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Rapid Review: What is the effect of school-based strategies or interventions that promote elementary and secondary student and caregiver engagement?

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## **Executive Summary**

#### Background

School engagement, the extent to which students participate in school activities, is a priority for educators. Measures of school engagement are associated with higher academic performance, but also children and youth's mental health and wellbeing. As school engagement is a multifaceted concept that includes behavioural, emotional and cognitive commitment to learning, peer relationships and activities, measures and definitions differ and may include:

- Behavioural indicators, such as attendance, participation in extra-curricular activities, or school-related conduct (i.e., treating peers and teachers with dignity and respect and complying with school rules).
- Socio-emotional indicators, such as positive or negative reactions to school, relationships with teachers or peers, or feelings of school belonging and connectedness
- Cognitive indicators, such as self-regulated learning and the perceived relevance of schoolwork

This review was conducted to identify, appraise and summarize the available research evidence about efforts to increase school engagement in elementary and secondary schools.

This rapid review includes evidence available up to June 26, 2024, to answer the question:

# What is the effect of school-based strategies or interventions that promote elementary and secondary student and caregiver engagement?

#### **Key Points**

- Interventions for school engagement were broadly categorized across several main categories.
  - Socio-emotional learning programs build individuals' capacity for emotional regulation, prosocial skills, and empathy and promote social connection and belonging.
  - **Behavioural** interventions are structured reactions to students' behaviours, such as rewards for positive behaviours.
  - Interventions involving student leadership, for example, students as peer mentors or in leading recreational or learning activities
  - **Restorative justice** programs involve giving students a role in collaborative disciplinary responses.
  - **Mental health-focused** interventions include providing mental health resources or professionals to students and/or caregivers.
  - Inclusivity-focused interventions promote the inclusion of equity-deserving groups, such as 2SLGBTQI+ students or human rights for all.
  - School meal programs provide free or reduced-cost meals to students
  - **Other** interventions that did not fit into the categories above, including arts-based and health promotion programs

- The body of evidence is largest for **socio-emotional learning** programs and **behavioural** interventions. Findings for these interventions were mixed, in part due to the heterogeneity of interventions and outcomes. Several interventions demonstrated benefits, but it is recommended that these are closely evaluated for contextual similarities before implementation; no clear factors or intervention components were associated with positive outcomes. The certainty of evidence is **very low** (GRADE); findings are likely to change as new evidence becomes available.
- Interventions involving students in leadership roles in academic/recreational contexts or within restorative justice programs had consistently positive findings for school engagement outcomes. This category also had an explicit focus on equity-deserving populations, including Indigenous youth, racialized children and children from low-income families. While these programs consistently demonstrate statistically significant improvements in the outcomes measured, the size of the effect and practical significance of this change is unclear. Benefits may also be limited to older youth, e.g., senior elementary or secondary students, and restorative justice programs may have the most benefit for youth who are at risk of entering the judicial system. The certainty of evidence is low (GRADE); findings may change as new evidence becomes available.
- Interventions that focused on mental health had mixed findings. Studies demonstrated a
  positive effect on school engagement for family-focused interventions, but findings were
  mixed for interventions that embedded mental health specialists in schools. The
  certainty of evidence is very low (GRADE); findings are likely to change as new evidence
  becomes available.
- Interventions that focused on inclusivity for 2SLGBTQI+ students or on promoting universal human rights, regardless of identity, consistently found a positive effect on school engagement outcomes. These programs are likely beneficial, but the small number of studies limits confidence in this finding. The certainty of evidence is low (GRADE); findings may change as new evidence becomes available.
- School meal programs mostly had positive effects on school attendance rates across large, high-quality studies. These programs are likely beneficial, especially when meals are universal or free and when provided to low-income students with an identified need. The certainty of evidence is low (GRADE); findings may change as new evidence becomes available.
- Within the category of **other** interventions, the effect of arts-based programs was unclear as the study did not provide robust outcome data. A health promotion program reported harmful effects on feelings of school belonging. Caution is warranted for physical activity and healthy eating programs as they have the potential to stigmatize students with perceived "unhealthy" attributes. The certainty of evidence is **very low** (GRADE); findings are likely to change as new evidence becomes available.

 The studies in this review provide very limited evidence for the experiences of populations who live with social and structural inequities, such as Indigenous or racialized communities. Findings for several interventions highlight benefits for lowincome or racialized students. However, further research is required to ensure the representation of these populations in decision making.

#### Overview of Evidence and Knowledge Gaps

- Across the 38 studies and eight systematic reviews that report on interventions that target school engagement-related outcomes, limitations in reporting findings hinder the ability to ascertain the size of effects on outcomes. Findings are often reported as comparison coefficients or changes in scores for a specific measurement scale, which are difficult to translate to real-world impact.
- Numerous measures of school engagement were reported in included studies, such as
  observation, attendance, interviews, and surveys that measure school climate and
  feelings of belonging. These measures are likely indicators of the broader concept of
  school engagement, but the indirectness of these measures may contribute to
  underestimating the effect of intervention on school engagement.
- The eight included systematic reviews were largely low-quality due to issues with reporting study selection processes, lists of included studies and poorly reported or absent ratings of the quality of included studies. Syntheses were primarily descriptive, with unclear statistical and practical significance of findings.
- Only two studies included caregivers as recipients for an intervention component. These
  included a mental health intervention that provided educational sessions to caregivers
  on topics such as trauma and positive parenting and a health promotion intervention
  that provided caregivers with an app for information on packing healthy school lunches.
  The limited evidence does not support this review in determining the effectiveness of
  caregiver engagement.
- Details regarding implementation were often limited in studies. However, implementation details may be available online through program-run websites for many programs evaluated in these studies, such as the Positive Behavioral Intervention and Supports (PBIS) program.
- For organizations looking to implement some of the programs described in these studies, there may be important feasibility considerations, as many of the actions needed to implement the programs were taken by a combination of school and research staff, with the support of research funding. For example, in some studies, schools were provided with embedded mental health professionals, which may be cost-prohibitive in many jurisdictions.

## Methods

A description of the development of the NCCMT's Rapid Evidence Service, including an overview of the rapid review process and rationale for methodological decisions, has been published (<u>Neil-Sztramko *et al.* 2021</u>).

#### **Research Question**

This rapid review addresses the following research question(s), developed in collaboration with public health decision makers:

# What is the effect of school-based strategies or interventions that promote elementary and secondary student and caregiver engagement?

#### Search

An information specialist was involved in developing and conducting the search.

On June 26, 2024, the following databases were searched using key terms, including: "schools", "students or caregivers", "engagement", and "interventions":

- <u>MEDLINE</u>
- PsycINFO
- <u>ERIC</u>

A copy of the full search strategy is available in <u>Appendix 1</u>.

A subject matter expert from McMaster University with expertise in child and youth health was also consulted to confirm study inclusion/exclusion criteria.

### **Study Selection Criteria**

A proportion of results (10%) were first screened in duplicate to confirm reviewer agreement; disagreements were resolved through consensus or consulting with a third reviewer. The remaining results were screened by a single reviewer.

The search results were first screened for recent syntheses. Single studies that were included and reported in available syntheses were excluded from this review. When available, findings from syntheses are presented first, as these consider the available body of evidence and, therefore, can be applied broadly to populations and settings.

English-language, peer-reviewed sources and sources published ahead of print before peer review were included.

	Inclusion Criteria	Exclusion Criteria
Population	Elementary and secondary	Preschool
	school students and their	Higher education or university/college
	caregivers	Studies that only include students with disorders,
		learning disabilities or medical conditions (e.g.,
		ADHD, learning disabilities, autism, diabetes)
Intervention	School-based strategies or	Interventions or strategies targeting specific
	interventions to promote	individuals (i.e., not at the school or grade level)
	engagement, or school board	Classroom management techniques
	policies to promote engagement	Learning technologies
	applied at the school or school	Pedagogical approaches
	board level	Government policies
		Interventions only implemented/tested on less
		than 30 individuals or a single classroom
		After-school programs
		Programs specifically for new immigrants or
-		newcomers
Comparator	Any comparator, including	
	before-and-after intervention or	
	non-randomized controls or no	
0.1		
Outcome	Quantitative or qualitative	Engagement in virtual platforms
	measures of:	Academic achievement
	Student engagement	Physical safety
	Student engagement:	Disruptive behaviour, concentration
	attendance, participation in	bisiuptive behaviour (problem behaviour,
	extra-curriculars, school dropout	disruptions)
	Socio-emotional engagement	Suspension
	e a positive/negative reactions	
	to school, relationships with	
	teachers/peers, feelings of	
	belonging/connectedness,	
	feelings of safety	
	Cognitive engagement, e.g., self-	
	regulated learning, perceived	
	relevance of schoolwork,	
	Caregiver engagement:	
	Attendance at school events.	
	participation in parent councils,	
	support for school messaging at	
	home, time spent with children	
Setting	High-income countries	Low-income countries
_		Focus on COVID-19 pandemic
Time	Last 10 years	

#### Data Extraction and Synthesis

Data relevant to the research question, including study design, setting, location, population characteristics, interventions or exposures, and outcomes, when reported in the included studies, were extracted by one reviewer and verified by a second. Information on the social determinants of health (based on the PROGRESS-Plus framework) was extracted where reported (<u>O'Neill *et al.* 2014</u>). Interventions were categorized according to common intervention types. These categories were identified by reviewing included syntheses and studies, and categories were generated inductively. Two syntheses and two single studies reported on interventions with common elements belonging to two categories. Findings were disaggregated across categories prior to analysis. The results were synthesized narratively due to the variation in methodology and outcomes for the included studies.

A subject matter expert from McMaster University reviewed and provided feedback on the synthesized results; these considerations were incorporated into the final review.

#### Public Partner Engagement in the Review Process

Two public partners involved in public health school health teams and the COMPASS research system at the University of Waterloo's School of Public Health Sciences agreed to participate in this rapid review.

The public partners were engaged in question development, provided feedback on the initial draft, and approved the final report. Their feedback was incorporated into the Executive Summary.

#### Appraisal of Evidence Quality and Certainty

The quality of included evidence was evaluated using critical appraisal tools, as indicated by the study design below. Quality assessment was completed in duplicate by two independent reviewers; conflicts were resolved through discussion or by a third reviewer.

Critical Appraisal Tool
Assessing the Methodological Quality of Systematic Reviews (AMSTAR) 2 Tool
JBI <u>Checklist for Case Control Studies</u>
JBI <u>Checklist for Cohort Studies</u>
JBI <u>Checklist for Qualitative Research</u>
JBI <u>Checklist for Quasi-Experimental Studies</u>
JBI <u>Checklist for Randomized Controlled Trials</u>
Mixed Methods Appraisal Tool (MMAT)

Completed quality assessments for each included study are available on request.

The Grading of Recommendations, Assessment, Development, and Evaluations (<u>GRADE</u>) (<u>Schünemann *et al.* 2013</u>) approach was used to assess the **certainty of the findings** in **quantitative research** based on eight key domains.

In the GRADE approach to quality of evidence, **non-randomized studies** provide **low-quality** evidence, and this assessment can be further reduced based on the following:

- High risk of bias
- Inconsistency in effects
- Indirectness of interventions/outcomes
- Imprecision in effect estimate
- Publication bias

and can be upgraded based on:

- Large effect
- Dose-response relationship
- Accounting for confounding.

The overall certainty in the evidence for each outcome was determined, considering the characteristics of the available evidence (observational studies, some not peer-reviewed, unaccounted-for potential confounding factors, different tests and testing protocols, lack of valid comparison groups). A judgement of 'overall certainty is very low' means that the findings are very likely to change as more evidence accumulates.

In addition to considering the quality and certainty of the included evidence, the findings from this rapid review should be interpreted in the context of the methodological restrictions inherent in a rapid review process (<u>Garritty *et al.*</u>, 2024</u>). For example, limited database searching, single reviewer screening, and data extraction may introduce potential bias or result in studies being missed.

## **Findings**

#### Summary of Evidence Certainty

This rapid review included eight completed syntheses and 38 single studies for a total of 46 publications. The certainty of the key findings included in this review is as follows:

# What is the effect of school-based strategies or interventions that promote elementary and secondary student and caregiver engagement?

Key Finding	Evidence included		GRADE assessment of	
	Study design	n*	certainty in the evidence	
<b>Socio-emotional learning</b> programs and <b>behavioural</b> interventions had mixed findings.	Syntheses Single studies	7 16	⊕OOO VERY LOW <sup>1</sup>	
Interventions involving students in <b>leadership</b> <b>roles</b> , either in academic/recreational contexts or within <b>restorative justice programs</b> , had consistently positive findings for school engagement outcomes.	Syntheses Single studies	1 9	⊕⊕⊖⊖ LOW²	
Interventions that focused on <b>mental health</b> had mixed findings. Studies demonstrated a positive effect on school engagement for family-focused interventions, but findings were mixed for interventions that embedded mental health specialists in schools.	Syntheses Single studies	0 3	⊕OOO VERY LOW <sup>1</sup>	
Interventions that focused on <b>inclusivity</b> for LGBT+ students or on promotion of universal human rights, regardless of identity, consistently found a positive effect on outcomes related to school engagement.	Syntheses Single studies	0 3	⊕⊕⊖⊖ LOW²	
<b>School meal</b> programs saw mostly positive effects on school attendance rates across large, high- quality studies. These programs are likely beneficial, especially when meals are universal or free, and when provided to low-income students where there is an identified need.	Syntheses Single studies	0 6	⊕⊕⊖⊖ LOW²	
Within the category of <b>other</b> interventions, the effect of arts-based programs was unclear as the study did nor provide robust outcome data. A health promotion program reported harmful effects on feelings of school belonging.	Syntheses Single studies	0 2	⊕⊕⊖⊖ LOW <sup>2</sup>	

\*Values exceed the total number of publications (n=46) as some publications contributed to multiple key findings.

<sup>1</sup> In the GRADE approach to certainty of evidence, non-randomized studies, as included in this review, provide low certainty evidence; this was downgraded to very low due to inconsistency.

<sup>2</sup> In the GRADE approach to certainty of evidence, non-randomized studies, as included in this review, provide low certainty evidence.

#### Socio-Emotional Learning Programs

Seven syntheses (**Table 1a**) and 11 single studies (**Table 1b**) evaluated socio-emotional learning programs, a broad label for programs that build individual capacity for emotional regulation, prosocial skills, conflict resolution, and promotion of connectedness and belonging.

The seven syntheses included interventions for various grade levels, school types and countries. Single studies were primarily conducted in public schools, except for one international boarding school. Studies originated in the USA (n=6), Europe (n=4) and Canada (n=1). Interventions were conducted for entire schools, most in elementary schools (n=9), of which four included senior elementary students; only two were conducted in secondary schools. Most studies, including those represented in syntheses, were quasi-experimental in design.

Interventions included mostly teacher-led activities designed to build socio-emotional skills. Teachers were provided with training to support the delivery of these activities. Studies varied in their reporting of the frequency of activities, e.g., daily, weekly or monthly, which may contribute to heterogeneity in study findings. Most interventions were implemented for one academic year before evaluation. Some interventions evaluated after several months showed no effect, possibly due to the shorter duration.

Studies varied significantly in how they measured impact. Outcomes were all related to school engagement but included various indicators such as socioemotional skills, feelings of belonging, feelings of safety, and ratings of school climate.

Overall, syntheses presented positive findings, particularly for school climate and studentteacher relationships. However, due to the low-quality reporting of synthesis methods and the statistical significance of findings, confidence in these findings is low. Across studies, findings were mixed, with the largest apparent impact on feelings of school belonging. While many studies demonstrated at least some effect of the intervention, the high heterogeneity between interventions limits the ability to determine whether different intervention components led to greater success.

One study specifically targeted its intervention for students from low-income households, implementing recess coaches to coordinate group recreational activities. This study did report positive effects on school climate but did not report the size of this effect or if it was statistically significant.

While many syntheses and studies report positive findings, these may be overstated as many did not report meaningful effect sizes or whether the findings were statistically significant. While these interventions may be promising, it is recommended that study contexts be evaluated for similarity to the local context and that the feasibility of teacher-led interventions be assessed before implementation.

# Table 1a: Syntheses of Socio-emotional Learning Programs

Reference	Date range	Included studies	Population	Setting	Interventions	Outcome	Summary of findings	Quality of	Quality of
	of studies							single studies	synthesis
<u>Cipriano <i>et</i></u> <u><i>al.</i> 2023</u>	2008-2020	43 experimental studies of social- emotional learning interventions that reported outcomes for school climate	Number of students in pooled analysis NR Grades K-12	Number of schools in pooled analysis NR Elementary and secondary schools of any type, in any country	Universal school- based interventions targeting one or more intrapersonal and interpersonal socio-emotional skills.	School climate & safety	Of the 43 studies that reported on school climate, pooled data show a moderate mean effect size for socio- emotional learning interventions on school climate (0.293; 95%CI=0.198, 0.388).	NR	Moderate
<u>Allen <i>et al.</i></u> 2022	2005-2021	22 experimental studies of social- emotional learning interventions that reported outcomes for school belonging	n=13,384 students Grades 7-12; ages 12-18	n=159 schools Senior elementary and secondary schools of any type, in any country	Universal school- based interventions targeting one or more intrapersonal and interpersonal socio-emotional skills.	School belonging	Of the 22 included studies, 14 reported effect statistically significant effect sizes for socio-emotional learning interventions on school belonging ranging from small (0.13) to large (0.85) (all p<0.05). The review did not pool study findings.	NR	Low
<u>Eklund <i>et</i></u> <u>al. 2022</u>	2000-2018	4 experimental studies of socio- emotional interventions that reported outcomes for attendance	n=50,925 students Grades: K-12	Number of schools in analysis NR Elementary and secondary schools of any type, in Australia, Canada, United Kingdom, and United States	School-based interventions to reduce chronic absenteeism, including • behavioural (attendance contracts, individual or group counselling, social- emotional learning; n=4) • academic (skill instruction and/or support; n=4) • family-school partnerships (n=5)	Chronic absenteeism rates	There was a moderate effect size for socio-emotional interventions (0.25; 95%Cl=0.04, 0.45) and no significant effect for family-school partnerships (0.09; 95%Cl=-0.03, 0.21).	8 high, 8 moderate, 6 low	Low

<u>Smith <i>et</i></u> <u>al. 2022</u>	2001-2019	23 experimental studies of family- school engagement interventions that reported on parent- teacher relationships	Number of students, caregivers and teachers in pooled analysis NR Grades: preschool-12 Caregivers: 85% female Teachers: 93% female, 85% white; 15% NR	Number of schools in analysis NR 73% Elementary, 9% senior elementary, and 13% pre-schools of any type, in any country	Family-school engagement interventions including parent- teacher meetings, teacher training, family corners for parent-teacher interactions, parent training, home visits, workshops).	Parent– teacher relationships	There was a moderate pooled effect size on parent-teacher relationships (0.23; 95%Cl=0.06, 0.37). This effect was larger when students had externalizing concerns (0.31; 95%Cl=0.02, 0.46). There was no difference in effect size by child age, race/ethnicity or urban vs. rural settings. There was a moderate pooled effect size on parent-teacher communication (0.34; 95%Cl=0.13, 0.55). There was a moderate pooled effect size on parent-teacher mutual understanding and trust (0.25; 95%Cl=0.06, 0.36).	NR	Low
Charlton <i>et</i> al. 2021	1989-2019	8 experimental studies of social- emotional learning interventions that reported outcomes for school climate	Number of students in pooled analysis NR Grades: K-8	n=1096 schools 69% Elementary, 27% middle, 4% mixed schools, in any country	Universal school- based interventions targeting one or more intrapersonal and interpersonal socio-emotional skills.	School climate, defined as engagement, safety and environment	There was a moderate pooled effect size of interventions focused on social and emotional skills (0.48, 95%Cl=0.17, 0.79).	14 high (remaining NR)	Low
Kincade <i>et</i> <u>al. 2020</u>	2007-2018	21 experimental studies of pro-social learning interventions that reported outcomes for student-teacher relationships	n=6944 students Grades: preschool-8	Number of schools in analysis NR Elementary (n=10 studies), senior elementary (n=1 study) and preschools (n=10 studies) of any type, in any country	Universal class- based programs that include direct and indirect practices, and proactive, teaching or consequent practices.	Student- teacher relationships	There was a moderate pooled effect size of student-teacher relationships (0.26, SE=0.03, p-value NR).	NR	Low

<u>Voight <i>et</i></u>	2000-2016	66 experimental,	Number of	Number of	Universal school-	Safety;	Of the 14 studies that reported on	NR	Low
<u>al. 2016</u>		observational and	students in	schools in	based interventions	participation	safety outcomes, effect sizes ranged		
		qualitative studies of	analysis NR	analysis NR	targeting one or	and	from small (0.04) to moderate (0.62)		
		social-emotional			more intrapersonal	attendance;	(p-values NR).		
		learning	Grades: 5-12	Senior	and interpersonal	relationships			
		interventions that		elementary and	socio-emotional	and school	Of the 9 studies that reported on		
		reported outcomes		high schools of	skills.	belonging	participation and attendance		
		for school climate		any type, in any			outcomes, effect sizes ranged from		
		(number of each		country			small (0.08) to large (0.90) (p-values		
		study type NR)					NR).		
							Of the 20 studies that reported on		
							relationship and belonging outcomes,		
							effect sizes ranged from small (0.03)		
							to large (2.82) (p-values NR).		
							The review did not pool study		
							findings.		

## Table 1b: Single Studies of Socio-Emotional Learning Programs

Reference	Study design	Participants and setting	Intervention	Implementation details and duration of intervention	Outcome (measurement tool)	Findings	Quality rating
<u>Al-Jbouri</u> <u>et al. 2023</u>	Randomized controlled trial	<ul> <li>n=183 students</li> <li>Grades: K-8</li> <li>Ages: 4-14</li> <li>% Female: 48%</li> <li>SES: NR</li> <li>Ethnicity: NR</li> <li>n=19 public Catholic elementary school boards, Canada (number of schools NR)</li> </ul>	Faith and Wellness: A Daily Mental Health Resource	The Faith and Wellness website provides teachers with a database of daily 5–15-minute activities focused on stress management and coping, identification and management of emotions, positive motivation and perseverance, healthy relationship skills, self- awareness and sense of identity, and executive functioning.	Classroom climate (teacher-reported survey 5- point Likert survey); school motivation and engagement (student- reported 5-point Likert surveys)	Compared to schools that did not receive the intervention, there were no significant differences between the program and measured outcomes.	Moderate
Coldborg	Quesi	n 620 students	Dutch Desitive	Duration: 2 months	Student wellbeing (KIND)	Compound to appeals that did not	lliab
<u>Goldberg</u> <u>et al. 2022</u>	experimental	<ul> <li>Grades: 1-8</li> <li>Ages: 4-12</li> <li>% Female: 50%</li> <li>SES: NR</li> <li>Ethnicity: NR</li> <li>n=4 elementary schools, Netherlands</li> </ul>	Education Programme	<ul> <li>School teams identity shared values (e.g., kindness, respect, safety, etc.). Teachers implement activities and policies based on these values.</li> <li>Teachers receive two workshops focused on promoting children's wellbeing and teaching values. Program staff visit schools monthly to support implementation.</li> <li>Duration: 1 year</li> </ul>	R student weilbeing (KINDL- R student-reported survey); social-emotional and behavioural function (Strengths and Difficulties Questionnaire), student- teacher relationships, student engagement (blinded observer)	receive the intervention, there were no significant improvements in measured outcomes.	Hign

<u>McDaniel</u> <u>et al. 2022</u>	Quasi- experimental (single group pre-post test)	n=537 students Grades: K-5 Ages: NR % Female: NR SES: 35% low-income Ethnicity: 65% white n=1 elementary school, United States	Open Circle Social and Emotional Learning curriculum	Teacher-led sessions focused on emotional management skill to promote empathy, positive relationships, and problem solving. Teachers receive one day of training and grade-specific resources to support implementation. Duration: 1 year	Social skills (teacher-rated Social and Emotional Learning Class Assessment); school climate (Inventory of School Climate), attendance	<ul> <li>Compared to scores prior to the intervention,</li> <li>Increased scores for cooperative behaviours, prosocial skills, and strategies for emotional/behavioural regulation (effect size NR; p&lt;0.001).</li> <li>Increased scores for school climate (91.21 to 96.75 post-intervention, statistical significance NR)</li> <li>Reduced chronic absenteeism (23% to 6%, statistical significance NR)</li> </ul>	High
<u>Rosen <i>et</i></u> <u>al. 2022</u>	Quasi- experimental	<ul> <li>n=4699 students</li> <li>Grade: 9</li> <li>Ages: NR</li> <li>% Female: 47-50%</li> <li>SES: NR</li> <li>Ethnicity: 40-90% non-white</li> <li>n=11 public high schools, United States</li> </ul>	Personalization for Academic and Social Emotional Learning	<ul> <li>Teachers and staff implement five new routines:</li> <li>1. Routine check-ins with students</li> <li>2. Goal setting with students</li> <li>3. Student progress tracking</li> <li>4. Regular educator meetings to discuss student progress</li> <li>5. Culture of personalization</li> <li>Duration: 1 year</li> </ul>	Teacher-student relationships (Teacher- Student Relationships subscale of Student Engagement Instrument); student self-regulated learning (Self-Efficacy for Self-Regulated Learning scale)	Compared to schools that did not receive the intervention, there were no significant increases in measured outcomes.	High
<u>Vincent <i>et</i></u> <u>al. 2022</u>	Quasi- experimental (single group pre-post test)	<ul> <li>n=600 students</li> <li>Grades: 9-12</li> <li>Ages: NR</li> <li>% Female: 49-70%</li> <li>SES: NR</li> <li>Ethnicity: 54-64% white</li> <li>n=4 high schools, United States</li> </ul>	Student Ownership, Accountability, and Responsibility for School Safety (SOARS)	<ul> <li>Four components:</li> <li>App/website for students to report peer behaviour</li> <li>Everyday Restorative Practices curriculum, focused on kindness</li> <li>Information briefs for teachers and parents</li> <li>Resources for a school-wide safety campaign</li> <li>Duration: 1 year</li> </ul>	Anti-social behaviours (Peer Experience Questionnaire); personal safety (Safe School Survey)	<ul> <li>Compared to scores prior to the intervention,</li> <li>Increased scores for students' connection to peers and staff (0.23; p=0.009)</li> <li>Increased scores for personal safety (0.15; p=0.003)</li> <li>Decreased levels of disruption (-0.13, p=0.21)</li> </ul>	High

<u>Borman <i>et</i></u> <u>al. 2019</u>	Randomized controlled trial	<ul> <li>n=1304 students</li> <li>Grade: 6</li> <li>Ages: NR</li> <li>% Female: 49%</li> <li>SES: NR</li> <li>Ethnicity: 44% ethnic minority</li> <li>Public senior elementary schools (number NR), United States</li> </ul>	Transition Program to support transition to middle school	Teacher-led reading and writing exercise helps students frame thinking about belonging and "fitting in" to support the transition to middle school. Teachers received activity materials. Duration: 1 year	Social and emotional wellbeing	<ul> <li>Compared to students who did not receive the intervention,</li> <li>Increased ratings of school trust (p&lt;0.001)</li> <li>Increased feelings of social belonging (p=0.001)</li> <li>Increased identification with school (p=0.006)</li> </ul>	Moderate
<u>Carney <i>et</i></u> <u>al. 2019</u>	Quasi- experimental	<ul> <li>n=207 students</li> <li>Grades: 3-6</li> <li>Ages: NR</li> <li>% Female: 39%</li> <li>SES: NR</li> <li>Ethnicity: 15% ethnic minority</li> <li>n=2 elementary schools, United States</li> </ul>	Project Team™ Whole School Prevention Program	Whole-school promotion of prosocial behaviours through posters, newsletters, assemblies. Duration: 2 years	School connectedness (CAYCI School Experience survey)	Compared to students who did not receive the intervention, there were no significant improvements in measured outcomes.	High
Dunleavy <u>et al. 2019</u>	Quasi- experimental (single group pre-post test)	<ul> <li>n=55 students</li> <li>Grades: 4-5</li> <li>Ages: 9-11</li> <li>% Female: 42-55%</li> <li>SES: NR</li> <li>Ethnicity: NR, students represent 30 nationalities</li> <li>One international elementary school, France</li> </ul>	Adapted "Quality world pictures activity"	Teacher-led activities that promote finding and discussing shared values. Duration: NR	Feeling of belonging (Psychological Sense of School Membership measure)	Compared to pre-intervention, scores for feelings of belonging increased (82 to 85; p<0.002). Scores in the control group did not change.	High

Garcia Bacete <i>et</i> <u>al. 2019</u>	Quasi- experimental	n=413 students Grade: 1 Ages: mean 6 years % Female: 50-53% SES: NR Ethnicity: NR n=4 public elementary classrooms, Spain	Intervention focused on peer relationships	Teacher-led curriculum focused on social-emotional learning, kindness for those who are different. Teachers received several 90- or 120-minute orientation sessions with research team, and biweekly 1-hour consults. Duration: 9-18 weeks	Student-teacher relationships (Teacher Interaction for Early Primary survey); social acceptance (Pictorial Scale of Perceived Competence and Social Acceptance for Young Children)	Compared to students who did not receive the intervention, there was no improvements in student ratings of teacher warmth. Compared to children who did not receive the intervention, participants rated self-perceptions of peer acceptance higher (value NR, p<0.01).	High
<u>Elfrink <i>et</i></u> <u>al. 2017</u>	Mixed methods	<ul> <li>n=2510 students</li> <li>Grades: 1-8</li> <li>Ages: 4-12</li> <li>% Female: NR</li> <li>SES: NR</li> <li>Ethnicity: NR</li> <li>n=2 elementary schools, Netherlands</li> </ul>	Positief Educatief Programma (Positive Education Programme)	Teachers assess children's engagement and wellbeing, and intervene when ratings fall below set thresholds. Schools were provided with training workshops to enhance teacher skills to promote engagement and wellbeing, and resources to implement strategies to meet students' needs. Duration: 1 year	Student wellbeing in school (KINDL-R questionnaire); school climate (PSE questionnaire)	<ul> <li>Compared to prior to the intervention,</li> <li>Students in grades 1-3 rated well- being higher (large effect size, p=0.00)</li> <li>Students in grades 4-8 rated well- being higher (small-medium effect size, p=0.01)</li> <li>Parents rated school climate more positively (large effect size, p=0.00)</li> </ul>	High
London <i>et</i> <i>al.</i> 2015	Quasi- experimental	n=21 teachers Grades: 1-5 Ages: NR % Female: 45-49% SES: low-income Ethnicity: 52-84% Hispanic n=6 public elementary schools, United States	Playworks recess program Target: schools with low-income students	Recess coaches placed at schools to implement recess games and introduce conflict resolution tools. Coaches train junior student coaches to lead games and help conflict resolution for younger students. Duration: 1 year	School climate (interviews)	Compared to schools that did not implement the intervention, • greater inclusivity in group activities • decreased conflict • improved school climate with increased physical and emotional safety (all effect sizes NR, statistical significance NR)	Moderate

#### **Behavioural Interventions**

Two syntheses (**Table 2a**) and six single studies (**Table 2b**) evaluated behavioural interventions, which are structured reactions to students' behaviours, such as rewards for positive behaviours.

The two syntheses included studies conducted at various grade levels, but single studies were conducted mostly in senior elementary and secondary schools; only one study included elementary schools. Syntheses focused on studies from the USA, Canada, Australia and the UK, while single studies were conducted mostly in the USA (n=5) and one in France. Most studies, including those represented in syntheses, were quasi-experimental in design and of high quality. There was also one moderate-quality case control and one moderate-quality qualitative study.

One of the syntheses and nearly all single studies (n=5) evaluated the <u>Positive Behavioural</u> <u>Interventions and Supports (PBIS) framework</u>. This framework establishes school-wide expectations for behaviour and then encourages and acknowledges desired behaviours. It also addresses unwanted behaviours in a structured manner. The program provides additional tiers of support for students with additional needs. Evidence from the synthesis and single studies found that PBIS contributed to improved teacher-student relationships, improved school climate, and reduced dropout rates. While improvements were shown, it is difficult to determine the size of the effects due to limitations in reporting outcomes.

Another synthesis (n = 14 studies) focused on additional behavioural interventions, such as attendance contracts or behavioural counselling, and a single study evaluated the effect of reinforcing pro-social behaviour through a rewards system. While the synthesis found positive effects on school climate, the single study found no differences between intervention and control groups.

Studies varied significantly in how they measured impact. Outcomes were all related to school engagement but included various indicators such as socioemotional skills, feelings of belonging, feelings of safety, and ratings of school climate.

One study of the PBIS framework specifically targeted schools with mostly Black students, and another implemented the framework in schools with higher-than-average dropout rates. Both studies found positive findings, which may indicate a benefit for higher-needs schools.

Overall, the PBIS framework is likely beneficial but given limitations in reporting of findings, the size of the effect on outcomes is unclear. For other behavioural interventions, there is not enough evidence to conclude whether there is an effect on outcomes related to school engagement.

## Table 2a: Syntheses of Behavioural Interventions

Reference	Date range of	Included studies	Population	Setting	Interventions	Outcome	Summary of findings	Quality of	Quality of
<u>Charlton <i>et</i></u> <u>al. 2021</u>	1989-2019	6 experimental studies of social- emotional learning and behavioural interventions that reported outcomes for school climate	Number of students in pooled analysis NR Grades: K-8	n=1096 schools Elementary (69%), middle (27%), mixed (4%) schools, in any country	School-wide PBIS program.	School climate, defined as engagement, safety and environment	There was a moderate pooled effect size of positive behavioural interventions and supports (0.61, 95%Cl=0.39, 0.83).	2 high, 4 moderate	Low
<u>Eklund <i>et</i></u> <u>al. 2022</u>	2000-2018	14 experimental studies of behavioural interventions that reported outcomes for attendance	n=50,925 students Grades: K-12	Number of schools in analysis NR Elementary and secondary schools of any type, in Australia, Canada, United Kingdom, and United States	<ul> <li>School-based interventions to reduce chronic absenteeism, including</li> <li>behavioural (attendance contracts, individual or group counselling, social- emotional learning; n=4)</li> <li>academic (skill instruction and/or support; n=4)</li> <li>family-school partnerships (n=5)</li> </ul>	Chronic absenteeism rates	There was a moderate pooled effect size for attendance for behavioural interventions (0.26; 95%Cl=0.14, 0.38).	8 high, 8 moderate, 6 low	Low

## Table 2b: Single Studies of Behavioural Interventions

Reference	Study design	Participants and setting	Intervention	Implementation details and	Outcome	Findings	Quality
				duration of intervention	(measurement tool)		rating
<u>Kubiszewski</u> <u>et al. 2023</u>	Quasi- experimental	<ul> <li>n=6765</li> <li>Grades: 6-9</li> <li>Age: mean 12.3</li> <li>% Female: 51%</li> <li>SES: 24-68% low-income</li> <li>Ethnicity: NR</li> <li>n=21 public middle schools, France</li> </ul>	School-wide PBIS program	PBIS focuses on communicating, promoting and rewarding expected behaviours. A leadership team meets regularly to monitor data related to progress and program fidelity. Duration: 3 years	Feelings of belonging, peer relationships, and teacher-student relationships (Socio- Educational Environment Questionnaire)	Compared to schools that did not receive the intervention, there were no significant improvements in feelings of belonging or peer relationships. Compared to schools who did not implement the program, there were positive effects on teacher-student relationships (effect size, p<0.05).	High
<u>Lawrence <i>et</i></u> <u>al. 2022</u>	Qualitative	<ul> <li>n=12 school staff</li> <li>Grades: middle and high school</li> <li>Ages: NR</li> <li>% Female: NR</li> <li>SES: 60% low-income</li> <li>Ethnicity: 38% Black, 15% Hispanic</li> <li>n=3 public middle and high schools, United States</li> </ul>	School-wide PBIS program	PBIS focuses on communicating, promoting and rewarding expected behaviours. A leadership team meets regularly to monitor data related to progress and program fidelity. Duration: NR	School climate (semi- structured interviews, focus groups, writing prompt responses)	Based on interviews and written responses, school staff felt the program had a positive impact on school climate, where the school felt more friendly, welcoming and motivating.	Moderate
<u>McIntosh <i>et</i></u> <u>al. 2021</u>	Quasi- experimental	<ul> <li>n=mean 494 students per school</li> <li>Grades: K-12</li> <li>Ages: NR</li> <li>% Female: NR</li> <li>SES: 73% low income</li> <li>Ethnicity: 86% Black</li> <li>n=25 public elementary, middle and high schools, United States</li> </ul>	School-wide PBIS program Target: Black students	PBIS focuses on communicating, promoting and rewarding expected behaviours. A leadership team meets regularly to monitor data related to progress and program fidelity. Duration: 2 years	School climate (School Climate Index)	Compared to other low- performing schools that did not receive the intervention, there was a greater improvement school climate (effect size NR; p<0.001)	High

<u>Molina <i>et al.</i></u> 2020	Case-control	n=~3800 students Grade: NR Age: NR %Female: NR SES: NR Ethnicity: NR n=6 public middle schools, United States	School-wide PBIS program	PBIS focuses on communicating, promoting and rewarding expected behaviours. A leadership team meets regularly to monitor data related to progress and program fidelity. Duration: NR	Attendance	Compared to schools that did not receive the intervention, there were no improvements in attendance.	Moderate
<u>Malloy <i>et al.</i></u> 2018	Quasi- experimental	<ul> <li>n=~11,000 students (570-610 per year)</li> <li>Grades: 9-12</li> <li>Ages: NR</li> <li>% Female: NR</li> <li>SES: lower than state average</li> <li>Ethnicity: 91% white</li> <li>n=1 public high school, United States</li> </ul>	School-wide PBIS program Targets: Schools with above-average rates of student drop-out	PBIS focuses on communicating, promoting and rewarding expected behaviours. A leadership team meets regularly to monitor data related to progress and program fidelity. Duration: 5 years	School drop out rates	The rate dropped from 2.8% at baseline to 0.88% in the final year of implementation (statistical significance NR).	High
<u>Carney <i>et al.</i></u> 2019	Quasi- experimental	<ul> <li>n=207 students</li> <li>Grades: 3-6</li> <li>Ages: NR</li> <li>% Female: 39%</li> <li>SES: NR</li> <li>Ethnicity: 15% ethnic minority</li> <li>n=2 elementary schools, United States</li> </ul>	Project Team™ Whole School Prevention Program	Whole-school promotion of prosocial behaviours through posters, newsletters, assemblies. A reward system implemented where students can submit tickets for positive behaviours. Duration: 2 years	School connectedness (CAYCI School Experience survey)	Compared to students who did not receive the intervention, there were no improvements in school connectedness.	High

#### Interventions Involving Student Leadership

Six studies in seven articles (**Table 3**) evaluated the effect of interventions where students take on leadership roles on school engagement outcomes. These leadership roles include peer mentorship or leading recreational or learning activities. There were no syntheses of interventions involving student leadership roles.

Studies comprised moderate and high-quality randomized controlled trials, quasi-experimental studies, and one high quality mixed methods study. Most studies were conducted in the USA (n=4), and one each was conducted in Canada and Norway. Studies mostly involved older senior elementary or secondary school students.

Overall, studies found small positive effects on school climate, feelings of belonging and peer relations. Qualitative findings report positive perceptions of the impact of student leadership programs on school climate and program participants. In one study that reported findings by race, it was found that compared to white students, racialized students had larger increases in behavioural engagement and peer relations.

Two studies focused on Indigenous youth, one study in Canada focused on Indigenous youth in Ontario, and one study in the USA focused on Alaskan Native youth. Additionally, one study focused on racialized children, and another focused on children from low-income families. This intervention category focused on equity-deserving populations, reflecting an alignment between providing leadership opportunities and promoting equity.

Interventions that provide leadership opportunities for students are likely beneficial for school engagement, evidenced by consistently positive findings across studies. However, due to limitations in reporting study findings, the size of the effect of these interventions is unclear.

Reference	Study design	Participants and setting	Intervention	Implementation details and duration of intervention	Outcome (measurement tool)	Findings	Quality rating
<u>Larsen <i>et</i></u> <u>al. 2023</u> <u>Urke <i>et al.</i> 2023</u>	Randomized controlled trial	<ul> <li>n=1508 students</li> <li>Grades: 11-12 equivalent (years 1-2 upper secondary)</li> <li>Ages: NR</li> <li>% Female: 61%</li> <li>SES: NR</li> <li>Ethnicity: mostly white</li> <li>n=16 secondary schools, Norway</li> </ul>	The Dream School Program and Mental Health School Team	Twice during the school year, older students trained as mentors implement meetings focused on school climate and develop an action plan. The Mental Health School Team were student service professionals who closely support students at risk of drop out. Duration: NR	School climate (Learning Climate Questionnaire and Caring Climate Scale); attendance	Compared to schools that did not receive the intervention, there were no improvements in measured outcomes.	Moderate
<u>Crooks <i>et</i></u> <u>al. 2015</u>	Mixed methods	n=82 students and educators • Grades: 8-12 • Ages: 14-19 • % Female: NR • SES: NR • Ethnicity: Indigenous n=15 public schools, Ontario, Canada	The Fourth R: Uniting Our Nations Target: Indigenous youth	<ol> <li>Multiple components:</li> <li>Elementary Mentoring Program: Older students mentor younger students based on the Medicine Wheel life cycles.</li> <li>Peer Mentoring Program for Secondary Students: Grade 9 students are paired with an older student mentor for lunchtime activities.</li> <li>Cultural Leadership Course</li> <li>Cultural Leadership Camp with culturally significant activities led by Elders and community leaders</li> <li>Student Advisory Committee: represent students' needs</li> </ol>	Students' sense of belonging and relationships (surveys and interviews)	Based on interviews, students felt the program helped them feel more connected to their culture at school, increased their sense of belonging and helped them develop healthy relationships.	High

## Table 3: Single Studies of Interventions Involving Student Leadership

<u>Wexler <i>et</i></u> <u>al. 2017</u>	Quasi- experimental (single group pre-post test)	n=764 students Grades: 3-12 Ages: NR % Female: 51% SES: NR Ethnicity: Native Alaskan n=10 public schools,	Youth Leaders Program Target: Alaska Native youth	Between four and 18 youth leaders are selected by an all-school vote. These leaders organize activities, assist with student issues, and help in the community. Youth leaders attend a training retreat and are advised by teachers or community members.	School climate (surveys and interviews), attendance	Compared to prior to the intervention, there were no improvements in measured outcomes. Based on interviews, participants felt the program made a positive impact on school climate.	Moderate
<u>Van Ryzin</u> <u>et al. 2020</u>	Randomized controlled	n=1890 students • Grades: 7-8	Student-led learning	Duration: 1 years A cooperative learning framework included reciprocal teaching, peer tutoring	Behavioural engagement;	Compared to prior to the intervention, there were increases in behavioural	High
	trial	<ul> <li>Ages: NR</li> <li>% Female: 47%</li> <li>SES: NR</li> <li>Ethnicity: 75% white</li> <li>n=15 senior elementary schools, United States</li> </ul>	Target: Racialized children	<ul> <li>and collaborative reading. Students are provided with teacher-led coaching.</li> <li>Teachers received three half-day training sessions, regular check-ins and resources to support activities.</li> <li>Duration: 4 years</li> </ul>	peer relations (both using subscale of Engagement vs. Disaffection with Learning Scale)	engagement and peer relations scores (effect size NR, p<0.001). Compared to white students, racialized students had larger increases in behavioural engagement and peer relations (effect size NR, p<0.001).	
Flannery et al. 2020	Randomized controlled trial	n=1588 students Grade: 9 Age: 14 % Female: 46-47% SES: NR Ethnicity: 56-63% white n=4 public high schools, United States	Freshmen Success Intervention	To support the transition to high school, program included a leadership team of grade 9 students supported by teachers, and peer support by older peer navigators. Teachers received four hours of training. Duration: 1 year	Motivation and engagement (Motivation and Engagement Scale)	Compared to students who did not receive the intervention, participants had higher scores for motivation (small effect size, p=0.002) and engagement (small effect size, p<0.001).	Moderate
<u>London <i>et</i></u> <u>al. 2015</u>	Quasi- experimental	<ul> <li>n=21 teachers</li> <li>Grades: 1-5</li> <li>Ages: NR</li> <li>% Female: 45-49%</li> <li>SES: low-income</li> <li>Ethnicity: 52-84% Hispanic</li> <li>n=6 public elementary schools, United States</li> </ul>	Playworks recess program Target: schools with low-income students	Recess coaches placed at schools to implement recess games and introduce conflict resolution tools. Coaches train junior student coaches to lead games and help conflict resolution for younger students. Duration: 1 year	School climate (interviews)	Compared to schools that did not implement the intervention, • greater inclusivity in group activities • decreased conflict • improved school climate with increased physical and emotional safety (all effect sizes NR, statistical significance NR)	Moderate

#### **Restorative Justice Programs**

The common feature of school-based restorative justice programs is the involvement of students in disciplinary responses at the school. Responses are led by teachers, but peers are engaged in decision making related to disciplinary actions.

These programs were evaluated in one synthesis (**Table 4a**) of 34 studies conducted in elementary and high schools and two single studies (**Table 4b**) of schools in urban settings. One of the interventions was specifically designed to divert first-time offenders from the judicial system.

Findings were mixed in terms of outcomes related to school engagement. The synthesis noted positive effects on attendance, school climate and student-teacher relationships based on experimental, observational and qualitative studies, but the effect sizes, statistical significance and quality of included studies were often not reported.

Of the single studies, a moderate-quality randomized controlled trial found no impact of the intervention on perceived danger or violent behaviour. The other, a high-quality mixed methods study, reported qualitative evidence of a positive impact on school climate.

Overall, there are likely benefits to restorative justice programs on school engagement, given positive findings in the large synthesis and an additional single study, but limitations in the reporting of findings within the studies limit the interpretation of the size of the effect. The benefits of these programs may be limited to older students with the maturity required to participate in these programs and may be greatest when implemented in schools where students are at the highest risk of entering the judicial system.

Reference	Date range of studies	Included studies	Population	Setting	Interventions	Outcome	Summary of findings	Quality of single studies	Quality of synthesis
<u>Lodi <i>et al.</i></u> 2021	2010-2021	<ul> <li>34 studies, including:</li> <li>12 experimental</li> <li>2 observational</li> <li>18 qualitative</li> <li>2 mixed methods</li> </ul>	n=22,383 students, teachers, staff, caregivers Grades: K-12 Ages: 6-18	n=900 schools Elementary and high schools of any type, in any country	Restorative justice and restorative practices such as restorative circles, restorative conferences, mediation, peer mediation, and conversations with external facilitators, teachers, students or researchers.	School climate & safety	There were significant positive changes to school climate associations reported with restorative practices (effect size NR; p- values NR). There were significant positive changes to relationships between peers and between students and teachers reported with restorative practices (effect size NR; p- values NR). There were significant positive changes to attendance reported with restorative practices (effect size NR; p-values NR).	NR	Low

## Table 4a: Syntheses of Restorative Justice Programs

## Table 4b: Single Studies of Restorative Justice Programs

Reference	Study design	Participants and setting	Intervention	Implementation details and duration of intervention	Outcome (measurement tool)	Findings	Quality rating
<u>Smokowski</u> <u>et al. 2018</u>	Randomized controlled trial	n=4000 students Grades: 7-12 Ages: 11-16 % Female: 50 SES: NR Ethnicity: 33% white, 26% Black, 18% American Indian, 11% Latinx, 12% mixed/other n=24 public senior elementary and high schools, United States	The Youth Court in Schools Project Target: Urban youth	Students with first-time offenses participate in Youth Court, rather than referral to juvenile justice system. In Youth Court, a teacher acts as judge and students act as prosecution and defense. Peer jurors recommend prosocial actions as reparations, e.g., community service. Upon completion, the offence is removed from the offender's school record. Students provided with 8-10 hours of Youth Court training. Duration: NR	Students' perceptions of school danger, violent behaviour (School Success Profile Plus);	Compared to schools that did not receive the intervention, there were no improvements in outcomes.	Moderate
<u>Wang <i>et al.</i></u> 2019	Mixed methods	<ul> <li>n=2510 students</li> <li>Grades: all</li> <li>Ages: NR</li> <li>% Female: NR</li> <li>SES: 70-84% low-income</li> <li>Ethnicity: majority Black</li> <li>n=4 schools (2 elementary, 1 senior elementary, 1 high school), United States</li> </ul>	Responsive Circles: a Restorative Practices strategy Target: Urban youth	Semi-structured, teacher-led sessions that respond to moderately serious conflicts. The victim, offender and peers attend the session. Teachers received 2 professional development sessions. Duration: 7 months	School climate (teacher interviews)	Most (70%) teachers believed the intervention had a positive impact on school climate.	High

#### Mental Health-focused Interventions

Three studies (**Table 5**) evaluated interventions that provided mental health-focused resources to students and/or their caregivers. There were no syntheses for this intervention category. Of the three single studies, all were rated high quality and included a quasi-experimental, mixed methods, and a qualitative study. Two studies focused on elementary students in the USA, and another also included senior elementary and secondary students in Germany.

One of the studies in the USA provided educational sessions to elementary students and caregivers belonging to mostly low-income Latinx families. This study found improved scores for peer interactions, positive school identity and qualitative reports of increased social competency.

The other two studies integrated dedicated mental health support staff in schools, either in the form of a school coach or therapists. A high-quality quasi-experimental study found improved scores for school climate following implementation, while the other, a high-quality qualitative study, reported a perceived improvement in student mental health outcomes, although a positive school climate was experienced both before and after the implementation of mental health support staff.

Both studies focused on younger, elementary-level students and found positive impacts on school climate. Overall, however, findings are mixed, and it is difficult to determine whether mental health-focused interventions improved school engagement. Another consideration is the feasibility of implementation, given the resource requirements for embedding dedicated staff in schools.

Reference	Study design	Participants and setting	Intervention	Implementation details and	Outcome	Findings	Quality
				duration of intervention	(measurement tool)		rating
Bowen <i>et al.</i> 2023	methods	<ul> <li>n=54 students, 34</li> <li>caregivers, 23 teachers</li> <li>Grades: K-5</li> <li>Ages: NR</li> <li>% Female: 49%</li> <li>SES: 95% low income</li> </ul>	he Gien Project: universal mental health program consisting of mental health and school	Classes offered to caregivers and students on issues such as mental health resources, gangs, positive parenting and trauma.	Socio-emotional assets Developmental Assets Preteen Profile); school climate (Creating a Great	intervention, scores for positive interactions with peers and positive school identity increased (effect size NR; p<0.05)	Hign
		<ul> <li>Ethnicity: 94% Latinx</li> <li>n=1 public elementary school, United States</li> </ul>	Target: low-income, Latinx population		interviews)	Based on interviews with students, the program increased feelings of school safety and social competencies.	
<u>DiGirolamo</u> <u>et al. 2021</u>	Quasi- experimental	<ul> <li>n=447 therapists, number of students NR</li> <li>Grades: 1-5</li> <li>Ages: 6-10 years</li> <li>% Female: NR</li> <li>SES: NR</li> <li>Ethnicity: NR</li> <li>n=718 public elementary and senior elementary schools, United States</li> </ul>	The Georgia Apex Program: mental health program to increase detection of behavioral health needs and access to professional help.	Therapists are integrated into school staff and develop identification and referral processes for students in need of mental health resources. School staff received education around mental health needs. Duration: 4 years	School Climate (School Climate Star Rating based on discipline metrics, safe and substance-free ratings, attendance)	Compared to schools that did not implement the program, there was a greater increase in school climate scores (effect size NR, p<0.01).	High
<u>Corrieri <i>et al.</i></u> 2014	Qualitative	<ul> <li>n=244 students</li> <li>Grades: 5-12</li> <li>Ages: NR</li> <li>% Female: NR</li> <li>SES: reported as average</li> <li>Ethnicity: NR</li> <li>n=5 public senior elementary and high schools, Germany</li> </ul>	School Coach Concept	Integration of school coaches with social work background into school staff, with roles in mediating conflicts between students, conducting lessons on topics such as bullying and mental health, and participating in class trips and events Duration: 2 years	School climate, peer relationships and student-teacher relationships (focus group interviews)	Based on interview data, school climate was rated positively both before and after program implementation. School coaches were seen as trusted adults for students.	High

# Table 5: Single Studies of Mental Health-focused Interventions

#### Inclusivity-focused Interventions

Three studies (**Table 6**) focused on interventions promoting inclusivity by specifically supporting 2SLGBTQI+ students or promoting universal human rights regardless of identity. There were no syntheses in this intervention category.

All three studies, including a randomized controlled trial, quasi-experimental, and cohort study, were rated moderate quality. One intervention was designed to promote universal human rights among younger elementary school students in Greece. The other two studies focused on older students and supported those who identified as 2SLGBTQI+. These implemented Gay-Straight Alliance meetings, and one also integrated school "safe zones" and a resiliency curriculum.

The three studies reported statistically significant positive effects of their interventions on school climate, feelings of belonging and socio-emotional assets. However, it is difficult to ascertain the size of these effects due to limits in reporting and interpretability of the outcome measures.

These interventions are likely beneficial for school climate; however, certainty is reduced by the limited number of small, moderate-quality studies.

Reference	Study design	Participants and setting	Intervention	Implementation details and duration of intervention	Outcome (measurement tool)	Findings	Quality rating
<u>Poteat <i>et</i></u> <u>al. 2024</u>	Cohort	<ul> <li>n=92 students</li> <li>Grades: 9-12</li> <li>Ages: 14-19</li> <li>% Female: more than half identified non- binary</li> <li>SES: NR</li> <li>Ethnicity: 50% racialized</li> <li>Number of NR public high schools, United States</li> </ul>	Gender- Sexuality Alliances school clubs Target: LGBTQIA+ students	Gender-Sexuality Alliances school clubs held meetings at least twice per month, providing leadership, decision- making and school event opportunities for youth. Duration: 1 year	School belonging (Psychological Sense of School Membership scale)	Compared to other times during the school year, during the days following a Gender-Sexuality Alliances school club meeting, youth reported higher scores for school belonging (value NR; p=0.01).	Moderate
<u>Stavrou <i>et</i></u> <u>al. 2024</u>	Randomized controlled trial	n=340 students Grades: 3-6 Ages: 9-12 % Female: NR SES: NR Ethnicity: NR n=7 elementary schools, Greece	Human Rights Education	Teachers led 12 activities focused on human rights, human rights violations and the protection of human rights. Duration: 4 months	Perceived importance of children's rights (Questionnaire on the Importance of Child Rights); behavioural engagement (Attentiveness and School Compliance scales); emotional engagement (School Belonging scale); school climate (School Performance Goal Structure and School Mastery Goal Structure scales); empathy (Bryant Empathy Index)	Compared to students that did not receive the intervention, scores for school belonging, school climate, emotional engagement and empathy increased after the intervention (all p<0.05).	Moderate
<u>Whidden</u> <u>et al. 2020</u>	Quasi- experimental	<ul> <li>n=360 students</li> <li>Grades: 9-12</li> <li>Ages: NR</li> <li>% Female: NR</li> <li>SES: 67% low income</li> <li>Ethnicity: NR</li> <li>n=1 public high schools, United States</li> </ul>	Gay-Straight Alliances school clubs, Safe Zones and a Resiliency Curriculum Target: LGBT+ students	Gender-Sexuality Alliances school clubs were held meetings at least twice per month. "Safe Zone" stickers were placed in general meetings areas. Resiliency curriculum was integrated into courses.	School enjoyment and overall well-being (Academic Resiliency tool)	Compared to prior to the intervention, scores increased for school enjoyment (value NR; p=0.01). Findings for overall well- being NR.	Moderate

# Table 6: Single Studies of Inclusivity-focused Interventions

#### **School Meal Programs**

Six quasi-experimental studies (**Table 7**) evaluated the effect of school meal programs on student attendance in public schools in the USA. There were no syntheses in this intervention category. Most studies (n=5) were rated high quality, while one was rated moderate quality.

Four studies evaluated universal school breakfast programs: one studied a "breakfast after the bell" program in which breakfast is provided to students who arrive too late for standard breakfast, and one compared free vs. reduced-cost breakfast.

Most studies found small increases in attendance or decreases in the number of lowattendance students (defined as those who attend <95% of school days). One study reported that students who participated in a late breakfast program had 2.5 times higher odds of attending school than those who did not.

One study only found increased attendance for the no-cost breakfast program compared to reduced-cost breakfast. In contrast, two studies found no difference in attendance after implementing universal free breakfast programs.

Three of the included studies targeted universal free breakfast programs specifically for lowincome students. Each of these found a positive effect on attendance.

Overall, school meal programs are likely beneficial for increasing school attendance, especially when meals are universal or provided at no cost. The greatest impact is likely to be in schools where there is a demonstrated need.

## Table 7: Single Studies of School Meal Programs

Reference	Study design	Participants and setting	Intervention	Implementation details and duration of intervention	Outcome and measurement tool (if	Findings	Quality rating
<u>Chandrasekhar</u> <u>et al. 2023</u>	Quasi- experimental	<ul> <li>n=30,493 students</li> <li>Grades: 5-12</li> <li>Ages: 9-19 years</li> <li>% Female: 49.53%</li> <li>SES: 85.9%         economically         disadvantaged</li> <li>Ethnicity: 68.78%         Hispanic</li> </ul> Public elementary and     secondary schools, United     States (number NR)	Breakfast After the Bell program: breakfast provided to students who arrive late, offering a "second chance" after initial breakfast provisions, such as in the school cafeteria, have ceased. Target: schools with high proportion of low- income students	A breakfast cart was made available for students access after the cafeteria has closed for the morning. Duration: 2 years	Attendance: total number of school days attended by each student	Compared to students who did not participate, students in the intervention group were more than 2.5 times more likely to attend school (aOR=2.55; 95% CI=2.23, 2.92).	High
Bullock <i>et al.</i> 2022	Quasi- experimental	<ul> <li>n≥146,000 students</li> <li>Grades: elementary and secondary</li> <li>Ages: NR</li> <li>% Female: NR</li> <li>SES: 30% qualify for free school meals based on income</li> <li>Ethnicity: 37% Black, 28% Hispanic, 25% white, 7% Asian, 3% multi-racial, 1% Native American or Pacific Islander</li> <li>n=150 public elementary and secondary schools, United States</li> </ul>	Universal free breakfast policy	Implementation details NR Duration: 1 academic year	Change in attendance from previous year; change in unexcused absences from previous year	Compared to schools that did not receive the intervention, there were no improvements in attendance rates or unexcused absences.	High

Bartfeld <i>et al.</i> 2020	Quasi- experimental	<ul> <li>n=~33,088 students</li> <li>Grades: 1-5</li> <li>Ages: NR</li> <li>% Female: NR</li> <li>SES: 74% in intervention group and 64% in control group economically disadvantaged</li> <li>Ethnicity: 58% in intervention group and 36% in control group ethnic minority</li> <li>n=145 public elementary schools, United States</li> </ul>	Community Eligibility Provision: part of the Healthy, Hunger-Free Kids Act, a national policy that offers free breakfast and lunch to all students without families having to apply for free meals. Target: schools with high proportion of low- income students	Schools provide free breakfast and lunch to all students at eligible schools. The program takes a whole-school approach and does not require families or students to enroll. Duration: 3 years	Attendance rates and low-attendance students (who attend <95% of available school days).	There was no significant effect of the intervention in the first year. In the second year, compared to schools were who eligible but did not implement the intervention, the proportion of low- attendance students reduced by 3.5% (p=0.045). For economically disadvantaged students, attendance increased by 4.2% (p=0.035).	High
Bartfeld <i>et al.</i> 2019	Quasi- experimental	Number of students NR <ul> <li>Grades: 1-5</li> <li>Ages: NR</li> <li>% Female: 49%</li> <li>SES: NR</li> <li>Ethnicity: 76-85% white</li> </ul> n=1000 public elementary schools, United States	The School Breakfast Program.	The program provides breakfast to students prior to the start of the school day. Schools chose whether to provide meals at reduced or no cost, and to provide meals in the cafeteria or the classroom. Duration: 5 years	Attendance: total number of school days attended by each student	Compared to no school breakfast program, the availability of a breakfast program resulted in no improvement in attendance. Compared to reduced cost breakfasts, free breakfasts were associated with a 0.24 percentage point increase in attendance (SE=0.11; p=0.023). There was no difference in attendance for breakfast offered in classroom vs. cafeteria.	High

Corcoran et al.	Quasi-	n=≥700,000 students	Breakfast in the	Implementation details NR.	Attendance rate: number	Compared to schools that	Moderate
<u>2016</u>	experimental	Grades: K-8	Classroom: free		of days present as a	did not receive the	
		Ages: NR	universal breakfast for	Duration: 10 years	percentage of days	intervention, there was no	
		• % Female: 49.5%	students served in the		enrolled.	improvement in attendance.	
		SES: NR	classroom				
		• Ethnicity: 45.5%					
		Hispanic 58%, 36.5%					
		Black					
		n=1050 public elementary					
		schools, United States					
Anzman-Frasca	Quasi-	Number of students NR	Breakfast in the	Implementation details NR.	Attendance rate: number	Compared to schools	High
<u>et al. 2015</u>	experimental	Grades: K-6	Classroom: free		of days present as a	without a breakfast program,	_
		Ages: NR	universal breakfast for	Duration: 10 months	percentage of days	schools with the breakfast	
		• % Female: NR	students served in the		enrolled.	program had higher	
		• SES: >80% eligible for	classroom			attendance rates (95.5% vs.	
		free/reduced meals				95.3%; p=0.004).	
		• Ethnicity: >70%	Target: low-income,				
		Hispanic	racial/ethnic minority				
			students				
		n=446 public elementary					
		schools, United States					

#### **Other Interventions**

Two studies (**Table 8**) reported interventions that did not fit in the categories described above.

A high quality quasi-experimental study reported the implementation of an arts-based program provided theatre and visual arts activities. This program saw higher attendance on days with scheduled arts activities. Arts programs may be beneficial, but the evidence is very limited and only illustrates an effect for days with a planned arts activity, rather than overall attendance, which would better indicate overall school engagement rather than engagement with the program itself.

Another high quality quasi-experimental study implemented a health promotion intervention for students and caregivers. This study found that participants were less likely to report a sense of belonging in school. As the only study in this review reporting a potential harm, caution is warranted for interventions that focus on physical activity and health eating as they have the potential to stigmatize students with what are perceived as "unhealthy" attributes. The program also implemented a phone app to provide caregivers with guidance on packing healthy school lunches, which may not account for affordability and child food preferences.

Reference	Study design	Participants and setting	Intervention	Implementation details and duration of intervention	Outcome (measurement tool)	Findings	Quality rating
Brouillette et al. 2014	Quasi- experimental	<ul> <li>n=985 students</li> <li>Grades: K-2</li> <li>Ages: NR</li> <li>% Female: NR</li> <li>SES: 75-100% low income</li> <li>Ethnicity: 87% Latinx</li> <li>n=5 public elementary schools, United States</li> </ul>	Teaching artists co-taught 27 weekly lessons (nine visual art, nine theater, nine dance) with classroom teachers. Target: low-income students	Weekly 50-minute arts lessons were led by teacher and teaching artist in teacher's own classroom. Duration: 8 months	Attendance on arts lessons days	Compared to days without an arts lesson, attendance was 0.65 percentage points higher (p<0.05).	High
<u>Stjernqvist</u> <u>et al. 2018</u>	Quasi- experimental	n=548 students Grades: 5-6 Ages: 10-12 % Female: 52-63% SES: average Ethnicity: 83-86% white n=8 elementary schools, Denmark	We Act - Together for Health program	A health committee was established in schools. Three educational programs were provided to students. Caregivers received a phone app for healthy packed lunches and a supportive Facebook group. Teachers received a training workshop. Duration: 1 year	Sense of belonging, trust and support in peers, trust and support in teachers (World Health Organization's Health Behaviour in School Children survey)	Compared to students and caregivers who did not receive the intervention, students were less likely to report a higher sense of belonging (OR=0.54; 95%CI=0.37, 0.79). Compared to schools that did not receive the intervention, there were no improvements in trust and support in peers or teachers.	High

## Table 8: Single Studies of Other Interventions

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