

Mindfulness Practices Moderate the Association Between Intergroup Anxiety and Outgroup Attitudes

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Abstract In prior literature, intergroup contact has been associated with better attitudes toward outgroups, but intergroup anxiety mediates this relationship. Higher anxiety is associated with less-favorable outgroup attitudes. We hypothesized that this meditational association would be moderated by frequency of mindfulness and contemplative practices. Study 1 surveyed Christian, Hindu, and Muslim college students in India regarding their frequency of practices, intergroup contact, intergroup anxiety, and attitudes (i.e., favorability and trait ratings) about primary and secondary outgroups. Study 2 measured these same variables with White/European, African, and Hispanic American adults. The results showed that participants that reported higher intergroup anxiety reported more negative outgroup attitudes. This relationship, however, was moderated by mindfulness-type practices: among participants who frequently engaged in these practices, this association was reduced compared with those who reported little or no mindfulness-type practices. The findings suggest that mindfulness and contemplative practices may help people regulate feelings of intergroup anxiety, which may in turn reduce the likelihood that intergroup anxiety exacerbates negative attitudes toward outgroups.

Keywords Mindfulness practices · Meditation · Contemplative practices · Outgroup attitudes · Intergroup anxiety · Intergroup generalization

Introduction

Much evidence—from both everyday accounts and research findings—suggests that people hold prejudicial attitudes toward members of outgroups (Pettigrew 1998). Predicated on these attitudes, individuals may subconsciously act in biased ways or consciously discriminate against members of outgroups (Kang, Gray, and Dovidio 2014). One of the most researched interventions for improving outgroup attitudes was guided by the “contact hypothesis” (Allport 1954). Much evidence shows that contact between members of different groups has the capacity to improve attitudes toward members of outgroups (Allport 1954; Pettigrew and Tropp 2006). In addition, research (Pettigrew, 2009; van Laar et al. 2005) has examined the conditions under which attitudes toward a primary outgroup will or will not generalize to attitudes toward a different outgroup.

Evidence suggests that positive attitudes toward one outgroup, engendered through intergroup contact, generalize to attitudes toward other outgroups. For example, van Laar et al. (2005) examined the influence of having a cross-ethnic college roommate (i.e., White-, African-, Asian-, or Hispanic-Americans) on changes in intergroup attitudes among students. The researchers found that, among participants who had cross-ethnic roommates, prejudice toward the roommate’s ethnic group (i.e., primary outgroup) decreased over time. Also, in some instances, these same participants were less prejudiced toward other outgroups (i.e., secondary outgroups). Similarly, Pettigrew (2009) examined the relationship between Germans’ positive contact with foreigners living in Germany and attitudes toward these foreigners as well as a variety of other outgroups

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(i.e., Muslims, the homeless, non-traditional women, homosexuals, and Jews). The results revealed that greater positive contact with foreigners was associated with lower prejudice toward foreigners and other outgroups.

Despite the positive influences of intergroup contact, research also shows that contact between members of different groups can induce intergroup anxiety (Stephan and Stephan, 1985). Intergroup anxiety occurs when individuals experience nervousness about interacting with members of outgroups, fearing negative outcomes during the interaction such as disapproval and embarrassment (Hyers and Swim 1998; Stephan and Stephan 1985). This anxiety is specific to contexts involving intergroup interaction (Stephan 2014). Researchers (e.g., Islam and Hewstone 1993; Stephan et al. 2002) show that higher levels of intergroup anxiety are associated with less-favorable attitudes toward outgroups. Islam and Hewstone (1993) examined the relationship between contact with members of an outgroup and both intergroup anxiety and attitudes toward the same outgroup. Their study included Muslim college students, the religious majority in Bangladesh, and Hindu students, the religious minority. The results showed that participants who reported less-frequent intergroup contact expressed less-favorable attitudes toward their outgroup and greater intergroup anxiety regardless of participants' religion. Research has also found that intergroup anxiety not only predicts attitudes toward the outgroup in question but also predicts attitudes toward other outgroups. For example, Vezzali and Giovannini (2012) examined the relationship between the influence of contact with, and anxiety toward, a primary outgroup (i.e., immigrants), as well as attitudes toward secondary outgroups (i.e. the disabled and homosexuals). The researchers found that contact with immigrants had an indirect effect on anxiety and perspective taking toward secondary outgroups through reduced anxiety and increased perspective taking toward the primary outgroup (i.e., immigrants). More generally, research reveals that the relationship between positive intergroup contact and more favorable outgroup attitudes can be mediated by three processes: reduced intergroup anxiety, increased knowledge about the outgroup, and increased empathy (Pettigrew et al. 2011).

Mindfulness refers to non-judgmental, conscious attention and awareness of present thoughts, events, and experiences (Brown and Ryan 2003; Kabat-Zinn 2003). It emphasizes an open acceptance of thoughts and emotions as they occur, and promotes adaptive, positive responses to internal and external stimuli. The broad category of mindfulness practices includes sitting meditation, mindful movement (e.g., walking meditation, yoga) as well as concentration practices (e.g., lovingkindness; Fredrickson et al. 2008). Research has examined the influence of these meditation practices on a number of cognitive and emotional processes (e.g., Pruitt and McCollom 2010; Keune and Forintos 2010). Keune and Forintos (2010) found that compared with non-meditators, meditators reported greater emotional adjustment. Also, Pruitt and McCollom (2010) conducted a

structured interview of individuals with at least 10 years of meditation experience and found that these practitioners reported less reactivity in their intimate relationships.

Intergroup anxiety is an emotional response to a given intergroup contact situation. Because mindfulness practices engender a non-judgmental awareness and acceptance of this emotional response, it seemed plausible that those who practice mindfulness would be less likely to project their anxiety onto an outgroup. Supporting our rationale, Smalley and Wintson (2010) explain that mindfulness “is neither expressive nor repressive per se; the mindful approach is to recognize your emotions, feel them fully, and then let them go so that they don't control you or lead you to act in ways that are harmful to others...” (p. 111). That is, “mindfulness does not stop certain feelings from occurring; rather, it makes individuals better at noticing these feelings and responding to them more skillfully” (Everyday Mindfulness, 2015). Consistent with this idea, Weinstein (2010) showed that, when participants believed they were rejected by another individual, it was only those who were asked to take interest in their feelings that refrained from displacing their feelings of rejection onto the other individual, and expressed more prosocial attitudes. As Brown et al. (2015) explain, when one feels threatened by others (e.g., during intergroup contact), taking an interest in one's own emotional experiences should reduce defensiveness toward others.

A small set of studies suggest that mindfulness practices are associated with less bias and prejudice toward outgroup members. Most of these studies have implemented “lovingkindness” meditation (LKM) intervention with novice participants (i.e., no meditation experience). LKM focuses on developing unconditional kindness, warmth, and caring first toward the self, then extending to other beings, and involves directing one's emotions toward warm feelings in an open-hearted way (Fredrickson et al. 2008; Kang et al. 2014). Kang et al. (2014) found that a lovingkindness meditation (LKM) intervention decreased implicit bias toward African Americans and homeless individuals. This effect was not observed on measures that explicitly asked participants to evaluate these outgroups. Stell and Farsides (2015) found that, compared with an imagery control group, participants who listened to a brief LKM meditation expressed less implicit bias toward African Americans (i.e., the primary outgroup) but not toward Asian Americans (i.e., secondary outgroup). Similarly, Parks et al. (2014) showed that, compared with a control condition, participants who listened to a brief audiotope focused on either LKM toward either a homeless person or a stranger reported lower intergroup anxiety and more future contact intentions toward homeless individuals. Lueke and Gibson (2014) found that participants who listened to a brief body-scan meditation showed less implicit bias toward the elderly and African Americans as compared with control participants. Finally, Hunsinger et al. (2014) examined the relationship between

actual meditation experience and explicit racial prejudice toward African Americans. The researchers found that individuals with greater self-reported engagement in lovingkindness and compassion-meditative practices, specifically, reported less racial prejudice toward African Americans, compared with non-meditators. Although these studies suggest that mindfulness practices, particularly LKM, influence intergroup processes, they do not test the notion that mindfulness practices have the capacity to decouple the relationship between intergroup anxiety and outgroup attitudes. This possibility is suggested by mindfulness theory (Brown et al. 2015; Smalley and Wintson 2010) and research (Weinstein 2010) on the ways in which awareness of feelings of anxiety can reduce the harmful reactions that may arise from anxiety.

Given prior literature on mindfulness and prejudice, the current studies sought to examine the relationship between intergroup contact, intergroup anxiety, attitudes toward outgroup members, and mindfulness meditation practices. Following from Islam and Hewstone (1993), we predicted that greater intergroup anxiety, regarding the primary outgroup, would be associated with less-favorable attitudes toward and beliefs about the primary outgroup (hypothesis Ia). Expanding on their research, and following from the findings of Vezzali and Giovannini (2012), we hypothesized that greater intergroup anxiety about the primary outgroup would be associated with less-favorable attitudes and beliefs about a secondary outgroup (hypothesis Ib). Moreover, our central hypotheses were that the association between intergroup anxiety and both outgroup favorability and traits toward the primary outgroup would be mitigated among those who report greater engagement in mindfulness practices (hypothesis IIa), and the association between intergroup anxiety toward the primary outgroup and generalized influences on attitudes about the secondary outgroup (favorability, traits) would be similarly be moderated by mindfulness practices (hypothesis IIb). Also, following Islam and Hewstone's findings, we predicted that participants who reported more positive contact with the primary outgroup would report more positive attitudes toward that same outgroup (hypothesis IIIa) and a secondary outgroup (hypothesis IIIb). Furthermore, we believed these associations between contact and attitudes would be mediated by intergroup anxiety for the primary outgroup (hypothesis IVa) and secondary outgroup (hypothesis IVb).

Study 1

Method

Participants

Participants were 328 English-speaking university students from Karnatak University in Dharwad, India ($M_{\text{age}} = 23.07$,

$SD = 2.14$). Students self-identified as either Hindu ($n = 216$), Muslim ($n = 62$), or Christian ($n = 50$). Female ($n = 175$) and male ($n = 153$) participants were nearly equally represented in the sample. All participants provided informed consent. The conducting of this study was approved by Karnatak University.

Procedure

Participants answered paper surveys at their university in exchange for course credit. All participants answered questions regarding meditative practice outgroup attitudes. At Karnatak University, Hindus comprise the religious majority, Muslims are a religious minority, and Christians are an even smaller numerical minority. Following from Islam and Hewstone's procedure, Hindu participants were first asked to answer questions about Muslims ("primary outgroup") and then toward Christians ("secondary outgroup"). Muslim and Christian participants were first asked to answer questions about Hindus and then toward the other religious minority outgroup. The surveys contained a few measures that are irrelevant to the current research and are therefore not discussed further.

Measures

Participants were asked to indicate their engagement in mindfulness practices (i.e., formal sitting meditation, yoga, tai chi, qigong, and lovingkindness meditation, $r = .75$). These practices are considered mindfulness or contemplative practices, but for ease of interpretation, we use the term "mindfulness practices." Although formal sitting meditation may be considered the most common type of mindfulness practice, mindfulness retreats often include both sitting meditation and heart practices (e.g., lovingkindness) as well as mindful movement practices (i.e., walking meditation, yoga, tai chi, and qigong; Calendar: Residential Retreats, Spirit Rock 2016). As such, including all of these practices in our measure provided a broader scope of mindfulness practices.

The first set of items asked participants to think of the previous 30 days and indicate on a scale from 1 (*never*) to 5 (*very*) how often they engaged in each meditative practice, and these items were averaged. The second set of items asked participants to consider the previous week and indicate, on a scale from 0 to 7, the number of days they participated in each practice, and these were averaged. Because these two indices used different scales, Z-scores were calculated for each of the two averages, and these Z-scores were combined into a single index we call "mindfulness practices."

Intergroup contact ($\alpha = .83$) was derived from measures used by Islam and Hewstone (1993). Participants were asked to indicate the amount of different types of contact they had with primary outgroup members. Specifically, participants answered nine questions about quantitative and qualitative

contact with members of the target outgroup (e.g., quantitative: *As neighbors, how much contact have you had in the past, or do you now have, with Muslims?*; qualitative: *Is your contact experience with Muslims pleasant and enjoyable?*; 1 = none at all, 5 = a great deal).

The measure of intergroup anxiety was developed by Stephan and Stephan (1985) and used by Islam and Hewstone (1993). Participants were asked to imagine they were the only member of their religious group and were asked to indicate how they would feel if they interacted with a group of religious outgroup members as compared with an interaction with ingroup members. Participants were given a series of negative traits (i.e., *awkward, defensive, irritated, impatient, self-conscious, and suspicious*) and asked to indicate their feelings on a 1 (*not at all*) to 5 (*very much*) scale ($\alpha = .73$). Intergroup anxiety was assessed only toward the primary outgroup.

The five-item measure of outgroup favorability was derived directly from those adopted by Islam and Hewstone (1993). For example, participants were asked to indicate how favorable they felt toward members of the target outgroup (e.g., *Overall, what is your attitude toward Muslims in our society? 1 = strongly negative; 7 = strongly positive*). Participants indicated favorability toward a primary outgroup ($\alpha = .62$) and secondary outgroup ($\alpha = .66$).

Participants were given a series of traits (see Islam and Hewstone 1993) and were asked to indicate how outgroup members seem to be for each trait. Participants responded to three positive traits (i.e., *fun-loving, hospitable, and intelligent*) and three negative traits (i.e., *selfish, deceitful, and aggressive*) using a scale from 1 (*not at all*) to 5 (*very much*). Participants responded to the positive traits ($\alpha = .50$) and negative traits ($\alpha = .63$) regarding the primary outgroup as well as positive traits ($\alpha = .55$) and negative traits ($\alpha = .64$) regarding the secondary outgroup.

Data Analyses

We used the guideline of ± 1.5 to determine if our measures of skewness and kurtosis were normally distributed (Tabachnick and Fidell 2013). Using this guideline, skewness (absolute value ranges = .09 to .70) and kurtosis (absolute value ranges = .01 to .85) statistics revealed that no variable appreciably deviated from the normal distribution. In addition, Aiken and West (1991) explain that presence of extreme outliers in analyses can distort their interpretation and recommend that participants with a studentized residual of greater than 2.5 are statistically extreme outliers which should be removed. Accordingly, these extreme outliers were excluded only in the analysis in which the outlier was identified. Importantly, for any given analysis, the percentage of outliers was only between 0.91% and 1.52% of the data (the degrees of freedom in each model depend upon the number of outliers as well as any missing data). Religion (i.e., 1 = Hindu,

0 = Muslim, and 0 = Christian) and gender (i.e., 1 = female and 2 = male) were also included as covariates if either or both were correlated with a given outcome.

To test our hypotheses, we used Hayes' (2013) PROCESS macro for regression in SPSS. The macro reports the outcomes of a standard regression analysis that test both "main effects" as well as "interactive effects" and reports the outcomes of tests of mediation; the program tests direct and indirect links in a mediational model using bootstrapping. Indirect effects that are significant, using confidence intervals, verify mediation. For all of the following analyses, we report unstandardized beta coefficient along with standard errors and confidence intervals.

Results

Recall that the measure of mindfulness practices was the average of the Z-scores of reported frequency and days. The average for the rated frequency of the six practices was 1.86 (SD = .61), and the average for the reported days of the six practices was 1.39 (SD = 1.16). These averages are influenced by the fact that the majority of participants did not practice tai chi, qigong, and lovingkindness practices. The majority of participants, however, reported relatively frequent sitting, walking, and yoga practices. Among those who reported these practices, the mean reported frequencies for sitting, walking, and yoga were 3.33 (SD = 1.10), 3.07 (SD = 1.10), and 3.20 (SD = 1.16), respectively; the mean number of days for sitting, walking, and yoga were 4.22 (SD = 2.25), 3.71 (SD = 2.09), and 4.34 (SD = 2.45), respectively. Remaining means, standard deviations, and zero-order correlations are reported in the Electronic Supplementary Material.

Primary Outgroup

Supporting hypothesis Ia, the results showed that participants with greater intergroup anxiety reported less-favorable attitudes toward the primary outgroup, $t(318) = -8.54$, $p < .0001$, $b = -.36$, $SE = .042$, 95% CI (-.44, -.27). More importantly, supporting hypothesis IIa, the results revealed that mindfulness practices moderated the relationship between intergroup anxiety and favorability, $t(318) = 4.09$, $p < .001$, $b = .16$, $SE = .039$, 95% CI (.08, .24). As shown in Fig. 1a, for participants who reported low, $b = -.69$, $SE = .087$, $t(106) = -7.912$, $p < .0001$, or moderate $b = -.49$, $SE = .078$, $t(105) = -6.314$, $p < .0001$, engagement in mindfulness practices, there was a relatively strong, negative relationship between intergroup anxiety and outgroup favorability, indicating that higher levels of intergroup anxiety were associated with less-favorable attitudes toward the primary outgroup. By contrast, for those who reported relatively high levels of mindfulness practices, the association between

intergroup anxiety and outgroup favorability was relatively weaker, $b = -.25$, $SE = .081$, $t(106) = -3.106$, $p < .003$, suggesting that mindfulness practices reduced the relationship between intergroup anxiety on lack of favorability. Supporting hypothesis IIIa, participants who reported less intergroup contact had less favorable attitudes, $t(318) = 12.01$, $p < .0001$, $b = .49$, $SE = .041$, 95% CI (.41, .57) toward the primary outgroup. This latter relationship was mediated by intergroup anxiety, supporting hypothesis IVa; the indirect effects showed that intergroup anxiety was a mediator at low, moderate, and high levels of mindfulness practices, $b = .15$, $SE = .033$, 95% CI (.09, .23), $b = .10$, $SE = .024$, 95% CI (.06, .16), $b = .06$, $SE = .022$, 95% CI (.02, .12), respectively.

The pattern of relationships was similar for positive traits. Specifically, supporting Hypothesis Ia, participants with greater intergroup anxiety reported less positive traits toward the primary outgroup, $t(319) = -5.22$, $p < .0001$, $b = -.20$, $SE = .038$, 95% CI (-.27, -.12). More importantly for the current study, supporting hypothesis IIa, the results revealed that mindfulness practices moderated the relationship between intergroup anxiety and positive traits, $t(319) = 2.09$, $p < .04$, $b = .07$, $SE = .035$, 95% CI (.04, .004). The pattern of results (as shown in Fig. 1b) showed higher levels of intergroup anxiety were associated with less positive trait ratings for those with low, $b = -.39$, $SE = .072$, $t(106) = -4.2$, $p < .0001$, and moderate, $b = -.27$, $SE = .061$, $t(105) = -4.40$, $p < .0001$, levels of mindfulness practices. This association was somewhat dampened for those reporting higher mindfulness practices, $b = -.20$, $SE = .078$, $t(107) = -2.58$, $p < .05$. Also, supporting hypothesis IIIa, participants who reported less intergroup contact ascribed less positive traits, $t(319) = 9.21$, $p < .0001$, $b = .34$, $SE = .037$, 95% CI (.27, .42) toward the primary outgroup. This latter relationship was mediated by intergroup anxiety, supporting hypothesis IVa; that is, less

intergroup contact was associated with greater intergroup anxiety, which in turn, was associated with less positive traits. The indirect effects showed that intergroup anxiety was a mediator at low, $b = .08$, $SE = .020$, 95% CI (.05, .13), moderate, $b = .06$, $SE = .016$, 95% CI (.03, .09), and high, $b = .04$, $SE = .019$, 95% CI (.004, .08) levels of mindfulness practices.

Finally, the results for negative traits were different from those for outgroup favorability and positive traits. Although participants with greater intergroup anxiety ascribed more negative traits to the primary outgroup, $t(318) = 11.63$, $p < .0001$, $b = .55$, $SE = .047$, 95% CI (.46, .64) (which supported hypothesis Ia), mindfulness practices did not significantly moderate the relationship between intergroup anxiety and negative traits, $t(318) = -1.83$, $p = .068$, $b = -.08$, $SE = .044$, 95% CI (-.017, .01). Hypothesis IIa was therefore not supported for negative traits. Also, the results showed that less intergroup contact was no longer associated with more negative traits, $t(318) = -1.59$, $p = .11$, $b = -.07$, $SE = .046$, 95% CI (-.16, .02), when intergroup anxiety was in the model. Supporting hypothesis IVa, the indirect effects showed that intergroup anxiety was a mediator at low, moderate, and high levels of mindfulness practices, $b = -.19$, $SE = .045$, 95% CI (-.28, -.11), $b = -.16$, $SE = .037$, 95% CI (-.24, -.10), $b = -.14$, $SE = .033$, 95% CI (-.22, -.08), respectively.

Secondary Outgroup

Supporting hypothesis Ib, participants with greater intergroup anxiety toward the primary outgroup reported less-favorable attitudes toward the secondary outgroup, $t(317) = -9.48$, $p < .0001$, $b = -.46$, $SE = .048$, 95% CI (-.55, -.36). Moreover, the results revealed that mindfulness practices moderated the relationship between intergroup anxiety toward the primary outgroup and outgroup favorability toward the

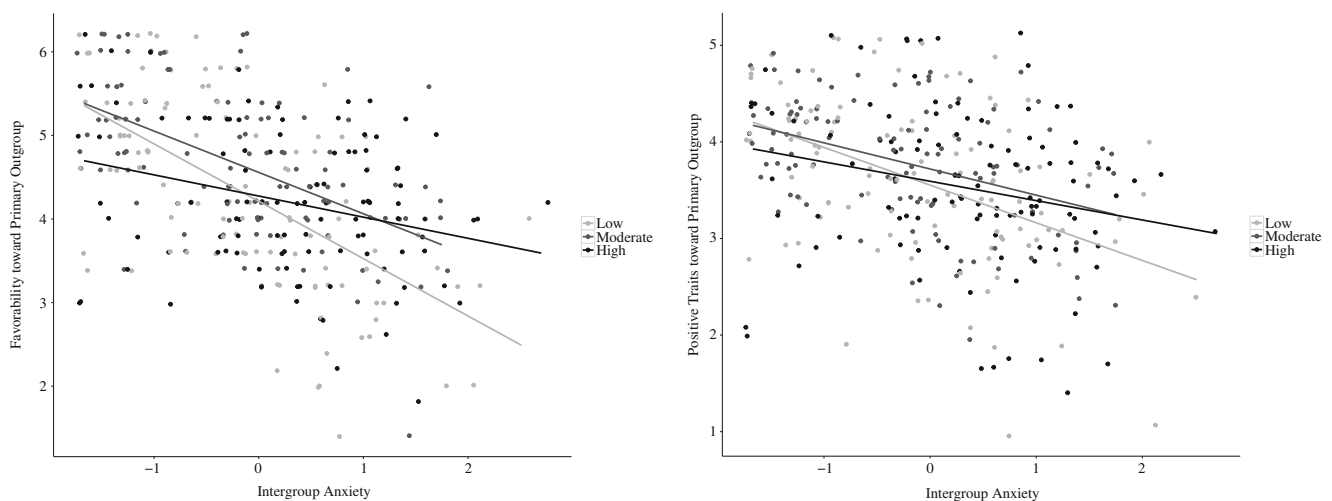


Fig. 1 a, b Interaction between mindfulness practices and intergroup anxiety in study 1, at low, moderate and high levels of mindfulness practices. Interaction shown for favorability (a) and positive traits (b) toward the primary outgroup

secondary outgroup, $t(317) = 2.96$, $p < .004$, $b = .13$, $SE = .043$, 95% CI (.04, .21), supporting hypothesis IIb. As shown in Fig. 2a, for participants who reported low engagement in mindfulness practices, there was a strong, negative relationship between intergroup anxiety and outgroup favorability, $b = -.72$, $SE = .083$, $t(103) = -8.69$, $p < .0001$, indicating that higher levels of intergroup anxiety were associated with less-favorable attitudes toward the secondary outgroup. By contrast, for those who reported relatively moderate, $b = -.49$, $SE = .089$, $t(108) = -5.70$, $p < .0001$, or high, $b = -.38$, $SE = .080$, $t(106) = -4.79$, $p < .0001$, levels of mindfulness practices, the association between intergroup anxiety and outgroup favorability was relatively weaker, suggesting that mindfulness practices reduced the association between intergroup anxiety and lack of favorability. Also, supporting hypothesis IIIb, participants who reported less intergroup contact with the primary outgroup had less-favorable attitudes toward the secondary outgroup, $t(317) = 5.97$, $p < .0001$, $b = .28$, $SE = .047$, 95% CI (.19, .37). Supporting hypothesis IVb, this latter relationship was mediated by intergroup anxiety toward the primary outgroup; the indirect effects showed that intergroup anxiety was a mediator at low, moderate, and high levels of mindfulness practices, $b = .17$, $SE = .037$, 95% CI (.10, .25), $b = .13$, $SE = .028$, 95% CI (.09, .20), $b = .10$, $SE = .025$, 95% CI (.06, .15), respectively.

The results for positive traits regarding the secondary outgroup suggested that participants with greater intergroup anxiety toward the primary outgroup ascribed less positive traits toward the secondary outgroup, $t(317) = -6.13$, $p < .0001$, $b = -.25$, $SE = .040$, 95% CI (-.33, -.18), supporting hypothesis Ib. However, mindfulness practices did not significantly moderate the relationship between intergroup anxiety and positive traits, $t(317) = 1.60$, $p = .11$, $b = .06$, $SE = .037$, 95% CI (-.01, .13); therefore, hypothesis

IIb was not supported. Also, supporting hypothesis IIIb, the results showed that more intergroup contact with the primary outgroup remained a significant predictor of positive traits for the secondary outgroup, $t(317) = 7.15$, $p < .0001$, $b = .29$, $SE = .040$, 95% CI (.21, .37), when intergroup anxiety was in the model. Supporting hypothesis IVb, the indirect effects showed that intergroup anxiety was a mediator at low, moderate, and high levels of mindfulness practices, $b = .08$, $SE = .021$, 95% CI (.04, .13), $b = .06$, $SE = .017$, 95% CI (.04, .10), $b = .05$, $SE = .020$, 95% CI (.02, .10), respectively.

Finally, participants with greater intergroup anxiety toward the primary outgroup endorsed more negative traits about the secondary outgroup, $t(319) = 8.65$, $p < .0001$, $b = .42$, $SE = .049$, 95% CI (.32, .52), supporting hypothesis Ib. More importantly for the current study, the results revealed that mindfulness practices moderated the relationship between intergroup anxiety toward the primary outgroup and negative traits toward the secondary outgroup, $t(319) = -2.08$, $p < .04$, $b = -.09$, $SE = .045$, 95% CI (-.18, -.005), supporting hypothesis IIb. As shown in Fig. 2b, for participants who reported low, $b = .56$, $SE = .078$, $t(104) = 7.09$, $p < .0001$, or moderate, $b = .48$, $SE = .083$, $t(107) = 5.80$, $p < .0001$, engagement in mindfulness practices, there was a relatively strong, positive relationship between intergroup anxiety toward the primary outgroup and negative traits toward the secondary outgroup. By contrast, for those who reported high levels of mindfulness practices, the association between intergroup anxiety and negative traits was relatively weaker, $b = .34$, $SE = .086$, $t(107) = 4.03$, $p < .001$, revealing that mindfulness practices reduced the association between intergroup anxiety and more negative traits. Also, supporting hypothesis IIIb, participants who reported less intergroup contact ascribed more negative traits, $t(319) = -2.76$, $p < .01$, $b = -.13$, $SE = .048$, 95% CI (-.23, -.04) toward the secondary outgroup. This latter

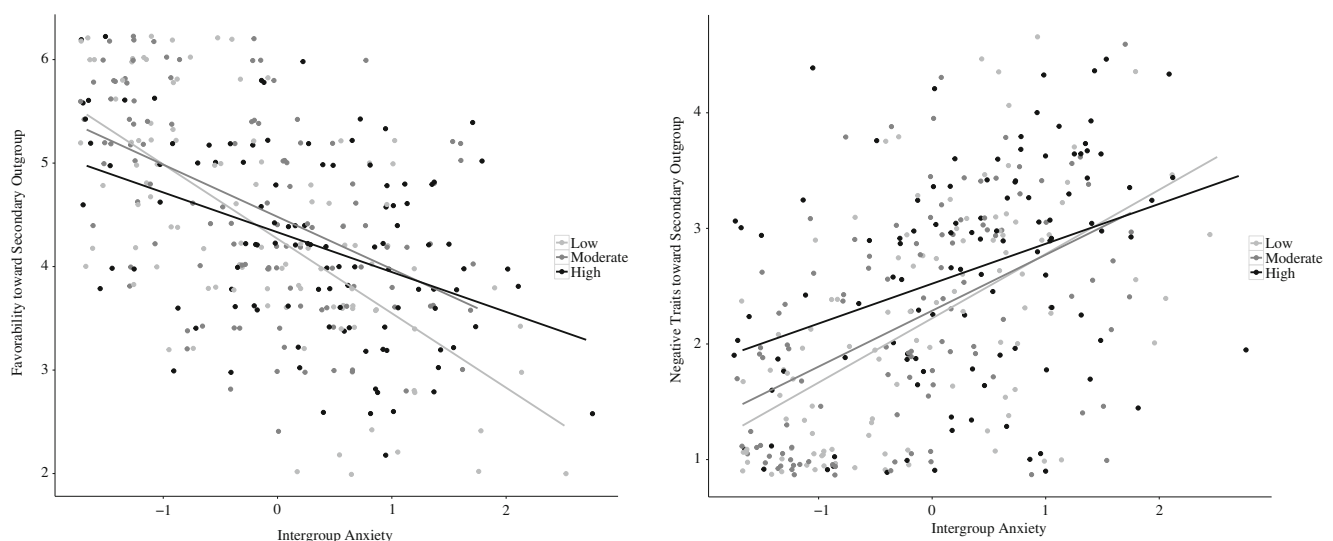


Fig. 2 a, b Interaction between mindfulness practices and intergroup anxiety toward the secondary outgroup in study 1, at low, moderate and high levels of mindfulness practices. Interaction shown for favorability (a) and negative traits (b) toward the secondary outgroup

relationship was mediated by intergroup anxiety, supporting Hypothesis IVb; the indirect effects showed that intergroup anxiety was a mediator at low, $b = -.15$, $SE = .033$, 95% CI $(-.22, -.09)$, moderate, $b = -.12$, $SE = .028$, 95% CI $(-.19, -.07)$, and high levels of mindfulness practices, $b = -.10$, $SE = .030$, 95% CI $(-.17, -.05)$.

Study 2

In study 1, mindfulness practices and intergroup anxiety interacted in their influences on two of the outcomes, revealing that the association between anxiety and outgroup attitudes was dampened for those who reported more frequent and longer engagement in mindfulness practices. Similarly, the results showed that the association between intergroup anxiety toward the primary outgroup and favorability toward and negative traits ascribed to the secondary outgroup was moderated by participants' engagement in mindfulness practices.

Study 2 was conducted to conceptually replicate the findings from study 1 with a different sample. In particular, study 2 allowed us to test our primary interactive hypothesis across different cultures (i.e., Indian vs. US samples), different social groups (i.e., religious vs. ethnic outgroups), and different age samples (i.e., college student vs. general adult). The hypotheses for study 2 were the same as those for study 1.

Method

Participants

Participants were a US sample of 400 Amazon Mechanical Turk workers. Participants were excluded from analyses if they completed the survey in less than 4 min ($n = 5$), if they failed to correctly answer three of four items checking for response sets (e.g., *Select strongly disagree to ensure you are a human responder*; $n = 13$), or if they failed on both of these restrictions ($n = 3$). These restrictions excluded less than 6% of the sample, leaving a remaining sample size of 379 participants. All participants provided informed consent. Participants in the remaining sample self-identified as either White/European American ($n = 299$), African American ($n = 52$), or Hispanic American ($n = 28$). The included sample had an approximately equal representation of females ($n = 220$) and males ($n = 159$). To indicate their age, participants selected an appropriate age range (i.e., *under 18, 18 to 20, 21 to 30, 31 to 40, 41 to 50, 51 to 60, 61 to 70, 71 to 80, 81 to 90, and 90 or older*); approximately 73.6% of the sample selected age ranges between 18 and 40 (none were under 18, or 81 and older). The Institutional Review Board at the University of Missouri approved the conducting of this study.

Procedure

The procedure was identical to the first study. However, instead of using paper surveys, participants were recruited through Amazon Mechanical Turk and answered online surveys using Qualtrics. Participants were compensated with \$1.00 for participation.

Measures

Like in study 1, the same two mindfulness practices measures were used (i.e., frequency and number of days in the past week) and we added a third item: the average number of minutes practiced in any one session (1 = 0 min; 2 = 1–5 min; 3 = 5–10; 4 = 10–20; 5 = 20–30; 6 = 30–40; 7 = 40–50; 8 = 50–60). Frequency, days, and minutes of mindfulness practices were standardized and combined to form a single measure.

In addition, participants answered all intergroup measures toward a primary and secondary ethnic outgroup (again, derived from Islam and Hewstone 1993). African American and Hispanic American participants indicated attitudes first toward White/European Americans (i.e., primary outgroup) and then toward the other ethnic minority (i.e., secondary outgroup). Approximately half of the White/European American participants indicated attitudes first toward African Americans and then toward Hispanic Americans ($n = 145$); the remaining White/European American participants ($n = 154$) answered questions first toward Hispanic Americans and then toward African Americans. Besides these additions, the measures of intergroup contact with the primary outgroup ($\alpha = .81$), intergroup anxiety toward the primary outgroup ($\alpha = .88$), favorability toward the primary ($\alpha = .88$) and secondary outgroup ($\alpha = .91$), positive traits toward the primary ($\alpha = .80$) and secondary outgroup ($\alpha = .83$), negative traits toward the primary ($\alpha = .85$) and secondary outgroup ($\alpha = .88$), and mindfulness practices ($\alpha = .79$) were identical to study 1.

Data Analyses

Skewness (absolute value ranges = .03 to .93) and kurtosis (absolute value ranges = .09 to 1.15) statistics revealed that no variable appreciably deviated from the normal distribution. For study 2, the percentage of outliers for any given analysis ranged from 1.51% to 2.64% of the data. We adopted the same series of regression analyses used in study 1, and ethnicity (i.e., 1 = White/European American, 0 = African American, and 0 = Hispanic American) and gender (i.e., 1 = female and 2 = male) were included as covariates only if they were correlated with the given outcome.

Results

Recall that the measure of mindfulness practices was the average of the Z-scores of reported frequency, days, and minutes. The average for the rated frequency of the six practices was 1.82 (SD = .61), the average for the reported days of the six practices was 1.89 (SD = .95), and the average for the reported minutes of the six practices was 2.31 (SD = 1.01). Like study 1, the averages in study 2 are influenced by the fact that the majority of participants did not practice tai chi, qigong, and lovingkindness practices. The majority of participants, however, reported relatively frequent sitting, walking, and yoga practices. Among those who reported these practices, the mean frequency for sitting, walking, and yoga mindfulness practices were 3.43 (SD = .89), 3.26 (SD = .94), and 3.21 (SD = .93), respectively. The mean number of days for sitting, walking, and yoga were 4.03 (SD = 1.92), 3.71 (SD = 1.77), and 3.70 (SD = 1.51), respectively. The mean number of minutes for sitting, walking, and yoga were 4.35 (about 5 to 20 min; SD = 1.31), 4.80 (about 10 to 30 min; SD = 1.59), and 5.26 (about 20 to 40 min; SD = 1.59), respectively. Remaining means, standard deviations, and zero-order correlations are reported in the Electronic Supplementary Material.

Primary Outgroup

Supporting hypothesis 1a, and replicating the findings of study 1, participants with greater intergroup anxiety reported less-favorable attitudes toward the primary outgroup, $t(364) = -13.96$, $p < .0001$, $b = -.56$, $SE = .040$, 95% CI $(-.63, -.48)$. The results revealed that mindfulness practices moderated the relationship between intergroup anxiety and outgroup favorability, $t(364) = 2.70$, $p < .01$, $b = .10$, $SE = .036$, 95% CI $(.03, .17)$. As shown in Fig. 3a, for

participants who reported low, $b = -.75$, $SE = .069$, $t(122) = -10.91$, $p < .0001$, or moderate, $b = -.84$, $SE = .079$, $t(121) = -10.63$, $p < .0001$, engagement in mindfulness practices, there was a negative relationship between intergroup anxiety and outgroup favorability. For those with high levels of mindfulness practices, the association between intergroup anxiety and outgroup favorability was somewhat weaker $b = -.70$, $SE = .064$, $t(120) = -10.85$, $p < .0001$. Although the interaction was consistent with H3a, we would have expected the negative association between anxiety and outgroup favorability to be strongest for those reporting little or no mindfulness practices. Also, supporting hypothesis IIIa, participants who reported less intergroup contact had less-favorable attitudes toward the primary outgroup, $t(364) = 10.68$, $p < .0001$, $b = .41$, $SE = .039$, 95% CI $(.33, .49)$. This latter relationship was mediated by intergroup anxiety, supporting hypothesis IVa; the indirect effects showed that intergroup anxiety was a mediator at low, $b = .29$, $SE = .040$, 95% CI $(.21, .37)$, moderate, $b = .25$, $SE = .035$, 95% CI $(.19, .32)$, and high levels of mindfulness practices, $b = .21$, $SE = .035$, 95% CI $(.15, .29)$.

Participants with greater intergroup anxiety reported less positive traits ascribed to the primary outgroup, $t(366) = -7.31$, $p < .0001$, $b = -.27$, $SE = .037$, 95% CI $(-.34, -.20)$, supporting hypothesis 1a. Moreover, the same moderating pattern was found for positive traits: supporting hypothesis IIa, mindfulness practices moderated the association between intergroup anxiety and positive traits attributed to the primary outgroup, $t(366) = 2.32$, $p < .03$, $b = .07$, $SE = .032$, 95% CI $(.01, .14)$. Specifically, as shown in Fig. 3b, for participants low, $b = -.45$, $SE = .057$, $t(121) = -7.84$, $p < .0001$, in mindfulness practices, greater intergroup anxiety was associated with less positive traits. In contrast, for those with moderate, $b = -.39$, $SE = .064$,

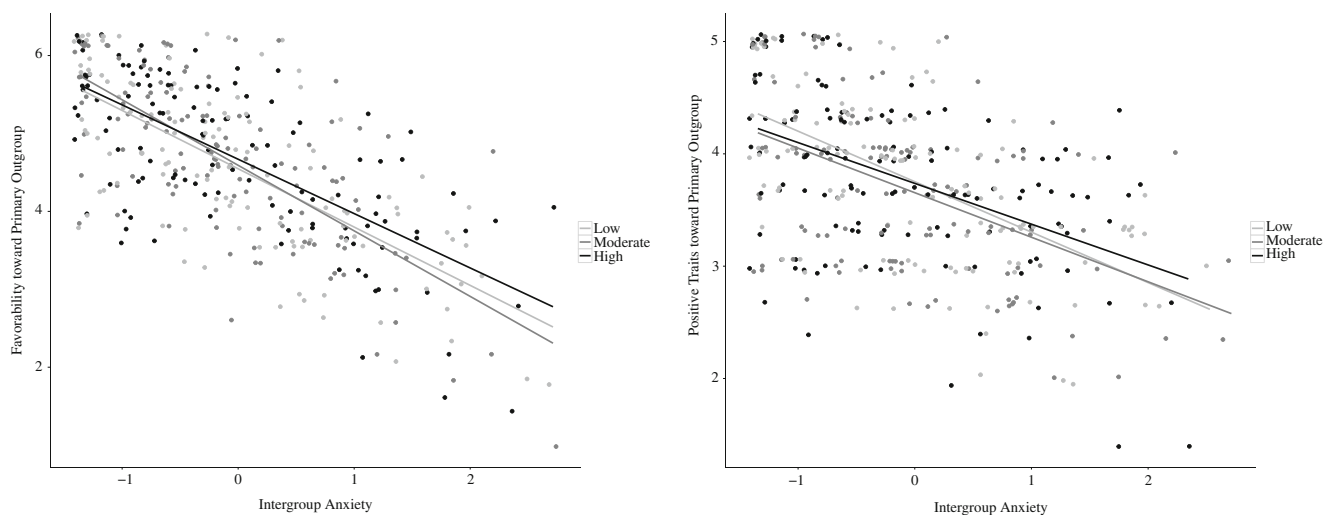


Fig. 3 a, b Interaction between mindfulness practices and intergroup anxiety toward the primary outgroup in study 2, at low, moderate, and high levels of mindfulness practices. Interaction shown for favorability (a) and positive traits (b) toward the primary outgroup

$t(123) = -6.20, p < .0001$, or high, $b = -.36, SE = .061$, $t(121) = -5.98, p < .0001$, mindfulness practices, the relationship was somewhat less strong. Also, supporting hypothesis IIIa, the results showed that more intergroup contact remained a significant predictor of positive traits, $t(366) = 7.64, p < .0001, b = .27, SE = .035, 95\% CI (.20, .37)$, when intergroup anxiety was in the model. The indirect effects showed that intergroup anxiety was a mediator at low, moderate, and high levels of mindfulness practices, $b = .15, SE = .024, 95\% CI (.11, .20), b = .12, SE = .021, 95\% CI (.08, .16), b = .09, SE = .026, 95\% CI (.05, .15)$, respectively, supporting hypothesis IVa.

As was shown in study 1, for negative traits ascribed to the primary outgroup, mindfulness practices did not moderate the relationship between intergroup anxiety and negative traits ascribed to the primary outgroup, $t(361) = -0.05, p = .95, b = -.002, SE = .034, 95\% CI (-.07, .07)$ (therefore, hypothesis IIa was not supported). Nevertheless, greater intergroup anxiety, $t(361) = 14.44, p < .0001, b = .60, SE = .042, 95\% CI (.52, .69)$, and intergroup contact, $t(361) = -0.70, p = .48, b = -.03, SE = .042, 95\% CI (-.11, .05)$, were associated with negative traits (supporting hypotheses Ia and IIIa). In addition, supporting hypothesis IVa, the indirect effects showed that intergroup anxiety was a mediator at low, $b = -.292, SE = .037, 95\% CI (-.37, -.23)$, moderate, $b = -.291, SE = .033, 95\% CI (-.36, -.23)$, and high levels of mindfulness practices, $b = -.291, SE = .035, 95\% CI (-.37, -.23)$.

In summary, the results mostly replicated those of study 1, showing that the association between higher levels of intergroup anxiety and less-favorable evaluations was dampened for those reporting more frequent mindfulness practices. That both studies 1 and 2 showed that the extensiveness of participants' mindfulness practices moderated the relationship between intergroup anxiety and favorability toward and positive trait-beliefs about the primary outgroup provides compelling evidence for our primary hypothesis.

Secondary Outgroup

For study 2, the results for all of our outcomes failed to show moderating influences of engagement in mindfulness practices toward the secondary outgroup. Nevertheless, the results of study 2 replicated study 1 in showing outgroup generalization. For the measure of favorability toward the secondary outgroup, greater intergroup anxiety was associated with less favorability toward secondary outgroup, $t(360) = -5.16, p < .0001, b = -.31, SE = .060, 95\% CI (-.42, -.19)$; mindfulness practices did not moderate this relationship, $t(360) = 1.25, p = .21, b = .06, SE = .049, 95\% CI (-.04, .16)$; and, greater intergroup contact was associated with more favorability, $t(360) = 6.05, p < .0001, b = .36, SE = .059, 95\% CI (.24, .48)$. The indirect effects showed that intergroup anxiety was a mediator at low, moderate, and high levels of

mindfulness practices, $b = .17, SE = .041, 95\% CI (.09, .27), b = .14, SE = .033, 95\% CI (.05, .20), b = .12, SE = .039, 95\% CI (.05, .20)$, respectively.

Participants with greater intergroup anxiety reported less positive traits toward secondary outgroups, $t(360) = -5.21, p < .0001, b = -.24, SE = .049, 95\% CI (-.33, -.15)$; mindfulness practices did not moderate this relationship, $t(360) = .26, p = .79, b = .01, SE = .038, 95\% CI (-.06, .08)$; and, intergroup contact was associated with more positive traits, $t(360) = .29, p < .0001, b = .24, SE = .046, 95\% CI (.15, .33)$. The indirect effects showed that intergroup anxiety was a mediator at low, moderate, and high levels of mindfulness practices, $b = .12, SE = .031, 95\% CI (.06, .18), b = .11, SE = .027, 95\% CI (.06, .17), b = .11, SE = .038, 95\% CI (.04, .18)$, respectively.

Also, participants with greater intergroup anxiety ascribed more negative traits toward the secondary outgroup, $t(360) = 9.47, p < .0001, b = .49, SE = .051, 95\% CI (.38, .59)$; mindfulness practices did not moderate this relationship, $t(360) = .52, p = .61, b = .02, SE = .045, 95\% CI (-.07, .11)$; and, intergroup contact did not predict negative traits, $t(360) = -.52, p = .60, b = -.03, SE = .051, 95\% CI (-.13, .07)$, when intergroup anxiety was in the model, suggesting full mediation. The indirect effects showed that intergroup anxiety was a mediator at low, moderate, and high levels of mindfulness practices, $b = -.21, SE = .038, 95\% CI (-.29, -.14), b = -.22, SE = .033, 95\% CI (-.29, -.17), b = -.23, SE = .038, 95\% CI (-.31, -.16)$, respectively.

Discussion

Although the findings of the current studies are consistent with prior literature, they suggest a more complex relationship between mindfulness practices and intergroup processes. The primary purpose of the current work was to understand whether engagement in mindfulness practices moderates the negative influence of intergroup anxiety on attitudes toward outgroup members. In two studies, we found support for our hypotheses. Our findings suggest that mindfulness practices may reduce the relationship between intergroup anxiety and negative outgroup attitudes. We found that the association between intergroup anxiety and less-favorable attitudes was relatively stronger for participants who reported no or little engagement in mindfulness practices, and that this association was relatively weaker for those who reported high levels of engagement in mindfulness practices. In addition, the findings of study 1, but not study 2, provided some evidence that mindfulness practices may moderate the relationship between anxiety felt while interacting with one group and attitudes toward a different outgroup (i.e., outgroup generalization). That is, mindfulness practices may deflect the influence of

intergroup anxiety not only toward the outgroup in question but also toward other outgroups.

There are several ways in which the current work advances our understanding of mindfulness and intergroup processes. Notably, we found evidence for our hypotheses across different cultures (i.e., Indian vs. US), different social groups (i.e., religious vs. ethnic outgroups), and different age samples (i.e., college students vs. adults). Little research on mindfulness and outgroup attitudes has included diverse samples (e.g., Hunsinger et al. 2014; Kang et al. 2014). In addition, no prior research has found evidence that mindfulness practices may influence outgroup generalization processes. Note that two studies (i.e., Kang et al., 2014; Stell and Farsides, 2015) have examined the influence of mindfulness practices on two different target groups, but these studies did not examine generalization of outgroup attitudes per se. Unlike previous studies, study 1 revealed some evidence that engagement in mindfulness practices in daily life tended to reduce the association between feelings of intergroup anxiety about a primary outgroup and attitudes toward a secondary outgroup.

Moreover, the current studies examined frequency of daily mindfulness practices in the context of actual intergroup contact experiences reported by participants. Our studies reveal a moderating influence of “everyday” mindfulness practices. Our findings may suggest that routine mindfulness practices may allow people to understand the anxiety that they feel during intergroup contact, and as such, these practitioners may avoid displacing their feelings of anxiety onto perceptions of outgroup members (Smalley and Wintson 2010; Weinstein 2010). Moreover, only one study (i.e., Parks et al. 2014) has examined mindfulness practices and intergroup anxiety. Our findings are different from those of Parks et al. (2014); their findings showed that college students exposed to a brief LKM induction (i.e., 15-min audiotape) reported less anxiety toward the homeless. The findings of the current studies showed either a lack of or a small, positive association between engagement in daily mindfulness practices and intergroup anxiety. The discontinuity between Parks et al.’s and our results may be attributable to differences in the operationalization of mindfulness practice, in the type of meditation, or the relative proximity between the mindfulness practice and the report of intergroup anxiety. Parks et al.’s study included a one-time meditation practice, apparently among novices, that engendered feelings of unconditional kindness, warmth, and caring toward either the homeless or strangers, and anxiety was measured soon after the practice. By contrast, our measure of everyday practices suggested that those who reported high levels of engagement were relatively experienced practitioners. Also, our operationalization included a variety of mindfulness practices (e.g., sitting and walking meditation, etc.). Although LKM was one of these practices, relatively few of our participants reported frequent engagement in it. Finally, in our study, there is no reason to assume

that intergroup contact and feelings of anxiety were proximal to engagement in mindfulness practices. These differences are important because, whereas mindfulness interventions may reduce acute feelings of intergroup anxiety, sustained “everyday” practice may be more likely to enhance peoples’ awareness and understanding of their own feelings of anxiety in intergroup contexts (Smalley and Wintson 2010; Weinstein 2010).

Also, our results do not suggest that those who regularly engage in mindfulness practices are necessarily less biased. Indeed, in study 1, there was a small, positive correlation between frequency of mindfulness practices and ascription of negative traits toward primary and secondary outgroups; in study 2, there was a small, positive correlation among frequency and ascription of negative traits toward only the primary outgroup. These small but replicated associations may suggest that those who frequently engage in mindfulness practices may be relatively more aware of their own negative cognitions about outgroups. But this finding need not negate prior literature; there are several differences between our approach and that of previous studies of mindfulness and outgroup attitudes. First, most of these previous studies showed that mindfulness practices affected implicit bias but not explicit bias. Our study exclusively measured explicit attitudes toward outgroups. Hunsinger et al. (2014) showed that meditation practitioners, who were White/European Americans, reported less explicit prejudice toward African Americans. Importantly, however, these participants were selected because of their advanced experience with lovingkindness and compassion meditation, in particular. Likewise, most of the studies that showed influences on implicit bias introduced novices to LKM. Compared with other meditation practices (e.g., insight and transcendental), concentration practices that foster feelings of compassion and lovingkindness may have specific influences on outgroup attitudes, especially implicit attitudes. Indeed, such “heart practices” that engender warmth, empathy, and compassion toward others may be necessary to improve outgroup attitudes. More generally, sustained contemplative practices may be more likely to mitigate individuals’ reactivity to their own emotional experiences (e.g., anger, anxiety, and fear) and thereby reduce the likelihood that negative emotions color outgroup attitudes.

Limitations

Notwithstanding that our work provides some new insights, the current studies have several limitations. First, the findings from both studies used concurrent survey methods. As such, the actual “causal” direction among the variables is impossible to determine, definitively. Nevertheless, the findings support theory and replicate the findings of other research (e.g., Islam and Hewstone 1993; Stephan et al. 2002). Researchers should

seek to verify the moderating influence of mindfulness practices on intergroup anxiety by manipulating engagement in mindfulness practice. Second, our measure of mindfulness practices was self-reported, and as such, we have no way to verify the accuracy of these reports. It may be reasonable to expect that even if reports are less than accurate, the scale from little to high levels of practice approximate actual individual differences in engagement in mindfulness practices. Also, the findings provide a new understanding about the potential relationship between “everyday” mindfulness practices and intergroup processes. Another limitation is that, essentially, our participants were self-selected into mindfulness level (e.g., low, moderate, and high). Participants that indicate frequent mindfulness practices are likely to be different in many ways than those who do not. Importantly, however, our results do not suggest that people who practice more frequently are more likely to report less anxiety or greater acceptance of outgroups. In addition, our operationalization of mindfulness practices was a composite of several different types of mindfulness practices. It is reasonable to assume that different types of mindfulness practices could differentially influence intergroup processes. Our operationalization of mindfulness allowed us to capture the variety of contemplative practices in which people engage, but future studies may seek to understand whether specific types of practices have different influences on intergroup processes. In addition, future research should examine whether mindfulness practices moderate the association between other established mediators (e.g., empathy toward outgroups; see Pettigrew and Tropp 2006) on the relationship between intergroup contact and outgroup attitudes. Finally, in study 1, the reliabilities of our intergroup measures were lower than ideal. Although our Indian participants spoke English, it may be that the items were not as interpretable as they would have been otherwise. Nevertheless, the reliabilities of these measures were acceptably high in study 2 and the pattern of findings for the relations among the primary variables were mostly replicated. Further research is needed to clarify the extent to which everyday mindfulness practices are associated with intergroup generalization.

The association between mindfulness practices and intergroup relations may be more nuanced than has previously been revealed. Everyday mindfulness practices may foster a heightened awareness and better understanding of one’s emotions and attitudes in intergroup contact settings. Our study examined frequency of daily mindfulness practices in the context of intergroup contact experiences. The findings suggest that engagement in everyday mindfulness practices may help people regulate their responses when they feel anxiety in intergroup situations. The contact hypothesis (Allport 1954) suggests that intergroup contact is associated with positive attitudes toward outgroups. Perhaps the combination of intergroup contact and engagement in everyday mindfulness practices provide an ideal combination for reducing the negative

influences of intergroup anxiety that arises during contact with outgroup members (Robert et al. 2015). Future research may examine the causal implications of mindfulness practices on intergroup anxiety and outgroup attitudes by comparing mindfulness intervention with a control condition and testing whether the conditions moderate the relationship between intergroup anxiety and attitudes. For example, no prior research has examined the effects of MBSR training on changes in perceptions of outgroup members. Our findings shed light on the association between mindfulness practices, intergroup anxiety, and outgroup attitudes. Understanding the conditions under which intergroup anxiety may be mitigated may help to improve intergroup attitudes. Mindfulness practices appear to not only calm one’s own anxiety and lead to positive outcomes for individuals, but also might be a tool to enhance harmony between members of different social groups.

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Author Contributions MAP-B assisted with executing a second study, analyzed data for both studies, and wrote the manuscript and revisions. SVK collaborated with design of both studies, assisted with data collection of the first study, and assisted with editing the first draft of the manuscript. VM executed the first study and entered all data for the first study. KMS advised on study methodology and statistical approach and edited the first draft of the paper. BAB designed and executed both studies, analyzed data for both studies, and served as senior editor on the manuscript and its revisions.

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Conflict of Interest The authors declare that they have no competing interests.

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