphy, & van Ryn, 2015).

1.3 Interventions for Interracial Anxiety

Some interventions may help reduce this anxiety, or overcome its deleterious effects. Many of these interventions rest on the principle of *regulatory focus* (Higgins, 1997). This principle extends and elaborates on the traditional hedonic principle that people tend to approach pleasure and avoid pain. Regulatory focus posits that people tend to seek desired end-states through promotion (working toward, or approaching accomplishments and aspirations) or prevention (avoiding danger, or preserving safety and responsibilities). Further, Higgins proposed that individuals differ according to their tendency to adopt a particular regulatory focus, that different situations may elicit different regulatory focuses, and that regulatory focus may moderate the intensity of emotional responses to situations.

Subsequent research by Shah, Brazy and Higgins (Shah, Brazy, & Higgins, 2004) found that a prevention focus predicted avoidance of outgroup members, whether the prevention focus was measured explicitly or implicitly and whether avoidance was assessed behaviorally or via self-reported intentions. These findings involved experimentally manipulated ingroup-outgroup distinctions (e.g., teammate vs. competitor) or group identities with relatively less historical prejudice or bias at stake (e.g., college affiliations), however.

Trawalter and Richeson (2006) extended this initial investigation of regulatory focus to the interracial context. White participants who were explicitly instructed to avoid expressing prejudice (prevention focus) in an impending interaction with a Black partner demonstrated

greater impairments in cognitive control on a subsequent Stroop task, as compared to those who were given instructions to "approach the interaction as an opportunity for to have an enjoyable intercultural dialogue" (promotion focus; Trawalter & Richeson, 2006, p. 409). Moreover, participants given no instructions also showed equivalent patterns of Stroop interference, suggesting that White participants anticipating an interracial interaction with a Black partner tend to adopt a prevention focus. Prior work has found that such Stroop interference is related to anxiety, such that reducing participants' self-regulatory burden for interracial anxiety reduces their Stroop interference following interracial interactions (Richeson & Trawalter, 2005). Thus Trawalter and Richeson's (2006) findings suggest that instructions eliciting a promotion focus might ameliorate White participants' anxiety about interacting with a Black person.

A related body of literature has investigated the direct training of approach or avoidance orientations. An avoidance orientation, which can be experimentally induced by giving White participants negative expectancies regarding an upcoming interracial interaction, is associated with greater anxiety about the interaction and subsequent avoidance behavior, both in the interaction and in terms of future contact (Plant & Butz, 2006). Kawakami and colleagues used an implicit training paradigm to induce approach or avoidance orientations (Kawakami, Phills, Steele, & Dovidio, 2007). In this paradigm, participants are instructed to respond to computer-presented stimuli, such as faces, by pulling in (approach) or pushing away (avoidance) with a joystick. Kawakami et al. found that implicit training to approach Black faces increased White participants' nonverbal approach behavior in a subsequent conversation: White participants sat closer and faced their Black interaction partner more directly.

Other studies have examined techniques that might also be considered to alter regulatory focus or approach-avoidance orientation. Prior to a conversation about a race-relevant or neutral

topic, Schultz and colleagues gave White participants information about the negative effects of avoidance and the potential benefits of exposure in reducing interracial anxiety (Schultz, Gaither, Urry, & Maddox, 2016). As compared to control participants who received no information, intervention participants were more likely to choose a black conversational partner when discussing a race-related topic, less likely to cite concerns about appearing prejudiced or their own comfort, and more likely to demonstrate positive nonverbal engagement behavior as assessed by third-party raters (Schultz et al., 2016). Stern and West (2014) gave participants *implementation intentions*, brief phrases that participants were to recite to themselves (e.g., "If I start to feel uncomfortable, then I will tell myself 'I can be confident'"), prior to an interracial interaction. Implementation intentions increased White participants interest in sustained contact with Black interaction partners while not reducing interracial anxiety. Thus reframing or cognitive reappraisal of one's goals in an interracial encounter may facilitate contact with racial outgroup members.

Despite some promising experimental findings, research on factors that influence or mitigate the behavioral effects of interracial anxiety has largely been confined to the social psychology literature. There appears to be clear potential for integrating findings from clinical psychology, especially on emotion regulation and anxiety treatment. One construct with particular potential in this regard, as well as increasing attention from clinical researchers, is mindfulness.

1.4   Mindfulness and Acceptance as Interventions for Anxiety and Avoidance

Mindfulness has its roots in Eastern religious and philosophical—especially Buddhist—traditions as a psychological state associated with the practice of meditation (Shapiro, 2009). As a construct of interest to Western psychology, mindfulness can be defined as consisting of two

components: 1) "self-regulation of attention so that it is maintained on immediate experience," and 2) "an orientation [toward one's inner experience] that is characterized by curiosity, openness, and acceptance" (Bishop, 2004, p. 232). Although mindfulness is chiefly an attentional process, Western psychological science has embraced its potential clinical applications in reducing emotional distress (Baer, 2003). Numerous therapeutic approaches and interventions have been developed that incorporate formal meditation practices to teach mindfulness, including Mindfulness-Based Cognitive Therapy (MBCT; Segal, Williams, & Teasdale, 2002) and Mindfulness-Based Stress Reduction (MBSR; Kabat-Zinn et al., 1992). Other related treatments place less emphasis on formal meditation but incorporate brief mindfulness exercises, instruction in mindfulness skills, and an emphasis on acceptance of sometimes-distressing, present-moment experience. Examples of these "acceptance-based interventions" include Acceptance and Commitment Therapy (ACT; S. C. Hayes, Strosahl, & Wilson, 1999) and Dialectical Behavior Therapy (DBT; Linehan, 1993).

Evidence from randomized controlled trials (RCT) suggests that acceptance-and mindfulness-based interventions are efficacious treatments for a variety of anxiety disorders. Hayes-Skelton, Roemer, and Orsillo (2013) found that an acceptance-based behavioral therapy for Generalized Anxiety Disorder (GAD) had comparable efficacy to applied relaxation, an established empirically-supported treatment for GAD (Chambless & Ollendick, 2001). A RCT of ACT versus traditional CBT for social anxiety disorder found that both treatments produced significant improvements in symptoms relative to waitlist control and no differences between the acceptance-based and traditional treatments (Craske et al., 2014). Kocovski and colleagues (Kocovski, Fleming, Hawley, Huta, & Antony, 2013) obtained similar findings in a comparison of a group-format mindfulness and acceptance-based therapy with traditional group CBT for

social anxiety: both treatments outperformed waitlist control but there were no differences between treatment conditions. Another trial comparing ACT to traditional CBT in a mixed anxiety disorder sample found evidence for ACT's comparable efficacy to an established efficacious treatment for anxiety (Arch et al., 2012).

Although RCTs of mindfulness-based interventions that emphasize formal meditation practice are somewhat scarce, preliminary evidence suggests that such mindfulness training can reduce symptoms of anxiety. An open trial of MBCT for GAD found pre- to post-intervention reductions in anxiety symptoms and worry (Evans et al., 2008). Jain and colleagues (Jain et al., 2007) compared an abbreviated MBSR treatment to relaxation training and found that both treatments produced comparable reductions in distress. In a meta-analysis of mindfulness meditation interventions for anxiety and depression symptoms, Hofmann and colleagues (Hofmann, Sawyer, Witt, & Oh, 2010) found that mindfulness interventions (either MBSR, MBCT, or adapted versions of either) were associated with a moderate effect size in reducing anxiety symptoms across a broad range of disorders and symptom severity.

1.5   Brief Mindfulness Interventions for Anxiety

Laboratory research has also investigated the short-term effects of brief training in mindfulness meditation. This approach is a critical element of establishing the mechanisms of change for any psychotherapeutic intervention, since it allows for the isolation of different treatment components (Kazdin, 2005, 2007). Acceptance-based treatments like DBT and ACT incorporate mindfulness training with other, more traditional cognitive and behavioral therapeutic techniques (S. C. Hayes, Strosahl, & Wilson, 2011; Linehan, 1993). Even treatments that predominantly comprise formal meditation practice include other components, such as hatha yoga in the case of MBSR (Kabat-Zinn et al., 1992) or psychoeducation on the cognitive model

of depression in the case of MBCT (Segal et al., 2002). Given the diversity of mindfulness- and acceptance-based treatments and the heterogeneity of techniques within them, such laboratory research serves a crucial role in refining their evidence base.

Laboratory-based studies have established that brief acceptance or mindfulness instructions can produce short-term benefits across a variety of anxiety symptoms. Individuals with panic disorder who listened to 10-minute instructions on acceptance of emotions reported less anxiety during a subsequent stressor designed as an analog of a panic attack (CO_2 inhalation challenge; Sanderson, Rapee, & Barlow, 1988), as compared to those given instructions in emotional suppression (Levitt, Brown, Orsillo, & Barlow, 2004). Similarly, Eifert and Heffner (Eifert & Heffner, 2003) found that participants high in anxiety sensitivity who received 10-minute instructions on acceptance reported less fear and cognitive symptoms of anxiety during a subsequent CO_2 challenge than those receiving instructions in controlling their anxiety symptoms. Ainsworth and colleagues (Ainsworth et al., 2015) found that two related forms of mindfulness meditation—open monitoring and focused attention—each buffered against increases in subjective anxiety following a CO_2 challenge.

Short-term mindfulness training also appears to ameliorate anxious responding in social contexts. Creswell and colleagues (2014) found that a brief, 3-day (25 minutes per day) mindfulness intervention reduced self-reported stress reactivity to a subsequent social evaluation laboratory stressor as compared to a control condition (cognitive analytic problem-solving). Another study examined the effects of brief mindfulness training on socially anxious participants' anxiety symptoms following an unexpected speech task. Those who listened to a 40-minute mindfulness intervention reported less negative affect, less state anxiety, and less

post-event processing, the repetitive and usually negative mental review of one's performance in a social situation, than those in a control condition (Shikatani, Antony, Kuo, & Cassin, 2014).

Laboratory studies also suggest that mindfulness training can counteract worry, the hallmark repetitive cognition characteristic of GAD. Ainsworth and colleagues (2017) developed brief laboratory interventions targeting the attention and acceptance components of mindfulness separately and compared the effects of each to a progressive muscle relaxation control condition in reducing negative thoughts following a worry induction. Both mindfulness conditions outperformed relaxation in minimizing negative thought intrusions after worry, and participants in the acceptance-based mindfulness condition reported fewer intrusions than those receiving attention-based instructions. In another study, as compared to a laboratory-based worry induction, 11-minute mindfulness instructions produced opposite changes in healthy participants' subjective and physiological symptoms of anxiety, reducing arousal and increasing flexibility of respiratory rate (Vlemincx, Vigo, Vansteenwegen, Van den Bergh, & Van Diest, 2013).

Finally, experimental evidence also suggests that brief mindfulness can reduce a core behavioral concomitant of anxiety, avoidance. Arch and Craske (2006) compared brief mindfulness meditation to worry and unfocused attention conditions in their effects on emotional reactions to viewing affectively-valenced images. Participants in the mindfulness condition reported less negative emotion in response to neutral images than either comparison condition and demonstrated a trend toward less negative affect in response to negative images as well. In addition to these effects on emotional responding, Arch and Craske (2006) also found that mindfulness condition participants were more likely than those in the unfocused attention control condition to view additional, optional negative images, a proxy for behavioral persistence. A similar, non-significant trend was observed between mindfulness and worry conditions. Two

studies of acceptance interventions in the context of a CO_2 inhalation challenge found that acceptance instructions not only decreased stress reactivity to the stressor but also increased willingness to persist in the stressful task, as indexed by willingness to either immediately complete the CO_2 inhalation challenge a second time (Levitt et al., 2004) or to return for a second experimental session four weeks later (Eifert & Heffner, 2003). Eifert and Heffner (2003) also found that participants receiving acceptance instructions had shorter delays before initiating trials of the CO_2 challenge than those receiving control instructions.

Taken together, these findings suggest that brief, laboratory-based mindfulness and acceptance interventions are effective at reducing cognitive and affective symptoms of anxiety in the short term. In addition, there is some evidence that acceptance or mindfulness interventions can increase persistence (or self-reported willingness to persist) in tasks that are stressful or likely to elicit negative affect. Given the central role of avoidance (of anxiety-provoking stimuli and contexts) in maintaining anxiety, this potential effect of mindfulness on persistence is especially noteworthy. In fact, theories of the mechanisms of mindfulness and acceptance posit that these techniques might function in part by directly targeting avoidance.

1.6 Mindfulness and Acceptance as Decoupling Interventions

Although different conceptualizations of mindfulness propose various potential mechanisms for its salutary psychological effects (e.g., emotion regulation; Chambers, Gullone, & Allen, 2009; A. M. Hayes & Feldman, 2004; or decentering; Shapiro, Carlson, Astin, & Freedman, 2006), a common element across theories is that mindfulness involves reduced reactivity to negative emotions and thoughts. Mindfulness involves adopting an accepting orientation to *all* aspects of experience, negative or positive, and in doing so, disrupts habitual patterns of responding to aversive internal experience (e.g., through suppression or avoidance).

This aspect of mindfulness is explicit in some measures, such as the Five Facet Mindfulness Questionnaire (FFMQ; Baer, Smith, Hopkins, Krietemeyer, & Toney, 2006), a widely-used self-report measure of mindfulness derived from factor analysis of other extant mindfulness measures, which includes a subscale assessing "nonreactivity to inner experience." In other measures, such as the Philadelphia Mindfulness Scale (PHLMS; Cardaciotto, Herbert, Forman, Moitra, & Farrow, 2008), this aspect of nonreactivity is captured in items assessing acceptance or nonacceptance (e.g., "If there is something I don't want to think about, I'll try many things to get it out of my mind").

Levin, Luoma and Haeger (2015) describe this aspect of nonreactivity to inner experience as a "decoupling" of the normative or habitual relationships between particular internal experiences (e.g., thoughts or feelings) and their cognitive, affective, or behavioral sequelae. They argue that mindfulness- and acceptance-based interventions share this decoupling process as a mechanism of change, which also distinguishes them from more traditional psychological interventions that seek to alter the form or frequency of aversive internal experiences. According to Levin and colleagues, studies can establish decoupling effects in one of two ways: 1) demonstrate that mindfulness or acceptance interventions diminish or eliminate the relationship between thoughts or emotions and normatively associated thoughts, emotions, or behavior (e.g., negative affect and smoking urges, smoking urges and smoking behavior; Adams et al., 2013); or 2) find a moderation effect of self-reported mindfulness or acceptance on the relationship between thoughts or emotions and behaviors (e.g., disordered eating cognitions and disordered eating behaviors; Masuda, Price, & Latzman, 2012). Of the 16 studies Levin and colleagues reviewed that directly tested decoupling effects of a mindfulness- or acceptance-based intervention, 13 studies found some form of decoupling effect. Among those decoupling findings

were reductions in cigarette smoking—but not urges to smoke—following brief mindfulness (Bowen & Marlatt, 2009), a diminished relationship between implicit attitudes toward alcohol and heavy drinking after mindfulness training (Ostafin, Bauer, & Myxter, 2012), and greater persistence in a painful task in spite of pain intensity following an acceptance intervention (Gutiérrez, Luciano, Rodríguez, & Fink, 2004).

Notably, one laboratory study by Feldman, Greeson, and Senville (2010) established that a decoupling effect distinguished mindfulness meditation from the related techniques of compassion meditation and relaxation. As compared to those receiving compassion or relaxation instructions, participants in the mindfulness condition demonstrated a weaker correlation between the frequency of negative repetitive thoughts and negative emotional responses to those thoughts. This finding in particular suggests that decoupling is not merely a common mechanism among mindfulness and acceptance-based interventions but that it is also specific to such treatments.

Kang, Gruber and Gray (2013) proposed a similar theory of mindfulness, arguing that it contributes to a "de-automatization," or disruption, of automatic mental associations. They identify prejudice and stereotypes as one area in which mindfulness might contribute to de-automatization. By enhancing awareness of previously implicit attitudes and biases, mindfulness might allow individuals to think and behave in ways less shaped by habitual associations between stereotypes and particular outgroup members.

1.7   Mindfulness and Acceptance and Intergroup Bias

Although, applications of mindfulness and acceptance in the context of outgroup bias are novel and relatively rare, some preliminary evidence suggests that they can be potent interventions for intergroup bias. In support of their de-automatization theory, Kang, Gray, and

Dovidio (2014) found that an extended lovingkindness meditation program reduced implicit bias

against Black people and homeless people.[1] Implicit bias, as assessed by the Implicit Association

Test (IAT), is believed to indicate automatic associations between constructs in memory, such as

stimuli relevant to an outgroup (e.g., faces) and concepts such as "good" or "bad" (Greenwald et

al., 2002). Thus a reduction in implicit bias following meditation training may indicate a de-

automatization of implicit associations between images of homeless or Black people and

concepts of "bad."

Lueke and Gibson demonstrated in a pair of studies that a much briefer, single-session

training in mindfulness meditation can also reduce implicit racial and age-related bias (2015) as

well as discrimination behavior (2016). White participants receiving 10 minutes of mindfulness

meditation instruction showed less implicit bias toward Black or older people than those who

received control instructions, and further analyses of IAT scores suggested that those in the

mindfulness condition experienced less activation of negative automatic associations

("Black/bad" or "old/bad"; Lueke & Gibson, 2015). In the second study, the same mindfulness

intervention reduced discrimination against racial outgroup members in a computer-based

monetary trust game, relative to control (Lueke & Gibson, 2016). Another laboratory-based

intervention study found that a single session of lovingkindness meditation improved attitudes,

anxiety and future contact intentions regarding people who are homeless, relative to a no-

intervention control (Parks, Birtel, & Crisp, 2014).

Larger-scale intervention studies have also found evidence for the efficacy of acceptance

and mindfulness in reducing bias. Several studies have compared ACT, delivered in a group

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[1] This finding would seem to contradict the finding by Feldman et al (2010) that decoupling distinguishes
mindfulness meditation from compassion meditation. The 6-week program used by Kang and colleagues (2014) was
much more extensive than Feldman and colleagues' circumscribed 15-minute intervention, however, and
incorporated elements of more traditional mindfulness training that might help account for the de-automatization
effect they found.

workshop format, to educational interventions in addressing stigma and prejudice. As compared to education, ACT workshops have reduced stigma against people with mental illness (Masuda et al., 2007), decreased the stigmatizing attitudes of substance abuse counselors against their clients (S. C. Hayes et al., 2004), and increased pro-diversity action intentions (Lillis & Hayes, 2007). Cross-sectional evidence also indicates that frequent engagement in mindfulness practices (including meditation, yoga, tai chi, and qigong) attenuates the relationship between intergroup anxiety and negative attitudes towards outgroup members (Price-Blackshear, Kamble, Mudhol, Sheldon, & Ann Bettencourt, 2017).

Taken together, these findings suggest that mindfulness and acceptance-based interventions have potential in reducing intergroup bias. Brief mindfulness and related meditation interventions can weaken the automatic associations that drive implicit bias against outgroup members (Kang et al., 2014; Lueke & Gibson, 2015). Longer-term acceptance-based interventions appear to weaken explicit bias (S. C. Hayes et al., 2004; Lillis & Hayes, 2007; Masuda et al., 2007).

Despite these promising initial findings, however, no studies have examined the impact of mindfulness or acceptance training on intergroup *anxiety* and its behavioral sequelae. Reductions in implicit bias could conceivably disrupt the negative effects of interracial anxiety on avoidance behavior, as intergroup anxiety tends to activate the evaluative, affective component of implicit bias (but not the cognitive, stereotype component; Amodio & Hamilton, 2012), and implicit bias can increase avoidant nonverbal behavior in interracial encounters (Dovidio, Gaertner, Kawakami, & Hodson, 2002; Dovidio, Kawakami, & Gaertner, 2002; Kawakami et al., 2007). To date, however, the only evidence examining the possible utility of mindfulness in disrupting the relationship between intergroup anxiety and avoidance is cross-

sectional (Price-Blackshear et al., 2017). Although Parks, Birtel and Crisp (2014) provide some

experimental support, the lovingkindness meditation they used is a distinct practice from

traditional mindfulness with putatively distinct mechanisms (Feldman et al., 2010). In addition,

their study shares a shortcoming with much of the experimental literature on interracial anxiety,

in that it assesses self-reported behavioral intentions, rather than avoidance behavior itself. With

the notable exception of work by Richeson and colleagues (e.g., Trawalter & Richeson, 2008),

most examinations of anxiety in interracial interactions have used behavioral intentions as a

proxy measure for actual behavior. Intentions are a strong predictor of behavior but may still

account for only 28% of the variance in actual behavior, leaving a significant intention-behavior

"gap" (Sheeran, 2002).

1.8   The Present Study

The present study expanded on the aforementioned applications of mindfulness and

acceptance to areas of prejudice and bias while focusing on an association for which mindfulness

is a theoretically apt intervention: the relationship between interracial anxiety and avoidance

behavior. I compared the effects of brief mindfulness training to no-instructions control on a

behavioral measure of avoidance, interpersonal distancing, in an anxiety-provoking interracial

interaction context. I hypothesized that mindfulness would moderate the relationship between

interracial anxiety and avoidance, such that a positive relationship between anxiety and

avoidance in the control condition would be attenuated for those receiving mindfulness

instructions.

In addition to assessing the immediate behavioral effects of mindfulness in an interracial

interaction context, this study also assessed willingness for future interracial contact as a proxy

for a more distal behavioral outcome. There are clear shortcomings to studies that rely solely on

behavioral intentions, as described above. Including both immediate and longer-term outcomes serves an important role, however, by helping to bridge the gap between interracial interactions and intergroup contact (MacInnis & Page-Gould, 2015). The present study employed two measures of behavioral intentions: self-reported willingness to reschedule the interracial conversation and the proposed date for rescheduling the interaction. As with the proximal outcome of interpersonal distance, I hypothesized that mindfulness will also moderate the relationship between interracial anxiety and each willingness measure. For the dichotomous outcome of willingness to reschedule, I predict that the influence of anxiety on the likelihood of being willing to reschedule will be weaker in the mindfulness condition. For the continuous outcome of the proposed reschedule date, I predict that a positive relationship between anxiety and number of days until reschedule date will be weaker in the mindfulness condition than in control.

2 METHODS

2.1 Participants

Participants were White undergraduate students recruited via Georgia State University's online SONA psychology participant pool. The study was described as "a study of emotions in interpersonal situations." A prescreen requirement only displayed the study to potential participants who listed their race as White. Participants received research participation credit for completing study procedures.

A total of 68 participants completed all study procedures. Of these, 50 (79.4%) identified as female, 11 identified as male, and 2 reported other gender identities. The demographic form used for this study allowed participants to endorse multiple racial and ethnic identities; 15 participants (23%) identified themselves as Hispanic/Latino, and 1 (1.6%)

identified as Middle Eastern. In addition, 11 participants (17.5%) reported being born outside the United States. Participant ages ranged from 18 to 33 years ($M = 20.78$, $SD = 3.08$).

2.2   Measures

2.2.1   *Potential Covariates*

2.2.1.1   *Interracial anxiety.*

The Intergroup Anxiety Scale-Modified (Stephan et al., 2002) is a 12-item self-report measure assessing intergroup anxiety in the context of a hypothetical interaction with a specific outgroup. Respondents are asked to rate how they would feel when interacting with the outgroup, using a 10-point scale ranging from 1 (*not at all*) to 10 (*extremely*). Items include "uncertain," "threatened," "nervous," and "trusting" (reverse-scored). For the purposes of this study, "Black" was specified as the racial outgroup. The scale has shown good reliability ($\alpha= .92$) in a White American college student sample (Stephan et al., 2002). To minimize potential demand characteristics or participant suspicion, participants also completed versions of the scale for other outgroups: "people with mental illness," "people with tattoos," and "people who are homeless." For the current study, Cronbach's α for the scale assessing anxiety interacting with African Americans was .84.

2.2.1.2   *Demographics and prior intergroup contact.*

Participants were asked to identify their gender and age. They were also asked to characterize the frequency and depth of their prior contact with people of other races/ethnicities, using a scale adapted from Islam and Hewstone (1993). This scale consists of five items rated on a 7-point Likert-type scale (1 = "none at all," 7 = "a great deal"), asking participants to indicate how much contact they have with specific group members at college, in their home neighborhood, at the homes of outgroup members, as close friends, and in informal

conversations. As with the intergroup anxiety measure, prior intergroup contact with non-target outgroups (people with mental illness, people with tattoos, and people who are homeless) was also assessed, to minimize potential demand characteristics. This scale has shown good internal consistency regarding contact with Black people in a non-Black student sample ($\alpha = .86$; Blascovich, Mendes, Hunter, Lickel, & Kowai-Bell, 2001). In the present study, internal consistency was good ($\alpha = .76$).

2.2.1.3 *Trait mindfulness.*

The Philadelphia Mindfulness Scale (PHLMS; Cardaciotto et al., 2008) is a 20-item self-report measure of dispositional mindfulness. It has two 10-item subscales assessing present-moment awareness (e.g., "When I am startled, I notice what is going on inside my body") and acceptance (e.g., "If there is something I don't want to think about, I'll try many things to get it out of my mind," reverse-scored). Higher scores indicate greater awareness, acceptance or overall mindfulness. Items are rated on a 5-point, Likert-type scale (1 = "never," 5 = "very often") in terms of how often respondents experienced each in the past week. Both the acceptance and awareness subscales have good internal consistency in non-clinical (α ranging from .75 to .86) and clinical ($\alpha = .75$ for both subscales) samples (Butryn, Forman, Hoffman, Shaw, & Juarascio, 2011; Cardaciotto et al., 2008).

2.2.1.4 *Social desirability.*

The 13-item short form of the Marlow-Crowne Social Desirability Scale (Reynolds, 1982) was used to assess whether socially desirable responding is related to the outcomes of interest. This form of the SDS is a self-report measure consisting of 13 statements that are rated true or false, with higher scores indicating greater social desirability. Reynolds (1982) reported

adequate internal consistency of the short form (α = .76) and high correlation (r = .93) with the 33-item full scale (Crowne & Marlowe, 1960). Cronbach's α for the scale in this study was .64.

2.2.1.5 *Life satisfaction.*

The Satisfaction with Life Scale (Diener, Emmons, Larsen, & Griffin, 1985) is a 5-item measure of global life satisfaction with good internal consistency (α = .87) and reliability over a two-month test-retest interval. Items are rated on a 7-point, Likert-type scale (1 = "strongly disagree," 7 = "strongly agree"), with higher scores indicating greater overall life satisfaction. For this study, the scale had a Cronbach's α of .88.

2.2.1.6 *Trait anxiety.*

The 20-item Trait portion of the State-Trait Anxiety Inventory (STAI Form Y-2; Spielberger, Gorsuch, Lushene, Vagg, & Jacobs, 1983) is a 20-item self-report measure assessing general anxiety proneness. One of the most widely-used measures of dispositional anxiety, the STAI has excellent internal consistency and high test-retest reliability (Elwood, Wolitzky-Taylor, & Olatunji, 2012). Internal consistency in this study was also excellent (α = .92).

2.2.1.7 *Fear of negative evaluation.*

The Brief Fear of Negative Evaluation Scale (BFNE; Leary, 1983) is a 12-item self-report measure assessing concerns with negative social evaluation. The brief version is highly correlated with the full scale (r = .96) and has demonstrated excellent internal consistency (α = .90). A core construct related to social anxiety, fear of negative evaluation as measured by the BFNE is significantly related to social avoidance (Collins, Westra, Dozois, & Stewart, 2005). Internal consistency of the scale for this study was also excellent (α = .91).

2.2.1.8   Interpersonal distance preference.

Participants' preferences regarding interpersonal distance was assessed using a computerized version (Perry, Rubinsten, Peled, & Shamay-Tsoory, 2013) of a comfortable interpersonal distance (CID) paradigm originally developed in paper format by Duke and Nowicki (1972). In this self-report measure, a circle is displayed on screen with two stick figures, one in the center of the circle and one on the perimeter, connected by a radius. Participants are prompted to imagine themselves as the central figure in a room and to indicate where on the radius they would want a person approaching them to stop. The CID includes eight trials with this format, with circles displaying different radii oriented at 0°, 45°, 90°, 135°, 180°, 225°, 270° and 315°.

In the present study, the circles had a radius of 5.4 inches, and the figures were 0.6 inches tall. Scores for the CID were obtained by calculating the mean distance, in pixels, across all eight trials. Using the original paper format of the task, Duke and Kiebach (1974) found that CID scores were significantly associated with preferred distance as indicated by a "real-life" paradigm involving a stranger, with correlations ranging from .52 to .76. (Duke & Kiebach, 1974). Scores on the computerized version of this task were also moderately associated associated with self-reported social anxiety ($r = .44$; Perry et al., 2013).

So-called "projective" measures of interpersonal distance like the CID have been criticized for relatively poor test-retest reliability and limited validity in their moderate association with actual real-world preferences regarding personal space (Hayduk, 1983). However, due to concerns about evoking participant suspicion regarding the measurement of interpersonal distance in this study, the CID was employed as a potential covariate. For the current study, the scale demonstrated excellent internal consistency ($\alpha = .98$).

2.2.2 Manipulation check.

2.2.2.1 State mindfulness.

The Toronto Mindfulness Scale (TMS; Lau et al., 2006) was used as a manipulation check. The TMS is a self-report measure intended to assess state mindfulness retrospectively, with respect to a preceding period of actively practicing mindfulness. Although the TMS comprises two subscales, Decentering and Curiosity, prior experimental research has found the Decentering subscale to be more reliably sensitive to brief mindfulness interventions (Erisman & Roemer, 2010; Feldman et al., 2010). The Decentering subscale assesses "awareness of one's experience with distance and disidentification rather than being carried away by one's thoughts and feelings," and consists of 7 items rated on a four-point scale (0 = "not at all, 4 = "very much"), describing what the respondent "just experienced." Sample items include "I was open to taking notice of anything that might come up," and "I experienced myself as separate from my changing thoughts and feelings." Lau and colleagues (2006) reported internal consistency (Cronbach's α) of .84 for the Decentering scale. For this study, internal consistency was poor for pre-intervention Decentering (α = .56) but good for post-intervention Decentering (α = .85).

2.2.3 Outcome measures

2.2.3.1 General affect.

The 10-item short form of the Positive and Negative Affect Schedule (PANAS; Mackinnon et al., 1999) was used to assess participants' mood before and after the intervention phase. This self-report measure consists of 10 adjectives, five positive and five negative, rated on a 5-point, Likert-type scale (1 = "Never," 5 = "Always"). The Negative Affect scale consists of the adjectives "afraid," "upset," "nervous," "distressed," and "scared." Mackinnon and colleagues reported Cronbach's α of .78 for the Positive Affect subscale and .87 for the Negative

Affect subscale, with good evidence for the scale's factor structure. In this study, Cronbach's α ranged from .83 to .84 for Positive Affect and from .70 to .78 for Negative Affect.

2.2.3.2   *State Interracial Anxiety.*

Anxiety related to the upcoming interracial interaction was assessed with a scale used by Stern and West (2014) and based on prior work by Pearson et al. (2008) and West, Shelton and Trail (2009). Participants rated the degree to which they felt "anxious," "awkward," "uncomfortable," or "nervous" about the interaction on a 7-point Likert-type scale (1 = "not at all," 7 = "very much"). Stern and West reported Cronbach's α values for this scale ranging from .84 to .94 across three studies. In the present study, internal consistency for the scale was excellent (α = .91).

2.2.3.3   *Behavioral avoidance.*

Participants' avoidance related to the impending interracial interaction was assessed via a chair distance paradigm. This paradigm, which has been used extensively in experimental social psychology (e.g., Aiello, Derisi, Epstein, & Karlin, 1977; Goff et al., 2008; Word, Zanna, & Cooper, 1974), involves asking participants to set up their chair for an impending interaction and then using the distance between their chair and that of a confederate or interaction partner as an index of interpersonal distancing. Interpersonal distance in these paradigms is positively related to anxiety (Brady & Walker, 1978), including interracial anxiety (Goff et al., 2008). Notably, although distance in the chair paradigm is significantly related to trait-level intergroup anxiety and implicit affective evaluations of racial outgroup members, it is not related to other trait-like constructs, such as implicit stereotyping, explicit prejudice or motivation to respond without prejudice (Goff et al., 2008). Distancing appears to significantly influenced by contextual factors, such as stereotype threat, learning goals and implementation intentions. White participants under

stereotype threat—that is, when their fear of appearing prejudiced was activated—put more distance between their chair and their interaction partner than when stereotype threat was not activated (Goff et al., 2008). Framing the interaction as an opportunity for learning diminished the effects of stereotype threat. Moreover, interpersonal proximity (decreased distance) is analogous to approach behavior and representative of improved intergroup attitudes and diminished intergroup prejudice (Kawakami et al., 2007).

2.2.3.4 *Avoidance of future contact.*

Participants' avoidance of future contact with the assigned conversation partner was assessed prior to debriefing. Participants were informed that their assigned partner was unable to complete the conversation and were asked if they are willing to reschedule. Responses to this initial query were scored dichotomously (willing = 0 vs. unwilling to reschedule = 1). Participants were asked to provide a date on which they could return to complete the conversation. The number of business days (excluding weekends and school holidays) between the current and proposed reschedule date was calculated to obtain a continuous measure of participants' interest in future contact ("reschedule delay"), with greater scores (longer latency) presumed to indicate greater avoidance.

2.3 Procedure

The study was conducted in two phases. In the first phase of the study, participants completed self-report measures of interracial anxiety, prior intergroup contact, trait mindfulness, preferred interpersonal distance, fear of negative evaluation, and trait anxiety.

In this second phase, participants completed a series of brief self-report measures of additional potential covariates: life satisfaction, mood and social desirability. They then completed a baseline assessment of state mindfulness. Next, participants were informed that they

would participate in a 10-minute dialogue about affirmative action. A picture of their supposed

interaction partner was be displayed on the computer. The interaction partner was Black, with

gender matched to participant[2]. Pictures were taken from the NimStim facial stimuli set

(Tottenham et al., 2009), specifically #11 (female) and #41 (male), the neutral and closed-mouth

expression for each. Participants were prompted to type a one-sentence introduction that would

ostensibly be displayed to their interaction partner before the conversation.

Next, participants were randomly assigned to one of two conditions: mindfulness or no-

instructions control. In the mindfulness condition, participants listened to audio-recorded

instructions for mindfulness meditation. These instructions were modeled after interventions that

have been found to reduce implicit race bias and improve intergroup trust (Lueke & Gibson,

2015, 2016), as well as to produce short-term improvements in emotion and state decentering

consistent with mindfulness theory (Arch & Craske, 2006; Erisman & Roemer, 2010; Feldman et

al., 2010). The instructions (see Appendix A) began with a rationale for employing mindfulness:

that it is normal to have unwanted, negative thoughts and feelings, and that mindfulness is one

technique for managing those experiences. The instructions then asked participants to pay

attention to the physical sensations of breathing, to notice when their mind wandered, and to

gently and non-judgmentally redirect their attention back to their breath. The remainder of the

audio recording was allotted to practicing this technique, with silence and periodic prompts and

reminders. The neutral control condition was matched for duration and consisted of two

descriptions of travel in Japan. This text has been used as a neutral control condition in prior lab-

based studies of cognitive defusion techniques (Masuda et al., 2010).

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[2] For participants reporting gender other than male or female, the computer program was set to display the female conversation partner's picture by default.

Immediately following the intervention phase, participants were prompted to answer the 7-item Decentering subscale of the TMS as a manipulation check and then complete the 10-item PANAS a second time. Next, the experimenter directed the participant to another experimental room, where he/she was supposedly to engage in the racially provocative conversation. This room was generally empty except for two chairs stacked in the corner of the room. The experimenter feigned annoyance that the room was not fully prepared beforehand and asked the participant to arrange the chairs for the conversation while the research assistant retrieved the other conversation partner. After a brief interval (approximately 2 minutes), the experimenter returned to the room and informed the participant that their conversation partner had to leave early and was unable to continue participating at that time. The experimenter then asked the participant whether they would like to reschedule the conversation for another date, and if so, to offer a potential date. Then the experimenter left the room again briefly, before returning to probe for suspicion, measure the chair distance using a tape measure, and thoroughly debrief the participant. To minimize any effect of experimenter characteristics, only the study author administered the procedures for the second, in-person phase of the study.

3   RESULTS

Of the 68 participants with complete data, five either failed to follow all study procedures (e.g., not setting up both chairs) or shared information undermining the validity of their data (e.g., stating without prompting that they hadn't listened to the audio instructions). Their data were excluded. Four more participants indicated suspicion that chair distance was an outcome of interest, and their data were also excluded from analyses, yielding a final sample of 59 participants whose data were included in subsequent analyses. Figure 1 displays the exclusion of participants from analyses, and demographics for the final sample are displayed in Table 1.
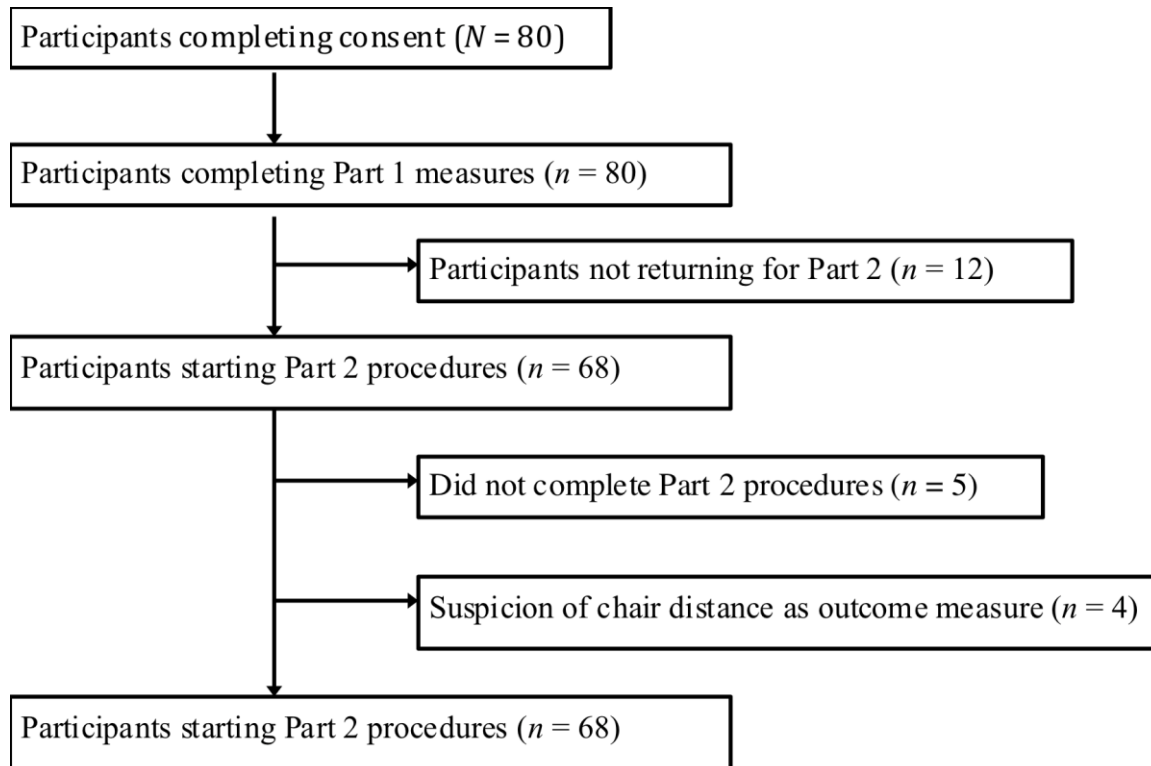
Figure 1. Exclusion of Participants

Table 1 Sample Characteristics

	Full Sample (N = 59)	Control (n = 29)	Mindfulness (n = 30)
Age	20.8 (3.17)	20.59 (2.61)	21 (3.66)
Male	11 (19%)	3 (10.3%)	8 (26.7)
Female	46 (78%)	25 (86.2%)	21 (70%)
Other Gender	2 (3.4%)	1 (3.4%)	1 (3.4%)
Asian	0 (0%)	0 (0%)	0 (0%)
Hispanic/Latino	14 (23.7%)	8 (27.6%)	6 (20%)
Black/African-American	0 (0%)	0 (0%)	0 (0%)
Native American/American Indian	0 (0%)	0 (0%)	0 (0%)
White	59 (100%)	30 (100%)	29 (100%)
Age	20.8 (3.17)	20.59 (2.61)	21 (3.66)

3.1 Manipulation Check

Descriptive statistics for outcome measures and process measures from the intervention phase are displayed in Table 2. To determine whether the mindfulness intervention successfully produced increases in state mindfulness, a repeated-measures *t*-test was conducted on TMS-Decentering scores pre- and post-intervention in the mindfulness condition. Participants reported greater decentering following the mindfulness instructions, $t(28)=6.57$, $p<.001$. As further evidence for the efficacy of the mindfulness intervention, an independent groups *t*-test was conducted on post-intervention TMS-Decentering scores across both conditions. This indicated that participants receiving mindfulness instructions reported greater decentering post-intervention than those in the distraction control condition, $t(55) = 6.86$, $p < .001$.

Table 2. Descriptive Statistics for Outcome and Intervention-Phase Measures

	Full Sample (*N* = 59)		Control (*n* = 29)		Mindfulness (*n* = 30)	
	M	*SD*	*M*	*SD*	*M*	*SD*
Distance	37.80	8.26	36.87	7.37	38.71	9.08
Reschedule Delay	2.19	1.42	2.59	1.66	1.79	1.01
Decentering-Pre	19.83	4.14	-	-	19.83	4.14
Decentering-Post	21.46	5.95	17.96	4.50	24.83	5.23
Pos. Affect-Pre	2.90	0.91	2.73	1.00	3.06	0.80
Pos. Affect-Post	2.76	0.88	2.53*	0.85	2.99*	0.87
Neg. Affect-Pre	1.77	0.65	1.83	0.70	1.70	0.60
Neg. Affect-Post	1.32	0.43	1.31	0.35	1.32	0.50
State Anxiety	2.72	1.47	2.86	1.63	2.58	1.30

Note. Decentering = Toronto Mindfulness Scale Decentering subscale; Pre = Pre-intervention; Post = Post-intervention; Pos. Affect = PANAS Positive Affect subscale; Neg. Affect = PANAS Negative Affect subscale; State Anxiety = State Interracial Anxiety
* $p < .05$

3.2 Preliminary Analyses

Descriptive statistics for the potential covariates are presented in Table 3. Independent groups *t*-tests were used to determine whether between-condition differences existed for any of

the potential covariates: interpersonal distance preference, prior intergroup contact, trait mindfulness, social desirability, trait interracial anxiety, fear of negative evaluation, life satisfaction, and general trait anxiety. Of these, the only significant between-condition differences to emerge were with the mindfulness group having higher life satisfaction, $t(57) = -2.06$, $p < .05$ and more prior contact with African-Americans, $t(57) = -2.03$, $p<.05$. Participants in the mindfulness group also reported greater post-intervention positive affect, $t(56) = -2.02$, $p < .05$.

Table 3. Descriptive Statistics for Potential Covariates

	Full Sample ($N = 59$)		Control ($n = 29$)		Mindfulness ($n = 30$)	
	M	*SD*	*M*	*SD*	*M*	*SD*
SWLS	4.94	1.29	4.60*	1.42	5.28*	1.08
MCSDS	5.90	2.63	5.24	2.82	6.53	2.30
CID	125.08	57.09	121.18	58.22	129.35	56.95
BFNE	37.89	10.82	40.39	11.06	35.14	10.10
Intergroup Anxiety	3.03	1.10	3.19	1.08	2.87	1.12
Prior Contact	7.62	1.99	7.10*	1.86	8.13*	2.00
Acceptance	25.98	7.33	24.66	7.51	27.27	7.04
Awareness	38.95	5.28	38.21	5.31	39.67	5.23
PHLMS	64.93	8.63	62.86	8.72	66.93	8.18
STAI	44.98	10.61	46.79	10.30	43.11	10.79

Note SWLS = Satisfaction with Life Scale; MCSDS = Marlow-Crowne Social Desirability Scale; CID = Comfortable Interpersonal Distance; BFNE = Brief Fear of Negative Evaluation Scale; PHLMS = Philadelphia Mindfulness Scale; Acceptance = PHLMS Acceptance subscale; Awareness = PHLMS Awareness Subscale; STAI = State-Trait Anxiety Inventory-Trait Version
* $p < .05$

Next, zero-order correlations were calculated between all continuous study variables. Tables 4 and 5 display correlations between continuous outcome measures (distance and reschedule delay), potential covariates, and process measures from the intervention phase. The only variable with a significant bivariate relationship with either chair distance or reschedule delay was post-

intervention negative affect, which was significantly associated with chair distance, $r(58) = .376$, $p < .01$.

To examine whether gender should be entered as a covariate, one-way ANOVAs were conducted on distance and reschedule delay across the three gender categories. Overall, distance differed across gender, $F(2, 56) = 4.48$, $p < .05$, while there were no significant differences in reschedule delay across gender. Planned contrasts revealed that female participants demonstrated less interpersonal distance in the chair paradigm than male participants, $t(11.95) = -2.34$, $p < .05$. Given this significant between-group difference, gender was entered as a covariate in subsequent analyses using distance as an outcome measure.

Prior to main analyses, relevant continuous variables (distance, reschedule delay, and state interracial anxiety) were checked for normality and homoscedasticity. Normal Q-Q and P-P plots and normality tests raised concerns about non-normality for distance and reschedule delay. Square root transformations were performed on both Distance and reschedule delay, and main analyses were performed using both transformed and untransformed variables. Patterns of significance in results did not differ whether using transformed or untransformed variables, however. To enhance interpretability of findings, analyses using untransformed variables are reported here.

Table 4. Zero-Order Correlations Between Primary Outcomes and Potential Covariates

	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Distance	1	-.15	.16	-.16	.05	.18	.06	.22	.20	.05	.15	.13	.06
2. Reschedule Delay		1	-.15	-.10	-.04	.09	.07	-.02	-.10	-.09	.02	-.06	.00
3. State Anxiety			1	-.10	.06	.12	.27	.35**	-.14	-.28*	.12	-.17	.30*
4. MCSDS				1	.01	.01	-.23	-.03	-.07	.38**	-.09	.27*	-.21
5. SWLS					1	-.01	-.50**	-.17	.03	.45**	.02	.40**	-.63**
6. CID						1	-.09	.24	.12	-.11	.18	.01	.08
7. BFNE							1	.13	-.02	-.54**	.02	-.48**	.62**
8. Interracial Anxiety								1	-.46**	-.12	.03	-.09	.24
9. Prior Contact									1	-.09	.21	.05	-.03
10. Acceptance										1	-.09	.79**	-.68**
11. Awareness											1	.53**	.13
12. PHLMS												1	-.50**
13. STAI													1

Note. MCSDS = Marlow-Crowne Social Desirability Scale; SWLS = Satisfaction with Life Scale; CID = Comfortable Interpersonal Distance; BFNE = Brief Fear of Negative Evaluation Scale; PHLMS = Philadelphia Mindfulness Scale; Acceptance = PHLMS Acceptance subscale; Awareness = PHLMS Awareness Subscale; STAI = State-Trait Anxiety Inventory-Trait Version
*. $p < .05$, ** $p < .01$

Table 5. Correlations Between Primary Outcomes and Intervention Process Measures

	1	2	3	4	5	6	7
1. Distance	1	-.15	.16	.07	.03	.14	.38**
2. Reschedule Delay		1	-.15	-.30*	-.32*	.00	-.16
3. State Anxiety			1	.05	.11	-.02	.25
4. TMS Decentering Post				1	.94**	.48**	-.06
5. TMS Post					1	.51**	.01
6. Pos. Affect Post						1	.21
7. Neg. Affect Post							1

Note. TMS = Toronto Mindfulness Scale; Post = Post-Intervention; Pos. Affect = Positive and Negative Affect Schedule—Positive Affect scale; Neg. Affect = Positive and Negative Affect Schedule—Negative Affect scale.
*$p < .05$, ** $p < .01$

3.3   Main Analyses

Following the method described by Baron and Kenny (1986), multiple hierarchical regression was used to test the primary study hypotheses regarding the potential moderating impact of mindfulness on the relationship between state interracial anxiety and avoidance behavior. The regression equations to test the first and third hypotheses were the same except for their dependent variables: interpersonal distance versus days until proposed reschedule date, respectively. Regarding the dichotomous outcome measure of willingness to reschedule the interracial conversation, all 59 participants in the final sample agreed to rescheduling. With no variance in this outcome measure, no regression was conducted to test the second hypothesis.

For both regressions collinearity diagnostics did not indicate concerns about multicollinearity of predictors, and the Durbin-Watson statistic supported independence of errors. Plots of regression standardized residuals suggested that residuals were relatively normally distributed.

In the regression predicting interpersonal distance, gender was first entered as a covariate in step 1, dummy-coded with female as the reference group. In the second step, main effects of condition and state anxiety regarding the interracial conversation were entered. In step 3, the State Anxiety $\times$ Condition interaction term was entered, with state anxiety mean-centered. Results from the regression for interpersonal distance are displayed in Table 6. The model with only the dummy-coded gender variables entered significantly predicted distance, $F(2, 56) = 4.48$, $p = .016$, accounting for 13.8% of the variance in distance, $R^2 = .14$, Adj. $R^2 = .11$. Male gender, as compared to female, was associated with greater interpersonal distance, $t = 2.94$, $p = .005$. When main effects of state anxiety and condition were added in step 2 of the model, the regression again significantly predicted distance, $F(4, 54) = 3.31$, $p = .017$, but did not significantly increase the proportion of variance in distance explained by the model. In Step 2, male gender again predicted distance, $t = 3.10$, $p = .003$. State anxiety was a marginally significant positive predictor of distance, $t = 1.97$, $p = .054$, while condition was not a significant predictor. The addition of the State Anxiety $\times$ Condition interaction in Step 3, did not account for significantly more variance in distance, although the overall model was again significant, $F(5, 53) = 2.78$, $p = .036$. Male gender significantly predicted distance again in this final model, $t = 3.16$, $p = .003$, but neither of the main effects nor the State Anxiety $\times$ Condition interaction term were significant, ps $> .05$. These results did not support the hypothesized interaction between condition and state anxiety in predicting interpersonal distance.

Table 6. Multiple Regression Predicting Interpersonal Distance

Scale	B	SE B	B	R^2 (adj. R^2)	ΔR^2
Step 1				.14 (.11)	
Constant	36.43	1.15			
Gender: Male	7.70	2.62	.37**		
Gender: Other	-1.80	5.64	-.04		
Step 2				.20 (.14)	.06
Constant	36.00	1.47			
Gender: Male	8.25	2.66	.39**		
Gender: Other	-4.09	5.66	-.09		
State Anxiety	1.40	0.71	.25*		
Condition	0.88	2.05	.05		
Step 3					
Constant	35.99	1.47		.21 (.13)	.01
Gender: Male	8.47	2.68	.40**		
Gender: Other	-3.81	5.69	-.08		
State Anxiety	0.92	0.91	.16		
Condition	0.88	2.05	.05		
State Anxiety × Condition	1.22	1.42	.14		

Note. $N = 59$. Gender: Male was coded (Male = 1, Female/Other = 0); Gender: Other was coded (Other = 1, Female/Male = 0); Condition was coded (0=Control, 1=Mindfulness).
* $p < .05$, ** $p < .01$

Results from the regression predicting reschedule delay are presented in Table 7. The Step 1 model including only main effects of state anxiety and condition significantly predicted reschedule delay, $F(2, 55) = 3.43$, $p = .04$, accounting for roughly 11% of the variance in days until reschedule date, $R^2 = .11$. The main effect of condition was significant, $B = -0.84$, $SE_B = .36$, $\beta = -0.30$, $t = -2.32$, $p = .02$. Assignment to the mindfulness condition (versus control) was associated with offering an earlier reschedule date (i.e., less avoidance). State anxiety was not a significant predictor in this step, however, $p > .05$. When the State Anxiety × Condition interaction term was added in Step 2, the overall regression no longer significantly predicted rescheduling delay, $F(3, 54) = 2.35$, $p = .08$, $R^2 = .12$. The main effect of condition remained significant, $B = -0.84$, $SE_B = .36$, $\beta = -0.30$, $t = -2.32$, $p = .02$, with mindfulness being associated with a shorter reschedule delay (i.e., less avoidance) as compared to control. Neither state

anxiety nor the interaction term were significant predictors, ps > .05. This regression analysis also did not support the hypothesized interaction.

Table 7. Multiple Regression Predicting Reschedule Delay

Scale	B	SE B	β	R^2 (adj. R^2)	ΔR^2
Step 1				.11 (.08)	
Constant	2.61	.25			
State Anxiety	-0.16	.12	-.17		
Condition	-0.84	.36	-.30*		
Step 2				.12 (.07)	.01
Constant	2.60	.26			
State Anxiety	-0.10	.16	-.10		
Condition	-0.84	.36	-.30*		
State Anxiety × Condition	-0.17	.25	-.11		

Note. N = 59. Condition coded 0=Control, 1=Mindfulness.
* p < .05

3.4 Post-Hoc Analyses

To further contextualize the results of the main analyses, several post-hoc analyses were conducted. The guiding theory for this study holds that mindfulness functions by decoupling—or weakening—the relationship between internal experience. Multiples studies have characterized this effect as mindfulness reducing habitual, or automatic behavior (Wenk-Sormaz, 2005; Moore & Malinowski, 2009; Lueke & Gibson, 2015), a process that could be considered akin to altering the influence of trait-level factors on behavior. Given this theory and evidence base, bivariate correlations between key study variables were examined by condition to illuminate potential differences in these relationships across mindfulness and control groups. Table 8 displays correlations between outcomes and trait-level variables baseline measures by condition. In the control condition, interpersonal distance was positively associated with prior interracial contact, r = .52, p = .004. In the mindfulness condition, distance was positively associated with trait-level interracial anxiety, r = .49, p = .006, and with trait mindful awareness, r = .382, p = .037. There

was also a marginally significant association in the mindfulness condition between actual distance and self-reported interpersonal distance preference $r = .43$, $p = .053$.

Another related account of mindfulness' effects is that it functions by buffering the effects of state-level stress on subsequent behavior (Creswell et al., 2014). To further examine potential relationships in line with this theory, bivariate correlations were calculated between outcomes and state-level affect and mindfulness variables from the intervention phase of the study (see Table 9). In the mindfulness condition, distance was significantly associated with negative affect post-intervention, $r = .541$, $p = .002$. Using the full sample, reschedule delay was negatively related to post-intervention decentering, $r = -.30$, $p = .023$, but this relationship was not significant at the level of individual conditions, ps $> .05$.

Table 8. Correlations Between Outcome Measures and Potential Covariates, by Condition

	1	2	3	4	5	6	7	8	9
1. Distance		-.11	.16	-.02	-.11	.52**	.15	-.17	.03
2. Reschedule Delay	-.16		-.05	.04	-.05	-.05	-.22	.10	-.13
3. BFNE	.03	.15		.54**	.24	.27	-.49*	.05	-.39
4. STAI	.16	-.19	.68**		.47*	.05	-.54**	.21	-.34
5. Intergroup Anxiety	.49**	-.07	-.05	-.01		-.30	-.21	.41*	.08
6. Prior Contact	-.07	-.02	-.11	-.03	-.56**		-.28	-.19	-.36
7. Acceptance	-.08	.29	-.55**	-.79**	.00	-.02		-.11	.80**
8. Awareness	.38*	-.04	-.054	.09	-.29	.52**	-.14		.52**
9. PHLMS	.18	.23	-.53*	-.63**	-.18	.31	.77**	.52**	

Note. Correlations above the diagonal are for Control condition ($n = 29$), below the diagonal are for Mindfulness ($n = 30$). BFNE = Brief Fear of Negative Evaluation Scale; STAI = State-Trait Anxiety Inventory-Trait Version; PHLMS = Philadelphia Mindfulness Scale; Acceptance = PHLMS Acceptance subscale; Awareness = PHLMS Awareness Subscale
* $p < .05$, **. $p < 0.01$

Table 9. Correlations Between Outcome and Process Measures, by Condition

	1	2	3	4	5	6
1. Distance		-.11	.14	.30	.04	.09
2. Reschedule Delay	-.16		-.10	-.36	.05	-.07
3. State Anxiety	.21	-.35		.28	.14	.35
4. Decentering Post	-.22	.08	-.01		.35	.22
5. Pos. Affect Post	.17	.15	-.15	.46*		.52**
6. Neg Affect Post	.54**	-.30	.19	-.27	.01	

Note. Correlations above the diagonal are for Control condition ($n = 29$), below the diagonal are for Mindfulness ($n = 30$).
* $p < .05$, ** $p < .01$

Based on the condition-specific relationship between trait interracial anxiety and distance, another regression was conducted to explore the potential interaction of trait interracial anxiety and condition in predicting distance. This analysis employed the same hierarchical method used in the main analyses; results of the regression are displayed in Table 10. Gender (dummy coded according to the same scheme used above) was entered as a covariate in the first step of the regression, followed by main effects of trait interracial anxiety and condition in the second step, and the Trait Interracial Anxiety × Condition interaction in the third step. The final model significantly predicted distance, $F(5, 53) = 3.50$, $p = .008$, and accounted for 24.8% of the variance in distance (adj. $R^2 = .18$). This model represented a significant increase in the

proportion of variance accounted for, over the model including only main effects, $\Delta R^2 = .06$, $F(1,$ 53) = 4.30, $p = .043$. In the final model, male gender was a significant predictor, $t = 2.44$, $p =$ .018, and the Trait Interracial Anxiety $\times$ Condition interaction was significant, $t = -2.07$, $p = .043$. Dummy coding for condition (original: control = 0, mindfulness = 1) was reversed to explore the main effect of trait anxiety in each condition. Anxiety significantly and positively predicted distance in the mindfulness condition, $t = 2.77$, $p = .008$, but not in the control condition, $t = -$ .153, $p = .88$, indicating that for participants in the mindfulness condition only, greater trait interracial anxiety was associated with greater physical distancing in the chair paradigm.

Table 10. Post-Hoc Multiple Regression Predicting Distance

Scale	B	SE B	β	R^2 (adj. R^2)	ΔR^2
Step 1				.14 (.11)	
Constant	36.43	1.15			
Gender: Male	7.70	2.62	0.37**		
Gender: Other	-1.80	5.64	-0.04		
Step 2				.19 (.13)	.20
Constant	35.90	1.48			
Gender: Male	7.30	2.65	0.35**		
Gender: Other	-2.25	5.58	-0.05		
Interracial Anxiety	1.66	0.93	0.22		
Condition	1.17	2.08	0.07		
Step 3				.25 (.18)	.04
Constant	36.26	1.45			
Gender: Male	6.38	2.61	0.30*		
Gender: Other	0.31	5.56	0.01		
Interracial Anxiety	3.51	1.27	0.47**		
Condition	1.23	2.02	0.08		
Interracial Anxiety × Condition	-3.90	1.88	-0.36*		

Note. $N = 59$. Gender: Male was coded (Male = 1, Female/Other = 0); Gender: Other was coded (Other = 1, Female/Male = 0); Table displays results for Condition dummy coding (1 = control, 0 = mindfulness).
* $p < .05$, ** $p < .01$

It is a common finding in experimental studies of mindfulness interventions that brief mindfulness training, as compared to neutral control conditions, can differentially impact positive and negative affect (Arch & Craske, 2006; Broderick, 2005). To further contextualize

the finding that negative affect was associated with distance in the mindfulness condition, two separate 2 (Condition) × 2 (Time) repeated-measures ANOVAs were conducted on positive and negative affect scores. There was no significant effect of time on positive affect, $p > .06$. Consistent with the results of independent groups t-test reported above, there was a marginally significant between-subjects effect of condition, $F(1, 56) = 4.01$, $p = .05$, $\eta^2_{partial} = .067$, with positive affect marginally higher in the mindfulness than control condition (see Table 3 for means). The Time × Condition interaction was not significant, indicating that this marginal difference in positive affect was consistent across timepoints, $p > .05$. Negative affect ratings differed significantly as a function of time, $F (1, 56) = 45.14$, $p < .001$, $\eta^2_{partial} = .446$, with negative affect decreasing from pre- to post-intervention. There was no significant effect of Condition, however, nor was the Time × Condition interaction significant, ps $> .05$.

Finally, to rule out potential alternative explanations for the main effect of condition on reschedule delay, the regression analysis predicting reschedule delay was rerun with additional covariates. Several between-condition differences could have conceivably contributed to the shorter reschedule latency associated with the mindfulness condition: participants receiving mindfulness instructions had higher life satisfaction and more prior contact with Black people at baseline, and they reported greater positive affect post-intervention. Life satisfaction and positive affect have been repeatedly shown to predict greater social interaction, more enjoyment of social interaction, more positive perceptions of others, and increased prosocial behavior (Lyubomirsky, King, & Diener, 2005), all of which are plausible contributors to the latency in rescheduling. Previous intergroup contact is a robust predictor both of improved attitudes and diminished prejudice toward the outgroup (Pettigrew & Tropp, 2006) and these improved attitudes also longitudinally predict greater outgroup interaction and friendship (Levin, van Laar, & Sidanius,

2003). With the inclusion of prior intergroup contact, life satisfaction, and post-intervention positive affect as covariates, the final model again did not significantly predict reschedule delay, $F(6, 50) = 1.18$, $p = .33$. The proportion of variance in reschedule delay accounted for by the full model was roughly similar, $R^2 = .12$. Again, condition remained the only significant predictor, $B = -0.85$, $SE_B = .42$, $\beta = -0.30$, $t = -2.06$, $p < .05$, with mindfulness being associated with a shorter delay in rescheduling.

4   DISCUSSION

The present study intended to explore the potential of brief mindfulness meditation training to modulate the impact of interracial anxiety on avoidance in an impending interracial interaction. Drawing from theories of mindfulness-based interventions that emphasize their potential to "decouple" the relationship between internal experience (e.g., thoughts and feelings) and external behavior (Levin, Luoma, and Haeger, 2015), I hypothesized that mindfulness training would moderate the relationship between self-reported anxiety about an interracial interaction and subsequent avoidance behavior. I predicted that participants receiving mindfulness training would evince a weaker relationship than control between anxiety and three different measures of avoidance: physical distancing in a chair paradigm, stated willingness to reschedule an interracial conversation (dichotomous future avoidance), and latency to proposed reschedule date for the conversation (continuous future avoidance). Despite some evidence for significant effects of the mindfulness intervention, results did not support these hypotheses regarding potential interactions. No significant main effects or interactions were found regarding the role of condition and state interracial anxiety in predicting physical distance. There was no variance in the dichotomous avoidance outcome of willingness to reschedule. For the continuous outcome measure of future avoidance—reschedule delay—there was a significant main effect of

condition, such that mindfulness participants chose earlier reschedule dates, but no significant main effect of state anxiety or interaction emerged.

4.1   Effect of Mindfulness on Reschedule Delay

The significant main effect of condition on reschedule delay indicates that mindfulness was associated with a modest (approximately one day) reduction in the time to rescheduled conversation date, as compared to control. This result is consistent with other findings that brief mindfulness or acceptance interventions can increase willingness to approach potentially anxiety-provoking situations in laboratory settings (Arch & Craske, 2006; Eifert & Heffner, 2003).

Notably, the absence of an interaction with state anxiety suggests that this effect of mindfulness occurred without its decoupling avoidance behavior from anxiety, as had been hypothesized. Nor did mindfulness decrease negative affect or increase positive affect as compared to control. The earlier reschedule dates selected by mindfulness participants could reflect other differences between conditions. As suggested by post-hoc analyses, however, the effect of mindfulness on reschedule delay appears to be independent of previous interracial contact, life satisfaction, and positive affect. Thus this finding provides preliminary evidence of the impact of mindfulness on an avoidance behavior regardless of anxiety or other affect. Future studies should further probe this effect.

4.2   Invariance of Willingness Measure

Contrary to the hypothesis that condition and state anxiety would interact to predict participants' stated willingness to reschedule the interracial conversation, there was no variance in willingness to reschedule. All participants reported being willing to reschedule. In the interest of minimizing coercion, participants were told beforehand that they would automatically be

granted full participation credit prior to their responding to the willingness question, and no additional credit was offered for returning. Nevertheless, it is possible that the lack of variance in responses reflects demand characteristics of the study design.

Demand characteristics are often described as features of the experimental setting that cue participants to the experimenters' hypotheses and to which a subset of participants respond by attempting to behave as "good subjects" confirming these hypotheses (Orne, 1962; Nichols & Maner, 2008; Sharpe & Whelton, 2016). The single willingness to reschedule question, posed by the experimenter, could be a particularly unambiguous cue as to how a "good subject" would be expected to behave. Anecdotally, during the post-experiment suspicion probe, few participants reported suspecting that the rationale for rescheduling was fictitious. Many participants reported a desire to be helpful to the experimenter by rescheduling, however. Thus rather than reflecting participants' suspicions regarding the study hypotheses, the sample-wide willingness to return could reflect a broader altruistic motive consistent with the impulse to participate in a research study in the first place.

It is also possible that the dichotomous measure of putative avoidance may have lacked sensitivity to capture finer-grained distinctions in avoidance of future interracial contact. Other laboratory-based studies have assessed interest in future interracial contact using multi-item, self-report scales that operationalize future avoidance as a continuous variable (Stern & West, 2014, Studies 1 and 2; Plant & Butz, 2006). Notably, the continuous measure of future avoidance used in this study, days until proposed reschedule date, did show variance as a function of condition.

The shortcomings of a dichotomous measure may have been further compounded if the prospect of rescheduling the conversation was not sufficiently anxiety-provoking or otherwise aversive to elicit significant avoidance. Unlike Stern and West's (2014, Study 1 and Study 2)

study, in which interest in future contact was assessed after an actual interracial interaction, the assessment of future avoidance in this study took place without participants having engaged in the ostensibly stressful task of conversing with a racial outgroup member. In the present study, the discomfort associated with an interracial interaction may have been relatively less salient, and thus participants may have been less likely to refuse to reschedule the conversation. Like the present study, Plant and Butz (2006) also assessed avoidance of future contact without a preceding interracial interaction, but their example is instructive. Plant and Butz found that variance in intentions to avoid was related to participants' expectations regarding their ability to interact without bias. Expecting that one could interact without bias was associated with less future avoidance. In the present study, participants' lack of avoidance—as captured by the dichotomous measure of willingness—could indicate that the experimental design did not sufficiently alter participants' expectations that they could interact without bias.

4.3   State Anxiety and Measures of Avoidance

4.3.1   *Physical distance.*

Although unexpected, the absence of a relationship between state interracial anxiety and physical distance is consistent with findings from another study employing the same chair distance paradigm and measure of state-level anxiety about an interracial interaction (Stern & West, 2014, Study 3). Regarding their findings, Stern and West speculated that the intervention employed in their study, implementation intentions, may have weakened the relationship between state anxiety and desire for interpersonal proximity. Findings from this study, particularly the lack of an association between state anxiety and distance in the control condition, suggest that such a relationship might not exist even in the absence of an intervention.

Despite the non-significant relationship with distance, state anxiety did demonstrate theory-consistent associations with other constructs. State interracial anxiety was positively associated with trait general anxiety and trait interracial anxiety. Trait anxiety is typically conceptualized as a dispositional propensity to experience state anxiety in response to specific stressors (Spielberger et al., 1983). Thus some degree of correlation between state and trait anxiety, both general and specific to the domain of interracial interactions, would be expected. The negative relationship between state interracial anxiety and trait mindful acceptance is similarly consistent with literature suggesting that trait mindfulness can buffer anxious responding to laboratory-based stressors (Arch & Craske, 2010). This pattern of associations suggests that the absence of a relationship between state interracial anxiety and distance is thus indicative of some disjunction between the constructs, rather than validity issues with the measure of state interracial anxiety.

It may be illustrative to compare the unanticipated nonsignificant findings regarding state interracial anxiety with the significant relationship found between distance and post-intervention negative affect. Across conditions, negative affect was moderately correlated with distance. In addition to suggesting that the distance outcome measure was sensitive to state-level affect, this significant finding also raises the possibility that participants' physical distancing was driven by a broader affective process. While the state interracial anxiety measure included items narrowly tailored to the experience of anxiety and social discomfort ("anxious," "uncomfortable," "nervous," and "awkward"), the negative affect scale items employed here also encompassed more overt distress and fear ("afraid," "upset," "distressed," "scared," and "nervous").[3]

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[3] When zero-order correlations between distance and individual items on the PANAS negative affect subscale were explored, three items evinced significant associations with distance ("afraid," "scared," and "distressed"). By contrast, only one item from the state anxiety scale

Previous research has identified many situational and state-level individual factors that drive interpersonal distance, including anger (Meisels & Dosey, 1971), situational stress, and perceived threat (Dosey & Meisels, 1969; Ickes, 1984). The broader scope and greater severity captured in the construct of negative affect may have better reflected this array of influences and thus contributed to the positive association between negative affect and physical distance in the present study. If so, this suggests that physical distancing in the context of an interracial interaction—at least in the present sample—is related more to general distress and fear than interracial anxiety. Although brief mindfulness has demonstrated efficacy in reducing negative affect (Arch & Craske, 2006), more severe negative emotion might require more intensive mindfulness training to counteract associated avoidance behaviors. It could be that the intervention employed in this study was not sufficiently potent to diminish the link between strong negative affect and physical avoidance.

4.3.2 Reschedule delay.

Unexpectedly, state interracial anxiety did not independently predict reschedule delay. This finding contrasts with prior evidence that state-level anxiety about interracial interactions was associated with decreased interest in future contact (West et al., 2009; Stern & West, 2014, Study 2) or a lower likelihood of future contact (Plant & Devine, 2003). Methodological differences may help account for the discrepancy between this study and the earlier findings.

Two of the previous studies assessed state anxiety with respect to a preceding interracial interaction, either with a roommate (West, Shelton, & Trail, 2009) or specific outgroup member (Stern & West, 2014). As noted above, state anxiety retrospectively reported after an interaction may have more predictive value for future behavior—or behavioral intentions—than anxiety

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("anxious") was significantly associated with distance. One item ("nervous") appears on both scales and was not related to distance in either context.

reported prior to an interaction. In the social anxiety literature, post-event processing, a cognitive review of one's performance following social interaction, is seen as a key factor maintaining social anxiety via negative self-appraisals and diminished self-efficacy (Rapee & Heimberg, 1997), and ultimately leading to greater social avoidance (Rachman, Grüter-Andrew, & Shafran, 2000). A similar process may be at work in interracial anxiety and interactions: retrospective reports of state anxiety may better predict future avoidance because they also reflect some degree of postevent appraisal. Plant and Devine (2003) also found a significant association between state anxiety about an upcoming interaction and avoidance. In that study, however, rather than assessing intentions for future contact/avoidance, the authors measured actual avoidance behavior dichotomously, by whether participants returned for an interaction postponed by one week.

Unlike those earlier studies, the present study operationalized future avoidance as participants' proposed latency in returning to an (ostensibly) anxiety-provoking interaction. Latency to initiate a stressful task has been used to assess behavioral avoidance in laboratory paradigms (e.g., Eifert & Heffner, 2003). As suggested by participants' universal willingness to reschedule, however, returning for the conversation might not have seemed like a particularly stressful experience. Consequently, participants' proposed reschedule dates might not have been an accurate index of avoidance but instead reflected other factors, such as their individual scheduling constraints.

4.4   Influence of Trait-Level Constructs on Avoidance

Although the main analyses revealed that state interracial anxiety did not predict any avoidance outcome, post-hoc analyses indicated that several trait-level factors were associated with distance in one of the two conditions. Specifically, trait interracial anxiety and trait mindful

awareness were positively associated with distance in the mindfulness condition, while prior interracial contact was positively associated with distance in the control condition. Although no hypotheses were developed a priori regarding these analyses, the results were unexpected in light of the theory and prior literature guiding our main hypotheses.

4.4.1   *Prior intergroup contact.*

The positive relationship between prior interracial contact and distance in the control condition goes against theory that prior intergroup contact reduces interracial anxiety and avoidance behavior (Stephan & Stephan, 1985), diminishes perceived threat in interracial conversations (Blascovich et al., 2001), and is longitudinally associated with greater racial diversity in social relationships (Emerson, Kimbro, & Yancey, 2002). Instead, control participants with greater experience in interracial interactions put more physical distance between themselves and their hypothetical Black interaction partner. One potential explanation for this unintuitive finding is that, in the control condition, participants with more prior interracial interaction experience were more concerned with having a positive experience in the upcoming conversation. Such investment in the outcome of the conversation can sometimes backfire, leading to a paradoxical effect in which individuals with such commitment end up appearing less positive, comfortable or responsive in interactions (Shelton, Richeson, Salvatore & Trawalter, 2005; Vorauer & Turpie, 2004; Page-Gould, Mendoza-Denton, & Tropp, 2008). Previous findings regarding this unexpected effect have been in the context of an actual interracial interaction. The present study suggests that such an effect may be evident even in avoidance behavior preceding a supposed interaction.

Although the positive relationship between prior contact and distance was evident only in the control condition, it would likely be premature to conclude that the specific control or

mindfulness instructions were responsible for such a discrepancy. The difference could instead reflect that control participants reported significantly less prior intergroup contact than those in the mindfulness condition. It is possible that a curvilinear relationship between prior contact and avoidance could help reconcile the present finding with theory and other literature. At lower levels of prior contact, as represented by the control condition in this study, contact may be positively associated with distance and avoidance more broadly, due to the paradoxical effects discussed above. Beyond a certain point, however, that relationship may flip, so that greater contact is associated with less avoidance, as would be predicted by general intergroup contact theory (Pettigrew & Tropp, 2006). With their prior contact slightly higher than those in the control condition, mindfulness condition participants may have spanned the moderate levels of prior contact at which the curvilinear relationship flips, hence the nonsignificant relationship between contact and distance in the mindfulness condition. Future studies could further explore this possibility with samples intended to encompass a wide range of previous experience with interracial interactions.

4.4.2   *Trait interracial anxiety.*

Broadly, the positive relationship between trait interracial anxiety and physical distance replicates prior findings using the chair distance paradigm in a putative interracial conversation (Goff et al., 2008). However, as indicated by a post-hoc moderation analysis, trait interracial anxiety and condition interacted, such that anxiety only significantly predicted distance in the mindfulness condition. This result runs counter to the decoupling theory of mindfulness that guided this study's main hypotheses, which holds that mindfulness functions by weakening the relationship between anxiety and avoidance. It is important to note that results of the manipulation check indicate that the mindfulness intervention appeared to work as intended,

preferentially increasing decentering in the mindfulness condition. Thus this finding suggests that some aspect of the mindfulness intervention functioned to increase the influence of trait anxiety on avoidance. In the absence of between-condition differences for two of the three avoidance outcomes, this effect might be best understood as increasing the coherence of participants' inner affective experience and their physical distancing behavior.

A core aspect of mindfulness, cultivated through meditation practice, is the nonjudgmental awareness of all present-moment experience, whether positive or negative (Baer et al., 2008). The instructions in this study explicitly framed mindfulness as a tool for managing potentially "upsetting" thoughts. Unlike the control instructions, this direct mention of potential negative experience may have increased the salience of such experiences. In addition, practicing mindfulness would be expected to enhance participants' awareness of transient distressing thoughts or feelings. Participants in the mindfulness condition may have been more likely to notice their own experience of anxiety regarding the impending interracial conversation, whereas participants listening to the control instructions could potentially be distracted from their anxious thoughts or feelings. With awareness of their negative affect enhanced by the mindfulness intervention, mindfulness participants may have then been more likely to physically distance themselves in accordance with their dispositional interracial anxiety.

4.4.3 Trait mindful awareness.

The positive relationship between trait mindful awareness and chair distance, also unexpected, further supports a potential link in the mindfulness condition between increased awareness of inner experience and avoidance in interracial situations. Participants who were more likely to notice their thoughts and feelings in daily life may have been more likely to respond to the mindfulness intervention with increased awareness of their own negative affect

and, consequently, greater avoidance. Trait mindful awareness has played such a potentiating role in other studies of mindfulness-based interventions, amplifying the effect of the intervention (Shapiro, Brown, Thoresen, & Plante, 2011).

4.5   Influence of sample characteristics

Some aspects of the present study sample might also help to account for this pattern of results. Specifically, participants in the present study reported levels of trait mindfulness and trait anxiety that differ from comparable samples in other studies. Mean trait mindful awareness for this sample was slightly higher than in the normative student sample used in the PHLMS validation study (Cardaciotto et al., 2008) and another study employing a healthy adult sample (Ruocco & Direkoglu, 2013). In fact, mean mindful awareness for this study was closer to levels reported by nonclinical student samples after participating in multi-week mindfulness interventions (Bergen-Cico, Possemato, & Cheon, 2013; Klein et al., 2015). Mindful acceptance, by contrast, was lower in this study than in normative student or healthy adult samples (Ruocco & Direkoglu, 2013; Bergen-Cico et al., 2013; Klein et al., 2015) and comparable to a general psychiatric outpatient sample (Cardaciotto et al., 2008). Trait anxiety was higher in this sample than in comparable nonclinical student samples (Bergen-Cico et al., 2013; Spielberger et al., 1983) and approximately the same level as reported by a medical inpatient population with psychiatric comorbidities (Spielberger et al., 1983).

Taken together, these differences would help to clarify the unexpected findings regarding the role of trait mindful awareness and trait interracial anxiety in predicting distance for mindfulness participants. Participants in the present study may have had heightened capacity to notice their own internal experience but slightly greater difficulty accepting that same experience. Theories of mindfulness generally stipulate that both the attentional (awareness) and

attitudinal (acceptance) facets are essential to its salutary effects on psychological health

(Shapiro et al., 2006). For participants dispositionally high in awareness but with relatively less

capacity to accept aversive thoughts and feelings, mindfulness instructions could have increased

the salience of distress and anxious thoughts related to the upcoming interracial interaction while

doing little to diminish their influence on subsequent behavior. With trait anxiety higher than

normative levels for nonclinical students, participants in the present study may have been

particularly susceptible to this unexpected and deleterious effect of the mindfulness intervention.

Another distinguishing characteristic of the present study's sample is its broader

demographic context. At Georgia State University (GSU), White students are a demographic

minority, representing 29% of the undergraduate population in 2016, while Black students

accounted for 37%, Asians 12%, Hispanic/Latino students 9%, and students of two or more races

5% (U.S. Department of Education, 2018a). By contrast, nationally White students made up 58%

of the undergraduate college population, while black students accounted for 14% (U.S.

Department of Education, 2018b). Thus the White student sample in this study, unlike those in

many other studies of interracial anxiety at universities in the United States, was drawn from a

majority-minority population.

White students at GSU might be expected to have relatively higher levels of ongoing

interracial contact on campus. Although social self-segregation is possible (Carmichael, 2013),

White students at GSU would likely be relatively unable to avoid some degree of regular

interracial interaction, regardless of their level of state interracial anxiety. By virtue of deciding

to attend such a diverse institution, White students at GSU have already self-selected for a lower

tendency to avoid interracial contact. Once on campus, regular interracial interactions could

further diminish their anxious responding to, and subsequent avoidance of, interracial interaction

(Pettigrew, 1998; Stephan, 2014, Turner et al., 2007). Both this self-selection effect and ongoing interracial contact could help to account for the lack of significant associations between most predictors and avoidance (either chair distance or reschedule delay).

4.6   Limitations

This study had several notable limitations. The relatively small sample size limited the power of analyses to find significant effects. Although the pattern of significant and nonsignificant correlations across conditions raises intriguing possibilities about the effects of brief mindfulness training, these post-hoc findings should be considered with caution given that a larger sample size may have yielded more significant associations.

This study did not directly assess participants' previous meditation experience. Such experience is a potential confound for any effects of condition, as many of the short-term effects of meditation have been shown to vary as a function of meditation experience (e.g., Taylor et al., 2011). Trait mindfulness measures tend to track differences in meditation experience (Baer et al., 2008), and the PHLMS could be considered a reasonable proxy for prior meditation. Nevertheless, measuring such experience directly would help to rule out any potential confounding influence.

Chair distance, the primary outcome in this study, arguably has greater ecological validity as a measure of avoidance behavior than some commonly used measures, such as surveys of approach-avoidance behavioral intentions (e.g., Turner, West, & Christie, 2013). Still, as noted above and suggested by the pattern of bivariate correlations with chair distance, physical distance preference can be determined by many factors and is not solely indicative of avoidance (Evans & Howard, 1973; Hayduk, 1983). In this study, the ecological validity of the chair distance paradigm was further limited by its taking place prior to the purported interaction. Despite being

methodologically more complex, assessing avoidance in the course of an actual interracial conversation, as opposed to beforehand, would allow for a more nuanced account of avoidance. For instance, in the context of a face-to-face interaction, body orientation, eye contact, and smiling are all potential indicators of interpersonal openness and approach/avoidance orientation (e.g., Kawakami et al., 2007; Ickes, 1984).

Although restricting the study sample to White participants prioritizes internal validity with a relatively small sample size, it also limits the generalizability of these findings. Interracial anxiety is a phenomenon experienced by all racial groups (Stephan, 2014). Studies that include Black (or other racial minority) participants can highlight important racial differences in the dynamics of stress and anxiety in interracial interactions (e.g., Trawalter & Richeson, 2008). In addition to limiting this study's external validity, the inclusion of only White participants perpetuates a harmful myopia in behavioral science, the exclusion of racial and ethnic minority participants, and by extension, the experiences of people from those groups (Sue, 1999).

4.7   Future directions

More research on the effects of mindfulness training on avoidance in intergroup contexts would help to clarify the unexpected findings in this study. In particular, the possibility that mindfulness, both trait and state, functioned to amplify rather than diminish the influence of anxiety on avoidance, merits further investigation. Future studies should investigate these as a priori hypotheses, while perhaps focusing on trait anxiety (interracial and domain-general) and negative affect, rather than state anxiety as a predictor of avoidance. Careful assessment of prior meditation experience is essential to future studies in this area to help determine whether a history of mindfulness meditation practice contributes to the otherwise unexpected relationships found in the mindfulness condition. Baer and colleagues (2008) noted a similar phenomenon

regarding the Observe subscale of the Five Facet Mindfulness Questionnaire, which also taps the attentional/awareness facet of mindfulness. To explore potential divergent relationships between observing and psychological well-being, they recruited separate samples of nonmeditators and meditators. A similar procedure would help to clarify the findings from this study.

Given the somewhat anomalous demographic makeup of the university population from which this study sample was drawn, replication or extensions conducted in multiple samples, both college and community, would be informative. As suggested above in the discussion of limitations, future studies would also improve their external validity by including Black or other non-White participants and assessing multiple avoidance behaviors (e.g., distance, body orientation, eye contact) in the context of an actual interaction.

Given the discrepancy noted in participants' trait mindful awareness and acceptance, additional research is needed to probe the potentially negative consequences of an "imbalance" between elevated awareness and normatively low acceptance. One potentially fruitful path would be to explore this preliminary finding in the context of research on the negative affective consequences of self-focused attention (e.g., Mor & Winquist, 2002).

Another area for further investigation is the question of an effective "dosage" of mindfulness training. Some studies have raised doubts about the efficacy of single-session meditation interventions to change affect or cognition as compared to a robust control (Johnson et al., 2013). Especially when intended to address a complex and stigma-laden subject such as interracial anxiety, a 10-minute audio instruction in mindfulness of breathing meditation may not be sufficient to achieve the hypothesized decoupling effect. Future research could explore both increasing the dosage of traditional meditation training, through longer duration of practice or repeated practice sessions, and tailoring the mindfulness intervention more directly to the

challenge of interracial anxiety. An augmented mindfulness intervention could explicitly invoke the prospect of a challenging interracial interaction and then use that imaginary interaction as a stimulus for practicing mindful acceptance. It could also provide a rationale for future, potentially-stressful interactions as opportunities for practicing mindfulness. Such instructions might more effectively evoke the cognitive and motivational orientations previously shown to diminish avoidance in interracial situations (Murphy, Richeson, & Molden, 2011).

4.8   Conclusion

Despite the aforementioned limitations, the present study contributes to a nascent body of literature exploring the impact of mindfulness training on affect and behavior in an interracial interaction context typically studied in social psychology. We found that a mindfulness intervention had limited and in some ways unanticipated impact on the relationship between anxiety about an upcoming interracial interaction and avoidance behavior. Although mindfulness did not alter this relationship, one form of avoidance, proposed latency in rescheduling the interaction, was lower in the mindfulness condition than in a distraction control condition. In addition, post-hoc analyses revealed that mindfulness training facilitated the influence of trait interracial anxiety on a physical measure of avoidance, interpersonal distance, and that trait level anxiety and trait mindfulness were positively associated with distance in the mindfulness condition only.

These findings raise surprising implications regarding the effect of mindfulness on affect and avoidance in an interracial context. Rather than decoupling the relationship between negative affect and avoidance in these situations, mindfulness may strengthen this association for physical avoidance, while reducing a more distal form of avoidance. Enthusiasm for mindfulness as a clinical intervention has yielded some promising early evidence of its benefits for implicit bias

and prejudiced attitudes. Far from a panacea, however, mindfulness appears to confer risky

effects in the context of interracial anxiety.

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APPENDICES

Appendix A: Mindfulness Intervention Instructions

Mindfulness Intervention Instructions

Adapted from Lueke & Gibson (2015, 2016) and Kiken & Shook (2011)

The next task that we will have you do today is an exercise to help you become more fully aware of what is happening in the moment. It is important for this study that you participate fully and follow the instructions.

I am going to train you on how to use a strategy for dealing with negative thoughts and emotions. We call this technique "mindfulness."

Start by finding a comfortable position in your chair with your feet flat on the floor and your back straight but not stiff or straining. Resting your hands on the top of your thighs. Finding a position that is alert while relaxed. You can close your eyes if that feels comfortable, but it is important to stay awake.

Mindfulness involves simply being aware of your thoughts, emotions and experiences in a nonjudgmental manner, allowing them to be as they are in the present moment, without engaging in thinking about them or pushing them away.

It's normal to have negative thoughts and feelings. Typically, when we have upsetting thoughts or emotions, we tend to think about them over and over again, we judge them as good or bad, or we try to push them away so that we don't have to deal with them.

The technique of mindfulness is not to struggle with upsetting thoughts or emotions, but just to be aware of them and let them be, as we pay attention to what we are experiencing

moment-to-moment. So, instead of engaging with our thoughts and emotions or pushing them away, we practice being aware of them simply as thoughts and emotions. We watch them come and go, as if they are waves in the ocean or clouds against the sky.

We're going to use your breathing to anchor your attention in your present experience. Start by bringing your attention to your belly and chest – wherever you feel your breath moving in your torso – feel this area rise or expand gently as you breathe in, and then feel it fall or draw back as you breathe out. Then continue to observe the feelings of each breath in and out, without trying to control your breathing. The point is to be aware of your breathing, something we usually do without much awareness, feeling how it feels as it flows in and flows out.

Your mind is likely to wander away from your breathing at some point. This is normal and there's no need to judge it. Just notice and accept wherever your mind is, with a sense of curiosity. Note your momentary thoughts as thoughts, and passing feelings as feelings. This returns you to noticing your current experience. Then, you can gently shift your attention back to your anchor: the feeling of each breath coming in and going out. Continue with this process of observing the feeling of your breathing.

If you like, you can think of your thoughts as if they were projected on a movie screen. You sit, watching the screen, waiting for the thoughts or images or feelings to arise. When they do, you can pay attention to them so long as they are there "on the screen" and then let them go as they pass away.

This technique is all you need to do during this exercise. If you happen to think this is foolish or boring, let those momentary thoughts be and then gently return to the process of noticing each breath in each moment.

Now, you will be given some quiet time to continue with this exercise. Every now and then during this quiet time, you will hear some reminders. Please continue to attend to the feelings of each breath in and out.

Reminders:

Gently maintain attention on your breathing, following each each breath in for its full duration and each breath out for its full duration.

When a thought, or an emotion, or a feeling comes up, simply notice it. Then return your attention to your breathing, letting the experience go. If you like, you can imagine the passing thoughts and other experiences as waves in the ocean, as clouds in the sky, or images on a movie screen.

Appendix B: Control Condition Instructions

Control Condition Instructions

Adapted from Masuda et al. (2010)

The next task we will have you do today is to listen to the following information. Please pay attention to the information.

Japanese Ryokan

For westerners whose idea of luxury is usually tied up   with crescent drives, liveried servants, and grand   stairways, a first-class Japanese inn may seem   almost perverse in its simplicity and understatement.   Often the entrance is nothing more than a sliding   door at the end of a stone path, or perhaps a broad   opening along one side of a cobbled alleyway. Inside,   the room for which you may have paid $800 a night is   defined by clean, uncomplicated lines: rectilinear   straw mats; a table surrounded by cushions; a recessed alcove with a hanging scroll as centerpiece. Unlike even the most basic American inn these days, the ryokan offers no swimming pool or weight room; no chocolates on your pillow; no concierge for help with your dinner reservations. It is less a full-service hotel than a kind of spa for the senses.

True, the room may be bare almost to the point of minimalism; but just as we can best see

a flower in all its beauty when it rises out of the simplest dish, the surroundings truly do take on a kind of purity: the straw smell of the tatami mats on the floor; the clack of the sliding door against its stop; the crisp cleanliness of the inn's cotton robe against your skin. While the maid serves green tea and perhaps a sweet on a leaf-shaped wooden dish, your eyes rest themselves beyond the paper screens slid open to reveal the beautiful outdoor scene. It may be a garden, miniature in scale, where stepping-stones lead to a carp pond an arm's reach away; it may be a vista of cliffs with the sea beyond, or snow-capped Fuji in the distance. But it is always utterly private, no threat of human intrusion. Tranquility and repose are the inn's principal offerings.

And then there is the bath: sometimes separate public baths for men and women, but often a private bath of cedar in a little cedar room, where drops of moisture from the steam glisten on the ceiling. You wash first, crouched upon a tiny wooden stool on the tile floor. When you finally venture to put your foot in, the water is so hot you are unable to bear it for long—so hot, in fact, that when you take your foot back out, you seem to be wearing a red sock. Over the course of a determined minute or two, you lower yourself into the water, which pours over the side in a smooth tongue onto the floor; afterward, when you rinse with cold water, you will feel that same glow that follows a massage.

And of course, dinner—which, along with breakfast, is included in the price of your room. Around dusk the maids come to arrange the table: lacquered chopsticks on a porcelain rest; beer glasses and sake cups; the steaming towel, rolled tight as a cigar, to wipe your hands and face. The food comes, dish by dish on a variety of ceramics and lacquerware, in an almost endless succession of delicate tastes. Then the table is cleared, and while you brush your teeth, the futons with their crisp white sheets are laid in the center of the room.

There in the dark, with the straw smell of the mats and the drone of cicadas, you may even struggle to stay awake; not that you aren't tired, but to sleep is to give it all up, to bring on the following morning, when you must leave. Like one of those paradoxes from a Zen fable, solitude can be its own kind of stimulation.

Daisetsuzan Big Snow Mountain.

Fire and water collide in Daisetsuzan. Two massive volcanoes pin the national park at the center of Japan's northernmost island, Hokkaido, their steaming peaks dropping off into forested, snow-pillowed, river-washed slopes—half a million acres churned green, orange, red, and white by the seasons.

Japan rose from the sea in seismic violence. Tectonic plates slid and were subducted, mantle rock melted and pooled underground, volcanoes erupted. Quiet for centuries, Asahi Dake, the highest peak in Hokkaido, rises to the north. Tokachi Dake, to the south, last erupted in 2004. In the cold, wet climate of Hokkaido, summits built by Earth's internal fires draw snow, and snow turns to rushing water, forest, moss, and flower. Daisetsuzan means "big snow mountain."

Thick ground cover makes much of Daisetsuzan impenetrable, a self-preserving preserve, untrammeled except for the few specified trails. In a crowded island country—one of the most industrialized and densely populated in the world—the park offers rare open space, its peaks and forests bounded by neatly cultivated fields. The park is a haven for deer, birds, hares, and bears

as well as trees, shrubs, and flowers. Japanese backpackers move in silent respect through the massif.

During the glacial maximum 18,000 years ago, Hokkaido was linked by land bridges to Asia, not Japan, and the ancestors of the Ainu people crossed to Hokkaido. Few indigenous Ainu remain, their forebears having been dispossessed and assimilated by the Japanese. Yet it is impossible to look at these rivers and mountains without thinking of their sacred view of the place.

Asahi Dake used to be a perfect cone, but an eruption long ago blew out its flank. The path skirts a chaotic cleft torn by eight sulfur-collared vents issuing steam. Now the path is steep with lingering patches of snow. Above, cloud swallows mountain; volcano swallows cloud. Finally the top of Asahi Dake stands clear.