



# A randomized controlled pilot trial of classroom-based mindfulness meditation compared to an active control condition in sixth-grade children<sup>☆</sup>

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## ABSTRACT

The current study is a pilot trial to examine the effects of a nonelective, classroom-based, teacher-implemented, mindfulness meditation intervention on standard clinical measures of mental health and affect in middle school children. A total of 101 healthy sixth-grade students (55 boys, 46 girls) were randomized to either an Asian history course with daily mindfulness meditation practice (intervention group) or an African history course with a matched experiential activity (active control group). Self-reported measures included the Youth Self Report (YSR), a modified Spielberger State-Trait Anxiety Inventory, and the Cognitive and Affective Mindfulness Measure –Revised. Both groups decreased significantly on clinical syndrome subscales and affect but did not differ in the extent of their improvements. Meditators were significantly less likely to develop suicidal ideation or thoughts of self-harm than controls. These results suggest that mindfulness training may yield both unique and non-specific benefits that are shared by other novel activities.

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## 1. Introduction

Children in the United States face myriad psychological challenges, including depression, anxiety, and attention deficits (Bloom, Dey, & Freeman, 2006). It is estimated that the prevalence among American youth of a mental disorder resulting in severe impairment is as high as 22.2% (Merikangas et al., 2010). Not only do many disorders emerge during childhood and adolescence (Costello, Angold, & Keeler, 1999; Paus, Keshavan, & Giedd, 2008), but also early symptoms of psychological distress can also be predictive of later episodes of minor and major illnesses (Keenan et al., 2008), and subclinical symptoms of depression during adolescence can predict later episodes in adulthood (Pine, Cohen, Cohen, & Brook, 1999). For some, adolescence can be a dangerous period, as unmonitored mood problems and stress can lead to self-harming behaviors and suicide (Beautrais, 2003; Laye-Gindhu & Schonert-Reichl, 2005). Excessive stress during developmental periods can also lead to serious cognitive consequences in adult life

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(Davidson & McEwen, 2012; Hedges & Woon, 2011). Accordingly, pre-adolescence represents a significant window of opportunity during which an intervention can help prevent the development of later life challenges, including a major psychiatric disorder.

It has been argued that schools have become the frontline of the mental health system for children and adolescents (Burns et al., 1995). Many American schools offer a variety of mental health services ranging from acute care to more generalized prevention programs, implemented through full-service school-based health centers, school psychologists, or guidance counselors. However, the availability of such services varies depending upon local resources (Weist, 1997), and there is a consensus that the mental health needs of many children in the United States remain largely unmet, especially among minority groups and the uninsured (Broman, 2012; Costello, Egger, & Angold, 2005; DeRigne, 2010; Flisher et al., 1997; Kataoka, Zhang, & Wells, 2002; Kessler et al., 2001; Williams & Chapman, 2011; Wu, Katic, Liu, Fan, & Fuller, 2010). Undoubtedly, schools with limited resources would benefit from low cost interventions that are proven to improve student mental health.

Programs that are integrated directly into regular classroom curricula may offer cost-effective alternatives to after-school initiatives, which require additional resources and may not be available to students with competing demands for time, such as jobs or afterschool activities. Programs that are integrated into curricula also present a potential advantage over those offered through health services, which are also not always available to students in impoverished communities. As a result, a variety of classroom-based, teacher-implemented programs have been developed to help prevent the onset of psychological, emotional, behavioral, and social disorders among children (Leaf et al., 1996; Rones & Hoagwood, 2000). Some school health programs promote health by focusing on general knowledge about care for oneself and others, whereas others teach specific skills to help students lead healthy lifestyles. At least one study (Schlitt et al., 2000) provides evidence that up to around 50% of school-based mental health centers in the United States offer classroom-based behavior modification programs, which suggests popular support for curriculum-integrated intervention strategies. Furthermore, programs that are integrated into existing curricula offer an indirect advantage in the sense that they may reduce the stigma surrounding the procurement of mental health services. Stigma is a common reason that youth do not seek and receive mental health treatment – by incorporating mindfulness interventions directly into the classroom, students and teachers are given an opportunity to raise and discuss mental health concerns.

Recently, mindfulness meditation has experienced growing popularity as a form of school-based intervention and has been incorporated into educational curricula throughout the United States, both in K-12 schools (Greenberg & Harris, 2012; Kaiser-Greenland, 2010; Meiklejohn et al., 2012; Mind and Life Education Research Network (MLERN), 2012) and in higher education (Shapiro, Brown, & Astin, 2011). Mindfulness meditation involves two core activities, the cultivation of attention regulation and emotional equanimity, and has been defined as the process of, “bringing one’s complete attention to the present experience on a moment-to-moment basis” (Marlatt & Kristeller, 1999, p. 68). School-based meditation programs implement simple techniques designed to enhance self-awareness and self-regulation of attention, emotions, and behavior in children and adolescents (Greenberg & Harris, 2012; MLERN et al., 2012). Primary practices in school-based meditation programs (particularly mindfulness) include directing attention to a specific “attentional anchor” – a focus of attention, such as the sensations of breathing or environmental sounds, that one returns to whenever the mind wanders – in order to cultivate greater clarity and acceptance of moment-to-moment experience. Such programs often adapt practices from mindfulness programs developed for adults, such as Mindfulness-Based Stress Reduction (MBSR), an 8-week stress reduction program that incorporates stress education, group therapy, and meditations drawn from Buddhist traditions (Carbani, Roach, & Fredrick, 2013; Kabat-Zinn, 1990). Other school-based programs adopt practices such as yoga (Khalsa, Hickey-Schultz, Cohen, Steiner, & Cope, 2012) and tai chi (Wall, 2005). Interventions can involve daily practice (Beauchemin, Hutchins, & Patterson, 2008; Schonert-Reichl & Lawlor, 2010) or be composed of weekly sessions with additional “homework” meditation sessions. Informal meditation practices are also used, which involve incorporating mindful awareness into common activities such as walking, eating, and talking (Meiklejohn et al., 2012).

Empirical studies in adults suggest that meditation practices may have positive impacts on a wide range of conditions that start in adolescence, including anxiety, depression (Grossman, Niemann, Schmidt, & Walach, 2004; Hofmann, Sawyer, Witt, & Oh, 2010), and suicidal behavior (Williams, Duggan, Crane, & Fennell, 2006). Additionally, studies in adults have also found improvements in sustained attention (Jha, Krompinger, & Baime, 2007; Kaul, Passafiume, Sargent, & O'Hara, 2010; MacLean et al., 2010; Valentine & Sweet, 1999), executive function and self-regulation (Chambers, Lo, & Allen, 2008; Heeren, Van Broeck, & Philippot, 2009; Ortner, Kilner, & Zelazo, 2007; Tang, Yang, Leve, & Harold, 2012; Tang et al., 2007; Zeidan, Johnson, Diamond, David, & Goolkasian, 2010; Zylowska et al., 2008), which are important markers of risk in children and adolescents. In children and adolescents, poor executive functioning, including self-regulation problems and attention problems, is predictive of a wide range of behavioral and emotional problems, especially depression, anxiety, and suicidality (Moffitt et al., 2011; Tang et al., 2012). Conversely, better executive functioning is associated with greater emotional, behavioral, and health outcomes (Blair & Peters, 2003; Blair & Razza, 2007; Carlson, Mandell, & Williams, 2004; Carlson & Moses, 2001; Lefevre et al., 2013; Moffitt et al., 2011).

Because of the widespread popularity, application, and scientific study of meditation in adults, there has been much interest and enthusiasm in applying these practices earlier in life, during childhood and adolescence. A few well-designed randomized control trials (RCTs) suggest that mindfulness-based programs may benefit clinical samples of children and adolescents with anxiety, depression (Beauchemin et al., 2008; Biegel, Brown, & Shapiro, 2009), and attention problems (Semple, Lee, Rosa, & Miller, 2010; Zylowska et al., 2008).

However, there are serious limitations to the body of mindfulness research on children and adolescent populations (Burke, 2010). In addition to the many pilot trials that suffer from small sample sizes (Bogels, Hoogstad, van Dun, De Shutter, & Restifo, 2008; Singh et al., 2007), previous studies have often involved clinical samples that preclude generalization to normal adolescent populations (Biegel et al., 2009; Singh et al., 2007; Singh et al., 2010; Zylowska et al., 2008). Such samples include only those children whose symptoms have been severe enough to warrant treatment. Broader interventions for larger, nonclinical groups

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