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MINDFULNESS INCREASES ANALYTICAL THOUGHT AND DECREASES JUST WORLD BELIEFS

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ABSTRACT

A growing body of research has found that engaging in mindfulness may alter thought processes in a range of different manners, such as increasing psychological well-being, decreasing stress, decreasing implicit racism, and many other positive psychological effects. The present study investigated whether engaging in mindfulness meditation would influence analytical thought processes. Participants listened to a 10-minute audio recording via noise-canceling headphones then answered a series of questions. Individuals who listened to the mindfulness recording answered more Cognitive Reflection Test questions analytically while participants in the control group answered them more intuitively. Participants in the mindfulness condition also indicated significantly lower scores on the Belief in a Just World scale.

INTRODUCTION

The general working definition of mindfulness is that it is "the awareness that emerges through paying attention on purpose, in the present moment, and nonjudgmentally to the unfolding of experience moment by moment (Kabat-Zinn, 2003, p. 144)." Engaging in mindfulness meditation aids individuals in understanding and reflecting upon their thoughts and emotions as mental events that are separate from themselves. This allows individuals to view their thoughts and reactions nonjudgmentally and understand that these mental states are ephemeral. This realization allows for individuals to refrain from their automatic reactions to these thoughts, and respond to internal impulses and environmental stimuli with greater cognitive control (Bishop et al., 2004).

This cognitive control that mindfulness helps produce has been shown to elicit many positive psychological, cognitive, and behavioral effects. Some of these effects include increasing psychological well-being (Brown and Ryan, 2003), decreasing stress (Baer et al., 2012),

increasing happiness (Killingsworth and Gilbert, 2010), and reducing food cravings in obese individuals (Alberts, Thewissen, and Raes, 2012). Participating in long-term (8-week) mindfulness sessions can lead to positive changes in thought patterns, such as decreases in ruminative thinking, anxiety, and other attitudes that may be deemed as dysfunctional (Ramel, Goldin, Carmona, and McQuaid, 2004). Consistent mindfulness regimens have also been shown to decrease thought suppression – an unsuccessful emotion regulation strategy that often leads to an increase in unwanted thoughts – in patients suffering from suicidal thoughts and substance abuse issues (Bowen, Witkiewitz, Dillworth, and Marlatt, 2007; Hepburn, Crane, Barnhofer, Duggan, Fennell, and Williams, 2009).

Although regular mindfulness sessions produce many positive changes to human thought processes, other research into mindfulness has shown that eliciting even a one-time temporary mindfulness state – produced by utilizing short audio recordings (approximately 10 minutes in length) – can have positive implications. These short-term mindfulness states have been found to decrease implicit racism, ageism, and linguistic in-group favoritism (Lueke and Gibson, 2015; Tincher et al., 2015). Mindfulness has particularly shown a propensity to reduce automaticity, as the mechanism by which mindfulness reduces age and race implicit bias is by weakening the automatic activation of stereotypes.

Due to the impact of mindfulness on automaticity, there is reason to believe that mindfulness may also aid in analytical thought processes as well. Research has shown that mindfulness decreases mind wandering and increases working memory capacity (Mrazek, Franklin, Phillips, Baird, and Schooler, 2013). By limiting distractions and remaining focused on the task at hand, mindfulness allows the majority of cognitive resources to be allocated with greater specificity and impact. Mindfulness has also been show to improve insight problem solving, in which the obvious answer is incorrect and individuals must reorganize information in order to achieve the correct solution (Ostafin & Kassman, 2012). By helping the mind disengage from the automatic solution that comes to it, mindfulness allows a better and more thorough investigation of information to arrive at more creative and accurate conclusion. In other words, whereas individuals often become fixated on the immediate solution, mindfulness provides greater cognitive awareness of all of the options and allow for the utilization of these options.

If mindfulness reduces reliance on automatic cognitive processes, which allows for improved cognitive functioning, and assists individuals in greater reflection upon their own thought processes and feelings (Bishop et al., 2004), then mindfulness may allow for individuals to better examine their thought processes to provide more thoughtful responses. Without the bombardment of automatic thoughts that often lead to automatic responses, the individual can more freely and objectively consider their world views and demonstrate logical reasoning abilities. The present study was designed to examine whether mindfulness would influence individuals' analytical thought processes. Specifically, we hypothesized that entering a mindfulness state would alter individuals' thought processes causing them to view situations more rationally.

To test this hypothesis, individuals entered a mindfulness meditative state and responded to questions from The Cognitive Reflection Test (CRT; Frederick, 2005) and Belief in a Just World

scale (Lipkus, 1991). The CRT is a test that is designed to measure an individual's ability to control his/her thought processes by superseding a response that is intuitive but incorrect, and to engage in deeper reflection that leads to the correct response – known as the analytical response. The Belief in a Just World scale measures the degree to which an individual believes that the world is a just place in where only bad people are punished. The belief in a just world can lead to negative and irrational thoughts and behaviors such as victim blaming (Furnham, 2003), so increases in rational thought may cause a decrease in this just world belief. Because mindfulness increases attention and the ability to reflect upon one's own thoughts and feelings, inducing a mindfulness state may influence individuals' perspective of each item on the CRT and Belief in a Just World scale, as well as their reflection on how they interpret each item, causing their responses to be more rational and analytical.

METHOD

Participants were 122 undergraduate students (50 male and 72 female; M_{age} = 19.25 years, SD = 4.03) from a small university in the Southeastern United States. Approximately 48% of the sample was Caucasian, followed by 39% African-American, 8% Hispanic, 1% Asian-American, and 4% biracial. Participants were given extra credit in one of their psychology courses as compensation for their participation.

Materials consisted of a 10-minute audio recording played via noise-canceling headphones, the Belief in a Just World scale (Lipkus, 1991) and the Cognitive Reflection Test (Frederick, 2005) – which contains questions that have an intuitive (but incorrect) answer and an analytical (correct) answer. Participants in the experimental group listened to a recording to instill a mindfulness state, in which a female voice instructed participants to remain in a state of focus while becoming aware of their bodily sensations (e.g. breath). Participants in the control group listened to the same female voice describe an English countryside. These recordings have been used in previous mindfulness research to successfully create a mindfulness condition and control condition (Lueke & Gibson, 2014).

Participants were randomly assigned to either the control or experimental (mindful) condition. After listening to the audio recording, the participants were given a questionnaire that contained the Belief in a Just World scale, the Cognitive Reflection test, and three demographic questions asking for the participant's age, sex, and race.

RESULTS

Independent-samples *t*-tests indicated that individuals who listened to the mindfulness recording answered more Cognitive Reflection Test questions analytically, $t(120) = 2.61$, $p < .05$,while participants in the control group answered them more intuitively, $t(120) = 2.10$, $p < .05$. Participants in the mindfulness condition also indicated lower scores on the Belief in a Just World scale, $t(120) = 2.32$, $p < .05$. These results suggest that producing a mindfulness state increases participants' likelihood of engaging in analytical thinking.

DISCUSSION

The purpose of the present study was to examine whether mindfulness could increase individuals' thought processes that are analytical in nature – focusing on suppressing automatic or intuitive processes and developing analytical approaches to problems and situations. Specifically, the CRT and Belief in a Just World scale were used to operationalize analytical thought. The results supported our hypothesis. Inducing a mindfulness state – even one that is produced by a 10-minute audio recording – increased analytical thought processes. Participants who listened to the mindfulness recording – when compared to the control group – gave significantly more analytical (correct) responses to the CRT questions and gave significantly lower ratings of agreement toward the items in the Belief in a Just World scale – indicating that participants in a mindfulness state approached the items on both of these scales more analytically and less intuitively. The importance of these findings lie within the fact that increasing analytical thought processes and perspectives may in turn decrease negative beliefs and behaviors. For instance, although believing in a just world may seem harmless, it can lead to irrational and harmful attitudes and behaviors, such as viewing an innocent rape victim negatively (Kleinke and Meyer, 1990). The present study has shown that inducing mindfulness may help alleviate these social issues.

The results from this study are consistent with previous mindfulness studies that have also found cognitive improvements when participants enter a mindfulness state (Alberts et al., 2012; Bishop et al., 2004; Bowen et al., 2007; Hepburn et al., 2009; Lueke and Gibson, 2015; Mrazek et al., 2013). This study adds to the growing body of literature another positive effect of mindfulness that had not yet been studied – analytical perspectives and beliefs in a just world. This experiment, much like the previous mindfulness experiments, illustrates the importance of implementing mindfulness on a larger scale. This technique improves memory, self-control, implicit biases, and rational thinking.

There are some limitations to this study that should be addressed. For instance, to induce a mindfulness state, a 10-minute audio recording was used. Although this recording has been used in previous mindfulness research with effective results (Lueke and Gibson, 2015), for consistent long-term effects a regular weekly regimen of mindfulness induction may be necessary. Also, rational thought was measured using scales. The scales used in this study were well validated, but it is difficult to know how well these two scales accurately measured rational thought. Using some sort of behavioral measure might produce more salient effects. However, the scales in this study still recorded significant differences between the control and mindfulness groups, so they serve as a great starting point for further investigation into the positive effects that mindfulness has on analytical thought processes and rational perspectives regarding the world.

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APPENDIX

Table 1. Correlation Matrix for Variables Examined

Variables	1	2	3
1. Just World Belief		-.204*	.209*
2. Analytical Thought	-.204*		-.616**
3. Intuitive Thought	.209	-.616**	

* $p < .05$
** $p < .001$

AUTHORS' NOTE

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