

A systematic review of intervention research examining effective student wellbeing in schools and their academic outcomes

Purpose

Improving student wellbeing and building resilience are crucial in preventing and reducing the impact of mental health problems. Schools play a vital role in promoting student wellbeing. However, there is little clear evidence about the effectiveness of school-based wellbeing programs in terms of their impact on both students' wellbeing and on academic outcomes. Few systematic reviews consider academic outcomes, and previous reviews on wellbeing are narrow in scope. This review addresses these limitations, guided by the following research question: *“How effective are school-based wellbeing interventions for improving the academic and non-academic outcomes of children and young people in mainstream schools?”*

Current review

This review explored the research regarding the effects of school-based wellbeing interventions on student academic achievement (N = 320,505), as defined by numeracy, literacy or general performance, and wellbeing-related outcomes (N = 411,535) of social-emotional adjustment (e.g., relationships, connectedness), behavioural adjustment, cognitive adjustment (e.g., conduct problems, aggression), and internalising symptoms (e.g., decision making, executive function, resiliency). There were 75 studies that qualified and were included in the final analyses which involved 432 extracted outcomes from students 5 to 18 years of age.

Of high importance to this systematic review was that the evidence and findings reported had to be applicable to the Australian schooling context. The review was limited to interventions delivered in school or by a school teacher with appropriate professional development. Interventions that were strictly country specific (e.g., Charter Schools in the US) were excluded from the review. The majority of studies (51) were conducted in the US and five from the UK, with the remaining 26% coming from a diverse range of cultural backgrounds – Spain (3), Turkey (3), Democratic Republic of the Congo (2), Israel (2), Italy (2), Australia (1), Bhutan (1), Brazil (1), India (1), Mexico (1), Northern Ireland (1), Peru (1), Singapore (1), Sweden (1), and Tanzania (1) – reflective of the multicultural diversity in Australian communities.

Summary of the review method

A systematic review and meta-analysis was undertaken. Data sources A+ Education, ERIC, Education Research Complete, British Education Index, PsycInfo and Scopus (limited to the ‘Social Sciences’ Subject Area) were searched for experimental and quasi-experimental studies published between January 2004 and January 2020 investigating the effect of school-based interventions on student academic and wellbeing outcomes. Trial registries and grey literature sources were also searched.

Eligibility criteria for selecting studies included randomised controlled trials (RCTs), experimental and quasi-experimental studies comparing school-based wellbeing interventions with ‘business as usual’,

typically delivered in a classroom context. Included studies involved school-aged children (5-18 years old), had measures of academic achievement and wellbeing (in the broadest sense), and was written in English. Two independent reviewers extracted the data and assessed the risk of bias of included studies. Random effects meta-analyses of the effect of intervention on student academic and wellbeing outcomes were performed.

This review adapted an Australian government framework of strategic imperatives for health and wellbeing promotion that related to improving mental wellbeing, encouraging physical activity, and preventing harm from substance abuse.

Study registration: PROSPERO CRD42020176599, 28/04/2020, www.york.ac.uk/inst/crd

Key conclusions

1. This review found that school-based wellbeing programs had small to moderate positive impacts on student academic achievement, compared to similar students in control groups engaged in their usual activities with general academic performance equivalent to three months of additional learning gain ($g = 0.26$), numeracy achievement equivalent to two months gain ($g = 0.10$), and literacy achievement equivalent to one month gain ($g = 0.07$). Wellbeing programs had small to moderate effects on wellbeing-related measures: social-emotional adjustment ($g = 0.14$), behavioural adjustment ($g = 0.15$), cognitive adjustment ($g = 0.18$), and a moderate impact on internalising symptoms ($g = 0.20$) compared to students in control groups, consistent with previous reviews.
2. Evidence showed that specific student belonging and engagement programs in school had the greatest impact on academic achievement. Programs that supported social-emotional skills were more effective for promoting student wellbeing and were associated with better literacy outcomes and those that encouraged physical activity, exercise and relaxation were associated with better numeracy outcomes.
3. Research indicated that students from disadvantaged backgrounds may benefit most from a combination of universal whole-school programs supported by targeted programs. Findings were not conclusive and should be interpreted with caution for interventions targeting students with special needs, as the effect was not statistically significant.
4. Evidence suggests that wellbeing programs delivered by 'trained' classroom teachers (e.g., a program designed to build the capacity of the teacher first, supported by resources for students) were marginally more effective in impacting students' wellbeing outcomes than programs delivered by external professionals. This finding highlights the importance of teacher professional learning and their essential role and capacity to influence student wellbeing outcomes. No difference was found on academic outcomes due to the mode of delivery.
5. Programs designed for Secondary schools (of which there were relatively few) appeared to have greater impact on outcomes than programs in other settings (e.g., Primary school), as did universal programs (versus targeted) delivered to students in medium-sized groupings of 11 to 20 students (versus one-on-one or large groups).
6. While the quality of included studies is among the best in the field of educational RCT and quasi-experimental designs, there is still a high risk of bias due to the inability to blind participants, study personnel and outcome assessment. It reflects the often, unavoidable complexities in educational research.
7. While there is a plethora of wellbeing programs and interventions available for schools to implement, only one Australian study was included in this systematic review which suggests that high-quality studies using robust research designs are scarce. There is also an increasing need to demonstrate evidence of impact for program funding. More high-quality program evaluations are needed across Australia in order to identify programs that show promise or validate those that are widely used.

Findings

Of the 75 included studies, 57 examined interventions that focused on improving mental wellbeing (behavioural, cognitive, social-emotional, belonging and engagement, mentoring, resilience), 14 studies considered a physical approach (exercise, relaxation techniques), and four studies examined interventions designed to prevent harm from tobacco, alcohol and drugs abuse. Meta-analysis of the results found that wellbeing interventions had very small positive effects on academic achievement (Hedge's $g = 0.17$, equivalent to two months learning gain), social-emotional adjustment ($g = 0.14$), behavioural adjustment ($g = 0.15$), cognitive adjustment ($g = 0.18$), and internalising symptoms ($g = 0.20$) compared to 'business as usual', consistent with previous reviews.

Interventions that were indirectly delivered to students usually via classroom teachers who were trained to deliver a specific wellbeing program, were marginally more effective than direct-delivery by an external professional in impacting wellbeing-related outcomes. No difference was found for the mode of delivery on academic achievement. This implies the importance of upskilling teachers and the longer lasting impact it may have on student wellbeing as compared to programs delivered by external professionals with less direct teachers' support.

Belonging and engagement interventions were more effective for promoting academic achievement ($g = 0.31$, equivalent to four months additional learning), while social-emotional skills programs were more effective for promoting student wellbeing outcomes ($g = 0.23$). Shorter programs of up to one school term had a greater impact on student academic and wellbeing outcomes than programs of longer duration. While interventions have a positive impact on all school levels, evidence suggests those that were designed for Secondary schools appeared to have greater impact on outcomes than in other school settings, compared to the comparison conditions, as did universal interventions delivered to students in medium-sized groupings. This may suggest that programs in Secondary schools were more effective in targeting wellbeing issues which may manifest more prominently in upper school years and students' capacity to understand and benefit from such programs is better as compared to students in Primary schools. However, there was substantial inconsistency across study results due to the diverse range of assessment tools used ($I^2 = 89\%$). All of the included studies were at high risk of bias in at least one domain, mainly due to the inability to blind participant to the treatment group or lacked random assignment. As the quality of the included studies was mostly low (relative to the high standards set in RCTs in health), the findings should be interpreted with caution.

Wellbeing programs in Australia

A general review of school-based wellbeing programs in Australia was conducted. According to a national programs directory (beyou.edu.au/resources/programs-directory), Australian schools and early learning services can access over 200 school-based wellbeing programs (see the [Addendum](#) for a full list of programs as at August 2020). Over half (56%) had 'low' quality evidence, where only an underlying theoretical framework was identified but no study had been undertaken or published. One-fifth of programs (22%) were rated as having a 'medium' quality evidence-base, by referencing some related research. Only 23% of programs gave concrete evidence of their impact in the form of published studies or reports (first author and date provided).

Clearly there are many good wellbeing programs and interventions available for schools to implement, as evidenced by the programs directory (see the [Addendum](#)) and a sample of the whole-school wellbeing frameworks (see Table 2 of [Main Report](#)). However, there are very few studies that have been published on any of these programs and frameworks that adopt an experimental or quasi-experimental research design favoured in high-quality systematic reviews. Of the 200 plus programs listed, only two (*You Can Do it!* – an Australian program, and *Tribes* – a US program) had sufficient quality of evidence to be included in this current systematic review. The other programs named in the included studies were not

listed in the Australian directory. While there is clearly significant activity in the wellbeing intervention space, this implies a lack of high-quality evidence of impact.

Implications for policy and practice

The large number of studies included in this systematic review afforded the opportunity to explore the moderating effect of intervention characteristics on student academic and wellbeing outcomes. In the context of universal school-based wellbeing programs, indirect program delivery by the trained classroom teacher supported by program resources for students as an enhancement to standard curriculum, may be marginally more effective and have a longer lasting impact, than directly-delivered, often targeted programs by an external professional. However, the evidence suggests that a combination of a universal whole-school approach supported by targeted programs for ‘at risk’ students is optimal.

However, the sheer diversity of interventions considered in this systematic review makes it difficult to isolate the specific set of characteristics that typify a successful intervention designed to promote both academic achievement and wellbeing outcomes. In short, there is no silver bullet. Nevertheless, a set of characteristics that emerged from the moderator meta-analyses suggest that effective wellbeing promotion is systemic and usually involves programs that are:

- **short: delivered within a Term** – thus manageable and sustainable in a crowded curriculum;
- **universal program** – building awareness and capacity of the whole community, reduces stigma;
- **explicitly taught by the trained classroom teacher** – building the teacher’s capacity first;
- **delivered in regular sessions** – building the student’s capacity through practice and repetition;
- **delivered to groups of students** – ranging from 11 students up to classroom size, and
- **developmentally differentiated** – recognising that wellbeing is influenced by stages in life, particularly during transition and adolescence.

Implications for research

This systematic review presents the best evidence but not necessarily the best school-based wellbeing programs. In other words, wellbeing programs have been selected for inclusion in this systematic review because they met selection criteria that minimises reporting bias, not because it was an exceptional program. This needs to be kept in mind when interpreting findings.

This systematic review provides the most robust evidence to date that attempts to broadly quantify the positive impact that wellbeing interventions have on, not only student wellbeing outcomes but also student academic achievement, testing the widely-held belief that ‘happy kids are better learners’.

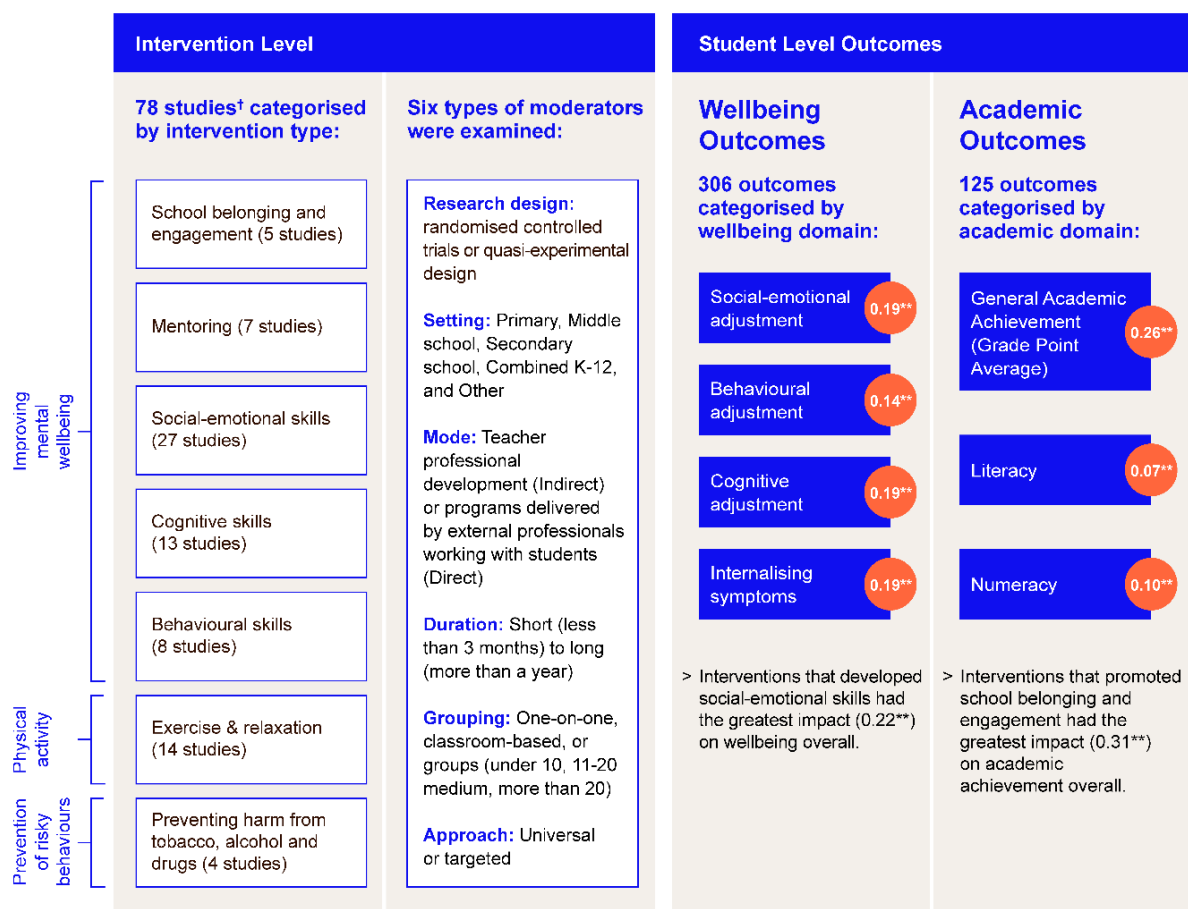
While only one Australian study was included in the meta-analyses¹, the review was grounded in the current offerings of whole-school mental health promotion initiatives in Australia, as well as the plethora of wellbeing programs available to schools. The lack of Australian studies in this systematic review suggests that high-quality and large-scale research is needed across Australia in order to robustly test many more programs and interventions that show promise or are widely used even in the absence of evidence (See [Addendum](#) for full list of over 200 wellbeing programs used in Australian educational settings).

¹ Ashdown, D. M., & Bernard, M. E. (2012). Can explicit instruction in social and emotional learning skills benefit the social-emotional development, well-being, and academic achievement of young children? *Early Childhood Education Journal*, 39(6), 397-405.

The greatest limiter to the inclusion of studies (75 out of 4850) was the lack of an academic outcome. Studies of interventions purporting to improve academic outcomes need to include robust standardised measures of academic performance to strengthen the evidence base around the relationship between health and education. Of greater concern, however, is the sheer diversity of unvalidated wellbeing measures. It reflects the diversity of wellbeing programs on offer and complexity in field of educational research. Locally and internationally, we still lack standardised benchmark indicators of student wellbeing because, in part, we still lack a globally accepted definition.

This comprehensive systematic review of 75 included studies is designed to summarise the evidence and present an overall assessment of the impact of health and wellbeing interventions on both academic and wellbeing outcomes. This review presents an important starting point to conduct further analyses and examine features of interventions and their effectiveness. Section 3.6 in the report provides a discussion on some 'emerging examples' of effective interventions.

Systematic review outcomes overview



[†]Two of the 75 included articles reported multiple studies.

^{**}Effect sizes shown as Hedge's g, p < 0.01 significance

Impact map

Table 1 presents a heat map of the estimated impact of interventions on student academic and wellbeing outcomes, moderated by contextual and program characteristics. Shading of each outcome reflects the level of impact according to the statistical effect size, Hedge's g. Detailed results and full presentation of the risk analyses can be found in the [Main Report](#). An interactive version of the Impact Map with estimates of months learning gain and the evidence behind the results are available [here](#).

Table 1. Summary of findings

Moderators	Academic overall	Numeracy	Literacy	GPA/Other	Wellbeing overall	Social-emotional adjustment	Behavioural adjustment	Cognitive adjustment	Internalising symptoms
Intervention type									
Improving mental wellbeing: Belonging & engagement	0.31	-0.03	0.12	0.36	0.21	0.18	0.10	0.24	0.23
Improving mental wellbeing: Mentoring	0.17	0.11	0.03	0.35	0.16	0.15	0.05	0.26	
Improving mental wellbeing: Social-emotional skills	0.16	0.10	0.10	0.35	0.22	0.16	0.22	0.23	0.24
Improving mental wellbeing: Cognitive skills	0.11	0.04	0.04	0.21	0.09	0.16	0.03	0.09	0.08
Improving mental wellbeing: Behavioral skills	0.10	0.04	0.05	0.17	0.12	0.06	0.11	0.14	0.20
Encouraging physical activity: Exercise & relaxation	0.20	0.24	0.10	0.21	0.18	0.13	0.23	0.21	0.13
Preventing harm from tobacco, alcohol & drugs	0.13	0.15	0.00	0.13	0.16	0.04	0.13	0.19	
School setting									
Primary	0.10	0.08	0.07	0.21	0.19	0.15	0.18	0.20	0.18
Middle	0.18	0.24	0.07	0.22	0.18	0.13	0.14	0.20	0.21
Secondary	0.28	0.24	0.24	0.28	0.23	0.13	0.02	0.20	0.19
Combined K-12	0.15	-0.01	-0.02	0.44	0.06	0.12	0.01	0.10	0.06
Other	0.09			0.09	0.12	0.19	0.13	0.03	0.06
Intervention mode									
Direct	0.16	0.09	0.03	0.26	0.16	0.14	0.16	0.19	0.15
Indirect	0.16	0.11	0.09	0.26	0.18	0.13	0.13	0.18	0.22
Program duration									
Short (< 3 months)	0.22	0.25	0.14	0.27	0.23	0.24	0.30	0.17	0.31
Moderate (< year)	0.15	0.08	0.07	0.26	0.16	0.18	0.13	0.16	0.15
Long (> year)	0.11	0.03	0.05	0.23	0.16	0.07	0.11	0.23	0.19
Grouping size									
One-on-one	0.18	0.06	0.02	0.33	0.15	0.13	0.18	0.17	0.08
Classroom	0.16	0.09	0.05	0.30	0.18	0.13	0.13	0.20	0.19
Small (<11)	0.15	0.13	0.15	0.12	0.27	0.30	0.11	0.21	0.21
Medium (11-20)	0.24	0.28	0.38	0.00	0.24	0.00	0.21	0.24	0.36
Large (>20)	0.11			0.11	0.08			0.02	0.30
Intervention approach									
Targeted: Academic risk	0.17	0.09	0.07	0.31	0.16	0.11	0.12	0.18	0.12
Targeted: Disadvantaged	0.16	0.25	0.20	0.07	0.27	0.26	0.52	0.23	0.74
Targeted: Special needs	-0.03			-0.03	0.10	0.19	0.13	-0.04	0.06
Universal	0.18	0.08	0.01	0.31	0.22	0.16	0.13	0.20	0.24

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The full Report and Addendum is available [here](#).

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