Gender differences in response to a school-based mindfulness training intervention for early adolescents

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\textbf{ABSTRACT}

Mindfulness training has been used to improve emotional wellbeing in early adolescents. However, little is known about treatment outcome moderators, or individual differences that may differentially impact responses to treatment. The current study focused on gender as a potential moderator for affective outcomes in response to school-based mindfulness training. Sixth grade students (\(N = 100\)) were randomly assigned to either the six weeks of mindfulness meditation or the active control group as part of a history class curriculum. Participants in the mindfulness meditation group completed short mindfulness meditation sessions four to five times per week, in addition to didactic instruction (Asian history). The control group received matched experiential activity in addition to didactic instruction (African history) from the same teacher with no meditation component. Self-reported measures of emotional wellbeing/affet, mindfulness, and self-compassion were obtained at pre and post intervention. Meditators reported greater improvement in emotional wellbeing compared to those in the control group. Importantly, gender differences were detected, such that female meditators reported greater increases in positive affect compared to females in the control group, whereas male meditators and control males displayed equivalent gains. Uniquely among females but not males, increases in self-reported self-compassion were associated with improvements in affect. These findings support the efficacy of school-based mindfulness interventions, and interventions tailored to accommodate distinct developmental needs of female and male adolescents.

\section{1. Introduction}

Early adolescence presents unique developmental challenges and opportunities for implementing mental health intervention strategies. Early symptoms of emotional disturbance, such as depression or context-inappropriate behaviors or feelings (\textit{Code of Federal Regulations, Title 34, §300.8(c)(4)(ii), 2004}) tend to emerge during early adolescence (Paus, Keshavan, & Giedd, 2008) with
the prevalence rate of 11% to 50% of school-age children experiencing emotional problems severe enough to warrant the use of mental health services (Carter et al., 2010; Kessler et al., 2012; Romano, Tremblay, Vitaro, Zoccolillo, & Pagani, 2001; U.S. Department of Health and Human Services, and Centers for Disease Control and Prevention, 2013). Given the prevalence of pathology and wide need for prevention, development of cost-effective and generalizable interventions that aim to improve emotional wellbeing of adolescents is critical. One emerging strategy that has shown promising effects among the adolescent populations is mindfulness training (Biegel, Brown, Shapiro, & Schubert, 2009; Bogels, Hoogstad, Dun, Schutter, & Restifo, 2008; Broderick & Metz, 2009; Napoli, Krecz, & Holley, 2005; Saltzman & Goldin, 2008; Schonert-Reichl & Lawlor, 2010; for a review, see Burke, 2010). However, less is known about moderators of treatment outcomes or factors that influence treatment efficacy that are necessary to inform successful development of evidence-based intervention strategies (Ospina et al., 2007). The current study addressed gender, a critically relevant risk factor for emotional wellbeing/impact among adolescents (for meta-analyses, see Else-Quest, Hyde, Goldsmith, & Van Hulle, 2006; Hofmann, Sawyer, Witt, & Oh, 2010), as a potential treatment outcome moderator for mindfulness intervention success among early adolescents.

1.1. Mindfulness training in school

Mindfulness training aims to cultivate mindful awareness with nonjudgmental approaches to thoughts, sensations, and feelings, and greater compassion toward one's thoughts and actions (Kabat-Zinn, 1990). Mindfulness training was previously shown to increase self-reported mindfulness (Chambers, Lo, & Allen, 2008; Zeidan, Johnson, Diamond, David, & Goolkasian, 2010) and self-compassion (Birnie, Speca, & Carlson, 2010; Neff, 2003), and positive affect was associated with increases in mindfulness (Baer, 2003) and self-compassion (Hollis-Walker & Colosimo, 2011; Van Dam, Sheppard, Forsyth, & Earleywine, 2011). Therefore, improvements in mindfulness and self-compassion in meditators may predict enhanced affective wellbeing.

Mindfulness training aims to cultivate moment-to-moment non-elaborative attention to and awareness of external and internal events, such as thoughts, emotions and body sensations (Kabat-Zinn, 1990). In practice, individuals maintain awareness of and attention to the present moment, whenever mind wanders, gently but firmly bring back the focus of attention to the initial target object. The goal of such practice is to train the mind to be stable and disengage from habitual mental processes, such as emotional reactivity (Kang, Gruber, & Gray, 2013, 2014). Mindful attention may allow individuals to identify secondary elaboration of thought processes at the moment they enter the mind. For example, when a student fails an exam, her mind may generate condemnatory self-reactivity (Kang, Gruber, & Gray, 2013, 2014). Mindful attitude may either prevent such secondary evaluations from occurring, or help individuals to embrace already occurred evaluative thoughts as they are, without suppression or distortion (e.g., “I am a failure.”). Mindful attitude may either prevent such secondary evaluations from occurring, or help individuals to embrace already occurred evaluative thoughts as they are, without suppression or distortion (e.g., “I am feeling as though I am a failure.”). Maintaining a subtle distance from mental experiences and observing thoughts as mental events that do not necessarily reflect facts of reality, or de-centering through mindful attention (Segal, Williams, & Teasdale, 2002), can in turn lead to healthy coping strategies to social and academic challenges unique to school environments.

Mindful skills may be particularly beneficial in the midst of increasing demands and challenges students face in their academic and social life. Currently, an increasing number of youths are experiencing clinical disorders and stress-related behavioral problems (e.g., Card & Hodges, 2008; Currie et al., 2002; Lohaus & Ball, 2006): It is estimated that 22.2% of the youths in United States currently have or will have a severe mental disorder (Merikangas et al., 2010), with affect-related disorders such as anxiety and depression being among the most prevalent diagnoses (World Health Organization, 2002). Thus, considering the mental health of students is increasingly imperative to successful formal education, and the vital function of contemporary schools should include not only propagating knowledge, but also cultivating cognitive and affective skills to prevent psychological disorders and adaptively manage social and academic stressors.

School-based mindfulness training can be a powerful addition to existing school programs and can effectively function to meet students' psychological needs. First, mindfulness practice explicitly aims to enhance positive qualities of mind including self-discipline, emotion awareness and regulation, prosocial orientation such as compassion and empathy, and ethical decision making (e.g., Zener, Hermleben-Kurz, & Walach, 2014). These qualities might in turn help students to adaptively respond to increasing challenges and flourish in stressful environments (e.g., Shapiro, Brown, & Astin, 2008). Second, school is the primary foundation of most children's social life outside family, and what they have learned through mindfulness training can be directly applied among their peers. Continuous feedback loops can motivate students and provide an ideal ground to monitor their progress. Third, the preventative nature of mindfulness training may provide additional benefits to nonclinical groups before problematic behaviors reach a clinical severity (e.g., Britton et al., 2014). It can also help avoid social stigma associated with traditional clinical treatment programs for clinical groups. Fourth, mindfulness-based programs are often administered in groups, akin to classroom settings, and with standardized intervention modules at a relatively low cost (Weare & Nind, 2011). Mindfulness training may be especially effective for the schools in low income and underserved communities, where the need for general and preventative mental health resources is greatest (Mendelson et al., 2010). These unique features collectively position mindfulness training feasible for school-based group interventions.

For these reasons, mindfulness is especially suitable for integration into school psychology practice (Felver, Doerner, Jones, Kaye, & Merrell, 2013); however, mindfulness research is yet to be centrally established in school psychology. Theories and practice available in mindfulness can offer new and effective school-based interventions to help maintain and enhance affective health of students. Mindfulness intervention could be implemented by school psychologists with foundational training in mindfulness intervention via classroom-based small group interventions, and school psychology programs can prepare clinicians who can provide mindfulness-based consultative services in school. Given their specific training and major roles in addressing mental health needs of adolescents, school psychologists can provide insights into the mindfulness-based intervention research for children, and more generally, the development of preventative interventions that focus on using inherent individual strengths of the child.
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