

Abstract

Mindfulness appears to promote individual well-being, but its interpersonal effects are less clear. Two studies in adult populations tested whether the effects of mindfulness on prosocial behavior differ by self-construals. In Study 1 ($N = 366$), a brief mindfulness induction, compared to a meditation control, led to decreased prosocial behavior among people with relatively independent self-construals, but had the opposite effect among those with relatively interdependent self-construals. In Study 2 ($N = 325$), a mindfulness induction led to decreased prosocial behavior among those primed with independence, but had the opposite effect among those primed with interdependence. The effects of mindfulness on prosocial behavior appear to depend on individuals' broader social goals. This may have implications for the increasing popularity of mindfulness training around the world.

Statement of Relevance

Mindfulness is big business. The U.S. meditation market, which includes classes, studios, and apps, is predicted to grow to over \$2 billion by 2022. Employers, health care settings, schools, and even prisons are increasingly urging mindfulness practice, with over one in five employers currently offering mindfulness training. By some accounts, being mindful increases prosocial behavior. In samples of college students, we tested whether this was inevitably the case. We found that for people who tend to view themselves as more interdependent, mindfulness increased prosocial actions. However, for people who tend to view themselves as more independent, mindfulness actually decreased prosocial behavior. Importantly, simple manipulations impacted this trend and made prosocial behavior more likely, even for people who view themselves as more independent of others. By providing a better understanding of how and when mindfulness affects prosocial behavior, this research allows us to make more informed decisions about the conditions under which mindfulness practices promote positive outcomes for individuals and for society.

Minding Your Own Business? Mindfulness Decreases Prosocial Behavior for those with Independent Self-Construals

Research on mindfulness—nonjudgmental monitoring of moment-by-moment cognition, emotion, perception, and sensation without fixation on thoughts of past and future (Kabat-Zinn 1990; Lutz et al. 2008) suggests that it improves individual well-being. Whether manipulated by meditation or assessed as a trait, mindfulness predicts positive outcomes including stress reduction (Chiesa and Serretti 2009), reduced negative affect and increased hope (Sears & Kraus, 2009), and increased subjective well-being (Keng et al., 2011). But what about the prosocial effects of mindfulness? Does mindfulness make people more generous and cooperative, or is it possible that it can actually make people more selfish? We propose that the prosocial effects of mindfulness depend greatly on whether one sees the self as independent from or as interdependent with other individuals—and that accordingly, mindfulness may actually reduce prosocial behavior among independent-minded individuals.

Mindfulness and Prosociality

Mindfulness is a trait: some individuals tend to be mindful more thoroughly and more often than others. It is also a state: that is, at any given time, it is possible for an individual to be more or less engaged in nonjudgmental awareness of their present thoughts and experiences. Accordingly, mindfulness can be affected by experiences, including laboratory inductions, and by meditation practices known collectively as mindfulness meditation (Kabat-Zinn 1990; Lutz et al., 2008).

There are cultural ties between mindfulness and prosocial behavior. As a traditional component of Buddhist religious practice it is thought to play a role in promoting moral behavior (Norenzayan, 2013). Modern practitioners share this view. For example, the Dalai Lama has

been quoted as saying, "If every eight year old in the world is taught meditation, we will eliminate violence from the world within one generation." (quoted in Kreplin, Farias, & Brazil, 2018). Some empirical research supports the notion that mindfulness promotes prosociality, including increased empathy and prosocial behavior (e.g., Hafenbrack et al., 2020; Lim, Condon, & DeSteno, 2015; Lutz et al., 2008) and decreased ostracism (e.g., Jones, Wirth, Ramsey, & Wynsma, 2019). However, there is also evidence that mindfulness may not straightforwardly promote prosocial behavior. At least one rigorous study has found that mindfulness can decrease motivation, including motivation to perform a task on behalf of others (Hafenbrack & Vohs, 2018). In addition, a recent meta-analysis found that the effects of various kinds of meditation on prosocial behavior were limited to methodologically-weak studies (Kreplin et al., 2018), and a subsequent meta-analysis of more methodologically-rigorous studies found that mindfulness affected only certain types of prosocial behavior (Berry et al., 2020). In other words, there is still much to learn about when—or whether—mindfulness makes people more likely to help others.

The Role of Self-Construal

We propose that understanding the complex effects of mindfulness on prosocial behavior requires a recognition that mindfulness originated in societies that were highly interdependent in self-construal, but mindfulness in the West, including the U.S., is practiced in a context of predominantly independent self-construals (Markus & Kitayama, 1991). An independent self-construal is a conception of the self as separate from others. The self is seen as singular and ideas about who one is come from comparing the self to others (e.g. I am smart, outgoing, and funny). Conversely, an interdependent self-construal is a conception of self that situates the self in an interpersonal context (e.g., "I am a woman, African American, a daughter, a sister, a college freshman, a feminist"). These contexts can include close relationship partners (a

relational interdependent self-construal) and/or collectives such as groups or nationalities (a *collective* interdependent self-construal; Brewer & Gardner, 1996; Gardner, Gabriel, & Lee, 1999). Self-construal is one of the most robust and reliable predictors of social goals and behaviors (Markus & Kitayama, 1991). Individuals with independent self-construals tend to act in ways that are consistent with goals of autonomy, separateness, and self-maximization; whereas those with interdependent self-construals tend to value the well-being of other group members, relationships, and interpersonal harmony (Gardner et al., 1999; Holland et al., 2004).

The emphasis of Western cultures on individualism and Eastern cultures on collectivism has led people from Western cultures to have more salient, active, and easily accessible independent self-construals as compared to people from Eastern cultures (Gardner et al., 1999). However, all people have both independent and interdependent aspects of self that can be activated by situation, including by experimental primes (Brewer & Gardner, 1996; Gardner et al., 1999). Thus self-construal is both a trait and a state. Those accessible goals then influence decisions and behaviors (Markus & Kitayama, 1991; Verplanken & Holland, 2002).

Mindfulness and the Self. Mindfulness could amplify the effects of self-construals on prosocial behavior by enhancing self-awareness. Although mindfulness is often discussed as decreasing ego-involvement (e.g., Brown, Berry, & Quaglia, 2016; Farb et al., 2007) and self-referential processing (Shi & He, 2019), some research and theorizing links mindfulness to *increased* attention to, and awareness of, the self. Specifically, cultivating awareness of the self is a central goal of mindfulness (Hanh, 1999), and research suggests a positive relationship between mindfulness and self-referential processing (e.g., Berkovich-Ohana et al., 2012) as well as self-enhancement (Gebauer et al., 2018; CITE in press). There is also some evidence that mindfulness is associated with greater self-concept clarity (Hanley & Garland, 2017). Thus,

although it is premature to definitively state the exact relationship between mindfulness and self, much research suggests that mindfulness increases self-awareness, suggesting that self-relevant goals should be particularly salient when people are mindful.

The Present Research

We hypothesized that the effects of mindfulness would differ depending on self-construal, such that mindfulness would predict increased prosocial behavior in the context of an interdependent self-construal, but decrease it in the presence of an independent self-construal. To test this, we examined existing data from one study and conducted one new study. Both of these studies examined a previously-validated manipulation of mindfulness, and between the two studies we examined both trait self-construal (Study 1) as well as primed self-construal (Study 2).

STUDY 1

Method

Participants

Participants ($N = 366$) were a sample of convenience drawn from the undergraduate research pool at the University at Buffalo and received course credit for participating in this study. Study 1 was originally designed to examine the effects of mindfulness meditation on prosocial behavior, but all participants in this study had also completed measures of self-construals during beginning-of-semester mass testing. This allowed us to test the hypothesis that the effects of mindfulness would be moderated by self-construal on a post-hoc basis.

The mean age in the sample was 19.00 ($SD = 1.85$), with 53% identifying as female, 46% as male, and 1% as transgender or other. A majority (53%) of participants were White, while 10% were Black, 27% were Asian or Asian American, while 10% were mixed race or other.

Across racial groups, 7% of participants identified as Hispanic. We had targeted an N of 400 in order to have the power to detect a small interaction effect (full details about power are in Supplemental Materials). A total of 416 individuals participated in the study, of whom 366 had completed the pre-study measure of self-construals, resulting in the final $N = 366$. Procedures for this and subsequent studies were approved by the IRB of the University at Buffalo.

Procedure

Participants came to the lab one at a time for a study on meditation and the self. Participants first completed measures of personality, trust, and prosocial tendencies that were not the focus of this investigation and then were randomly assigned to a meditation condition: either mindfulness meditation or a meditation control (mind wandering).

Meditation Manipulation.

Mindfulness meditation. Participants in the mindfulness meditation condition listened to instructions to induce mindfulness via mindful breathing (Kiken & Shook, 2011). The mindfulness meditation procedures draw from existing conceptualizations of mindfulness, involving a focus and regulation of attention and awareness toward experiences in the present moment (Brown & Ryan, 2003). These procedures focus on developing mindful breathing to induce state mindfulness (originally adapted from Arch & Craske, 2006). This condition included prompts such as “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 if you can.”

Meditation control. Previous research suggests that inactive control groups (such as assigning participants to receive mindfulness training later, a “waitlist” condition) may conflate

any effects of mindfulness with attentional instructions as well as preconceived thoughts about the benefits of meditation (Berry et al., 2020; Kreplin, Farias, & Brazil, 2018; Zeidan, Johnson, Gordon, & Goolkasian, 2010). Therefore, we utilized a meditation control procedure that still is presented as "meditation" but does not increase state mindfulness, unlike the mindful breathing instructions (Kiken & Shook, 2011).

Participants in the meditation control condition listened to instructions on unfocused attention, or mind wandering (also originally adapted from Arch & Craske, 2006). As in the mindfulness condition, the instructions were labeled as "meditation" instructions and encouraged participants to sit quietly, with their eyes closed if they chose. However, the instructions directed participants toward a neutral state that did not involve a focus on the present moment or the present experience of the breath. This condition included prompts such as, "Use the time to let your mind wander and think freely without needing to focus hard on anything in particular." Both the mindful breathing and meditation control instructions were presented over the course of a 15-minute meditation period.

Charity procedure. Following the meditation manipulation, participants read an article from a local newspaper, ostensibly randomly chosen to assess how meditation affects information processing. All participants actually read about a regional charity that offers assistance to rural poor and homeless people. Following this, participants completed a measure of compassion and were then presented with a letter, supposedly from the lab director, noting that some participants had seen this article and expressed an interest in helping. Participants were told that the university had arranged to send letters to alumni requesting their financial support for this charity, but that the university could use the help of students to stuff envelopes. Participants were offered the chance to do so, while being assured that their decision would have

no bearing on their credit for the study. Participants who offered to stuff envelopes were given materials to do so, and were left alone to complete that task for as long as they wished. When they notified an assistant that they were ready to leave, they were debriefed and thanked for their participation. During the debriefing procedure, 13 participants (4%) expressed some degree of suspicion about the purpose of the envelope stuffing task. Excluding these participants did not change the reported results. Their data are included.

Measures

Self-Construct. Self-construct was assessed as both relational interdependent self-construct using the Relational Interdependent Self Construct scale (Cross, Bacon, & Morris, 2000) and collective interdependent self-construct using the Collective Interdependent Self Construct scale (Gabriel & Gardner, 1999). Example items for relational self-construct included, "My close relationships are an important reflection of who I am," and "When I think of myself, I often think of my close friends or family also." Example items for collective self-construct included, "The groups I belong to are an important reflection of who I am," and "When I think of myself, I often think of groups I belong to as well." An *independent* self-construct was thus operationalized as low levels of *both* types of interdependent self-construct (Brewer & Gardner, 1996). Both scales exhibited very good internal consistency (relational: $\alpha = .86$; collective: $\alpha = .88$).

Compassion. Cameron and Payne's compassion scale (2011) includes nine items rated on a scale from 1 (*not at all*) to 7 (*extremely*) measuring feelings of sympathy, warmth, and compassion, as well as questions about perceived importance and appropriateness of helping. Example items included "How compassionate do you feel toward the people in the article you

read?" and "How much do you value the welfare of the people in the article you read?" This scale had excellent internal consistency ($\alpha = .93$).

Prosocial Behavior. The number of envelopes participants stuffed, which has been used often in research on prosocial outcomes (cf. Batson, 2011), was used as a measure of prosocial behavior.

Results

Most of the 366 participants (84%) decided to stuff envelopes, with the number of envelopes actually stuffed ranging from 1 to 158. However, given that a substantial number of participants (16%) declined to stuff envelopes (i.e., stuffing 0 envelopes) this variable was potentially appropriate for zero-inflated Poisson regression (Cameron & Trivedi, 2009).

Screening the data using this procedure revealed that no predictors were significant in zero-inflated portion of the model, so analyses of this count variable proceeded using just Poisson regression. Descriptive statistics and correlations for assessed variables are in Table 1.

Table 1

Study 1: Descriptive Statistics and Correlations for Assessed Variables (N = 366)

Variable	<i>M (SD)</i>	<i>r</i>			
		Mindfulness manipulation	Relational self-construal	Collective self-construal	Compassion
Envelopes stuffed	36.77 (33.04)	-.01	.07	.06	.20***
Mindfulness manipulation	0.50 (0.50)	--	.03	-.04	.002
Relational self-construal	5.02 (0.61)	--	--	.55***	.23***
Collective self-construal	4.70 (0.68)	--	--	--	.16**
Compassion	5.18 (1.09)	--	--	--	--

** $p < .01$, *** $p < .001$

A Poisson regression analysis predicting envelopes stuffed (the DV) from meditation condition, relational self-construal, and collective self-construal as well as their two- and three-way interactions indicated the presence of a three-way interaction among these variables ($b = 0.05$, 95% CI [0.02, 0.07], $z = 3.91$, $p < .001$, $\phi = .28$). In order to interpret this, we centered both self-construal variables at low ($M - 1 SD$) values, which allowed us to examine the simple effect of mindfulness among individuals with a relatively *independent* self-construal. This analysis indicated that mindfulness ($n = 178$) (vs. meditation control; $n = 188$) led to fewer envelopes being stuffed among individuals with relatively independent self-construals ($b = -0.15$, 95% CI [-0.20, -0.10], $z = -5.64$, $p < .001$, $\phi = .25$, IRR = 0.85). By contrast, centering both self-construal variables at high ($M + 1 SD$) values allowed us to examine the effect of mindfulness among individuals with a relatively *interdependent* self-construal, and indicated that mindfulness increased the number of envelopes stuffed among those with relatively interdependent self-construals ($b = 0.17$, 95% CI [0.12, 0.22], $z = 6.91$, $p < .001$, $\phi = .22$, IRR = 1.17). The incidence rate ratios (IRRs) for these effects indicated that mindfulness led to a 15% *decrease* in the rate of stuffing envelopes for those with independent self construals, but to a 17% *increase* in the rate of stuffing envelopes among those with interdependent self-construals. These effects are illustrated in Figure 1. Further analyses also examined the effect of mindfulness on envelopes stuffed when individuals were high in relational but low in collective self-construal or vice versa. Mindfulness decreased the number of envelopes stuffed for those high in relational but low in collective self-construal ($b = -0.14$, $z = -3.15$, $p = .002$), but had no significant effect for those low in relational but high in collective self-construal ($b = -0.03$, $z = -0.64$, $p = .522$). There was no significant main or interaction effect of mindfulness predicting compassion ($ps > .60$).

Consistent with our predictions, mindfulness led to decreased prosocial behavior among those with relatively independent self-construals. It also led to increased prosocial behavior among individuals with both interdependent relational and collective self-construals.

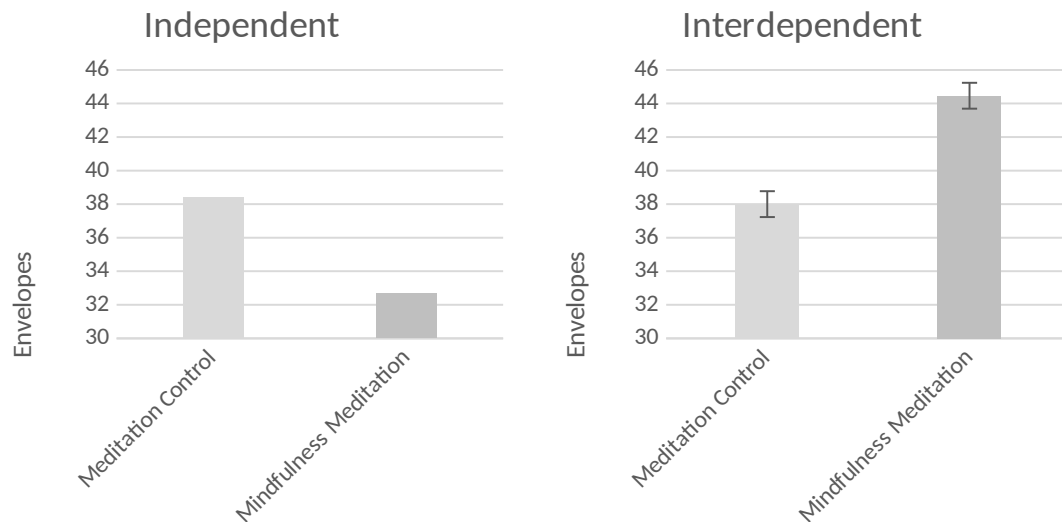


Figure 1. Effects of mindfulness meditation versus meditation control on prosocial behavior in the form of stuffing envelopes among those with relatively independent versus interdependent self-construals (both $ps < .001$). Error bars represent standard error of the estimate of model-estimated values.

STUDY 2

Method

Participants

Study 2 was designed to manipulate both mindfulness and salience of independent versus interdependent self-construals. Although this study was designed to be run in the lab during Spring 2020, the COVID-19 crisis prevented that. Instead, it was modified to run as an online

study, and participants were recruited separately from students in the undergraduate research pools at the University at Buffalo during the Spring and Summer academic terms. No participants had previously participated in Study 1. Mean age in this combined sample ($N = 325$) was 19.16 ($SD = 1.38$), with 30% identifying as female, 70% as male, and <1% as transgender or other. A majority (55%) of participants were White, while 11% were Black, 24% were Asian or Asian American, while 10% were mixed race or other. Across racial groups, 11% of participants identified as Hispanic. As in Study 1, we targeted an N of 400 but were only able to recruit an N of 333 due to Covid-19 altering data collection. Also consistent with the challenges of conducting this study online, eight participants reported not being able to comply with the instruction to be in a quiet, distraction-free location, which we believed would undermine the validity of the meditation manipulation. Omitting these participants resulted in the final $N = 325$.

Procedure

The Study 2 procedure was exactly the same as in Study 1 with the primary exception that, before the mindfulness manipulation, participants were randomly assigned to a pronoun selection task that primed either independence or interdependence. There were two additional differences from Study 1 due to the online design. First, participants were instructed to make sure they wore headphones and to find a quiet place where they could be alone to participate in the meditation manipulation. Second, rather than being asked to stuff envelopes to contact donors, participants were told that they could sign up for time slots to chat online with potential alumni donors to request their financial support for the charity. Participants were asked to give their contact information, so that an organizer could give them further details about volunteering. Thus, similarly to the in-person measure of Study 1, this online measure of prosocial behavior required the participant to make a non-private and specific time commitment in which to

volunteer to raise money for a charity. Previous research has used willingness to contact alumni donors as an indicator of motivation to engage in prosocial behavior (Grant et al., 2007). The planned dependent variable was the number of hours signed up for.

Self-Construal Manipulation. Independent versus interdependent self-construals were primed via a pronoun selection task. Specifically, participants completed the “pronoun circling task” (Brewer & Gardner, 1996) modified for online administration. Participants were provided with a short first-person paragraph about a trip to the city. The paragraph was either written in the singular (e.g. "I went to the city") or the plural (e.g. "we went to the city"). Participants were asked to click on all of the pronouns as they read through the paragraph. Previous research suggests that this prime activates self-construal and related goals (Gabriel et al., 1999), and a subsequent meta-analysis has found that it leads to differences in self-construal and related differences in values, relationality, and cognition consistent in direction and size with cross-national effects (Oyserman & Lee, 2008).

Compassion. As in Study 1, Cameron and Payne’s compassion scale (2011) assessed compassion ($\alpha = .93$).

Prosocial Behavior. Participants were given the opportunity to sign up for multiple hour-long blocks over the course of a week to volunteer. The total number of hours was originally designed to be an indicator of prosocial behavior, but given that most students actually did not volunteer at all (see below), whether participants signed up to volunteer (for any hours) or not was ultimately used to assess prosocial behavior.

Self-construal manipulation check. To ensure that the self-construal manipulation functioned as intended, at the end of the survey participants were asked to complete the Twenty Statements Task (TST). The TST was developed to provide a standardized method for assessing

the self-concept. In the task, participants are pretested with 20 word stems that begin “I am” and they are directed to complete those word stems to describe themselves. These statements were used to assess differences in interdependent versus independent self-construal by coding whether the sentences reflected the independent self (e.g. I am smart) or the interdependent self (e.g. I am a member of my family). The TST has since become one of the most commonly used methods of assessing differences in self-construal (for a review, see Oyserman & Lee, 2008).

Results

Consistent with past research (Gabriel et al., 1999; Oyserman & Lee, 2008), the self-construal manipulation affected participants' levels of independent cognition, with those in the independent condition using significantly more independent statements ($M = 13.52$, $SD = 0.41$) than those in the interdependent condition ($M = 12.14$, $SD = 0.44$, $t[307] = 2.30$, $p = .022$). Unlike in Study 1, the large majority (70%) of our 325 participants declined to volunteer (range of hours: 0 – 34, $M = 2.02$, $SD = 4.55$), owing perhaps to the increased time commitment required outside of a lab, or to the online and therefore more anonymous format. We nonetheless screened the data using zero-inflated Poisson regression. This procedure revealed no significant predictors within the Poisson component of the model, so analyses proceeded using volunteering as a dichotomous (yes/no) variable. A logistic regression with robust standard errors to account for clustering between different terms (spring and summer) was used to predict volunteering from dummy codes corresponding to meditation condition, self-construal priming condition, and their interaction. This analysis revealed a significant interaction ($b = -0.60$, 95% CI [-0.66, -0.55], $z = -21.02$, $p < .001$, OR = 0.54, 95% CI [0.52, 0.58]). Recentering showed that mindfulness led to reduced likelihood of volunteering among those primed with independence ($b = -0.27$, 95% CI [-0.50, -0.03], $z = -2.19$, $p = .028$, OR = 0.77, 95% CI [0.60, 0.97]) but increased

volunteering among those primed with interdependence ($b = 0.34$, 95% CI [0.16, 0.52], $z = 3.64$, $p < .001$, OR = 1.40, 95% CI [1.17, 1.68]). The odds ratios (ORs) for these effects indicate that mindfulness led to a 33% *decrease* in the odds of volunteering among those primed with independence, but a 40% *increase* in the odds of volunteering among those primed with interdependence. This pattern is illustrated in Figure 2. There were no main or interactive effects of mindfulness on compassion ($ps > .23$).

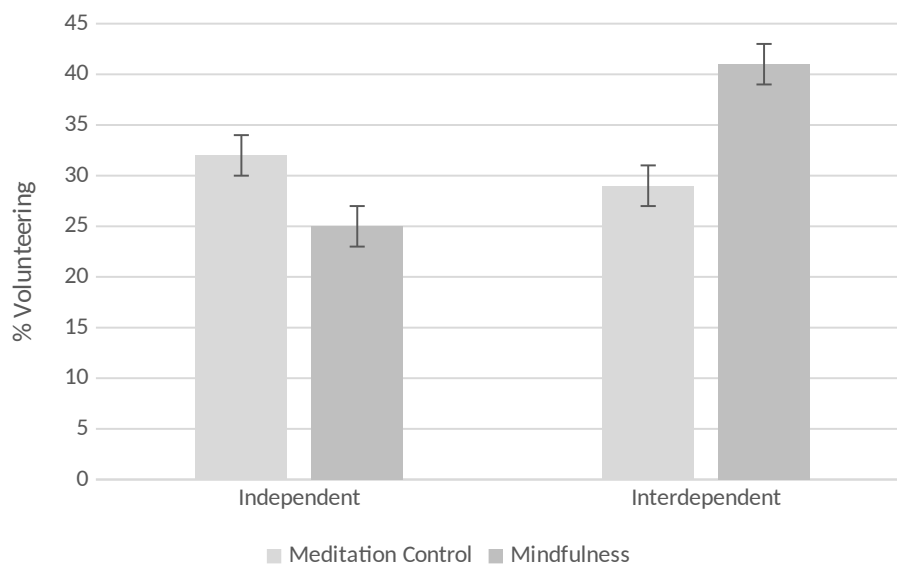


Figure 2. Percentage of participants within each condition who volunteered. Conditions were mindfulness meditation versus meditation control crossed with an independence prime versus an interdependence prime. Mindfulness ($n = 88$) versus control ($n = 76$) decreased volunteering among those primed with independence ($p = .03$), but mindfulness ($n = 79$) increased volunteering versus control ($n = 82$) among those primed with interdependence ($p < .001$). Independence (versus interdependence) decreased volunteering in the mindfulness condition ($p < .001$), but only marginally in the control condition ($p = .09$). Error bars represent standard error of the estimate of model-estimated values.

The results of this online study are consistent with our predictions: mindfulness decreased prosocial behavior when participants were primed with independence. By contrast, mindfulness increased prosocial behavior when participants were primed with interdependence.

GENERAL DISCUSSION

In two studies, we found support for the hypothesis that the effects of mindfulness on prosocial behavior would be moderated by self-construal. Specifically, mindfulness led to decreased prosocial behavior for individuals with independent self-construals, but increased prosocial behavior for those with interdependent self-construals. These findings were present for both trait and manipulated self-construals. We believe these findings shed light on the association between mindfulness and prosocial behavior, and have practical implications for mindfulness training, especially in individualistic societies.

The present research provides a stringent test of the effects of mindfulness on prosocial behavior in that both studies employed the use of a mindfulness manipulation with an active, rather than an inactive, control. Research suggests that the use of an active control is vital for controlling for placebo effects of meditation—that is, existing beliefs that meditation makes people “better,” more calm, and more compassionate (Berry et al., 2020; Zeidan et al., 2010). Thus, these studies provide a strong test of the effects of mindfulness meditation versus another task labeled as meditation, reflecting a transition toward more carefully matched mindfulness intervention conditions.

What Mindfulness Is, and Isn't

Our findings suggest that mindfulness on its own is not prosocial—or antisocial. To reiterate a typical definition of mindfulness, it consists of non-judgmental attention to thoughts

and sensations in the present moment (Kabat-Zinn 1990; Lutz et al. 2008). This conception of mindfulness is value-free, with no prosocial or even social content at all. Despite the lack of a clear theoretical link between mindfulness and prosociality, practitioners and researchers have speculated that there is something inherently prosocial about mindfulness—for example, that it bolsters empathy (Berry et al., 2020; Lim et al., 2015). However, we did not find associations between mindfulness and the related construct of compassion. Moreover, our finding that the prosocial effects of mindfulness are wholly moderated by self-construal, such that mindfulness can actually *decrease* prosocial behavior, calls this conceptualization into question. Our results are much more consistent with the possibility that mindfulness bolsters self-awareness, or another general mechanism that leads people to act on whatever social goals are salient. For some, those goals may be consistent with prosocial behavior, but for others they are not. Buddhist monk and humanitarian Matthieu Ricard endorsed this view, noting that a successful sniper embodies a certain type of mindfulness (Ricard, 2009), and writing that, "[b]are attention, as consummate as it might be, is no more than a tool [that] can also be used to cause immense suffering" (for another example of military uses of mindfulness, see also Jha et al., 2015).

Mindfulness in Context

If mindfulness is merely a tool, then understanding its effects requires consideration of the context in which it is practiced or experienced. Mindfulness practices originated in Buddhist religious traditions with accompanying ethical precepts, worldviews, and social practices (Purser, 2019). Notably, in light of the current findings, mindfulness also originated in societies that were and are highly interdependent (Markus & Kitayama, 1991). In such societies, mindfulness could foster prosocial behavior, as mindfulness serves to activate and promote representations of the self as connected to close others and to larger social groups. By contrast,

people in the U.S. and other Western nations experience mindfulness in societies that greatly value independence. Moreover, modern mindfulness training is secular by design and frequently focused on individual goals and well-being (Kucinkas, 2018; Purser, 2019), thus lacking (pro)social content. Our findings suggest that mindfulness, practiced outside of the context of interdependence, may not provide prosocial benefits, and may in fact have the opposite effect. In fact, data from one of our studies (Study 1) suggests that positive effects of mindfulness on prosocial behavior may be limited to individuals who view themselves as high in *both* relational and collective interdependence. However, it is crucial to note that even those with relatively independent self-construals in independent societies can adopt interdependent goals: our Study 2 results demonstrate that priming interdependence can reverse antisocial effects of mindfulness.

Although our research focused on prosocial behavior, and not on general effects of mindfulness, our findings may be relevant to the debate about mindfulness and self-focus (cf. Brown et al., 2016; Gebauer et al., 2018). Specifically, accounting for self-construals may help resolve the apparent contradiction between mindfulness as boosting self-awareness versus enabling self-transcendence. That is, increased attention to an *independent* self may mean something quite different from increased attention to a, more expansive, *interdependent* self.

Limitations and Future Directions

The present work draws from literature suggesting that mindfulness increases self-awareness, but this link was not assessed in the present research. Additional research should test the role of this possible mechanism. Given that past research indicates that mindfulness may specifically motivate prosocial behavior directly in response to a person's suffering (Berry et al., 2020), another limitation of our research is that we focused specifically on donations to and soliciting donations on behalf of strangers. On the other hand, these behaviors were assessed

following stories linking donations to suffering others. Moreover, the fact that one of our studies (Study 1) assessed actual physical helping behaviors (stuffing envelopes) is a methodological strength that suggests generalizability to real world contexts. Another limitation related to our assessments of prosocial behavior is that we were not able to assess suspicion for the online Study 2, so we cannot address how much the observed results reflect demand characteristics. However, Study 2 was very similar in content to Study 1, for which suspicion did not affect the observed results.

Future research should further test the generalizability of the present research. For example, research can and should examine non-Western samples and different age groups. Results may also differ with sustained rather than very brief mindfulness training.

Implications

The present research suggests that understanding the social effects of mindfulness requires attention to the role of self-construals, which differ across cultures and among individuals. By better understanding how and when mindfulness affects prosocial behavior, stakeholders can make more informed decisions about whether—and under what conditions—mindfulness practices are appropriate. Additionally, our results point towards ways to modify mindfulness interventions, perhaps by incorporating a focus on interdependence, to promote the best outcomes for individuals and for society.

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