

## RESEARCH ARTICLE

# **Pause, breathe, smile: A mixed-methods study of student well-being following participation in an 8-week, locally developed mindfulness program in three New Zealand schools**

**Ross Bernay<sup>a</sup>, Esther Graham<sup>b</sup>, Daniel A. Devcich<sup>c</sup>, Grant Rix<sup>d</sup>, Christine M. Rubie-Davies<sup>b</sup>**

<sup>a</sup> School of Education, AUT University, Auckland, New Zealand., <sup>b</sup> Faculty of Education, The University of Auckland, New Zealand, <sup>c</sup> Department of Anaesthesiology, The University of Auckland, Auckland, New Zealand. <sup>d</sup> The Mental Health Foundation of New Zealand, Auckland, New Zealand.

**\*Corresponding author:** Dr. Ross Bernay. Email: ross.bernay@aut.ac.nz.

**Pause, breathe, smile: A mixed-methods study of student well-being following participation in an 8-week, locally developed mindfulness program in three New Zealand schools**

**Abstract**

*Children today face increasingly high stress levels, impacting their well-being. Schools can play a crucial role in teaching social and emotional skills, therefore there is a need to identify effective interventions. This mixed-methods study of 124 elementary school students from three New Zealand schools aimed to (1) assess if children experienced improved well-being after an 8-week mindfulness program, and (2) understand their perceptions of the program. Participants completed these self-rated scales: the Mindful Awareness Attention Scale for Children and the Stirling Children's Well-being Scale. Six children were interviewed about their perceptions and classroom teachers' observations were reviewed. Quantitative data indicated a steady increase in students' mindfulness whilst well-being increased significantly but returned to baseline levels at three-month follow up. Changes in mindfulness were positively related to changes in well-being. The study results suggest the importance of offering mindfulness-based programs for potential improvements in students' well-being.*

**Key words:** mindfulness, children, well-being, social emotional skills, school

## **Introduction**

There is widespread concern in New Zealand and around the world about the mental health and well-being of children and, as a consequence, their ability to flourish at school. Studies report that children today suffer from unprecedented levels of stress, resulting in anger, behavioral problems, depression, and anxiety as well as lowered self-esteem and confidence (Goleman, 2005; Napoli, Krech & Holley, 2005). Childhood mental health difficulties tend to predict adult mental illness (Britton et al., 2014), presenting a clear impetus to develop strategies that foster child well-being. As part of a broader shift towards early prevention of mental illness, recent decades have seen the rise of school-based programs that teach children how to regulate emotion and manage conflict and stress (Broderick, 2013; Schonert-Reichl & Lawlor, 2010). A number of these programs are based on teaching students to become more aware of their thoughts, emotions, and actions through mindfulness-based techniques.

## **Mindfulness and Well-being**

Mindfulness is the awareness that comes from paying attention to the present moment with an attitude of nonjudgment. The practice encourages individuals to become more aware of their own responses and emotions, and to feel more compassionate towards themselves and others (Kabat-Zinn, 1990). There is evidence that mindfulness can have major health benefits for adults, including reducing stress and enhancing emotional regulation (Ludwig & Kabat-Zinn, 2008) and improving sleep patterns (Yook et al., 2008). Furthermore, mindfulness has been claimed to enhance feelings of happiness or wellbeing: Brown and Ryan (2003) found that adults with high mindfulness scores were lower in negative affect and higher in positive affect, independent of participants' general disposition.

Well-being is generally associated with an individual's positive general disposition, satisfaction, happiness, and good mental and physical health. However, there has been a shift

within psychology to integrate the eudaimonic dimension of well-being (concerned with those things that give life meaning, such as self-realization and positive relationships) with the traditional hedonic view of well-being (Ryan & Deci, 2001). In keeping with this definition, the Education Review Office [ERO] in New Zealand identified key outcomes for student well-being, on which schools will soon be required to report. These include social and emotional competence, achievement, a feeling of belonging, security in one's own identity, and resilience (ERO, 2013).

Mindfulness is theorized to facilitate well-being and greater mental stability by reducing emotional reactivity, which in turn leads to changes in thought patterns, and eventually self-management and acceptance (Baer, 2003; Shapiro, Carlson, Astin & Freedman, 2006; Weare, 2013). A core element of mindfulness practice is a focus on the breath. Rhythmic breathing is said to regulate the autonomic nervous system, focus the mind, and increase self-awareness (Napoli et al., 2005). Such breathing techniques may also help to produce the 'relaxation response' neutralizing the 'fight-or-flight' reaction triggered during stress, and increasing feelings of calm and control (Benson et al., 2000).

In an emerging area of scholarship, several studies have also reported a relationship between mindfulness and aspects of emotional intelligence (Baer, Smith, Hopkins, Krietemeyer & Toney, 2006; Brown & Ryan, 2003; Dekeyser, Raes, Leijssen, Leysen & Dewulf, 2008). It is suggested that because of the increased attentiveness to one's own and others' thoughts and feelings, mindfulness may enhance communication, connection, and empathy for others, and reduce social anxiety (Brown, Ryan & Creswell, 2007; Dekeyser et al., 2008). Functional magnetic resonance imaging (fMRI) scans have shown that brains of more mindful individuals are less reactive to threatening emotional stimuli and have greater ability to regulate emotion (Brown et al., 2007; Lutz et al., 2014). Finally, mindfulness skills may have the potential to improve behavioral regulation, in particular, self-control, a quality

that contributes to well-being by minimizing automatic reactions (Brown et al., 2007; Brown & Ryan, 2003; Goleman, 2005).

### ***Mindfulness-based interventions for children***

The majority of mindfulness research to date has focused on adult participants, yielding a substantial body of evidence confirming the benefits to well-being. Studies with young people—and in particular children—is an emerging area of research, and evidence is building to indicate that mindfulness could also be a useful tool for nurturing children's well-being. In the past five years a number of reviews have appeared, the majority suggesting that mindfulness-based interventions are both feasible and acceptable for children and adolescents, and offer a range of psychosocial and education benefits (Burke, 2010; Greenberg & Harris, 2012; Meiklejohn et al., 2012; Weare, 2013). For instance, a meta-review completed by Meiklejohn et al. (2012), which included six studies with elementary-school children, noted participation in mindfulness-based interventions predicted a variety of well-being benefits for students including emotion regulation, reduced stress, and greater self-esteem. However, as research in this area is still relatively new, many of the studies are based on pilot programs and have methodological limitations (Burke, 2010; Weare, 2013).

There is growing evidence of the efficacy of school-based mindfulness interventions for improving the mental health and social-emotional skills. In a controlled study of children aged 9-12 years ( $N = 246$ ), Schonert-Reichl and Lawlor (2010) reported significant improvements in teacher-rated social and emotional competence and student-rated positive emotions after an intervention where mindfulness exercises were integrated into lessons three times a day. The authors argued pre-adolescence may be the ideal time for interventions targeting mental wellbeing as it is a time of major developmental changes in the brain and provides a strong foundation for future positive mental health.

### *The New Zealand context*

To date, school-based mindfulness interventions have primarily taken place in North America and Europe and have been used successfully with multicultural student populations (Biegel, Brown, Schapiro and Schubert, 2009, Schonert-Reichl & Lawlor, 2010; Weijer-Bergsma, Langenberg, Brandsma, Oort, & Bögels, 2014). There is limited research in the area of mindfulness in any field in New Zealand, particularly with regard to children. In 2012, the Mental Health Foundation of New Zealand developed a mindfulness program that integrated a model of holistic wellbeing from a Māori perspective into lesson plans for New Zealand students. This program was the subject of a pilot study conducted by members of this research team in 2013. Drawing on qualitative data, the study found that teachers in primary school classrooms noted on-going improvements in students' well-being (calmness and reduced stress), attention, behavior, and compassion for self and others (Authors, 2014).

### *Aims of the present study*

The current study aimed to build on work conducted in the previous pilot study, by evaluating the benefits of a locally-developed mindfulness-based program for the well-being of primary school students in New Zealand. This mixed-methods study aimed to test the hypothesis that learning mindfulness practices may enhance children's well-being. It sought to examine changes in, and relationships between, mindfulness and well-being using quantitative methods. Teacher journals and interviews with a sample of students were used to triangulate the data, particularly in reference to perceptions of the program. It was expected that improvements in mindfulness would be reflected in improvements in well-being, as assessed by both student self-report data and teacher-observation.

Reviewers of mindfulness-based interventions have called for more large-scale, quantitative studies using randomized controlled designs. However, it should be noted that

achieving ideal scientific conditions for a study is very challenging when working within the limitations of a school environment where students are divided into classrooms and randomized allocation of participants into a program is not always possible (Cappella, Massetti, & Yampolsky, 2009). Indeed, randomization is not fail-safe, and can lead to diffusion of treatment when students or teachers ‘pass on’ their knowledge, creating invalid test results (Cappella et al., 2009). Furthermore, relying solely on quantitative data can be restrictive, as in seeking to confirm a specific hypothesis, it can be possible to miss other outcomes of an intervention. Incorporating a qualitative element to the study design enables greater engagement with the perceptions of the participants. Indeed, contemporary educational research recommends that ‘student voice’ be considered when considering new initiatives for schools (Cook-Sather, 2006). Combining qualities of both inductive and deductive reasoning, as mixed-method research does, affords the greatest opportunity for learning. In the studies conducted, few researchers employed designs that allowed participants an opportunity to elaborate on their experiences, and, if so, this was usually in short-answer questionnaire form (Biegel et al., 2009; Metz et al., 2013;) This is a gap that is addressed in the current study.

## **Method**

The study was conducted following consultation with a Māori cultural advisor and the granting of institutional ethical approval, and conformed to strict ethical guidelines.

### ***Participants***

Participants were pre-adolescent students, aged 9-12 years, ( $N = 124$ ) from three New Zealand schools with diverse characteristics. In New Zealand, socioeconomic characteristics of the school population are denoted by a decile system where decile 1 indicates the 10 percent of schools with the highest proportion of students from low socioeconomic

communities, and decile 10 are the 10 percent of schools with the lowest proportion of these students (Ministry of Education, 2015). Table 1 provides the demographic information for the sample. *Pasifika* includes students of Pacific Island descent, for example, Samoan, Tongan, Fijian; and *Asian* represents students of Southeast Asian, Chinese, or Indian descent.

*\*\* Insert Table 1 about here \*\**

## ***Measures***

### *Mindfulness*

The Mindful Attention Awareness Scale modified for Children (MAAS-C) was used to assess students' mindfulness. The MAAS-C is a 15-item scale with negatively worded statements relating to mindfulness traits (e.g., 'I can't stop thinking about the past or the future'), with a 6-point Likert-type scale, where 1=almost never, 2=not very often at all, 3=not very often, 4=somewhat often, 5=very often and 6=almost always. The scale is reverse scored to attain a total score for dispositional mindfulness. The MAAS-C was the first mindfulness scale shown to have a high level of validity and reliability for children aged 9-12 (Lawlor, Schonert-Reichl, Gadermann, & Zumbo, 2014). The study by Lawlor et al. (2014) reported the scale had high internal consistency (Cronbach's alpha = .84). Their study also demonstrated that mindfulness was related to well-being indicators such as optimism and autonomy, and negatively related to depression, anxiety, and negative affect. These results were consistent with a study of the MAAS with adult populations with similar measures (Brown & Ryan, 2003).

### *Well-being*

The Stirling Children's Well-being Scale (SCWBS) was used to assess well-being. The SCWBS is a 15-item positively-worded questionnaire designed to measure two components:

positive emotional state (subjective well-being) and positive outlook (psychological well-being), which together comprise the overall well-being score. Positive emotional state includes aspects of well-being such as cheerfulness and satisfying interpersonal relationships; positive outlook includes aspects such as optimism and clear thinking. An example from the positive emotional state subscale is: 'I've been getting on well with people'; while an example from the positive outlook subscale is: 'I think good things will happen in my life'. Items are scored on a 5-point Likert-type scale (1= Never, 2= Not much of the time, 3= Some of the time, 4= Quite a lot of the time and 5= All of the time). Following the contemporary positive psychology approach, the scale focuses on the positive aspects of mental health rather than the deficit-model that identifies symptoms of mental illness (Liddle & Carter, 2015). Liddle and Carter (2015) found the test to have good internal reliability, with a Cronbach's alpha of 0.83. Construct validity was tested by correlating the revised SCWBS with the DuBois Self-Esteem Scale and the Warkwick-Edinburgh Mental Well-Being Scale (WEMWBS). A significant positive correlation was shown between both the SCWBS and the WEMWBS ( $r = 0.750, p < 0.01$ ), and between the SCWBS and the DuBois Self-Esteem Scale ( $r = 0.647, p < 0.01$ ). Furthermore, in the current study, the students' baseline scores were comparable to mindfulness and well-being means reported in previous validation studies (Lawlor et al., 2014; Liddle & Carter; 2015).

There is also a social desirability subscale of 3 items ('I like everyone I have met', 'I have always told the truth' and 'I always share my sweets') designed to identify respondents who may be giving deliberately socially desirable or undesirable answers or using a response set. Scores of 3 or 14-15 on this subscale help identify responses that should be visually inspected for bias and treated with caution in the analysis process (Liddle & Carter, 2015). This process was followed and there was no evidence to suggest that biased response sets (e.g., identical answers throughout the questionnaire) were used by students in the sample.

### *Teacher observations of student behavior*

Student behavior during the mindfulness program was assessed through teachers' observation journals that were completed after weeks 2, 4, 6, and 8. These journals contained a series of prompts to elicit responses from the teachers regarding their participation and the students' participation in the mindfulness activities as well as their observations of changes in the students' behavior. Teachers were asked to comment on: students' social interactions with their peers in the classroom and on the playground, attention and focus during classroom lessons, and participation and engagement in classroom activities. At the end of the 8-week mindfulness intervention, teachers were also queried about any observations related to effects of mindfulness on the students' learning, well-being, and emotion regulation.

### *Student interviews*

To explore student perceptions of the intervention in some depth, semi-structured interviews were conducted with six students following the program. Prompts included, 'Have you used any of the techniques you learnt in the program? If so, which ones?' and 'Should other children learn mindfulness techniques? Why or why not?'

### ***Procedure***

#### *Questionnaires*

The two quantitative measures, the MAAS-C and the SCWBS, were completed at baseline, immediately following the intervention and at a 3-month follow-up. Instructions and the questionnaires themselves were read aloud to control for differences in reading ability. A script was developed to ensure that every class received a standardized explanation of the questionnaires and to guard against the possibility of bias. The students were told that there were no right or wrong answers, assured of the confidentiality of their responses, and encouraged to ask questions if they were unsure of the meaning of items. A teacher aide or

the class teacher sat with children who were identified as needing assistance. These students were also identified on the data analysis sheet so that their responses could be inspected for consistency compared to the cohort. The questionnaires took approximately 20 minutes to administer.

### *Program*

The program consisted of an 8-lesson mindfulness module developed by the Mental Health Foundation of New Zealand and designed to include attitudes to health and well-being held by the indigenous population. The Māori well-being model, *Te Whare Tapa Whā* conceptualizes good health (*hauora*) as a *whare* or house with four walls: *taha tinana* (physical health), *taha whānau* (extended family or social well-being), *taha hinengaro* (mental health) and *taha wairua* (spiritual well-being; Durie, 1994). All four aspects are seen as necessary for good health as they strengthen and support one another.

*Te Whare Tapa Whā* also underpins New Zealand's Health and Physical Education curriculum in schools where, notably *Taha wairua* is defined as 'the values and beliefs that determine the way people live, the search for meaning and purpose in life, and personal identity and self-awareness' (Ministry of Education, 2007). Indeed, the program for the current study was written to link closely with objectives of the New Zealand Curriculum, which requires that schools integrate the teaching of key competencies such as 'relating to others' and 'managing self' into lessons (Ministry of Education, 2007). Specific lessons covered themes of breath-body awareness, sensory awareness, practices for promoting kindness and gratitude, emotion-regulation, and interconnectedness. Students learned the following mindfulness practices: *Pause, Breathe, Smile* (PBS), a mindful breathing exercise; mindful eating (being aware of each bite; paying attention to the sensory experience of eating); mindful movement (a simplified stretching program); body scan (noticing each part

of the body); mindful walking (noticing in the body each part of each step); a happy heart practice to learn about loving-kindness; and practices for recognizing the connections between oneself and the wider environment.

The program was delivered in weekly one-hour sessions by one of three experienced mindfulness facilitators trained by a member of this research team (GR) who has substantial mindfulness training, facilitation, and practice experience. Owing to the geographical spread of the participating schools, it was not possible for the same facilitator to be used at each school. Teachers were provided a CD with guided meditation for further practice with the class during the week.

### *Interviews*

Qualitative data were derived from interviews with six students from School 2. As the time constraints of this study restricted the number of participants for the interview, it was decided that using students from a single school would help to eliminate the effects of other variables that could confound results, such as different mindfulness facilitators being used at different schools. Purposive sampling was used to select six students with differing characteristics, based on their scores (1-6) from the questionnaire at Time 1. To be eligible, students needed to have been present for the majority of mindfulness sessions, have completed the post-test, and show no evidence of social desirability bias in the SCWBS scale. Care was also taken to obtain a balance of genders and ethnicities.

### *Data analysis*

The quantitative data from the MAAS-C and SCWBS were entered into and analyzed using a statistical software package (SPSS v.22). Repeated measures ANOVAs were calculated to examine changes in students' self-reported levels of mindfulness across the three assessment

points (prior to, during, and after program completion). Post hoc tests (Bonferroni corrected) were used to explore changes. In addition, Pearson correlation coefficients were used to explore the relationship between changes in mindfulness and changes in self-reported well-being.

The data from the teacher's journal entries and students' interview transcripts were analyzed using thematic analysis, by identifying, analyzing, and reporting themes from the data set (Braun & Clarke, 2006). For this study, an inductive rather than theoretical approach to thematic analysis was selected, to allow the content of students' interviews and teacher observation journals to generate themes that were not necessarily dictated by the original interview questions (Braun & Clarke, 2006).

The qualitative data set was analyzed following the process outlined by Braun and Clarke (2006) whereby data is transcribed and closely read to generate initial codes. Data were systematically collated under each code and then into potential themes that were checked to ensure correspondence with the coded extracts and whole data set. Themes were then analyzed and refined to generate final names for each theme. In addition, several members of the research team independently generated codes for the teacher observation journals as part of a peer-checking process. Finally, vivid examples from extracts were selected that related back to the research question.

To complete the triangulation of data, codes and themes describing well-being or mindfulness benefits from the qualitative data were compared to the data from the quantitative scales, and the results as a whole were considered.

## Results

### *Changes in Mindfulness and Well-being*

*Mindfulness.* A one-way repeated measures ANOVA was conducted to evaluate the effect of the mindfulness intervention on students' self-reported mindful awareness over the study period. Results showed a statistically significant time effect for mean mindfulness ratings,  $F(2, 224) = 5.41, p = .005, \eta_p^2 = .05$ . Post hoc Bonferroni-corrected pair-wise comparisons showed no improvement from baseline to post program, but by 3-month follow up mindfulness scores were significantly greater than at baseline ( $p < .01$ ). Thus mindfulness appeared to gradually increase from baseline to follow up (see Table 2).

*Well-being.* A one-way repeated measures ANOVA showed a statistically significant time effect for mean well-being ratings as measured by the SCWBS total score,  $F(2, 226) = 4.98, p = .008, \eta_p^2 = .04$ . Post hoc Bonferroni-corrected pair-wise comparisons showed an improvement from baseline to post program ( $p < .05$ ), but by 3-month follow up well-being scores had returned to levels close to baseline (as seen in Table 2). This indicated that well-being significantly improved during the program but had returned to pre-program levels by 3-month follow-up.

Analysis of the SCWBS subscales showed a similar pattern for positive emotional state,  $F(2, 226) = 6.29, p = .002, \eta_p^2 = .05$ , where an improvement from scores at baseline to post program was shown,  $p < .05$ , but by 3-month follow up subjective well-being scores had again returned to levels comparable to baseline. No change was observed for the positive outlook subscale.

*\*\*Insert Table 2 around here \*\**

### ***Relationships between changes in mindfulness and well-being***

To examine relationships between changes in mindfulness and changes in well-being, Pearson correlation coefficients were calculated using change scores (MAAS-C, SCWBS, and subscales of the SCWBS) from pre- to post-program. Changes in mindfulness were significantly positively related to changes in overall well-being ( $r = .38, p < .001$ ) as well as for both subscales of the SCWBS—Positive Emotional State ( $r = .35, p < .001$ ) and Positive Outlook ( $r = .32, p < .001$ ). This indicated that students who showed an increase in mindful awareness were also more likely to show improvements in both subjective and psychological well-being following the program.

### ***Students' perceptions of program benefits***

The students' responses to the interview questions suggested they actively engaged with the practices taught. All the students interviewed perceived the mindfulness program positively and their comments indicated that they believed it had enhanced aspects of their well-being. Analysis of their comments suggested the students gained a greater awareness of the connection between their mind and body, their thoughts, feelings, and sensations of the present moment; and experienced a number of social-emotional benefits, including calmness, mental clarity, emotional regulation, empathy, and improved relationships.

The interview transcripts reflected clear differences in individual student's levels of understanding of various concepts; however, it was evident that all the interviewees had an understanding of the essential elements of mindfulness. One explained that mindfulness was a way of 'listening to what your body is saying.' Two students reported that since learning to focus on the present moment, they spent less time worrying, even though one child expressed

uncertainty as to why this was. The children also spoke of using mindful breathing to help cope with challenging situations, such as a running race or tackling homework. As one interviewee said, ‘Pause, breathe, smile...then your body calms down and you can do it... all your things, without worrying about anything.’

Importantly, all of the students were able to offer examples of how they had applied the practices learned, either at home, at school or with friends or family. Many of these examples related to learning ways to manage their emotions. Several students explained how they had used mindful breathing to calm themselves down during conflicts with siblings or peers. One child described a playground incident: ‘I was feeling really, really angry. But then I tried doing the breathing process...[and] I felt much more better [sic].’ Another child felt that learning to manage her moods helped her to have ‘better behavior’ and as a result, she had made more friends. Mindfulness practice encourages individuals to pay closer attention not only to their own feelings but to those of others. Three of the six students gave examples where their empathy for others led to kind actions, such as sharing lunch with a child who had none. One child indicated that it was easier to understand people's feelings by ‘looking at their eyes’. There were no observed negative findings from the students’ interviews.

### ***Teacher-observed student behavior***

Data from the teacher observation journals highlighted the overall high engagement of the students with the practices and corroborated the findings from student self-report data. Over the course of the mindfulness program, teachers reported students showed improvements in their ability to cope with stressful situations, resolve issues independently and manage difficult emotions. An example cited by a teacher was of a student who had mentioned that when she was ‘overwhelmed, [but] did PBS, [she] could think clearly and

complete one job at a time'. Teachers from one of the participating schools (a boarding school) reported students were also experiencing improved sleep quality.

The teachers' journals suggested that several weeks after students began the mindfulness program there was an improvement in classroom climate, although it took several weeks for these changes to become noticeable. Teachers reported fewer classroom disruptions, improved focus in class, and more positive peer relationships, including less name-calling. There was some evidence from teachers' journal entries that teacher-student relationships improved over the course of the mindfulness intervention, which may have been due to the teachers attuning more closely to the students and their feelings.

The journals also provided evidence of the feasibility and acceptability of the program for elementary school-aged students. Although there was initial hesitation, after a few sessions, students were highly engaged, requesting additional mindfulness exercises. In a journal entry between week 3 and 4 a teacher noted, 'When the bell is rung, the children are very good at being silent and breathing and focused.'

## **Discussion**

The present study examined the effects of an 8-week school-based mindfulness program on the well-being of elementary school students, and the relationship between changes in mindfulness and changes in well-being. It aimed to confirm the results of a pilot study which reported calmness, reduction in stress, and better self-regulation among students (Authors, 2014). While most research into mindfulness-based interventions has taken place in North America and the United Kingdom, this study assessed the impact of a mindfulness program designed to incorporate the indigenous philosophy of health in New Zealand and core elements of the national curriculum. A strength of this study was that it used triangulated data from teachers' observations, student interviews, and self-report questionnaires. All three

methods of data collection supported the hypothesis that learning mindfulness techniques offered some benefits for students' well-being.

### ***Quantitative findings***

The quantitative findings from this study suggested that participation in an 8-week mindfulness program led to short-term improvements in students' well-being and promoted more mindful behaviors. Changes in mindfulness were also related to changes in well-being. These findings are consistent with other studies noting the relationship between mindfulness and positive emotional states (Brown & Ryan, 2003; Lawlor et al., 2014). The quantitative data indicated the participants' growth in mindfulness was sustained beyond program completion. However, it was notable that the increase in participants' MAAS-C scores was not statistically significant between pre-test and post-test, but was significant at the three month follow up. This could be seen to support the notion that mindfulness takes time and practice to develop (Brown & Ryan, 2003).

Conversely, the students' well-being gains evident at post-test were not sustained three months later. There are a number of possible reasons for this, including contextual factors that may have a strong effect on wellbeing (e.g., school assessments) or the duration of the intervention. Further research is needed to explore whether additional booster sessions, or a program that integrated mindfulness in daily classroom practice, may help to sustain benefits to well-being. Regular follow-up practice at home has also been suggested to enhance the effectiveness of an intervention (Huppert & Johnson, 2010).

### ***Qualitative findings***

The qualitative data from the teacher journals and student interviews corroborated the findings from the quantitative data that there was some evidence that mindfulness practice

promoted well-being, primarily through strengthening participants' social and emotional skills. Data from the students' interviews aligned with literature reporting that mindfulness-based programs help children to become more aware of their thoughts and feelings, and more adept at managing their emotions in times of stress and within interpersonal relationships (Ciarrochi, Kashdan, Leeson, Heaven, & Jordan, 2011; Metz et al., 2013; Schonert-Reichl & Lawlor, 2010). The students in the current study reported that learning to regulate their emotions in the program led to improved relationships with their peers and family members, a finding consistent with that of other studies (Beauchemin, Hutchins, & Patterson, 2008; Oberle, Schonert-Reichl, Lawlor, & Thomson, 2012). In addition to developing greater awareness of their own emotions, the interviews suggested that the intervention helped students become more attuned to the feelings of others—another element which may have promoted better interpersonal relationships and led to improvements in class climate, a finding also reported in other studies (Weijer-Bergsma et al., 2014).

### ***The program***

The current study illustrated how mindfulness programs can be successfully integrated into the regular curriculum of a New Zealand classroom, as part of an holistic well-being approach. The program, developed by the Mental Health Foundation of New Zealand, was designed to resonate with the indigenous Māori population in New Zealand while still being appropriate for all students. As Kabat-Zinn (2003) observed, modern-day mindfulness is primarily about paying attention, a universally valued skill. Furthermore, the program incorporated key competencies from the New Zealand curriculum and linked to achievement objectives not only in Health but also in Social Science and Science (Ministry of Education, 2007). In its integration of social emotional content as well as providing opportunities for students to practice mindfulness with their teachers and families, the

program seems particularly promising. In a comprehensive review of programs designed to prevent mental health disorders, Greenberg, Domitrovich, Bumbarger, and Seligman (2001) concluded that ‘the most effective [prevention programmes] simultaneously "educate" the child and instill positive changes across both the school and home environments’ (p.32). In future, it would be of interest to study a longer-term, school-wide mindfulness-based programme that engages more closely with families and the whole school community—a practice also endorsed by the New Zealand curriculum (Ministry of Education, 2007).

### ***Limitations***

Limitations of this study design include the lack of a control group, which limits the extent to which we are able to rule out the influence of confounding variables on the results. However, in a related study by members of the research team, a group-randomized design using an active control condition was used to test the program's effects on well-being in a separate sample of school students (Authors, under review). Results from that study showed that, relative to controls, there were significantly greater increases in mindfulness group participants’ self-reported mindfulness and well-being following the program. Additionally, there was some evidence for sustained effects at 3-months’ follow-up as well as a positive relationship between changes in mindfulness and changes in well-being.

Second, due to geographical factors, different facilitators delivered the standardized program at each school. This made it difficult to guarantee that program delivery was consistent across the three schools. However, care was taken to standardize the training of the facilitators as much as possible to ensure that all key components of the program were delivered to a satisfactory level.

Finally, although teacher journals of their observations of students were included, (and we recognize that this could be influenced by bias), this study relied on the use of

student self-report in both the quantitative and qualitative data gathering. Self-report measures are by nature subjective and may be vulnerable to interviewer effect and response bias (Howard, Dailey, & Campbell, 1979). Indeed, the accuracy of any measure of self-reported mindfulness is contingent on how ‘mindful’ or self-aware the individual is and, moreover, different depths of mindfulness engagement may fundamentally change semantic reference points in the first place, thus potentially systematically biasing responses (Grossman, 2011). Added to this consideration is the tendency of young children to respond in ways that they deem to be socially desirable (Rubie-Davies & Hattie, 2012). However, inspection of the students’ scores on the SCWBS Social Desirability subscale did not suggest participants had deliberately responded in this way.

### ***Directions for future research***

Large-scale controlled trials in schools are needed to provide stronger evidence of the efficacy of mindfulness-based interventions in improving student well-being. Objective measures of randomly selected students (e.g., salivary cortisol or heart rate variability) could overcome threats to validity posed by the use of self-report measures. Longer trials and, in particular, longitudinal studies would also enable conclusions to be drawn about the efficacy of mindfulness-based interventions in promoting well-being over time.

### **Conclusion**

Addressing student well-being is becoming an educational priority across the developed world as recognition grows that children who are unhappy, anxious, or stressed struggle to learn to socialize and flourish generally. The potential of mindfulness-based interventions to ameliorate mental health problems among students has been highlighted by studies that have specifically measured differences in clinical symptoms of anxiety, stress, depression, and attention disorders (Joyce, ETTY-Leal, Zazryn, Hamilton & Hassed, 2010;

Zylowska et al., 2008). The present study, which conversely measured positive qualities of mental well-being, adds to the growing body of literature that suggests that mindful awareness practices could be integrated effectively into programs for the young to buffer against future mental illness.

This study suggests that students can benefit from learning simple techniques to relax when they feel anxious or stressed and be more aware of their own and others' emotions. In addition, it has also demonstrated the acceptability and feasibility of offering mindfulness-based programs that incorporate indigenous approaches to health and well-being in schools. However, further research on the long-term benefits of mindfulness programs in schools is warranted, ideally using more objective measures of well-being.

## References

Authors. (under review). Blinded for review.

Authors. (2014). Blinded for review.

Baer, R. A. (2003). Mindfulness training as a clinical intervention: A conceptual and empirical review. *Clinical Psychology: Science and Practice, 10*, 125–143.

doi:10.1093/clipsy.bpg015

Baer, R.A. , Smith, G. T., Hopkins, J., Krietemeyer, J., & Toney, L. (2006). Using self- report assessment methods to explore facets of mindfulness. *Assessment, 13*, 27–45.

doi:10.1177/1073191105283504

Beauchemin, J., Hutchins, T. L., & Patterson, F. (2008). Mindfulness meditation may lessen anxiety, promote social skills, and improve academic performance among adolescents with learning disabilities. *Complementary Health Practice Review, 13*, 34–45.

doi:10.1177/1533210107311624

Benson, H., Wilcher, M., Greenberg, B., Huggins, E., Ennis, M., Zuttermeister, P. et al. (2000). Academic performance among middle school students after exposure to a relaxation response curriculum. *Journal of Research and Development in Education, 33*, 156–165.

Biegel, G. M., Brown, K. W., Shapiro, S. L., & Schubert, C. M. (2009). Mindfulness-based stress reduction for the treatment of adolescent psychiatric outpatients: A randomized clinical trial. *Journal of Consulting & Clinical Psychology, 77*, 855–866.

doi:10.1037/a0016241

- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77-101. doi:10.1191/1478088706qp063oa
- Britton, W.B., Lepp, N.E., Niles, H.F., Rocha, T., Fisher, N.E., & Gold, J.S. (2014). A randomized controlled pilot trial of classroom-based mindfulness meditation compared to an active control condition in sixth-grade students. *Journal of School Psychology*, 52, 263-278. doi:10.1016/j.jsp.2014.03.002
- Broderick, P. C. (2013). *Learning to BREATHE: A mindfulness curriculum for adolescents to cultivate emotion regulation, attention and performance*. Oakland, CA: Harbinger.
- Brown, K. W., & Ryan, R.M. (2003). The benefits of being present: Mindfulness and its role in psychological well-being. *Journal of Personality and Social Psychology*, 84, 822–848. doi: 10.1037/0022-3514.84.4.822
- Brown, K. W., Ryan, R., & Creswell, J. D. (2007). Mindfulness: Theoretical foundations and evidence for its salutary effects. *Psychological Inquiry*, 18, 211–237. doi:10.1080/10478400701598298
- Burke, C. (2010). Mindfulness-based approaches with children and adolescents: A preliminary review of current research in an emergent field. *Journal of Child and Family Studies* 19, 133–144. doi: 10.1007/s10826-009-9282-x
- Cappella, E., Massetti, G. M., & Yampolsky, S. (2009). *Rigorous, responsive, and responsible: Experimental designs in school intervention research*. American Psychological Association. Retrieved from: doi:10.1037/11881-003
- Ciarrochi, J., Kashdan, T. B., Leeson, P., Heaven, P., & Jordan, C. (2011). On being aware and accepting: A one-year longitudinal study into adolescent well-being. *Journal of Adolescence*, 34, 695-703. doi:10.1016/j.adolescence.2010.09.003

- Cook-Sather, A. (2006). Sound, Presence, and Power: Exploring 'Student Voice' in Educational Research and Reform. *Curriculum Inquiry* 36, 359–390.  
<http://www.jstor.org/stable/4124743>
- Dekeyser, M., Raes, F., Leijssen, M., Leysen, S., & Dewulf, D. (2008). Mindfulness skills and interpersonal behaviour. *Personality and Individual Differences*, 44, 1235–1245.  
doi:10.1016/j.paid.2007.11.018
- Durie, M. (1994). *Whaiora: Māori Health Development*. Auckland: Oxford University Press.
- Education Review Office. (2013). *Wellbeing for success: Draft evaluation indicators for student wellbeing*. Wellington: Education Review Office.
- Goleman, D. (2005). *Emotional intelligence: Why it can matter more than IQ*. (10th anniversary ed.) New York: Bantam Books.
- Greenberg, M. T., Domitrovich, C., Bumbarger, B., & Seligman, M. E. P. (2001). The prevention of mental disorders in school-aged children: Current state of the field. *Prevention & Treatment*, 4, 1–62. doi:10.1037/1522-3736.4.1.41a
- Greenberg, M. T., & Harris, A. R. (2012). Nurturing mindfulness in children and youth: Current state of research. *Child Development Perspectives*, 6, 161–166.  
doi:10.1111/j.1750-8606.2011.00215.x
- Grossman, P. (2011). Defining mindfulness by how poorly I think I pay attention during everyday awareness and other intractable problems for psychology's (re) invention of mindfulness: Comment on Brown et al. (2011). *Psychological Assessment* 23, 1034–1040.
- Howard, G. S., Dailey, P. R., & Campbell, J. A. (1979). Response- shift bias: A source of contamination of self-report measures. *Journal of Applied Psychology*, 64, 144–150.  
doi:10.1037/0021-9010.64.2.144

- Huppert, F. A., & Johnson, D. M. (2010). A controlled trial of mindfulness training in schools: The importance of practice for an impact on wellbeing. *The Journal of Positive Psychology, 5*, 264–274. doi:10.1080/17439761003794148
- Joyce, A., ETTY-Leal, J., Zazryn, T. Hamilton, A & Hassed, C. (2010). Exploring a mindfulness meditation program on the mental health of upper elementary students: A pilot study. *Advances in School Mental Health Promotion, 3*, 17–25.  
doi:10.1080/1754730X.2010.9715677
- Kabat-Zinn, J. (1990). *Full catastrophe living*. New York, NY: Hyperion Press.
- Kabat-Zinn, J. (2003). Mindfulness-based interventions in context: Past, present, and future. *Clinical Psychology: Science and Practice, 10*, 144–156. doi:10.1093/clipsy.bpg016
- Lawlor, M., Schonert-Reichl, K., Gademann, A., & Zumbo, B. (2014). A validation study of the mindful attention awareness scale adapted for children. *Mindfulness, 5*, 730–741.  
doi:10.1007/s12671-013-0228-4
- Liddle, I., & Carter, G. (2015). Emotional and psychological well-being in children: The development and validation of the Stirling Children's Well-being Scale. *Educational Psychology in Practice, 31*(2), 174-185.
- Ludwig, D. S., & Kabat-Zinn, J. (2008). Mindfulness in medicine. *Journal of the American Medical Association. 300*, 1350–1352. doi:10.1001/jama.300.11.1350.
- Lutz, J., Herwig, U., Opialla, S., Hittmeyer, A., Jäncke, L., Rufer, M. et al. (2014). Mindfulness and emotion regulation—an fMRI study. *Social Cognitive and Affective Neuroscience, 9*, 776–785. doi:10.1093/scan/nst043
- Meiklejohn, J., Phillips, C., Freedman, M., Griffin, M., Biegel, G., Roach, A., et al. (2012). Integrating mindfulness training into K-12 education: Fostering the resilience of teachers and students. *Mindfulness, 3*, 291–307. doi:10.1007/s12671-012-0094-5

- Metz, S. M., Frank, J. L., Reibel, D., Cantrell, T., Sanders, R., & Broderick, P. C. (2013). The effectiveness of the learning to BREATHE program on adolescent emotion regulation. *Research in Human Development, 10*, 252–272. doi:10.1080/15427609.2013.818488
- Ministry of Education. (2007). *The New Zealand curriculum*. Wellington: Learning Media.
- Ministry of Education (2015). How the decile is calculated.  
<http://www.minedu.govt.nz/NZEducation/EducationPolicies/Schools/SchoolOperations/Resourcing/OperationalFunding/Deciles/HowTheDecileIsCalculated.aspx>
- Napoli, M., Krech, P. R., & Holley, L. C. (2005). Mindfulness training for elementary school students. *Journal of Applied School Psychology, 21*, 99–125.  
doi:10.1300/J370v21n01\_05
- Oberle, E., Schonert-Reichl, K. A., Lawlor, M. S., & Thomson, K. C. (2012). Mindfulness and inhibitory control in early adolescence. *The Journal of Early Adolescence, 32*, 565–588. doi:10.1177/0272431611403741
- Ryan, R. M., & Deci, E. L. (2001). On happiness and human potentials: A review of research on hedonic and eudaimonic well-being. *Annual Review of Psychology, 52*, 141–166
- Rubie-Davies, C. M., & Hattie, J. A. (2012). The dangers of extreme positive responses in Likert scales administered to young children. *International Journal of Educational and Psychological Assessment, 11*, 75–89.
- Schonert-Reichl, K. A., & Lawlor, M. S. (2010). The effects of a mindfulness-based education program on pre- and early adolescents' well-being and social and emotional competence. *Mindfulness, 1*, 137-151. doi:10.1007/s12671-010-0011-8
- Shapiro, S. L., Carlson, L. E., Astin, J. A., & Freedman, B. (2006). Mechanisms of mindfulness. *Journal of Clinical Psychology, 62*, 373–386. doi:10.1002/jclp.20237

Weare, K. (2013). Developing mindfulness with children and young people: A review of the evidence and policy context. *Journal of Children's Services*, 8, 141–153.

doi:10.1108/JCS-12-2012-0014

Weijer-Bergsma, E., Langenberg, G., Brandsma, R., Oort, F., & Bögels, J. (2014). The effectiveness of a school-based mindfulness training as a program to prevent stress in elementary school children. *Mindfulness*, 5(3), 238-248. doi: 10.1007/s12671-012-0171-9

Yook, K., Lee, S.-H., Ryi, M., Kim, K.-H, Bhoi, T. I., Suh, S. Y., et al. (2008). Usefulness of mindfulness-based cognitive therapy for treating insomnia in patients with anxiety disorders. *Journal of Nervous and Mental Disease* 196, 501–503. doi: 10.1097/NMD.0b013e31817762ac

NMD.0b013e31817762ac

Zylowska, L., Ackerman, D. L., Yang, M. H., Futrell, J. L., Horton, N. L., Hale, T. S., . . .

Smalley, S. L. (2008). Mindfulness meditation training in adults and adolescents with ADHD A feasibility study. *Journal of Attention Disorders*, 11, 737–746.

doi:10.1177/1087054707308502