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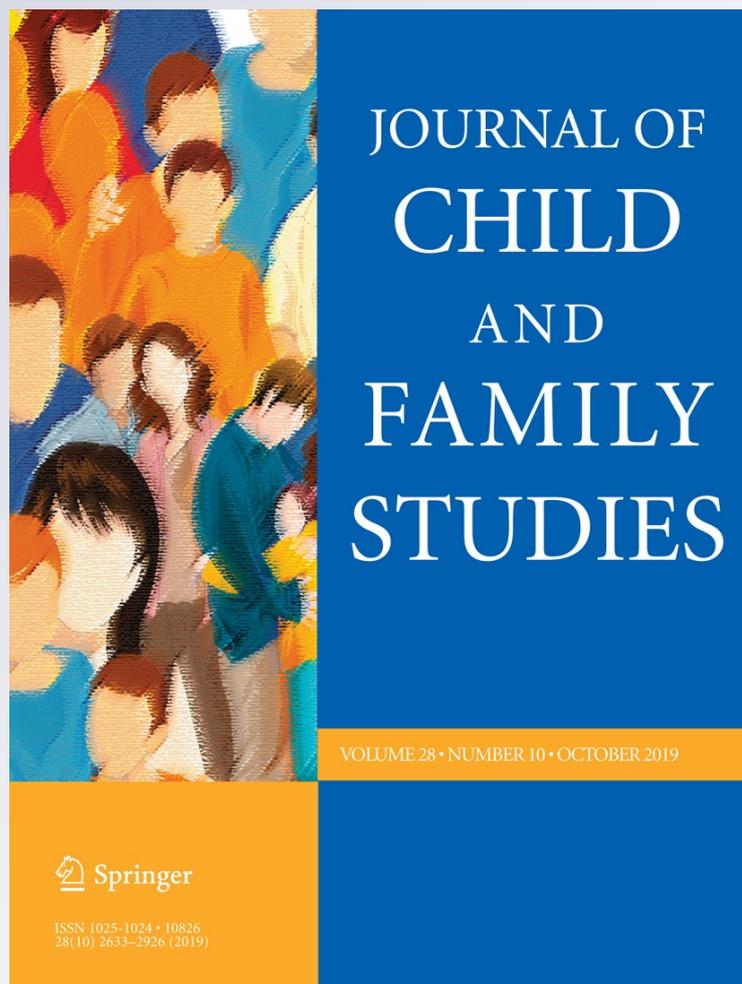
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Health School-based Mindfulness Interventions for Improving Mental Health: A Systematic Review and Thematic Synthesis of Qualitative Studies

Supakyada Sapthiang¹ · William Van Gordon ² · Edo Shonin³

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Abstract

Objectives School-based mindfulness interventions have recently shown promise for treating and preventing mental health issues in young people. However, the literature lacks a high-level perspective of the impact of mindfulness on young people's mental health according to their own first-hand accounts. Therefore, the objective of this study was to conduct the first systematic review and thematic synthesis to rigorously evaluate the qualitative evidence pertaining to students' experiences of school-based MBIs.

Methods The following electronic databases were searched for qualitative school-based mindfulness intervention papers published up until the end of March 2019: *PubMed*, *Web of Science*, *Scopus*, *ProQuest*, and *Google Scholar*. An assessment of study quality was undertaken using the Critical Appraisal Skills Programme qualitative checklist.

Results The initial literature search returned 4102 papers and seven studies met all of the inclusion criteria. The thematic synthesis identified four major themes of (i) using attentional processes to regulate emotions and cognitions, (ii) stress reduction, (iii) improved coping and social skills, and (iv) calming and/or relaxation.

Conclusions Findings show that school-based MBIs are experienced by students as having a range of benefits to mental health, including in both preventative and treatment contexts. However, efforts should be made to improve methodological quality, including taking steps to minimise recall bias and provide a greater degree of transparency regarding how students are selected to attend qualitative interviews or focus groups.

Keywords Mindfulness · Mindfulness-based interventions · Schools · School-based interventions · Mental health · Public mental health

Approximately 10% of young people aged 5–16 years suffer from mental illness and half of all mental illnesses commence prior to the age of 14 (World Health Organization [WHO], *N.D.*). Risk factors for mental illness in young people include (for example) low socioeconomic status, social deprivation, adverse childhood experiences, pressures

relating to academic progression, and lack of family or community-based support (Broderick and Metz 2009; Sapthiang et al. 2019a; Van Gordon et al. 2019; WHO 2012). Stressors can also arise because of the physical, social, and cognitive-affective changes associated with child and youth transition. Mental illness during childhood and adolescence is linked to somatic health problems such as obesity, academic underachievement, delinquency, lower employment prospects, and psychiatric problems during adulthood (Dray et al. 2017; WHO 2012).

In addition to seeking to enhance mental illness treatment approaches for young people, there is growing awareness of the benefits of cultivating resiliency and protective traits (Sapthiang et al. 2019b; Schonert-Reichl and Lawlor 2010; Windle 2011). Accordingly, the UK government has made mental health promotion a priority area and has emphasised the important role of schools for improving young people's

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mental health (Sapthiang et al. 2018). Indeed, since most children spend a considerable amount of time at school, it is a viable setting for cultivating protective traits (e.g., emotional literacy, coping skills) (Van Gordon et al. 2019). This is in line with Rose's (1992) prevention paradox principle in which prevention targeted at low-risk individuals can be more effective at improving disease burden versus targeting high-risk individuals. Furthermore, in addition to the logistical ease of administering interventions to a collective group of students (Dray et al. 2017), delivering interventions as a whole class activity can help reduce stigma, social comparison, and inequality in accessing the intervention (Kuyken et al. 2013).

A category of intervention known as mindfulness-based interventions (MBIs) has recently shown promise in treatment and preventative contexts with school-aged young people (Sapthiang et al. 2018). The practice of mindfulness derives from Buddhist meditation and involves maintaining an active awareness of experienced phenomena on a moment-by-moment basis (Van Gordon et al. 2015). A systematic review of quantitative studies of mindfulness delivered to young people in school settings ($N = 28$ included studies) demonstrated improvements in mental health variables such as depression, anxiety, rumination, behavioural distress, hostility, and aggression (Felver et al. 2016). The same systematic review also demonstrated increases in young people's resilience to mental illness through improvements in (for example) emotion regulation, attention skills, social skills, optimism, social-emotional competence, coping skills, and mindfulness (Felver et al. 2016).

However, according to Bannirchelvam et al. (2017), in addition to understanding and evaluating the evidence amassed through the aforementioned quantitative studies of mindfulness that have been conducted 'on' young people, it is essential to appraise and synthesise the evidence of qualitative mindfulness studies that have been conducted 'with' young people. Despite this, a systematic review of such qualitative studies has not been conducted to date, and the literature thus lacks a high-level perspective of the impact of mindfulness on young people's mental health according to their own first-hand accounts. Given that research supports young people's capability to elucidate and be experts of their experiential perspectives (Christensen and James 2000), a study reviewing such evidence is particularly needed. Furthermore, in light of growing evidence supporting the role of schools in adopting a public health approach toward building resilience and addressing mental health issues in young people, it would be helpful to determine what key themes underlie school students' lived experiences of participating in school-based MBIs.

Thus, the objective of this study was to conduct the first systematic review to rigorously appraise and synthesise the

qualitative evidence pertaining to students' experiences of school-based MBIs. The extended version of the Population, Intervention, Control, and Outcomes (PICO; Boland et al. 2013) format was used to help identify the following research question: What key themes relevant to mental health underlie and/or reflect young people's experiences of participating in school-based MBIs? The Preferred Reporting Items for Systematic Reviews and Meta-analysis (PRISMA; McInnes et al. 2018) guidelines were followed where appropriate.

Method

Literature Search

Paper titles, abstracts and keywords were searched using the following search terms and criteria: *Mindful** AND *School**, OR *Education**, OR *Student** OR *Youth* OR *Young* OR *Child** OR *Adolecen**. In order to avoid overlooking qualitative components embedded within quantitative studies, search terms specifically relating to qualitative data collection or analytical techniques were not employed. The aforementioned search terms were applied to the following electronic databases for all papers published up until the end of March 2019: *PubMed*, *Web of Science*, *Scopus*, *ProQuest*, and *Google Scholar*. Reference lists of relevant studies and review papers were also searched.

Selection Criteria and Data Extraction

In order to be included in the systematic review, a study had to (i) involve the delivery of an MBI (whether a single session or lasting for several months), (ii) involve students attending either primary or secondary education, (iii) employ intervention delivery linked to a school setting (i.e., whether delivered at school or involving students referred by a school), (iv) utilise qualitative data collection and analytical techniques, (v) report findings relevant to mental health, and (vi) be published in a peer-reviewed journal in English language. Papers were excluded if they (i) did not elicit responses directly from students, (ii) did not include an intervention specifically designated as being focussed on mindfulness (e.g., studies based on "yoga" or unspecified forms of meditation), (iii) only reported findings relevant to academic performance, and (iv) were theoretical or review papers (see Table 1 for alignment of inclusion and exclusion criteria with PICO elements). Studies not published in peer-reviewed journals were excluded on the basis that publication in a refereed journal should provide at least a minimum level of assurance in respect of a study's methodological approach, ethical propriety, reporting standards, and general credibility (Shonin et al. 2015).

Table 1 Extended PICO for this systematic review

Review question	What key themes relevant to mental health underlie and/or reflect young people's experiences of participating in school-based MBIs?	
	Inclusion criteria	Exclusion criteria
Population	Young people of school-going age	Not attending primary or secondary school
Intervention	A school-based MBI	An intervention not specifically designated as being focussed on mindfulness
Comparator	Not applicable	Not applicable
Outcomes	Any themes relevant to mental health	Educational performance
Study design	Qualitative intervention study	Quantitative studies (excluding those with an embedded qualitative arm), review papers, theoretical papers
Other	Published in a peer-reviewed academic journal	Did not elicit responses directly from students

Abstracts were screened and a paper was retrieved and analysed for study eligibility if it appeared to include relevant data or information. The PRISMA guidelines (McInnes et al. 2018) were used to inform the choice of extracted data items, which included sample size, sample description (e.g., age range, clinical/non-clinical, country of intervention delivery), intervention description (e.g., course length, session frequency, session duration, key techniques employed, etc.), details of intervention facilitator, qualitative data collection technique, qualitative analytical technique, and mental health-relevant themes.

Assessment of Study Quality

An assessment of study quality was undertaken using the Critical Appraisal Skills Programme (CASP) qualitative checklist (CASP 2018). Tools such as the CASP qualitative checklist (that includes ten questions such as: “*Was the recruitment strategy appropriate to the aims of the research?*” “*Was the data collected in a way that addressed the research issue?*”) provide a transparency of research methods which permits an evaluation of the credibility and transferability of the results of the primary study (Morton et al. 2010). However, the CASP assessment was not used as a basis for excluding or weighting any of the eligible studies.

Data Synthesis

A thematic synthesis was undertaken to elicit a rigorous high-level analytical abstraction of common elements and themes across eligible qualitative studies (Thomas et al. 2008). To allow the analysis of a substantive literature in which individual studies represented a wide range of study aims, the thematic synthesis focussed on identifying common underlying themes relevant to school students' mental health. Verbatim participant extracts taken from the results section of each eligible study were inputted into NVivo

11 software for storing, coding, and data searching (Morton et al. 2010; Thomas et al. 2008). The thematic synthesis employed phases of (i) coding participant extracts on a line-by-line basis for each eligible study, (ii) forming descriptive themes, and (iii) generating analytical themes (Thomas et al. 2008). Studies were read several times to confirm that all of the extracts of students' perspectives were captured (Morton et al. 2010). Participant perspectives were then assessed for convergence in order to formulate the final thematic structure (Lucas et al. 2007).

Results

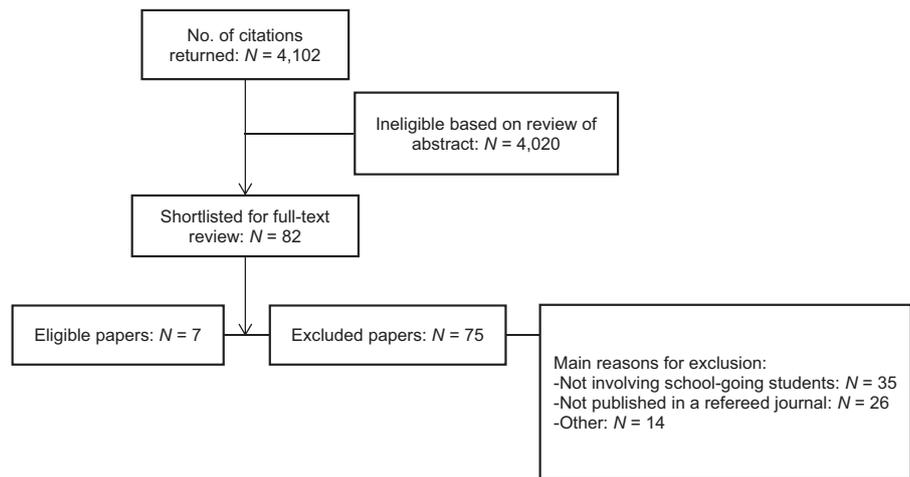
Search Results

The initial literature search returned 4102 papers. After the review of the papers' abstracts, 4020 studies were deemed ineligible according to the aforementioned eligibility criteria. Following a full-text review of the remaining 82 papers, seven studies met all of the inclusion criteria and were subjected to an in-depth review and appraisal. The PRISMA flow diagram outlining the paper selection process is shown in Fig. 1.

Primary Reasons for Exclusion

Of the 82 papers subjected to a full-text review, the main reasons for ineligibility were because the study (i) did not involve young people attending a primary or secondary school (e.g., Chrisman et al. 2009; Monshat et al. 2013), (ii) used an intervention that was not principally based on and/or described as mindfulness (e.g., Campion and Rocco 2009; Conboy et al. 2013), (iii) primarily relied on quantitative assessments with insufficient detail to determine the qualitative data collection process, qualitative analytical technique, and/or key themes identified (e.g., Broderick and Metz 2009; Metz et al. 2013; Tharaldsen 2012; Wall 2005),

Fig. 1 PRISMA flow diagram of the paper selection process



(iv) was not described as being a school-based intervention (e.g., Milligan et al. 2015), (v) did not directly elicit students' perspectives (e.g., Capel 2012), (vi) was not published in English language (e.g., Jin 2016), and (vii) was not published in a peer-reviewed journal.

Overview of Study Characteristics

The combined sample size of the seven eligible studies was $n = 251$ ($M = 35.86$, $SD = 29.40$). All seven eligible studies were published since 2014. Participants ranged in age between 7 and 18 years, and were based in Ireland (2 studies), US (2 studies), England, Australia, and Canada. Four studies were based in schools serving socioeconomically disadvantaged areas, and three studies specifically targeted students with mental health and/or behavioural issues (see Table 2 for a description of included studies).

Four studies used interviews (semi-structured interviews in the case of three studies) as the qualitative data collection technique and the remaining three studies used focus groups. Five studies used thematic analysis as the qualitative analytical approach. The duration of the MBI ranged from 5 to 20 weeks (duration not specified in Tunney et al. 2017). The range of MBI facilitators included registered psychologists, yoga instructors, school teachers and assistant teachers, mental health therapists, and study researchers (intervention facilitator details not provided in Costello and Lawler 2014).

Assessment of Study Quality

The assessment of study quality using the CASP checklist (2018) indicated variability in methodological robustness across the seven eligible studies. All of the eligible studies reported the sample size, provided a description of the sample, and included participant quotations. There were also no issues across the eligible studies in respect of

providing a clear statement of aims, using appropriate qualitative methodology, using a research design suitable for the research aims, adequately considering ethical issues, providing a clear statement of findings, and performing value-adding research (CASP items 1–3, 7, 9, and 10). However, as shown in Table 3, there were a number of methodological issues (between 2 and 4 'No' responses to CASP items per study) relating to ambiguous or unsuitable recruitment strategy, inappropriate data collection, lack of consideration of the relationship between participants and researcher, and poorly-defined or inappropriate data analytical strategy (CASP items 4–6, and 8).

Synthesis

Four major themes emerged as being relevant to students' mental health following participation in a school-based MBI (i) using attentional processes to regulate emotions and cognitions, (ii) stress reduction, (iii) improved coping and social skills, and (iv) calming and/or relaxation (see Table 4). The first theme referred to students' experience that mindful attention helped them to foster a greater awareness of and/or let go of emotions and cognitive processes. The second theme reflected students' experience of reductions in stress as well as an appreciation of the utility of mindfulness for stress reduction. The third theme referred to students' experience of enhanced coping and resilience skills as well as improvements in social skills. The fourth theme reflected students' experiences of both psychological and somatic forms of relaxation elicited through mindfulness practice.

Challenges and acceptability issues (e.g., misconceptions concerning mindfulness) were not targeted as part of the current systematic review but in any event, such issues would not have constituted a common theme as they were identified in only three of the seven eligible studies (i.e., Bannirchelvam et al. 2017; Dariotis et al. 2017; McGeechan et al. 2019).

Table 2 Description of included qualitative studies

Study (authors, year)	Participants	Intervention description	Themes/findings relevant to mental health	Data collection and analytical approach
Bannirchelvam et al. (2017)	$n = 8$ upper primary school students (grades 3–6; aged 7–11) identified to be at risk for mental health issues. Randomly selected from a cohort of 20 students. Four females. (Australia)	Classroom-based 8-session MBI (Triple R Program; Dove and Costello 2017): 6 weekly sessions each of 1-h duration, followed by 2 booster sessions. Guided mindfulness meditation (including visualisations, body scan, paying attention to sensory and psychological stimuli, and breath awareness), activities, discussions, and storybooks. Delivered by two external provisionally registered psychologists	(i) Emotional control, (ii) Awareness of negative emotional state, (iii) Awareness of repetitive cognitive processes, (iv) Perceived utility of mindfulness for emotional control and coping, (v) Awareness of impact of mindfulness on emotional states; (vi) Breathing, (vii), Shifting attention to the present, and (viii) Mind application	Semi-structured interviews analyzed using thematic analysis
Dariootis et al. (2016)	$n = 22$ students aged 10–13 years. Three schools serving disadvantaged urban communities. (US)	School-based mindful yoga intervention (Gould et al. 2014) delivered twice per week for 16 weeks. Sessions lasted approximately 45 min were taught during school time (25 students/class). Mindfulness principles and practices including yoga-based poses, and breathing techniques focused on present-moment awareness. Delivered by three Yoga instructors	(i) Linkages between techniques, health benefits, and real-life applications, (ii) Improved emotional appraisals of self and others, and (iii) positive expectations about the program's potential for beneficial effects on youth	Focus groups analyzed using an unspecified qualitative analytical technique
McCreechan et al. (2019)	$n = 16$ students from 3 intervention schools (selected by school staff from an intervention group of $n = 38$) aged 10–14 years with behavioural issues. (UK)	Classroom-based 10-week "stop, breath, mindfulness intervention". Included visual aids and practical demonstrations. Delivered by either a teacher or teaching assistant who was a certified mindfulness practitioner, with at least six months of mindfulness practice	(i) Continued engagement in mindful practice, and (ii) stress reduction and improved coping skills	Semi-structured interviews analyzed using thematic analysis
Dariootis et al. (2017)	Appeared to constitute the same study sample of Dariootis et al. (2016). $n = 22$ students aged 10–13 years. Three schools serving disadvantaged urban communities. (US)	Appeared to replicate the intervention-delivery of Dariootis et al. (2016). School-based mindful yoga intervention (Gould et al. 2014) delivered twice per week for 16 weeks. Sessions lasted approximately 45 min were taught during school time (25 students/class). Mindfulness principles and practices including yoga-based poses, and breathing techniques focused on present-moment awareness. Delivered by three Yoga instructors	Program needed to be longer to deal with stress and related issues	Appeared to replicate the methodological approach of Dariootis et al. (2016). Focus groups analyzed using an unspecified qualitative analytical technique
Milligan et al. (2017)	$n = 24$ students (age range not specified [average age of 15 years]) identified as experiencing self-regulation challenges, including behavioural regulation difficulties. Recruited from an intervention group of 36 students. Mixture of school- referral and self-enrolled on students. (Canada)	20-week "Integra MMA" (mindful martial arts) intervention. Weekly sessions of 1.5 h duration plus 8-min weekly brief. Awareness of breath, thoughts and feelings. Acceptance and letting go, sitting and walking meditations, cognitive therapy strategies, mixed-martial arts, yoga (Milligan et al. 2015). Delivered by a children's mental health therapist and a high school teacher with a black belt in Karate	(i) improved social competence, emotion regulation, and self-confidence, (ii) processes of awareness, calm, attention, and acceptance identified as supporting positive change, (iii) benefits observed across students at low- and high-risk for mental health challenges	Qualitative interview analyzed using thematic analysis
Costello and Lawler (2014)	$n = 63$ students aged 11–12 years. Two schools at risk of socioeconomic exclusion. (Ireland)	5-week mindfulness intervention. Weekly mindfulness practices of 3–12 min duration. Details of intervention facilitator not specified	(i) conceptualisation of stress, (ii) awareness, (iii) self-regulation, (iv) classroom relations, and (v) addressing future stress	Semi-structured interviews analyzed using thematic analysis
Tunney et al. (2017)	$n = 96$ "non-clinical" students aged 10–12 years. Two primary schools (one described as socioeconomically disadvantaged). (Ireland)	Allocated to a face-to-face ($n = 53$) or computer game ($n = 40$) mindfulness intervention. Both interventions promote awareness of body, mind and world. Details of intervention duration and session frequency not provided. Face-to-face intervention delivered by one of the paper authors	(i) relaxation, (ii) engagement, (iii) awareness, (iv) thinking (including letting go of thoughts), (iv) practice, and (vi) directing. All themes were present in the data from both the face-to-face and computerised arms	Focus groups analyzed using thematic analysis

Table 3 CASP assessment of study quality

Study (authors, year)	CASP items responded to with 'Yes' (i.e., strengths)	CASP items responded to with 'No' (i.e., quality issue)	Details of CASP items responded to with 'No'	Number of CASP items receiving a 'No' response
Bamirchelvam et al. (2017)	1, 2, 3, 7, 9, 10	4, 5, 8	-Participants had previous experience with mindfulness -Interviews were not recorded -No cross-validation of themes with participants	3
Dariootis et al. (2016)	1, 2, 3, 7, 9, 10	4, 5, 6, 8	-Participants not randomly selected from intervention arm -Period between intervention end and focus groups not defined -Name of qualitative analytical technique not specified -Researcher's role/influence not critically examined	4
McGeechan et al. (2019)	1, 2, 3, 7, 9, 10	4, 5, 8	-Interviews took place more than 6 months following programme completion -Initial coding was not validated by a second researcher -Participants not randomly assigned to the interview	3
Dariootis et al. (2017)	1, 2, 3, 7, 9, 10	4, 5, 6, 8	-Participants not randomly selected from intervention arm -Period between intervention end and focus groups not defined -Name of qualitative analytical technique not specified -Researcher's role/influence not critically examined	4
Milligan et al. (2017)	1, 2, 3, 7, 9, 10	4, 5, 6	-Participants not randomly assigned to interviews (and received a \$5 dollar food cafeteria voucher for participation) -Period between intervention and interview not specified -Researcher's role/influence not critically examined	3
Costello and Lawler (2014)	1, 2, 3, 7, 9, 10	4, 5, 6	-Interview recruitment strategy not clearly defined -Period between intervention and interview not specified -Researcher's role/influence not critically examined	3
Tunney et al. (2017)	1, 2, 3, 4, 7, 9, 10	5, 6	- Period between intervention and interview not specified -Researcher's role as intervention facilitator and study author not adequately discussed	2

Discussion

The present systematic review evaluated the qualitative evidence relevant to mental health arising from students' participation in school-based MBIs. Seven studies—which had all been published since 2014—met the eligibility criteria. A thematic synthesis included as part of the systematic review identified four major themes: using attentional processes to regulate emotions and cognitions, stress reduction, improved coping and social skills, and calming and/or relaxation.

In the context of the first master theme, participants reported how mindful attention helped them to observe their thoughts and feelings and respond rather than habitually react to a given stimulus. This is consistent with the consensus view that mindfulness involves focussing attention on moment-to-moment sensory and psychological experiences in an open and accepting manner (Chapman and Van Gordon 2018). This greater awareness of cognitive-affective processes appeared to play an important role in improving emotion regulation.

The school-based MBIs included in the present review also appeared to augment students' capacity for coping with the challenges associated with child and adolescent transition (i.e., the third Master theme to emerge from the dataset). Indeed, elsewhere researchers have highlighted both the immediate and preventative applications associated with learning mindfulness prior to adulthood (e.g., Sapthiang et al. 2018). In the present systematic review, improvements in coping skills were also reported to positively impact on social skills. This finding is noteworthy given the correlation between mental illness and social deprivation (WHO 2012).

Mindfulness was also understood by participants to be a valuable means of reducing stress as well as fostering calm and relaxation (i.e., the second and fourth master themes). Given that stress is a known risk factors for mental illness in young people (WHO 2012), techniques that can lower school students' stress levels will obviously have applications in a range of applied contexts. Furthermore, while a link between relaxation and stress reduction was not reported in every study included in this systematic review, mindfulness has been shown to induce relaxation through reduced autonomic arousal that, in turn, helps to dissipate accumulated stress (Shonin et al. 2015).

While this systematic review appears to support the utility of MBIs as school-based interventions for improving mental health, findings should be viewed in light of the limitations of the seven included studies, as well as the limitations of the systematic review itself. An assessment of methodological quality using the CASP (2018) qualitative checklist indicated a number of quality issues pertaining to the eligible studies. Of particular note was a lack of

Table 4 Distribution of master themes

Study (authors, year)	Theme 1: using attentional processes to regulate emotions and/or cognitions	Theme 2: stress reduction	Theme 3: improved coping and social skills	Theme 4: calming and/or relaxation
Bannirchelvam et al. (2017)	Yes	Yes	Yes	Yes
Dariotis et al. (2016)	Yes	Yes	Yes	Yes
McGeechan et al. (2019)	No	Yes	Yes	Yes
Dariotis et al. (2017)	No	Yes	No	No
Milligan et al. (2017)	Yes	Yes	Yes	Yes
Costello and Lawler (2014)	Yes	Yes	Yes	Yes
Tunney et al. (2017)	Yes	No	No	Yes

reporting of the period between intervention end and data collection, which made it difficult to assess whether recall bias may have influenced the findings. A further quality issue was that biases may have been present when selecting which students should attend the interview or focus group, as in most instances random assignment (or a convincing alternative approach) was not employed.

Key limitations relevant to the present systematic review were that despite incorporating the experiences of 251 school-going students based in five countries, unpublished and non-English language studies were excluded. Furthermore, by restricting the focus to school-based interventions, studies of young people receiving mindfulness training not linked to a school were also not included. Thus, it is possible that some potentially useful evidence may have been excluded.

A key implication based on the accounts of the students included in this systematic review is that school-based MBIs are experienced by students as having a range of benefits to mental health, including in both preventative and treatment contexts. However, an important future direction for school-based qualitative research is to improve methodological quality, including taking steps to minimise recall bias and provide a greater degree of transparency regarding how students are selected to attend qualitative interviews or focus groups.

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Author Contributions All authors were involved in the conception and writing of the paper. Furthermore, we confirm that all authors are responsible for all contents of the paper and had authority over manuscript preparation and the decision to submit the manuscript for publication.

Compliance with Ethical Standards

Conflict of Interest All authors declare that they have no conflict of interest apart from W.V.G. who delivers consulting and training

relating to using contemplative approaches in applied settings. W.V.G. also receives royalties from books relating to contemplative practice.

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