

“In normal life, we hardly realize how much more we receive than we give, and life cannot be rich without such gratitude.” ~ Dietrich Bonhoeffer

Gratitude – “a feeling of appreciation in response to an experience that is beneficial to, but not attributable to, the self” (Fehr et al., 2017, p. 363) – plays an integral role in promoting people’s helping behavior, both inside (Ford et al., 2018; Spence et al., 2014) and outside of the workplace (Bartlett & DeSteno, 2006; Ma et al., 2017; McCullough et al., 2008). In his in-depth discourse on gratitude, Adam Smith described it as one of the most basic social emotions and a core motivator of prosocial acts, referring to gratitude as “the sentiment which most immediately prompts us to reward” (Smith, 1759/1976, p. 68). Because gratitude reflects a powerful, positive force that drives employee helping behavior, it is increasingly needed in modern organizations that depend on teamwork and collaboration to achieve organizational goals (Bono et al., 2004).

Yet, gratitude is difficult for employers to cultivate and for employees to experience (Fehr et al., 2017). Indeed, the rapid pace and inherent complexities of today’s modern workplace can divert people’s attention at work (Jett & George, 2003), such that they may be less likely to fully attend to and appreciate the benefits they receive. These benefits may include opportunities for career development, the ability to adopt a flexible work schedule, or simply the helping hand of a coworker who donates their time to assist with meeting a deadline. Despite these observations, the role of attention and awareness in stimulating employees’ experiences of gratitude remains largely overlooked in the extant literature. This omission is surprising when one considers existing theory suggesting that the emergence of gratitude requires (a) individuals’ awareness of the benefits they receive and (b) their recognition of the costs incurred by benefactors to provide such benefits (e.g., Fehr et al., 2017; McCullough et al., 2001; Okamoto & Robinson, 1997; Tesser et al., 1968; Tsang, 2006; Wood et al., 2008). Attentional processes appear to be at the very heart of why employees

feel gratitude at work and, hence, may also play an indirect role in influencing employee helping behavior. Thus, we maintain that an appropriately specified model of workplace gratitude should account for the role of attentional processes in promoting gratitude and its outcomes at work.

Across four studies, we take a step in this direction by developing an elaborated process model that illuminates the psychological pathways through which one notable form of attention, mindfulness, stimulates gratitude and, in turn, greater helping behavior at work. *Mindfulness* – “receptive attention to and awareness of present events and experiences” (Brown et al., 2007, p. 212) – may be especially likely to promote experiences of gratitude given it involves the core process of “decoupling,” whereby one is able to mentally “step back” from and vividly observe present moment external events (e.g., sights, sounds, social interactions) and internal states (e.g., thoughts, emotions, sensations) from a metacognitive perspective (Glomb et al., 2011; Good et al., 2016). In doing so, mindful attention eases self-identification with such experiences – what Brown et al. (2008) referred to as “ego quieting” – thereby affording a more objective stance on them. We theorize that the decoupling process inherent to mindfulness is particularly relevant to fostering gratitude because it facilitates the two conditions we mentioned earlier as central to the emergence of gratitude (i.e., awareness of benefits in one’s environment and recognition of cost).

First, we propose that mindful decoupling prompts employees’ awareness of benefits at work in part by increasing their generalized *positive affect* (PA). By preventing employees from becoming overly self-immersed in daily work demands, mindfulness may promote the generation of PA, thereby “tuning” their attention to gratitude-inducing aspects of their work experiences. In addition to this “benefit-finding” hypothesis, we further propose that mindfulness may foster gratitude through a general “spillover” effect of PA. Second, we suggest that mindful decoupling may also enhance employees’ recognition of the costs incurred by benefactors to provide them

benefits by increasing their *perspective-taking*. By providing a mental shift away from self-focused modes of information processing, mindfulness may prevent employees' perceptions of their work experiences from being overly controlled by the automatic tendency to adopt a self-centric perspective, thereby increasing their capacity to "step into the shoes" of benefactors and better appraise the costs they incur to provide benefits. In short, we propose a theoretical model in which positive affect and perspective-taking represent dual pathways linking mindfulness to greater employee gratitude. While positive affect represents a "benefit-finding" mechanism, perspective-taking reflects a "cost-appraisal" mechanism in our model. Building on evidence that gratitude encourages prosocial behavior (Bartlett & DeSteno, 2006, Ma et al., 2017) and that it serves the core function of nurturing strong social bonds (Algoe et al., 2008; Algoe, 2012), we further theorize that gratitude promotes *prosocial motivation* (i.e., "the desire to expend effort to benefit other people," Grant, 2008, p. 49), in turn contributing to greater employee helping behavior. To test our model (Figure 1), we conducted two experiments, a semi-weekly, multi-source diary study, as well as a ten-day, experience sampling investigation.

We make several contributions to the literature. First, we contribute to the workplace gratitude literature by offering a guiding theoretical perspective that explains why mindfulness may serve as a necessary mindset for employees to feel gratitude at work. Although prior research on gratitude in organizations has primarily focused on the links between perceived benefits, such as organizational support (Ford et al., 2018), developmental feedback (Fehr et al., 2017), and servant leadership (Sun et al., 2019), and employees' experiences of gratitude, the fundamental role that attention and awareness may play in stimulating these processes remains overlooked. This is despite McCullough's (2002) claim that, "one of the key psychological processes governing gratitude may be a mindful awareness...grateful people attend to the benefits of their lives, and are mindful that these benefits did not come out of nowhere" (p. 303). We theorize that mindful

attention plays a key role in employees' capacity to direct attention to benefits and to be aware of their costs to benefactors and, therefore, is an important precondition for gratitude's emergence. In doing so, we contribute valuable insights to the extant literature by describing why mindfulness represents an important psychological process underlying the experience of gratitude at work.

Second, we contribute to the workplace mindfulness literature by advancing knowledge regarding the psychological mechanisms through which mindful attention is related to employee helping behavior. To date, research has primarily focused on why mindfulness decreases various forms of counterproductive work behavior, including aggression, retaliation, and organizational deviance (Kelley & Lambert, 2012; Krishnakumar & Robinson, 2015; Liang et al., 2016; Long & Christian, 2015; see Hafenbrack et al., 2020, for an exception). The larger scientific literature on mindfulness also emphasizes the downregulation of negative internal states (e.g., rumination, negative affect) and consequent maladaptive behaviors (e.g., Borders et al., 2010; Heppner et al., 2008; Peters et al., 2015). While important, this largely eliminative account of how mindfulness functions is incomplete given it overemphasizes the extinction of maladaptive response patterns and disengagement from negative mental states, rather than the facilitation of adaptive behavior and positive psychological states (Garland et al., 2015). Thus, we expand the scope of workplace mindfulness research by proposing a model that illuminates why mindfulness activates positive mental states, unlocking employees' prosocial motivation and driving them to help more at work.

Third, we contribute to research on the antecedents of employee prosocial behavior by answering calls for greater attention to the mechanisms through which discrete, "other-oriented" emotions (e.g., gratitude, empathy, elevation) prompt various forms of prosocial behavior (Bolino & Grant, 2016). Accumulated evidence within the broader psychological literature (see Ma et al., 2017, for a meta-analysis), as well as two recent studies of gratitude at work (Ford et al., 2018; Spence et al., 2014), support the positive link between gratitude and prosocial behavior. However,

previous research offers little insight into the motivational states that explain this relation (Tsang & Martin, 2019). Although gratitude has been described as a self-transcendent, other-oriented emotion that serves to nurture social bonds (Algoe & Haidt, 2009; Steller et al., 2018), little is known regarding the motivations underlying this relationally-oriented explanation of gratitude's function in social life. Exploring this question is important given much of the gratitude literature has used tit-for-tat, exchange-based explanations for gratitude's prosocial effects (e.g., Bartlett & DeSteno, 2006; McCullough et al., 2001), thus overlooking its capacity to elicit more promotive motivational states marked by a desire to enhance the wellbeing of others at work. We contribute important insight to the literature by examining whether gratitude's theorized action tendencies toward building and nurturing social bonds find their expression in greater prosocial motivation.

Theoretical Background

Gratitude

Throughout most of human history and across nearly all cultures, gratitude has been viewed as a basic and desirable aspect of social life (Emmons & McCullough 2003; Emmons & Shelton, 2002). Indeed, gratitude holds a prominent place in Buddhist, Christian, Hindu, Jewish, and Muslim thought. Moreover, centuries prior to Adam Smith's psychological examination of gratitude in *The Theory of Moral Sentiments* (1759/1976), classical, Roman philosophers, such as Cicero and Seneca, expounded the virtuous nature of gratitude and the vileness of ingratitude. While Seneca ardently condemned ingratitude as the worst and most pervasive of all the vices – a vice from which all other vices originate (Motto & Clark, 1994) – Cicero (1851) went so far as to suggest, “Gratitude is not only the greatest of virtues, but the parent of all the others” (p. 139).

Derived from the Latin root, *gratia*, meaning “grace” or “thanks,” gratitude represents a complex cognitive-affective state that typically arises from the recognition of a positive personal outcome, not necessarily deserved or earned, coupled with a judgment that the outcome originated

from an external source (Emmons & McCullough, 2003). In this sense, gratitude is, at once, a positive emotion – “the core of which is pleasant feelings about [a] benefit received” – combined with a cognitive appraisal that the benefit is not attributable to the self (Emmons & McCullough, 2004, p. 5; Emmons & Shelton, 2002; Tsang, 2006; Weiner, 1985). Inherent to this definition is that the object of gratitude is other-oriented, including human and nonhuman sources (e.g., God, nature). In the workplace, gratitude can emerge in response to benefits perceived to originate from other employees (e.g., task and emotional support, career coaching) or from the organization itself (e.g., flexible work arrangements, career development opportunities, paid parental leave) (Bono et al., 2004). As noted earlier, scholars posit that gratitude’s emergence stems in part from (a) an individual’s awareness of benefits received and (b) their recognition of the costs that benefactors incur to provide benefits (Fehr et al., 2017; McCullough et al., 2001; Tesser et al., 1968). Building on these ideas, below we suggest that mindfulness provides the attentional capacities needed to satisfy these requirements, creating fertile ground for employees to feel more grateful at work.

Mindfulness → Gratitude: PA as a Benefit-Finding and General Spillover Mechanism

As noted earlier, we propose two related reasons why mindfulness should promote greater experiences of gratitude at work via PA. First, we posit a benefit-finding hypothesis, whereby PA reflects a mechanism through which mindfulness prompts greater awareness of gratitude-inducing aspects of employees’ work experiences. Second, we propose a general spillover hypothesis, whereby mindfulness stimulates gratitude through an emotional spillover effect of PA. We present these arguments below.

In the complex milieu that defines today’s fast-paced, performance-driven workplace, it can be difficult for employees to feel gratitude. This difficulty arises because many demanding features of everyday work life – from responding to an inbox full of emails to meeting tight project deadlines to coping with interpersonal conflicts with others – tend to narrow people’s attention

and direct their information processing away from positive aspects of their work experiences (cf., Chajut & Algom, 2003; Easterbrook, 1959; Rozin & Royzman, 2001; Zautra et al., 2005). More specifically, employees often need to process information quickly and efficiently at work, causing their attention to automatically narrow, such that they may become overly fixated on and absorbed in immediate work demands (Davis et al., 2004; Reich et al., 2003; Zautra et al., 2001, 2005).

However, mindfulness may serve to disrupt this automatic process, increasing employees' experiences of state *positive affect* (PA) and, in turn, broadening their information processing to include more gratitude-inducing aspects of their work experiences. As mentioned earlier, mindful decoupling allows employees to mentally "separate" from and observe present-moment events more objectively, without becoming personally immersed in such experiences (Glomb et al., 2011; Hülsheger et al., 2013). As such, although work demands may continue to exist, when occupying this detached state of metacognitive awareness, employees are able to consciously attend to and nonjudgmentally accept these present-moment experiences, "freeing" them from maladaptive, automatic response patterns (Shapiro et al., 2006). In doing so, mindful decoupling is believed to actively promote the generation and maintenance of PA (Garland et al., 2015; Glomb et al., 2011; Good et al., 2016). Indeed, mindfulness is implicated in the overall valence, or tone, of people's emotional experiences; when a person is in a mindful state, they *feel* better because the overall ratio of positive to negative emotions they experience increases, even in difficult situations (Glomb et al., 2011; Good et al., 2016). Moreover, in contrast to some modern characterizations that depict mindfulness as engendering an "austere, affectively neutral state of bare attention," it has been traditionally described as a vehicle for generating and sustaining positive mental states (Garland et al., 2015, p. 299). Indeed, a number of studies link mindfulness or mindfulness training to self-reported PA (e.g., Brown & Ryan, 2003; Jha et al., 2010; Jislin-Goldberg et al., 2012), as well as enhanced left-sided anterior activation in the brain linked to PA (e.g., Davidson et al., 2000, 2003).

In turn, because PA functions as an information filter through which people attend to and process information about their environment (Zautra et al., 2000), employees' heightened levels of PA should foster greater attentional focus to positive, gratitude-inducing features of their work experiences. In fact, research suggests that PA broadens individuals' scope of attention, such that they do not "miss the forest for the trees" (Fredrickson, 2001; Fredrickson & Branigan, 2005).

Building on these ideas, some argue that the heightened levels of PA evoked by mindfulness may provide a signal that "tunes" people's attentional systems to stimuli consistent with the induced emotional state (Garland et al., 2015). Here, we theorize that as employees become more mindful at work and, in turn, experience greater PA, they are more likely to recognize the benefits present in their daily work lives. As an example, when a mindful employee is able to take a personal day due to their organization's flextime initiative, they may be more likely to recognize and appreciate this time off as a valued benefit provided by their employer, as opposed to taking it for granted. In addition, they may also be more likely to attend to other positive aspects of their everyday work lives – from a coworker's simple gesture of goodwill (e.g., career advice, emotional support) to their organization's available health benefits when emergencies arise. Taken together, we propose that mindfulness spurs gratitude and that PA is a "benefit-finding" mechanism underlying this link.

Of note, in addition to this "benefit-finding" argument, a general "spillover" hypothesis might also be proposed, whereby mindfulness promotes gratitude via a spillover effect of PA into this more specific emotional experience. Consistent with our earlier discussion, mindfulness is likely to engender a positive shift in the overall valence of employees' emotional experiences at work (Good et al., 2016). In turn, because gratitude also reflects a positively valenced, albeit more specific, emotional state (Wood et al., 2010), greater levels of PA may alter the hedonic balance of employees' daily emotional lives in ways that give rise to more specific feelings of gratitude at

work. In the next section, we further develop our framework by proposing that perspective-taking represents a dual mediator that also explains the relationship between mindfulness and gratitude.

Mindfulness → Gratitude: Perspective-Taking as a Cost-Appraisal Mechanism

People's capacity to experience gratitude at work may be further complicated by their tendency to adopt a self-centric lens on the benefits they receive, such that they are unable to adequately consider and appreciate the costs incurred to provide such benefits (Zhang & Epley, 2009). Specifically, previous research suggests that individuals tend to view their environments through a self-oriented frame of reference given their own perspective is typically automatic and easily accessible, whereas reasoning from an external vantage point is usually deliberate and more difficult (Epley et al. 2004, 2006). In other words, one's own perspective tends to act as a default source of attention that disproportionately influences information processing and, therefore, must be consciously corrected or “undone” when necessary. Unfortunately, these correction processes are notoriously inadequate (Epley & Gilovich, 2004; Gilbert, 2002; Tversky & Kahneman, 1974), causing individuals to fall victim to judgments that are egocentrically biased (Epley et al., 2006). Related to the present study, a self-oriented lens decreases sensitivity to cost-relevant information related to benefits received; that is, people often fail to take the viewpoint of their benefactors and therefore are less likely to be aware of the costs of providing such benefits (Zhang & Epley, 2009).

However, mindfulness may serve to “undo” or “correct” this tendency to automatically view the world solely through one's own perspective, allowing employees to engage in greater perspective-taking (i.e., the cognitive capacity to spontaneously adopt or consider the viewpoint of others, Davis, 1983; Galinsky et al., 2008) and, therefore, more accurately infer the costs of benefits they receive. As noted earlier, mindful decoupling fosters a shift away from self-focused, automatic modes of information processing that control perception and cognition (Glomb et al., 2011). This fundamental shift in perspective – from a self-involved “narrative self” (Williams,

2010) to a detached “observing self” (Deikman, 1982) – should prevent people’s perceptions of their work environment from being unduly regulated by the automatic tendency to focus on their own perspective. As Pandey et al. (2018) note, mindfulness “dissipates the boundaries that define the self and the other,” such that one is able to transcend a “restricted identity of an egocentric isolated self toward a self that co-arises with the larger social environment” (p. 59). In effect, this unique vantage point afforded by mindfulness creates the psychological “space” needed to adopt an other-oriented lens on experience. Consistent with this claim, prior research supports the link between mindfulness and greater perspective-taking (e.g., Beitel et al., 2005; Birnie et al., 2010).

In turn, as employees increasingly turn their attention outward and consider the point of view of others, this shift in perspective is likely to create fertile ground for gratitude’s emergence. As alluded to earlier, gratitude can be described as a self-transcendent, “other-praising” emotion because it arises out of other-oriented appraisals that involve a shift in attention away from the self and toward the concerns of others (Algoe & Haidt, 2009; Stellar et al., 2018). As such, since the appraisal of costs to benefactors (e.g., effort, time, money, inconvenience) is vital to attributing “goodness to the giver” and thus to experiencing gratitude (Watkins, 2013), perspective-taking is likely at the heart of these cost appraisals. That is, the capacity to spontaneously “put oneself in the shoes of others” may supply the mechanism for employees to better intuit the costs incurred by benefactors, contributing to their feelings of gratitude. Supporting this claim, prior studies link perspective-taking to higher levels of gratitude (e.g., Breen et al., 2010; McCullough et al., 2002).

In sum, mindfulness may provide precisely the shift in perspective – away from the self and toward benefactors (i.e., coworkers, supervisors, the organization) – that allows employees to more fully consider the costs of benefits they receive at work. As such, while positive affect may function as a “benefit-finding” mechanism that links mindfulness to heightened experiences of gratitude at work, we suggest that perspective-taking represents a “cost-appraisal” mechanism

underlying this relationship. Based on the above arguments, we propose the following predictions:

Hypothesis 1a: Mindfulness is positively related to gratitude at work.

Hypothesis 1b: Positive affect mediates the positive relation between mindfulness and gratitude at work.

Hypothesis 1c: Perspective-taking mediates the positive relation between mindfulness and gratitude at work.

Gratitude, Prosocial Motivation, and Helping Behavior at Work

As noted earlier, scholars have long argued that gratitude encourages prosocial behavior, with a number of studies supporting this claim (see Ma et al., 2017, for a meta-analysis). Building on the influential writings of 20th century theorists (e.g., Gouldner, 1960; Simmel, 1950; Trivers, 1971), contemporary scholars suggest gratitude may have an adaptive design from human beings' evolutionary past; that is, gratitude serves an important relational function in that it helps to build and maintain social bonds with others (e.g., Algoe et al., 2008; Algoe, 2012; Algoe et al., 2013).

In alignment with this idea and consistent with socio-functional models of emotion (e.g., Frijda, 1986; Keltner & Haidt, 1999), when people feel grateful in response to benefits that they perceive as originating from outside of the self, they will behave prosocially toward benefactors (i.e., reciprocal altruism) and toward other people (i.e., upstream reciprocity or a "pay it forward" response; McCullough et al., 2008; Nowak & Roch, 2006). Given these diffuse prosocial effects, it is argued that gratitude's motivational core is not simply based on the norm of reciprocity (i.e., the norm that dictates that one should repay others for benefits received); rather, gratitude is also likely to foster an increased connection to and concern for others (Algoe, 2012; Fehr et al., 2017; Tsang & Martin, 2019). If this is true, then gratitude should contribute to a "psychological state in which [employees] are focused on the goal of benefiting other people" (Grant & Berry, 2011,

p. 78). Expanding on this idea, we maintain that gratitude's action tendencies toward building and strengthening interpersonal relationships with others will be expressed via heightened levels of employee *prosocial motivation* – which, at the state-level, represents a “momentary focus on the goal of protecting and promoting the welfare of other people” (Batson, 1987; Grant, 2008, p. 49).

In turn, prosocial motivation has been shown to foster employee *helping behavior* (Grant & Berg, 2011; Rioux & Penner, 2001; Zhu & Akhtar, 2014) – a facet of organizational citizenship behavior which involves “voluntarily helping others with, or preventing the occurrence of, work-related problems” (Podsakoff et al., 2000, p. 516). Indeed, prosocial motivation prompts employees to give back more freely and continuously to others at work, regardless of whether they receive any benefits in return (Aydinli et al., 2014). In the absence of prosocial motivation, employees may view helping behavior through a more rational, self-focused lens (i.e., tit-for-tat), as opposed to a more promotive lens marked by a genuine concern for the welfare of others (Grant & Berg, 2011). Consistent with these ideas, research shows that prosocial motives are more predictive of helping behavior compared to other helping-related motivations (e.g., organizational concern, impression management; Rioux & Penner, 2001). Thus, we argue that gratitude prompts employees to take active steps to create a “benefit-rich” workplace via their engagement in greater helping behavior and that prosocial motivation explains this relation. We predict the following:

Hypothesis 2a: Gratitude is positively related to helping behavior at work.

Hypothesis 2b: Prosocial motivation mediates the positive relation between gratitude and helping behavior at work.

These arguments can be integrated with our earlier theorizing to produce an elaborated process model that accounts for the psychological pathways through which mindfulness is linked to higher levels of gratitude and, in turn, greater helping behavior at work. Specifically, we argue

that mindfulness, by increasing employees' positive affect and perspective-taking, tends to spur their feelings of gratitude. In turn, gratitude is likely to trigger employees' prosocial motivation, thereby increasing helping behavior. As such, we propose the following integrative hypothesis:

Hypothesis 3: The indirect effect of mindfulness on helping behavior will be serially mediated, such that the relation between mindfulness and gratitude will be mediated by positive affect and perspective-taking, while the relation between gratitude and helping behavior will be mediated by prosocial motivation.

Overview of Studies

To examine our proposed model, we conducted four studies, including two experimental investigations and two within-subject, field surveys. In Study 1, we tested a core assumption of our model that mindfulness fosters people's recognition of benefits that exist around them. To do so, we conducted an experiment in which participants were randomly assigned to a roughly 16-minute mindfulness intervention or to an inactive control group. They were then asked to report the number of things in their lives that they felt grateful for. In Study 2, we sought to establish the basic rationale that mindfulness stimulates the emergence of gratitude, thereby triggering a desire to help other people. To that end, we conducted another experiment utilizing a different, 8-minute mindfulness intervention. We subsequently asked participants to report their level of state gratitude and to indicate the degree to which they would be willing to help us with a separate, unpaid task.

In Studies 3 and 4, we used within-subject, field surveys given our theoretical focus on state mindfulness and its within-person links with our mediator and outcome variables at work. In these studies, we also sought to build on our earlier findings by examining their generalizability to the field. In Study 3, we collected semi-weekly, diary data on employees' state mindfulness, state gratitude, and prosocial motivation, as well as bi-weekly, direct coworker reports of their helping behavior at work. In Study 4, we then tested our full-hypothesized model by conducting

a ten-day experience sampling study involving four measurement occasions each workday. Taken as a whole, we present four complementary studies that serve to provide converging empirical evidence for the internal and external validity of our proposed theoretical model (Colquitt, 2008). It should be noted that all studies received institutional review board approval (Villanova University: HS-15-100; Mindfulness Study; George Washington University: NCR202265; Listening and Following Directions; University of Minnesota: Employees' Daily Work Experiences; University of Minnesota: Online Wellness; Villanova University: IRB-FY2021-111 Mindfulness in the workplace).

Study 1

Sample and procedure

We collected survey data from 210 individuals recruited through Amazon'sTM Mechanical Turk (MTurk). To qualify for the study, all participants needed to be at least eighteen years of age, be currently employed, hold a "Master" designation on MTurk, and confirm that they were able to listen to a roughly 16-minute audio file on their electronic device. Participants were also required to confirm that they would complete the study in a quiet location, free from any distractions. After consenting to the study and providing demographic data, participants were randomly assigned in the survey platform to either a mindfulness meditation condition or an inactive control condition. Next, they completed the manipulation check measure, then answered an open-ended question that asked them to list all the things in life that they were currently grateful for (i.e., "blessings"). In exchange for their time and effort in completing the study, participants were compensated with \$5.

Consistent with existing best practices for data screening, we first examined the data for evidence of insufficient attention (i.e., "careless" responding) (cf., Huang et al., 2012; Meade & Craig, 2012; Thomas & Clifford, 2017). First, we examined responses to a single question at the end of the survey [i.e., "In all honesty, do you believe that we should use the responses you have

provided in this survey (i.e., you have answered the survey questions as openly and as accurately as possible)?]. Second, we examined the amount of time participants in the mindfulness condition spent listening to the audio file. Those who answered “no” to the question regarding data quality or who clicked through to the survey without listening to the full 16-minute, 16-second audio file were removed from the analysis (Final $n = 109$). The final sample was, on average, 38.99 years of age ($SD = 9.76$), possessed 16.51 years of total work experience ($SD = 8.30$), and was mostly White (68.2%). With respect to gender identity, participants were 53.2% male and 46.8% female.

Experimental Manipulation

In the mindfulness group, participants listened to a roughly 16-minute audio recording of a mindfulness meditation exercise delivered by a professionally trained, female mindfulness coach, who was recruited specifically for this study. During the exercise, participants were asked to focus on their breathing and to connect with any present-moment experiences in a nonjudgmental way (e.g., thoughts, emotions, sensations). Consistent with the overwhelming majority of studies on mindfulness interventions (see Eby et al., 2019), we employed an inactive control group in which participants did not listen to any audio but rather moved directly to the survey portion of the study.

Measures

Mindfulness manipulation check. In both conditions, participants rated their level of state mindfulness using a shortened five-item version of the mindful attention and awareness scale (MAAS; Brown & Ryan, 2003), as utilized in Hülsheger et al. (2013). Sample items are: “Right now, I’m finding myself preoccupied with the future or the past” and “Right now, I’m finding it difficult to stay focused on what’s happening in the present” ($\alpha = .95$). Each MAAS item is reverse scored. All ratings were on a 1 (*Strongly disagree*) to 7 (*Strongly agree*) scale.

Blessings. Participants were then asked to list as many things in their lives that they felt grateful for at that moment. More precisely, we asked them to read and respond to the following

prompt adapted from prior studies (Emmons & McCullough, 2003; Southwell & Gould, 2017):

There are many things in our lives, both large and small, that we might feel grateful for.

These things might include supportive relationships, sacrifices or contributions that

others have made for you, facts about your life, such as your advantages and

opportunities, or even gratitude for life itself and the world we live in. Take some time

and list below all the things in your life that you feel grateful or thankful for right now.

The number of blessings for each participant was independently examined by two of the authors, and each rater assigned scores based on the number of blessings reported. The intraclass correlation indicated strong consistency in their ratings ($ICC = .99$, 95% CI [.98, .99], $F(108) = 84.57$, $p < .001$). Next, the raters established consensus on any differences between their ratings.

Results

Before analyzing the data, the mindfulness and control conditions were coded as “1” and “0”, respectively. An independent-samples t -test showed that those in the mindfulness condition reported significantly higher levels of state mindfulness ($M = 5.96$, $SD = 1.13$) compared to those in the control group ($M = 5.33$, $SD = 1.79$), $t(107) = 2.17$, $p < .05$, $d = .42$), providing support for the validity of the mindfulness induction. Next, we performed an independent samples t -test on the blessings variable. The results showed that participants who were assigned to the mindfulness condition reported, on average, 6.94 blessings ($SD = 3.72$), while those assigned to the control condition reported an average of 3.84 blessings ($SD = 3.12$), $t(107) = 4.73$, $p < .0001$, $d = .90$. In addition, a frequency analysis revealed that while only seven participants in the control condition reported more than six blessings (12.3% of the 57 total participants in this group), twenty-seven participants in the mindfulness condition did so (51.9% of the 52 total participants in this group).

In the mindfulness condition, participants listed a wide range of things in their lives that they were grateful for – including aspects of their personal (e.g., family, friends, pets, a safe place

to live, food, electricity, material possessions, faith) and professional lives (e.g., good pay, career success, stable employment, opportunities to work remotely, great coworkers), community and nation (e.g., a peaceful neighborhood, volunteers who devote their time to help others, politicians who display strong moral values and lead with empathy, being a citizen of a country that affords people opportunity), daily experiences (e.g., being able to breathe and see, learning or making a novel discovery, experiencing a moment of calm, simply being alive), interactions with nature (e.g., fresh air, clean water, changes in the seasons, plants, gardens), and other advantages in life (e.g., intelligence, curiosity, hope and optimism, a supportive upbringing, health and wellbeing).

Discussion

Study 1 provides support for a core assumption of our model; that is, that mindfulness facilitates people's recognition of more gratitude-inducing benefits (i.e., "blessings") that exist around them. Specifically, participants assigned to the mindfulness group reported 57.5% more blessings in their lives compared to those assigned to the inactive control group. In Study 2, we build on these results by testing the basic argument that mindfulness promotes people's feelings of gratitude and, in turn, their willingness to help others. As in Study 1, we use an experimental design, but use a different mindfulness intervention to bolster the internal validity of our results.

Study 2

Sample and procedure

We collected survey data from 189 individuals recruited through MTurk using the same inclusion criteria from Study 1. Again, participants were required to confirm that they would be in a quiet space while completing the study. After consenting to the study and providing demographic data, participants were randomly assigned in the survey to a mindfulness intervention or an inactive control condition. Next, they completed the manipulation check measure, followed by measures of the focal variables. In exchange for participating in the study, individuals were compensated \$3.

Before analyzing the data, we assessed it for evidence of insufficient attention responding (Huang et al., 2012; Meade & Craig, 2012). First, we examined responses to a single question at the end of the survey (i.e., “In your honest opinion, are your responses reliable and accurate?”). Second, we assessed for incorrect responses to two instructed response items (IRIs) embedded in the survey (e.g., “To ensure that you are paying attention, please mark ‘disagree’ for this item”). Third, we examined the amount of time that those in the mindfulness condition spent listening to the audio recording. Participants who answered “no” to the question regarding data quality, who responded inaccurately to one or both IRIs, or who clicked through to the survey portion of the study without listening to the full 8-minute audio recording were removed from the analysis (Final $n = 184$). The final sample was, on average, 39.50 years of age ($SD = 9.42$), possessed 18.10 years of work experience ($SD = 9.56$), and was mostly White (70.9%). In terms of gender identity, 56.8% of participants identified as male, 42.6% identified as female, and 0.5% identified as nonbinary.

Experimental Manipulation

In the mindfulness condition, participants listened to an 8-minute audio recording that has been successfully deployed in prior studies to induce a mindful state of present-moment awareness (Hafenbrack et al., 2014, 2020; Hafenbrack & Vohs, 2018). Like the intervention used in Study 1, this mindfulness meditation is guided by a professional, female mindfulness coach who instructs participants to focus on their breathing and connect with the present moment. We used a different mindfulness recording in Study 2 to avoid any potential method effects resulting from the use of the same audio recording across studies and to ensure that our hypothesized relations hold across mindfulness interventions of varying lengths. Before listening to the audio file, participants were required to confirm that they were in a quiet place. As in Study 1, we utilized an inactive control group in which participants proceeded directly to the survey without listening to any audio files.

Measures

Mindfulness manipulation check. Like Study 1, state mindfulness was assessed with the five-item MAAS ($\alpha = .93$). All ratings were on a 1 (*Strongly disagree*) to 7 (*Strongly agree*) scale.

Gratitude. To measure participants' experiences of state gratitude, we used three items from McCullough et al.'s (2004) Gratitude Questionnaire. The item stem read "Right now...", and the three scale items were: "... I am grateful to a wide variety of people," "... if I had to list everything that I felt grateful for, it would be a very long list," and "... I have so much in life to be thankful for" ($\alpha = .90$). Ratings were on a 1 (*Strongly disagree*) to 7 (*Strongly agree*) scale.

Willingness to help. Following a similar approach utilized by Grant and Gino (2010), at the end of the survey participants were asked if they would be willing to help us with a separate, unpaid task (i.e., rating the quality of short videos for a different study). They were informed that if they chose to assist us with rating the videos, they would be automatically directed to a separate link where they could watch and provide their ratings of the videos. We measured willingness to help by asking participants how many videos they would be willing to rate, ranging from 0 to 7. After completing this measure and while being debriefed about the study's purpose, participants were informed that they were not actually going to be helping us with an additional unpaid task.

Results

Before analyzing the data, the mindfulness and control group were again coded as "1" and "0", respectively. An independent-samples *t*-test revealed that those in the mindfulness condition reported higher levels of state mindfulness ($M = 6.07$, $SD = 1.49$) relative to those in the control group ($M = 5.49$, $SD = 1.50$), $t(182) = 2.93$, $p < .01$, $d = .39$), providing evidence for the validity of the mindfulness manipulation. Next, using the PROCESS macro for SPSS (Hayes, 2017), we examined the direct effect of the mindfulness induction on participants' feelings of gratitude, as well as the indirect effect of the mindfulness induction on their willingness to help via gratitude.

First, the results revealed that the mindfulness induction led to higher levels of state

gratitude ($\beta = .46, p < .05$; mindfulness condition: $M = 5.54, SD = 1.31$; control condition: $M = 5.08, SD = 1.63, t(182) = 2.09, d = .31$), providing preliminary support for *Hypothesis 1a*. Second, gratitude, in turn, was positively related to willingness to help ($\beta = .40, p < .001$), providing initial support for *Hypothesis 2a*. The means for willingness to help were 1.43 ($SD = 2.29$) for the mindfulness condition and 1.06 ($SD = 1.96$) for the control group. Next, we explored the indirect effect of the mindfulness induction on willingness to help via gratitude. Using bias-corrected 95% confidence intervals (CIs) with 5,000 resamples, participants' state gratitude was found to mediate the indirect effect of the mindfulness intervention on their willingness to help with the unpaid task (*indirect effect* = .18, $SE = .10$, 95% CI [.01, .39]; *direct effect* = .19, $SE = .31$, 95% CI [-.42, .79]).

Discussion

Building on Study 1's results, Study 2 suggests that mindfulness fosters the emergence of gratitude, thereby triggering a desire to help others. As such, the results suggest that gratitude may represent an important mechanism by which mindfulness "fuels the prosocial fire" (Grant, 2008). However, Study 2 has limitations. First, our experimental design did not allow us to test the theorized mechanisms through which mindfulness may be related to gratitude (i.e., positive affect and perspective-taking). Second, we were unable to test the proposed mechanism through which gratitude relates to helping behavior (i.e., prosocial motivation). Third, we did not measure actual helping behavior, but rather study participants' willingness to help. Fourth, our experimental design suffers from a lack of external validity. In Study 3, we sought to address the three latter limitations by collecting semi-weekly, diary data on employees' state mindfulness, state gratitude, and prosocial motivation, as well as bi-weekly, direct coworker reports of their helping behavior.

Study 3

Method

Sample and procedure. Multi-source survey data were collected from employees of a mid-sized university in the Northeastern United States. All participants were recruited through a weekly “Mindfulness Monday” program offered on campus to employees during their lunch hour. Each session was led by a trained mindfulness professional. Upon enrollment in the study, each participant attended an information session with the first author, which included an introduction to the study and instructions for completing the surveys. Participants completed an initial online survey containing demographic measures and were asked to recruit one coworker in their work unit to complete surveys about their work behavior over the course of the study. All participants were compensated with a \$20 AmazonTM gift card for completing the initial demographic survey.

Over the next six weeks, participants completed two online surveys per week, one on Tuesdays and one on Thursdays, which contained measures of the study’s focal variables. Each participant was emailed their semi-weekly surveys at 9:00 am and asked to complete each before they left work at 5:00 pm. The next morning, participants were emailed a \$5 AmazonTM gift card (\$10 total for completing both surveys each week). Their coworkers responded to one survey in weeks one, three, and six of the study, corresponding to time one, five, and eleven on the focal participant timeline. We selected this timing strategy for collection of the coworker data in order to balance the need for multiple measurement points from coworkers over the six weeks of data collection with (a) the overall compensation that they received and (b) the need to minimize the demands placed on their participation (Lavrakas, 2008). Specifically, this strategy allowed us to collect a baseline measure of helping in week one, another measure at roughly the halfway point of the study, and then a final measure in the last week of data collection. For their participation, all coworkers were emailed a \$5 AmazonTM gift card the morning after completing each survey. Of the 112 individuals who agreed to participate in the research study, 99 participants were able to recruit a direct coworker who successfully completed their portion of the study. Accordingly,

our final sample included 99 focal employees matched with 99 direct coworkers, respectively.

Regarding focal employees, the sample was, on average, 41.33 years of age ($SD = 12.38$), held an average organizational tenure of 8.79 years ($SD = 8.18$), and was mostly female (82.1%) and White (84.2%). Coworkers were, on average, 41.75 years of age ($SD = 13.38$), possessed an average tenure of 8.59 years ($SD = 7.96$), and were mostly female (85.71%) and White (88.78%). The response rate for our focal employee sample was 81.23%, while the response rate for their coworkers was 81.29%. For the 99 matched pairs, there were 995 focal employee observations and 239 coworker observations. To ensure that there were no differences on the focal variables for those included in our final sample and those who were not, we conducted regression analyses using coworker participation (0 = *no*, 1 = *yes*) as a predictor of the variables. For each variable, the effects were non-significant, suggesting those who were included in our final sample did not differ from those who were not on their levels of mindfulness, gratitude, and prosocial motivation.

Measures. Because our within-person design required that participants answer multiple surveys over time, we sought to reduce the response burden and minimize participant fatigue by using shortened measures of our focal constructs (Beal & Weiss, 2003; Fisher & To, 2012). All items were worded to capture participants' experiences at the day-level at work and were rated on a 1 (*Strongly disagree*) to 5 (*Strongly agree*) scale. Average Cronbach's alphas are reported in Table 1. To compare our shortened measures to the full versions, we collected data from 200 employees recruited via MTurk. The results revealed that the shortened state gratitude, prosocial motivation, and helping scales correlated at .91, .97, and .89 with their full versions, respectively.

Mindfulness. State mindfulness was assessed with the same five items in Studies 1 and 2.

Gratitude. State gratitude was measured utilizing the same 3-item measure from Study 2.

Prosocial motivation. Prosocial motivation was measured with six items adapted from Grant (2008) and Grant and Sumanth (2009). Sample items include: "Today, I am feeling..." "...

like I want to help others through my work,” “...like I care about improving the welfare of other people at work” and “...like making a positive difference in people’s lives through my work.”

Helping behavior. Coworker-rated helping behavior was assessed with five items adapted from Podsakoff et al. (1990). All items were reworded to assess helping behavior in the last three weeks at work, consistent with the measurement timing for coworker surveys (i.e., “Over the last three weeks, my coworker has...”). Three items were removed based on an initial factor analysis that revealed factor loadings below .40 for each (Hinkin, 1998). The two items for this measure were: “...helped others who have heavy workloads,” and “...helped others who have been absent.”

Multilevel confirmatory factor analysis. To establish the distinctiveness of our focal constructs, we conducted a series of multilevel confirmatory factor analyses. We assessed the fit of our model to the data at both the within- and between-person levels. This is consistent with our overall analytic approach and the intraclass correlations (ICCs), which suggest that significant variance exists at each level. We expected our constructs to be conceptually similar across levels and account for this cross-level similarity by constraining the factor loadings of common items to be equal (i.e., the factor loading of a given item is the same at the within- and between-person levels) (Bliese et al., 2007; Tay et al., 2014). The subsequent three-factor model, which specified the mindfulness, gratitude, and prosocial motivation items to load onto separate factors at each level, demonstrated an adequate fit to the data [$\chi^2(159) = 645.92, p < .001$; CFI = .94, TLI = .93, RMSEA = .06, SRMR_{Within} = .04, SRMR_{Between} = .06]. In contrast, a two-factor model, in which the gratitude and prosocial motivation items were loaded on the same factor, demonstrated a less than adequate fit to the data [$\chi^2(164) = 1552.11, p < .001$; CFI = .83, TLI = .81, RMSEA = .09, SRMR_{Within} = .08, SRMR_{Between} = .18; $\Delta\chi^2 = 906.20, p < .0001$; Hu & Bentler, 1999]. Moreover, a single-factor model displayed a poor fit to the data [$\chi^2(167) = 3758.45, p < .001$; CFI = .56, TLI = .52, RMSEA = .15, SRMR_{Within} = .16, SRMR_{Between} = .24; $\Delta\chi^2 = 2206.34, p < .001$]. Thus,

the results provide support for the distinctiveness of our focal constructs at each level of analysis.

Analytic strategy. Our data's hierarchical structure (i.e., days nested within individuals) required a multilevel approach to our analyses. We used semi-weekly assessments of mindfulness, gratitude, and prosocial motivation and bi-weekly measurements of coworker-rated helping. To test our hypothesized model, we used multilevel structural equation modeling (MSEM) in Mplus 8.5 (Muthén & Muthén, 1998-2017). The MSEM approach decomposes each variable into within- and between-person components, which latent group-mean centers each within-person variable implicitly (Muthén & Muthén, 1998-2017). When variables are group-mean centered at Level 1 (within-person), Level 2 (between-person) variation is removed and definitionally uncorrelated with Level 1 variables (Enders & Tofghi, 2007). As we estimate all paths (i.e., mindfulness → gratitude, gratitude → prosocial motivation, prosocial motivation → helping behavior etc.) at both levels of analysis, resulting coefficients reflect pure within-person relations at Level 1 and pure between-person relations at Level 2, thus allowing us to test our within-person hypotheses while also examining and controlling for any potential differences at the between-person level.

To allow for the testing of complex models in which mindfulness, gratitude, prosocial motivation, and helping are modeled concurrently, we used a Bayesian estimator (Asparouhov et al., 2018; Asparouhov & Muthén, 2010) rather than a maximum likelihood (ML) estimator. While each method has strengths and limitations, Bayesian analysis facilitates estimation of more complex models, does not rely on normality assumptions, and allows for more straightforward and exact inferences (Muthén, 2010; Zyphur & Oswald, 2015; for examples, see Simon et al., 2015; Thoroughgood et al., 2020). In our case, Bayesian estimation was appropriate because we tested for mediation and serial mediation, which often result in non-normally distributed indirect effects that are properly accounted for in Bayesian analysis (Yuan & MacKinnon, 2009). In fact,

the residuals in our multilevel model were non-normally distributed and, thus, standard errors are not accurately estimated in ML. As such, Bayesian results are more trustworthy (Muthén, 2010).

To test for mediation, we followed Preacher et al.'s (2010, 2011) procedures. The model corresponds to a 1-1-1-1 mediation model where predictor, mediator, and outcome variables are assessed at Level 1 (Bauer et al., 2006). Because we had fewer reports of coworker-rated helping compared to focal employees' daily surveys, we structured our model such that each measure of helping was linked to the Tuesday survey of the corresponding week (i.e., we paired the Time 1 coworker/Time 1 employee, Time 2 coworker/Time 5 employee, and Time 3 coworker/Time 11 employee surveys, respectively). Following Preacher et al. (2010, 2011) and consistent with our interest in examining the within-person relations spurred initially by mindfulness, we specified the model first with all effects fixed (i.e., a constrained model) and compared increasingly complex models allowing for random effects (i.e., variation across persons). Our model contains random effects for state mindfulness on state gratitude, prosocial motivation, and helping behavior, with all other paths fixed.¹ Additionally, we calculated R^2 for the within- and between-person levels, estimating the variance explained in each of our mediating variables as well as helping behavior.

Results

Table 1 presents means, standard deviations, reliabilities, and correlations between the study variables at the within- and between-person levels. To ensure the appropriateness of using MSEM to test our hypotheses, we first examined the amount of within-person variance in all Level 1 variables, estimating intraclass coefficients (ICC1) based on an unconditional model. As reported in Table 2, a significant amount of the variance in each focal variable was attributable to within-person variance over the course of the study: state mindfulness (59%), state gratitude (34%), prosocial motivation (45%), helping (45%). These results support the use of a multilevel approach given a non-trivial amount of variance exists at the within- and between-person levels.

Tests of hypotheses. Table 3 reports the results of the MSEM analyses. Table 4 presents a summary of the estimated indirect and serial indirect effects. We modeled the direct relations between mindfulness, gratitude, prosocial motivation, and helping behavior at Level 1 and Level 2 and calculated indirect effects using the MODEL CONSTRAINT command in Mplus. Of note, *p*-values in Bayesian analysis are typically reported as one-tailed and can be interpreted as the proportion of the distribution of effects that is below zero (for positive estimates) or above zero (for negative estimates) (Muthén, 2010). As such, and also due to our directional hypotheses, we used one-tailed tests of significance (Simon et al., 2015; Thoroughgood et al., 2020). The 95% *credibility interval* indicates the most probable range of values for the effect and is interpreted as a 95% probability that the effect falls within the specified range (Zyphur & Oswald, 2015).

Providing support for *Hypothesis 1a*, the results revealed that mindfulness was positively related to gratitude at the within level ($\gamma = .181, p < .001$). Although the direct relation between gratitude and helping behavior was not statistically significant ($\gamma = .108, ns$), prosocial motivation mediated the indirect effect of gratitude on helping ($\gamma = .089, p < .01, 95\% \text{ CI } [.032, .159]$), thus supporting *Hypothesis 2b*. We also explored the indirect effect of mindfulness on helping through gratitude and prosocial motivation. Mindfulness was positively related to helping via gratitude and prosocial motivation ($\gamma = .016, p < .01, 95\% \text{ CI } [.005, .031]$). The model explained 24% of the variance in helping behavior at the within-person level and 4% at the between-person level.

Supplemental analysis. Though we are constrained in making strong causal conclusions given our data's correlational structure, we examined the potential for a reverse causal relation between gratitude and prosocial motivation in our model. First, we compared the deviance scores (i.e., Deviance Information Criterion [DIC]) of each model to evaluate model fit (Muthén, 2010). Models with smaller DIC values are thought to provide a better fit to the data (Muthén, 2010). Although our proposed model had a slightly smaller value (DIC = 3813.896, pD = 437.106) than

the alternative model ($\text{DIC} = 3816.817$, $pD = 436.036$), these estimates are biased based on the number of parameters (pD) in the model, with a penalty for more parameters (Muthén, 2010). Common convention dictates that a difference in DIC of more than 10 is considered significant, but values below this threshold require further interpretation (Spiegelhalter et al., 2002). Thus, we needed to closely examine the relations in each model to identify which displayed a better fit.

Using Hayes (2018) and Trzebiatowski and Triana (2018) as guides, we found that our hypothesized model demonstrated a superior fit over the alternative model. First, with respect to indirect effects, although mindfulness had a positive relationship with prosocial motivation via gratitude (hypothesized model: $\gamma = .048, p < .001$) and a positive relationship with gratitude via prosocial motivation (alternative model: $\gamma = .064, p < .001$), prosocial motivation mediated the relationship between gratitude and helping behavior (hypothesized model: $\gamma = .089, p < .01$), but gratitude did not mediate the relation between prosocial motivation and helping (alternative model: $\gamma = .025, ns$). Second, although gratitude and prosocial motivation serially mediated the link between mindfulness and helping behavior (hypothesized model: $\gamma = .016, p < .01$), prosocial motivation and gratitude do not serially mediate the relation between mindfulness and helping behavior (alternative model: $\gamma = .006, ns$). Taken as a whole, these results support retaining our proposed model relative to an alternative model with prosocial motivation preceding gratitude.

Discussion

In Study 3, we extended our experimental findings to the field using multi-source survey data collected semi-weekly from 99 employees and bi-weekly from their direct coworkers. Our results suggest mindfulness is positively related to employee gratitude at work and that gratitude and prosocial motivation may play a central role in mediating the link between mindfulness and employee helping behavior. Yet, Study 3 suffered from two limitations. First, we were unable to create temporal separation between our daily measures of mindfulness, gratitude, and prosocial

motivation, thereby creating concerns about common method bias. Second, our model test did not assess the roles of positive affect and perspective-taking as dual mediators linking mindfulness to gratitude. In Study 4, we address these limitations by testing our full hypothesized model using an experience sampling study conducted over ten days with four measurement occasions per day.

Study 4

Method

Sample and procedure. Participants were recruited from throughout the United States utilizing personal contacts and snowballing sampling. Specifically, the research team approached working adults from their own networks who, in turn, recruited others they knew to participate in the study. The study was introduced to individuals as an investigation of employees' workplace attitudes and behaviors. Upon enrolling in the study, participants received an email that provided them with instructions for completing the study. Survey data were collected in two phases. First, participants completed an initial online survey containing demographic measures. For completing this survey, participants were compensated with a \$15 AmazonTM gift card. Second, a week later participants began the experience sampling portion of the study, which lasted two full workweeks (10 days total) and included four daily surveys containing measures of the study's focal variables.

Participants were instructed to complete the daily surveys within the designated timeframes (i.e., morning, late morning, afternoon, and evening). Using QualtricsTM survey software, daily surveys were automatically emailed to participants at the beginning of each survey's timeframe (accounting for time zone differences) and were set to expire before the next survey opened, thus preventing retrospective reporting. Participants were able to complete the surveys online using a computer or portable device (i.e., smartphone, tablet). The morning survey was distributed at 8am, the late morning survey at 11am, the afternoon survey at 2pm, and

the evening survey at 5pm. The latter survey was set to expire at 9pm. For each of the daily surveys, participants were compensated \$2 (\$8 per day for complete data). To encourage active participation throughout the two-week study, participants could earn an additional \$20 and \$35 for full completion of four days in week one and week two, respectively. All in all, study participants could earn up to a \$150 AmazonTM gift card.

Of the 105 individuals recruited, two who completed the baseline survey did not provide data for the ten-day data collection and, therefore, were dropped from subsequent analyses. Over the course of the ten-day study, the response rate was 96.28% across the surveys. Consistent with existing guidelines, we examined the data for evidence of careless responding (e.g., Huang et al., 2012; Meade & Craig, 2012). First, we compared response times across the surveys to ensure that participants had not simply sped through the surveys without carefully responding to the items. We estimated that participants should spend no less than two seconds per survey item (Huang et al., 2012; Yan & Tourangeau, 2008). Thus, they should have spent no less than 37 seconds on the morning, afternoon, and evening surveys and no less than 67 seconds on the late morning survey. Observations with response times that fell below these thresholds were dropped from the analyses (i.e., 2 morning, 8 late morning, 5 afternoon, and 3 evening observations). Second, we examined response patterns within each survey (Huang et al., 2012; Meade & Craig, 2012). Observations with consistent responses across all the scales (e.g., answering “4” for each item, missing reverse coded items) were removed from the final analyses (i.e., 13 from the morning, late morning, and afternoon surveys, respectively, and 27 from the evening surveys). The sample comprised 1,005 observations (95.7% of the original sample) from 103 participants (98.1% of the original sample).

The final sample was, on average, 36.89 years of age ($SD = 9.29$), had an average tenure of 5.21 years ($SD = 6.03$), and was 74.4% female and 86.3% White. Further, 60% of the sample reported not regularly practicing mindfulness, suggesting within-person variations in mindfulness

could largely be attributed to natural fluctuations rather than the effects of meditation practice.

Measures. Like Study 3, we used shortened measures of our focal constructs given the increased response burden imposed on participants by our experience sampling design (i.e., four daily surveys across two workweeks). All items were worded to capture participants' experiences at the corresponding time of day and were rated on a 1 (*Strongly disagree*) to 7 (*Strongly agree*) scale. Table 5 reports average Cronbach's alphas for each scale. Using the MTurk pilot data from Study 3, we found that the shortened positive affect, perspective-taking, prosocial motivation, and helping behavior scales correlated at .97, .95, .91, and .90 with their full measures, respectively.

Mindfulness. We assessed state mindfulness in the morning survey using the same five-item measure from Studies 1, 2, and 3. The sentence stem for each item read: "This morning,..."

Positive affect. We measured state positive affect in the late morning survey using four positive emotions from the short form of the PANAS (Mackinnon et al., 1999), similar to Lanaj et al. (2016). Participants indicated how they felt at work since the morning survey. The scale's items are: "This morning, I feel..." "...enthusiastic", "...inspired", "...determined", and "...alert."

Perspective-taking. Perspective-taking was measured in the late morning survey with two items from Grant and Berry (2011) (i.e., "This morning, I'm..." "...trying to take others' perspectives at work" and "...making an effort to see the world through others' eyes at work"). Participants reported their experiences since completing their last survey in the morning hours.

Gratitude. State gratitude was assessed in the afternoon survey with the same three items used in Studies 2 and 3, adapted for use in an experience sampling study. The stem for each item read: "This afternoon, I feel..." Participants reported how they felt since the late morning survey.

Prosocial motivation. Prosocial motivation was assessed in the evening survey with two items from Study 3. Ratings were based on how participants felt during the day: "Today at

work..." "... I felt like I wanted to help others," and "...it was important to me to do good for others."

Helping behavior. Consistent with previous studies using a similar experience sampling design (e.g., Lanaj et al., 2016), helping behavior was self-rated in the evening survey with three items. The items include: "Today at work, I..." "...helped others with work-related problems," "... assisted coworkers with heavy workloads" and "...helped coworkers with difficult assignments."

Time. Although time was not part of our hypotheses, we utilized the survey platform's timestamps to examine whether participants' responses on our focal variables changed over the course of the study. We coded two variables to account for time. First, time was coded as a continuous variable using the date of survey administration and centered on the first day of the surveys, providing a meaningful zero point to examine change over the ten day study. We labeled this variable "day of survey." Second, we coded for day of survey administration to examine differences in our variables across days of the week. We labeled this variable "day of the week."

Multilevel confirmatory factor analysis. As in Study 3, we assessed the fit of our model at both the within- and between-person levels and held factor loadings of like items equal across levels. The hypothesized six-factor model showed an adequate fit to the data [$\chi^2(297) = 880.38, p < .001$; CFI = .92, TLI = .91, RMSEA = .04, SRMR_{Within} = .05, SRMR_{Between} = .08]. Moreover, the six-factor model displayed a better fit relative to a series of alternative models (see Table 6).

Analytic strategy. Given the hierarchical data structure (i.e., daily reports nested within persons), we tested our hypotheses with multilevel modeling. We used daily assessments of each variable (Level 1) and estimated the hypothesized links using MSEM in Mplus 8.5. Consistent with our analytical approach in Study 3, all paths were estimated (mindfulness → PA, mindfulness → perspective-taking, PA → gratitude, perspective-taking → gratitude, gratitude → prosocial motivation, and prosocial motivation → helping behavior, etc.) at the within- and between-levels.

To test for mediation, we followed Preacher et al.'s (2010, 2011) procedures, building from the model tested in Study 3 to include dual mediating pathways between mindfulness and gratitude. To facilitate complex models in which we estimate all of our variables simultaneously, we again employed a Bayesian estimator. Also consistent with Study 3, and in alignment with our interest in examining a within-person chain of events spurred by a state of mindfulness, we present results from a final model in which the direct links between mindfulness and gratitude, prosocial motivation, and helping are specified as random, while all other paths remain fixed.

Results

Table 5 presents means, standard deviations, reliabilities, and correlations between the variables at the within- and between-person levels. Like Study 3, we first examined the amount of within-individual variance in all Level 1 variables, estimating ICCs based on an unconditional model. As reported in Table 7, a significant amount of variance in each variable was attributable to within-person variance: mindfulness (42%), positive affect (52%), perspective-taking (60%), gratitude (24%), prosocial motivation (46%), and helping behavior (47%). Accordingly, these results serve to provide assurance that a multilevel approach to analyzing the data is appropriate.

Tests of hypotheses. Tables 8 and 9 report the results of the MSEM analyses. Table 10 presents a summary of the estimated indirect and serial indirect effects. Building on our findings from the previous studies, we modeled the direct relations between mindfulness, positive affect, perspective-taking, gratitude, prosocial motivation, and helping behavior at Level 1 and Level 2 and calculated indirect effects in Mplus. Like Study 3, we used a one-tailed test of significance in line with Bayesian convention and our directional hypotheses. The results revealed that morning mindfulness was not directly related to gratitude in the afternoon ($\gamma = .024, ns$), failing to support *Hypothesis 1a*. Yet, mindfulness was positively related to positive affect ($\gamma = .244, p < .001$) and perspective-taking ($\gamma = .114, p < .01$) in the late morning. Moreover, both PA ($\gamma = .022, p < .001$,

95% CI [.012, .035]) and perspective-taking ($\gamma = .007, p < .01$, 95% CI [.002, .015]) mediated the indirect relation between mindfulness and gratitude, providing support for *Hypotheses 1b and 1c*.

As in Study 3, the direct link between gratitude and helping behavior was not significant ($\gamma = -.011, ns$), failing to support *Hypothesis 2a*. Yet, prosocial motivation mediated the indirect effect of gratitude on helping ($\gamma = .083, p < .001$, 95% CI [.044, .129]), supporting *Hypothesis 2b*. Mindfulness ($\gamma = -.021, ns$) did not directly predict helping. However, consistent with *Hypothesis 3*, the serial mediation effect was significant via the PA ($\gamma = .002, p < .001$, 95% CI [.001, .004]) and perspective-taking paths ($\gamma = .001, p < .01$, 95% CI [.000, .002]). Our model explained 14% of the variance in helping behavior at the within level and 46% of the variance at the between level.

Additionally, we also examined whether “day of study” or “day of the week” influenced our focal variables by modeling them as predictors at the within-person level. The results showed that perspective-taking ($\gamma = .047, p < .001$), prosocial motivation ($\gamma = -.025, p < .01$), and helping behavior ($\gamma = .024, p < .05$) all had significant slopes over the course of the ten-day study, while perspective-taking tended to decrease over the course of the week ($\gamma = -.047, p < .05$). Although these results indicate slight time-related changes in our variables, the hypothesized relationships remained consistent when including “day of study” and “day of week” in our proposed model.

Supplemental analysis. As a reviewer pointed out, because mindfulness increases employees’ capacity for self-regulation (Glomb et al., 2011; Hülsheger et al., 2013; Long & Christian, 2015), it may serve to generate self-control resources needed to reduce their levels of ego depletion. In turn, this replenishment of self-regulatory resources may promote employees’ capacity to experience gratitude and prosocial motivation, increasing their helping behavior. In other words, by reducing depletion levels, mindfulness may increase employees’ higher-order cognitive processing (Baumeister et al., 1998) and reduce their self-focused tendencies (DeWall et al., 2008), such that they may be more likely to recognize gratitude-inducing benefits around

them at work and, in turn, prioritize the welfare of others. Consistent with this claim, growing evidence suggests that depleted employees tend to scale back their engagement in prosocial acts at work (e.g., Christian et al., 2014; Johnson et al., 2014; Trougakos et al., 2015; see also DeWall et al., 2008). In short, lower levels of depletion may serve as an additional pathway through which mindfulness is linked to higher levels of gratitude, prosocial motivation, and helping behavior.

We explored this possibility by modeling depletion as an additional mediating pathway between mindfulness and gratitude. Depletion was measured in the afternoon survey with four items used in prior studies (Courtwright et al. 2016; Welsh & Ordóñez, 2014). Sample items are: “Right now, I feel mentally exhausted” and “Right now, I feel drained.” The results showed that mindfulness was negatively related to depletion ($\gamma = -.247, p <.001$), which was negatively related to gratitude ($\gamma = -.113, p <.001$). Yet, our proposed mechanisms remained significant despite the inclusion of depletion. Both PA ($\gamma = .013, p <.01, 95\% \text{ CI } [.003, .024]$) and perspective-taking ($\gamma = .006, p <.01, 95\% \text{ CI } [.001, .014]$) mediated the effect of mindfulness on gratitude. Moreover the serial mediation effect of mindfulness on helping was also significant via the PA ($\gamma = .001, p <.01, 95\% \text{ CI } [.000, .002]$) and perspective-taking paths ($\gamma = .001, p <.01, 95\% \text{ CI } [.000, .001]$).

Discussion

Utilizing an experience sampling design conducted over ten workdays with four daily measurement occasions, Study 4 expands on our earlier studies by creating temporal separation between our focal variables and by testing the theorized mechanisms through which mindfulness is related to gratitude at work. Regarding the latter, the results suggest that the relation between mindfulness and gratitude is indirect in nature, with PA and perspective-taking serving as dual mediators of this within-person link. Moreover, the results suggest the links between mindfulness, gratitude, and helping are complex and reflect an elaborate process involving multiple pathways.

Two points should be noted here. First, stronger support was found for PA as a mediator

compared to perspective-taking in our model. Specifically, although the *p*-value for perspective-taking was significant, our confidence interval fell just shy of containing zero. One explanation may be that PA fluctuates more on a momentary basis at work, while perspective-taking may be more effortful in the moment (Epley et al., 2004, 2006). Accordingly, PA may be more naturally responsive to mindfulness relative to perspective-taking. Second, the item stem (i.e., “Today...”) utilized in the evening survey’s prosocial motivation and helping behavior measures precludes us from determining exactly when study participants were prosocially motivated or engaged in acts of helping during their workday. Although this item stem is often used in end-of-day surveys in experience sampling studies, it is possible that some participants reported prosocial motivations and helping behaviors that preceded one or more of the psychological antecedents in our model.

General Discussion

Given the power of gratitude to spur helping behavior, cultivating employees’ experiences of gratitude reflects an important imperative in modern organizations that depend on teamwork to achieve organizational goals. Yet, today’s complex, performance-driven workplace presents an array of demands that make it difficult for employees to fully attend to and appreciate the various benefits they receive at work. As such, gratitude is often difficult for employers to promote and for employees to feel. Despite these observations, the literature offers little insight into the role of attentional processes in stimulating employees’ feelings of gratitude and, in turn, their prosociality.

Across four studies, including two experimental designs, a multi-source diary study, and a ten-day experience sampling investigation, we found converging evidence that mindfulness, a unique form of present-moment attention, stimulates employees’ feelings of gratitude and, in turn, their helping behavior. Moreover, we found that PA and perspective-taking reflect dual pathways linking mindfulness to gratitude and that prosocial motivation explains the link between gratitude and helping behavior. Below, we describe the theoretical and practical implications of our results.

Theoretical Implications

Our research makes several contributions. First, we contribute to the nascent literature on workplace gratitude by illuminating the role of mindfulness as a basic quality of attention needed for employees to experience gratitude at work. From a theoretical view, an underlying assumption in the broader gratitude literature is that attention is vital to experiencing gratitude (Fehr et al., 2017; Tesser et al., 1968; Tsang, 2006). As Emmons and Stern (2013) note, “One of the first steps in [experiencing] gratitude is attention. Attention is noticing and becoming aware of blessings that we normally take for granted. It is tuning into the many reasons for gratitude that already exist in our lives” (p. 853). We agree. Yet, there is a need for theoretical models that account for the central role of attentional processes in fostering gratitude and its outcomes at work. Integrating existing theory on mindfulness and gratitude, we developed and tested a model that helps to explain *why* mindful attention increases the likelihood that employees will feel gratitude at work, with downstream consequences for their helping behavior. Our model advances the literature by conceptualizing PA and perspective-taking as dual pathways through which mindfulness spurs gratitude. We posit that while the former reflects a “benefit-finding” mechanism linking mindfulness to gratitude, the latter represents a “cost-appraisal” mechanism. In sum, we extend theory on workplace gratitude by describing how a unique form of attention, mindfulness, may facilitate certain attentional requirements for gratitude’s emergence at work.

More broadly, we further answer Fehr et al.’s (2017) call for greater attention to the role of gratitude in organizational life. Despite the prominent place of gratitude within the broader psychological literature, as well as its established role in promoting relationship building and acts of prosociality (Algoe et al., 2008; Ma et al., 2017), only a handful of studies have been conducted on gratitude-related phenomena at work (Ford et al., 2018; Grant & Wrzesniewski,

2010; Lee et al., 2019; Locklear et al., 2020; Spence et al., 2014; Sun et al., 2019). Of note, this problem is not limited to gratitude. Additional other-oriented emotions, including moral elevation (Haidt, 2000, 2003; Schnall et al., 2010), awe (Keltner & Haidt, 2003; Shiota et al., 2007), and compassion (Goetz et al., 2010), are also underexplored within the organizational sciences. This is despite the important social functions that these emotions serve in helping people to transcend their own short-term needs and desires and focus on those of others (Stellar et al., 2018). As we have alluded, such work is more vital than ever as employers increasingly prioritize team-based structures requiring coordinated efforts to meet the demands of a globally competitive economy. Accordingly, beyond extending knowledge of how gratitude emerges at work, we add to existing research on other-oriented emotions in organizations, more broadly.

Second, we contribute to the growing literature on workplace mindfulness by illuminating the psychological pathways through which mindfulness may be related to greater helping behavior at work. As noted earlier, researchers have recently devoted considerable effort to understanding the salutary effects of mindfulness in reducing counterproductive work behavior (Krishnakumar & Robinson, 2015; Liang et al., 2016, 2018; Long & Christian, 2015). Although such findings are illuminating with respect to understanding how mindfulness may dissuade various dysfunctional behaviors at work, we know little regarding why mindfulness may encourage various functional acts, such as helping behaviors. Our results suggest that beyond extinguishing maladaptive forms of inner reactivity (e.g., negative affect, rumination) that prompt aggression, mindfulness may also serve a generative role by stimulating positive states that spur helping behavior. Indeed, as alluded to earlier, mindfulness, historically, was not intended to operate within a vacuum of dispassionate observation, characterized solely by its disruption of dysfunctional patterns of response; rather, it was also meant to be a transformative vehicle for achieving positive mental states and facilitating adaptive behaviors (Garland et al., 2015). Accordingly, our theoretical model expands the scope

of mindfulness research in organizational settings, highlighting one perspective on why mindful attention may encourage acts that “support the broader organizational, social, and psychological environment” in which work tasks are accomplished (Motowidlo & Van Scotter, 1994, p. 476).

Finally, we contribute to research on the antecedents of employee prosocial behavior by highlighting a key mechanism, prosocial motivation, through which the discrete, other-oriented emotion of gratitude shapes helping behavior. Although recent research links employee gratitude to greater helping behavior (Ford et al., 2018; Spence et al., 2014), we still know little regarding the underlying motivations that fuel grateful prosociality (Tsang & Martin, 2019). Our findings align with recent research on the potential neurological underpinnings of gratitude. Specifically, experiences of gratitude have been found to be associated with increased activity in the medial prefrontal cortex and the anterior cingulate cortex – regions of the brain associated with moral judgment and social cognition (Fox et al., 2015). Additionally, other studies link gratitude with a desire to promote the reputation of a benefactor, to recognize their efforts and repay them in some way (i.e., through words, actions, or material goods), and to cultivate a closer relationship with them (Algoe & Haidt, 2009). Accordingly, these findings provide indirect evidence that gratitude prompts a motivation to behave altruistically. Exploring the motivations that underlie gratitude’s prosocial effects offers interesting avenues for future research in light of prior claims suggesting these motives may be complex. That is, grateful prosociality may also be egoistically motivated – for example, when an individual returns favors to secure future favors (Trivers, 1971) or thanks a benefactor to portray an image of an appreciative, moral person (Jones & Pittman, 1982; see also Tsang & Martin, 2019). As such, we advance the extant literature by exploring a core motivational mechanism through which feelings of gratitude are linked to acts of prosociality in the workplace.

Practical Implications

From a practical standpoint, because mindfulness can become a regular part of people's work lives via training interventions (for qualitative and quantitative reviews, see Bartlett et al., 2019; Eby et al., 2019; Heckenberg et al., 2018; Jamieson & Tuckey, 2017; Lomas et al., 2019), employers may benefit from adopting mindfulness interventions as a way of fostering employees' experiences of gratitude and, in turn, motivating their helping behavior. Indeed, given the common criticism that organizations are hotbeds for egocentrism (Dishman, 2015), our research suggests that mindfulness may be a partial antidote to this problem in that it may promote greater positive emotions and prompt an important shift in perspective – increasing their likelihood of feeling the other-oriented emotion of gratitude and stoking their "prosocial fires." As Good et al. (2016) noted, "mindfulness may be a single lever for beneficially influencing many variables, enabling general management of organizational functioning via a parsimonious intervention" (p. 134).

Our results may also have implications for the effectiveness of various gratitude-focused human resource practices, such as employee appreciation programs. Formal appreciation programs are "occasions in which organizations have planned and institutionalized opportunities to endow individuals with expressions of positive affirmation" (Roberts et al., 2005, p. 718). These planned events may involve, among other things, monthly recognition ceremonies, manager emails sent to team members, senior leaders, and even customers about an employee's job-related strengths, or roundtable discussions where employees share stories about coworkers who contributed positively to their work lives (Mosley & Irvine, 2014; Roberts et al., 2005). From the recipient's perspective, these initiatives have the potential to demonstrate to employees that they are valued members of the organization and that they are not taken for granted by their managers and coworkers (Fehr et al., 2017). However, their effectiveness depends on the extent to which managers and coworkers are aware of a focal employee's day-to-day activities, which, as we have discussed, is difficult in many fast-paced, "cognitively noisy" workplaces. Accordingly, mindfulness training may serve

to enrich employee appreciation programs by allowing those who participate in them to become more aware of their peers' daily efforts at work and contribute more fully to such programs in turn.

Limitations and Future Research Directions

Our research is not without limitations. First, although our core focus was on gratitude, mindfulness may be related to employee helping behavior via additional other-oriented emotional states. Berry et al. (2018), for example, found across multiple studies that trait mindfulness and mindfulness training fostered helping behavior directed at an ostracized stranger via heightened empathic concern (see also Hafenbrack et al., 2020). Empathic concern reflects “an other-oriented emotional response elicited by and congruent with the perceived welfare of a person in need” and encompasses a constellation of feelings, such as sympathy, compassion, and tenderness (Batson et al., 2007, p. 65). Although empathic concern is an other-oriented emotional state like gratitude, it operates when individuals are aware of the plights of others, rather than when they recognize that they have received costly benefits from an external source. By increasing employees’ ability to separate from distractions and stay in the here and now, as well as understand their own emotions and the events that shape them, mindfulness may foster their awareness of and sympathy toward others who suffer various challenges, setbacks, and forms of mistreatment at work, motivating them to help their colleagues in need (Block-Lerner et al., 2007; Thoroughgood et al., 2020).

Mindfulness may also motivate employee helping behavior by eliciting greater feelings of moral elevation – a positive emotional response that is experienced when one witnesses acts of virtue or moral beauty (Haidt, 2000, 2003). Moral elevation encompasses distinct feelings of warmth, “dilation” or expansion in the chest, and being uplifted in some way, combined with admiration and affection for the virtuous actor (Haidt, 2000). In turn, feelings of elevation give rise to action tendencies toward emulating the actor’s behavior, drawing closer to others, and displaying greater responsiveness to their needs and interests (Aquino et al., 2011; Haidt, 2000).

Like gratitude, elevation represents a self-transcendent, “other-praising” emotion, yet it arises out of other-oriented appraisals of virtue, defined broadly, rather than generosity toward the self, specifically (Algoe & Haidt, 2009; Stellar et al., 2018). From its Buddhist origins, mindfulness has been associated with a deep sense of morality, in part because it cultivates an understanding of the interconnectedness of all living beings and concern for their wellbeing (Eisenbeiss & van Knippenberg, 2014; Kabat- Zinn, 2003). Thus, owing to their elevated moral standards, mindful employees should be more likely to consciously attend to and process acts of charity, kindness, and other displays of virtue at work (Eisenbeiss & van Knippenberg, 2014), causing them to experience more frequent and intense feelings of moral elevation and, in turn, motivating them to help others more at work. Overall, extant theory on self-transcendent, other-oriented emotions offers fruitful avenues for exploring why mindfulness is linked to acts of prosociality at work.

Second, although we focused on helping behavior directed at coworkers, we did not examine whether our predictions generalize to other stakeholder groups, notably customers or other end users. As alluded to earlier, gratitude scholars have speculated that when people feel grateful, they may seek to “pay it forward” by engaging in acts of upstream reciprocity toward third parties (McCullough et al., 2008). Specifically, it has been argued that gratitude-motivated upstream reciprocity may have evolved as a way of fostering higher levels of altruism beyond direct reciprocity, thus providing additional adaptive value to human beings during their ancestral past (McCullough et al., 2008; Nowak & Roch, 2006). These theoretical ideas present interesting implications for thinking about employee gratitude as a catalyst for prosocial behavior toward various stakeholders – in *and* outside of the organization. As such, future researchers might draw on this gratitude-motivated upstream reciprocity hypothesis to better understand how mindful awareness is linked to customer service behavior via its generative role in stimulating gratitude.

Third, there are likely untested boundary conditions operating on our model’s proposed

links. For example, in hyper-competitive work environments marked by excessive performance pressure (Mitchell et al., 2018) and rampant social undermining (Lee et al., 2016), mindfulness may be less likely to shift employees into the self-transcendent mindset necessary for them to feel gratitude. Indeed, workplaces that threaten employees' interests, such as their status, power, and security, tend to evoke a self-protective mindset, thereby focusing their attention narrowly on their own needs and concerns (Kouchaki & Desai, 2015; Mitchell et al., 2018; Murnighan et al., 2001). As such, these types of work environments may exert competing effects on employees' orientation to the self (vs. others), restricting the capacity of mindfulness to elicit their feelings of gratitude. Moreover, even for employees who are able to occupy a state of mindful awareness in such contexts, questions remain regarding whether their enhanced perspective-taking capacity would necessarily promote heightened levels of gratitude. That is, although the basic tenets of our theorizing likely hold across various organizational settings, future research might consider an alternative argument that the heightened perspective-taking induced by mindfulness fosters an awareness of how ungenerous and self-centered one's colleagues are in dysfunctional workplaces. Yet, based on existing research, we would expect that even within toxic workplaces, employees in a state of mindful awareness are unlikely to experience decreased levels of gratitude because of their capacity to better understand the situational forces underlying their coworkers' behavior. Indeed, research suggests perspective-taking fosters interpersonal forgiveness, in part, because victims are more likely to perceive the offending party as human and to try and understand what broader factors may have influenced their behavior (Enright & Coyle, 1998; McCullough et al., 1997; Takaku, 2001; Takaku et al., 2001; Witvliet et al., 2001). Additionally, Karremans et al. (2020) found that mindfulness increased people's capacity to forgive others for past offenses via greater perspective-taking. In sum, future research should consider how situational factors serve as moderators in our model.

Finally, despite presenting four studies that offer converging evidence for the internal and external validity of our model, Study 4 was the only one that tested *Hypotheses 1b, 1c, and 3*. We believe that our ten-day, experience sampling study provides a rigorous test of these hypotheses. Yet, future research should further examine the relations between mindfulness, positive affect, perspective taking, and gratitude to replicate and extend our findings. In doing so, such work will serve to deepen our understanding of how mindfulness encourages prosocial behavior at work.

Conclusion

Emmons and Shelton (2002) noted that, “a world without gratitude would be unendurable” (p. 462). At work, this observation is no less true. Indeed, given the increasing body of research on gratitude’s various benefits to human experience, including its capacity to enhance physical and psychological wellbeing (Emmons & McCullough, 2003), decrease aggression (DeWall et al., 2012), and foster prosociality (Bartlett & DeSteno, 2006), employers have much to lose from failing to cultivate gratitude in their workforces. By highlighting a theoretically relevant, yet previously overlooked, antecedent of gratitude’s emergence at work, mindfulness, our research points to a key factor that employers can leverage to build more appreciative workplace cultures.

Footnotes

1. Our decision regarding how to model random and fixed slopes was theoretically based.

Specifically, we were interested in examining a within-person process spurred by a state of mindfulness at work. Thus, we were interested in the within-person impact of mindfulness on subsequent variables in our model. Yet, based on the advice of a reviewer and for the purposes of comprehensiveness and transparency, we also tested a model in which all of our predicted paths were random. Beginning with a constrained model in which no slopes were specified to be random (e.g., a model in which we expect state mindfulness to have a uniform effect across individuals on each focal variable), we built up to our reported model by adding random effects and building in model complexity until we had covered all theoretically motivated paths (cf., Preacher, et al., 2010). With each addition of a random slope, we compared the new model to the constrained model by utilizing the calculated deviance statistic (i.e., -2 log likelihood). Model comparison can be performed by calculating the differences between the test statistics and comparing against the chi-square distribution with degrees of freedom equal to the difference in the number of parameters estimated (Raudenbush & Bryk, 2002; Snijders & Bosker, 2012). A significant *p*-value indicates that the addition of the random slope is non-negligible. The results indicated that there were no significant differences between findings from the original model and a model in which only hypothesized paths were modeled as random [mindfulness → gratitude, $\gamma = .180, p < .001$; gratitude → helping, $\gamma = -.003, ns$; gratitude → prosocial motivation, $\gamma = .295, p < .001$; prosocial motivation → helping, $\gamma = .309, p < .001$; indirect: gratitude → prosocial motivation → helping, $\gamma = .089, p < .05$ 95% CI [.007, .182]; serial indirect, $\gamma = .016, p < .05$, 95% CI [.001, .035] (one-tailed tests)]. Because this model did not differ meaningfully from our original model and because we feel our original model better aligns with our conceptualization of our focal constructs, our final analysis reports estimates from the model in which only direct paths from mindfulness to subsequent variables are set as random. Thus, we are confident that our model is conceptually and statistically sound.

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Study 3 Descriptive Statistics and Correlations

	<i>α</i>	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7	8
<i>Level 1 Variables</i>											
1. Mindfulness	.90	3.89	.76		.52***	.44***	.02	.10	-.05	.23*	.14
2. Gratitude	.91	4.21	.64	.27***		.63***	.01	.10	-.07	.17	.10
3. Prosocial Motivation	.95	3.95	.61	.36***	.36***		-.04	-.09	.02	.19	.18
4. Helping Behavior	.82	3.87	.71	.04	.10	.27***		.11	.16	-.01	.02
<i>Level 2 Variables</i>											
5. Gender		.82	.38					.02	.02	.06	
6. Race		.84	.36						-.02	-.08	
7. Age		41.33	12.38							.57***	
8. Tenure		8.79	8.18								

Note. *N* = 995 observations; *N* = 99 participants. Within-individual correlations are below the diagonal, between-person correlations are above. Cronbach's alphas are calculated for each measurement, and then averaged across measurements. Gender is coded as 1 = female. Race is coded as 1 = white. **p* < .05 ; ***p* < .01 ; ****p* < .001 (two-tailed)

Study 3 Variance Decomposition of Focal Variables

Construct	Variance Decomposition (%)		Reliability of Estimate
	Within- Individual	Between- Individual	
Mindfulness	.59	.41	.89
Gratitude	.34	.66	.96
Prosocial Motivation	.45	.55	.94
Helping Behavior	.45	.55	.78

Table 3

Study 3 MSEM Direct Effects on Gratitude, Prosocial Motivation, and Helping Behavior

Independent variable	Gratitude			Prosocial motivation			Helping behavior		
	Est.	SD	95% CI	Est.	SD	95% CI	Est.	SD	95% CI
Level 1 (Within-person level)									
Mindfulness	.181***	.033	[.115, .245]	.211***	.035	[.143, .279]	-.109	.092	[-.293, .066]
Gratitude				.268***	.036	[.197, .337]	.108	.110	[-.109, .324]
Prosocial motivation							.340**	.110	[.125, .555]
Residual variance at Level 1	.120***	.006	[.109, .133]	.122***	.006	[.111, .135]	.179***	.026	[.135, .238]
R ²	.143***	.020	[.104, .183]	.251***	.024	[.205, .296]	.240***	.058	[.115, .348]
Level 2 (Between-person level)									
Mindfulness	.566***	.112	[.343, .784]	.169	.106	[-.036, .370]	-.021	.176	[-.367, .326]
Gratitude				.488***	.095	[.302, .675]	.066	.184	[-.293, .420]
Prosocial motivation							-.077	.200	[-.474, .313]
Residual variance at Level 2	.216***	.038	[.158, .306]	.131***	.023	[.095, .185]	.295***	.064	[.198, .445]
R ²	.263***	.086	[.104, .440]	.438***	.083	[.267, .592]	.042***	.040	[.004, .155]

Note. N = 99; 995 observations. Cases with missing data on all time points were excluded from analyses. Estimate = unstandardized regression coefficient; standardized estimates are provided on hypothesized paths. SD = standard deviation of the posterior distribution; CI = credibility interval. R² represents total variance explained at each level. *p < .05 ; **p < .01 ; ***p < .001 (one-tailed)

Study 3 Summary of Hypothesized Indirect Effects and Serial Indirect Effects

Hypothesized indirect effect	Est.	SD	95% CI
Mindfulness → gratitude → prosocial motivation	.048***	.011	[.028, .072]
Gratitude → prosocial motivation → helping behavior	.089**	.032	[.032, .159]
Mindfulness → gratitude → prosocial motivation → helping behavior	.016**	.007	[.005, .031]
Mindfulness → gratitude → helping behavior	.019	.020	[-.020, .062]
Mindfulness → prosocial motivation → helping behavior	.070**	.026	[.025, .128]

Note. $N = 99$; 995 observations. Cases with missing data on all time points were excluded from analyses. Estimate = unstandardized regression coefficient; standardized estimates are provided on hypothesized paths. SD = standard deviation of the posterior distribution; CI = credibility interval. * $p < .05$; ** $p < .01$; *** $p < .001$ (one-tailed)

Table 5

Study 4 Descriptive Statistics and Correlations

	<i>α</i>	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7	8	9	10	11	12	13
<i>Level 1 Variables</i>																
1. Mindfulness	.88	4.66	1.26		.60***	.31**	.33***	.31**	.09		-.04	.02	.19	.17	.04	
2. Positive Affect	.88	4.68	1.22	.22***		.57***	.65***	.65***	.48***		-.09	.09	.28**	.07	-.02	
3. Perspective-taking	.90	5.02	1.11	.11**	.26***		.50***	.65***	.54***		.24*	-.12	.15	-.08	.07	
4. Gratitude	.89	5.73	.99	.10**	.22***	.18***		.61***	.34**		.19*	.04	.08	-.08	-.03	
5. Prosocial Motivation	.90	5.50	1.10	-.01	.18***	.19***	.20***		.57***		.11	.10	.20*	-.15	.02	
6. Helping Behavior	.85	4.72	1.11	-.03	.02	.14***	.05	.29***			.00	.18	.01	-.07	-.03	
7. Time	-	-	-	.01	.06	.12***	-.02	-.07*	.05							
8. Day of the Week	-	-	-	.01	.07*	.00	-.01	-.03	-.01	.49***						
<i>Level 2 Variables</i>																
9. Gender		.78	.41									.00	.01	.09	.09	
10. Race		.86	.34										.22*	.17	-.06	
11. Age		36.89	9.29											.42***	-.02	
12. Tenure		5.21	6.03												-.08	
13. Education		6.19	1.59													

Note. *N* = 1,005 observations; *N* = 103 participants. Within-individual correlations are below the diagonal, between-person correlations are above. Cronbach's alphas are calculated for each measurement, and then averaged across measurements. Gender is coded as 1 = female. Race is coded as 1 = white. **p* < .05 ; ***p* < .01 ; ****p* < .001 (two-tailed)

Table 6

Study 4 Multi-level Confirmatory Factor Analyses

Model	χ^2	df	$\Delta\chi^2$	CFI	TLI	RMSEA	SRMR Within/Between
Model 1: Six-factor hypothesized model	880.38***	297	---	.92	.91	.04	.05 / .08
Model 2: Five-factor model	3544.65***	308	2664.27***	.58	.53	.10	.15 / .20
Model 3: Five-factor model	1913.61***	308	1033.23***	.79	.77	.07	.07 / .14
Model 4: Five-factor model	1975.77***	308	1095.39***	.78	.76	.07	.09 / .29
Model 5: Five-factor model	2130.94***	308	1250.56***	.76	.74	.08	.09 / .13
Model 6: Five-factor model	2019.77***	308	1139.40***	.78	.75	.07	.09 / .12
Model 7: Five-factor model	1942.84***	308	1062.46***	.79	.76	.07	.08 / .13
Model 8: Four-factor model	3283.24***	317	2402.86***	.61	.58	.10	.12 / .18
Model 9: Two-factor model	6138.49***	329	5258.12***	.24	.21	.13	.18 / .30

Note: Model 2 specified mindfulness and gratitude items to load on a single factor. Model 3 specified PA and perspective-taking items to load on a single factor. Model 4 specified PA and gratitude items to load on a single factor. Model 5 specified perspective-taking and gratitude items to load on a single factor. Model 6 specified gratitude and prosocial motivation items to load on a single factor. Model 7 specified prosocial motivation and helping behavior to load on a single factor. Model 8 specified gratitude, prosocial motivation, and helping behavior items to load on a single factor. Model 9 specified mindfulness, PA, and perspective-taking items to load on a single factor, and gratitude, prosocial motivation, and helping behavior items to load on a single factor.

Study 4 Variance Decomposition of Key Variables

Construct	Variance Decomposition (%)		Reliability of Estimate
	Within-Individual	Between-Individual	
Mindfulness	.42	.58	.93
Positive Affect	.52	.49	.90
Perspective-taking	.60	.40	.87
Gratitude	.24	.76	.97
Prosocial Motivation	.46	.54	.92
Helping Behavior	.47	.53	.92

Table 8

Study 4 MSEM Direct Effects on Positive Affect, Perspective-Taking, and Gratitude

Independent variable	Positive Affect			Perspective-taking			Gratitude		
	Est.	SD	95% CI	Est.	SD	95% CI	Est.	SD	95% CI
<i>Level 1 (Within-person level)</i>									
Mindfulness	.244***	.037	[.170, .318]	.114**	.036	[.042, .186]	.024	.029	[-.033, .080]
Positive affect							.092***	.020	[.053, .130]
Perspective-taking							.068***	.02	[.028, .107]
Residual variance at Level 1	.756***	.037	[.688, .834]	.732***	.036	[.666, .807]	.205***	.011	[.186, .227]
R ²	.053***	.016	[.026, .088]	.012***	.008	[.002, .031]	.124***	.022	[.085, .169]
<i>Level 2 (Between-person level)</i>									
Mindfulness	.482***	.085	[.314, .650]	.171*	.084	[.008, .340]	-.042	.099	[-.234, .154]
Positive affect							.579***	.139	[.304, .852]
Perspective-taking							.236	.141	[-.040, .517]
Residual variance at Level 2	.556***	.102	[.391, .777]	.507***	.084	[.369, .698]	.484***	.078	[.361, .659]
R ²	.292***	.087	[.131, .468]	.054***	.052	[.001, .194]	.438***	.084	[.272, .596]

Note. N = 99; 995 observations. Cases with missing data on all time points were excluded from analyses. Estimate = unstandardized regression coefficient; standardized estimates are provided on hypothesized paths. SD = standard deviation of the posterior distribution; CI = credibility interval. R² represents total variance explained at the each level. *p < .05 ; **p < .01 ; ***p < .001 (one-tailed)

Study 4 MSEM Direct Effects on Prosocial Motivation and Helping Behavior

Independent variable	Prosocial motivation			Helping behavior		
	Est.	SD	95% CI	Est.	SD	95% CI
<i>Level 1 (Within-person level)</i>						
Mindfulness	-.048	.041	[-.128, .032]	-.021	.048	[-.116, .075]
Positive affect	.107***	.032	[.045, .170]	-.045	.036	[-.116, .026]
Perspective-taking	.111***	.031	[.050, .173]	.099**	.036	[.027, .168]
Gratitude	.261***	.058	[.146, .373]	-.011	.067	[-.141, .119]
Prosocial motivation				.323***	.041	[.242, .404]
Residual variance at Level 1	.500***	.026	[.453, .553]	.634***	.033	[.573, .701]
R ²	.133***	.022	[.091, .176]	.138***	.023	[.096, .186]
<i>Level 2 (Between-person level)</i>						
Mindfulness	-.105	.088	[-.276, .067]	-.220*	.110	[-.438, -.007]
Positive affect	.319**	.134	[.059, .587]	.363*	.176	[.020, .717]
Perspective-taking	.417**	.125	[.175, .664]	.351*	.172	[.013, .691]
Gratitude	.223*	.102	[.024, .421]	-.149	.132	[-.406, .111]
Prosocial motivation				.383*	.166	[.060, .709]
Residual variance at Level 2	.326***	.061	[.226, .455]	.512***	.096	[.373, .746]
R ²	.560***	.077	[.398, .699]	.463***	.086	[.291, .623]

Note. N = 99; 995 observations. Cases with missing data on all time points were excluded from analyses. Estimate = unstandardized regression coefficient; standardized estimates are provided on hypothesized paths. SD = standard deviation of the posterior distribution; CI = credibility interval. R² represents total variance explained at each level. *p < .05; **p < .01 ; ***p < .001 (one-tailed)

Study 4 Summary of Hypothesized Indirect Effects

Hypothesized indirect effect	Est.	SD	95% CI
Mindfulness → positive affect → gratitude	.022***	.006	[.012, .035]
Mindfulness → perspective-taking → gratitude	.007**	.003	[.002, .015]
Gratitude → prosocial motivation → helping behavior	.083***	.022	[.044, .129]
Mindfulness → gratitude → prosocial motivation → helping behavior	.002	.003	[-.003, .007]
Mindfulness → positive affect → gratitude → prosocial motivation → helping behavior	.002***	.001	[.001, .004]
Mindfulness → perspective-taking → gratitude → prosocial motivation → helping behavior	.001**	.000	[.000, .002]

Note. $N = 99$; 995 observations. Cases with missing data on all time points were excluded from analyses. Estimate = unstandardized regression coefficient; standardized estimates are provided on hypothesized paths. SD = standard deviation of the posterior distribution; CI = credibility interval. Between-person results omitted. * $p < .05$; ** $p < .01$; *** $p < .001$ (one-tailed)

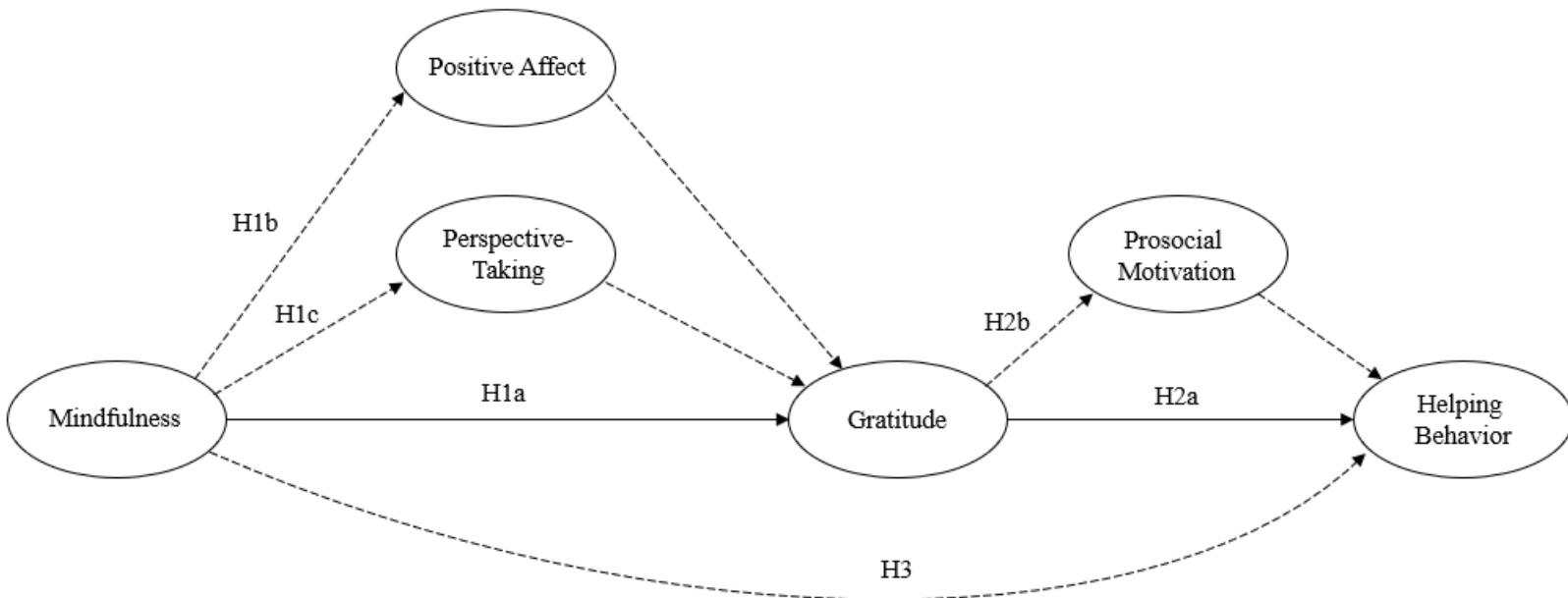


Figure 1. Proposed model. Solid lines indicate direct paths; dotted lines indicate indirect paths. H1a and H2a are tested in Study 2 (experimental design). H1a, H2a, and H2b are tested in Study 3 (semi-weekly, multi-source, diary study). All study hypotheses are tested in Study 4 (experience sampling design).