Trait Mindfulness and Prosocial Behavior: The Moderating Role of Self-Construals and Individualism

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Abstract

Objectives: Trait mindfulness is associated with many measures of individual well-being, but its relationship to prosocial behavior is less clear. Prior research found that a brief intervention boosting *state* mindfulness led to increased prosocial behaviors among individuals with interdependent self-construals, but decreased prosocial behaviors among individuals with independent self-construals. The present research sought examine *trait* mindfulness and prosocial behavior and to examine to the moderating roles of both horizontal and vertical interdependence.

Methods: Participants ($N = 149$) came to a lab and read about a charitable cause. They then had the opportunity to stuff envelopes on behalf of a fundraising appeal for that cause. Previously, outside of the lab, participants had completed measures of trait mindfulness, self-construal, and individualism-collectivism.

Results: Trait mindfulness predicted increased helping behavior in the form of stuffing envelopes among people high in collective interdependent self-construal and among those low in horizonal or vertical individualism.

Conclusions: Thus, findings suggest that trait mindfulness can predict either greater or lesser prosocial behavior depending on people's preexisting social goals and identities, and that this pattern is not limited to vertical individualism.

Preregistration: This study is not preregistered.

Keywords: Trait mindfulness, prosocial behavior, self-construal, individualism, collectivism

Trait Mindfulness and Prosocial Behavior: The Moderating Role of Self-Construals and Individualism

There is abundant evidence that mindfulness—a nonjudgmental monitoring of in-the-moment cognition, emotion, perception, and sensation (Kabat-Zinn, 1982; Lutz et al., 2008)—is good for individual well-being. Mindfulness training and momentary mindfulness inductions lead to reduced stress, anxiety, and negative affect (for reviews, see Baer, 2003; Chiesa & Serretti 2009; Grossman et al., 2004) and increased self-esteem and subjective well-being (Keng et al., 2011; Magalhães et al., 2023; Naragon-Gainey & Demarree, 2017; Pepping et al., 2013). Mindfulness as a trait, defined as the proclivity to be mindful in everyday life (Bajaj & Pande, 2016; Chen et al., 2023), is also associated with individual well-being, including greater satisfaction of fundamental psychological needs (Brown & Ryan, 2003), buffering the effects of neuroticism (Wenzel et al., 2015), less anxiety and aggression (Chen et al., 2023), and more creativity (Bajaj & Pande, 2016), resilience (Bajaj & Pande, 2016; Chen et al., 2023), emotion regulation (Prakash et al., 2015) and self-connection (Klussman et al., 2020).

The beneficial effects of mindfulness on attention and emotion regulation have led some researchers to propose that it should foster positive outcomes not just for the self, but for others as well (Berry, Rodriguez, et al., 2023). Many empirical studies have found that mindfulness promotes prosocial outcomes such as increased empathy and prosocial behavior (e.g., Berry et al., 2020; Donald et al., 2019; Hafenbrack et al., 2020; Lim et al., 2015; Malin & Gumpel, 2022; Wallmark et al., 2019). Research also suggests that mindfulness can reduce antisocial processes, including ostracism and biases (e.g., Chang et al., 2023; Jones et al., 2019; Oyler et al., 2022).

Despite the body of evidence suggesting that mindfulness increases prosocial outcomes, some research indicates that the associations between mindfulness and social outcomes are unclear (Berryman et al., 2023; Kreplin et al., 2018) or even negative (Hafenbrack et al., 2021; Hafenbrack & Vohs, 2018; Corbi et al., 2024; Xie et al., 2023). Various explanations have been proposed for these divergent results, with some empirical support: it is possible that mindfulness affects certain types of prosocial behavior but not others (Berry et al., 2020), that different facets of mindfulness might have different associations with prosocial outcomes (Kil et al., 2021), or that different study designs yield different results (Nyklicek et al., 2024). In this article, we seek to further advance another possible explanation for the inconsistent findings about the association between mindfulness and prosocial outcomes: this association may depend on individual differences in how people view themselves in relation to others.

Recent research suggests that the relationship between mindfulness and prosocial behavior might depend on underlying motivations for helping (e.g., Hafenbrack et al, 2022; Kil et al., 2021), and on individual differences in personalities and values (e.g., Berry et al., 2021; Guo et al., 2023; Xiao et al., 2020). One noteworthy recent investigation indicated that the effects of mindfulness on prosocial behavior could be either positive or negative depending on people's self-construals (Poulin et al., 2021). Specifically, a brief mindfulness intervention led to increased prosocial behavior among people with (assessed or manipulated) interdependent self-construals, but led instead to decreased prosocial behavior among those with independent self-construals.

Although Poulin et al.'s (2021) findings are potentially helpful for understanding the seemingly contradictory effects of mindfulness on prosocial behavior, they leave open the question of whether the effects of the brief mindfulness intervention generalize to longer-lasting

manifestations of mindfulness. Researchers have noted the importance of distinguishing between trait and state mindfulness (e.g., Wheeler et al., 2015). State mindfulness exists during, or right after a mindfulness meditation (e.g., Lau et al., 2006) as compared to trait mindfulness, which is a predisposition to be mindful in daily life (e.g., Baer et al., 2006). There is a relatively weak relationship between trait and state mindfulness, suggesting that one should not assume that relationships found for state mindfulness are also true for trait mindfulness (Bravo et al., 2017; Thompson & Waltz, 2007). Indeed, research suggests that trait and state mindfulness do not always behave in the same way. For example, state mindfulness increases motivated attention to stimuli but trait mindfulness does not (Egan et al., 2018) and state and trait mindfulness have different associations with physical activity (Tsafou et al., 2017). Moreover, although experimental inductions of state mindfulness appear to decrease task-specific arousal (Hafenbrack & Vohs, 2018), people's free choices to engage in meditation practice during work breaks, which may reflect trait mindfulness, are associated with subjective vitality (Fritz, Lam, & Spreitzer, 2011). In summary, there is no reason to assume that effects found for state mindfulness should also be there for trait mindfulness, and trait mindfulness is much more long-lasting and thus important to understand.

The associations between trait mindfulness for prosocial behavior are currently unclear. Past research has found inconsistent associations between trait mindfulness and prosocial behavior, with some research suggesting little to no association (Schindler & Pfattheicher, 2021) and other research indicating that these associations may depend on the presence or absence of mindfulness interventions (Berry et al., 2023). Although no one has looked at interdependence as a moderator of the relationship between trait mindfulness and prosocial behavior, some recent research suggests that self-construal does moderate the association between trait mindfulness and

forgiveness (Zhang & Li, 2023), suggesting a possible role for prosocial behavior. Thus, one goal of the current research is to examine whether the relationship between *trait* mindfulness and prosocial behavior is moderated by interdependence.

A second goal is to examine what kind of interdependence moderates the relationship between mindfulness and helping behavior. Poulin et al. (2021) utilized collective and relational self-construals as measures of interdependence (Gabriel & Gardner, 1999). The relational self-construal is the degree to which the self includes close relationship partners, and the collective self-construal is the degree to which the self includes important groups. Although these are related constructs (i.e. they are both part of the interdependent self) they are typically examined separately. This is because the two aspects of self are related to different behaviors, vales, and individual differences (e.g. Gabriel & Gardner, 1999), are emphasized differently for different cultures (e.g. Marmat et al, 2014), and even activate different areas of the brain (Zheng et al., 2018). However, these measures share the similarity that they are designed to tap into a key aspect of interdependence: whether the self is viewed as separate from, versus connected to, other people (e.g., Markus & Kitayama, 1991). Thus, the moderating role of interdependence was explained as being due to mindfulness interventions leading to increased awareness of internal thoughts that classified others as connected to the self (interdependent people) and thus more worthy of help or as separate from the self (independent people) and thus less worthy of help.

Although that explanation was consistent with the data and existing theory, it did not account for the difference between *horizontal* and *vertical* interdependence. Horizontal societies are oriented towards equality, whereas vertical societies are orientated towards hierarchy (Triandis 1995, 2001). The research by Poulin et al. (2021) was conducted in the United States,

which is a vertical-individualist society. Increasingly, researchers have been emphasizing the importance of the vertical and horizontal distinction that is nested within the traditional distinction between individualism and interdependence (for review see Shavitt et al, 2011). Specifically, although both horizontal and vertical individualism emphasize seeing the self as separate from others, vertical individualism also emphasizes wanting to be the best (Shavitte et al., 2011). Similarly, whereas both horizontal and vertical interdependence emphasize seeing the self as connected to others, vertical collectivism emphasizes competition with outgroup members and adherence to authority within the ingroup (Triandis & Gelfand, 1998).

If, as previous research argued, it is the tendency to see the self as separate versus connected that moderated the effects of mindfulness on helping behavior then the horizontal versus vertical dimensions should not matter for the moderation of the association between mindfulness and helping behavior. However, it is also possible that the previous research found effects due to the largely American sample being high in the vertical dimensions of independence. Thus, people who were independent might have been less helpful after being primed not because they saw others as separate from the self, but because they saw others as sources of competition (in which case helping others would be detrimental). The current research examines those competing hypotheses by adding measures of vertical and horizontal independence and interdependence to the previous measures of collective and relational selves.

In this investigation, we had two primary goals. The first goal was to examine whether the relationship between trait mindfulness and helping behavior is moderated by level of interdependence. The second goal was to examine if the moderation was linked to only horizontal interdependence or to both horizontal and vertical interdependence. A preliminary examination of these hypotheses was done in a dataset that had originally been designed to

examine goal pursuit. Although the methods were not well-tailored to test our predictions and the dependent variable was highly skewed even when treated as dichotomous, the results suggested that interdependence might moderate the association between trait mindfulness and helping behavior. That initial examination suggested this investigation was worthwhile and is available in supplemental materials. In that investigation and in the present research, we recognized that we were testing many potential moderators for our singular hypothesis, so we applied a Benjamini-Hochberg procedure to manage the overall false discovery rate (Benjamini & Hochberg, 1995).

Method

Participants

Participants (N = 149) were from an undergraduate research pool at a large university in the northeastern United States and were compensated with course credit. All participants in this study voluntarily completed measures of relational and collective interdependent self-construals, horizontal and vertical individualism and collectivism, and trait mindfulness during a battery of baseline assessments earlier in the semester. This allowed us to test *a priori* the hypothesis that mindfulness would predict prosocial behavior differently depending on self-construals and/or individualism-collectivism.

The mean age in this sample was 19.51 (SD = 3.84), with 49% identifying as female, 50% as male, and 1% as other. A plurality (46%) of participants were White, while 16% were Black, 29% were Asian or Asian American, while 9% were mixed race or other. Across racial groups, 8% of participants identified as Hispanic. The total number of participants in this study was 157, which was the maximum N we were able to obtain during a semester, but 8 (5%) expressed that they believed that the study was actually about prosocial behavior, meaning that

their behavior on the envelope task would be colored by this knowledge. Therefore those participants were excluded, resulting in the final *N*.

Procedure

Participants came to the lab one at a time for a study on "meditation and the self."[1] After briefly answering questions about their prior experience with meditation, participants were told that this study was in part about how mindfulness and personality are related to information processing, including information from the media. Next, participants read a supposedly randomly chosen article from a local newspaper, as in Poulin et al. (2021). Following the procedures in that study, all participants actually read a news article that happened to be about a regional charity that offers assistance to rural poor and homeless people. Next, participants filled out a measure of compassion and demographics measures, and viewed a message informing them that they were done with the study and should signal for a research assistant to enter the room. Importantly, all participants finished these tasks in under half an hour although they had signed up for a one-hour study, meaning that there was ample time for the next step in the procedure—the assessment of prosocial behavior. When the assistant arrived, they said, “Hey, you’re done with the study now, but you still have some time left. The story that you read during the study mentioned a group that’s helping poor people in the area. They really need volunteers, and we were hoping that some students who finish early might want to help out by filling these envelopes with fliers. You just put one of each in the envelope

[1] This study description was chosen to parallel the methods of Poulin et al. (2021), as well as to provide a conservative test of our hypotheses: if people's lay beliefs are that meditation promotes prosocial behavior, making meditation salient should increase positive associations between meditation and prosocial behavior. However, our results indicated there was no significant correlation between envelopes stuffed and either trait mindfulness (see Table 1), or past meditation experience ($\rho = .06$, $p = .33$).

and they're ready to go. You don't need to seal them. Is this something you'd want to do for a little while before we finish up?" If participants declined, the research assistant proceeded to debrief them right away. If participants agreed to stuff envelopes, they were given materials to do so, and were left alone to complete that task for as much of the remaining time in the experimental session 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, 8 participants (5%) expressed strong suspicion about the purpose of the envelope stuffing task and were excluded from analyses.

Measures

Individual Differences

All individual difference measures were assessed during the battery of baseline assessments earlier in the semester described above. These included mindfulness, our key predictor, and the proposed moderators of self-construal and vertical/horizontal individualism-collectivism.

Trait Mindfulness. The 15-item Five-Facet Mindfulness Questionnaire (FFMQ-15; Baer et al., 2012) was used to assess mindfulness as an individual difference ($\alpha = 0.70$). This scale includes 15 Likert-style questions, and is comprised of five factors—Observing, Describing, Acting with awareness, Nonjudging of inner experience, and Nonreactivity to inner experience. These intercorrelated factors are specified in order to capture the complexity of skills that comprise mindfulness, and the hierarchical factor structure of the scale allows for an overall mindfulness score for each participant (Christopher, Neuser, Michael, & Baitmangalkar, 2012).

Self-construal. Self-construal was assessed using shortened forms of the relational and collective interdependent self-construal scales (Cross, Bacon, & Morris, 2000; Gabriel &

Gardner, 1999). These shortened versions have been used successfully when space is an issue in research (e.g. Gabriel et al., 2017), and both scales exhibited very good internal consistency (relational: $\alpha = 0.85$; collective: $\alpha = 0.86$).

Individualism and collectivism. Individualism and collectivism were assessed in both horizontal and vertical forms using a measure developed by Triandis and Gelfand (1998). This measure consists of separate 4-item scales of horizontal individualism ($\alpha = 0.66$), vertical individualism ($\alpha = 0.69$), horizontal collectivism ($\alpha = 0.65$), and vertical collectivism ($\alpha = 0.72$).

Dependent Variable: Prosocial Behavior

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

Data Analyses

The key analyses for this investigation consisted of a set of regressions predicting prosocial behavior from mindfulness and its interactions with self-construal and individualism-collectivism variables. The dependent variable was envelopes stuffed, which was a true count variable, with 0 being the most common single number of envelopes stuffed (15% of participants) and with decreasing numbers of envelopes occurring thereafter. Therefore, following Poulin et al. (2021), who also used this envelopes variable, analyses took the form of zero-inflated Poisson regression (Cameron & Trivedi, 2009). This procedure allows for simultaneous estimation of whether a person chose to help (i.e., zero versus all other values), and how much a person chose to help (i.e., how many envelopes they stuffed). Inspecting fit statistics indicated that the zero-inflated model was a better fit to the data (log likelihood = -914.83, AIC = 1869.66, BIC = 1929.74) than regular Poisson regression (log likelihood = -1515.98, AIC =

3051.96, BIC = 3082.00). In using zero-inflated Poisson regression, however, we examined a large number of significance tests. In this case, we examined 7 sets of moderators (collective self-construal, relational self-construal, the collective x relational interaction as in Poulin et al. [2021], horizontal individualism, vertical individualism, horizontal collectivism, and vertical collectivism). Moreover, since we examined both the Poisson and zero-inflated portions of the zero-inflated Poisson model, this meant that there were a total of 14 *p* values to consider. Because each of these interactions represented a test of the same underlying research question, examining all 14 of them inflated the possibility of obtaining a "significant" result purely by chance. To address this, we employed the Benjamini-Hochberg procedure (Benjamini & Hochberg, 1995) to manage the overall false discovery rate. In brief, this procedure consists of ordering the *p* values in a set of analyses from smallest to largest, with a *p* value allowed to count as significant if it satisfies the expression $p_k \leq \frac{k}{m}\alpha$, in which *k* corresponds to the *p* value's position in the order, *m* is the total number of analyses, and α is the chosen Type I error rate. In our analyses, *m* was equal to 14, *k* was a value from 1 to 14 for each interaction, and α = 0.05. This meant that at least one *p* value would need to be less than or equal to 0.004 in order to count as "significant" in our analyses. Raw data from this study are available at https://osf.io/r8dbf/?view_only=de8cb2305a7a43a5be1f02bf2a306873

Results

Table 1

*Descriptive Statistics and Correlations for Assessed Variables (*N = *149)*

		r						
Variable	*M* (*SD*)	1	2	3	4	5	6	7
1. Envelopes stuffed	25.89 (19.86)	--						
2. Trait mindfulness	3.01 (0.37)	0.11	--					
3. Relational self-construal	5.07 (1.00)	-0.03	0.18*	--				
4. Collective self-construal	4.37 (1.06)	-0.06	0.19*	0.57***	--			
5. Horizontal individualism	5.46 (0.85)	0.10	0.11	0.05	-0.06	--		
6. Vertical individualism	4.43 (1.03)	-0.002	0.17*	0.13	0.09	0.36***	--	
7. Horizontal collectivism	5.37 (0.80)	0.02	0.02	0.30***	0.28***	0.17*	-0.04	--
8. Vertical collectivism	4.95 (1.04)	0.05	0.02	0.17*	0.04	0.15	0.21**	0.29***

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Note. Correlations with envelopes calculated as Spearman's ρ. All others are Pearson's *r*.

Potential Moderators

Descriptive statistics and correlations for assessed variables are in Table 1. As described above, we examined seven different zero-inflated Poisson regressions predicting envelopes stuffed amount from mindfulness and seven different potential moderators. Among these, none of the coefficients in the zero-inflated portion of the model attained even conventional levels of significance (all *p*s > .06), but four attained conventional levels of significance at the $p < 0.001$ level in the Poisson component of the model, meaning that they also all survived the Benjamini-Hochberg procedure: collective self-construal, horizontal individualism, vertical individualism, and vertical collectivism. All 3 other *p* values for the Poisson interactions were greater than 0.05.

Because several moderators survived the Benjamini-Hochberg procedure, and because several of these (especially the individualism-collectivism variables) were moderately correlated, we wanted to see which of these variables might uniquely moderate the role of mindfulness and which might instead be explained by other variables. For this reason, we ran one more zero-inflated Poisson regression, this time predicting envelopes from all four surviving moderators and their interactions with mindfulness (all predictors standardized).[2] This analysis indicated that three of the four moderators significantly and uniquely moderated the association between mindfulness and envelopes stuffed: collective self-construal (b = -0.06, $p < 0.001$, 95% CI[-0.09, -0.02], $\phi = 0.76$), horizontal individualism (b = -0.07, $p = 0.002$, 95% CI[-0.11, -0.02], $\phi = 0.25$), and vertical individualism (b = -0.14, $p < 0.001$, 95% CI[-0.18, -0.09], $\phi = 0.51$). By contrast, the moderating role of vertical collectivism was reduced to non-significance (b = -0.03, $p = 0.16$, 95% CI[-0.06, 0.01], $\phi = 0.12$), indicating that its apparent moderating role was likely due to overlap with other moderators.

In order to examine the simple slopes from this model, all moderators were standardized and then recentered at 1 *SD* below and above the mean. To compute recentered moderators at a low (M – 1 *SD*) value, we added 1 to each standardized moderator so that a standardized value of -1 became 0. Likewise, to compute recentered moderators at a high (M + 1 *SD*) value, we subtracted 1 from each standardized moderator so that a standardized value of 1 became 0.

Using these recentered values to examine the simple slopes indicated that mindfulness significantly predicted stuffing fewer envelopes at low (M – 1 *SD*) collective self-construal (b = -0.08, $p = 0.007$, 95% CI[-0.14, -0.02], $\phi = 0.22$), but more envelopes at high (M + 1 *SD*)

[2] Using this many simultaneous predictors raised a potential concern with multicollinearity, however all tolerances for all included variables exceeded 0.75, indicating that each had sufficient unique variance to serve as a predictor.

collective self-construal ($b = 0.32$, $p < 0.001$, 95% CI[0.26, 0.37], $\phi = 0.92$). In practical terms, this means that at low collective self-construal, a 1 *SD* increase in mindfulness predicted 2.43 *fewer* envelopes stuffed, but at high collective self-construal, a 1 *SD* increase in mindfulness predicted 8.83 *more* envelopes stuffed. This pattern is illustrated in Figure 1.

By contrast, mindfulness predicted stuffing more envelopes at low horizontal individualism ($b = 0.18$, $p < 0.001$, 95% CI[0.13, 0.24], $\phi = 0.53$), but not at high horizontal individualism ($b = 0.05$, $p = 0.07$, 95% CI[-0.003, 0.11], $\phi = 0.15$). In practical terms, this means that at low horizontal individualism, a 1 *SD* increase in mindfulness predicted 5.08 *more* envelopes stuffed, but at high horizontal individualism, a 1 *SD* increase in mindfulness marginally predicted 1.50 *fewer* envelopes stuffed. This pattern is illustrated in Figure 2.

Similarly, mindfulness predicted stuffing more envelopes at low vertical individualism ($b = 0.26$, $p < 0.001$, 95% CI[0.20, 0.32], $\phi = 0.68$), but not at high vertical individualism ($b = -0.02$, $p = 0.48$, 95% CI[-0.07, 0.04], $\phi = 0.06$). In practical terms, this means that at low vertical individualism, a 1 *SD* increase in mindfulness predicted 6.92 *more* envelopes stuffed, but at high horizontal individualism, a 1 *SD* increase in mindfulness predicted a non-significant 0.63 *fewer* envelopes stuffed. This pattern is illustrated in Figure 3.

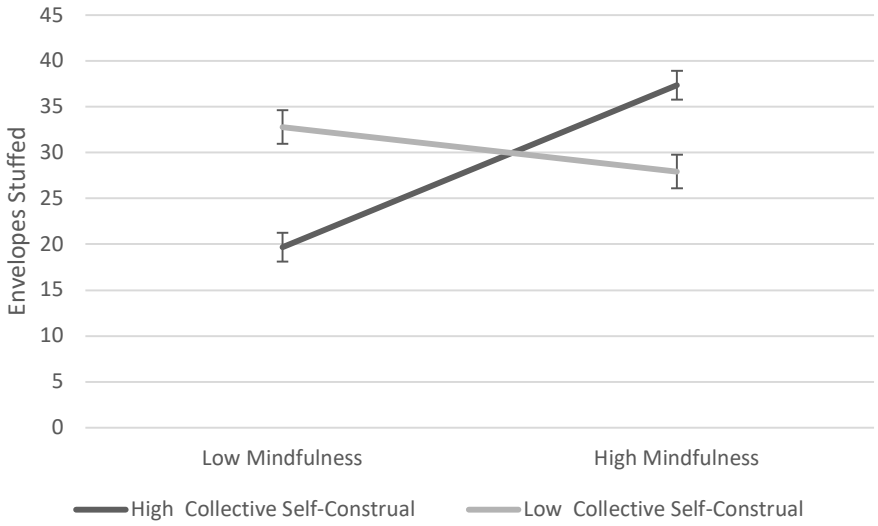

Figure 1. Associations between trait mindfulness and prosocial behavior in the form of stuffing envelopes among individuals low (*M* – 1 *SD*) in collective self-construal versus those high (*M* + 1 *SD*) in collective self-construal. "Low" and "High" Mindfulness represent point estimates at 1 *SD* below and above the mean, respectively. Error bars represent 95% CI of the estimate of model-estimated values.

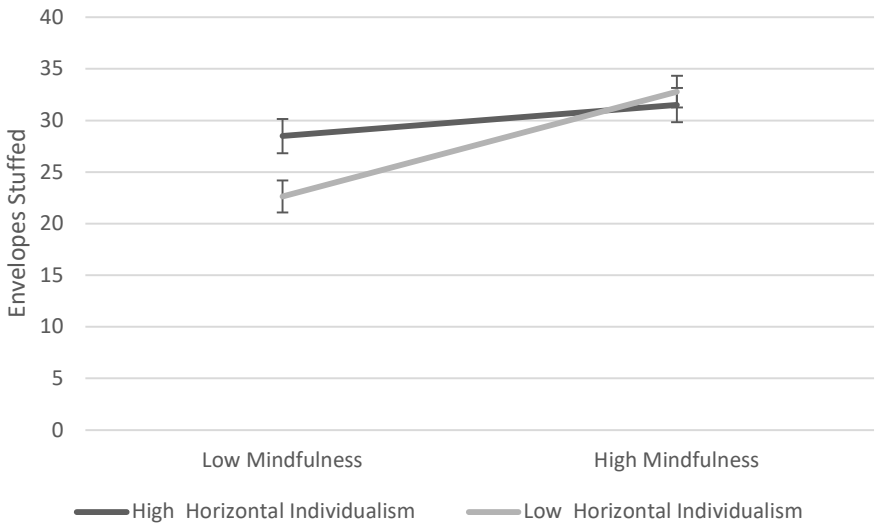

Figure 2. Associations between trait mindfulness and prosocial behavior in the form of stuffing envelopes among individuals low (*M* – 1 *SD*) in horizontal individualism versus those high (*M* + 1 *SD*) in horizontal individualism. "Low" and "High" Mindfulness represent point estimates at 1 *SD* below and above the mean, respectively. Error bars represent 95% CI of the estimate of model-estimated values.

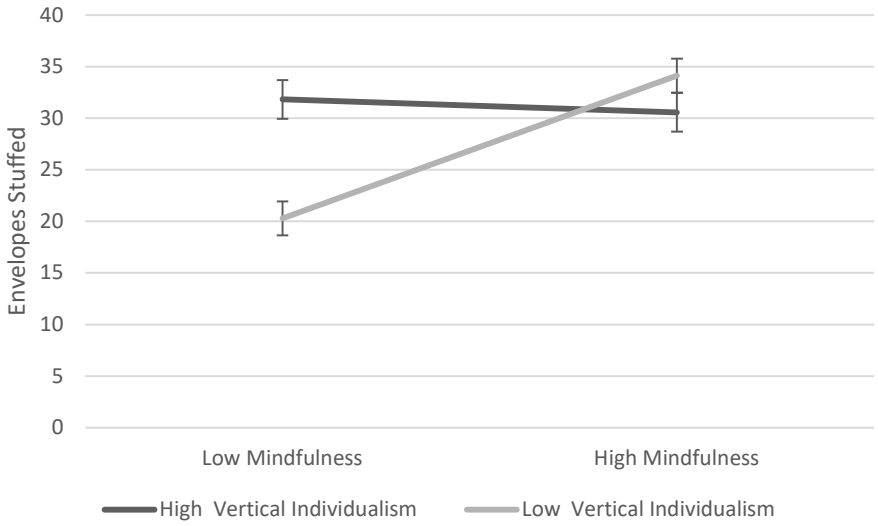

Figure 3. Associations between trait mindfulness and prosocial behavior in the form of stuffing envelopes among individuals low (M – 1 SD) in vertical individualism versus those high (M + 1 SD) in vertical individualism. "Low" and "High" Mindfulness represent point estimates at 1 SD below and above the mean, respectively. Error bars represent 95% CI of the estimate of model-estimated values.

Discussion

This research had two main goals: to test whether the relationship between trait mindfulness and helping behavior is moderated by level of interdependence, and to examine whether any moderation was linked to only horizontal interdependence or to both horizontal and vertical interdependence. We found that trait mindfulness predicted greater prosocial behavior for those high in collective interdependent self-construals, for those low in horizontal individualism, and for those low in vertical individualism, and that trait mindfulness predicted decreased prosocial behavior among those low in collective interdependent self-construals. Together, these findings suggest that the prosocial implications of trait mindfulness depend on

individual differences in how people view themselves in relation to others, irrespective of the vertical/horizontal distinction.

Our findings echo the conclusions of other researchers who have suggested that mindfulness on its own is neither prosocial nor antisocial; rather, it is a practice or state of mind that appears to amplify a person's preexisting social goals and/or identity (Berryman et al., 2023; Chen & Jordan, 2020; Hafenbrack et al, 2021; 2022; Kil et al., 2021; Poulin et al., 2021). How exactly mindfulness does this is currently unclear. One possibility is that mindfulness bolsters both awareness and acceptance of the self exactly as it is, meaning accepting the nature—prosocial or not—of one's social identity or goals. A central goal of mindfulness is awareness of and insight into the true nature of the self (Hanh, 1999; Vago & Silbersweig, 2012). In other words, one's self-relevant social goals/identity should be particularly salient when people are mindful.

We are careful here to use the phrase "social goals/identity," as it is somewhat unclear exactly what about a person mindfulness makes salient or amplifies. We examined three ways of assessing interdependent self-construals and four ways of assessing individualism-collectivism, and not all dimensions functioned as moderators, though all that did so produced patterns of moderation in the expected directions. One important consistent result, however, was that we found moderation by both vertical *and* horizontal aspects of interdependence in the form of vertical and horizontal individualism. It is unclear why the results were specific to individualism and not collectivism, although one possibility given the high average number of envelopes stuffed is that stuffing very few required an active choice to opt out, which high individualism might facilitate (cf. Estep & Greenberg, 2020). Regardless, these findings suggest that low levels of interdependence do not prevent mindfulness from motivating prosocial behavior solely out of

competitive concerns (due to vertical independence), but instead that viewing the self as separate versus connected is a more parsimonious mechanism behind the moderation results.

Limitations and Future Research

As noted above, it is unclear exactly why mindfulness appears to amplify people's preexisting social goals or identities, and one limitation of this research is that it does not assess potential mechanisms. For example, our findings are highly consistent with the hypothesis that mindfulness increases self-awareness, but this mechanism was not assessed in our research. Our findings may also be consistent with the possibility that mindfulness decreases task-specific arousal (Hafenbrack & Vohs, 2018), which was also not assessed. However, this mechanism on its own, or in combination with increased self-awareness, could make undesirable and effortful actions such as stuffing envelopes especially unappealing for persons who tend to view their own needs as separate from others. It also might be beneficial for future research to carefully examine interactions between distinct facets of mindfulness and potential moderators. We opted not to do that in the current research owing to the already-large number of interactions under investigation as well as concerns about the stability of the factor structure of the short FFMQ-15 (Gu et al., 2016; Medvedev et al., 2018). Future research could use more robust measures of mindfulness to address this.

Additionally, further research is needed to clarify what dimensions of people's social selves matter most and most consistently for moderating the link between mindfulness and prosocial behavior. Other research points to additional individual differences that may be associated with those we examined, such as trait empathic concern or desire to help (Berry et al., 2018; Jones et al., 2018). Future research could broaden the number of individual differences

assessed to determine which are actually most important for shaping the prosocial correlates of mindfulness.

Our research was also limited in its reliance on Western college student samples, which themselves present constraints on the range of interdependence and individualism-collectivism. Future research should also test the generalizability of the present research in non-Western samples, low-SES populations, and different age groups.

Finally, and most important, because our research examined trait mindfulness and trait moderators, we cannot draw causal conclusions from this research, though we note strong parallels with the findings of Poulin et al. (2021), who manipulated both interdependence and mindfulness. To fully bridge our findings with that prior work, it would be ideal if similar research could examine the effects of (experimentally-manipulated) long-term mindfulness training along with assessed and/or manipulated moderators. This kind of research would flesh out the full picture of when mindfulness does, and does not, lead to prosocial behavior.

Awareness of mindfulness as a both a practice and as a trait has exploded around the globe. Although its benefits for individuals are relatively clear, its social impact is not. Our research, by identifying the conditions under which mindfulness could increase or decrease prosocial behavior, could help individuals and organizations decide whether or in what way to make mindfulness a priority. Regardless, we hope our research helps build theory and stimulate new research in this growing and complex field of research.

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