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Short Communication

Be open: Mindfulness predicts reduced motivated perception



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ABSTRACT

Mindfulness is defined as non-judgmental present-moment attention and awareness, which varies across persons and moments. As a non-judgmental stance, mindfulness should allow for greater perceptual objectivity. Previous research suggests that self-interest can motivate people to “see what they want to see” (Balcetis & Dunning, 2006). We hypothesized that mindfulness would moderate this effect such that state and trait mindfulness would be associated with less motivated perception. We adapted the methods of Balcetis and Dunning (2006) in an online study ($N = 161$). Results show that state and trait mindfulness predicted less motivated perception. These effects were stronger after excluding participants who noticed the ambiguity of the image as well as controlling for mood. These findings suggest that mindfulness is a stance of greater objectivity.

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1. Introduction

Mindfulness has been defined as non-judgmental attention and awareness of the present moment, which varies across individuals, as well as within individuals, across time (Bishop et al., 2004). Buddhists liken this stance of non-judgment to having a “child’s mind,” or a “beginner’s mind,” such that experience is approached with openness and curiosity (Suzuki, 1973). Psychologists describe non-judgment as a stance of greater initial equanimity towards events (Brown, Ryan, & Creswell, 2007) and as being experientially open (Hayes, Strosahl, & Wilson, 1999). Accordingly, when mindful, a person takes in the world empirically, collecting experiential evidence to inform behavior and attitudes, rather than jumping to conclusions. Mindfulness is thus thought to foster more objective and unbiased processing of experience through a “bare registering of the facts observed” (Brown et al., 2007, p. 212), and conversely, lessen reliance on top-down mental processes fueled by expectations, desires, or schemas (Olendzki, 2005).

Previous research links mindfulness to reduced judgment, albeit mostly using self-report measures. Arch and Craske (2006), for instance, found that, compared to a control condition, participants randomly assigned to a brief mindfulness induction reported less emotional volatility in response to pleasant and unpleasant photos, and exhibited greater willingness to view highly unpleasant pictures, indicative of more openness and acceptance. Moving beyond self-report, Brown, Goodman, and Inzlicht (2013) used a neural

measure of emotional reactivity, the late positive potential (LPP), as participants viewed photographs of varying arousal and valence, and found those higher in dispositional mindfulness exhibited lower LPP responses to highly arousing unpleasant images, consistent with the view that mindfulness is related to reduced judgment. Using a behavioral measure of selective attention, Hodgins and Adair (2010) found individuals with formal meditation training, compared to matched controls, exhibited greater ability to overcome distracting visual cues, indicative of greater openness and flexibility. Although evidence supports the conceptualization of mindfulness as a stance of greater objectivity, research has not investigated behavioral evidence of non-judgment as it applies to implicit biases in perceptual processing.

To the extent that mindfulness fosters greater non-judgment and equanimity towards experience, it should predict a reduction in the use of top-down processes in which expectations or desires influence perception. Instead, mindfulness should predict increased use of bottom-up or experiential perception, reflecting openness to experience the world with greater objectivity. To test this, we examined mindfulness in relation to ‘motivated perception’, a top-down process in which people’s visual perception is influenced by their desires. This phenomenon was showcased by Balcetis and Dunning (2006), who told participants that they would either consume a disgusting smoothie or orange juice, and that the computer would randomly assign their beverage by flashing either a letter or a number on the screen. Half were told that seeing a letter meant assignment to the smoothie, whereas a number meant assignment to the orange juice. The other half received the opposite pairing. In reality the figure shown to all participants could be perceived as either the letter B or the number 13. Results

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showed that most people saw the ambiguous image in the way that would lead to the desired outcome of receiving the orange juice, evidencing motivated perception.

In the current study we conducted a conceptual replication of this [Balcetis and Dunning \(2006\)](#) study to test the hypothesis that trait and state mindfulness would predict reduced motivated perception, indicative of lesser reliance on top-down perceptual processes.

2. Method

2.1. Participants

American adults ($N = 161$, 65% female) recruited from Amazon Mechanical Turk participated for a small financial reward. The study was described as evaluating the influence of pleasant and unpleasant tasks on behavior. Participants ranged in age from 18 to 65, ($M = 37.7$, $SD = 12.4$). Most indicated their race/ethnicity as White (82%), 8.0% as Asian, 7.5% as Black, and 2.4% as Native American, Pacific Islander, or “other.” Most reported having had some college education, receiving a bachelor’s or graduate degree (87.5%). Only 4.4% reported having a regular meditation practice for more than 6 months.¹

2.2. Procedures and measures

2.2.1. Consent and cover story

All participants provided informed consent. Participants were told that they would be assigned at random by a computer program to engage in either a pleasant task, which was watching a funny video clip of a comedian, or an unpleasant task, which was to complete high-level logic and mathematic problems as well as crossing out the number “5” in a randomly-generated, 150,000-integer-long number string. We further told participants that the computer would convey their assignment by flashing a either a letter (A–Z) or a number (1–26) on the screen. We counterbalanced the meaning of the letter or number by informing half the participants that seeing a letter meant they would do the pleasant task, whereas a number signaled the unpleasant task. For the other half of participants, the pairing was reversed.

2.2.2. B/13 task

Each participant was then presented a fixation point (3 s) prior to a 400 ms flash of the same ambiguous image used by [Balcetis and Dunning \(2006\)](#), which can be interpreted as either the letter “B” or the number “13” ([Fig. 1](#)). Participants were asked to indicate whether they saw a letter or a number (forced choice) and to type the letter or number they saw. To ensure participants were not simply seeing the ambiguity in the image and reporting it in the way that would lead to their desired task, we next made a supposed correction, stating the opposite pairing of tasks to the letter or number from what we had originally stated (e.g., participants originally told that a letter meant assignment to the video and a number to the logic task, we now stated that a letter meant the task and a number the video; procedure similar to [Balcetis & Dunning, 2006, Study 5](#)). After stating the switched meanings of the letter or number, we asked again whether they saw a letter or number, as a check to make sure no one changed what they said they saw. Subsequently, we asked how pleasant of a mood participants were in (1 = very unpleasant to 7 = very pleasant), and which task they hoped to be assigned to.



Fig. 1. Ambiguous B-13 stimulus.

2.2.3. State mindfulness

Next participants completed the State Mindfulness Attention and Awareness Scale ([Brown & Ryan, 2003](#)), which assesses the frequency of mindful behavior during a specified time frame. We asked participants to report on “the last five minutes,” so that ratings would reflect self-reported mindfulness at the time that the image was perceived. A sample item is, “During the last five minutes I found myself preoccupied with the future or the past” (reverse coded). This measure exhibited good reliability in the current sample ($\alpha = .88$).

2.2.4. Trait mindfulness

We subsequently measured trait mindfulness with the “Mindful Attention and Awareness Scale” ([Brown & Ryan, 2003](#)). This self-report measure asks participants to rate frequency of mindful experiences and behavior, with higher scores indicating greater mindfulness. This scale also exhibited good reliability in the current sample ($\alpha = .89$).

2.2.5. Suspicion probing and debriefing

Next participants completed demographics items and responded to two open-ended questions, “What was the purpose of the letter or number that flashed earlier?” and “What do you think was the purpose of the study?” Finally, participants learned that they would not engage in a pleasant or unpleasant task and received a debriefing form.

3. Results

Four participants began but did not complete the study, resulting in missing data for some variables. Participants with partial data were included in analyses for which they had complete data, but were omitted from analyses for which they had incomplete data.

3.1. Perceptions of the stimulus

Across all participants ($N = 161$), 69.6% reported seeing the stimulus as the letter “B,” and 30.4% reported seeing the stimulus as the number “13.” [Balcetis and Dunning \(2006\)](#) found frequencies of responses in the same direction, but to a lesser degree; in their sample of 50 participants, 54% reported seeing the letter “B” and 46% of participants reported seeing the number “13.” Of participants

¹ The same pattern of results holds when these participants are excluded from the analyses.

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