

**Supporting emotional wellbeing in schools: The efficacy of a mindfulness-based group
intervention on anxious and depressive symptoms in children**

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Abstract

Objective: This study examines the efficacy of a six week child mindfulness program (TRIPLE R) in teaching mindfulness skills and reducing negative emotional symptoms in a school setting.

Method: Using a correlational within-subjects repeated measures design, the relationships between child self-reported mindfulness skills and negative emotional symptoms were explored.

Mindfulness skills were measured using the Child and Adolescent Mindfulness Measure (CAMM; Greco, Baer & Smith, 2011), and emotional symptoms were measured using the Revised Children's Anxiety and Depression Scale (RCADS; Chorpita, Yim, Moffitt, Umemoto, & Francis, 2000). A sample of 57 Australian grade 5 children in three primary schools completed the measures pre and post intervention.

Results: There was a small to moderate increase in mindfulness skills post intervention (Cohen's $d = 0.32$), however negative emotional symptoms did not significantly improve. Increased mindfulness skills were significantly associated with decreased emotional symptoms, most notably for symptoms related to social phobia ($R = -.61$), separation anxiety ($R = -.42$) and generalised anxiety ($R = -.32$).

Discussion: This study provides preliminary support for the TRIPLE R program and the potential benefits of school-based mindfulness interventions in improving children's wellbeing. The limited improvement in negative emotional symptoms is likely related to the non-clinical sampling. The relationship between increased mindfulness skills and decreased emotional symptoms is discussed, and recommendations for further research are presented.

Keywords: mindfulness, anxiety, depression, wellbeing, children, school

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In today's society, children experience increasing challenges. They are expected to manage high study demands, social relationships, social media, and navigate their own thoughts and feelings and associated developmental changes as they hit puberty; all within the backdrop of varying familial stability, support, and personal and learning capabilities (Thompson & Gauntlett-Gilbert, 2008). Schools are increasingly searching for ways to foster a capacity for resilience and wellbeing in children, and to provide early intervention during primary school to teach a range of skills and techniques that enhance children's self-awareness, coping and social skills (Huppert & Johnson, 2010; Napoli et al., 2005). Mindfulness is proving a successful intervention to improve wellbeing in adults (Kabat-Zinn, 2003; Keng, Smoski, & Robins, 2011), and is being used increasingly with both adolescents and children (Thompson & Gauntlett-Gilbert). Research into the effectiveness of schools-based interventions using mindfulness techniques is growing, and initial studies show promise for improving wellbeing in children (Liehr and Diaz, 2010; Kuyken et al., 2013).

Mindfulness has been defined as "the awareness that emerges through paying attention on purpose, in the present moment, and non-judgmentally to the unfolding of experience moment by moment" (Kabat-Zinn, 2003, p.145). The process and practice of mindfulness has in Buddhist philosophy long been believed to alleviate suffering that is experienced when the mind is focused on the past or future. In returning to the present moment, mindfulness helps counter experiential avoidance strategies (Hofmann, Sawyer, Witt & Oh, 2010), which contribute to the maintenance of many emotional disorders (Hayes, 2004). Mindfulness can bring alleviation from anxious and depressive symptoms, and contribute to general wellbeing (Grossman, Niemann, Schmidt, &

Walach, 2004; Keng et al., 2011). Increased awareness and non-judgmental observation of thoughts and feelings can positively impact emotional regulation and lead to alternative behavioural choices that positively impact relationships (Hayes & Feldman, 2004; Huppert & Johnson, 2010; Thompson & Gauntlett-Gilbert, 2008). Increased mindfulness practice can improve attention and cognitive functioning (Keng et al.), positively impacting learning, problem solving, and decision-making (Huppert & Johnson, 2010).

Although research has predominantly centred on the impact of mindfulness on psychological wellbeing in adults, recent attention has focused on studying the effects of mindfulness in children and adolescents. Evidence has shown that individuals with earlier onset of anxious or depressive symptoms are at greater risk for anxiety or mood disorders later in life as well as other psychological issues and disorders (Costello, Egger & Angold, 2005), and increasing numbers of children and adolescents are being diagnosed with anxiety or depressive disorders (Farrell & Barrett, 2007; ter Wolbeek, van Doornen, Kavelaars, Tersteeg-Kamperman & Jeijnen, 2011).

As childhood development lays the foundation for wellbeing in adulthood (Costello et al., 2005), and children are facing increased pressures to perform academically, to navigate social media and manage relationship issues, as well as function in changing family systems (Napoli et al., 2005) it is more important than ever to foster mental health from an early age. Early intervention and preventative programs that enhance wellbeing, coping and social skills in children must be a priority (Esbjorn, Somhovd, Turnstedt, & Reinholdt-Dunne, 2012). While previous programs which focused on teaching problem solving and social skills had limited effect, more recent studies are attempting to replicate effective interventions for adults in child populations (Joyce, Etty-Leal, Zazryn, & Hamilton, 2010). Napoli et al. advocated for the growing role schools play in

implementing prevention programs, and incorporating mindfulness practices and training into the classroom.

Research investigating mindfulness in children is limited although growing (Burke, 2010; Thompson & Gauntlett-Gilbert, 2008). In a review of the current research on mindfulness-based approaches for children and adolescents, Burke discussed a small number of existing studies that show tentative evidence for improvements in anxiety symptoms, attention deficit hyperactive disorders, attention, and social skills in clinical and non-clinical samples of school children; although references numerous limitations in the research. In a non-randomised controlled study, Kuyken et al. (2013) found that a Mindfulness in Schools Program delivered over 9 weeks to 12-16 year olds was effective in teaching mindfulness skills, reducing depressive symptoms and stress, and in enhancing wellbeing. Huppert and Johnson (2010) found that modified short mindfulness for adolescent student males failed to provide significant differences between mindfulness and control groups on measures of mindfulness, resilience and psychological wellbeing, but did produce positive association in the mindfulness group between amount of practice and improvement in psychological wellbeing and mindfulness.

In a pilot study with children from minority backgrounds, a Mindful Schools-designed program of mindfulness delivered in ten 15-minute classes every day for two weeks reduced anxious and depressive symptoms in 8-11 year olds (Liehr and Diaz, 2010). In a pilot study with Australian children aged 10-13 years using 45 minute mindfulness program over 10 sessions, designed to be congruent with principles outlined by Kabat-Zinn (1994), Joyce et al. (2010) found a decrease in self-reported anxiety and depressive symptoms, and an increase in teacher-reported improvements in emotional health. While there were no control groups or long term follow up, this

research provides support for a tailored intervention within schools that successfully teaches mindfulness skills and reduces anxious and depressive symptoms in Australian 10-13 year olds.

To date, research has been restricted by a lack of quantitative research and substantial empirical evidence, small samples and lack of control groups (Burke, 2010). In addition none of the above studies used an empirically validated mindfulness measure specifically designed for children and/or adolescents to assess mindfulness skills pre and post treatment. Kuyken et al. (2013) measured mindfulness postintervention by asking questions regarding practice; Joyce et al., (2010) asked teachers to provide a one-page reflection on their teaching of mindfulness meditation and associated barriers; Liehr and Diaz (2010) indicated no mindfulness measurement and Napoli et al. (2005) used a measure of attention. Huppert and Johnson (2010) measured mindfulness pre and post intervention using the Cognitive and Affective Mindfulness Scale-Revised (CAMS-R; Feldman, Hayes, Kumar, Greeson, & Laurenceau, 2007), although this measure was designed for use with clinical adult populations.

While a number of self-reported assessment measures for mindfulness have been developed for use in adult populations (Bergomi, Tschacher, & Kupper, 2013), few exist for children. The first measure of mindfulness specifically for children and adolescents, the Child and Adolescent Mindfulness Measure (CAMM) was developed recently (Greco, Baer & Smith, 2011), and has been found to be reliable and valid with children as young as nine years (de Bruin, Zijlstra & Bogels, 2014; Greco et al., 2011). The Mindfulness Attention Awareness Scale (MAAS), an adult measure, has been adapted for use with children (Lawlor, Schonert-Reichl, Gadermann & Zumbo, 2014) although there are concerns regarding the developmental appropriateness of simply adapting adult measures for use with children (Watt, Hopkinson, Costello, & Roodenburg, 2016).

The aim of the current study was to investigate the efficacy of a mindfulness-based intervention for children, delivered in a school setting. It was expected that children's self-reported mindfulness skills would be higher postintervention (Time 2) than preintervention (Time 1). It was also expected that children's self-reported negative emotional symptoms would be lower postintervention (Time 2) compared to preintervention (Time 1). Finally, it was expected that there would be an inverse relationship between the change in children's self-reported mindfulness skills and emotional symptoms across time.

Method

Participants

Three government primary schools in Melbourne, Australia elected to be involved in the program, which was supported by local government funding. The program was delivered to 72 children enrolled in grade 5. Sampling across the schools varied. One school chose to deliver the program to an entire class, while two schools chose to screen children for inclusion according to a range of criteria: identified by parents or teachers as having difficulties with anxious or depressive symptoms manifested through school nonattendance, limited peer friendships, social isolation/withdrawal, non-participation in class activities, and/or repeated attendance at sick bay. Participation was voluntary and children were considered eligible if parents consented to their attendance, and counselling for ongoing support after the completion of the program was made available if desired. Participants were free to withdraw from the program at any time with parental consent.

In order to maintain confidentiality unique codes were provided for each participant. Pre and post measures were unable to be matched for 15 children due to either being absent at either

data collection time (six children) or incorrect use of codes (nine children), and were therefore omitted from analysis. The data provided by 57 children (37 males) are included in this study.

Procedures

Program intervention

The six week intervention program (TRIPLE R: Robust, Resilient, Ready to Go) was developed by a non-government organisation and the delivery was supported by provisionally registered psychologists enrolled in Master of Psychology (Counselling) and Master of Psychology (Educational and Developmental) courses. At least one school teacher was present at each session. Ethics approval was granted for evaluation of the TRIPLE R program by the Monash University Human Research Ethics Committee (project no: CF14/2118 – 2014001119).

The program was developed based on a range of mindfulness principles and developmentally appropriate exercises for children as outlined by Snel (2013). Each one hour weekly session provided a combination of psycho-education, activities and mindfulness practice centred on a particular theme, such as the body, feelings, mind, and relationships. Each session consisted of whole-group activities and also included activities for groups of three to five children, which were then discussed in plenary. Allocation to smaller groups was random.

Session one provided an outline of the program, an understanding of mindfulness, and the opportunity for children and facilitators to get to know each other. Session two focused on naming and understanding feelings, and practicing observing different feelings in the body. Session three focused on understanding how and where different sensations and feelings manifest in the body. Session four focused on the mind, observing thoughts, and discussing how they relate to feelings and sensations. Session five focused on mindful relationships, understanding elements of healthy and unhealthy friendships and how behaviour impacts others. Session six focused on reviewing

learning over the six week program and engages children in a feedback process. Each session started with a brief mindfulness practice and ended with an audio guided mindfulness exercise written by Snel (2013). The program was delivered at the same time each week during term time.

Measures

Mindfulness was measured using the Child and Adolescent Mindfulness Measure (CAMM). The CAMM was developed to be used with children from nine years old (Greco et al., 2011), and was adapted from the Kentucky Inventory of Mindfulness Skills (Baer, Smith & Allen, 2004). The CAMM is a 10 item scale that assesses present-moment awareness and nonjudgmental, non-avoidant responses to thoughts and feelings. Respondents are asked to rate how often each item is true for them using a five point scale from 0 (*never*) to 4 (*always*). Greco et al. found that the CAMM scale demonstrated strong internal consistency with a sample of American children aged 10 to 16 years ($\alpha = .81$). In a Dutch translation, De Bruin et al. (2014) also reported high levels of internal consistency for children aged 10 to 12 years ($\alpha = .71$), and adolescents aged 13 to 16 years ($\alpha = .80$). In the current study, the CAMM demonstrated good reliability at both preintervention ($\alpha = .64$) and postintervention ($\alpha = .72$).

Symptoms were measured using the Revised Children's Anxiety and Depression Scale (RCADS; Chorpita, Yim, Moffitt, Umemoto, & Francis, 2000). The RCADS was designed to measure symptoms specific to the DSM-IV (APA, 1994) anxious and depressive disorders for children aged 8 to 18 years (Chorpita et al., 2000, de Ross, Gullone, & Chorpita, 2002). The RCADS is a 47 item self-report questionnaire consisting of five scales related to anxiety symptoms; Separation Anxiety Disorder (SAD), Social Phobia (SP), Generalised Anxiety Disorder (GAD), Panic Disorder (PD) and Obsessive Compulsive Disorder (OCD); and one scale related to depression symptoms, Major Depressive Disorder (MDD).

Respondents are asked to rate how often each item is true for them on a 4-point scale from 0 (*never*) to 3 (*always*). Chorpita et al. (2000) demonstrated good validity and internal reliability with an American sample, with alpha coefficients ranging from .71 to .85 for the subscales. De Ross et al. (2002) extended this work with Australian samples of 8 to 12 year olds and 13 to 18 year olds, demonstrating good internal consistency (subscale alpha coefficients ranging from .79 and .88). Chorpita, Moffitt and Gray, (2005) demonstrated support for the RCADS in a further clinical American sample, and Esbjorn et al., (2012) in a Danish national sample recruited through community schools. In the current study the RCADS was found to be reliable for each subscale both pre and postintervention (SP: $\alpha = .87$ and $\alpha = .91$ respectively; PD: $\alpha = .86$ and $\alpha = .83$; MDD: $\alpha = .81$ and $\alpha = .80$; SAD: $\alpha = .80$ and $\alpha = .73$; GAD: $\alpha = .89$ and $\alpha = .86$; OCD: $\alpha = .70$ and $\alpha = .70$).

Data analysis

Prior to any analysis, the data was screened for missing and extreme values. Missing values were replaced using the SPSS expectation-maximisation (EM) technique, which uses a maximum likelihood approach to iteratively generate values using a normal distribution (Little & Rubin, 2002; Pigott, 2001). No significant difference was obtained between variable means both before and after implementing EM at Time 1 (Little's MCAR $\chi^2 = 2123.70$, $df = 2153$, $p = .67$) or Time 2 (Little's MCAR $\chi^2 = 1533.99$, $df = 1606$, $p = .90$) and therefore it was concluded that there was no pattern for the missing data. Data was screened for outliers by converting to z-scores, and no responses exceeded an absolute score of 3.29. With the current sample size, it is important to consider statistical power. According to G*Power (Faul, Erdfelder, Buchner, & Lang, 2009), there was a 95.69% probability of detecting a moderate effect size in a repeated measures design with 57 participants, and only a 31.26% chance of detecting a small effect size.

Results

Self-reported mindfulness skills

A repeated measure *t*-test was conducted to evaluate the impact of the intervention on children's mindfulness skills scores. There was a statistically significant increase in mindfulness skills from preintervention ($M = 29.14$, $SD = 4.11$) to postintervention ($M = 30.49$, $SD = 4.36$), $t(56) = 2.20$, $p = .03$. The mean increase in mindfulness scores was 1.35 with a 95% confidence interval ranging from 0.12 to .2.58. Because effect size calculations in repeated-measures testing are inflated, Dunlop, Cortina, Vaslow & Burke (1996) suggest correcting for the intra-individual correlation between measures across time. The corrected Cohen's d was calculated to be 0.32, which is a small to moderate effect size (Cohen, 1992).

Self-reported negative emotional symptoms

Repeated measures *t*-tests were conducted to evaluate the impact of the mindfulness-based intervention on emotional symptoms, as measured by the RCADS; namely Social Phobia (SP), Panic Disorder (PD), Major Depressive Disorder (MDD), Separation Anxiety Disorder (SAD), Generalised Anxiety Disorder (GAD) and Obsessive Compulsive Disorder (OCD). The results of the analyses are presented in table 1.

<Insert table 1 around here>

Relationship between mindfulness skills and negative emotional symptoms

The relationship between mindfulness skills (as measured by the CAMM) and emotional symptoms (as measured by the RCADS scales), were investigated using Pearson correlations. The derived scores used in the correlations were calculated by taking the difference between preintervention (Time 1) and postintervention (Time 2). The correlation represents the relationship

between the change in mindfulness and the change in emotional symptoms across time. The relationships between mindfulness skills and emotional symptoms is detailed in table 2.

<Insert table 2 around here>

Discussion

This study aimed to investigate the effectiveness of a school mindfulness-based intervention program. It was expected that children's self-reported mindfulness skills would be higher postintervention than preintervention. Secondly, it was expected that children's self-reported anxious and depressive symptoms would be lower postintervention compared to preintervention. Finally, it was expected that there would be an inverse relationship between children's self-reported mindfulness skills and negative emotional symptoms. Specifically, increases in mindfulness skills would be associated with decreased anxious and depressive symptoms.

The result of the current study provided some support for the first hypothesis that children's self-reported mindfulness skills would be higher postintervention than preintervention. There was a significant increase in self-reported mindfulness skills postintervention. Given the links in the literature between increased mindfulness and improved wellbeing (Huppert & Johnson 2010), the comparatively small investment in time and resources needed to conduct a six week program in a school setting shows much promise.

The intervention was uniquely designed and its efficacy has not previously been tested. These findings suggest that the TRIPLE R intervention program was successfully designed to raise children's awareness and understanding of mindfulness, and to teach mindfulness skills that can be employed in everyday situations. This intervention was designed using developmentally appropriate tools based on the work of Snel (2013) and employed a variety of different delivery methods to cater for different learning styles. Critically, the intervention focused on experiential

learning that enabled children to link learnt concepts to practical experience to gain mindfulness skills that could be used in everyday situations.

The current study found little evidence to support the expectation that a brief mindfulness-based program would significantly improve children's self-reported emotional symptoms. While there was a notable downward trend in emotional symptoms for each of the RCADS scales across time, these were small and not significant. This is perhaps not unexpected, given that the sample consisted of children in a school setting rather than a clinical setting, although some schools indicated that some participating children were known to experience anxious and depressive symptoms. In addition, the decision of one of the schools to provide the intervention for a whole class would likely have resulted in a sample with more moderate negative emotional symptoms. Additional reasons may include the relatively small sample size, and the design of the intervention, which although encompassing education regarding anxious and depressive symptoms, focused more holistically on a number of aspects of wellbeing.

The lack of significant improvements in emotional symptoms in the current study is also partly consistent with previous research. A meta-analysis by Zoogman et al. (2015) found that there was evidence for a small yet significant decrease in psychological symptoms following mindfulness-based interventions in youth. Mindfulness-based interventions have also been found to be more efficacious for reducing symptoms of anxiety and depression in clinical populations compared to general populations (Hofmann et al., 2010).

Perhaps the most intriguing finding in the current study was the evidence that increases in mindfulness skills are associated with decreases in negative emotional symptoms. A significant inverse relationship was found between self-reported mindfulness skills and emotional symptoms related to Social Phobia (SP), Generalised Anxiety Disorder (GAD), and Separation Anxiety

Disorder (SAD). The relationship between mindfulness skills and SP was by far the strongest, followed in size by the relationship between mindfulness skills and GAD and SAD respectively.

SAD, GAD and SP are considered the three most common anxiety disorders among youth and are known as the “child and adolescent anxiety triad” (Jablonka, Sarubbi, Rapp & Albano (2012, p. 543). Higher prevalence rates may somewhat explain the degree of association between increased mindfulness skills and decreased symptoms, simply due to the greater scope for improvement over time. Alternatively, mindfulness may be more effective at addressing these particular emotional symptoms in children, however further research is needed to confirm this.

A similar association between mindfulness skills and the Major Depressive Disorder (MDD), Obsessive Compulsive Disorder (OCD) and Panic Disorder (PD) scales was found. However, the relationships were not significant, indicating that as mindfulness skills increased symptoms on these scales decreased only marginally. Again, this result could have been related to the sample size, sampling characteristics, or even a differential impact of mindfulness across the range of negative emotional symptoms.

This study has some limitations. Firstly, it must be noted that the results do not guarantee that the significant increase in mindfulness skills can be wholly subscribed to the mindfulness intervention. It could be argued that a range of additional factors caused the increase in mindfulness skills, such as independent learning and practice. It is also possible that children answered positively in the postintervention questionnaire due to response bias, a desire to present themselves as ‘performing’, or simply because they were more familiar with the terms. While some individual responses indicated little change in mindfulness skills, overall observation throughout the program, and children’s reflections and feedback in Session 6 indicate there was indeed an increase in

understanding and practice of skills at the end of the program. These observations and data corroborate the finding that mindfulness skills increased considerably at the end of the program.

The lack of significant findings across all RCADS scales also warrants discussion. While statistical analysis indicated a 95% probability of detecting a moderate effect size, the small sample size and associated lack of power suggested that it was unlikely that small effect sizes would be detected. Although previous research indicates that larger effect sizes are more likely found in clinical than non-clinical samples (Zoogman et al., 2015), a larger sample size would enable small effect sizes to be detected at the significant level with greater reliability.

Limitations notwithstanding, this research has significant implications for the field. It extends limited existing research and provides support for the role of a school-based mindfulness intervention program. Most importantly, it demonstrated that increased mindfulness skills are associated with decreased negative emotional symptoms, in particular for symptoms associated with social, generalised, and separation anxiety. By selecting the CAMM, the current study also addresses a known limitation in the field with regards to the lack of developmentally appropriate mindfulness outcome measures being used to investigate program effectiveness.

Further research into the TRIPLE R program would benefit from addressing methodological issues by increasing the sample size, and addressing sampling procedures so that they are consistent (or investigating the difference in results across subsamples). As this first study into the TRIPLE R program was correlational, further studies using a randomised control group is warranted. Other wellbeing factors which are worthy of exploration using the TRIPLE R include attention, sleep, emotional awareness and regulation, subjective happiness, and resilience.

This study shows promise in validating the efficacy of a developmentally appropriate mindfulness-based program that both increases mindfulness skills and decreases anxious symptoms

in non-clinical primary school aged children. The transition into adolescence is a key developmental window for self-regulation and a period when young people are negotiating complex school and social stressors (Kuyken et al., 2013). Given the high prevalence of negative emotional symptoms in children, and the long term ramifications, providing early preventative intervention is crucial. Mindfulness has been shown to help individuals cope with everyday stressors and to cultivate and promote wellbeing and mental health (Huppert, 2009). Teaching mindfulness skills to children before or around the onset of puberty and adolescence may increase the likelihood of protective factors later in life. Further research into the TRIPLE R program and the role of mindfulness in enhancing areas of wellbeing in children is warranted and will add considerably to this field.

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Table 1.

Changes in RCADS emotional symptoms across time (N = 57)

| | Time 1 | | Time 2 | | <i>t</i> | <i>df</i> | <i>p</i> | Cohen's |
|-------------------------------|--------|------|--------|------|----------|-----------|----------|----------|
| | Mean | SD | Mean | SD | | | | <i>d</i> |
| Social Phobia | 10.65 | 6.31 | 9.51 | 6.87 | 1.51 | 56 | .14 | 0.17 |
| Panic Disorder | 6.93 | 5.46 | 5.68 | 4.74 | 1.95 | 56 | .06 | 0.24 |
| Major Depressive Disorder | 9.37 | 5.37 | 8.61 | 5.24 | 1.12 | 56 | .27 | 0.14 |
| Separation Anxiety Disorder | 5.21 | 4.72 | 4.72 | 4.17 | 1.27 | 56 | .21 | 0.12 |
| Generalised Anxiety Disorder | 7.58 | 4.67 | 6.81 | 4.37 | 1.48 | 56 | .15 | 0.17 |
| Obsessive Compulsive Disorder | 5.82 | 3.62 | 5.33 | 3.64 | 1.09 | 56 | .28 | 0.14 |

Table 2

Correlations between derived CAMM and RCADS scores across time (N = 57)

| RCADS scale | R | <i>p</i> | R ² (%) | Effect size |
|-------------------------------|------|----------|--------------------|-------------|
| Social Phobia | -.61 | <.001 | 37.33 | Large |
| Panic Disorder | -.21 | .12 | 4.37 | Small |
| Major Depressive Disorder | -.26 | .05 | 6.67 | Small |
| Separation Anxiety Disorder | -.32 | .01 | 10.43 | Moderate |
| Generalised Anxiety Disorder | -.42 | <.001 | 17.56 | Moderate |
| Obsessive Compulsive Disorder | -.26 | .06 | 6.56 | Small |

Note. Effect sizes according to Cohen (1992).