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Mindfulness, Learning, and Education

Joanna Higgins and Rebecca Keane
Victoria University of Wellington

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Introduction

Mindfulness is an age-old practice derived from Buddhist philosophy and practice of non-judgmental attention and awareness to being in the present moment. In the last few decades it has been steadily gaining popularity in the West as a non-secular practice as evidenced by a growing number of websites and promotion through social media including endorsements by celebrities. Many journals have published special editions, devoted to mindfulness practices and the journal named *Mindfulness* began in 2010. A number of studies report ways of measuring mindfulness such as the *Mindfulness Attention Awareness Scale* (MAAS) which has been adapted for various populations. Similarly there is a growing literature reporting interventions across age-groups and settings that aim to foster mindfulness such as *Soles of the Feet*, *Mind-Up*, *Mindfulness Based Cognitive Therapy* and *Mindfulness Based Stress Reduction*. In recent years Mindfulness as an intervention has found its way out of clinical settings into learning institutions such as schools and tertiary institutions as well as informal learning settings such as the home. Two emerging and related bodies of inquiry underpin its appeal and application; one is evidence that mindfulness practice can improve cognitive functioning and emotional awareness, the other is a suggestion that mindfulness practice can also improve achievement. A growing body of literature critiquing mindfulness interventions in various everyday settings including education raises questions about undermining mindfulness practices' spiritual origins in attempts to commodify the practice. This article is focused on the relationship between mindfulness practices and learning in everyday educational settings where it is promoted as enhancing student and teacher well-being such as providing strategies for increasing resilience. The implementation of mindfulness programs in educational settings prompts consideration of a range of factors, such as duration of course and session times, adaptations that need to be made to the practice in terms of the age of the participants, the curriculum context, and fidelity to traditional practice. In informal settings such as the home it is advanced as a means of improving

parenting. Where possible the article presents the most recent and robust studies and places them in the most related section.

General Overview

There are increasing numbers of websites promoting mindfulness practices aimed at all age groups and contexts. These are up to the minute ways of finding out about current research and practice. The websites selected for this section are associated with the use of mindfulness practices to support and promote learning in everyday settings. Many include links to research studies and scholarly commentaries. For example, the UK-based site of the **Centre for Mindfulness Based Research and Practice**, associated with Bangor University, and the **American Mindfulness Research Association** specifically promote and promote research on mindfulness. **The Mindful Schools** site also is designed for teachers to have easy access to current studies and practices within the classroom. Country-level mental health foundations have mindfulness dedicated websites such as the UK Mental Health Foundation's **Be Mindful**, and the New Zealand Mental Health Foundation's, **Mindfulness Works**. These provide resources such as directories of practitioners, and examples of how to practice mindfulness with many having video clips. Similarly the **Australian Childhood Foundation**, a government sponsored organization details mindful parenting practices. Recently, at least two edited handbooks by leading researchers and proponents of mindfulness (Brown et al, 2014 and Le et al 2014) have been published with chapters providing a comprehensive account of developments in the field.

American Mindfulness Research Association[<https://goamra.org/>]

American based website. Encourages membership to promote mindfulness based research and practice. Highlights current and archived research, news and articles around the use and benefits of mindfulness.

Australian Childhood Foundation. 2012. *Mindful parenting handbook*: Ringwood, VIC: Australian government.

Sections include; how to be a mindful parent, how to practice mindfulness parenting, information on childhood brain development, emotions and behavior, simple mindfulness techniques, and reflective exercises from both parents and child's point of view. Easy to follow and engage with.

Be Mindful[<http://bemindful.co.uk/>]

United Kingdom based website linked to the national mental health foundation. Site provides links to information about Mindfulness, Mindfulness Based Stress Reduction, Mindfulness Based Cognitive Therapy and courses in the UK that teach mindfulness techniques. Provides videos for illustration and personal accounts from participants. Easy to navigate.

Brown, Kirk Warren., Cresswell, J. David., and Ryan, Richard M. 2014. *Handbook of Mindfulness: Theory, Research*, New York: Guildford Publication.

Presents 23 chapters from a variety of authors. The five parts are titled; historical and conceptual overview of mindfulness, mindfulness in the context of contemporary psychological theory, the basic science of mindfulness, mindfulness intervention for healthy populations and mindfulness interventions for clinical populations.

Centre for Mindfulness Based Research and Practice[<https://www.bangor.ac.uk/mindfulness/>]

United Kingdom based website, which is link to Bangor University. The focus of the centre is to promote research that supports the use of mindfulness. Provides links to research, teacher training, tertiary level study and local courses.

Le, Amanda., Christelle T. Ngnoumen., and Ellen Langer. (eds) 2014. *The Wiley Blackwell Handbook of Mindfulness*, Chichester, UK: John Wiley & Sons. Ltd.

Presents 52 chapters from a variety of author. The five parts are titled; origins and theories, consciousness, cognition and emotion, leadership and organisational behaviour, health, wellbeing and performance and education and creativity and coaching. Links to a website titled The Langer Mindfulness Institute.

Mindful Schools[<http://www.mindfulschools.org/>]

American based website promoting the use of mindfulness techniques in schools. Provides updates to current research and articles through the organizations Facebook® page.

Mindfulness Works[<http://mindfulnessworks.co.nz/>]

New Zealand based website. Which is linked to the national mental health organization website. Links promote the use of mindfulness techniques in different environments and the organization's work in New Zealand schools. Provides a directory of trainers and upcoming workshops nationally. Updates from this website can be received through the organization's Facebook® page.

What is Mindfulness?

There are multiple ways of defining mindfulness with the review articles by Chiesa (2012) and Mikulus (2010) usefully addressing the difficulties inherent in doing so. One of these difficulties arises from differences between a traditional framing based on Buddhist origins as described in the writings of Kabat-Zinn (as cited in Williams & Kabat-Zinn, 2011), compared to that promoted by Langer (see Langer and Moldoveanu, 2000; Mikulus, 2010; and Sternberg, 2000) who associates mindfulness as the opposite of mindlessness or an active engagement of the mind in activity. Some commentators (see Shapiro et al., 2006) point to the problems of losing the Buddhist context when defining mindfulness and the disjuncture between an American psychological base and Asian understanding of psychology. Mikulus (2010) compares Langer's definition to the Buddhist-based ones by examining mental processes or "behaviors of the mind" and suggests that being clear about the constructs of awareness, concentration, and attitude and how they relate to each other is critical to arriving at clearer understandings of what mindfulness is. In a model of mindfulness, Shapiro et al. (2006) identify three axioms similar to those proposed by Mikulus of intention ("on purpose"), attention ("paying attention") and attitude ("in a particular way"). Using Langer's definition, Sternberg (2000) considers three different views of mindfulness as a cognitive ability, a personality trait or a cognitive style. In considering each construct's respective body of literature he suggests that mindfulness/mindlessness is closer to being a cognitive style rather than a cognitive ability or personality trait. With each varying definition there is a varying argument about its ability to be operationalized (Bishop et al. 2004 and Brown & Ryan, 2007) impacting the interpretation of results.

Bishop, Scott. R., Mark Lau., Shauna Shapiro., Linda Carlson., Nicole D. Anderson., James Carmody., et al. 2004. Mindfulness: A proposed operational definition. *Clinical Psychology: Science and Practice*, 11.3: 230-241. [doi:10.1093/clipsy.bph077]

The authors set out to operationalize mindfulness using existing definitions, key descriptors and by describing its practice. They are in agreeance that an operationalized definition could support reliability and validity as emerging empirical evidence arises in the field. Other articles in this series also address the definition of mindfulness.

- Brown, Kirk Warren., Richard M. Ryan, & J. David Creswell. 2007. Addressing fundamental questions about mindfulness. *Psychological Inquiry*. 18.4: 272–281. [doi:10.1080/10478400701703344]
Compares and contrasts the concept of mindfulness to aspects such as self-focussed attention and self-control with good illustrative examples. Attempts to answer questions about mindfulness benefits and practices along with its application through intervention.
- Chiesa, Alberto. 2012. The difficulty of defining mindfulness: Current thought and critical issues. *Mindfulness*, 4: 255-268. [doi:10.1007/s12671-012-0123-4]
Reviews the traditional and current conceptualizations of mindfulness, comparing the similarities and contrasts between definitions drawn from Buddhist and Western psychology literature. Discusses whether mindfulness is a state versus trait, or both, which adds to the limitations of current questionnaires aimed at measuring mindfulness. Suggestions for future research are provided.
- Langer, Ellen. J., & Mihnea Moldoveanu. 2000. Mindfulness research and the future. *The Journal of Social Issues*, 56. 1: 129–139.
The authors provide a definition of mindfulness that is different to the Buddhist definition in which they describe mindfulness as a cognitive construct. They concluded by discussing the advantages of increasing mindfulness in the classroom and the way in which this could help towards relieving social problems over time.
- Mikulus, William. L. .2010. Mindfulness: Significant common confusions. *Mindfulness*. 2:1-7. [doi:10.1007/s12671-010-0036-z]
Stimulates clearer thinking about mindfulness and its application, despite definition, for the purpose of improving the effectiveness of mindfulness treatment programs. Compares the Buddhist perspective vs the social definition by Langer. Encourages the reader to find practical and individualized ways to cultivate mindfulness in different environments, including education.
- Shapiro, Shauna L., Linda E. Carlson., John A. Astin., and Benedict Freedman. 2006. Mechanisms of mindfulness. *Journal of Clinical Psychology*, 62.3: 373–386. [doi:10.1002/jclp20237]
Presents a proposed model of mindfulness Intention, Attention and Attitude(IAA), based on Kabat-Zinn definition. These key aspects are described, along with the four mechanisms of self-regulation, values clarification, cognitive, emotional, and behavioral flexibility and exposure. The authors suggest that all aspects are essential to the practice of mindfulness and that they are interwoven, occur simultaneously and are part of a cyclic process.
- Sternberg, Robert. J. 2000. Images of Mindfulness. *Journal of Social Issues*. 56. 1: 1-26
Asks whether mindfulness as defined by Langer should be understood as a cognitive ability, a personality trait or a cognitive style. Supports each of these claims and their interrelatedness in light of research.
- Williams Mark. J and Jon Kabat-Zinn. 2011. Mindfulness: Diverse perspectives on its meaning, origins and multiple applications at the intersection of science at dharma. *Contemporary Buddhism: An Interdisciplinary Journal*. 12. 1: 1`-18. [doi 10.1080/14639947.2011.564811]
An introduction to a special issue on Mindfulness. Details the origins of mindfulness and its concepts. Places mindfulness in the context of scientific and psychological practices of today and suggests its use in education and medicine in the future. Provides a graph of the increase in number of mindfulness publication over the last 30 years.

Benefits Associated with Mindfulness Practice

Mindfulness is claimed to have many benefits including physiological, psychological, preventative and remedial with hundreds of research studies on the positive effects of mindfulness-based interventions. Most of these studies in the last two and a bit decades have investigated the benefits of mindfulness training for adults with stress and depressive disorders in medical and psychological clinical settings (Brown, Ryan, & Cresswell, 2007) with benefits for education settings increasingly investigated. Studies in education include generating mindfulness-oriented behaviors through minimal training such as focused breathing to more intensive courses embracing the philosophy and intent of mindfulness. Derived from the Buddhist definition and practice of mindfulness, Brown and Ryan (2003) consider the benefits of mindfulness practices in terms of individual psychological well-being. Later Brown, Ryan and Cresswell (2007) relate these benefits to cognition, attention and social interaction. Mindfulness benefits have also been linked to emotional regulation, Ortner et al. (2007) investigated the effect of mindfulness meditation on the response to pictures with emotional content. Another strand of the literature addresses the benefits of mindfulness for developing attention and awareness generally and when completing tasks; for instance Howell and Buro (2011) link mindfulness meditation to participants' orientation to achievement in terms of emotions and self-regulation. Chambers et al. (2008) illustrated that mindfulness training was linked to improved working memory and attention as well as a lessening of depressive symptoms. Baer (2003), Hoffman et al. (2010) and Grossman et al. (2004) are all comprehensive or meta-analyses of mindfulness-based interventions and the benefits in both clinical and non-clinical populations, these benefits range from improved psychological functioning, mental well-being, anxiety and depressive conditions.

Baer, Ruth A. 2003. Mindfulness training as a clinical intervention: A conceptual and empirical review. *Clinical Psychology: Science and Practice*. 10.2: 125-143. [doi:10.1093/clipsy/bpg015]

A comprehensive review of literature (22 studies) that use mindfulness based interventions, some of which are described here. The collected research indicates that mindfulness based interventions may help alleviate a variety of mental health problems and improve psychological functioning.

Brown, Kirk. Warren and Richard M. Ryan. 2003. The benefits of being present: Mindfulness and its role in psychological well-being. *Journal of Personality and Social Psychology*, 84.4: 822-848. [doi:10.1037/0022-3514.84.4.822]

A series of 5 studies (correlational, quasi-experimental and laboratory). Investigates different measures on the Motivational Attention Awareness Scale (MAAS) and examines empirical links between mindfulness and well-being with an adult population. Findings showed that mindfulness was associated with heightened self-knowledge and could be a predictor of day-to-day self-regulation and well-being.

Brown, Kirk. Warren., Richard M. Ryan., and J David. Creswell. 2007. Mindfulness: Theoretical foundations and evidence for its salutary effects. *Psychological Inquiry*, 18.4: 211-237. [doi:10.1080/10478400701598298]

This article details the nature of mindfulness and its relation to attention and awareness. It considers the role that mindfulness plays across several life domains. Provides evidence for mindfulness promoting social interaction, alternative perspective taking, and cooperative response patterns.

Chambers, R., Barbara Chuen Yee Lo., and Nicholas B Allen. 2008. The impact of intensive mindfulness training on attention control, cognitive style and affect. *Cognitive Theory and Research*. 32: 303-322. [doi:10.1007/s1068-007-9119-0].

Experimental study with adult participants. Found upon the completion of mindfulness training participants showed improvements in self-reported mindfulness, depressive symptoms and rumination. Performance measures indicated increased working memory and sustained attention. Describes some of the underlying processes of mindfulness practice.

Grossman, Paul, Ludger Niemann, Stefan Schmidt, and Harald Walach. 2004. Mindfulness-based stress reduction and health benefits. A meta-analysis. *Journal of Psychosomatic Research*. 57:35-43. [doi:10.1016/S0022-3999(03)00573-7]

Meta-analysis of 20 studies that address the relationship between Mindfulness Based Stress Reduction (MBSR) and health benefits. Findings showed that MBSR may help a broad range of individuals to cope with their clinical and non-clinical ailments. Provides a list of retrieved studies related to mindfulness.

Hofmann, Stefan G., Alice C. Sawyer., Ashley A. Witt, and Dianna Oh. 2010. The effect of mindfulness-based therapy on anxiety and depression: A meta-analytic review. *Journal of Consulting and Clinical Psychology*. 78.7: 169-183. [doi:10.1037/a0018555]

Meta-analysis of 39 studies that address the relationships between Mindfulness-Based Therapy (MT) and a range of conditions including anxiety disorder and depression. The results suggest that MT is a promising invention for treating these conditions in a clinical population.

Howell, A. J., and Karen Buro. 2011. Relations among mindfulness, achievement-related self-regulation, and achievement emotions. *Journal of Happiness Studies*, 12.6: 1007-1022. [doi:10.1007/s10902-010-9241-7]

Discusses the link between mindfulness and achievement-related self-regulation and emotions. Achievement-related self-regulation includes such factors as being more prone to engage in academic help-seeking, delay of gratification, greater self-control and less procrastination. First in the field to address this relationship.

Ortner, Catherine. N. M., Sachne J. Kilner., and Philip David. Zelazo. 2007. Mindfulness meditation and reduced emotional interference on a cognitive task. *Motivation and Emotion*, 31,4: 271-283. [doi:10.1007/s11031-007-9076-7]

Investigates the effects of mindfulness meditation (MM) on attentional control in emotional contexts (affective pictures) with adult participants. Aimed to address the cognitive processes that underlie other said benefits of mindfulness. Results suggest that MM is associated with enhance psychological well-being and less interference between the pictures and performance on a subsequent cognitive task.

The Place of Mindfulness in Educational Curriculum

There is a growing and relatively recent interest in incorporating mindfulness practices into educational curriculums, both formal and informal, at all levels from early childhood to adult education. Reasons for doing this draw from the acclaimed and reported benefits in researched interventions and also from philosophical positions promoting mindfulness such as Langer's. In this section the authors promote the inclusion of mindfulness practices as part of the everyday curriculum particularly to promote social and emotional well-being of students and teachers, some of which is drawn from their own research using mindfulness interventions in educational contexts. Key scholars who promote the benefits of mindfulness

from their research include Davidson et al. (2012), who advocates for the improvement of public education in the US. Langer (1993), who was one of the earliest commentators to promote engagement in learning through mindfulness practices from a Western perspective. Ritchhart and Perkins (2000) draw on Langer's work to promote specific instructional strategies that promote engagement in classroom learning. From a teacher's perspective, Brady (2008) suggests that mindfulness in education promotes learners' curiosity and concentration. Ergas (2013) notes that to realize the potential of mindfulness in educational settings there is a need to shift from thinking of mindfulness in philosophical terms to identifying practices that result in measureable curriculum outcomes. Hyland (2014) similarly sees a place for mindfulness in the educational curriculum particularly with the current climate educators face. Tobin and Powietarzowska (2015) also see mindfulness as important to addressing the socio-emotional needs of learners, specifically through the science curriculum. Mahani (2012) advocates for mindfulness concepts and practices as a component of the transformational curriculum.

Brady, Richard. 2008. Realizing true education with mindfulness. *Human Architecture: Journal of the Sociology of Self-Knowledge*, 1.3: 87-8.

A personal reflection of approaches used by the author (a secondary school teacher) to address obstacles in current education. Includes readings given to the students and their descriptions of experiences. Providing the opportunity to be mindful in an educational context enabled students to enhance factors such as concentration, curiosity and diligence.

Davidson, Richard J., John Dunne, Jacquelynne S. Eccles, Adam Engle, Mark Greenberg, Patricia Jennings, et al. 2012. Contemplative practices and mental training: Prospects for American education. *Child Development Perspectives*. 6.2: 146-153. [doi:10.1111/j.1750-8606.2012.00240.x]

This article assesses the benefits of contemplative practices (including mindfulness) drawing on research in neuroscience, cognitive science, development psychology and education. Presents substantial evidence that mindfulness practices could potentially enhance the quality of public education. Discusses strengths and limitations to its possible implementation in education.

Ergas, Oren. 2013. Two mind-altering curriculums: contemplative, mindfulness, and the educational question whether "to think or not to think". *Journal of Transformative Education*. 11.4: 275-296. [doi:10.1177/1541344614540334]

Ergas advocates for the need for mindfulness practices to be included in educational curriculum, whilst addressing the movement of mindfulness from a philosophy to a scientifically measurable essence. He presents his perspective on the nature of educational pedagogy and problems related to its implementation. A second article in the same year.

Hyland, Terry. 2014. Mindfulness-based interventions and the affective domain of education. *Educational Studies*. 40.3: 277-291. [doi:10.1080/03055698.2014.889596]

In a series of articles, Hyland presents mindfulness as a healthy inclusion into the school's curriculum to counteract the current flaws. He illustrates direct and practical links between mindfulness and educational practices at all levels. Selected British studies are highlighted that show promise and suggestions are offered by the author for program improvement.

Langer, Ellen. J. 1993. A mindful education. *Educational Psychology*, 28.1: 43-50

Defines mindfulness as a cognitive concept. Discusses the nurturing of cognitive processes through teaching methods, such as placing learning in context. Looks at the difference between absolute attention and variable attention and learning and liking in regards to their impact on learning.

Mahani, Sepideh. 2012. Promoting mindfulness through contemplative education. *Journal of International Educational Research*. 8.3: 215-222

This article reviews literature with a contemplative focus e.g. integrated learning, experiential learning and transformational learning. Suggests that higher education institutions need to work towards the incorporation of contemplative and mindfulness practices into the curriculum in order to enhance students learning outcomes.

Tobin, K and Malgorzata Powietrzynska 2015. Mindfulness and wellness: Central components of a science of learning. *Innovación Educativa*, 15.67: 61-87

Addresses the inclusion of mindfulness in science curriculum in institutions formally associated with education. The authors believe that the adoption of this may affect social-emotional and cognitive changes beyond these contexts and may dilute the impact of the teacher and the emotional climate of these environments. Includes personal experiences of practice and intervention.

Ritchhart, Ron and David N. Perkins. 2000. Life in the mindful classroom: Nurturing the disposition of mindfulness. *The Journal of Social Issues*. 56.1: 27-47.

Explores whether you can cultivate mindfulness as a state as described by Langer through conditional instruction in a classroom setting. Draws on experimental studies as well as qualitative case studies. Examples are provided as to how conditional instruction as opposed to absolute instruction may be used to cultivate mindfulness in this setting.

Measuring Mindfulness

An enduring challenge is finding ways to measure mindfulness across adult populations with a lot of discussion around whether mindfulness is a measurable concept, a state of mind or a trait of personality. Davidson (2010) questions whether it is possible for participants to reliably report on their mindfulness practices in terms of their quality. Similarly, Bergomi et al. (2012) conclude that no measure of mindfulness seems to provide a comprehensive measure of all aspects of mindfulness. The eight measures that are currently used and that have been validated are: The Freiberg Mindfulness inventory (FMI), The mindfulness attention awareness scale (MAAS), The cognitive and affective mindfulness scale revised- (CAMS-R) Southampton Mindfulness Questionnaire (SMQ) Kentucky Inventory of Mindfulness Scale (KIMS) Five Facets Mindfulness Questionnaire (FFMQ) Philadelphia Mindfulness Scale (PHLMS) and Toronto Mindfulness Scale (TMS) (Bergomi et al. 2013). Baer et al. (2006) focus on the psychometric properties of five of these self-report assessment measures while Grossman (2008) concludes that MAAS and MAAS-A have validity as self-report scales. However, Van Dam et al. (2010) raise issues about the construct validity of MAAS. Other researchers including Sauer et al. (2012) critique questionnaires and alternative approaches by considering the alignment between conceptualisations of mindfulness and the assessment measures. In another experimental study Solloway and Fisher (2007) reconsider what is measurable in mindfulness practice through connecting qualitative with quantitative measures.

Baer, R. A., Gregory T Smith., Jaclyn Hopkins., Jennifer Krietemeyer, J., and Leslie Toney. 2006. Using self-report assessment methods to explore facets of mindfulness. *Assessment*, 13.1: 27-45.[doi:10.1177/107319105283504]

Examines the psychometric properties of five mindfulness questionnaires (MAAS, FMI, KIMS, CAMS, MQ). By combining the data sets from questionnaires and conducting exploratory factor analysis, five key facets of mindfulness were identified (non-reactivity to inner experience,

observing, describing, acting with awareness, accepting without judgement). Differential relationships between these facets and other constructs were considered.

Bergomi, C., Wolfgang Tschacher., and Zeno Kupper. 2013. The assessment of mindfulness with self-report measures: Existing scales and open issues. *Mindfulness*, 4: 191-202. [doi:10.1007/s12671-012-0110-9]

A comprehensive overview of the eight currently available and validated mindfulness scales. Discusses the disparities and limitations among them and offers an indication of which measure is suited to specific populations such as clinical samples or the general population.

Davidson, Richard J. 2010. Empirical explorations of mindfulness: Conceptual and methodological conundrums. *Emotion*. 10. 1: 8-11. [doi:10.1037/a0018480]

Addresses key methodological and conceptual issues in the empirical study of mindfulness, including its definition, duration of training and the nature of control and comparison groups in interventions. The authors are left with the unresolved question whether participants can reliably report on the quality or magnitude of their mindfulness.

Grossman, P. 2008. On measuring mindfulness in psychosomatic and psychological research. *Journal of Psychosomatic Research*, 64: 405-408. [doi:10.1016/j.jpsychores.2008.02.001]

This commentary highlights problems when measuring mindfulness with little personal understanding and without an agreed upon definition for measurement purposes. Cites examples on questionnaires and discusses the bias that can occur from the both developers and the population they are validated with.

Sauer, Sebastian., Harald Walach., Stefan Schmidt., Thilo Hinterberger., Siobhan Lynch., Arndt Büssing., and Niko Kohls. 2012. Assessment of mindfulness: Review on state of the art. *Mindfulness*, 4. 1: 3–17. [doi:10.1007/s12671-012-0122-5]

Discusses the conceptualization of mindfulness and reviews commonly used measurement approaches. Offers recommendations towards the improvement of methodological approaches to measuring mindfulness along with suggestion as to what measurement instruments are considered to be most appropriate for particular research contexts.

Solloway, Sharon. G., and William P Fisher. 2007. Mindfulness in measurement: Reconsidering the measurable in mindfulness practice. *International Journal of Transpersonal Studies*, 26, 58-81.

An experimental study that attempts to marry qualitative and quantitative measures of mindfulness. The study operationalizes mindfulness as a construct, evaluates its stability over time and across groups and establishes a metric for measuring changes in the amounts of mindfulness. Supports findings that mindfulness practices are teachable, learnable and measurable.

Van Dam, Nicholas, T., Mitch Earleywine., and Ashley Borders. 2010. Measuring mindfulness? An item response theory analysis of the mindful attention awareness scale. *Personality and Individual Differences*, 49.7: 805–810. [doi:10.1016/j.paid.2010.07.020]

This experimental study investigates the response pattern and scale properties of the Mindfulness Attention Awareness Scale (MAAS) using item response theory analysis and a large sample of undergraduate students. Finding showed that some statements provide greater statistical information about traits and there are some challenges to the construct validity of the measure in terms of the mindfulness-absent items.

Measuring Mindfulness with Specific Populations

Increasingly mindfulness practices and methods have been adapted for children and adolescents and now also across ethnic and language groups. Greco et al. (2011) review the Child and Adolescent Mindfulness Measure (CAMM) which was adapted from the Kentucky Inventory of Mindfulness Scale (KIMS). de Bruin et al. (2014) focus on the Dutch version of CAMM in terms of assessing its validity. Using a Chinese version of the Frieberg Mindfulness Inventory-Short version (FMI-13) with Chinese university students, Chen and Zhon (2014) examined its suitability for this population. Morgan et al. (2014) examined the psychometric properties of the Mindfulness Attention Awareness Scale (MAAS) for African American university students. Other validation studies focus on other measures such as a children's version of the Mindfulness Attention Awareness Scale (MAAS), named MAAS-C (Lawlor et al., 2014). Lawlor et al. as part of their validation study suggested that mindfulness in children may be age-variable and naturally occurring without training.

Chen, Si-Yi., and Ren-Lai Zhon. 2014. Validation of a Chinese version of the Frieberg mindfulness inventory-short version. *Mindfulness*, 5: 529-535. [doi:10.1007/s12671-013-0208-8]

Examines the psychometric properties of the Chinese version of the Frieberg Mindfulness Inventory- Short version (FMI-13) with a sample of Chinese university students. The inventory was chosen for translation because of its Buddhist orientation and the strong connection between Chinese and Buddhist philosophy. Findings showed that this version had acceptable psychometric properties for measuring mindfulness in Chinese populations.

de Bruin, Esther, L., Bonne, J.H. Zijlstra., and Susan M Bögels. 2014. The meaning of mindfulness in children and adolescents: Further validation of the child and adolescent mindfulness measure (CAMM) in two independent samples from the Netherlands. *Mindfulness* 5: 422-430. [doi:10.1007/s12671-013-0196-8]

Examines the psychometric properties of the Dutch version of the Child and Adolescent Mindfulness Measure (CAMM) with two independent samples of children in the Netherlands (aged 10-12 years & 13-16 years). It was found that the Dutch version had adequate psychometric properties similar to the original yet different mindfulness facets may play different roles in child and adolescents.

Greco, Laurie, A., Ruth, A. Baer., and Gregory T. Smith. 2011. Assessing mindfulness in children and adolescents: Development and validation of the child and adolescent mindfulness measure (CAMM). *Psychological Assessment*, 23.3: 606-614. [doi: 10.1037/a0022819]

Describes the development and validation of the Child and Adolescent Mindfulness Measure (CAMM). CAMM was adapted from an original scale and is intended for youth over age nine. Support was found for the reliability and validity of CAMM as a developmentally appropriate measure. Provides direction for future research.

Lawlor, Molly Stewart., Kimberly A, Schonert-Reichl., Anne M. Gadermann., and Bruno D. Zumbo. 2014. A validation study of the mindful attention awareness scale adapted for children. *Mindfulness*, 5: 730-741, [doi:10.1007/s12671-013-4]

A Canadian validation study of the Mindful Attention Awareness Scale Adapted for Children (MAAS-C) with a large sample of 11-year-olds. Preliminary results suggest MAAS-C is psychometrically sound for children of this age. Other evidence indicated that mindfulness may be a naturally occurring quality of consciousness across ages that is higher in younger children. Suggestions are given as to why this might be.

Morgan, Jessica, R., Akihiko Masuda., and Page L. Anderson. 2014. A preliminary analysis of the psychometric properties of the mindful attention awareness scale among African American college students. *Mindfulness*, 5: 639-645. [doi:10.1007/s12671-013-0216-8]

Examines the psychometric measures of the Mindfulness Attention Awareness Scale (MAAS) in African American university students to investigate the validity of research in this field with this population. It was found that despite limitations the MAAS scale is an adequate measure of mindfulness in this population.

Mindfulness Interventions

Mindfulness is one of many contemplative practices. This section provides an overview of types of interventions designed to foster mindfulness. The studies name and describes a range of mindfulness interventions in current use and provide descriptions of what they look like, strengths, adaptations and limitations. The studies range from a review of many to a detailed analysis of a particular intervention. Cullen (2011), Garrison Institute Report (2005), Meicklejohn et al. (2012) and Roemer and Orsillo (2003) all provide overviews in which they highlight a range of interventions detailing their purpose, the context for their use, and the intended population. Roemer and Orsillo (2003) examine different mindfulness interventions in clinical settings. Other studies focus on specific interventions such as Kabat-Zinn (2003), Saltzman and Goldin (2008), Broderick and Frank (2014) and Powietrzynska et al. (2015). Kabat-Zinn provides a context for Mindfulness Based Stress Reduction, a comprehensive intervention and perhaps one of the most commonly cited programs. Saltzman and Goldin (2008) provides an example of adaptation for children of Mindfulness Based Stress Reduction. Learning to BREATHE is an intervention that is designed to build resilience (Broderick and Frank, 2014). Powietrzynska et al. (2015) propose heuristics to foster a mindfulness orientation.

Broderick, Patricia C., and Jennifer L. Frank. 2014. Learning to BREATHE: An intervention to foster mindfulness in adolescents. *New Directions for Youth Development*. 142: 31-44. [doi:10.1002.yd]

Presents a case study of *Learning to Breathe* mindful-based program as part of a wider initiative *Inner resilience program* and provides limitations, successes and direction for the future of implementation of mindfulness within the schools' curricula. Reviews the possible benefits of mindfulness for adolescents, along with its application in schools.

Cullen, Margaret. 2011. Mindfulness-based interventions: An emerging phenomenon. *Mindfulness*. 2: 186-193. [doi:10.1007/s12671-011-0058-1]

An overview of the growing field of mindfulness based intervention (MBI) mostly in clinically based settings and specifically Mindfulness Based Stress Reduction. Highlights the current trend of offering tailor made MBI interventions to different groups with differing needs. Discusses the role of mindfulness tutors and the ongoing need for training and practice.

Garrison Institute Report. 2005. Contemplation and education: A survey of programs using contemplative techniques in K-12 educational settings: A mapping report. New York: The Garrison Institute

A comprehensive report that names and describes contemplative practices (including mindfulness) used in education across four categories: Contemplative programs that promote emotional balance and well-being, social and emotional programs that use contemplative techniques, comprehensive school programs informed by contemplative practices and contemplative techniques in pre-service and in-service teacher training.

Kabat-Zinn, John. 2003. Mindfulness-Based interventions in context: Past, present, and future. *Clinical Psychology: Science and Practice*. 10.2: 144-156. [doi:10.1093/clipsyc/bpg016]

Provides the origins and rationale for Mindfulness Based Stress Reduction and discusses the importance of mindfulness practice of teachers of mindfulness. This commentary also provides a definition of mindfulness and describes its introduction to medicine and health care.

Meicklejohn, John., Catherine Phillips., M. Lee Freedman., Mary Lee Griffin., Gina Biegel., Andy Roach., 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]

A comprehensive review of literature pertaining to mindfulness training in K-12 education (12 studies). Includes teacher training and well as directly teaching students. Lists the mindfulness programs currently in use (10 total). Provides an agenda for future research policy and practice.

Powietrzynska, M., Kenneth Tobin and Konstantinos Alexakos. 2015. Facing the grand challenges through heuristics and mindfulness. In R Gunstone (Ed). *Cultural Studies of Science Education*, 10: 65-81. [doi:10.1007/s1142-014-9588-x]

Addressed the use of mindfulness techniques to facilitate teachers and students improving the quality of teaching and learning. A heuristics intervention is described with examples here and in other works by the principal authors.

Roemer, Elizabeth and Susan M. Orsillo. 2003. Mindfulness: A promising intervention strategy in need of further study. *Clinical Psychology: Science and Practice*. 10: 172-178. [doi:10.1093/clipsy/bpg020]

The authors elaborate on further area of inquiry in relation to mindfulness interventions. Look at the effectiveness of the interventions, the optimum form of their delivery and their incorporation in the clinical setting.

Saltzman, Amy and Philippe Goldin. 2008. Mindfulness based stress reduction for school-aged children. In S. C. Hayes & L. A. Greco (Eds.), *Acceptance and Mindfulness Interventions for children Adolescents and Families*. 139–161. Oakland, CA: Context Press/New Harbinger.

Provides a proposed course outline (Mindfulness Based Stress Reduction for children) and age appropriate adaptations. Addresses key questions: Do children benefit from mindfulness training in measurable and meaningful ways? What are the most skillful ways to teach mindfulness to children? In what settings are children most likely to learn mindfulness skills?

Place for Mindfulness Intervention with Specific Populations

The various pieces of literature selected highlight the adoption of mindfulness across various groups such as children, youth, parents, and teachers (see sub sections for intervention with these populations). The pieces examine the possibilities of using mindfulness in everyday learning situations rather than studies of the ongoing intensive mindfulness practice of those, for instance, actively practicing a Buddhist philosophy, or of those receiving mindfulness from a clinical intervention. While many studies agree on the benefits of mindfulness questions raised include whether young children have the developmental readiness to fully engage in practices such as mindfulness breathing. Another debate for promoting mindfulness in everyday contexts is its implementation by those with limited experience and training for instance classroom teachers and parents. Greenberg and Harris (2012) and Zenner et al. (2014) review current contemplative programs in schools in terms of their fit for purpose across specific groups. Zelazo and Lyons (2012) specifically look at viability for young children from a developmental perspective. Napoli et al. (2005) examine the impact of a mindfulness-based program with the aim of developing the attention-span of elementary school students. Zack et al. (2014) reviews studies about mindfulness and

interventions with youth highlighting that youth's readiness to receive and benefit from learning these practices. Felver et al. (2013) examine the role of the school psychologist in planning for the implementation of interventions across age groups that include mindfulness practices such as Positive Behavior in Schools (PBS). Sawyer-Cohen et al. (2010) advocate for more empirical research on the effectiveness of mindfulness parental practices on improved family interactions.

Greenberg, Mark T., and Alexia R. Harris. 2012. Nurturing mindfulness in children and youth: Current state of research. *Child Development Perspectives*. 6.2: 161-166. [doi:10.1111/j.1750-8606.2011.00215.x]

A review of literature on contemplative practices (yoga, meditation, mindfulness) with children and youth. A section is assigned to school-based contemplative interventions. Presents options for developing more sound programs and research around the use of mindfulness in this specific population.

Felver, Joshua C., Erin Doerner, Jeremy Jones, Nicole C. Kaye and Kenneth W. Merrell. 2013. Mindfulness in school psychology: Applications for intervention and professional practice. *Psychology in the Schools*. 50.6: 531-547. [doi:10.1002/pits]

Addresses the potential application of mindfulness intervention within the school setting by school psychologists. The article presents popular mindfulness interventions and proposes a 3 tiered approach (school wide, small groups and individual work) using examples from past research.

Napoli, M, Paul Rock Krech and Lyn C. Holley. 2005. Mindfulness training for elementary school students: The attention academy. *Journal of Applied School Psychology*. 21.1: 99-125. [doi:10.1300/J370v21n01_05]

In this study the authors consider the effects of mindfulness training on the attentional efforts of students in grades 1-3. The introduction discusses mindfulness implementation into the curriculum and the readiness of children this age based on current environmental factors.

Describes the Attention Academy Programme (AAP) and includes detailed description of it in the Appendix.

Sawyer-Cohen, Jeanette A., and Randy J. Semple. 2010. Mindful parenting: A call for research. *Journal of Child and Family Studies*. 19: 145-151. [doi:10.1007/s10826-009-9285-7]

A call for research for mindful parenting programs e.g. Mindfulness Based Cognitive Therapy. Describes the mindful parenting program and its potential effect on parents and their children.

Zack, Sanno, Jennie Saekow, Megan Kelly, and Anneliese Ranke. 2014. Mindfulness based interventions for youth. *Journal of Rational-Emotive and Cognitive-Behavioural Therapy*. 32: 44-56. [doi:10.1007/s10942-014-0179-2]

Reviews literature that relates to the impact of mindfulness intervention in clinical settings and programs that are specifically designed for and are effective with youth. Discusses the developmental appropriateness of these interventions for children and youth and their assessment methods.

Zelazo, Philip David, and Kristen E. Lyons. 2012. The potential of mindfulness training in early childhood: A developmental social cognitive neuroscience perspective. *Child Development Perspectives*. 6.2: 154-160. [doi:10.1111/j.1750-8606.2012.00241.x]

Adding to their 2011 paper, the authors attend to the cognitive neuroscience perspective as an explanation for the feasibility of mindfulness exercise with children as young as pre-school.

Suggests that mindfulness can help regulate reflection, anxiety, arousal and motivation in this age group. Advises how mindfulness exercises can be adapted for children and adolescents.

Zenner, C, Hermleben-Kurz, S. & Walach, H. (2014) Mindfulness-based interventions in schools—a systematic review and meta-analysis. *Frontiers in Psychology*, 5, 1-20.

A systematic review of 24 of published and unpublished studies that demonstrated the effects of school-based mindfulness interventions with participants aged 6-18, including 11 from outside the USA. Interventions mostly linked to existing mindfulness programs. Collective measures included cognitive performance, emotional problems, stress and coping, resilience, and third person ratings.

Interventions with Early Childhood and Elementary Students

The studies in this section describe evidence of improved learning through a variety of mindfulness interventions with early childhood and elementary school aged children. The effects range from regulating emotions, reducing stress and anxiety, improving executive functions, academic engagement, and increasing social skills. The studies include qualitative, auto-ethnography, single-case study, experimental, mixed method, and randomised control. Burke (2010) reviews current interventions across age-groups and presents a summary of their benefits. Capel (2012) employs Langer's distinction of mindful and mindless states and uses children's story-telling of their experiences as a strategy to promote mindfulness. Felver et al. (2014) reports on a specific intervention, Soles of the Feet, as a strategy to limit distractions with the outcome of increasing time spent on task. Flock et al. (2010) reports on an experimental school-wide intervention, Innerkids, aimed at increasing emotional resilience that supports positive interactions within the school setting. Mendelson et al. (2010) comments on another school-wide intervention that focuses on the coping skills of students who come from a violent neighbourhood. Schonert-Reichl and Lawlor (2010) report on MindUp, a classroom based program, designed to promote the well-being of students aged 9-13, for instance, emotional resiliency and social competence. van de Weijer-Bergsma et al. (2014) reports on a large-scale randomised control study of middle-school students, Mindfulkids, in terms of feasibility and cross-benefit analysis. Finding that the variability of results appeared to relate to initial mindfulness traits. Semple et al. (2010) describes mindfulness-based cognitive therapy for individual children which was adapted from an adult-version for use in clinical settings.

Burke, Christine A. 2010. Mindfulness-Based approaches with children and adolescents: A preliminary review of current research in an emergent field. *Journal of Child and Family Studies*. 1.2: 133–144. [doi:10.1007/s10826-009-9282-x]

A comprehensive preliminary review of 15 mindfulness-based approaches across three populations; pre-school children, elementary school children and high school adolescents. A third of the studies were conducted in school. Outcomes of learning mindfulness techniques included decreased anxiety and depressive symptoms and increased compliance and social skills.

Capel, Celine Marie. 2012. Mindlessness/mindfulness, classroom practices and the quality of early childhood education. *International Journal of Quality & Reliability Management*, 29.6: 666-689. [doi: 10.1108/026567112111245656]

Examines how mindless/mindfulness classroom practices affect the quality of learning and experiences of children in early childhood education, using auto-ethnography. Suggested that quality of education can be improved through mindfulness and may be an alternative way to make

learning accessible to all. Discusses attributes of mindfulness that are significant to classroom practices and implications for practice.

Felver, Joshua C., Jennifer I. Frank and Amber D. McEachern. 2014. Effectiveness, acceptability, and feasibility of the soles of the feet mindfulness-based intervention with elementary school students. *Mindfulness*. 5: 589-597. [doi:10.1007/s12671-013-0238-2]

A multiple base line study in a school setting study with 3 elementary school boys (in 3rd grade) displaying high levels of off task behaviour. Utilizes *Soles of the Feet* intervention and collects data through observation and questionnaires. The intervention effectively increased the participants' academic engagement.

Flook, Lisa., Susan L. Smalley., M. Jennifer Kitil., Brian M. Galla., Susan Kaiser-Greenland., Jill Locke., et al . 2010. Effects of mindful awareness practices on executive functions in elementary school children. *Journal of Applied School Psychology* 26. 1: 70–95. [doi:10.1080/15377900903379125]

Measured the effectiveness a school-based program named *InnerKids* on executive functioning (EF) with participants aged 7-9, using teacher and parent reports. The programme was found to be beneficial for children with EF difficulties. A programme description is provided in the Appendix.

Mendelson, Tamar., Mark T. Greenberg., Jacinda K. Dariotis., Laura Feagans Gould., Brittany I. Rhoades., and Philip J. Leaf. 2010. Feasibility and preliminary outcomes of a school-based mindfulness intervention for urban youth. *Journal of Abnormal Child Psychology*. 38.7:985–94. [doi:10.1007/s10802-010-9418-x]

Reports findings from a school-based mindfulness yoga intervention, aimed at regulating emotions and response to stress, administered in a violent neighbourhood with participants aged 9-10. Social validity was high for students and staff. Findings showed that the intervention had a positive impact on problematic responses to stress.

Schonert-Reichl, Kimberly A., and Molly Stewart Lawlor. 2010. The effects of a mindfulness-based education program on pre- and early adolescents' well-being and social and emotional competence. *Mindfulness* 1.3:137–151. [doi:10.1007/s12671-010-0011-8]

Evaluates the effectiveness of the Mindfulness Education (ME) program (renaming *MindUP*) delivered to students aged 9-13. After completion, teachers rated students in the ME group, more attentive, emotionally regulated and socially-emotionally competent. Highlights the need for effective intervention with this age group and the limitations of literature in this field.

Semple, Randje J., Jennifer Lee., Dinelia Rosa., and Lisa F. Miller. 2010: A Randomized trial of mindfulness-based cognitive therapy for children: Promoting mindful attention to enhance social-emotional resiliency in children. *Journal of Child and Family Studies* 19.2: 218–229. [doi:10.1007/s10826-009-9301-y]

Describes the development and implementation of *Mindfulness-Based Cognitive Therapy for Children* (MBCT-C). As a result of an experiment, participants that had this therapy reduced attention and behaviour problems as well as anxiety symptoms. Reports results from previous studies by the same authors with children ranging from 7-13 years in a clinical setting.

van de Weijer-Bergsma, Evan., George Langerberg., Rob Brandsma, Frans J. Oort., and Susan M. Bögels. 2014. The effectiveness of a school based mindfulness training as a program to prevent stress in elementary school children. *Mindfulness*, 5, 238-248. [doi:10.1007/s12671-012-0171-9]

Reports on results of a randomized control study using *Mindfulkids* with students aged 8-12. Discusses implementation in schools and possible implications for adolescents. Concludes that *Mindfulkids* could be feasible and beneficial for all students in a school setting, with long term effects. Results differed for students with different traits as measure with a mindfulness scale.

Interventions with Secondary School Students

The studies in this section describe evidence of improved learning through a variety of mindfulness interventions on secondary school aged youth. The effects described include anxiety and stress reduction including depressive and obsessive disorders, improving self-image, somatic symptoms, and improved social skills. The design includes experimental and empirical studies from large to small scale.

Beauchemin et al. (2008) reports on an intervention with youth with learning disabilities and found the mindfulness training improved the participant's level of achievement, social interactions and reduced anxiety. Biegel et al. (2009) modified a clinically-situated mindfulness-based stress reduction program for secondary aged girls that was additional to standard treatments for depressive and obsessive disorders. Huppert and Johnson (2010) also modified a mindfulness-based stress reduction program for use by teachers in a classroom setting for the purpose of improving resilience in boys aged 14 to 15. Kuyken et al. (2013) in a non-randomised control feasibility study evaluated the outcomes of Mindfulness in Schools program and found reduced rates of depression and reported improved well-being. Raes et al. (2014), in randomised control trial of a school-based program across all ages of secondary, combined mindfulness-based cognitive therapy and mindfulness-based stress reduction and identified possible strategies for addressing rates of depression in adolescents. Singh et al. (2007) studied how using Soles of the Feet programme with adolescents with conduct-disorder decreased incidents of aggression. Wall (2005) combined Tai Chi with Mindfulness Based Stress Reduction to promote calmness with adolescents who are frequently exposed to violence in their community. Wisener (2014) reported on a mindfulness mediation program that resulted in a positive change in the school climate in an alternative high school setting.

Beauchemin, James., Tiffany L. Hutchins., and Fiona Patterson. 2008. Mindfulness meditation may lessen anxiety, promote social skills, and improve academic performance among adolescents with learning disabilities. *Complementary Health Practice Review*. 13, 1: 34–45.

[doi:10.1177/1533210107311624]

Reports the effects of a mindfulness meditation intervention on students (aged 13-18) diagnosed with a learning disability. Examines whether mindfulness could be especially advantageous for this population. Provides a good description of the program implementation. Measures of achievement, anxiety, and social skills were all improved post-intervention.

Biegel, Gina M., Kirk Warren Brown., Shauna L. Shapiro., and Christine M. Schubert. 2009. Mindfulness-based stress reduction for the treatment of adolescent psychiatric outpatients: A randomized clinical trial. *Journal of Clinical and Consulting Psychology*. 77: 855–866. [doi:10.1037/a0016241]

Assesses the effects of a modified Mindfulness Based Stress Reduction program for participants aged 14-18 (mostly females) in an outpatient psychiatric facility while continuing usual care. The treatment group reported reduced symptoms of anxiety, depression, perceived stress, obsessive symptoms, interpersonal problems and somatic distress and increased self-esteem and sleep quality.

Huppert, Felicia A., and Daniel M. Johnson. 2010. A controlled trial of mindfulness training in schools: The importance of practice for an impact on well-being. *Journal of Positive Psychology*. 5.4: 264-274.

[doi:10.1080/17439761003794148]

A controlled trial of in school mindfulness training (modified Mindfulness Based Stress Reduction) implemented by classroom teachers. Investigated its impact on resilience and well-being in boys aged 14-15. Found no significant difference in mindfulness scores between groups, however there was a positive association between practice and improvement in psychological well-being. High social validity.

Kuyken, William., Katherine Waere., Obioha C. Ukoumunne., Rachael Vicary., Nicola Motton., Richard Burnett., et al. 2013. Effectiveness of the mindfulness in schools programme: non-randomised controlled feasibility study. *The British Journal of Psychiatry*. 203: 126-131. [doi: 10.1192/bjp.bp.113.126649]
Assessed the outcomes of *Mindfulness in Schools Program* (MiSP) with participants aged 12-16 across secondary schools. Findings post treatment showed that students in the MiSP group reported fewer depressive symptoms, lower stress and greater well-being levels. Evidence is provided for the acceptability of the program.

Raes, Filip., James W. Griffith., Katleen Van der Gucht., and J. Mark G. Williams. 2014. School-based prevention and reduction of depression in adolescents: a cluster-randomized controlled trial of a mindfulness group program. *Mindfulness*. 5: 477-486. [doi:10.1007/s12671-013-0202-1]
A school based mindfulness program (combination of Mindfulness Based Cognitive Therapy & Mindfulness Based Stress Reduction) taught to participants aged 13-20, aimed at reducing and preventing depression in adolescents. The treatment group reported lower levels of depression and other findings suggest preventative and curative effects of mindfulness intervention. Illustrates how mindfulness programs can be implemented successfully in schools.

Singh, Nirbay N., Giulio Lancioni., Subhashni D. Singh Joy., Alan S. W. Winton., Mohamed Sabaawi., Robert G. Wahler., and Judy Singh. 2007. Adolescents with conduct disorder can be mindful of their aggressive behavior. *Journal of Emotional and Behavioral Disorders*. 15. 1: 56-63.
Assess the effectiveness of *Soles of the Feet* in modulating aggression behavior in 3 adolescence (aged 13-14years) who had been diagnosed with a conduct disorders using multiple baseline design. The participants' were able to learn skills from the intervention and use them in situations that previously resulted in aggression.

Wall, Robert B. 2005. Tai Chi and mindfulness-based stress reduction in a Boston Middle School. *Journal of Paediatric Health Care*. 19: 230-237.
This article provides a description of a clinical project that used a combination of Tai Chi and Mindfulness Based Stress Reduction in a middle school in a violent community. Subjective statements suggested that the participants experienced improved well-being, calmness, relaxation and increased self-care, self-awareness and interdependence as a result of the intervention.

Wisner. Betsy L. 2013. An exploratory study of mindfulness meditation for alternative school students: Perceived benefits for improving school climate and student functioning. *Mindfulness*. 5:626-638. [doi:10.1007/s12671-013-0215-9]
Examines the benefits of mindfulness meditation (MM) for alternative high school students (aged 15-19 years). MM was perceived by the participants to be helpful and led to a calmer and more peaceful school climate. It is noted that flexibility is needed for program efficiency. Concluded that mindfulness programs have the potential to bring about change in this context.

Interventions with Parents and their Children

There is a growing interest in applying mindfulness practices to parenting. Motivation for doing this includes specific needs arising from diagnoses such as ADHD or the divorce of parents as well as more generally to improve family relationships through a focus on well-being and emotional control. The studies in this section fall into two broad categories; those with a focus on remedial actions and those seeking to enhance functioning family situations as in Altmaier and Maloney (2007) who evaluated a mindful parenting program aimed at enhancing parent-child relationships for divorced parents. Similarly Coatsworth et al. (2010) evaluated a mindful parenting program which culminated in a proposed model to improve parent-youth relationships. Harnett and Dawe (2012) completed a review of empirical studies and promoted parental mindfulness training as an intervention that might provide long-term benefits. Two articles, Bögels et al. (2008) and Singh et al. (2014) focused on how mindfulness can improved parental relationships with children who have been diagnosed with a disorder such as Autism.

Altmaier, Elizabeth and Raelynn Maloney, 2007. An initial evaluation of a mindful parenting program. *Journal of Clinical Psychology*. 63.12: 1231-1238. [doi:10.1002/jclp.20385]

Evaluated the effectiveness of the Mindful Parenting Program using divorced parents of preschool aged children. Results revealed increased mindfulness but no change in parent –child relationships during in home observations.

Bögels, Susan., Bert Hoogstad., Lieke van Dun., Sarah de Shutter., and Kathleen Restifo. 2008. Mindfulness training for adolescents with externalizing disorders and their parents. *Behavioral and Cognitive Psychotherapy*. 36:193–209. [doi 10.1017/S1352465808004190]

Tested the effects of mindfulness training (based on Mindfulness Based Cognitive Therapy) with adolescents with externalizing disorders and their parents simultaneously. The adolescents made improvements in attention, social problems and happiness and reduced externalizing symptoms. Parents noted similar effects in their children and improvement with their personal goals. Results were maintained at follow up.

Coatsworth, J. Douglas., Larissa, G. Duncan., Mark T. Greenberg., and Robert L. Nix. 2010. Changing parent's mindfulness, child management skills and relationship quality with their youth: Results form a randomized pilot intervention trail. *Journal of Child and Family Studies*. 19: 203-217. [doi: 10.1007/s10826-009-9304-8]

Evaluation of the efficiency of a mindful parenting program. Showed strong effects on measures of mindful parenting and parent-youth relationship qualities. By infusing mindfulness activities to existing validated parenting programs seemed to add value by influencing both the thoughts and behaviors of parents. Proposes a mindful parenting model.

Harnett, Paul. H., and Sharon Dawe. 2012. Review: The contribution of mindfulness-based therapies for children and families and proposed conceptual integration. *Child and Adolescent Mental Health*, 17.4: 195-208. [doi:10.1117/j.1475-35588.2011.00643.x]

An empirical review of studies (24). Some of which are with both parents and their children. Authors have an overall aim to improve family relationships and help children to increase ability to sustain attention and manage emotion. It is suggested that parental mindfulness training is an appropriate intervention and some suggestion of its possible long-term effects are provided.

Singh, Nirbhay, N., Giulio E. Lancioni., Alan S.W. Winton., Bryan T. Karazsia., Rachel E. Meyers., Larry L. Latham., and Judy Singh. 2014. Mindfulness-based positive support (MBPBS) for mothers of adolescents with autism spectrum disorder: Effect on adolescence behaviour and parental stress. *Mindfulness*. 5: 646-657. [doi:10.1007/s12671-014-0321-3]

The most recent in a series of studies by the same authors. Previous findings showed that mindfulness training in parents/caregivers can decrease aggression and non-compliance with children and adolescents with Autism, ADHD and without diagnosis. This study adds to the body of evidence using mothers and adolescents diagnosed with Autism.

Interventions with Teachers

There are an increasing number of studies mostly since 2010 on how teachers use mindfulness practices in classroom settings and the wider school setting. These include studies that review mindfulness models, frameworks and interventions as well as empirical studies of training programs of beginning and more experienced teachers. A range of English-speaking western countries are represented in the mostly qualitative studies and include the UK, US, Australia and New Zealand. Albrecht et al.'s (2012) review of teacher practices include those that improve teacher well-being, while Crane et al.'s (2010) review is of UK mindfulness interventions used by teachers. Roeser et al. (2012) identifies future trends for mindfulness training for teachers within a model. Burrows (2011) examines the impact of relational mindfulness training on teachers' emotional resilience. Similarly Bernay's (2014) study takes a qualitative approach to investigating the impact of mindfulness on professional resilience of first year teachers. Gold et al. (2010) adapt Mindfulness-Based Stress Reduction (MBSR) for primary teachers. Sherretz (2011) examines what practices are associated with being a mindful teacher. Van Aalderen et al. (2014) focus on the teacher's of mindfulness intervention role in fostering mindfulness in their participants.

Albrecht, Nicole. J., Patrica M. Alberecht., and Marc Cohen. 2012. Mindfully teaching in the classroom: A literature review. *Australian Journal of Teacher Education*, 37. 12: 1-14. [doi:10-14221/ajte2012v37n12.2].

A review of mindful teaching practices in the classroom. Findings showed that mindfulness practices help teachers reduce their stress levels, improve self-esteem and assist with behavior management. Includes statistics to support the urgent need based on the current classroom climate. Includes personal narratives from teachers who have taught mindfulness concepts in the classroom.

Bernay, Ross, S. 2014. Mindfulness and the beginning teacher. *Australian Journal of Teacher Education*, 39.7: 58-69,

A phemenological study with 5 beginning teachers, introduced to mindfulness in their training program. Investigated the effect of mindfulness training on personal and professional resilience in their first year of teaching. Results are illustrated though journal snippets. Found that mindfulness training made a significant difference to their ability to cope, so much so that participants continued to use mindfulness strategies after the study.

Burrows, Leigh. 2011. Relational mindfulness in education. *Encounter: Education for Meaning and Social Justice*. 24.4:1-6

An inquiry project with 8 educators who participated in relational mindfulness training. The participants found the experience to be positive and inserts are shared from journal reflections. Results supported mindfulness as an intervention to help teachers deal with the emotional challenges of the school environment.

Crane, Rebecca. S., Willem Kuyken., Richard P. Hastings., Neil Rothwell., and J. Mark. G. Williams 2010. Training teachers to deliver mindfulness-based interventions: Learning from the UK experience. *Mindfulness*, 1.2: 74-86. [doi:10.1007/s12671-010-0010-9]

Reviews the developments in mindfulness-based interventions implemented by teachers. The author share a belief that the quality of mindfulness teaching depends on the quality of the

teacher. Sets out criteria for competence and training steps. Provides a framework for mindfulness-based teachers training program and addresses the development of these programs in the UK.

Gold, Eluned., Alistair Smith., Ieuan Hopper., David Herne., Glenis Tansey., and Christine Hulland. 2010. Mindfulness-based stress reduction (MBSR) for primary teachers. *Journal of child and family studies*. 19:184-189. [doi:10.1007/s10826-009-9344-0]

Investigated the effect of Mindfulness Based Stress Reduction (MBSR) with primary school teachers on their levels of anxiety, depression and stress, movement towards a stated goal and changes in awareness. The majority of the participants made improvements across all areas. Suggests MBSR could be an effective and cost efficient intervention for occupational stressed teachers.

Roeser, Robert W., Ellen Skinner., Jeffrey Beers., and Patricia A. Jennings. 2012. Mindfulness training and teachers' professional development: An emerging area of research and practice. *Child Development Perspectives*. 6.2: 167-173: [doi:10.1111/j.1750-8606.2012.00238.x]

Explores mindfulness training for teachers through a model. Discusses how teacher's emotional regulation will in turn have positive effects in the classroom. Outlines current mindfulness based programs for teachers. Poses future questions and includes suggestions for research design and measures, length of training including teacher and student programs.

Sherretz, Christine, E. 2011. Mindfulness in education: case studies of mindful teachers and their teaching practices. *Journal of Thought*. 79-96

A qualitative study that asks what it means to be a mindful teacher and what that looks like in practice. Findings indicated that teachers, who were considered mindful, emphasized multiple pathways to an answer, added fun to learning, gave choices, encouraged elaboration, there was a sense of community in their classrooms and they had positive views of their students.

Van Aalderen, Joël R., Walter J. Breukers., Rob P.B. Reuzel., and Anne E.M. Speckens. 2014. The role of the teacher in mindfulness-based approaches: A qualitative study. *Mindfulness*. 5:170-178. [doi:10.1007/s12671-012-0162-x]

Interviews with teachers of mindfulness intervention along with their participants (adults) to investigate the role of the teacher in the intervention's effectiveness. Found that it was important to both teachers and participants that the teachers embodied mindfulness concepts and practices and that they acknowledged the importance of peer support in their teaching.

Interventions in Tertiary Settings

The studies in this section focus on mindfulness practices in tertiary settings. The investigations are mostly qualitative rather than experimental randomized control studies and include self-reported benefits. The benefits range from improved self-regulation, sleep quality, improved focus, stress management and improved feelings of happiness. From a Buddhist perspective, Bush (2011) tracks the effects of incorporating mindfulness practices in tertiary courses across disciplines. Caldwell et al. (2010) studied the efficacy of movement-based practices on college-based recreational classes and reported increased states of mindfulness. Holland (2006) conducted a study in two different contexts, in and outside the US, they described the implementation of a mindfulness program across settings and considered the long-term effects of programmes like this in the tertiary setting. Maple (2012), a New Zealand study, looks at the introduction of mindfulness and reported increased self-management and focus and transfer to other

areas of their life. Rogers (2013) reports on the *Koru* program and examines adaptations needed for the tertiary setting.

Bush, Mirabai. 2011. Mindfulness in higher education: *Contemporary Buddhism: An Interdisciplinary Journal*. 12. 1: 183-197. [doi:10.1080/14639947.2011.564838]

This paper (written by the co-founder of the Centre for the Contemplative Mind) explores the introduction of mindfulness into courses in higher education and sites examples by different lecturers in different disciplines. Positive effects are illustrated with quotes.

Caldwell, Karen., Mandy Harrison., Marianne Adams., Rebecca H. Quin and Jeffrey Greeson. 2010. Developing mindfulness in college students through movement-based courses: Effects on self-regulatory self-efficacy, mood, stress, and sleep quality. *Journal of American College Health*. 58.5: 433-442

Examines the efficacy of movement-based courses as a means of increasing mindfulness and its effect on improved sleep quality. College student's participated in a class of either Pilates, Taiji quan, or Gyrokinesis. Mindfulness was found to be increased via these classes and this partially explained improved sleep quality.

Holland, Daniel. 2006. Contemplative education in unexpected places: Teaching mindfulness in Arkansas and Austria. *Teachers College Record*. 108.9: 1892-1861

This article describes the development of an experiential course in mindfulness taught in two different university contexts. Journal entries describe the impact on the students. Discusses the benefits as well as the potential hurdles of implementation of programs like this on a wider scale.

Mapel, Tim .2012. Mindfulness and education: Students' experience of learning mindfulness in a tertiary classroom. *New Zealand Journal of Educational Studies*. 47. 1: 19-32

Explores student's experiences of learning mindfulness in a tertiary classroom. Students found the program acceptable, reported that it helped them focus and manage stressful situations better and was relevant to their studies as well as their personal lives. Provides literature on the benefits of mindfulness practices within tertiary student populations.

Rogers, Holly B. 2013. Koru: Teaching mindfulness to emerging adults. *New Directions for Teaching and Learning*. 134: 73-81. [doi:10.1002/tl]

Discusses the benefits of a short mindfulness program titled *Koru* used with adults (aged 18-29) in a university. Limitations and adaptations that related especially to this age group were delineated. Improved happiness, sleep, and management of studies and decreased stress levels were reported upon completion. The program was received optimistically.

Teaching mindfulness

Teaching mindfulness in schools is a growing field of research. Studies investigating this are largely situated in the US and UK with increasingly studies from other parts of the English-speaking world, notably Canada, Australia and New Zealand. This section includes reviews of programs designed to teach about mindfulness such as those by Gould, Dariotis, Greenberg, and Mendelson (2016), Jennings (2016) and Weare (2013). Gould and colleagues (2016) review is framed around the notion of fidelity implementation. Jennings (2016) examines the effectiveness of mindfulness programs in the American public school system using the notion of best practice to ensure secularity. The UK, Canadian and US mindfulness programs reviewed by Weare (2013) include Inner Kids, MindUp, and Mindfulness in Schools Project. An important component of this review is the inclusion of the policy context in terms of supporting mindfulness programs. Books by McCown, Reibel, and Micozzi (2011) and Schoeberlein

(2009) are guides to implementing mindfulness programs in classrooms. McCown, Reibel, and Micozzi's book (2011) addresses the issue of how to teach mindfulness and is framed around the questions of why, who and how to teach mindfulness in a US context of Western pedagogical models. It draws on the program of Mindfulness-based Stress Reduction (MBSR) and Vipassana Buddhist traditions. Schoeberlein's (2009) book, drawing on a US context perspective, incorporates a blend of motivational and practical orientations to mindfulness practices in education. This section on teaching mindfulness includes two books (Jennings, 2016; Powietrzynska & Tobin, 2016) and one article (Rix & Bernay, 2014) that draw attention to how programs are framed. Jennings (2016) highlights the affective dimension of mindfulness in contrast to the more commonly discussed cognitive domain. Powietrzynska and Tobin's (2016) edited volume includes an extensive section on mindfulness in education with chapters on ecological mindfulness, creativity and art contexts. Rix and Bernay (2014) discuss their pilot study of a school-based mindfulness project using a bi-cultural framing and thematic analysis to investigate the impact of mindfulness-breathing practices on student and teacher well-being.

Gould, Laura F., Jacinda K. Dariotis, Mark T. Greenberg, and Tamar Mendelson (2016) Assessing fidelity of implementation (FOI) for school based mindfulness and yoga interventions: A systematic review. *Mindfulness*, 7: 5-33. [doi:10.1007/s12671-015-0395-6]

A review of the fidelity of implementation (FOI) in studies that examine the effectiveness of school-based mindfulness studies. 48 studies meet criteria (not all specifically based on mindfulness concepts) and found that the rigorous fidelity testing was conducted in insufficient quantities. Five recommendations are given and examples provided.

Hyland, Terry (2011). *Mindfulness and Learning: Celebrating the Affective Dimension of Education*. Dordrecht: The Netherlands, Springer Press.

The affective domain of learning is contrasted with the more commonly written about cognitive domain and described as a "therapeutic turn" by the author. Comprehensive arguments are made for attention to emotions and mindfulness as a means of promoting a new model and philosophy of life-long education.

Jennings, Patricia A. (2016). Mindfulness-based programs and the American public school system: Recommendations for best practice to ensure secularity. *Mindfulness* 7: 176-178. [doi: 10.1007/s12671-015-0477-5]

The author reviews the state of Mindfulness-Based programs being utilized in the American school system and provides recommendations for best practices in this setting. The author addresses inconsistencies using specific examples with the secular nature of mindfulness practice. Notes that research into the effectiveness of the mindfulness interventions have not keep up with the influx of program implementation.

McCown, Donald, Diane C. Reibel and Marc S. Micozzi (2011). *Teaching Mindfulness: A Practical Guide for Clinicians and Educators*. Dordrecht: Springer.

In the context of a mindfulness curriculum the authors examine the pedagogical relationship between teacher and student through the lens of Mindfulness-Based Stress Reduction (MBSR) and mindfulness Buddhist origins. The book is divided into three sections; one, a background on mindfulness-based interventions, a second, about teaching practice, and a third details a mindfulness-based curriculum.

Powietrzynska, Malgorzata & Kenneth Tobin, (Eds.)(2016). *Mindfulness and Educating Citizens for Everyday life*. Rotterdam: Sense Publishers.

This edited book promotes mindfulness as a way of life. Explorations about maintaining wellness through healthy living include sections on mindfulness in education and mindfulness and wellness. Chapter contributors are from a diverse range of regions: North, Central and South America, SE Asia and Oceania. The teaching of mindfulness practices incorporates multiple contexts such as tertiary and school classrooms and clinical settings.

Rix, Grant and Ross Bernay (2014). A study of the effects of mindfulness in five primary schools in New Zealand. *New Zealand Journal of Teachers' Work*, 11(2), 201-220.

Reports on the effects of an eight-week mindfulness program in five New Zealand primary schools. A Maori (indigenous) model of hauora (holistic well-being) is a key element of the program. It found mindfulness practice can impact the five key competencies of thinking, managing self, relating to others, and participating and contributing in the *New Zealand Curriculum* for the school sector.

Schoeberlein, Deborah (2009) *Mindful Teaching and Teaching Mindfulness*. Boston: Wisdom Publications.

Based on the author's use of classroom mindfulness techniques the book includes discussion of attentiveness and awareness, simple strategies aimed at developing the habit of mindfully being, how teachers and students can work together on mindfulness and many other practical orientations for a teacher.

Weare, Katherine (2013). Developing mindfulness with children and young people: a review of the evidence and policy context. *Journal of Children's Services*, 8 (2), 141-153. DOI: 10.1108/JCS-12-2012-0014.

A review of teaching mindfulness to young people literature including US-based and UK mindfulness projects; Inner Kids, MindUp, Learning to BREATHE and the Mindfulness in Schools Project as well as those for teachers such as Toronto's Mindfulness-based Wellness Education and New York's Garrison Institute's Cultivating Awareness and Resilience in Education. A consideration is mindfulness's fit with the policy context.

Critical perspectives

A recent trend is the commodification of mindfulness which has been popularly labelled "McMindfulness". This development has been increasingly critiqued by a group of authors in the UK and US. Key commentators include: Ergas (2015); Forbes (2016); Hyland (2016, 2016); and Purser (2014). This section provides an overview of these critiques. Key arguments include the secularisation and commodification of mindfulness into a neoliberal framing which obscures its spiritual origins particularly in regard to advocating its inclusion in education – formal and informal. The studies range from commentaries, such as that by Purser and Loy (2013) in the Huffington Post and that by Nowogrodzki (2016) in Nature | News, as well as interviews with those who originally promoted the practice, namely Kabat-Zinn. Shonin's (2016) interview with Kabat-Zinn clarifies his meaning of "non-judgement moment-to-moment awareness", his position on taught mindfulness programs such as Mindfulness-based Stress Reduction (MBSR) and mindfulness as a way of being based on practice. More detailed analyses of current efforts to popularise the practice include Hyland's (2016) discussion of "right livelihood", a specific Buddhist precept, that could be used to limit the erosion of the spiritual underpinnings of mindfulness. Drawing on education philosophers he raises questions about the ethics and morality of commodifying a meditative practice. In his other 2016 article Hyland makes similar points but also considers the implications of commodification for mindfulness in the curriculum. Ergas (2015) distinguishes between

wisdom traditions as justification for contemplative practices in education and the current trend of evidence-based empirical science justifications. He considers how “scientification” is promoting instrumental mindfulness educational interventions. Forbes (2016) uses a prophetic critique to challenge McMindfulness interventions and shows how this secular discourse of mindfulness is perpetuating a neoliberal individualist hegemony of social meaning. Purser (2015) discusses the myth of “being in the moment” and its use in the secularisation of mindfulness arguing that a singular focus on the present moment has promoted a narrowing of mindfulness practice in education.

Ergas, Oren (2015). The deeper teachings of mindfulness-based ‘interventions’ as a reconstruction of ‘education’. *Journal of Philosophy of Education*, 49(2), 203-220.

Considers the nature of contemplative practices arguing there are two distinct sets of rhetoric used to justify inclusion in education – one from the wisdom traditions and the other more dominant discourse from empirical science. Warns about the risks of a secularised instrumental curricular interventions that obscures wisdom-traditions.

Forbes, David (2016). Modes of mindfulness: Prophetic critique and integral emergence. *Mindfulness*, 7, 1256-1270. DOI: 10.1007/s12671-016-0552-6.

Identifies six modes of mindfulness to clarify their societal functions and purposes. Proposes an integral meta-model that develops a critical taxonomy to evaluate mindfulness approaches when considering integral curricula and interventions. This prophetic integral mindfulness model transcends neo-liberal enactments of mindfulness.

Hyland, Terry (2016). The limits of mindfulness: Emerging issues for education. *British Journal of Educational Studies*, 64(1), 97–117. DOI: 10.1080/00071005.2015.1051946.

The author writes widely on mindfulness and its place in education. This article addresses the wide spread application of “McMindfulness” and discusses the effects of the watered down approach, including the exclusion of the traditional and spiritual foundations. The continuing role of mindfulness in the curriculum is discussed.

Hyland, Terry (2016). The erosion of right livelihood: counter-educational aspects of the commodification of mindfulness practice. *Person-centered & Experiential Psychotherapies*, 15(3), 177-189. DOI: 10.1080/14779757.2016.1179666.

This critique of educational and workplace commodification of mindfulness examines the erosion of the Buddhist precept of right livelihood. It argues that an emphasis on ethical and therapeutic orientations to education is a powerful way to counter the proliferation of commodified instrumentalists versions of mindfulness practices.

Nowogrodzki, Anna (2016). Power of positive thinking skews mindfulness studies; *Nature*, 21/4/16. [doi: 10.1038/nature.2016.19776]

This short Nature | News article draws attention to the skewed reporting of trials of mindfulness to improve mental health outcomes by emphasizing the positive results with negative results going unpublished.

Purser, Ronald (2015). The Myth of the Present Moment. *Mindfulness* 6, 680–686. DOI 10.1007/s12671-014-0333-z.

Argues that Kabat-Zinn's operational definition of mindfulness as "being in the moment" limits the depths of secular mindfulness practice. The author unpacks the philosophies of traditional Buddhist mindfulness practices and some of the contradictions in modern intervention such as MBSR in terms of present time and space and being in the moment.

Purser, Ronald and David Loy (2013). Beyond McMindfulness. Huffington Post, 1/7/13, http://www.huffingtonpost.com/ron-purser/beyond-mcmindfulness_b_3519289.html.

Described as stripped-down secularized technique, which some are now calling "McMindfulness". Leading a call for more ethical and socially responsible view of mindfulness practice.

Shonin, Edo (2016). 'This is not McMindfulness'. Interview with Jon Kabat-Zinn. *Psychologist* 29 (2), 124-125.

A question and answer between Edo Shonin and Jon Kabat-Zinn, the founder of mindfulness-based stress reduction explores the reasons why mindfulness is growing in popularity. Kabat-Zinn argues that defining mindfulness can be problematic and attempts to do are better seen as working definitions. He rejects the term 'McMindfulness' suggesting that fundamentally mindfulness is a way of being that requires practice.