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The State-Like and Skillful Aspects of Mindfulness: The Roles of Working Memory and Self-Regulation

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A common theme throughout the focal article (Hyland, Lee, & Mills, 2015) suggests that mindfulness is associated with a range of benefits, but the phenomenon itself is not well defined and conceptualized. Throughout the research area, mindfulness has been defined as a trait, as a skill, and, most commonly, as a state. In order to advance a productive research area, conceptual clarity is needed to further distinguish between these aspects of mindfulness. In this commentary, I will (a) provide a distinction between mindfulness as a state and the skill of entering a mindful state, (b) outline the implications of skillful mindfulness for working memory capacity (WMC) and job performance, and (c) discuss the conflicting hypotheses of state mindfulness and self-regulation.

Current definitions of mindfulness primarily emphasize its state-like nature, but various mindfulness training programs are associated with improved outcomes, such as reduced stress, indicating there is a skillful aspect of mindfulness that can be trained. To better clarify these research areas, it is

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useful to think of mindfulness solely as a within-person, transient state; it is possible to be in a mindful state in the morning but no longer in a mindful state in the afternoon. The mindfulness training programs that offer such varied benefits are not training individuals on the state of mindfulness per se but are instead training the skill of entering a mindful state. By training this skill, individuals are able to more readily enter a mindful state and potentially maintain that state for prolonged periods of time.

The ability to voluntarily enter a state of mindfulness is useful as it allows individuals to exert more efficient control of attentional resources. The application of the state of mindfulness to different settings can be especially important when looking at within-person variability in work performance. Previous research has indicated that individuals vary a great deal in their work performance (Fisher & Noble, 2004) and that effective attention allocation is important for successful work performance (Kanfer & Ackerman, 1989). It is also apparent that a number of things can pull an individual's attention away from their work, such as rumination (Wang et al., 2013) and emotion regulation (Ortner, Zelazo, & Anderson, 2013). Providing individuals with the skills to more effectively enter a mindful state and allocate their attention can have large implications for within-person work performance.

The literature of WMC can help shed light on this relationship between mindfulness as a skill and attentional control. WMC is often equated with attentional control (Engle, 2002). Individuals with WMC are able to more effectively allocate attention to a task and improve performance, as evidenced by a robust literature suggesting that high WMC individuals perform better on a variety of tasks than low WMC individuals. Initial evidence suggests that mindfulness training can improve performance on WMC tasks. Specifically, mindfulness training is associated with higher WMC performance as measured by the operation span task (Jha, Stanley, Kiyonaga, Wong, & Gelfand, 2010; Mrazek, Franklin, Phillips, Baird, & Schooler, 2013; Roeser et al., 2013; Unsworth, Heitz, Schrock, & Engle, 2005) and moderates the decline in attentional control associated with high stress environments (Leonard et al., 2013).

The improvements in WMC associated with mindfulness training are especially interesting considering that training programs specifically targeting WMC are largely ineffective (Melby-Lervåg & Hulme, 2015; Redick, 2015; Redick, Shipstead, Wiemers, Melby-Lervåg, & Hulme, 2015). It is generally found that WMC training programs are able to improve performance on specific tasks, typically attributed to practice effects, but these gains are not generalizable to different tasks that tap the same underlying construct or fluid intelligence. This suggests that current WMC training programs are training individuals how to be better at certain and similar tasks but are not teaching individuals to improve their attentional control in gen-

eral. However, training the *skills* associated with WMC performance, not training the tasks, may allow for improved performance across a variety of domains. The ability to readily enter a mindful state may be one of those skills. Mindful states are associated with paying close attention to various stimuli in an open and accepting way without distraction from the past or future; in other words, enhanced attentional control. The skill of entering a mindful state can be applied to a variety of unrelated situations, and the associated improved attentional control should increase performance across a variety of dissimilar WMC tasks. Future research can explore this generalizability of mindfulness training on WMC improvements using tasks that tap different underlying processes.

Improved attentional control is only one potential outcome of the state of mindfulness. A breadth of research suggests that mindfulness training is effective at improving a host of other outcomes. Mindfulness training is related to improved emotional regulation (Hill & Updegraff, 2012; Lutz et al., 2014; Modinos, Ormel, & Aleman, 2010), decreased emotional exhaustion (Galantino, Baime, Maguire, Szapary, & Farrar, 2005; Hülsheger, Alberts, Feinholdt, & Lang, 2013), and prevention of burnout (Kranser et al., 2009; Roeser et al., 2013). Although it is likely that improved attentional control is partially mediating the relationship between enhanced ability to enter a mindful state and these various outcomes (Schmeichel, Volokhov, & Demaree, 2008; Teper, Segal, & Inzlicht, 2013), it is also likely that improved attentional control is not driving the entire relationship. Burnout and emotional exhaustion are conceptualized as a chronic depletion of regulatory resources after prolonged exposure to work stresses (Maslach, Schaufeli, & Leiter, 2001). The protective influence of mindfulness on burnout and emotional exhaustion suggests that repeatedly entering the state of mindfulness may be protecting or even replenishing the limited regulatory resources that are depleted by demanding work situations.

Mindfulness as a restorative state is not initially intuitive. Mindfulness states are meant to prevent individuals from behaving in automatic or thoughtless ways and allow individuals to move past their schemas (Shapiro, Carlson, Astin, & Freedman, 2006). While this ability to disengage automatic behaviors can be useful, automatic behaviors are also needed to protect individuals from making continuous decisions and depleting their pool of regulatory resources. By preventing individuals from behaving automatically, individuals may be further depleting their pool of regulatory resources. This is further evidenced by functional magnetic resonance imaging research suggesting that state mindfulness is related to the deactivation of the default network (Brewer et al., 2011), which is generally associated with mind wandering and rest (Mason et al., 2007). This depletion hypothesis runs counter to the burnout and emotional exhaustion findings discussed above.

To better understand these competing hypotheses, additional conceptual clarity is needed around the construct of state mindfulness and how it changes across time. It is possible that the state of mindfulness fundamentally changes with practice. During initial mindfulness training, it may be very difficult to maintain an active and open awareness of internal and external stimuli. In these instances, preventing automatic behaviors may be depleting. However, it is possible that the mindful state becomes restorative only after prolonged practice when individuals have already mastered the skill of entering and maintaining a mindful state. As mindfulness training programs become progressively shorter with smaller practice requirements, it is possible that these restorative effects may dissipate, and mindfulness practice may actually become depleting. Conversely, engaging in a mindful state may be universally depleting, but continuous reengagement builds self-regulatory capacity similar to engaging in any type of regulatory behavior (Masicampo & Baumeister, 2007). The enhanced capacity may account for these macro changes in individual functioning but may unintentionally result in decreased functioning immediately following a mindfulness state. Future research can explore what aspects of state mindfulness are restorative (i.e., engaging in the state or repeated depletion) and how these aspects change with skill.

This complex relationship between state mindfulness and the skill of entering a mindful state requires more research to (a) better clarify the constructs, (b) investigate the relationships between the state and the skill, and (c) explore how each relates to various outcomes. Researchers can explore how to better train the skill of entering a mindful state, individual differences in base skill level and learning rate, the difficulty of entering a mindful state in various settings (i.e., high stress situations), and appropriate situations for entering a mindful state. Research can continue to explore how mindful states impact self-regulation across time and how skill can moderate these relationships. This can allow researchers to better understand between- and within-person variations in job performance as it relates to changes in attentional control and regulatory resources.

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Why Mindfulness Sustains Performance: The Role of Personal and Job Resources

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Building on the focal article by Hyland, Lee, and Mills (2015), we propose conservation of resources (COR) theory (Hobfoll, 1989) as a framework that may explain why mindfulness contributes to work motivation and performance in an organizational context. We argue that mindfulness is especially beneficial in dynamic work contexts because it provides employees with a personal resource that makes them more resilient to the loss of job resources

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