Helping People by Being in the Present: Mindfulness Increases Prosocial Behavior

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Abstract

The present research tested whether mindfulness, a state characterized by focused, nonjudgmental awareness of the present moment, increases prosocial behavior in the workplace or work-related contexts. Study 1a was a longitudinal field experiment at a US insurance company. Compared to workers under waitlist control, employees who were assigned to a daily mindfulness training reported more helping behaviors over a five day period both in quantitative surveys and qualitative daily diaries. Study 1b, conducted in a large consulting company in India, extends these findings with a field experiment in which co-workers rated the prosocial behavior of teammates in a round robin design. Moving from devoting time to devoting money, in Study 2a and 2b we find that individuals randomly assigned to engage in a focused breathing meditation were more financially generous. To understand the mechanisms of mindfulness' effects on prosocial behavior, Study 3 found support for empathy and moderate support for perspective taking as mediators. This study also examined the effects of induced state mindfulness via two different mindfulness inductions, focused breathing and loving kindness meditation. Our results indicate secular state mindfulness can make people more other-oriented and helpful. This benefit holds even in workplace contexts, where being helpful toward others might face constraints but is nevertheless of great importance.

Keywords: mindfulness; meditation; prosocial behavior; empathy; perspective taking; altruism; loving kindness

Helping People by Being in the Present: Mindfulness Increases Prosocial Behavior

In the past decade, corporate mindfulness training programs have exploded in popularity. According to a national survey of large corporations by Fidelity Investments and the National Business Group on Health (2019), 60% of organizations offered yoga or meditation courses to their employees. At Google alone, thousands of employees have gone through the company's notable "Search Inside Yourself" program (Tan, 2012). Mindfulness, which is rooted in Buddhism (Harvey, 1990), is defined in Western psychology as non-judgmental awareness of the present moment (Brown & Ryan, 2003; Kabat-Zinn, 1990). Mindfulness can arise organically but can also be intentionally cultivated as a fleeting state or a stable trait by engaging in mindfulness meditation. In part due to social norms and legal requirements (Kucinskas, 2014a; 2014b; 2018), the variant of mindfulness taught in the West is secularized - emphasizing stress reduction and emotional regulation (Gelles, 2015; Kabat-Zinn, 1990; Purser & Milillo, 2015).

Some proponents believe mindfulness practice fosters positive interpersonal outcomes in the workplace. Hunter (2013, p.59) noted "If people pay attention to their mind, body, and emotions, they begin to approach the world with more openness and inquisitiveness. Quite often that touches off deeper values, such as concern for others and the world at large." Likewise, a consensus is emerging that trait mindfulness or long-term (usually 6-12 weeks) mindfulness training is either correlated with or increases empathic, compassionate, or other-focused cognitive processes or behaviors (for a review, see Donald et al., 2019).[1] However, these studies have limited implications for the workplace due to the large time investments

[1]See also Berry et al., 2018, Cohen & Miller, 2009; Condon, Desbordes, Miller, & DeSteno, 2013; Flook, Goldberg, Pinger, & Davidson, 2015; Giluk, 2010; Hutcherson, Seppala, & Gross, 2008; Kok & Singer, 2017; Krasner et al., 2009; Reb, Narayanan, & Chaturvedi, 2014; Rosenberg et al., 2015; Sansó et al., 2017; Tipsord, 2009; cf. Purser & Milillo, 2015

required for the mindful interventions (see Kemeny et al., 2012 for an exception) or the difficulty involved in cultivating employee traits related to mindfulness.

Corporate executives often view mindfulness practices as a *state-change* intervention for improving employees' own mood, focus, or performance (Carlock, 2014; Gelles, 2015; George, 2012; Harrington & Dunne, 2015). Yet, to the best of our knowledge, there are no published experiments examining the effect of *state* mindfulness inductions in the workplace. This is an important omission because state mindfulness inductions are empirically and theoretically distinct from long term training interventions such as a week-long silent retreat or a 6-8 week series of mindfulness workshops. Relative to long term training interventions, short inductions of state mindfulness typically cost less money and time, as well as allow employees to use judgment at times when mindfulness is not needed or even counterproductive (Creswell 2017), such as when analyzing past performance or projecting future goals (Hafenbrack, 2017). State mindfulness inductions may also be used more precisely in situations when mindfulness is known to be beneficial such as when individuals feel excessive amounts of stress (Brown & Ryan, 2003), before they make a large decision (Hafenbrack, Kinias, & Barsade 2014), or in advance of a challenging conversation (Beckman et al., 2012; Long & Christian, 2015).

It is important to understand whether and how state mindfulness can increase prosocial behaviors (i.e., actions that are performed to help or benefit another: Krebs, 1982), because mindfulness is increasingly being embraced by corporations and work-life is deeply relational in nature (Dutton & Ragins, 2007; Lu et al., 2017; Pillemer & Rothbard, 2018; Spreitzer, Lam, & Fritz, 2010; Spreitzer, Sutcliffe, Dutton, Sonenshein, & Grant, 2005). Today's workplace requires continual interaction with co-workers, customers, subordinates, and supervisors -- and prosocial behaviors are lubricants of positive interrelating and generative organizational cultures (Blau, 1964; Colbert, Bono, & Purvanova, 2016; Deckop,

Cirka, & Andersson, 2003; Stephens, Heaphy, & Dutton, 2011). As mindfulness research in the management literature has focused largely on the *intra*personal consequences of mindfulness (Dane, 2011; Kudesia, 2019), we are only beginning to understand the *inter*personal consequences of mindfulness practices such as prosocial behavior in the workplace (see recent reviews by Donald et al., 2019; Good et al., 2016; Sutcliffe, Vogus, & Dane, 2016). Each of these reviews concludes there is only limited mindfulness research with interpersonal outcomes in a workplace context.

Workplaces often encourage self-interested behaviors and are replete with time pressure to complete one's own tasks (Bergeron, 2007; Darley & Batson, 1973; Perlow, 1999) and the felt pressure to compete with others (Deutsch, 1949; Falcão, 2012; Johnson et al., 2006). Even if prosocial behavior occurs in line with somewhat stable individual tendencies (Grant, 2013; Huseman, Hatfield, & Miles, 1987), it can be altered by immediate situational cues and psychological states that are associated with self-interested behavior in the workplace (e.g., theory of the firm). For example, merely priming the concept of money induces selfish behavior (Vohs, 2015; Vohs, Mead, & Goode, 2006). Inducing a calculative and deliberative mindset (Zhong, 2011) and priming economic schemas (Molinsky, Grant, & Margolis, 2012) decrease individuals' prosocial behavior. If mindfulness can induce prosocial behavior in a work-related setting, it would not only prove its usefulness for organizations but also demonstrate its theoretical relevance outside of tightly scripted lab environments.

In five experiments, we test whether a psychological state of mindfulness, induced using secular meditation materials, enhances prosocial behavior in work-related settings. We also explore whether this effect of mindfulness extends to proactive or unprompted helping, and we also examine the mechanisms of mindfulness on prosocial behavior.

Mindfulness and Prosocial Behavior

We suggest that mindfulness is likely to enhance prosocial behavior in a workplace context, because as Sutcliffe and colleagues' (2016, p. 57) assert, mindfulness is "a more social construct than its name, implied mechanisms, and measurement implies." Prior theoretical work has proposed that mindfulness influences people's natural connection with others (Davidson & Harrington, 2002) by moving people away from their default bias toward self-concerns (Good et al., 2016). How might this occur? In each moment, mindfulness calls us to connect either to our own and/or others' experience in the present moment. Present-focused attention can increase mental awareness allowing for a more nuanced assessment of situations (Decety & Ickes, 2011; Dekeyser, Raes, Leijseen, Leysen, & Dewulf, 2008; Hölzel et al., 2011) which might help workers be more attuned to the immediate feelings and needs of colleagues and customers. Present-focused awareness can also enable more successful communication (Bavelas, Coates, & Johnson, 2000); mindful employees may be more active listeners and better able to pay attention to other people's reactions as they are occurring. Mindful individuals are also by definition less evaluative of their thoughts, being more likely to perceive thoughts as mental activity as opposed to literal truths (Brown & Ryan, 2003). Thus, they are likely to be more tolerant and accepting of others as they are less influenced by judgments, assumptions, and biases. As a result, individuals are more likely to engage in prosocial behavior in the workplace when in a state of mindfulness.

Mindfulness also enables the self-regulation that can be necessary for prosocial behaviors in the workplace (Glomb, Duffy, Bono & Yang, 2011; Papies, Pronk, Keesman, & Barsalou, 2015). Americans are spending more hours at work with colleagues than with friends and family (Hamermesh & Stancanelli, 2015), and, unlike friends, work colleagues are not necessarily chosen, therefore the potential and magnitude of relationship problems are higher. Furthermore, due to the collaborative nature of work, relational problems can be more common in the workplace than in other situations which require less forced interdependence

(e.g., socializing with friends). For this reason, engaging in prosocial behaviors is sometimes challenging as workers face conflict or friction with other people when working on teams or collaborations. Mindfulness, however, can help individuals be in the moment and not react to those challenges at the workplace with worry, rumination, or/and emotional outbursts (Good et al., 2016; Yu & Zellmer-Bruhn, 2018). Indeed, mindfulness is negatively associated with how much people mistreat or act aggressively towards others, including in the workplace (Gu, Zhong, & Page-Gould, 2013; Krishnakumar & Robinson, 2015; Liang et al., 2016; 2018; Long & Christian, 2015; Ruedy & Schweitzer, 2010). Overall, when mindfulness helps workers better handle potential challenges and problems in workplace social interactions, they will be more likely to engage in prosocial behavior.

Although not specifically examining prosocial behaviors, prior empirical research on a related cognitive tendency--orientation toward others--provides some indirect support for our rationale. For example, mindfulness is related to improved intimate relationships outside of work (Barnes, Brown, Krusemark, Campbell, & Rogge, 2007; Carson, Carson, Gil, & Baucom, 2004) through improved communication skills (e.g. Saavedra, Chapman, &, Rogge, 2010; Wachs & Cordova, 2007). Trait and state mindfulness are associated with other-oriented tendencies including openness, relatedness, and interpersonal closeness, again outside of a workplace context (Brown & Ryan, 2003). Lastly, mindfulness practices are associated with greater activity in the insula, a brain region that is involved in processing others' emotional experiences (Farb et al., 2007; see Singer, Critchley, & Preuschoff, 2009 for a review) meaning that more mindful individuals may have increased awareness of others' needs. When others are more cognitively salient in our minds, we are more likely to be helpful towards those people (Grant et al., 2007).

Short-term inductions of mindfulness are associated with heightened awareness of others, such as more open listening (Beckman et al., 2012), decreased bias against

stigmatized groups (Lueke & Gibson, 2015), and greater acceptance and tolerance of others (Carson, Carson, Gil, & Baucom, 2004; Beach et al., 2013). Similar short-term inductions suggest mindfulness meditation promotes more other-focused behaviors such as claiming less value for oneself in negotiation (Grapendorf, Sassenberg, & Landkammer, 2017; Hafenbrack, Barsade, & Kinias, 2014; cf. Reb & Narayanan, 2014) and giving more to charity (Ashar et al., 2016; Weng et al. 2013). Higher levels of employee trait awareness (a facet of mindfulness) have been linked to increased organizational citizenship behavior (Reb, Narayanan, & Ho, 2015). However, whether short-term inductions of state mindfulness enhance prosocial behavior in the workplace remains an open question. Thus, we suggest the following hypothesis:

Hypothesis 1. Mindfulness increases prosocial behavior.

Mechanisms Linking Mindfulness and Prosocial Behaviors

Drawing upon prior research on the causes and consequences of positive emotions, empathy, and perspective taking, we propose three mechanisms explaining why mindfulness enhances prosocial behaviors.

Positive Emotions as a Mechanism. Positive emotions are emotional experiences that have a positive valence (Russell, 1980) and have been found to be an outcome of mindful practice (Sedlmeier et al., 2012), possibly due to an increase in savoring positive experiences (Fredrickson, Cohn, Coffey, Pek, & Finkel, 2008; Quoidbach, Berry, Hansenne, & Mikolajczak, 2010). In contrast, people report less happiness when their minds wander to the past or future compared to when focused on the present moment (Killingsworth & Gilbert, 2010). Mindfulness inductions, as short as seven minutes, have been associated with increases in positive affect (Malinowski & Lim, 2015) and decreases in both negative affect

(Arch & Craske, 2006; Hafenbrack, Kinias, & Barsade, 2014; Long & Christian, 2015) and emotional reactivity (Liang et al., 2018; Sedlmeier et al., 2012).

Positive emotions are likely to be related to prosocial behaviors in that they prompt individuals to engage with their environment and undertake actions that are evolutionarily adaptive (Davidson, Jackson, & Kalin, 2000; Frijda, 1994). The broaden-and-build theory of positive emotions (Fredrickson, 1998) further develops this perspective, arguing that, while negative emotions can *narrow* attention, cognition, and physiology toward coping with an immediate threat or problem, positive emotions *widen* an individual's thought-action repertoire by promoting novel and creative actions that, in turn, build social bonds (Barsade & O'Neill, 2014). In moments of mutual care, an individual has heightened concern and focus on another's holistic well-being, which eclipses tendencies towards self-absorption, making people feel open and ready to engage with the world (e.g., Kahn & Isen, 1993), including with others in their work lives (Fredrickson et al., 2008; Garland, Froeliger, Zeidan, Partin & Howard, 2013), and enables people to see the world in a more positive light (Carlson, Charlin, & Miller, 1988; George, 1991). In light of the discussion above and prior evidence that positive emotions mediate the effects of some mindfulness interventions on prosocial behavior (Donald et al., 2019), we offer the following hypothesis:

Hypothesis 2a. Positive emotions mediate the positive effect of mindfulness on prosocial behavior.

Empathy as a Mechanism. Empathy is the ability to feel another's emotions (Levenson & Ruef, 1992). Through empathy, individuals vicariously experience another's affective state (Decety & Ickes, 2011; Preston & Van de Waal, 2002). In this way, while empathy is not an emotion (Haidt, 2003), it is emotional in nature. Thus, empathy differs

from our first hypothesized mediator of positive emotions because empathy allows people to connect with others' emotions, whether those emotions are pleasant or unpleasant.

In a review of the mindfulness literature, Good et al. (2016) suggest that "intrapersonal attunement promotes interpersonal attunement" (p. 132). Mindfulness decreases automaticity and increases awareness and regulation that can help people be in the present moment, not only in alignment with the self but also with the needs of others. By understanding their own internal processes, individuals can be more aware of the emotional processes of others. Dane (2011) suggested that mindfulness widens attentional breadth which may allow an individual to be more attuned to those with whom they are working.

Mindfulness may also increase focus on the task at hand with fewer attentional lapses (Hafenbrack & Vohs, 2018; Mrazek, Smallwood, & Schooler, 2012). Such task focus may allow individuals to see the nuances in a situation involving another person and realize how to help them, rather than making broad assumptions about another's needs and concerns. Present-focused attention increases mental self-awareness which allows for more nuanced sense-making of the situation (Dutton et al., 2014) which allows one to empathize with the needs of others (Decety & Ickes, 2011; Dekeyser et al., 2008; Hölzel et al., 2011). The attentional focus that comes with mindfulness also helps individuals to be more aware of others' tasks and characteristics, leading to the development of more accurate and shared mental models that may help them empathize (Good et al., 2016). Prior research found that health care professionals who participated in mindfulness training expressed more empathy with their patients (Krasner et al., 2009; cf. Stanley et al., 2006). Research suggests a link between trait mindfulness and empathy (Dekeyser et al., 2008). Furthermore, Glomb et al. (2011) suggest that empathy is an important process by which mindfulness practices improve workplace functioning. Through empathy, individuals are able to consider the larger social picture to see the appropriate forum for action. In many cases, the feelings of empathetic

concern create the agency to act to alleviate another's suffering (Dutton, Workman, & Hardin, 2014) or otherwise improve their situation, such as by engaging in prosocial behavior. Thus, we offer the following hypothesis:

Hypothesis 2b. Empathy mediates the positive effect of mindfulness on prosocial behavior.

Perspective Taking as a Mechanism. Perspective taking is the cognitive capacity to consider other people's viewpoints which ''allows an individual to anticipate the behavior and reactions of others'' (Davis, 1983, p. 115). While some scholars have used the terms empathy and perspective taking interchangeably, the current prevailing view is that empathy and perspective taking are different constructs such that empathy is emotional in nature whereas perspective taking is cognitive in nature, and that they are "distinct but related social competencies" (Galinsky, Maddux, Gilin, & White, 2008, p. 378).

Perspective taking is an important capability in the development of non-egocentric behavior (Piaget, 1932; Mead, 1934) which prioritizes the needs of society or other people above immediate self-interested concerns. For example, perspective taking is linked to moral reasoning (Kohlberg, 1976) and altruistic behavior (Batson, 1991). When faced with others whom we could help, we are more likely to understand their perspective and notice how we could help them if we have present-focused awareness of their circumstances, what they say, and their facial expressions, compared to when our minds are wandering away from the situation at hand to past or future concerns. Self-interested concerns tend to be past or future related (Bluedorn, 2002; Farb et al., 2007; Mainemelis, 2001; Markus & Nurius, 1986) and reducing focus on the future could reduce how much people focus on their own needs as opposed to others'. Indeed, self-transcendence has been associated with altruistic behavior (e.g., Atkins & Parker, 2012; Crilly, Schneider, & Zollo, 2008), possibly because when we

stop focusing on ourselves, there is a natural tendency to consider the perspectives and needs of others. Because mindfulness transitions people from an egocentric perspective and towards a third-party perspective (Golubickis, Tan, Falben, & Macrae, 2016), we hypothesize:

> **Hypothesis 2c.** Perspective taking mediates the positive effect of mindfulness on prosocial behavior.

Research Design Overview

Using diverse samples (business school students and workers in North America, Europe, and Asia), mixed methodologies (state induction, longitudinal, field, and lab experiments), two types of mindfulness meditation (focused breathing and loving kindness), and several different measures of prosocial behavior, the present research tested whether mindfulness enhances prosocial behavior. Studies 1ab-2ab all examined the main effect of mindfulness on prosocial behavior in the workplace or a work-relevant context. Study 3 examined the mechanisms that might explain that main effect. Studies 2b and 3 also provided the advantage of a laboratory design to explore more objective behavioral measures and mechanisms. To be more specific, Study 1a examined through a longitudinal field experiment employees' helping behavior towards co-workers and customers as reported in daily surveys when randomly assigned to a mindfulness or control condition. Study 1b extended those findings in a field experiment in which team members rated each other's prosocial behavior in a round robin design. Studies 2a and 2b extended the findings from how people spend time and effort to how people spend money, another form of helping at work. Study 2a, a field experiment with full time workers, explored whether mindful employees would be more likely to donate to a coworker in financial distress. In Study 2b, we tested whether business school students in the mindfulness condition were more altruistic with a financial behavioral measure of prosocial behavior when they entered a bonus lottery. Finally, in Study 3 we

examined the effects of two different types of mindfulness meditation - focused breathing and loving kindness - on prosocial behavior as well as tested the three proposed mechanisms: positive emotions, empathy, and perspective taking. Differing control conditions (e.g., mind-wandering, listening to the news) provided a comparison to baseline working activities (Killingsworth & Gilbert, 2011; Fritz, Lam, and Spreitzer, 2011). To mitigate the possibility of demand effects, none of the studies' recordings mentioned the term "mindfulness" nor any terms relating to Buddhism, ethics, religion, or meditation.

Study 1a: Longitudinal Field Experiment

In this study, we tested Hypothesis 1 using a longitudinal field experiment that involved daily interventions and assessments. Participants in the treatment condition completed a breath mindfulness induction each morning, and later that day we measured the extent to which participants engaged in prosocial behavior during the workday. This research design used both quantitative and qualitative reports of prosocial behavior.

Method

Participants

We sent invitations to all 603 employees working in the same division of a large insurance company as potential participants in the study. Initial contact with the insurance company was made by one of the lead authors with an HR executive of the company, who then acted as the liaison to help facilitate proper administration of the study in the field. In line with other mindfulness studies (e.g., Hülsheger et al., 2014; Hülsheger, Feinholdt, & Nübold, 2015), employees received an email describing the project from the employee health and wellness office inviting them to participate during their normal working hours. They were informed that participants would be entered into a drawing for a chance to win one of three $25 gift certificates.

A total of 146 employees enrolled in the study and were randomly assigned to either the mindfulness condition (*N*=73) or the waitlist control condition (*N*=73). Seventeen individuals did not complete any subsequent daily surveys and were not included in the analyses, resulting in a final sample of 129 employees, with 62 participants remaining in the mindfulness condition and 67 in the control condition. The response rate of initially enrolled participants to daily surveys did not significantly differ between the treatment and the control groups (85% mindfulness, 91% control, χ^2 (1) = 0.46, *n.s.*). All these employees worked full-time (mean organizational tenure = 9.4 years, SD = 6.9). The participants represented a variety of job roles including customer care specialist (39.5%), analyst (12.4%), and claims specialist (5.4%), among others. The participants (22 men, 107 women) were 17.6% non-Caucasian; and had a mean age of 41.1 years (SD = 10.5). Participants' work locations were spread across 11 states (e.g., Wisconsin, Florida, Kentucky, etc.). Confirming the random assignment, participants in the treatment and the control conditions did not significantly differ in terms of their gender (χ^2 (1) = 2.58, *n.s.*), age (*F*(1, 116) = 2.61, *n.s.*), whether they were of a Caucasian ethnicity (χ^2 (1) = .46, *n.s.*), whether they worked from home (χ^2 (1) = 2.73, *n.s.*), or their state location (χ^2 (10) = 7.56, *n.s.*). These participants in the final sample (i.e., those who enrolled *and* responded to the daily surveys) also did not differ along those dimensions from individuals who initially enrolled in the study but failed to actually participate in the daily surveys (gender: χ^2 (1) = 2.94, *n.s.*; age: *F*(1, 121) = .01, *n.s.*; Caucasian ethnicity: χ^2 (1) = 1.06, *n.s.*; working from home: χ^2 (1) = 1.94, *n.s.*; state location: χ^2 (10) = 10.33, *n.s.*).

Supervisors of 84 participants (mindfulness: 41; control: 43) in the sample also agreed to provide an additional assessment of prosocial behavior at the end of the week. Participants who had their supervisor agreeing to participate did not differ from those who did not have a participating supervisor in terms of gender (χ^2 (1) = 1.73, *n.s.*), age (*F*(1, 116) = .58, *n.s.*),

whether of a Caucasian ethnicity (χ^2 (1) = .80, *n.s.*), or whether they worked from home (χ^2 (1) = 2.51, *n.s.*). There was a minor difference in terms of the state location (χ^2 (10) = 18.93, $p < .05$), such that participants located in the state of Kentucky were a bit more likely to have a supervisor who agreed to participate (χ^2 (1) = 5.88, $p < .05$) compared to the sample average of all 11 states, though we do not think this one-state location would have meaningfully altered the results.

Procedure

Participants in both conditions received a general survey assessing demographic information the week before the intervention began. We used a day-level design where those in the mindfulness condition engaged in a breath mindfulness practice each morning for five consecutive workdays. Each day, participants in both conditions were asked to complete two short surveys that were sent in the morning (6 AM) and in the afternoon (2 PM), respectively. Survey links were active for a five-hour window after the link was sent to ensure that they were completed during the appropriate window; the average time elapsed between morning and afternoon survey completion was 4.7 hours (SD = 2.1). Participants in the mindfulness condition listened to a seven-minute audio-recording before completing the survey questions each morning, while participants in the control condition just completed the morning survey. Afternoon surveys were identical for both groups, and aside from quantitative scales, afternoon surveys also included an open-ended question about "an event that stood out in your mind today." After completion of the study, participants in the waitlist control condition received access to the same audio recordings as those in the mindfulness condition to ensure fairness. In total, we obtained 508 day-level observations from the 129 employee participants.

Mindfulness meditation intervention. For the mindfulness condition, we adopted an approach similar to Hülsheger and colleagues (Hülsheger, Alberts, Feinholdt, & Lang, 2013; Hülsheger et al., 2015) who also used self-training interventions recorded by a trained

mindfulness practitioner. In conjunction with a professional mindfulness instructor with over 25 years of experience teaching mind-body practices and collaborating with academic researchers, we adopted and recorded exercises used in clinical mindfulness-based programs (e.g., MBCT - Segal, Teasdale, Williams, & Gemar, 2002; MBSR - Kabat-Zinn, 1982). Individuals were instructed to practice focusing their attention on their breath or body and refrain from making evaluations of their thoughts. Given our interest in designing an intervention that could be readily integrated into daily work-life, our intervention's audio-recording was designed to last approximately 7 minutes each day, similar to the 8-minute length of a previously used mindfulness induction (Mrazek et al., 2012).

To build participants' comfort and skill with mindfulness practices, participants completed a mindful breathing exercise on the first day, and, on subsequent days, completed mindful breathing along with additional exercises. On each day, participants completed a three-minute breathing space exercise (Crane, Williams, & Soulsby, 2007), which is specifically designed for everyday living. It allowed participants to develop mastery with the same exercise each morning, before beginning a new exercise to build their repertoire of mindfulness practice. For days two through four, the breathing space exercise was additionally followed by a body scan, with each day focusing on a different section of the body (lower body, upper body, full body). In the body scan, bodily sensations are used to focus the mind and individuals are trained to observe distracting thoughts. On day five, after the breathing exercise, participants chose a routine work activity (e.g., picking up the phone before answering a call) to perform in a mindful way, bringing their full attention and awareness to it. On that day, participants were asked to complete their self-chosen mindful activity as often as possible during the day.

We undertook several measures in our study design to make sure participants should be blind to the experimental conditions, as well as unaware of which of their coworkers were

also participating, to mitigate potential demand effects. First, the study was advertised as a stress reduction and relaxation study, therefore participants were not expecting mindfulness exercises. While participants worked within the same division of an insurance company, this division was spread out over several states, and many participants worked from home. Thus, many workers were not in visible proximity to one another. Also, many in-office workers wore headsets as part of completing their routine work duties as call center workers. Therefore, it was not possible for a focal worker to know if their co-workers were listening to a mindfulness recording or taking a client call. Those in the control condition also responded to the prompt about the 'event that most stood out in your day', and from the second author's exchanges with participants, many control participants believed this prompt was "the intervention". Therefore, we surmise that most participants in the control condition were unaware that they were, indeed, in the control condition. Lastly, on the final day of the study, we asked participants for feedback and comments about their experience, and no one indicated any knowledge of our hypothesis. Taken together, given that workers were unaware of their own condition or others' conditions in the study, it would be challenging for workers to collectively come up with their own interpretation of the study such that it would influence our findings in line with our hypothesis, thus reducing concerns for demand effects.

Furthermore, as is standard in experience sampling method studies, our self-report dependent variable (prosocial behavior) was measured at a different time of day than when our intervention was administered, reducing potential demand effects. Measuring our assessed changes over several days enabled us to assess whether our intervention had a 'real' change on behavior within individuals. Finally, we used two additional methods that were less subject to demand effects to measure the prosocial behavior outcome, including having independent research assistants code qualitative responses in the open-ended question (from employees and supervisors) and collecting supervisor assessments of prosocial behavior.

Measures. In the study, the general survey assessed demographic variables and trait mindfulness. The daily morning surveys assessed state mindfulness as a manipulation check following the mindfulness practice audio-recording. The daily afternoon survey assessed helping behavior as an indicator of prosocial behavior. Supervisors completed a short survey about the focal participants at the end of the one-week study period. Unless otherwise specified, items were answered on a 5-point rating scale.

State mindfulness. State mindfulness in the morning survey was assessed with the Toronto Mindfulness Scale (Lau et al., 2006), which is designed to be administered after a person engages in a mindful practice. We chose this scale because it was a state measure appropriate for use in a work context. Its 14 items measure two dimensions of mindfulness: decentering and openness. As in prior research using this measure (e.g., Lau et al., 2006; Erisman & Roemer, 2010), we combined the two dimensions to capture an overall evaluation of an individual's state mindfulness (α = .85; ICC1 = .66).

Prosocial behavior. We examined helping behavior as a form of employee prosocial behavior in a work context. We utilized four different measures to assess helping.

Day-level helping. In the afternoon survey, participants reported how many times they had helped others during the workday, using a dropdown list (i.e., 0, 1, 2, ..., 15, > 15 times; ICC1 = .75).

Open ended event of the day. Drawing on Amabile and Kramer's (2011) research on what makes work meaningful and significant, at the end of each workday, participants were asked to qualitatively describe "one event from today that stood out in your mind." Participants were told that the event could be positive, negative, or neutral, but that they should provide enough details to describe the event and why it was significant. These responses averaged 29 words, or roughly three sentences, in length. We coded these sentences to capture whether or not the employee described a way that he/she was helpful to

someone during that workday (0=no, 1=yes). Independent research assistants, blind to the experimental conditions and hypotheses, coded all responses. All responses were additionally reviewed by the third author, also blind to experimental condition, to verify coding accuracy. Examples of helping behaviors that employees wrote in their responses include assisting a supervisor to install a computer program and teaching a co-worker something new. Open-ended responses were organically generated in that the mindfulness exercise recordings did not include any content related to prosocial messages or helping behavior.

Helping during the study week (supervisor report). At the end of the week, supervisors rated focal employees' helping behavior towards others in the workplace, using a one-item measure of helping, "How often did the individuals give up their time to help others who have work or non-work problems?" (1= not at all, 5 = many times) (adapted from Van Dyne & LePine, 1998).

Open ended behavior description of the week (supervisor report). Supervisors also answered the open-ended question, "How did <employee's name> show up at work?" We coded these responses, roughly one sentence in length, to capture whether or not the supervisor described the employee as helpful to someone during the workweek (0=no, 1=yes). One of the lead authors, who was blind to the experimental conditions, coded all responses. Examples of helping behaviors included co-leading a team project or offering support to a co-worker. Supervisors were unaware of participants' conditions when they wrote their open-ended responses.

Analytical Strategy

When predicting the day-level helping outcome reported in the daily surveys (a day-level dependent variable), which was nested within individuals, we used multilevel analyses with random coefficient modeling. We performed these analyses using the *Multilevel* package in R (Bliese, 2013). When predicting the overall level of helping during the study week rated

by supervisors (an individual-level dependent variable), we performed regular ANOVA analyses using the *base* package in R (R Core Team, 2017). When analyzing the open-ended responses, we performed Chi-square tests.

Results

Table 1 contains descriptive statistics and intercorrelations among the study variables.

Manipulation Check

As a manipulation check, we assessed whether the experimental condition had a significant effect on day-level state mindfulness. As results of multilevel modeling in Table 2 show, our experimental condition (mindfulness condition = 1, control condition = 0) was a positive and significant predictor of daily state mindfulness ($b = 0.23$, s.e. = 0.11, $p < .05$), confirming that participants in the mindfulness condition had significantly higher levels of day-level state mindfulness than those in the control condition. We thus proceed to test the effects of the experimental condition on hypothesized outcomes.

Hypothesis Tests

To test Hypothesis 1, we assessed the effect of the experimental condition on day-level helping behavior as measured in the daily survey. As results of multilevel modeling in Table 2 indicate, our experimental condition positively predicted day-level helping ($b = 1.74$, s.e. = 0.86, $p < .05$), showing that mindfulness condition participants had significantly higher levels of helping than control condition participants, thus providing support for H1.

Our coding of participants' qualitative reporting of an important event of the day was also consistent with Hypothesis 1. A chi-squared test was performed on the coded responses and found that participants in the mindfulness condition reported a greater amount of helping behavior than those in the control condition (χ^2 (1) = 6.76, $p <.002$).

We also assessed the effect of the experimental condition on supervisor-rated helping during the study week. An ANOVA test showed that participants in the mindfulness

condition and the control condition did not significantly differ in supervisor-rated helping behavior during the study week[2] ($F(1,75) = .21$, *n.s.*). A Chi-squared test showed that participants in the mindfulness condition and the control condition did not significantly differ in supervisor open-ended response about employee behavior during the study week ($\chi^2(1) = .03$, n.s.). We will explore why this may be so in our discussion.

Thus, Hypothesis 1 was supported for self-reported day-level helping behavior, both in the number of times helping and in open-ended prompts about significant workday events, though not supported for supervisor-assessed helping during the study week.

Discussion

Study 1a provided some support for the prediction that mindfulness practice will be associated with increased prosocial behavior in the workplace (Hypothesis 1). Daily helping was higher for participants in the mindfulness condition, and those participants were also more likely to describe helping behaviors as the workday events that stood out for them; however, supervisor-reported prosocial behavior was not influenced by the experimental condition. One possible reason is that supervisors may not have been aware of workers' prosocial behaviors in that generous workers may not have advertised their increased helping behavior (Grant, 2014).

It may also be that, in this study sample, the majority of employees have their designated workspaces (e.g., a cubicle), and supervisors do not closely monitor employees' workday interactions with other people, which might often occur near employees' own workspaces. Further, several employees reported helping friends and family members during the day, such as through a call during lunchtime, or helping coworkers on personal (non-work) issues. Moreover, some forms of prosocial behavior by insurance company employees

[2]Of the 84 participants whose supervisors agreed to provide the helping behavior rating, 77 participants (mindfulness: 38; control: 39) actually received matched supervisor ratings (i.e., a small number of supervisors did not end up completing the survey).

(who are this study's population), such as paying out a claim that was valid but had some ambiguity, might be harder to assess and observe (e.g., assessing roof damage as wind damage, as opposed to flood damage, in the aftermath of a hurricane as flood damage is not covered by a typical homeowner's insurance policy). Thus, supervisors might not have been in a good position to observe employees' prosocial behavior. Indeed, in the open-ended responses, several supervisors noted they were unable to closely monitor their employees' behavior.

Another limitation of the study is that our qualitative helping measure is somewhat imprecise in that it focuses on the most salient event of the day as opposed to all events. This measure cannot rule out the possibility that mindfulness simply made one's own helping behavior more cognitively salient, which could occur even without an increase in the incidence of helping behaviors. However, we find it worthwhile to include this measure because it complements the quantitative measure in this study. We use different measures in subsequent studies to rule out the alternative explanation of cognitive salience.

Study 1b: Team Member Rating Field Experiment

In this study, we further tested Hypothesis 1 using a one-day field experiment at an IT consulting company that involved a brief mindfulness intervention in the morning and an other-rating of helping by team members at the end of the workday. This research design extends Study 1a by using multiple raters to evaluate participants' externally visible prosocial behavior, as well as by having an active control condition.

Method

Participants

A total of 250 employees in two divisions of a large IT consulting company in India were invited to participate in the study. Employees received an email flyer from their manager inviting them to participate in a study on "social situations, time, and feelings"

during their normal working hours. This study title was chosen so that participants were not expecting mindfulness exercises to avoid placebo and demand effects. Participants were only invited to participate if they worked on a team of 3-5 people. Sixteen employees (seven from the mindfulness condition and nine from the active control condition) were removed from analyses because none of their team members rated their prosocial behavior at the end of the day. The average number of raters each participant had of their own prosocial behavior was 2.74 raters (*SD* = 1.10). While we included any participant in analyses who had been rated by at least one of their team members, only fourteen participants had only one rater. The final sample consisted of 92 employees (Mindfulness condition: *N*=54; active control condition: *N*=38; M_{age} = 26.89, *SD* = 2.20, 51 men, 37 women, and 4 who did not report their gender). Neither gender ($\chi^2(1, N = 88) = 1.02$, $p = .31$) nor age ($t(85) = 0.60$, $p = .55$) nor number of raters ($t(90) = 0.21$, $p = .84$) differed significantly across conditions, indicating that random assignment was successful. All employees worked full-time and were not paid for taking part in the survey.

Procedure

Participants were randomly assigned to a two cell (mindfulness induction vs. control) between-subjects experiment. After listening to a focused breathing mindfulness meditation or a same-length NPR news recording in the morning, participants completed manipulation check questions and then continued their workday. At the end of their workday, each participant rated the other members of their team on the extent to which each person had helped other team members during that day by providing guidance in challenging situations. They then filled out demographic questions.

Mindfulness meditation induction vs. listening control. Participants in the mindfulness condition listened to an 8-minute shortened version of an audio recording that has been successfully used to induce a state of mindfulness and present-moment awareness

(Hafenbrack, Kinias, & Barsade, 2014).[3] This recording was a guided focused breathing meditation in which participants were guided by a professional mindfulness coach to focus attention on the physical sensations of breath. The aim of mindful breathing is to connect with the present moment.

Participants in the control condition listened instead to an eight-minute recording from National Public Radio (2018) on the topic of technological advances. This control condition was chosen because it was the same form of media as the treatment condition task (i.e., an audio recording). Consuming news media is something employees frequently do during their work breaks, and it has been used as a comparison condition in prior state mindfulness induction research (Hafenbrack & Vohs, 2018). Listening to an unrelated audio recording is a common control condition task in state mindfulness induction experiments (Erisman, & Roemer, 2010; Lloyd, Szani, Rubenstein, Colgary, & Pereira-Pasarin, 2016; Lueke & Gibson, 2015).

Prosocial behavior (other rated). At the end of the workday, each participant listed the names of up to four other members of their team. They rated the extent to which each person helped other team members during that day by providing guidance when other team members faced a difficult situation (1 = not at all; 7 = very much; Mittal, Sengupta, Agrawal, & Gupta, 2018). This measure was chosen because it was relevant to the kind of team interactions done by consultants in their work environment. This kind of guidance is an organizationally valuable form of prosocial behavior (Wilson & Elman, 1990), which is also inherently visible to other members of a team as they work together on a consulting project. This measure was averaged across raters to the focal person (ICC(1) = .35, ICC(2) = .38).

[3]Whereas the original recording was 15 minutes in length, we used this shortened recording in order to run the study within the shortened time limit requested by our contact at the company who recruited the participants.

Manipulation check. Participants completed three manipulation check questions regarding the extent to which they were focused on their breath, the present moment, and physical sensations at the end of the recording they had listened to (1 = very slightly or not at all; 5 = extremely; Hafenbrack, Kinias, & Barsade, 2014). These items were aggregated to a mean score ($\alpha = .819$).

Results and Discussion

Table 3 contains descriptive statistics and intercorrelations among study variables.

Manipulation Check

Participants in the mindfulness condition reported greater focus on their breath, the present moment, and physical sensations ($M = 3.02$, $SD = 0.93$) than those in the control condition ($M = 2.61$, $SD = 0.88$; $t(90) = 2.097$, $p = .039$, $d = 0.45$). This result indicated that a state of mindfulness was successfully induced.

Hypothesis Tests

Results show that participants in the mindfulness condition engaged in more prosocial behavior by providing guidance to coworkers as rated by their team members ($M = 4.80$, $SD = 1.16$), compared to participants in the control condition ($M = 4.26$, $SD = 1.25$; $t(90) = 2.16$, $p = .034$, $d = .45$).Thus, Hypothesis 1 was supported for other-assessed helping behavior. Furthermore, the results suggest that the psychological state of mindfulness can be potent enough to influence the behavior of employees during their workday. It is highly unlikely that the significant effect of induced state mindfulness on this collective group measure of other-assessed helping was due to demand characteristics, because participants did not know which conditions their teammates had and there was the time delay between the intervention and the round-robin response measure.[4]

[4]For a demand effect to occur, the employees would each need to: (1) take more time out of their workday than already needed for our study in order to share the details of the induction recordings with each other, (2) know the study is an experiment and that experiments have treatment and control conditions, (3) correctly guess that

Like Study 1a, this study also demonstrated that as little as eight minutes of focused breathing meditation can induce prosocial behavior (also see Mrazek et al., 2012). This finding indicates that the "minimum effective dose" (Good et al., 2016, p. 135) of mindfulness meditation does not need to be that big in order to produce desirable psychological states and behaviors.

Both Studies 1a and 1b used survey measures of helping behavior, which, although suitable for the field study contexts, could be argued to have limitations compared to experimentally observed helping behavior. To that end, we designed Studies 2a and 2b to capture a more objective measure of helping. Furthermore, Studies 1a and 1b mainly captured the extent to which individuals were being prosocial by devoting one type of important resource at work -- time (i.e., by spending time helping others or providing guidance). Another arguably important resource in workplace contexts that people can use in prosocial ways is financial resources (i.e., money), and Studies 2a and 2b look into this aspect to assess the effects of mindfulness on prosociality more comprehensively.

Study 2a: Financial Allocation Field Experiment

As another test of whether state mindfulness increases prosocial behavior (H1), we conducted an experiment with an employee sample in which participants indicated how much money they would hypothetically donate to their co-worker in financial distress.

Method

Participants

Participants were 144 full time employees recruited through the alumni mailing list of a South Asian business school. The business school alumni relations office sent an initial

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the breathing exercise is the treatment condition and the news recording is the control condition, (4) correctly guess the variables and directionality of our hypotheses on the spot when they individually learned of our dependent measure hours later, (5) remember the conditions each person on their team had reported having in the morning, (6) answer the ratings of those team members in line with both their assigned conditions and an accurate guess of our hypothesis. The notion that all six of those things took place seems unlikely in even a single group, let alone in enough groups for bias to account for our results.

email to 350 alumni inviting them to participate. The ones who replied were emailed the study link. This study was conducted online by emailing a Qualtrics survey link to participants which contained the entire experiment. Twelve participants did not follow instructions that their two allocations in the altruism task should sum to $1000, and those participants were removed before the analyses. The remaining 132 participants (mindfulness condition: 62; control condition: 70; 50.8% women; M_{age} = 25.08, SD = 2.98) were included in the final analyses. Neither gender ($\chi^2(1, N = 132) = 0.29$, $p = .59$) nor age ($t(130) = 0.632$, $p = .529$) differed significantly across conditions, indicating random assignment was successful.

Procedure

Participants were randomly assigned to a 2 cell (mindfulness induction vs. control) between-subjects experiment. After listening to a mindfulness or mind-wandering control recording, participants made a hypothetical altruism decision. Participants then answered manipulation check and demographic questions and were debriefed.

Mindfulness meditation induction vs. mind-wandering control. As in Study 1b, participants in the mindfulness condition listened to an 8-minute shortened version of a guided focused breathing meditation audio recording that has been successfully used to induce a state of mindfulness and present-moment awareness (Hafenbrack, Kinias, & Barsade, 2014).

Participants in the control condition listened instead to an eight-minute recording made by the same speaker which asked them to let their thoughts run freely (i.e., mind-wandering), the extended version of which has previously been used as a comparison group to mindfulness (Hafenbrack, Kinias, & Barsade, 2014; see also Arch & Craske, 2006)[5].

[5]Mind-wandering is the most commonly used control condition in published state mindfulness experimental research (Arch & Craske, 2006; Dickenson et al., 2013; Hafenbrack et al., 2014; Hafenbrack & Vohs, 2018; Keng et al., 2016; Kiken & Shook, 2011; Lee & Orsillo, 2014; Liang et al., 2018; Long & Christian, 2015;

Prosocial behavior. Participants engaged in a financial allocation task adapted from Tost, Wade-Benzoni, & Johnson (2015), though with adjusted financial amounts to increase psychological realism. Participants were asked to imagine that they were to be awarded a $1000 bonus, an amount comparable to a bonus in the workplace. Inspired by a program at the Borders Foundation, a charitable arm of the now-defunct Borders Books where workers could contribute to help co-workers experiencing financial difficulties, participants were told they could allocate the bonus between the two accounts - one personal and the other for a co-worker facing financial difficulties[6].

Manipulation check. Participants completed four manipulation check questions about the recording they had listened to, specifically the extent to which they had been focused on their breathing, physical sensations, and the present moment, and were in touch with their body (1 = very slightly or not at all; 5 = extremely; Hafenbrack, Kinias, & Barsade, 2014). These items were averaged (α = .80).

Results and Discussion

Table 4 contains descriptive statistics and intercorrelations among study variables.

Manipulation Check

Participants in the mindfulness condition reported greater focus on their breath, body, and the present moment (M = 3.36, SD = 0.80) than those in the control condition (M = 3.00,

Rosenstreich, 2016; Rosenstreich & Ruderman, 2017; Wilson et al., 2015; Winning & Boag, 2015). Our reasoning for choosing this prevalent control condition in two of our studies is that it replicates the baseline waking mental state (Mason et al., 2007) that adults have been found to experience on average 47% of the time (Killingsworth & Gilbert, 2010). Moreover, it is closely matched to the mindfulness condition recording in that they are both recorded by the same speaker, they have comparable amounts of instructions at similar intervals, and they are both giving instructions for how to focus attention introspectively. It thus allows the tests to be high in internal validity because virtually nothing is being varied across conditions except the independent variable of interest -- whether participants are engaging in a mindfulness meditation or not. It is also not clear to many participants in the mind-wandering control condition that they are not doing a meditation, and some have thanked the experimenter for the "relaxing meditation"; thus, using such a control condition also helps to keep participants blind to the experimental conditions.

[6]Due to constraints within our organizational setting, we did not actually pay out a bonus, though we did actually pay a bonus using a similar paradigm in Study 2b which we will describe below.

SD = 1.01; *t*(130) = 2.289, *p* = .025, *d* = 0.40). This result indicated that a state of mindfulness was successfully induced.

Hypothesis Test

The amount of bonus that participants in the mindfulness condition indicated that they would give to their financially distressed co-worker (*M* = $482.08, *SD* = $265.48) was greater than the amount indicated by those in the mind-wandering control condition (*M* = $374.54, *SD* = $273.75; *t*(130) = 2.285, *p* = .024, *d* = 0.40). This result supported Hypothesis 1 that mindfulness would increase prosocial behavior.

Because the design of Study 2a included targets of helping who were financially suffering, it precludes us from knowing whether participants receiving the mindfulness interventions were simply more attentive to other people's suffering (e.g., Condon et al., 2013), or whether they would help other people more even without knowing if those people were suffering. Study 2b engaged with this issue by using a behavioral measure of financial generosity and a situation in which the recipient of the money was not obviously suffering. This design allowed us to determine whether mindfulness enhances objective altruism in the absence of explicit suffering or distress cues.

Study 2b: Financial Allocation Laboratory Experiment

In Study 2b, we conducted an experiment in which participants were asked to decide how much of a bonus (that would actually be received if won) they would share with another participant. The allocation task was similar to that employed in Study 2a, however this study utilized a real lottery that would make an actual payment to the winner, making the prosocial behavior more realistic and substantive. In addition, there was no mention that the recipient was in financial distress or suffering in any other way, in order to test whether recipient suffering is necessary for mindfulness to increase prosocial behavior. This study took place in

a behavioral laboratory, which complemented our other studies (e.g., in the field) by allowing a more controlled environment.

Method

Participants

Participants were 66 business or economics students at a Central European university (mindfulness condition: 34; control condition: 32; 51.5% women; M_{age} = 23.68, SD = 4.67, $M_{work\_experience}$ = 2.83 months, SD = 4.26). Neither gender ($\chi^2(1, N = 66) = 3.00$, $p = .08$) nor age ($t(64) = 0.20$, $p = .842$) differed significantly across conditions, indicating successful random assignment. Each participant was paid €5 for participation. The one participant who won the lottery also received a €120 bonus.

Procedure

Participants were recruited by a general email sent out to all business and economics students. Each participant came in person to a behavioral laboratory and sat at a computer with headphones. Participants were randomly assigned to a 2 cell (mindfulness induction vs. control) between-subject experiment. After listening to a mindfulness or mind-wandering control recording, participants made a financial allocation similar to that of Study 2a. However, unlike in Study 2a, the person who won the lottery would actually receive the bonus. Participants then answered manipulation check and demographic questions, then were debriefed. Our exclusion criterion was identical to that of Study 2a - we would remove participants whose two financial allocations did not sum to €120 - however, no participants were excluded because all participants' allocations summed to €120.

Mindfulness meditation induction vs. mind-wandering control. Participants listened to one of two 15-minute audio recordings (Hafenbrack, Kinias, & Barsade, 2014), mindfulness or mind-wandering control, the shortened versions of which were used in Study 2a.

Prosocial behavior. Participants participated in a lottery for €120, and they were asked, if they won the lottery, to decide how much they would give to another study participant (adapted from Tost et al., 2015; the bonus amount was borrowed from Joshi & Fast, 2013[7]). Participants were led to believe that any donated money would actually go to another participant. Participants were told if they donated a part of their winnings, the donated amount would be multiplied by 1.5 (that is, for example, if they donated €40, the other participant would receive €60) then immediately transferred. This multiplication procedure was used because there is often a multiplier in interpersonal games (e.g. Berg, Dickhaut, & McCabe, 1995) and so that there would be a clear group benefit to helping, as is typically the case in social dilemmas (Weber & Murnighan, 2008; Zeng & Chen, 2003). This was a substantial amount of money and it would serve as a psychological anchor, making the scenario realistic.

Manipulation check. To measure the extent to which the focused-breathing induction cultivated increased awareness of the present moment in the mindfulness condition, we asked participants to report the extent to which they were "absorbed in the present moment," using a 5-point Likert scale (1 = very slightly or not at all, 5 = extremely; Hafenbrack, Kinias, & Barsade, 2014).

Results and Discussion

Table 5 contains descriptive statistics and intercorrelations among study variables.

Manipulation Check

Participants in the mindfulness condition reported greater focus on the present moment (M = 3.56, SD = 1.05) than in the control condition (M = 2.81, SD = 1.06; $t(64) = 2.872$, p = .006, d = 0.71), indicating that a state of mindfulness was successfully induced.

[7]However the currency being exchanged was different, it was dollars in Joshi & Fast (2013) vs. Euros in our study.

Hypothesis Test

Participants in the mindfulness condition donated more to their fellow participant (M = €40.59, SD = 34.11) than did participants in the control condition (M = €23.06, SD = 23.49; $t(64) = 2.42$, $p = .019$, $d = .60$). Study 2b again demonstrated that an induced psychological state of mindfulness increased prosocial behavior, supporting Hypothesis 1. This result further indicates that recipient suffering is not necessary in order for mindfulness to increase prosocial behavior and suggests that mindfulness can increase general altruism.

Our studies so far have provided rich evidence that mindfulness can increase prosocial behavior, and we sought to explore the mechanisms for this effect. In addition, we believe it might be helpful to explore and compare additional types of secular mindfulness meditation for promoting prosocial behavior beyond the focus-on-breath intervention. We thus address these issues in Study 3 by both testing the hypothesized mechanisms and including an additional loving-kindness meditation intervention alongside the more basic breath-based mindfulness meditation we have examined in the studies above.

Study 3: Experiment Testing Positive Emotions, Empathy, and Perspective Taking as Mechanisms

Study 3 extends Studies 1a-2b in three ways. First, we conceptualize and empirically examine the three mechanisms (positive emotions, empathy, and perspective taking), corresponding to Hypotheses 2a - 2c, explaining why mindfulness increases prosocial behaviors. Second, we include a second meditation practice (i.e., loving kindness), which may be particularly attuned to prosocial behaviors (Van Dam et al., 2018). Third, we examine a different prosocial behavior - compassionate responding in reaction to a realistic workplace scenario - to test whether mindfulness enhances prosocial behaviors beyond devoting additional time or money as examined in the studies above. Compassionate responding is vital to organizational functioning because the extent to which bad news is presented

empathically is a key predictor of perceived justice in the eyes of the recipient (Patient & Skarlicki, 2010).

Participants

Our sample included 139 employees located in the U.S. (focused breathing condition: 52; loving kindness condition: 46; control condition: 41; 40% female; mean age = 35.58 years, SD = 11.01) recruited using Amazon's Mechanical Turk survey platform, which has been shown to provide data of adequate reliability (Buhrmester, Kwang, & Gosling, 2011; Paolacci, & Chandler, 2014). Being employed was a stated requirement to participate in the study and 84.2% of participants reported working more than 25 hours per week. Neither gender ($\chi^2(2, N = 139) = 2.13$, $p = .35$) nor age ($F(2, 136) = 1.09$, $p = .34$) nor work hours ($F(2, 136) = 2.26$, $p = .11$) differed significantly across conditions, indicating random assignment was successful.

Procedure

Participants were randomly assigned to one of three conditions: two meditation conditions (focused breathing or loving kindness) and a control condition (listening to a *New York Times* article).[8] One of the lead authors, with ten years of experience in leading mind-body practices, recorded a 15-minute audio file for each intervention adapted from

[8]In this study, our intention was to empirically determine if the loving kindness meditation induction induced mindfulness. If the loving kindness meditation induction passed the mindfulness manipulation check compared to the control condition, we would consider it a mindfulness induction. Otherwise, we could include it as a second active control condition. This is because there are competing reasons to believe that loving kindness meditation may or may not be a mindfulness induction.
On the one hand, loving kindness meditation is a part of many of the most popular mindfulness programs, such as MBSR (Kabat-Zinn, 1990) and Search Inside Yourself (Tan, 2012) and longer term loving kindness meditation training has previously been found to increase mindfulness (Fredrickson et al., 2008). On the other hand, the content of loving kindness meditation is more about sending positive energy towards other people than about connecting with experience in the present moment, much of the previous research on loving kindness meditation does not explicitly consider it a form of mindfulness practice (e.g., Fredrickson et al., 2008; Hoffman, Grossman, & Hinton, 2011; Hutcherson et al., 2008; Kang, Gray, & Dovidio, 2013), some have argued loving kindness is a "contemplation" practice rather than a meditation practice (Kudesia & Nyima, 2015), and a single state induction of loving kindness may not have as strong of effects as extended loving kindness training. For these reasons, we treated this as an empirical question.

Hafenbrack, Kinias, and Barsade (2014) and Hutcherson et al. (2008). Participants were required to listen to the entire recording and could not advance until completion.

After the induction, subjects completed a brief manipulation check and then were asked to deliver bad news to a subordinate, in a scenario drawn from Molinsky et al. (2012). In the scenario, participants were told that they were to give difficult feedback to Sarah, who was a good worker but would be denied a promotion because she was consistently late for work due to car troubles. Participants were asked to deliver this bad news to Sarah in a memo (see Supplementary Online Material for the actual scenario). Participants did not receive any instructions or cues about what to write, so any display of compassion would be self-initiated and voluntary. Participants then completed a short survey assessing empathy, perspective taking, positive emotions, and demographic variables. We did not measure these mechanisms before the dependent variable to avoid priming implicit theories, and our approach is consistent with Molinsky et al.'s (2012) design.

Focused breathing mindfulness induction. The focused breathing mindfulness intervention was adapted from the Hafenbrack, Kinias, and Barsade (2014) script which was adapted from previously used breath meditation interventions (Arch & Craske, 2006; Kabat-Zinn, 1990).

Loving kindness mindfulness induction. The loving kindness meditation induction was adapted from Hutcherson et al. (2008), which had been adapted from materials by Salzberg (2002). In the loving kindness meditation, participants focused on giving and receiving feelings of warmth and kindness to a loved one.

Control condition. The control condition task was to listen to an audio recording of a New York Times article about education initiatives, similar to our Study 1b control condition. All three recordings and scripts are available in the supplementary materials.

Prosocial behavior. In this study, our operationalization of prosocial behavior was compassionate responding, where employees show support to others in a way which is not required by the job. Following Molinsky et al.'s, (2012) procedure to assess compassionate responding, we enlisted two coders to rate the managers' responses to the scenario (1 = not at all compassionate, 7 = extremely compassionate. See supplementary materials for sample responses which were rated low, medium, and high in compassion.). The second and third authors, who were blind to the experimental condition, independently coded a subset (20) of responses. After reviewing, discussing, and gaining agreement on the subset of items, the second author coded the remaining responses.

Positive emotions. To assess positive emotions, we utilized Fredrickson, Tugade, Waugh, & Larkin's (2003) modified Differential Emotions Scale (5pt Likert, 1 = not at all and 5 = extremely). The emotions listed were amusement, awe, inspiration, gratitude, hope, joy, interest, love, and pride (α = .90).

Empathy. To assess empathy, we asked participants how they felt toward Sarah using Batson's (1987) scale (1 = not at all; 7 = very much), including items such as ''sympathetic'' and ''moved'' (a = .94).

Perspective taking. To assess perspective taking, we asked participants how much they considered Sarah's perspective using Grant & Berry's (2011) 4-item scale (7pt Likert, 1 = strongly disagree; 7 = strongly agree) which we adapted to be specifically about Sarah. The items were "I made an effort to see the world through Sarah's eyes", "I imagined how Sarah was feeling", "I sought to understand Sarah's viewpoints", and "I tried to take Sarah's perspective".

Manipulation Check. We used the same mindfulness measure, the Toronto Mindfulness Scale (Lau et al., 2006), as in Study 1a.

Results

Table 6 contains descriptive statistics and intercorrelations among study variables.

Manipulation Check

Our manipulation check confirmed that participants in the meditation conditions reported a significantly higher level of state mindfulness (focused breathing: M = 3.84, SD = .58; loving kindness: M = 3.95, SD = .65) than did participants in the control condition (M = 3.46, SD = .74; focused breathing: $t(91) = 2.76$, $p < .01$; loving kindness: $t(85) = 3.25$, $p < .01$). A state of mindfulness was successfully induced in each of the meditation conditions.

Hypothesis Tests

Hypothesis 1 predicted that mindfulness practice (both focused breathing and loving kindness) would increase compassionate responding. An ANOVA found significant differences between the three conditions on compassionate responding, $F(2, 103) = 3.1$, $p < .05$). Participants in both the focused breathing (M = 3.07, SD = 1.82) and the loving kindness (M = 2.83, SD = 1.73) conditions demonstrated significantly higher levels of compassionate responding than did participants in the control condition (M = 2.11, SD = 0.89; focused breathing: $t(68) = 2.55$, $p = .013$; loving kindness: $t(61) = 1.98$, $p = .053$). Participants in the focused breathing and loving kindness conditions demonstrated similar levels of compassionate responding ($t(77) = .588$, $p = .56$). See Figure 1 for a graphic illustration. These results thus supported Hypothesis 1.

T-tests showed that participants in each intervention reported significantly higher levels of positive emotions (focused breathing, M = 2.7, SD = .55; loving kindness, M = 3.0, SD = .54) than those in the control condition (M = 2.2, SD = .68; focused breathing: $t(91) = 4.12$, $p < .01$; loving kindness: $t(85) = 6.19$, $p < .01$). A second set of t-tests showed that participants in each intervention reported significantly higher levels of empathy (focused breathing, M = 3.96, SD = 1.66; loving kindness, M = 4.24, SD = 2.04) than those in the control condition (M = 3.11, SD = 1.98; focused breathing: $t(91) = 2.25$, $p < .05$; loving

kindness: $t(85) = 2.6$, $p < .05$). A third set of t-tests showed that participants in each intervention reported significantly higher levels of perspective taking (focused breathing, M = 5.12, SD = 1.32; loving kindness, M = 5.05, SD = 1.33) than those in the control condition (M = 4.31, SD = 1.75; focused breathing: $t(91) = 2.54$, $p < .05$; loving kindness: $t(85) = 2.25$, $p < .05$).

Hypotheses 2a-2c predicted that the effect of mindfulness on prosocial behavior will be mediated by positive emotions (H2a), empathy (H2b), and perspective-taking (H2c). In stand-alone bootstrapping mediation tests (Preacher & Hayes, 2008) on the effect of the focused breathing condition on compassionate responding, empathy (estimate = .230, 95% C.I. = [0.030, 0.578]) and perspective taking (estimate = .290, 95% C.I. = [0.079, 0.634]) were significant mediators, but positive emotions was not (estimate = -.042, 95% C.I. = [-0.428, 0.220]). In stand-alone bootstrapping mediation tests on the effect of the loving kindness condition on compassionate responding, empathy was a significant mediator (estimate = .350, 95% C.I. = [0.070, 0.827]) but perspective taking (estimate = .146, 95% C.I. = [-0.051, 0.481]) and positive emotions (estimate = .124, 95% C.I. = [-0.259, 0.586]) were not.

In a simultaneous bootstrapping mediation test on the effect of the focused breathing condition on compassionate responding including all three hypothesized mediators, perspective taking was a significant mediator (estimate = .204, 95% C.I. = [0.030, 0.561]), but empathy (estimate = .153, 95% C.I. = [-0.001, 0.508]) and positive emotions (estimate = -.080, 95% C.I. = [-0.478, 0.130]) were not. See Figure 2 for an illustration of these results. In a simultaneous bootstrapping mediation test on the effect of the loving kindness condition on compassionate responding including all three hypothesized mediators, empathy was a significant mediator (estimate = .372, 95% C.I. = [0.082, 0.832]), but perspective taking

(estimate = -.045, 95% C.I. = [-0.319, 0.121]) and positive emotions (estimate = .195, 95% C.I. = [-0.109, 0.643]) were not. See Figure 3 for an illustration of these results.

In a trimmed model simultaneous bootstrapping mediation test on the effect of the focused breathing condition on compassionate responding including only empathy and perspective taking, both empathy (estimate = .149, 95% C.I. = [0.001, 0.498]) and perspective taking (estimate = .202, 95% C.I. = [0.035, 0.537]) were significant mediators. See Figure 4 for an illustration. In a trimmed model simultaneous bootstrapping mediation test on the effect of the loving kindness condition on compassionate responding including only empathy and perspective taking, empathy was a significant mediator (estimate = .364, 95% C.I. = [0.083, 0.847]), but perspective taking was not (estimate = -.048, 95% C.I. = [-0.307, 0.106]).[9] See Figure 5 for an illustration.

Overall, both types of mindfulness interventions increased compassionate responding. These effects for both types of interventions were mediated in the modified simultaneous bootstrapping mediation test (with a trimmed model) by empathy, supporting Hypothesis 2b. Perspective taking mediated the effect of the focused breathing condition but not the loving kindness condition, providing partial support for Hypothesis 2c. Although the mindfulness intervention increased positive emotions, positive emotions did not mediate its effect on compassionate responding because the positive emotions variable was not correlated with the compassionate responding dependent variable (r = .072, p = .343), thus failing to support Hypothesis 2a.

Discussion

Study 3 provided additional support for Hypothesis 1, that mindfulness increases prosocial behavior. Participants who participated in the focused breathing and loving kindness forms of meditation demonstrated higher levels of compassionate responding in a

[9]All bootstrapping tests presented above had 5000 resamples and all confidence intervals were bias-corrected.

workplace scenario, responding as managers to a subordinate's adversity. Study 3 also offers support for empathy and perspective taking as key mechanisms explaining why mindfulness is related to prosocial behavior. Both meditation conditions increased participants' compassionate responding toward a subordinate in a difficult situation; however, empathy was also the strongest mediator for the loving kindness condition while perspective taking was the strongest mediator for the focused breathing condition.

While we did not explicitly hypothesize different mediators for each meditation condition, we think this pattern of results makes sense in light of the content of these two meditations. Focused breathing has an emphasis on physical sensations which root people in the present moment. This may create a calm state in which people better notice and think through the wants and needs of others, are less likely to let their minds wander, and are more stably focused on the task or situation at hand (Hafenbrack & Vohs, 2018; Mrazek et al., 2012). Consistent with how love has been conceptualized as an emotion (Barsade & O'Neill, 2014; Reis & Aron, 2008), loving kindness meditation may inherently be more emotional in nature because it instructs people to send love and positive energy to others.

Consistent with Fredrickson et al. (2008), focused breathing and loving kindness interventions were associated with increased positive emotions. However, in contrast to the results of some previous dispositional mindfulness and intervention studies (for a review, see Donald et al., 2019), positive emotions did not mediate the relationship between state mindfulness and this form of prosocial behavior. However, the discrepancy between those meta-analytic results and our results could relate to how Donald et al., (2019, p. 106) consider empathy an "other-oriented positive emotion", not the empathy definition we drew on of the ability to feel another's emotions (Levenson & Ruef, 1992) - including negative emotions. Moreover, individuals may feel less compelled to engage in actions which might possibly disturb inner states of serenity when in a mindful state. Mood maintenance theory (Wegener

& Petty, 1994) suggests people may ignore negative topics or activities which are inconsistent with their current positive affective state. Moreover, feeling or displaying positive emotions may be inappropriate when another person is visibly suffering (Dutton et al., 2014).

Study 3 also examined two different approaches to mindfulness – focused breathing and loving kindness - finding that both practices significantly increased state mindfulness and, in turn, prosocial behavior. This suggests that different mindfulness practices can have similar results in the workplace, thus, allowing individuals to choose the practice that personally resonates with them. It also suggests that focused breathing meditation, which is not thought to be as inherently "prosocial" in the way loving kindness meditation is (Van Dam et al., 2018, p. 45; see also Leiberg, Klimecki & Singer, 2011), can also induce prosocial behavior. To the extent that the loving-kindness meditation is a "mindfulness plus prosocial emotion" type of intervention, our results lend further support to a recent meta-analysis which failed to find a difference between this type of intervention and "mindfulness only" interventions in facilitating prosocial behavior (Donald et al., 2019, p. 103).

A potential limitation of this study is that an author of the present research recorded each of the inductions (after adapting scripts from prior published work); however, the consistent results with our other four studies, in which the inductions were recorded by non-author instructors, suggests that our findings are not methodological artifacts of a specific recording and should reduce bias concerns.

General Discussion

Five studies - including diverse samples (business school students and employees in North America, Europe, and Asia), methodologies (state induction, longitudinal, field, and lab experiments), types of meditation (focused breathing and loving kindness), control conditions (mind-wandering, waitlist, and listening to the news), and measures of prosocial

behavior (helping behaviors to customers and coworkers, guidance to team members, financial allocations, and compassionate responding) - tested whether mindfulness enhances prosocial behavior in the workplace or work-related contexts. We found that state mindfulness increases prosocial behavior and that this effect was mediated by increased empathy and perspective taking, supporting Hypotheses 1, 2b, and 2c, though not Hypothesis 2a.

Contributions

This research makes a number of contributions to the literatures on mindfulness and prosocial behavior at work. First, we extend the nascent literature on the effects of *state* mindfulness in organizations (Liang et al., 2018; Long & Christian, 2015). Although mostly neglected in prior mindfulness intervention research conducted in organizations (see reviews by Allen et al., 2015, and Eby et al., 2017, which contain virtually no examples of state mindfulness induction studies), inducing state mindfulness on-the-spot may be most relevant in a work setting, especially in jobs without formal breaks. It was also not a foregone conclusion that induced state mindfulness and measured trait mindfulness operate in the same way (cf. Fleeson, 2001; Hafenbrack, Kinias, & Barsade, 2014; Long & Christian, 2015). For example, trait mindfulness has been shown to positively correlate with subjective vitality (Brown & Ryan, 2003), a measure of felt arousal, whereas induced state mindfulness reduces felt arousal (Hafenbrack & Vohs, 2018), which suggest that state and trait mindfulness can have different effects. That induced state mindfulness increased prosociality in our studies is notable because, when taken in conjunction with other articles on the link between trait mindfulness and prosocial behavior (e.g. Reb, Narayanan, & Chaturvedi, 2014), it demonstrates that prosocial behavior is an outcome on which state mindfulness and trait mindfulness actually do operate similarly.

Second, we contribute to the positive organizational scholarship literature (Cameron & Dutton, 2003; Cameron & Spreitzer, 2011) by demonstrating that state mindfulness increases prosocial behavior *in the workplace*. This is significant as this is one of the first studies to deploy a workplace intervention. As noted, workplaces naturally bear a range of hindrances to helping behaviors (Darley & Batson, 1973; Deutsch, 1949; Falcão, 2012; Johnson et al., 2006; Molinsky et al., 2012; Perlow, 1999), such as felt pressure to complete more work in less time or competition with peers. That mindfulness can induce prosocial behavior in a workplace setting indicates it is potent enough to overcome organizational constraints and may even facilitate the creation of organizational cultures of collegiality, reciprocity, and thriving (Baker & Dutton, 2003; Barsade & O'Neill, 2014; Spreitzer et al., 2005; Stephens et al., 2011).

Third, we contribute to the mindfulness literature by conceptualizing and empirically examining three other-oriented potential *mechanisms* - positive emotions, empathy, and perspective taking. We find that empathy and perspective taking mediate the relationship between mindfulness and prosocial behavior. While state affect (Hafenbrack, Kinias, & Barsade, 2014; Long & Christian, 2015) has been a common mediator of the consequences of state mindfulness and positive affect has been found to help build social resources (Fredrickson et al., 2008), our research shows that positive emotions did not mediate the relationship between state mindfulness and prosocial behavior. This result underscores the importance of acknowledging that state mindfulness has an array of psychological consequences (including increasing perspective taking, a "cold" non-affect-driven process) rather than being only an emotion regulation tool.

Moreover, our finding that the prosocial effects of mindfulness involve different mechanisms depending on the meditation induction (i.e., focused breathing and perspective taking, loving-kindness and empathy) suggests that all mindfulness meditations do not have

identical effects. That is, the underpinnings of how state mindfulness works depends on the type of induction being used. This extends prior mindfulness research which largely found both practices have similar effects (e.g., Donald et al., 2019) yet stopped short of unpacking if there are different mechanisms underlying the practices. To the best of our knowledge, the management literature has not examined focused breathing and loving kindness meditation practices as different conditions in the same state induction study. In fact, longer multi-week interventions often combine the two together (e.g., Hülsheger et al., 2013; 2014), making it harder to sort out the effects. Focused breathing practice, which might be viewed by managers as a simple "physical" exercise, may have more legitimacy in a workplace context than loving kindness practice, which may be perceived as too soft, personal, or "new age" for the workplace. Our study, moreover, demonstrates that focused breathing meditation is just as potent as loving kindness meditation for inducing mindfulness and influencing our hypothesized mechanisms and prosocial behaviors. To our knowledge, we are the first to demonstrate that a single state induction of loving kindness meditation increased state mindfulness. Thus, our findings both shed light on the comparison between the two meditation practices and, while helping to build the legitimacy of loving kindness meditation practice for use in a work context, also suggests there might be little loss in sticking to focused breathing meditation if organizations are more receptive to it.

Fourth, we contribute to the ongoing discussion between proactive and reactive prosocial behavior. Reactive prosocial behavior is when someone helps another in response to requests, prompts, or distress cues while proactive prosocial behavior is spontaneous (Lee, Bradburn, Johnson, Lin, Chang, 2018; Grant & Ashford, 2008). Prior research has explored the link between mindfulness and reactive prosocial behavior where participants observed suffering or hardship. Condon et al. (2013) found that individuals who had completed an 8-week mindfulness training program were more likely to give their seat to a confederate on

crutches who appeared to be in pain. Berry et al. (2018) found mindfulness promoted prosocial responsiveness to a representation of an ostracized stranger (using a "cyberball" paradigm: Williams & Jarvis, 2006). Leiberg et al (2011) also found that people help more when confronted with distress cues than when not. Our research extends their work, exploring proactive prosocial behavior where the target of the prosocial behavior did not explicitly convey that they were suffering. In Study 2b in particular, we found that participants in the mindfulness condition allocated more money to another participant in the study despite not having any information about that other participant (i.e., without prompts about financial needs or any other form of distress). We also find the workers were more likely to offer general support to their co-workers and/or clients (Study 1a and 1b). Thus, a strength of our studies is that they indicate that mindfulness is not only increasing reactive helping because one better notices suffering; we find that mindfulness also 'lights a spark' that increases people's impulse to proactively help.

Limitations and Directions for Future Research

While our studies offer a number of contributions they are not without weaknesses. First, in some of our studies, it was the participants themselves who reported their helping behaviors and financial allocations. Behaviors that are subject to demand effects or social desirability, especially those involving morality, are likely to be biased in self-reports (Griffin & Kacmar, 1991), and the relationship between mindfulness and prosocial behavior has in the past appeared larger in self-report than other-report measures of helping (Donald et al., 2019). However, the fact that similar results were obtained with other-report measures (Study 1b), in non-leading, qualitative responses (Study 1a and Study 3), and objective behavioral measures that were aligned with incentives (Study 2b), reduces demand effect concerns. Further, when we requested comments from participants after each study, no one claimed to know the purpose of our study. But we acknowledge demand effects concerns could have been

mitigated even more strongly if we included more direct probing to ensure participants were blind to their experimental condition and our hypotheses.

Second, we employed a variety of operationalizations (e.g., quantitative event reporting, financial allocations, and qualitative diary entries) to alleviate concerns about the limitations of any single measure of prosocial behavior. Future research can employ additional measures of prosocial behaviors such as customer assessments. Subsequent research could look at more "big ticket" prosocial workplace outcomes (e.g., volunteering to lead employee resource groups or charitable giving campaigns). Lastly, prosocial behaviors are not uniformly positive (Bolino & Turnley, 2005; Koopman, Lanaj, & Scott, 2016), future research can investigate whether mindfulness helps employees avoid the dark side of citizenship behaviors (Bergeron, 2007; Umphress, Bingham, & Mitchell, 2010).

Although Studies 1a, 1b, and 2a were conducted in a workplace setting, our last two studies were conducted in a simulated workplace context. Though this approach for the last two studies has some limitations, it did provide some other advantages. In general, as both real and hypothetical tasks each have strengths and weaknesses in representing actual everyday behavior, researchers have argued that validating results with both increases confidence in the applicability of the results to real life (Bruner et al., 1956; Locey et al., 2011). Specifically, in Study 3, for example, the simulated scenario provided the advantage of controlling the magnitude of the subordinate's adversity such that it was the same for all participants. It also allowed a real-time assessment of in the moment positive emotions, empathy, and perspective taking as potential mechanisms, which can be more difficult to measure in busy natural work settings. By using a financial allocation task to another participant, Study 2b had the advantage of providing a simple, "clean" scenario and, as noted, demonstrating that the recipient need not be suffering in order for mindfulness to increase prosocial behavior (i.e., reactive prosocial behavior).

Implications for Practice

As is often the case for behavioral interventions (Wilson, 2011), practitioner enthusiasm for and application of mindfulness-related programs has outpaced scientific research on the effects of such programs in the workplace. Dozens of corporations, including Google, General Mills, and Aetna, have adopted mindfulness training programs to help employees reduce stress. These programs often draw on research linking mindfulness and well-being. However, as Glomb et al. (2011) note, the majority of mindfulness-related studies have been conducted with student or clinical samples. Only a few, albeit a growing number, explicitly examine mindfulness practice in the workplace, and nearly all focus on intra-individual outcomes (cf. Reb & Narayanan, 2014; Reb, Narayanan, & Chaturvedi, 2015; Yu & Zellmer-Bruhn, 2018). Our Studies 1a, 1b, and 2a are among the first mindfulness field experiments conducted at businesses or with employees featuring interpersonal outcomes. These findings may prompt organizations to be more open to mindfulness programs, given that the interpersonal benefits will help workers and organizations function more smoothly, especially in workplaces that require ever more frequent and stressful team, customer, and co-worker interactions.

The speed and efficacy in which a single short mindfulness meditation session can induce a state of mindfulness and positively shape behavior indicates that employees do not have to rely on their organization to offer formal intensive mindfulness trainings and could use short, widely available recordings on their own during breaks (Fritz et al., 2011; Hafenbrack, 2017). On the other hand, these results also suggest to organizations that brief mindfulness interventions could be a useful part of their employee health and well-being toolkit, along with other interventions (e.g. service learning: Pless, Maak, & Stahl, 2012; ethical codes of conduct: Stevens, Steensma, Harrison, & Cochran, 2004; Umphress, Ren,

Bingham, Gogus, 2009), at a much lower cost than a prolonged (e.g., full 8 weeks) mindfulness training program.

Conclusion

In today's highly demanding and uncertain job environment, kindness and positive relationships are more important than ever. This study finds that as little as one session of mindfulness practice enhances prosocial behavior. Furthermore, both breath-based practices and loving kindness practices can foster more prosocial behavior, through the mechanisms of increased empathy and perspective taking. The prosocial consequences of mindfulness are likely to improve the work lives not only of those who practice it, but also the many with whom they work and interact.

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Table 1

Study 1a: Means, Standard Deviations, and Correlations

Variable	Mean	s.d.	ICC1	1	2
Day-level variables					
1. State mindfulness	3.56	0.67	.66	(.85)	-.03
2. Daily helping	7.40	5.11	.75	-.04	-
Individual-level variable					
3. Supervisor-rated helping	3.85	1.32	-	.09	-.04

Note. Correlations above the diagonal are day-level correlations (n = 508). Correlations below the diagonal are person-level correlations (N = 129). Internal consistency reliabilities (i.e., Cronbach's alphas) are shown in parentheses along the diagonal where applicable. For day-level variables, mean level of Cronbach's alphas across the five days are displayed.

Table 2

Study 2: Predicting Day-Level State Mindfulness and Daily Helping

	State Mindfulness		Daily Helping	
Variable	Estimate	s.e.	Estimate	s.e.
Intercept	3.441***	0.073	6.649***	0.603
Experimental condition	0.231*	0.107	1.737*	0.861

Note. The models presented were two-level models, with day-level observations nested within individuals. Random intercept models are used. $N = 129$ at the individual level. Average number of day-level observations per individual is 3.94. Experimental condition (Level-2 predictor): 1 = mindfulness condition; 0 = waitlist control condition.

* $p < .05$; ** $p < .01$; ** $p < .001$.

Table 3

Study 1b: Means, Standard Deviations, and Correlations

Variable	Mean	s.d.	1	2
1. Experimental condition	0.59	0.50		
2. Manipulation check	2.85	0.93	.22	
3. Prosocial behavior	4.58	1.22	.22	.16

Table 4

Study 2a: Means, Standard Deviations, and Correlations

Variable	Mean	s.d.	1	2
1. Experimental condition	0.47	0.50		
2. Manipulation check	3.17	0.93	.20	
3. Prosocial behavior	425.05	274.21	.20	.06

Table 5

Study 2b: Means, Standard Deviations, and Correlations

Variable	Mean	s.d.	1	2
1. Experimental condition	0.52	0.50		
2. Manipulation check	3.20	1.11	.34	
3. Prosocial behavior	31.79	20.74	.28	.27

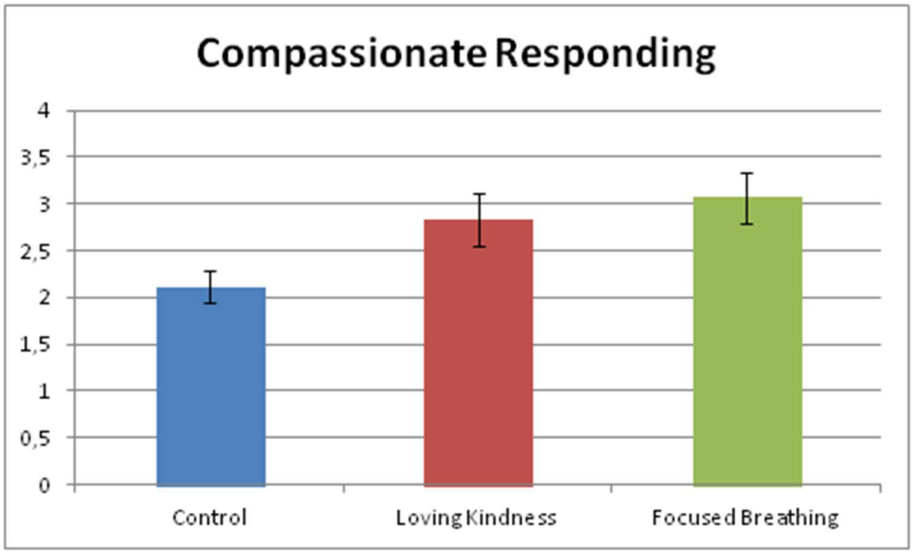
Table 6

Study 3: Means, Standard Deviations, and Correlations

Variable	Mean	s.d.	1	2	3	4	5
1. Experimental condition	2.03	.80					
2. Manipulation check	3.78	.65	.28				
3. Positive emotions	2.66	.67	.48	.48			
4. Empathy	3.96	1.93	.23	.17	.15		
5. Perspective taking	5.06	1.45	.19	.37	.18	.51	
6. Prosocial behavior	2.92	1.61	.15	.06	.07	.4	.3

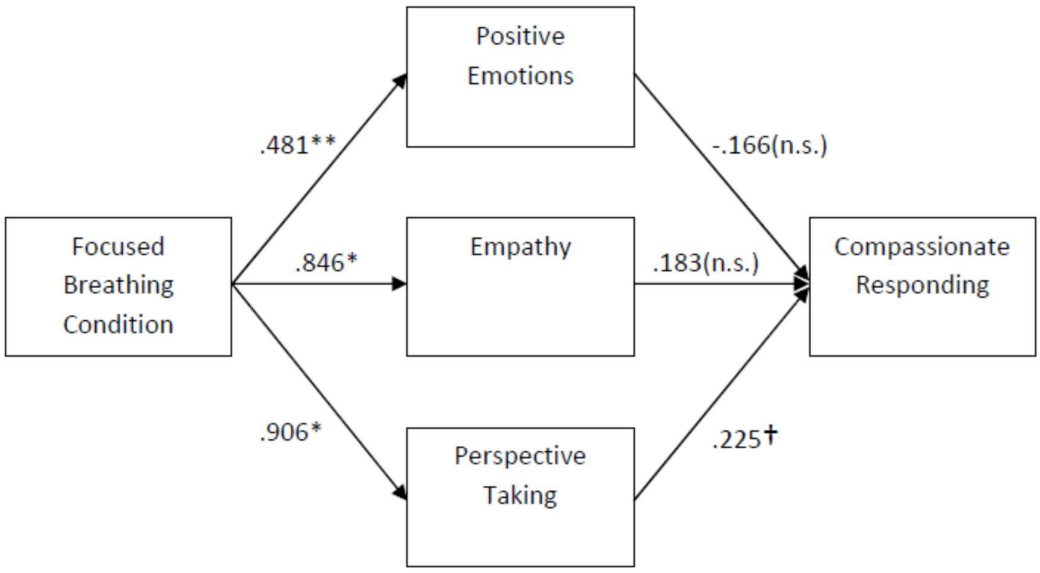
Note. Experimental condition was coded 1 = Control condition, 2 = Focused breathing meditation condition, 3 = Loving kindness meditation condition.

Figure 1.



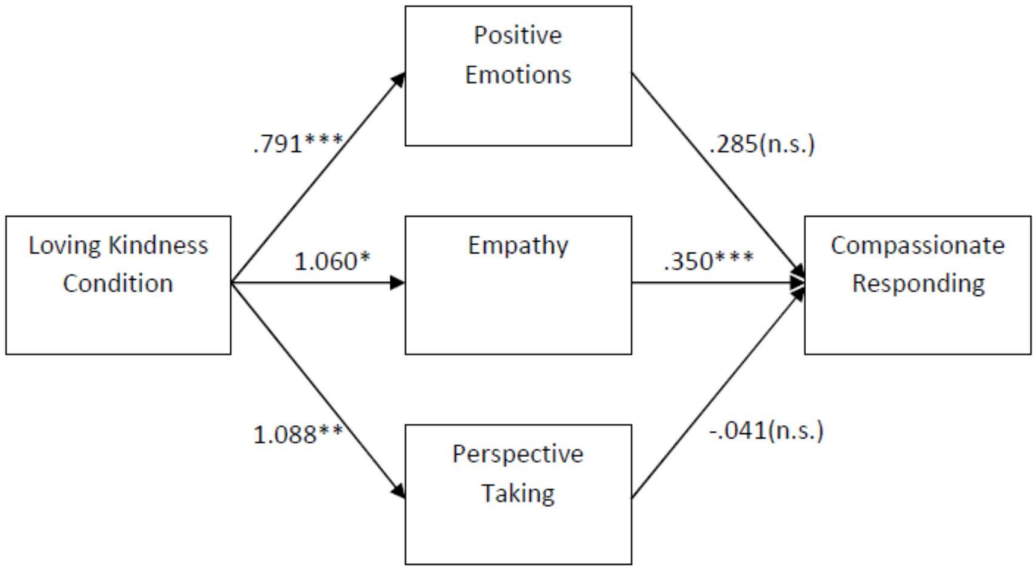
Compassionate responding as a function of focused breathing meditation, loving kindness meditation, or control condition in Study 3. Error bars indicate standard errors.

Figure 2.



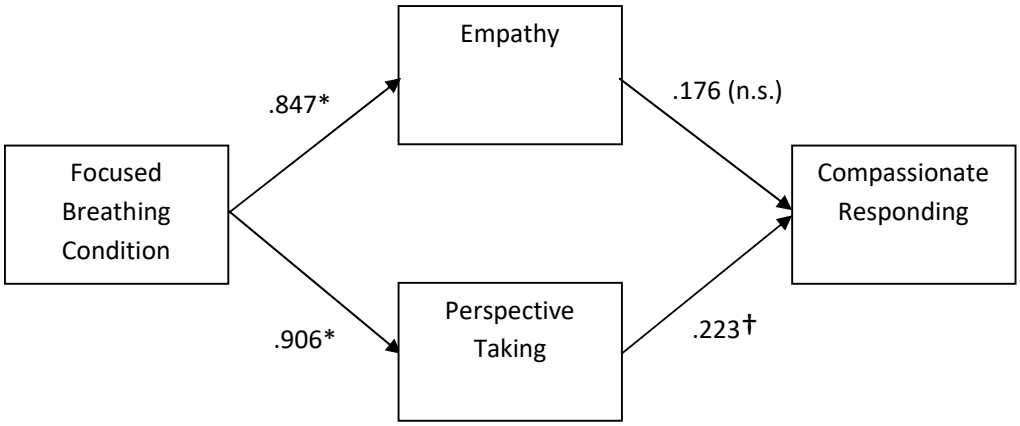
Perspective taking mediates the effect of focused breathing meditation condition on compassionate responding in a simultaneous test including positive emotions and empathy as potential mediators in Study 3.

Figure 3.



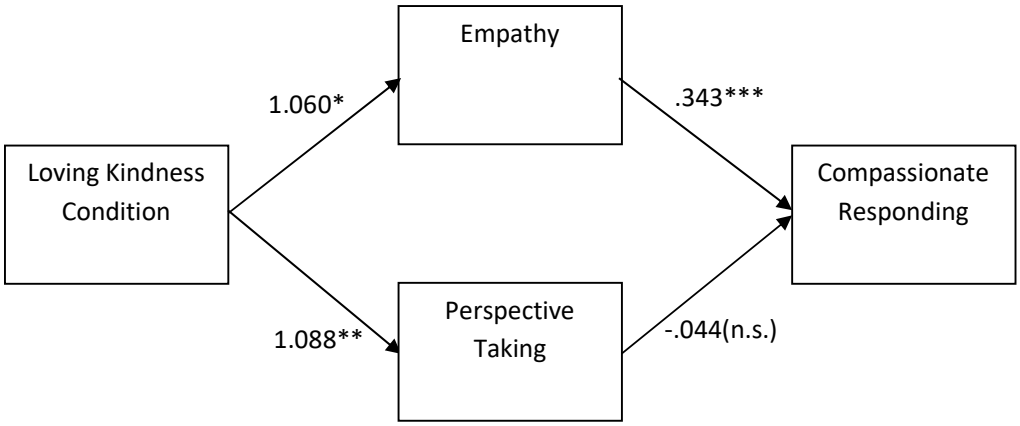
Empathy mediates the effect of loving kindness meditation condition on compassionate responding in a simultaneous test including positive emotions and perspective taking as potential mediators in Study 3.

Figure 4.



Perspective taking and empathy mediate the effect of focused breathing meditation condition on compassionate responding in a simultaneous test in Study 3.

Figure 5.



Empathy mediates the effect of loving kindness meditation condition on compassionate responding in a simultaneous test including perspective taking as another potential mediator in Study 3.

Supplemental Online Materials

This file contains the following materials:

- Study 2a Prosocial Behavior Task
- Study 3 Induction Scripts and Recording
- Study 3 Compassionate Responding Dependent Variable Vignette and Sample Responses

Study 2a Prosocial Behavior Task

Imagine that you were to **win a $1000 bonus** for participating in this study**.** We would like to ask you to make a decision now on how you want to make use of this bonus if you were to win it. Please allocate the $1000 to the following accounts:

- **An account that you will receive right away (Personal Account)**

- **An account that another employee at your company who is facing financial difficulties will receive right away (Donation Account)**

In the space provided below, please fill out the amount that you would like to allocate to each account. The sum of these numbers should not exceed $1000.

○ Personal Account _____

○ Donation Account _____

Study 3 Induction Scripts and Recording

Please click the links below to access the scripts and audio files.

Focused breathing meditation audio:
https://drive.google.com/file/d/0B74Pa4abrzSyeFlEREhRazk0MXc/view?usp=sharing

Focused breathing meditation script:
https://docs.google.com/document/d/1BaUHul3GLF6bx1SuRPuFUiQ60SGmi3MLhM94FClZL7A/edit?usp=sharing

Loving kindness meditation audio:
https://drive.google.com/file/d/0B74Pa4abrzSyTG1JV05nb3g2ZUU/view?usp=sharing

Loving kindness meditation script:
https://docs.google.com/document/d/1vfraVMSkPG9ZNHR0lV4wLo3XxnNFycmv9rAIe-SLG_4/edit?usp=sharing

New York Times control audio:
https://drive.google.com/file/d/0B74Pa4abrzSyNjhwZ2V5cll4WTQ/view?usp=sharing

New York Times script:
https://drive.google.com/file/d/0B74Pa4abrzSyVWxrVWRBT2hFdm8/view?usp=sharing

Study 3 Compassionate Responding Dependent Variable Vignette and Sample Responses

Imagine you are the manager of a large company and need to address this issue at work today.

You are the manager of a product development team, and Sarah, a team member, is not pulling her weight on the team. She is highly competent, but sometimes fails to show up at early team meetings because she does not have a car. This has been happening for several months, and you have given her multiple warnings and have attempted to coach her to act more professionally. However, the behavior has not changed. You now need to tell her that her poor performance is going to be permanently documented on her official records and that you are not recommending her for her desired promotion to senior associate. You need to deliver this news tomorrow in person. Please write down a script of what you plan to say during the meeting.

Examples of Responses:

High Compassionate Responding: *You have been a great asset to the company and are very well liked among the employees. However as of late, you have been showing poorer performance and have been given multiple warnings about your attitude to act more professional. I am sorry to say that this may reflect on your official records and will look bad on you when you come up for the senior associate promotion. If you need any help with your job, please let me know. We all know that you can succeed and that you are a great worker. You just need to show the company that.*

Moderate Compassionate Responding: *Sarah your lateness has come to a point were [sic] I feel it reflex's my ability to manage operations fairly for all employee's [sic] not just you. / Put yourself in my shoes as I appear to treat you differently then[sic] other employee's [sic]. You are setting a bad example and it effects [sic] you, me and all co-workers. / I am taking steps to document your tardiness because it is not fair to your co-workers or to the company you work for.*

Low Compassionate Responding: *Sarah, as you know, your performance has not been up to par lately. You have failed to show up at team meetings on many occasions, and you have received warning regarding this behavior. Yet it continues. Since the behavior has not been corrected, I have no choice but to document the facts in your permanent record. Also, since you cannot follow even the most basic rules, I unfortunately will not be recommending you for promotion at this time.*

Reference:

Molinsky, A. L., Grant, A. M., & Margolis, J. D. (2012). The bedside manner of homo economicus: How and why priming an economic schema reduces compassion. *Organizational Behavior and Human Decision Processes*, *119*(1), 27-37.