



## Effectiveness of a school-based mindfulness program for transdiagnostic prevention in young adolescents



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### ABSTRACT

Anxiety, depression and eating disorders show peak emergence during adolescence and share common risk factors. School-based prevention programs provide a unique opportunity to access a broad spectrum of the population during a key developmental window, but to date, no program targets all three conditions concurrently. Mindfulness has shown promising early results across each of these psychopathologies in a small number of controlled trials in schools, and therefore this study investigated its use in a randomised controlled design targeting anxiety, depression and eating disorder risk factors together for the first time. Students ( $M$  age 13.63;  $SD = .43$ ) from a broad band of socioeconomic demographics received the eight lesson, once weekly, (“Dot be”) mindfulness in schools curriculum ( $N = 132$ ) or normal lessons ( $N = 176$ ). Anxiety, depression, weight/shape concerns and wellbeing were the primary outcome factors. Although acceptability measures were high, no significant improvements were found on any outcome at post-intervention or 3-month follow-up. Adjusted mean differences between groups at post-intervention were .03 (95% CI:  $-.06$  to  $-.11$ ) for depression, .01 ( $-.07$  to  $-.09$ ) for anxiety, .02 ( $-.05$  to  $-.08$ ) for weight/shape concerns, and .06 ( $-.08$  to  $-.21$ ) for wellbeing. Anxiety was higher in the mindfulness than the control group at follow-up for males, and those of both genders with low baseline levels of weight/shape concerns or depression. Factors that may be important to address for effective dissemination of mindfulness-based interventions in schools are discussed. Further research is required to identify active ingredients and optimal dose in mindfulness-based interventions in school settings.

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Anxiety and depression typically emerge in mid-late adolescence (Neil & Christensen, 2009; Teesson et al., 2014; Zisook et al., 2007) and although eating disorders can emerge earlier, a peak also occurs at this time (Doyle, Smyth, & Grange, 2012) with high levels of comorbidity (Pearlstein, 2002). Twelve month prevalence rates for anxiety and depression in young Australians are 15% and 6% respectively (Australian Bureau of Statistics, 2007). These conditions tend to become chronic and episodic, spreading to impact academic achievement, employment, social relationships and physical health (Neil & Christensen, 2009). Eating disorders in Australia, affecting approximately ten percent of adolescents (Fairweather-Schmidt & Wade, 2014), are severe, chronic

conditions that are usually associated with other serious physical and psychological pathologies, and result in lowered quality of life (Agras, 2001). However, even subclinical disordered eating, affecting over 20% of young women in one Australian study, is associated with significant reductions in quality of life (Wade, Wilksch, & Lee, 2012). Evidence is accumulating for transdiagnostic risk factors across these three disorders, including difficulties in emotional regulation (Aldao, Nolen-Hoeksema, & Schweizer, 2010), rumination (McEvoy, Watson, Watkins, & Nathan, 2013; Nolen-Hoeksema & Watkins, 2011) and maladaptive perfectionism (Egan, Wade, & Shafran, 2011) with its key element of harsh self-criticism (Dunkley, Zuroff, & Blankstein, 2003). Hence a combined intervention approach might be possible.

School-based prevention programs offer a means of targeting a broad portion of the population at or before peak emergence of these conditions (Calear & Christensen, 2010; Nehmy, 2010). A strong case exists for “universal” programs which are offered to all

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students, thus avoiding the disadvantages of programs that select out at-risk individuals e.g., lack of failsafe screening, potential stigmatisation and the loss of opportunity for immunising all youth (Nehmy, 2010). To date, no prevention program successfully targets anxiety, depression and eating disorders simultaneously, which would be an advantage in terms of cost effectiveness and reducing demands on school curricula.

Mindfulness presents as one promising strategy, defined as “the awareness that emerges through paying attention on purpose, in the present moment, and non-judgementally to the unfolding of experience moment by moment” (Kabat-Zinn, 2003, p. 145). Kabat-Zinn brought ideas stemming from Buddhist origins into a scientific and secular context with his eight week program for adults (Mindfulness Based Stress Reduction, MBSR; Kabat-Zinn, 1990). Segal, Williams, and Teasdale (2002) built on this framework, incorporating cognitive behaviour therapy (CBT) elements to develop Mindfulness Based Cognitive Therapy (MBCT) for people with recurrent depression (McCown, Reibel, & Micozzi, 2010). Mindfulness addresses the transdiagnostic risk factors of interest by fostering the capacity to notice and allow strong unpleasant emotions (e.g., Arch & Craske, 2006; Leahey, Crowther, & Irwin, 2008), to step back from thoughts and recognise them as transient mental events that may not be factual (e.g., Bieling et al., 2012; Teasdale et al., 2002) and to cultivate a friendly, compassionate and non-judgemental stance towards oneself (e.g., Kuyken et al., 2010; Shapiro, Brown, & Biegel, 2007).

Over thirty years of research on mindfulness-based interventions (MBSR and MBCT) in adults shows robust support for treatment of anxiety and depression (especially of a recurrent nature) with moderate effect sizes (Baer, 2003; Grossman, Niemann, Schmidt, & Walach, 2004; Khoury et al., 2013). More recently, benefits are emerging for eating disorders, particularly binge and emotional eating (Katterman, Kleinman, Hood, Nackers, & Corsica, 2014). However the current state of research in youth is a much newer field overrepresented at this nascent stage by uncontrolled trials (Britton et al., 2014; Burke, 2010; Felver, Celis-de Hoyos, Tezanos, & Singh, 2015; Meiklejohn et al., 2012; Tan, 2015; Waters, Barsky, Ridd, & Allen, 2014; Zack, Saekow, Kelly, & Radke, 2014).

It has been suggested that adolescents may receive particular benefit from school based mindfulness programs given the confluence between adequate cognitive development and the increase in academic and social stressors (Broderick & Metz, 2009; Kuyken et al., 2013). To date there have been eight controlled studies of mindfulness interventions derived from MBCT or MBSR in secondary schools. Improvements have been reported across a range of outcomes including negative affect (Bluth et al., 2015; Broderick & Metz, 2009; Kuyken et al., 2013; Raes, Griffith, Van der Gucht, & Williams, 2014; Sibinga et al., 2013), stress (Kuyken et al., 2013; Metz et al., 2013), optimism/wellbeing (Kuyken et al., 2013), rumination (Sibinga et al., 2013), emotional regulation, calmness and somatization (Broderick & Metz, 2009; Metz et al., 2013), and eating disorder risk factors/symptoms (Atkinson & Wade, 2015).

Four of these eight studies are of note, three being randomised controlled trials (Atkinson & Wade, 2015; Raes et al., 2014; Sibinga et al., 2013) and three including follow-up (3 months, Kuyken et al., 2013; and 6 months, Raes et al., 2014; Atkinson & Wade, 2015). Two of these studies found significant improvements for depression, both showing between-group effect sizes of  $d = .3$  at post-intervention and follow-up (Kuyken et al., 2013; Raes et al., 2014) and with both a treatment and prevention effect demonstrated by Raes and colleagues. A broadening of results at follow-up to include reduced stress ( $d = .25$ ) and increased wellbeing ( $d = .3$ ) was also shown by Kuyken et al., (2013) suggesting mindfulness skills may strengthen over time, in contrast to the gradually decreasing long

term effects of many school prevention programs (Stockings et al., 2015; Weare & Nind, 2011). Although no improvements in negative affect were found in either of the following studies, Sibinga et al. (2013) showed reduced anxiety and rumination compared to controls at the end of the intervention, with medium between-group effect sizes ( $d = .64$  and  $.79$  respectively), and Atkinson and Wade (2015) demonstrated improvements in a broad range of eating disorder variables, with medium between-group effect sizes ranging from  $.47$  to  $.67$  at 6-month follow-up. The limitations of these studies include the lack of randomisation (Kuyken et al., 2013), small sample size and large attrition rates (Sibinga et al., 2013), use of an eating disorder specific programme (Atkinson & Wade, 2015), and limited outcome variables (Raes et al., 2014). However, findings across these four studies suggest that mindfulness programs are worthy of replication and continued exploration under more rigorous experimental conditions.

Mindfulness-based interventions (MBSR and MBCT) traditionally place an emphasis on the importance of daily home practice to maximise benefits, although empirical support for this is conflicting. Some researchers have demonstrated a positive association between formal practice and outcome in adults (e.g., Crane et al., 2014; Perich, Manicavasagar, Mitchell, & Ball, 2013) and youth (Huppert & Johnson, 2010; Kuyken et al., 2013) but other adult studies have shown no benefit without a trauma background (Williams et al., 2014) and no relationship between informal practice and outcomes (Crane et al., 2014). Given the constrict audience in school-based mindfulness interventions, and the competing demands for homework time across subjects, the benefits of home practice are particularly important to investigate further in youth.

Therefore the first aim of our study was to assess whether the promising effects of mindfulness-based interventions in schools could be replicated in a randomised controlled trial independent of program developers in an Australian context. The second related aim was to investigate a broad range of primary outcome measures, including anxiety, depression, wellbeing, and a risk factor for eating disorders (weight and shape concerns), in order to assess the potential of this intervention as a transdiagnostic prevention program. Secondary measures were two transdiagnostic risk factors that have shown a relationship to mindfulness in non-experimental research in adolescents: emotional dysregulation (Ciarrochi, Kashdan, Leeson, Heaven, & Jordan, 2011; Kerrigan et al., 2011) and self-compassion (a potential antidote to self-critical perfectionism; Bluth & Blanton, 2014). Changes in the mindfulness construct were investigated as well, as recommended by Tan (2015). The third aim was to assess whether any benefits were moderated by increased adherence to home practice. We predicted that all of our outcome measures would show improvement in the mindfulness group compared to the control group at post-intervention and follow-up. It was also predicted that, compared to the control group, the mindfulness intervention would be more effective in improving the primary outcome variables in those with high levels of home mindfulness practice.

## 1. Method

### 1.1. Participants

A range of urban coeducational secondary schools in Adelaide, South Australia who were either known to the researchers, had expressed interest in being involved in research or were conveniently located were contacted by email with telephone follow up, and four schools (one private, three public) agreed to participate. One public primary school also expressed interest in taking part and was included in the study. Students in Year 7 (primary school)

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