



# Factors Contributing to the Efficacy of Universal Mental Health and Wellbeing Programs in Secondary Schools: A Systematic Review

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Received: 26 May 2022 / Accepted: 4 August 2022 / Published online: 10 October 2022  
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## Abstract

Differences in approaches used to deliver school-based mental health and wellbeing programs may be a key consideration for program effectiveness, yet this has not been considered in reviews and meta-analyses to date. Consistent with previous research, this systematic review of 47 studies found that wellbeing programs delivered in schools tended to show small effect sizes for mental health and wellbeing outcomes with effects often not sustained. The review considered the influence of various program factors on effectiveness, and consistent with previous findings, program-based factors like theoretical framework, program length, and session duration did not show reliable patterns for influencing effectiveness. In contrast, pedagogical factors aimed at increasing participant engagement (e.g., using student-centred and active learning approaches), appear more closely linked to improved mental health and wellbeing outcomes. This review has shown that universal programs can be effective in producing better mental health and wellbeing outcomes in secondary school settings when participant engagement is maximised.

**Keywords** Adolescents · Mental health · Wellbeing · Prevention · Program · Schools

## Introduction

Mental health and wellbeing programs are commonplace in secondary schools around the world (Barry et al., 2019). They aim to help adolescents build skills which allow them to effectively navigate their journey into adulthood. However, these programs often produce mixed effects and despite numerous systematic reviews and meta-analyses it has been difficult for researchers and educators to clearly identify factors associated with program effectiveness. One area that has not yet been assessed are factors connected to student engagement, a key gap given that student engagement is associated with a variety of positive learning outcomes in numerous educational settings (Finn & Zimmer,

2012). To address this gap, the present review considers how participant engagement influences the outcomes of programs delivered in secondary school settings.

Adolescence is an important developmental period in which numerous social, neurological and emotional changes take place, all of which have the potential to contribute to difficulties with mental health (Negriff, 2020). While 75% of all mental health disorders are evident before the age of 24, half of all mental disorders manifest prior to the age of 14, with early symptoms often appearing years prior to a person meeting the full diagnostic criteria (Council & Medicine, 2009). In most western countries the period of adolescence takes place during secondary school. This marks a time where social and academic stress can contribute to the development of sub-clinical levels of depression and anxiety symptoms (Anniko, 2018). Early intervention during this period may assist adolescents to develop skills to manage their own wellbeing across the lifespan (Baños et al., 2017; Gladstone et al., 2015; *Preventing Mental, Emotional, and Behavioral Disorders Among Young People: Progress and Possibilities*, 2009). As such, mental health education may be most effective at the time and place where it is potentially most relevant: during adolescence in secondary schools.

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Whilst mental health issues such as depression and anxiety might be prevalent in the adolescent population, help seeking behaviors in this demographic are low (Aguirre Velasco et al., 2020; Singh et al., 2019). The World Health Organization (WHO), suggests that as few as 20% of adolescents in need access the treatment required (WHO, 2005). More recent studies have shown this trend improving, but a 2018 study still showed a quarter of adolescents meeting criteria for psychological distress had not accessed mental health services (Sheppard et al., 2018). Evidence-based psychological treatments have been associated with reductions in mental health symptoms of depression and anxiety in adolescents that are maintained over time (Bandelow et al., 2018; Clarke et al., 2001; Oud et al., 2019; Swain et al., 2013). Despite this, further research in clinical samples suggests that between 30% and 40% of young people with mental health concerns who do access evidence-based intervention therapy will relapse within two years (Curry et al., 2011; Evans et al., 2005). The relapse rates associated with psychological interventions in the adolescent population suggest that prevention programs may be needed as an alternative. Engaging adolescents in prevention programs can help to reduce the volume of people requiring individually delivered mental health intervention therapy which is resource intensive and can be difficult to access for many young people (Merry et al., 2004).

Mental ill-health prevention strategies tend to utilize an educative, skill development approach (Feiss et al., 2019), thus secondary schools represent a potentially suitable setting for these types of programs. Early intervention programs that target students at risk of developing mental illness, or students that have elevated but still sub-clinical symptomology have shown some success in reducing mental health symptoms post program with these effects maintained at 6 and 12 month follow up (Horowitz et al., 2007; Lawrence et al., 2017). Even so, regardless of their documented successes, these programs can contribute to risk of stigmatization, potentially creating a divide between different groups within the same educational setting if, for instance, students need to be removed from class to attend the prevention program. This division can lead to stigma for those selected to be involved, resulting in the risk of attrition or program refusal (Gronholm et al., 2018). Similarly, the lack of precise selection criteria may hinder efforts to select students for targeted prevention programs successfully (Dodge, 2020).

School-based universal prevention programs have been suggested as a solution for reducing the incidence of mental ill-health in future adult populations (Baños et al., 2017). These programs aim to provide participants with a broad background in key concepts and skills that are designed to support their mental health and wellbeing across their

lifespan (Wells et al., 2003). They are designed to be delivered to the wider population and are not aimed at targeting particular symptoms; instead, they strive to protect a person's universal mental health (de Pablo et al., 2020). In contrast to targeted prevention programs, universal programs are free from the risk of unwanted stigma that adolescents can associate with approaches that target high risk or symptomatic groups (Rapee et al., 2006).

There have been a number of systematic reviews and meta-analyses conducted to summarize the effectiveness of school-based mental health and wellbeing programs across the world. These reviews and meta-analyses examined program length and community involvement (Blank et al., 2010; Wells et al., 2003); participant age (Mackenzie & Williams, 2018); universal versus targeted programs (Feiss et al., 2019; Neil & Christensen, 2007; Caldwell, 2019); and guiding psychological theory (Dray et al., 2017; Tejada-Gallardo et al., 2020). Collectively, these reviews have provided partial direction for educators and researchers striving to determine the best practice for implementing universal prevention programs in secondary schools. One issue that remains particularly unclear, however, is the extent to which the universal programs reviewed are delivered using techniques that promote student engagement. It has been consistently demonstrated that greater student engagement is associated with improved learning and program outcomes (Carini et al., 2006; Marks, 2000; Shernoff, 2013; Wang et al., 2020). As with other educational settings, student engagement may also influence the effectiveness of universal programs in the promotion of mental health and wellbeing.

Pedagogy refers to the method and practice of teaching and educational research has provided direction as to the pedagogical factors that may contribute to students' engagement and therefore program efficacy (Martin, 2008). Student engagement has been defined as "the student's psychological investment in an effort directed toward learning, understanding, or mastering the knowledge, skills, or crafts that academic work is intended to promote" (Newmann, 1992, p12). To maximize the engagement of present day adolescents, the learning material must be relevant, and the students need to be involved in the discovery of solutions to real life problems (Shernoff et al., 2014). Instructional format may also be a predictor of student engagement; that is, characteristics associated with the facilitator (e.g., teacher or psychologist) in combination with the delivery method (Shernoff et al., 2014). Further to these, two critical pedagogical considerations for student engagement in wellbeing programs are active compared to passive learning approaches and student-centered compared to facilitator (or teacher) centered learning.

Active learning describes a teaching approach in which students are actively involved in the teaching and learning process (Silberman, 1996). Students are required to regularly review their understanding through reflection, questioning, discussing, writing and problem solving. It requires the learner to be mentally and often physically active in their attainment of knowledge through participating or contributing (Grabinger & Dunlap, 1995). Bonwell and Eison (1991) have suggested that active learning environments should include opportunities for both physical active learning (including role playing, physical problem solving, and group discussion) and active learning through writing (including journaling and other self-reflection exercises). The alternative is passive learning which implies that the student submissively receives the information being delivered. This method tends to be teacher or facilitator centered and more theoretical in nature, discarding the fundamental tenet of the widely accepted constructivist view of learning (de Kock et al., 2004), which emphasizes that knowledge cannot be transmitted directly from educator to learner, but rather must be constructed by the mental activity of the learners (Driver et al., 1994).

Student-centered learning environments aim for the student to be pivotal in the teaching and learning process in the same way that a client-centered approach to psychological therapy puts the client at the heart of the therapeutic process (Cannon & Newble, 2000; Murphy & Joseph, 2016). Student engagement is influenced by student-centered learning (Reeve, 2012), it identifies the need for autonomy, competence and relatedness as important for psychological growth and wellbeing (Smit et al., 2014). In student-centered learning environments, students are expected to consider the new information in the context of familiar and authentic situations. Learning is self-regulated, and students can influence the depth of learning for different topics throughout the learning process.

## The Current Study

In addition to program factors thought to influence program effectiveness considered in previous reviews and meta-analyses, this review examines factors that influence participant engagement in universal wellbeing programs delivered in secondary schools. Programs included in this review utilize evidence based psychological approaches designed to promote adolescent wellbeing and mental health. Consistent with previous reviews, it will consider only studies that have a control condition such as lessons as normal or an alternative program so that any detected effects are able to be associated with participation in the program. Program features with the potential to influence student engagement

considered in the current review include session length, program duration, program facilitator (known teacher or external provider), the use of student-centered pedagogy and the prominence of an active learning pedagogy. The aim of this review is not to develop an overall estimate of program effectiveness based on specific outcome measures. Instead, it aims to provide direction for program developers and schools employing these programs through a narrative description summarizing the features that appear most important for enhancing participant engagement and program effectiveness.

## Methods

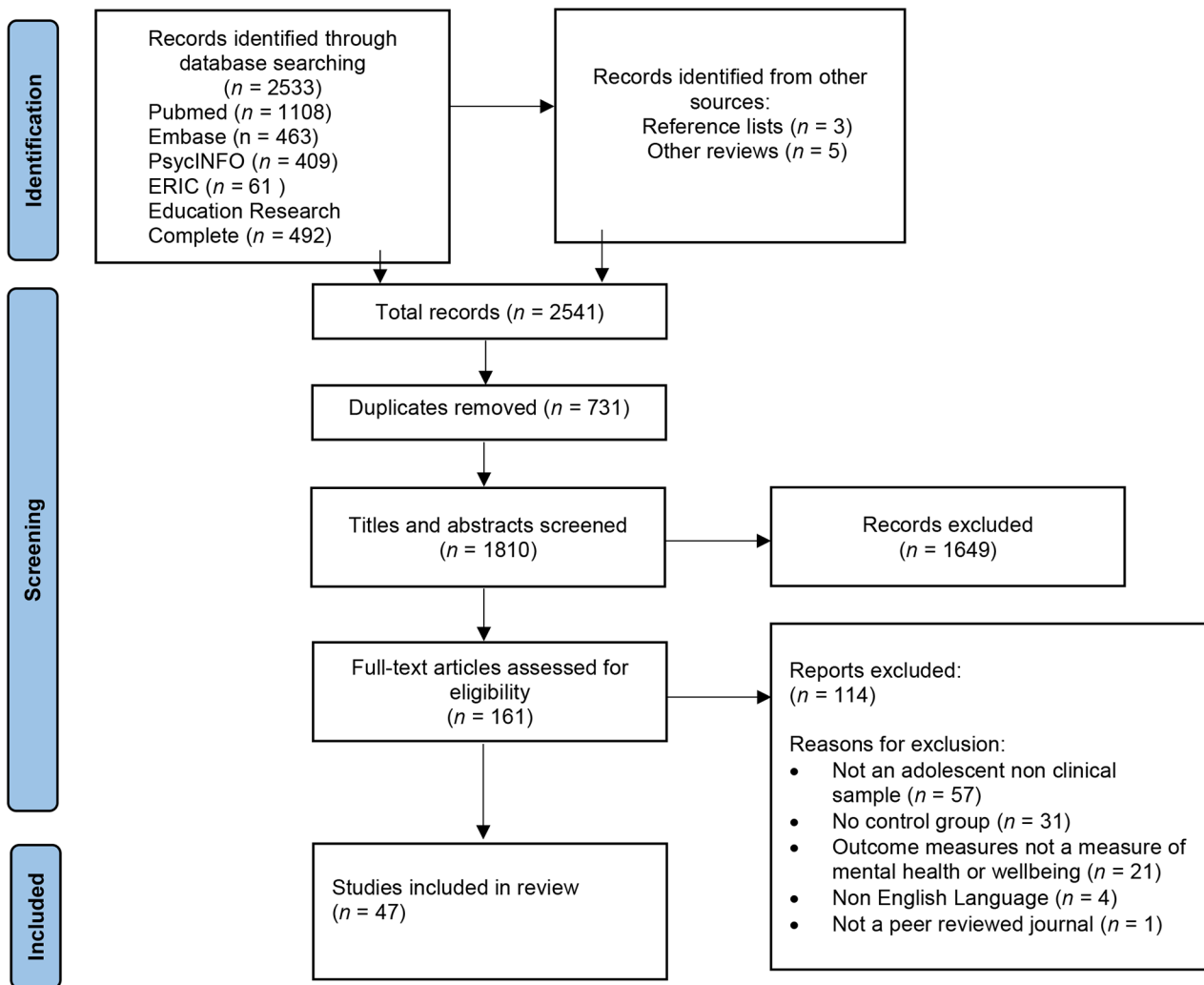
The review protocol was prospectively registered with PROSPERO (registration number - CRD42021269164) and adhered to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines (Page et al., 2021).

## Data Sources

A systematic literature search was performed using five databases (PubMed, Embase, PsycINFO, ERIC and Education Research Complete). Database selection and search term development was completed with the assistance of an expert research librarian. Search terms focused on prevention programs, mental health and wellbeing, adolescents, and schools (see supplementary materials, Table S1 for a detailed logic grid of search terms).

## Selection of Studies

The inclusion criteria for the selected studies were formulated in accordance with the PICO approach (Patient, Intervention, Comparison, Outcome), such that studies were included based on the following criteria: (1) The program was focused on a non-clinical, naturalistic sample of secondary school students (12 to 18 years old) in their school environment; (2) the intervention was universal in nature, targeted wellbeing and/or mental health outcomes, and delivered in a school setting; (3) studies were randomized control trials and non-randomized trials that used a control condition such as lessons as usual or an alternative program; (4) program outcomes were assessed using validated instruments for one or a combination of subjective psychological wellbeing support measures (e.g., resilience, self-esteem, and life satisfaction measures) and mental health measures (e.g., anxiety, depression, and distress measures); and (5) studies were published in peer reviewed journals from the year 2000 onwards to maximize the relevance for present



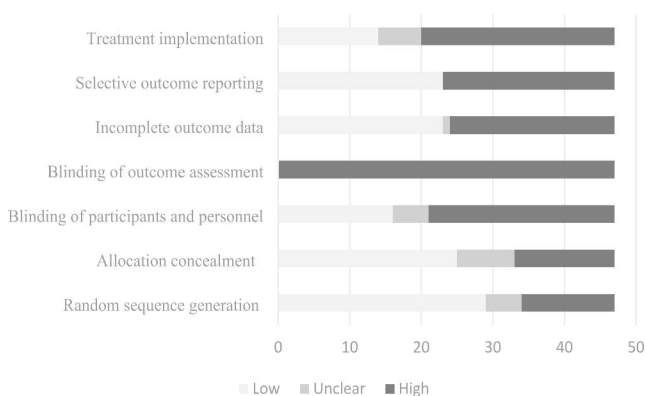
**Fig. 1** The PRISMA flowchart of article selection process

day educational offerings. The exclusion criteria comprised interventions designed for use with a clinical population, studies that were not peer-reviewed or did not quantitatively assess the effectiveness of the prevention program, and articles that were not published in English. Solely qualitative research was not considered for this review. Due to the heterogeneity of the outcome measures used in the included studies, a meta-analysis was not appropriate. Instead, a narrative synthesis in line with current Synthesis Without Meta-analysis (SWiM) guidance (Campbell et al., 2020) was conducted, summarizing features associated with program effects on both positive and negative indicators of mental health and wellbeing.

### Data Extraction

The PRISMA flowchart is depicted in Fig. 1 and outlines the standardized procedure of the different stages of study

identification and eligibility assessment. The initial search returned a total of 2533 articles. After 731 duplicates were removed, 1810 titles and abstracts were screened by the lead author. This included five relevant studies identified by manually screening the reference lists of recent systematic reviews (Blank et al., 2010; Caldwell et al., 2019; Cilar et al., 2020; Dray et al., 2017; Feiss et al., 2019; Mackenzie & Williams, 2018; Tejada-Gallardo et al., 2020) and a further three articles identified through manual screening of reference lists of the included studies for this review (Freire et al., 2018; Melnyk et al., 2013; Veltro et al., 2015). A second rater not connected to the research team independently screened a randomly selected sub-sample of 10% of studies. Inter-rater reliability was high (97%), with the small number of disagreements discussed until full consensus was reached. Following this process, full text screening was conducted for 161 articles.



**Fig. 2** Cochrane Collaboration's Tool for Assessing Risk of Bias Summary Graph

A total of 114 articles were excluded for reasons shown in Fig. 1, leaving 47 studies that met inclusion criteria identified for extraction. Study characteristics were extracted using an Excel spreadsheet developed for the purposes of the present study, with data extraction conducted by the lead author and checked by the second author. Information gathered from the studies included the following: study aim, theoretical underpinnings of the program, delivery methodology including pedagogical approach, session length, program duration, program facilitator, participant demographics, and results for the measured outcome variables.

## Quality Assessment

The selected studies were assessed for their methodological quality using the Cochrane Collaboration's tool for assessing risk of bias (Munder & Barth, 2018). The tool assesses the following risks of bias: (1) Sequence generation or how the groups were randomized if at all; (2) group allocation concealment; (3) blinding of participants and all personnel; (4) blinding of outcome assessors; (5) incomplete outcome data; (6) selective reporting; (7) Treatment implementation.

## Results

### Study Selection

The process of study selection can be seen in the PRISMA flowchart (Fig. 1). A total of 47 studies were included for the systematic review. All included studies were either randomized control trials or non-randomized two-arm (intervention and control group) designs that were conducted in secondary schools aimed at non-clinical adolescent samples. Each study reported at least one measure of mental health or wellbeing (e.g., measures of depression, anxiety, distress, life satisfaction). The variety of measures used in the studies

included in this review had all been previously validated for use with adolescent samples and are shown in the online supplementary materials (Table S2).

## Quality Assessment

The quality of each study was rated using Cochrane Collaboration's tool for assessing risk of bias (Munder & Barth, 2018) to determine potential bias, a summary of the results can be seen in Fig. 2. Each of the 47 studies included in this review were at risk of bias due to the self-report nature of the measures used, resulting in outcome assessors not being blinded. Similarly, almost every study suffered from the potential bias of missing data with attrition rates and consistent access to participants challenging for most studies. Further adding to the potential for bias was the difficulty of consistent program delivery, where 33 of the 47 (70%) included studies were deemed to be at risk of bias for intervention adherence. Just over half of the studies, 26 (55%) were either considered a high or unclear risk of bias when blinding participants during group allocation and 13 studies (28%) were a high or unclear risk of bias during the sequence generation phase of the trial. Finally, more than half of the included studies exhibited some concerns around selective reporting of results where the most encouraging data was reported allowing a more favorable reflection of the program being studied.

## Description of Studies and Their Effects

The studies included in this review measured the effectiveness of programs based on a variety of mental health and wellbeing outcome measures. Each program varied in delivery method as did program length and frequency of sessions. Table 1 shows the characteristics and main findings of all programs. The outcome variables examined in the 47 studies included in this review were wide-ranging making pooling of data not feasible. One study considered anxiety alone as the outcome variable of interest post intervention, eight considered depressive symptoms in isolation, six considered both depressive symptoms and anxiety, nine measured protective wellbeing factors only, while 23 measured a combination of depression, anxiety and wellbeing measures. Adding to the heterogeneity of the studies in this review, were differences in psychological theory defining each program (Cognitive Behavioral Therapy (CBT), Acceptance Commitment Therapy (ACT), Positive Psychology (PP), Rational Emotive Behavior Therapy (REBT), Mindfulness Therapy, Growth Mindsets, and others) and participant age (12–18). Significant positive results were reported for at least one of the outcome measures considered in  $n=22$  studies (47%), while  $n=25$  (53%) did not



**Table 1** Interventions with significant results for at least one outcome variable of depression, anxiety and wellbeing measures

Paper	Name & Theory	Country & Sample	Frequency and duration of each session, Duration of the whole intervention	Delivery method	Active participation	Written participation	Student centered	Passive participation	Key Findings
Ardic & Erdogan (2017)	<i>COPE-TEEN</i> CBT	Turkey N = 87 Age: 12–15	• 15 × 40 min sessions • Delivered weekly	• Delivered by teachers • Part of usual curriculum - health classes	✓	✓	✓	✓	<ul style="list-style-type: none"> <li>• Small improvement for anxiety, but not for depressive symptoms</li> <li>• Increase in physical activity and stress management</li> <li>• Small effect sizes maintained over 12-month period</li> <li>• Small reduction anxiety (males and females) and depressive symptoms (males only) maintained at 6 months</li> <li>• 67% of the sample did not complete the program in full</li> </ul>
Callear et al., (2009)	<i>Mood-GYM</i> CBT	Australia N = 1477 Age: 12–17	• 5 × 40 min sessions • Delivered weekly	• Online intervention • Teachers supervising and answering incidental questions	✓			✓	<ul style="list-style-type: none"> <li>• Small improvement for psychological flexibility, self-esteem, self-compassion, and personality mindset</li> <li>• Effects maintained at 4 and 8 week follow up</li> </ul>
Perkins et al., (2021)	<i>Mindset / ACT</i> <i>Intervention</i> Mindset	UK N = 80 Age: 16–18	• 30 min session • Once off	• Delivered in classroom setting • Content accessed online	✓			✓	<ul style="list-style-type: none"> <li>• Increase of depressive symptoms reduced for intervention group compared to control</li> <li>• 40% reduced risk for depressive symptoms in intervention group at 9 months follow up</li> <li>• Small positive effects for depressive symptoms overall, large effects for adolescents with high initial depressive symptoms</li> <li>• Sociotropy (excessive investment in interpersonal relationships) and achievement orientation moderated the effects of the interventions</li> </ul>
Miu & Yeager (2014)	<i>Mindset intervention</i> Mindset / CBT	USA N = 661 Age: 13–15	• 25 min session • Once off	• Delivered in a classroom setting • Content accessed online	✓			✓	<ul style="list-style-type: none"> <li>• Small positive effects for depressive symptoms overall, large effects for adolescents with high initial depressive symptoms</li> <li>• Sociotropy (excessive investment in interpersonal relationships) and achievement orientation moderated the effects of the interventions</li> </ul>
Horowitz et al. (2007)	<i>CB program and IPT skills training.</i> CBT	USA N = 380 Age: 13–15	• 8 × 90 min sessions • Delivered weekly	• Groups of 15 • Delivered by psychology graduate students	✓		✓	✓	<ul style="list-style-type: none"> <li>• Small improvement for depressive symptoms sustained at 10 month follow up</li> </ul>
Shochet et al. (2001)	<i>RAP-A and RAP-F</i> CBT	Australia N = 250 Age: 12–15	• 11 × 40–50 min sessions • 3 x parent sessions • Delivered weekly	• Groups of 8 to 12 • Delivered by psychologists	✓		✓	✓	<ul style="list-style-type: none"> <li>• Short term positive effects on depressive symptoms that were not sustained</li> <li>• More sustainable effects were found for coping skills and self-esteem</li> </ul>
Rivet-Duval et al., (2011)	<i>RAP-A and RAP-P</i> CBT	Mauritius N = 160 Age: 12–16	• 11 × 60 min sessions • Delivered weekly.	• Delivered in classroom setting • Delivered by trained teachers	✓		✓	✓	<ul style="list-style-type: none"> <li>• Reduced depressive symptoms in short term with mixed results for the effects in the longer term.</li> <li>• Reduced episodes of depressive disorder and improved social adjustment and academic performance for intervention group</li> </ul>
Merry et al., (2004)	<i>RAP-Kiwi</i> CBT	New Zealand N = 364 Age: 13–15	• 11 × 50 min sessions • Delivered weekly.	• Delivered in classroom setting • Delivered by trained teachers	✓		✓	✓	

Table 1 (continued)

Paper	Name & Theory	Country & Sample	Frequency and duration of each session, Duration of the whole intervention	Delivery method	Active participation	Written participation	Student centered	Passive participation	Key Findings
Rodgers and Dunsmuir (2015)	<i>Friends for Life</i> CBT	Ireland N = 62 Age: 12–13	<ul style="list-style-type: none"> <li>• 10 × 60 min sessions</li> <li>• Delivered weekly</li> </ul>	<ul style="list-style-type: none"> <li>• Group sizes were 10, 13 and 9.</li> <li>• Delivered by the first author.</li> </ul>	✓	✓	✓	✓	<ul style="list-style-type: none"> <li>• Significant, positive effects for anxiety were maintained at 4 months follow up</li> </ul>
Wahl et al., (2014)	<i>LARS and LISA</i> CBT	Germany N = 646 Age: 13–15	<ul style="list-style-type: none"> <li>• 10 × 90 min sessions</li> <li>• Delivered weekly</li> </ul>	<ul style="list-style-type: none"> <li>• Delivered in classroom settings</li> <li>• Delivered by psychologists and teachers</li> </ul>	✓	✓	✓	✓	<ul style="list-style-type: none"> <li>• Sustained positive effects seen for the psychologist delivered program for girls only</li> <li>• No significant effects for the teacher delivered program</li> </ul>
Possel et al. (2004)	<i>LISA-T</i> CBT	Germany N = 347 Age: 13–15	<ul style="list-style-type: none"> <li>• 10 × 90 min sessions</li> <li>• Delivered weekly</li> </ul>	<ul style="list-style-type: none"> <li>• Group sizes varied from 8 to 24</li> <li>• Classes were divided into two subgroups based on gender</li> <li>• Program delivered by psychologist</li> </ul>	✓	✓	✓	✓	<ul style="list-style-type: none"> <li>• No significant increases in depression scores for participants in the intervention group who had low pre scores at 6 months</li> <li>• Significant increases in depression scores for control group at each follow up time point</li> <li>• Students with clinically relevant symptoms at premeasurement showed no change in depressive symptoms</li> <li>• Small positive effects for unhelpful perfectionism were sustained</li> <li>• No significant difference found for negative affect and self-judgement immediately post program</li> <li>• Small, positive effects were reported for negative affect and self-judgement at 6 &amp; 12 month follow up</li> </ul>
Nehmy and Wade (2015)	<i>Healthy Minds</i> CBT	Australia N = 688 Age: 12–16	<ul style="list-style-type: none"> <li>• 8 × 45 min sessions</li> <li>• Delivered weekly.</li> </ul>	<ul style="list-style-type: none"> <li>• Delivered in class groups</li> <li>• Delivered by the first author</li> </ul>	✓	✓	✓	✓	<ul style="list-style-type: none"> <li>• Significant positive effects for mental health measured using the Thai Mental Health Questionnaire measuring depression, anxiety, psychosis, social function and distress</li> <li>• Small, positive effects for wellbeing</li> <li>• Small, significant negative changes for anxiety symptoms</li> <li>• Both effects were maintained at 2 month follow up</li> </ul>
	<i>Immune of Life for Teens</i>	Thailand N = 1106 Age: 12–15	<ul style="list-style-type: none"> <li>• 2 × 45 min sessions</li> <li>• Delivered weekly.</li> </ul>	<ul style="list-style-type: none"> <li>• Video viewing</li> <li>• Teachers guide follow up discussion</li> </ul>	✓	✓	✓	✓	
Ruini et al. (2009)	<i>Wellbeing intervention</i> CBT	Italy N = 227 Age: 13–15	<ul style="list-style-type: none"> <li>• 6 × 120 min sessions</li> <li>• Delivered weekly.</li> </ul>	<ul style="list-style-type: none"> <li>• Delivered in class groups</li> <li>• Delivered by psychologists</li> </ul>	✓	✓	✓	✓	

Table 1 (continued)

Paper	Name & Theory	Country & Sample	Frequency and duration of each session, Duration of the whole intervention	Delivery method	Active participation	Written participation	Student centered	Passive participation	Key Findings
Shoshani & Steinmetz (2014)	<i>Maytiv - positive psychology PP</i>	Israel N = 1167 Age: 12–15	<ul style="list-style-type: none"> <li>Ongoing whole school intervention</li> <li>15 × 120 min sessions</li> <li>Delivered fortnightly.</li> </ul>	<ul style="list-style-type: none"> <li>Whole-school model</li> <li>Specific sessions delivered in classroom</li> <li>Delivered teachers and psychologists</li> </ul>	✓	✓	✓	✓	<ul style="list-style-type: none"> <li>Small reductions in depressive symptoms, anxiety symptoms and distress</li> <li>Small improvements in self-esteem and self-efficacy</li> <li>All results were maintained at 12 and 18 month follow up</li> </ul>
Shoshani et al. (2016)	<i>Maytiv - positive psychology PP</i>	Israel N = 2517 Age: 12–15	<ul style="list-style-type: none"> <li>Ongoing whole school intervention</li> <li>15 × 90 min sessions</li> <li>Delivered fortnightly.</li> </ul>	<ul style="list-style-type: none"> <li>Whole-school model</li> <li>Specific sessions delivered in classroom setting</li> <li>Delivered by trained teachers, counsellors and psychologists</li> </ul>	✓	✓	✓	✓	<ul style="list-style-type: none"> <li>Positive effects for subjective wellbeing that were sustained at 8 and 12 month follow up</li> </ul>
David et al. (2019)	<i>REThink REBT</i>	Romania N = 164 Age: 10–16	<ul style="list-style-type: none"> <li>7 × 50 min sessions</li> <li>Delivered twice per week.</li> </ul>	<ul style="list-style-type: none"> <li>REThink: online game.</li> <li>REBE: group intervention delivered by a psychologist.</li> </ul>	✓			✓	<ul style="list-style-type: none"> <li>REThink game lowered depressive mood and distress</li> <li>REThink game improved participant self-awareness, self-control and attention</li> </ul>
Khanna and Singh (2016)	<i>Gratitude intervention PP</i>	India N = 177 Age: 11–14	<ul style="list-style-type: none"> <li>5 × 30 min sessions</li> <li>Delivered weekly.</li> </ul>	<ul style="list-style-type: none"> <li>Delivered in class groups</li> <li>Delivered by the first author</li> </ul>	✓	✓		✓	<ul style="list-style-type: none"> <li>Medium positive effects for wellbeing measures including: mental health continuum, PANAS (positive affect) and life satisfaction</li> <li>No significant results for negative affect</li> <li>High level of attrition and missing post test data impacted the study</li> <li>Small negative effects for anxiety symptoms for both groups</li> <li>No change was found for distress</li> </ul>
Wong et al. (2014)	<i>Thiswayup Schools: CBT</i>	Australia N = 976 Age: 14–16	<ul style="list-style-type: none"> <li>7 sessions for depression program</li> <li>6 sessions for anxiety program</li> <li>Both 45 min</li> <li>Delivered weekly</li> </ul>	<ul style="list-style-type: none"> <li>Delivered in class groups</li> <li>Online component</li> <li>Group discussions and worksheets facilitated by teachers.</li> </ul>	✓			✓	<ul style="list-style-type: none"> <li>Improved overall psychological well-being and life satisfaction for intervention group</li> <li>Improved levels of environmental mastery and self-acceptance for intervention group</li> <li>Improved self-efficacy in regulating negative emotions for intervention group</li> </ul>
Gigantesco et al. (2015)	<i>Goals and problems solving EI and PE</i>	Italy N = 308 Age: 14–16	<ul style="list-style-type: none"> <li>20 × 60 min sessions</li> <li>Delivered weekly</li> </ul>	<ul style="list-style-type: none"> <li>Delivered in class groups</li> <li>Delivered by either a psychologist or pedagogist from the school.</li> </ul>	✓	✓	✓	✓	<ul style="list-style-type: none"> <li>Improved overall psychological well-being and life satisfaction for intervention group</li> <li>Improved levels of environmental mastery and self-acceptance for intervention group</li> <li>Improved self-efficacy in regulating negative emotions for intervention group</li> </ul>



Table 1 (continued)

Paper	Name & Theory	Country & Sample	Frequency and duration of each session, Duration of the whole intervention	Delivery method	Active participation	Written participation	Student centered	Passive participation	Key Findings
Brunwasser et al. (2018)	PRP and CBT	USA N = 697 Age: 11–14	• 12 × 90 min sessions • Delivered weekly	• Groups of 6–14 • Sessions held after school • Sessions were led by a trained teacher or counselor or graduate student	✓	✓	✓	✓	<ul style="list-style-type: none"> <li>• Improved optimistic explanatory style for intervention group</li> <li>• Reduction in depressive symptoms for intervention group</li> <li>• Both changes were maintained at 12 months</li> </ul>
Coelho et al. (2015)	Positive Attitude Social Learning Theory	Portugal N = 628 Age: 11–17	• 13 × 45 min sessions • Delivered weekly	• Classroom based, infused into the school curriculum • Delivered by a psychologist with class director	✓	✓	✓	✓	<ul style="list-style-type: none"> <li>• Small effect sizes were detected for three of the five Social and Emotional Learning competencies - social anxiety, social awareness, and self-control</li> </ul>
Dray et al. (2017)	Resilience focused intervention	Australia N = 2105 Age: 13–16	• Delivery was flexible • The frequency and duration varied depending on the school	• School intervention team, comprising teachers, designated intervention officer and school executive • Delivery varied for each school	✓	✓	✓	✓	<ul style="list-style-type: none"> <li>• No significant effects were found for overall distress, internalizing or externalizing problems</li> </ul>
Bond et al. (2004)	Gatehouse Project	Australia N = 2679 Age: 13–14	• Delivered over a 10 week period • Delivery in English or Health classes	• Multilevel intervention: Whole school established a school based adolescent health team • Teaching resources were delivered by teachers in class groups	✓	✓	✓	✓	<ul style="list-style-type: none"> <li>• Positive influence on risk taking behaviors of alcohol, smoking and drug use</li> <li>• No positive effects on depressive symptoms</li> </ul>
Sheffield et al. (2006)	Cognitive restructuring and problem-solving universal intervention CBT	Australia N = 1225 Age: 13–15	• 8 × 45 min sessions – universal intervention • 8 × 90 min sessions – indicated intervention, • Delivered weekly	• Universal program was delivered by teachers in class groups following a manual. • The indicated group had two mental health professional facilitators and group sizes of 8–10	✓	✓	✓	✓	<ul style="list-style-type: none"> <li>• Neither intervention produced improvements in emotional well-being</li> </ul>

Table 1 (continued)

Paper	Name & Theory	Country & Sample	Frequency and duration of each session, Duration of the whole intervention	Delivery method	Active participation	Written participation	Student centered	Passive participation	Key Findings
Perry et al. (2014)	<i>Headstrong</i> Mental Health Literacy	Australia N = 380 Age: 13–16	• Flexible delivery for 5–8 weeks • 10 h in total	• Delivered by trained teachers • In class groups	✓	✓	✓	✓	<ul style="list-style-type: none"> <li>• mental ill-health stigma was decreased in intervention group</li> <li>• Mental health literacy increased in intervention group</li> <li>• No significant impact on psychological distress, help seeking attitudes or suicidal ideation</li> <li>• Social-emotional skills did not directly influence the development of adolescent depression</li> <li>• The intervention did not directly influence social-emotional skills in adolescents over the period examined</li> <li>• No significant effects for depressive symptoms, anxiety or distress</li> <li>• Program was considered feasible and acceptable to participants</li> <li>• No significant improvements in the variables of stress, depressive symptoms or anxiety</li> <li>• More participants in teacher-led groups either improved or recovered these symptoms than those in the external provider-led group</li> <li>• A higher percentage in the external provider-led group reported deteriorating symptoms</li> <li>• Minimal evidence to suggest that the RAP program was successful in reducing depressive symptoms</li> <li>• Some preliminary evidence suggests that the PIR program may help to improve peer interconnectedness</li> </ul>
N. Singh et al., (2019)	<i>Resilient Families</i> SEAC	Australia N = 1826 Age: 13–15	• 10 × 40–50 min student sessions • 1 × 120 min parent session • Delivered weekly	• Student sessions delivered by teachers in class groups • Parent session led by an adolescent health expert	✓	✓	✓	✓	
Burckhardt et al., (2017)	<i>ACT Universal Prevention Program</i> ACT	Australia N = 48 Age: 14–16	• 7 × 25 min sessions • Delivered weekly	• Facilitated by the lead author • Groups of 60 participants	✓				
Lai et al. (2016)	<i>The Little Prince is Depressed</i> CBT	Hong Kong N = 3391 Age: 14–16	• 12 × 45–60 min sessions • Frequency not documented.	• Delivered in class groups in lesson time. • Phase one was professionally led • Phase two was led by trained teachers who had observed phase one.				✓	
Rose et al. (2014)	<i>RAP and PIR</i> CBT	Australia N = 210 Age: 9–14	• 11 × 50 min sessions for RAP • 9 × 40–50 min sessions for PIR • Delivered weekly	• Provisionally registered psychologists delivered the RAP or PIR programs • Delivered to groups of 6 to 12 participants	✓	✓	✓	✓	

**Table 1** (continued)

Paper	Name & Theory	Country & Sample	Frequency and duration of each session, Duration of the whole intervention	Delivery method	Active participation	Written participation	Student centered	Passive participation	Key Findings
Gillham et al. (2007)	<i>PRP and PEP</i> CB and social problem solving.	USA N = 697 Age: 12–13	• 12 × 90 min sessions • Delivered weekly	• Delivered by teachers, counselors, and graduate psychology students • Delivered to groups of 6 and 14 participants	✓			✓	<ul style="list-style-type: none"> <li>• PRP did not reduce mean levels of depressive symptoms over the follow-up and did not prevent high or clinical levels of symptoms relative to either comparison group</li> <li>• In this study, PRP was effective in some schools, but not in others</li> </ul>
Volanen et al. (2020)	<i>b program</i> Mindfulness	Finland N = 3519 Age: 12–15	• 9 × 45 min sessions weekly • Combined with short home practices of 3–15 min 5–6 times per week.	• Certified mindfulness facilitators delivered the sessions in classes and in class time.	✓				<ul style="list-style-type: none"> <li>• No effect on depressive symptoms for boys</li> <li>• Small beneficial effect for resilience maintained at 26 week follow up for intervention group compared to control (relaxation program)</li> </ul>
Anttila et al. (2019)	<i>DespiNet-Thai</i> Theory of adolescent coping.	Thailand N = 180 Age: 15–19	• 5 × 50 min sessions • Delivered weekly	• Voluntary program delivered online • Delivered in class groups in class time		✓	✓		<ul style="list-style-type: none"> <li>• No statistically significant differences for depressive symptoms or distress</li> <li>• 61% of intervention group did not log on to access the program</li> <li>• Users suggested discussion forums for exchanging information and ideas between students and teachers would have helped</li> <li>• 27% found the program useful</li> </ul>
Calcar et al. (2016)	<i>e-couch Anxiety and Worry Program</i> CBT, relaxation/physical activity	Australia N = 1767 Age: 12–18	• 6 × 30–40 min sessions • Delivered weekly.	• Online delivery with support from teachers in one group and health care staff in the other group • Minimal staff-student interaction				✓	<ul style="list-style-type: none"> <li>• No statistically significant effects for reducing symptoms of generalized anxiety, social anxiety, anxiety sensitivity or depression</li> <li>• 36% of participants completed the entire program in the teacher supported group</li> <li>• 50% of participants completed the entire program in the health service supported group</li> </ul>
Burckhardt et al. (2016)	<i>Strong Minds</i> ACT and PP	Australia N = 267 Age: 15–18	• 16 × 30 min sessions • Delivered twice a week (mostly) over a 3 month period.	• Delivered by a registered psychologist to the entire year level in a lecture theatre.	✓			✓	<ul style="list-style-type: none"> <li>• Positive effects for reducing depression and anxiety symptoms for participants who had elevated symptoms at baseline</li> <li>• No significant effects for the complete sample</li> <li>• The authors believe this program may be effective as an early intervention, but not as a prevention program</li> </ul>

Table 1 (continued)

Paper	Name & Theory	Country & Sample	Frequency and duration of each session, Duration of the whole intervention	Delivery method	Active participation	Written participation	Student centered	Passive participation	Key Findings
Tak et al. (2016)	<i>Op Volle Kracht (OIK)</i> CBT	Holland N = 1341 Age: 13–14	• 16 × 50 min sessions • Delivered weekly with a 2 h booster at 12 months.	• Delivered in small groups • Delivered by psychologists experienced in CBT	✓		✓		<ul style="list-style-type: none"> <li>• The program was not effective in preventing depressive symptoms in early adolescence.</li> <li>• On average students did not like the sessions and did not find them useful</li> <li>• Participants provided qualitative data describing exercises as relatively boring and participants would have liked more active role-playing exercises and to perform more exercises electronically</li> <li>• In addition, participants reported that they would like to discuss more examples from their own lives instead of the examples provided in the program</li> </ul>
Lillevoll et al. (2014)	<i>MoodGYM</i> CBT	Norway N = 507 Age: 15–20	• 5 × 30–45 min • Delivered flexibly	• Online delivery		✓		✓	<ul style="list-style-type: none"> <li>• 11% of participants who signed up went on to enter the program</li> <li>• Of them, 3 from a potential 427 finished all modules</li> <li>• There were no statistically significant differences for depressive symptoms, self-esteem or self-efficacy</li> <li>• 15% of participants logged into the iMT and 20% logged into the iMT program.</li> <li>• One participant out of a potential 189 completed one of the courses in its entirety.</li> <li>• No meaningful analyses were possible</li> <li>• 19% of participants saw at least 50% of the video messages</li> <li>• There were no significant effects for depressive symptoms</li> <li>• There was no association between the proportion of messages viewed and depressive symptoms</li> </ul>
Antonson et al. (2018)	<i>iMTI and iMT</i> Mindfulness	Sweden N = 287 Age: 15–19	• 10 min sessions • delivered twice a day for 8 weeks	• Online delivery	✓				
Whitaker et al. (2017)	<i>MEMO</i> CBT	New Zealand N = 855 Age: 13–18	• Two messages delivered outside of school hours daily • Over a period of 9 weeks.	• Phone messages were a mix of text messages, video diary messages from 6 teen actors, video messages from celebs and episodes of a cartoon about four teens and their dog.				✓	
Burckhardt et al. (2015)	<i>Bite Back</i> PP	Australia N = 336 Age: 13–17	• flexible delivery for 4–6 weeks • A total of 6 h.	• Online delivery • Teacher facilitated with digital workbook and in class discussion		✓		✓	<ul style="list-style-type: none"> <li>• No significant improvement in mental health outcomes</li> <li>• The authors suggest that being forced to engage in positive psychology may remove its beneficial effects</li> </ul>

**Table 1** (continued)

Paper	Name & Theory	Country & Sample	Frequency and duration of each session, Duration of the whole intervention	Delivery method	Active participation	Written participation	Student centered	Passive participation	Key Findings
Barrett et al. (2006); (2005)	<i>FRIENDS</i> CBT	Australia N = 671 Age: 11–15	<ul style="list-style-type: none"> <li>• 10 × 70 min sessions</li> <li>• Delivered weekly with 2 booster sessions the next term</li> <li>• Included 4 parent sessions</li> </ul>	<ul style="list-style-type: none"> <li>• Teacher delivered in class groups</li> <li>• Year 6 and year 9 students were involved</li> <li>• Supported by a clinically trained psychology post graduate student.</li> </ul>	✓	✓	✓	✓	<ul style="list-style-type: none"> <li>• Sustained small effects for anxiety and depressive symptoms for year 6 participants at 12, 24 and 36 months</li> <li>• No significant difference for year 9 students' anxiety and depressive symptoms</li> <li>• Factors including classroom dynamics, student characteristics, and the facilitator's ability to maximize the therapeutic process within the classroom setting impacted the results</li> <li>• No significant effects were reported for depressive symptoms, anxiety or distress</li> </ul>
Johnson et al. (2016)	<i>b program</i> Mindfulness	Australia N = 293 Age: 13–14	<ul style="list-style-type: none"> <li>• 9 × 35–50 min sessions</li> <li>• Delivered weekly</li> </ul>	<ul style="list-style-type: none"> <li>• An external facilitator delivered mindfulness activities via a manual</li> </ul>	✓				
Tomyn et al. (2016)	<i>Think Health and Wellbeing</i> CBT	Australia N = 194 Age: 13–17	<ul style="list-style-type: none"> <li>• 6 × 50 min sessions</li> <li>• Delivery frequency not reported</li> </ul>	<ul style="list-style-type: none"> <li>• Delivered by psychology students</li> <li>• Delivered in class groups of 20–25</li> <li>• Tasks in a manual complimented the course</li> </ul>	✓	✓	✓	✓	<ul style="list-style-type: none"> <li>• Approximately 20% of participants in the intervention group experienced substantial change</li> <li>• While many did not improve, a substantial number worsened (at least initially, before returning to prior levels by T3).</li> <li>• Participants experiencing high levels of depression were most likely to experience a reduction of symptoms</li> <li>• Authors suggest that this intervention may be more effective if delivered as a targeted intervention for individuals with elevated depressive symptoms</li> </ul>
Sawyer et al. (2010)	<i>Beyond Blue</i> Varied	Australia N = 5633 Age: 12–14	<ul style="list-style-type: none"> <li>• 10 × 45 min sessions</li> <li>• Delivery frequency not reported</li> </ul>	<ul style="list-style-type: none"> <li>• Delivered by teachers</li> <li>• Delivered in class groups in class time</li> </ul>				✓	<ul style="list-style-type: none"> <li>• No significant differences were reported for depressive symptoms, coping actions and perceived social support</li> <li>• Teacher rated school climate was positively effected</li> <li>• Clear goals aligned with school priorities were not always evident, nor was engagement of teachers and students</li> </ul>

Table 1 (continued)

Paper	Name & Theory	Country & Sample	Frequency and duration of each session, Duration of the whole intervention	Delivery method	Active participation	Written participation	Student centered	Passive participation	Key Findings
Melnyk et al., (2013)	COPE TEEN CBT	USA N = 807 Age: 14–16	<ul style="list-style-type: none"> <li>• 15 × 50 min sessions</li> <li>• delivered weekly</li> </ul>	<ul style="list-style-type: none"> <li>• Delivered by teachers</li> <li>• Delivered in class groups in class time</li> <li>• Reviewing of newsletter with parents for homework</li> </ul>	✓	✓	✓	✓	<ul style="list-style-type: none"> <li>• Significant reduction in depression scores for those with elevated depression pre-intervention. No significant difference for anxiety and depression scores for the other participants.</li> <li>• Positive effects shown for BMI, positive behaviors regarding illicit substance use and other healthy behaviors</li> </ul>
Veltro et al., (2015)	PP	Italy N = 78 Age: 14–16	<ul style="list-style-type: none"> <li>• 18 × 60 min sessions</li> <li>• Delivered weekly</li> </ul>	<ul style="list-style-type: none"> <li>• Delivered by teachers</li> <li>• Delivered in class groups</li> </ul>	✓			✓	<ul style="list-style-type: none"> <li>• No significant effects found for the Strengths and Difficulties Questionnaire, perceived self-efficacy or the Health and Wellness Questionnaire</li> <li>• The program itself was reported as being a success based on reported significant change for particular questions within each measure</li> </ul>
Freire et al., (2018)	Challenge to B + PP	Portugal N = 99 Age: 13–17	<ul style="list-style-type: none"> <li>• 8 × 90 min sessions</li> <li>• Delivered weekly</li> </ul>	<ul style="list-style-type: none"> <li>• Delivered by psychology students</li> <li>• Delivered to groups of 13</li> </ul>	✓	✓		✓	<ul style="list-style-type: none"> <li>• Significant positive effects for self-esteem for the intervention group</li> <li>• No significant effects for self-concept or psychological well-being</li> </ul>

Note:

CBT Cognitive Behavior Therapy, ACT Acceptance Commitment Therapy, CB Cognitive Behavioral, IPT Interpersonal Psychotherapy, RAP Resourceful Adolescent Program – A adolescent, F family, P parent, PP Positive Psychology, REBT Rational Emotive Behavior Therapy, EI Emotional Intelligence, SEAC Social Emotional Academic Competence, PIR Peer Interpersonal Relatedness, PRP Penn Resilience Program, PEP Penn Enhancement Program, iMBI Internet Mindfulness Based Intervention, iMT Internet Music Therapy



produce significant positive effects for any mental health and wellbeing variables measured. Table 1 highlights the characteristics of these programs and the respective key findings of each study.

### Program factors linked to student engagement

The studies that reported significant positive effects for participants' mental health and wellbeing were more likely to include the key elements required for maximizing student engagement. Of the 22 programs reporting significant changes to psychological outcomes, 17/22 (77%) included at least one aspect that was based on active learning where the participant was required to be physically active in their learning experience. The same number of studies (17/22 (77%)) included an element of active learning where participants needed to reflect on and engage with the program's content through writing. Contrary to this, the 25 studies that did not produce significant positive effects were less likely to use active learning methods. Physically active learning experiences were present in 15/25 (60%) programs and written active learning practices in 12/25 (48%).

Student-centered learning methodology was more prevalent in studies reporting on programs that produced significant positive results. These studies allowed participants to have an input into the learning process such that their learning was personalized and informed the program content. In 55% of programs reporting such results (12/22), student-centered learning was a feature. Alternatively, only five programs from the 25 studies that reported non-significant effects for the mental health and wellbeing of participants (20%), used student-centered learning methods as a part of their delivery.

Teachers trained by psychologists or using facilitation handbooks designed by psychologists had slightly more success in delivering programs that produced significant, positive outcomes when compared to those delivered either online or by external providers such as psychologists. Teacher involvement in program delivery occurred in 13 out of 22 (59%) effective programs, while 12 of 25 (48%) programs that produced non-significant results had some form of teacher involvement in program delivery.

No clear pattern emerged as to the most effective program length, session frequency, and duration. From the studies that reported positive effects, 12/22 (55%) prevention programs were at least 10 sessions in duration, 15/22 (68%) with each session no longer than one hour, and 17/22 (77%) were accessed weekly. Similar numbers were found for the 25 studies that did not produce significant, positive effects for the mental health and wellbeing outcome variables they considered. Twelve of these 25 studies (48%) consisted of at least 10 sessions, 18/25 (72%) comprised sessions that

were no longer than one hour, and 14/25 (56%) were delivered weekly. Similarly, there was no consistent theme as to whether a trained psychologist or a trained teacher is more effective at delivering these programs. From the studies reporting positive effects, 7/22 (32%) were teacher delivered, 9/22 (41%) were delivered by psychologists, 3/22 (14%) were accessed online, while 16/22 (72%) had some form of teacher involvement. The studies reporting non-significant results included 11/25 (44%) delivered by teachers, 9/25 (36%) by external providers, 2/25 (8%) online, while 17/25 (68%) had some form of teacher involvement. The psychological theory driving most programs that showed positive effects was Cognitive Behavioral Therapy (CBT) with 13 of 22 (59%) studies reporting positive effects using CBT as their foundation. Studies unable to report positive effects for their programs used CBT as a base for their content in 11 of 25 (44%) studies.

### Discussion

Previous reviews and meta-analyses have examined the influence of a variety of program factors on the effectiveness of school-based, universal programs designed to support mental health and wellbeing. However, the pedagogy behind program delivery has not yet been considered. Consequently, the present review additionally examined the influence factors expected to enhance student engagement had on program effectiveness. Overall, the current review of 47 control trials found that while most prevention programs were not successful in producing sustained positive effects on psychological outcomes for secondary school students, a pattern of association between the methodology used for program delivery and program effectiveness was shown. Findings from just under half of the included studies suggest that content delivered via a pedagogical framework designed to maximize student engagement, tend to be associated with larger effects for targeted mental health and wellbeing outcome variables.

### Factors influencing program efficacy

Studies reporting positive effects often had some form of teacher involvement, some as the primary facilitator (e.g., Ardic & Erdogan 2017; Brunwasser et al., 2018; Merry et al., 2004; Rivet-Duval et al., 2011) and others as an observer or support to the primary facilitator (e.g., Calcar et al., 2009; Phuphaibul et al., 2005; Shoshani & Steinmetz, 2014; Shoshani et al., 2016; Wahl et al., 2014). Training for teachers appears important and the above-mentioned programs most often involved teacher/facilitators who were trained by psychologists. Further support for these teacher facilitators

came in the form of facilitation manuals developed by psychologists to allow for program fidelity. Whilst psychologists and other healthcare professionals who are expert in their field can provide sound, evidence-based content for prevention programs, educators are trained in classroom management and teaching methodology that can enhance student engagement (Emmer & Stough, 2001). Classroom teachers also have a prior relationship with their students that can result in more useful group discussions and personal sharing as a part of any program. Finally, these relationships between students and their teachers are ongoing, which allows support to be provided for students for the duration of their secondary schooling. Teachers can help students reflect on the program content to work through difficult life situations in real time.

In terms of theoretical framework, most programs included in the present review were grounded in Cognitive Behavioral Therapy (CBT). This is unsurprising as CBT has a strong evidence base for being effective in working with adolescents in clinical samples to reduce symptoms of depression and anxiety (Kendall & Peterman, 2015; Webb et al., 2012), and in non-clinical samples to reduce the negative effects of problematic traits such as perfectionism (Lloyd et al., 2015). The current review showed that effectiveness of programs founded on the tenets of CBT were mixed. Just over half of the programs that produced significant, positive results used Cognitive Behavioral Therapy (CBT) as the foundation for the content delivered, while just under half of the ineffective programs were based on the same psychological theory. Trials of programs driven by alternatives to CBT were much fewer in number and produced similarly mixed results; significant, positive effects were found in programs guided by Rational Emotive Behavior Therapy (David et al., 2019), Positive Psychology (Shoshani & Steinmetz, 2014; Shoshani et al., 2016) and education of growth mindsets and neuroplasticity (Miu & Yeager, 2014; Perkins et al., 2021). Additionally, programs based on ACT and mindfulness produced positive but non-significant effects (Burckhardt et al., 2017; Volanen et al., 2020).

Session duration, frequency, and program length were similar across most studies and did not appear to have a consistent influence on program effectiveness. Most programs were delivered weekly, with sessions not longer than an hour in duration and program length at least 10 sessions. It is possible that these features exist for more practical reasons (e.g., to fit within complex school timetables and optimise student attention and concentration; Hoshino & Fabris 2020; Williams & Williams, 2011), rather than specifically to enhance program effectiveness.

In the current review, every program has an element of didactic lecture style teaching to convey the psychological theory underpinning the program. In order to maximize

student attention during these teaching moments, presenters need to be adept story tellers (Williams & Williams, 2011), or have expertise in delivering lectures that involve student-centered methods (Bunce et al., 2010). It is difficult to make an assessment about how the content was delivered in the different programs without observation, but it is possible to consider the activities included to assess the extent to which student-centered and active learning opportunities were used in the various programs. In programs reporting significant, positive effects, student-centered approaches were often prominent in program delivery. Examples of student-centered learning approaches included setting personal goals and actions based on understanding developed through participation in the program, student participants choosing specific topics for discussion in the program relevant to their needs, determining their own wellbeing strategies and actively reflecting on their own thoughts, feelings and behaviors as part of the program.

Similar results were found for active learning experiences in programs reporting positive effects: more than three quarters of programs reporting significant beneficial effects provided physical active learning opportunities for participants. This included role playing, participation in group discussions, or interactive games. The same proportion of effective programs incorporated some form of writing to allow participants to be active in their learning – journaling, writing to provide guidance for future students, or activities in workbooks.

In comparison, the programs that did not produce positive effects for mental health and wellbeing outcomes were less likely to use student-centered and active learning delivery methods, with passive participation a more common approach. However, the most stark contrast between effective and ineffective programs regarded the student-centered approach. More than half the programs reporting positive effects had features where participants were able to have input into what was being learned, how it was being learned or how it was related to their personal world view. By contrast, only a fifth of programs reporting no positive effects had the participants at the center of their learning experience.

## Limitations and Future Directions

Although this systematic review was able to address a gap in the literature regarding the delivery method used by the different programs created, there are some limitations. The focus of this review was on quantitative data produced from controlled trial studies across the world. Due to the wide variety of psychological outcomes assessed by programs included in the review, it was not feasible to pool or meta-analyze study data. This meant that a meta-analysis, which

would normally be used to provide a quantitative synthesis of the results was not used. To develop a clearer understanding of prevention programs, future review approaches could consider focusing on specific outcome variables (e.g., symptoms of anxiety or depression) to allow for meta-analysis.

Because the present review considered effectiveness of programs based on quantitative data only, it is difficult to understand exactly how the students connected with the content except for through the outcome variables examined. As these programs are delivered to non-clinical samples, it can be difficult to show significant effects and it is possible that the benefits of these programs will not be seen until those participating are faced with some form of life difficulty. Studies that include a qualitative element should be considered to provide a more thorough account of how participants engage with the programs being reviewed. Similarly, future program trials should consider using a mixed methods approach to allow participants to report their engagement with the program in greater detail specifically highlighting aspects that help them engage and aspects that make focusing on the content more difficult. This will help provide greater meaning to the self-report quantitative results these trials uncover.

Despite the best preparations and intentions of researchers, the challenges associated with research in schools may still impact the quality of each study. This review was not immune from this issue and had concerns with the quality of the included trials, particularly regarding attrition rates. It was decided not to exclude any of these studies as the assessment of pedagogical approaches described by each was more valuable than the reliability of reported effectiveness for this narrative synthesis. However, future meta-analyses may choose to exclude studies with high levels of attrition to ensure the overall results are at reduced risk of bias from incomplete data.

Another risk of bias for this review is the ‘file drawer effect’ where often, only studies producing significant, positive results are published (Rosenthal, 1979). Publication bias has been reported to be as much as 40% more likely for studies that produce significant positive results compared to studies confirming the null hypothesis (Franco et al., 2014). Consequently, it is possible that the true effects of universal prevention programs delivered in schools are actually lower than the results described in this review as unpublished studies were not able to be included.

Finally, alternatives to CBT (e.g., REBT, Positive Psychology, growth mindset education) and approaches derived from CBT (typically termed ‘third wave’ CBT approaches; e.g., ACT, mindfulness) have been successful in producing positive effects for adolescents in different settings (Angreini et al., 2019; Burke, 2010; Carr et al., 2021; Livheim et al., 2015; Miller, 2019; Petersen et al., 2022; Reangsing et

al., 2021). The findings of this review suggest that programs based on these approaches may also show promise for use within schools, however, these psychological theories have not yet been used widely in the development of universal prevention programs. As such, CBT alternatives and third wave approaches may warrant greater exploration in future studies.

## Conclusion

Prior research into secondary school programs designed to prevent mental ill-health has not been able to provide clear direction for facilitators and developers regarding delivery methods most likely to produce positive outcomes. This review has shown that universal prevention programs that use techniques designed to increase participant engagement are more likely to be effective in producing better mental health and wellbeing outcomes in secondary school settings. It considered the methods used to engage secondary school students in these programs and found numerous factors were linked to program effectiveness. Teacher engagement appears important, whether involved with program delivery or reinforcing the work of program facilitators through student wellbeing practices during the school day. Similarly, more effective programs tended to deliver content using pedagogy proven to positively influence participant engagement. Programs that used a student-centered learning approach and required participants to be active in their learning were associated with more positive effects for mental health and wellbeing outcomes. Future trials should prioritize program delivery methods that allow participants to actively engage and influence the content delivered while ensuring it is guided by evidence based psychological theory.

**Acknowledgements** We would like to thank Vicki Langton for her help with the development of search terms for this review and Ria Aiyar whose contribution as an independent reviewer of the titles and abstracts of the accepted papers was greatly appreciated.

**Authors' Contribution** DS conceived of the study, participated in interpreting the data and wrote the initial draft of the manuscript; AT participated in refinement of the study design and in interpreting the data as well as drafting the manuscript; PS participated in interpreting the data and drafting the manuscript. All authors read and approved the final manuscript.

**Funding** Open Access funding enabled and organized by CAUL and its Member Institutions

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**Supplementary Information** The online version contains supplementary material available at <https://doi.org/10.1007/s40894-022-00193-6>.