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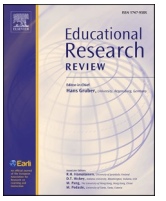

Review

A systematic review of the association between social and emotional competencies and student engagement in youth

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ABSTRACT

Student engagement (SE) is known as one of the most relevant predictors of academic achievement and completion. Social and emotional competencies (SECs) are well established as critical skills for healthy and adaptative youth development. This systematic review investigated the associations between SE and SECs in students aged 10–25 years. The review followed the PRISMA guidelines. Nine databases were searched for peer-reviewed literature published between 2004 and 2020. A total of 91 studies were selected, including 92879 youth students. Emotional engagement is the most studied dimension of student engagement and largely surpasses the number of studies that analysed the multidimensional SE concept. The number of studies in each of the five CASEL domains is uneven, with more studies focussing on self-management, self-awareness, and relationship skills, in association with SE. Overall, most studies showed that SECs are positively associated with SE and negatively associated with disengagement, with similar results for middle, high school and university students from different backgrounds, suggesting that educational institutions should implement social and emotional learning programmes to increase SE. Studies reporting age and gender differences with respect to SE showed unanimously higher SE values for girls and younger students. There is a clear need for studies that use the multidimensional SE concept, including university students and applying cross-cultural analyses.

1. Introduction

Education access is an established human universal right (UN General Assembly, 1948, p. 217) associated with decreased poverty and better health (Roy et al., 2020; Singh & Lee, 2021). However, access to education is not sufficient. Students need to be engaged to thrive academically, especially those in more vulnerable/risky contexts (Ungar et al., 2019). Strong student engagement (SE) supports youth throughout their academic trajectory and protects them in stressful situations (Fredricks et al., 2016; Wang & Eccles, 2013).

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An important moderator of academic stress appears to be the student's social and emotional competencies (SECs). Latent profiles of high school students showed that those with higher SECs were more likely to report a higher likelihood of less stress and burnout (Salmela-Aro & Upadyaya, 2020). The present systematic review aims to analyse the association between SECs and SE (as a multi-dimensional concept) in youth.

1.1. Student engagement in youth

Student engagement (SE) is a broad concept that depicts students' commitment, motivation and concentration in academic tasks and school-based extracurricular activities (Fredricks, 2015; Fredricks et al., 2004) as well as the relationship with peers and teachers (Appleton et al., 2008; Fredricks, 2015; Fredricks et al., 2004). We used the SE three-dimensional perspective in the present review, which considers emotional, behavioural and cognitive engagement (Fredricks, 2015; Fredricks et al., 2004; Furlong & Rebelez-Ernst, 2013). Emotional engagement refers to the students' emotional response towards school, learning, and the academic community (Fredricks et al., 2004), which has been related to the value attributed to education and a sense of school belongingness (Fredricks, 2015). Behavioural engagement refers to persistence and active participation in school-based activities (Fredricks et al., 2004; Furlong & Rebelez-Ernst, 2013) and students' adaptative behaviour in school (Fredricks, 2015). Finally, cognitive engagement comprises students' self-efficacy, regulatory strategies, expectations, and beliefs towards education (Fredricks et al., 2004) and their investment in the learning process (Fredricks, 2015; Fredricks & McColskey, 2012).

SE research has increased in the last years, which may be due to being amenable to change (Fredricks et al., 2016), and its apprenticeship trajectory influence (Lei et al., 2018). A meta-analysis review observed positive associations between emotional engagement and self-concept and self-efficacy and negative associations with school absence and dropout rates. Moreover, they concluded that results were similar despite grade level (i.e., middle school, high school) and socioeconomic status (Korpershoek et al., 2020). Another meta-analysis showed that overall SE had a moderately strong and positive association with academic achievement (Lei et al., 2018). Also, they concluded that the association was moderated by gender, with the association being stronger for girls, and as a function of cultural value, with effect sizes being larger for overall, emotional, and cognitive engagement amongst Eastern students, and behavioural engagement and academic achievement being higher amongst Western students (Lei et al., 2018).

Cross-cultural research studies have shown a decrease in SE in adolescence over the years, with students expressing more school-related stress (Inchley et al., 2020; Matos et al., 2020; Wang et al., 2015). In addition, students from 9th to 12th grade seem to experience SE and exhaustion simultaneously (Salmela-Aro et al., 2016), which can lead to burnout and fear of failing and, in the long term, decrease SE levels (Tuominen-Soini & Salmela-Aro, 2014).

1.2. Social and emotional competencies

Social and emotional competencies (SECs). include, but are not necessarily limited to, recognising and regulating emotions and behaviours, solving problems, making ethical and responsible decisions, and establishing caring and positive relationships with others while avoiding maladaptive behaviours (Weissberg et al., 2015). SECs tend to be facilitators of learning, predictors of resilience, promoters of prosocial behaviour, and produce pluralistic thinking (Cefai et al., 2018) - fundamental competencies which allow the individual to regulate their emotions, thoughts and behaviours in an adaptative and healthy way (Chernyshenko et al., 2018).

One of the most well-known frameworks of SECs is the CASEL (Collaborative for Academic, Social, and Emotional Learning) 5 framework (Borowski, 2019; Weissberg et al., 2015), which includes five broad and interrelated areas of competence: i) self-awareness; ii) self-management; iii) social awareness; iv) relationship skills; and v) responsible decision-making. According to this framework, changing the core five areas of competence will positively impact proximal outcomes and contexts and, consequently, lead to improvements in more distal outcomes. As such, this model advocates that SECs will directly affect school achievement and indirectly increase SE and decrease mental health difficulties (CASEL, 2003; Zins et al., 2004).

Meta-analyses of universal social and emotional learning (SEL) school-based programmes have found positive enhancement of SECs, students' attitudes toward self and others, positive social behaviour, conduct problems, emotional distress, and academic performance (Durlak et al., 2011; Sklad et al., 2012; Wigelsworth et al., 2016). Long-term outcomes also seem to be positive, such as higher well-being and academic performance and lower emotional distress and drug use (Taylor et al., 2017).

Beyond its impact at the individual levels, SEL also seemed to have a meaningful impact on classroom climate, promoting a positive school culture and adequate conditions for learning, involving care, cooperation, cultural responsiveness, and safety (Panayiotou et al., 2019), which in turn seems to affect SE engagement (Acosta et al., 2019).

1.3. The present study

Previous reviews started to unveil the relationship between SECs and SE. As the meta-analysis of Allen et al. (2018) outlined, school belonging can be fostered by academic motivation and emotional stability, parental, peer, and teacher support, gender, race and ethnicity, extracurricular activities, and environmental/school safety. The authors have also identified some relevant factors, such as personal demographic characteristics (i.e., age and gender), self-efficacy, coping skills, hope and ability to make friends. Another review by Korpershoek et al. (2020) provided information on school belonging, self-awareness, and management outcomes. However, they did not analyse students' social awareness, social management competencies, and responsible decision-making, as we will do in the present study. We aim to deepen the search under the umbrella of the SECs concept and identify the competencies that can be improved and promoted following the CASEL 5 framework, instead of relying solely on individuals' predetermined dispositional

intrinsic characteristics.

Additionally, we will consider the Fredricks et al. (2004) multidimensional proposal to evaluate SE instead of only addressing the emotional dimension, as in previous work (Allen et al., 2018; Korpershoek et al., 2020). The emotional engagement dimension and its synonyms will be coded as one, as done previously by Korpershoek et al. (2020). We will also analyse students' disengagement. For some, engagement and disengagement are assumed and assessed as opposing concepts that belong to the same continuum, with disengagement meaning the absence of engagement (Fredricks, 2015; Hofkens & Ruzek, 2019). However, for others, these concepts are distinct (i.e. disaffection) (Skinner et al., 2009). Disengagement manifests through a lack of participation and effort, disrupting class, skipping classes, and using poor learning strategies (Fredricks, 2014).

Studies also seem to indicate that younger and female students tend to express higher levels of engagement and satisfaction with school than male and older students (Amir et al., 2014; Hartono et al., 2019). However, a systematic analysis of these associations is still lacking. Furthermore, to the best of our knowledge, systematic reviews and meta-analyses only included students enrolled in the primary to the secondary levels of education (e.g., Allen et al., 2018; Korpershoek et al., 2020; Salmela-Aro et al., 2021), but not college students (Kahu, 2013), which will also be considered in our review.

In light of increasing awareness of the impact of SECs on several beneficial outcomes and their connection to SE, this study aims to provide the first systematic review of research on the association between SECs and SE (as a multidimensional concept) in youth. Also, due to the lack of systematic analysis on the age and gender differences regarding SE, we will investigate this association. The following research questions were addressed.

- Do youth students with higher SECs tend to report higher SE?
- Which SE dimensions and SECs categories have been studied in youth, considering the association between the two concepts?
- Are there any differences in SE as a function of age/school level or gender?

2. Method

2.1. Design

The objectives, inclusion criteria, and analysis methods of this review were specified in advance and documented in an a priori protocol, registered in PROSPERO (record number CRD42021232130). The updated Preferred Reporting Items for Systematic Review and Meta-Analysis (PRISMA) guidelines were used to guide the development of the review protocol and the reporting of the review findings (Page et al., 2021).

2.2. Selection criteria

Studies were eligible for inclusion if: i) written in English, Spanish, Portuguese, or French; ii) provided a unique sample (i.e., not included in more than one study); iii) published in peer-reviewed journals; iv) used an observational design, either cross-sectional or longitudinal; v) the sample was composed of youth students, with ages ranging from 10 to 25 years old (all genders, socioeconomic status and ethnicities were considered); vi) provided self-report data on SE which should include at least one of the three dimensions (i.e., affective, behavioural, or cognitive) or disengagement; and vii) were published after (or in) 2004 until 2020[1] (the lower time limit was established because the proposal of SE as a multidimensional concept was published in 2004) (Fredricks et al., 2004).

Conversely, studies were excluded if: i) they did not meet with the criteria specified above; ii) the participants were younger than ten years old, in class levels below the 5th grade or older than 25 years old[2]; iii) the participants had clinical symptoms or a diagnosis within the DSM 5's Neurodevelopmental Disorders cluster(American Psychiatric Association, 2013); iv) the reliability values were below the lower limit of acceptability, $\alpha < 0.60$ (Hair et al., 2014); v) student engagement was not academic-related; vii) SEC was relative to a specific context, such as academic or familial context, not addressing the broad definitions of SECs as outlined by the CASEL framework; additionally, vi) all types of literature reviews were excluded (though, their references were inspected), as well as theoretical manuscripts, books and handbooks.

2.3. Search strategy

The first two authors (A.C.S. and C.S.) independently (though at the same time and on the same day), conducted electronic database searches using seven databases PsycArticles, PsycInfo, Psychology and Behavioural Sciences Collection (these three through the EBSCOhost research platform), Web of Science, Cochrane Central Register of Controlled Trials, Scopus, Scielo, ERIC, and Pubmed on 24/04/2021, which was repeated on 12/05/2021.

The search algorithm was composed of Boolean combinations, wild-card characters, and truncation operators (Siddaway et al., 2019). A building block strategy was created, where the query was divided into key concepts A, B, and C, inclusive of variants and

[1] One article (Zhang et al., 2021) has the date of 2021 because it was retrieved has online first, though during the process of this systematic review, the study became published in an issue of the journal.

[2] If the study included participants outside of this age or grade range, but provided results not including these participants, we would include it and extract the data available (e.g., Liu et al., 2020).

synonyms, creating an inclusive list of possible terms as found in a previous pilot literature review and discussed with the sixth author, an expert in the field. The concepts were then added together using Boolean AND, with the search strategy modified as necessary for advanced searches of each database (Siddaway et al., 2019). The search terms used included the combinations and derivatives to capture all relevant titles and abstracts and keywords related to a) social and emotional competencies, b) school engagement, and c) the target population (see Table S1 in the Supplementary Material). Filters were used to limit the search results to peer-reviewed empirical research articles published in the English, Portuguese, French, and Spanish languages. No restrictions on the location of the studies were applied.

2.4. Screening and data extraction

In the initial reference management, references identified through database searches were imported into Zotero. In total, 3859 references were imported, of which 2580 were retained after the deletion of 1279 duplicates. The references were then imported to Rayyan QCRI (Ouzzani et al., 2016), a free web-based software program that facilitates collaboration between reviewers during the screening and selection of articles to be included in the systematic review. Two reviewers (A.C.S and M.F.S) independently screened all titles and abstracts, with 2405 articles being excluded for the reasons mentioned previously.

Then, 175 records were sought for retrieval, of which 14 full texts were not found. The authors were then contacted, and six answered within a one-month time frame. Consequently 167 full-text articles were assessed for eligibility, with analysis being performed independently by two of three authors (A.C.S, M.F.S. and I.F.), of which 78 were excluded for several reasons (see Fig. 1). At all stages, discrepancies were resolved in a discussion between the reviewers, with reasons being explicitly written as notes for future reference and to enhance reflection among reviewers. A fourth reviewer (C.S.) was involved when there was a lack of consensus on inclusion or exclusion, until agreement on inclusion or exclusion was reached.

The remaining 90 articles progressed to the data extraction stage, one article/record (Steinmayr et al., 2018) included two studies with different data samples, variables, and goals. Thus, we conclude with 91 studies. In accordance with PRISMA guidelines, the unit of analysis is the study and not the article or report (Page et al., 2021).

Data were independently extracted by two of three authors (A.C.S., M.F.S. and I.F.), with an inter-rater reliability agreement of 87.5% ($k_{mean} = 84.2$). To ensure accurate data extraction, the second and third authors (C.S. and M.M.) visually inspected the coding and agreement between coders, and disagreements were corrected with reference to the original material. Data were also extracted from the results section of studies to ensure that any additional interpretation in the discussion or conclusions section of a study would not influence the results and thus the extracted data (Carroll et al., 2011; Moshontz et al., 2018). Table 1 presents the extracted

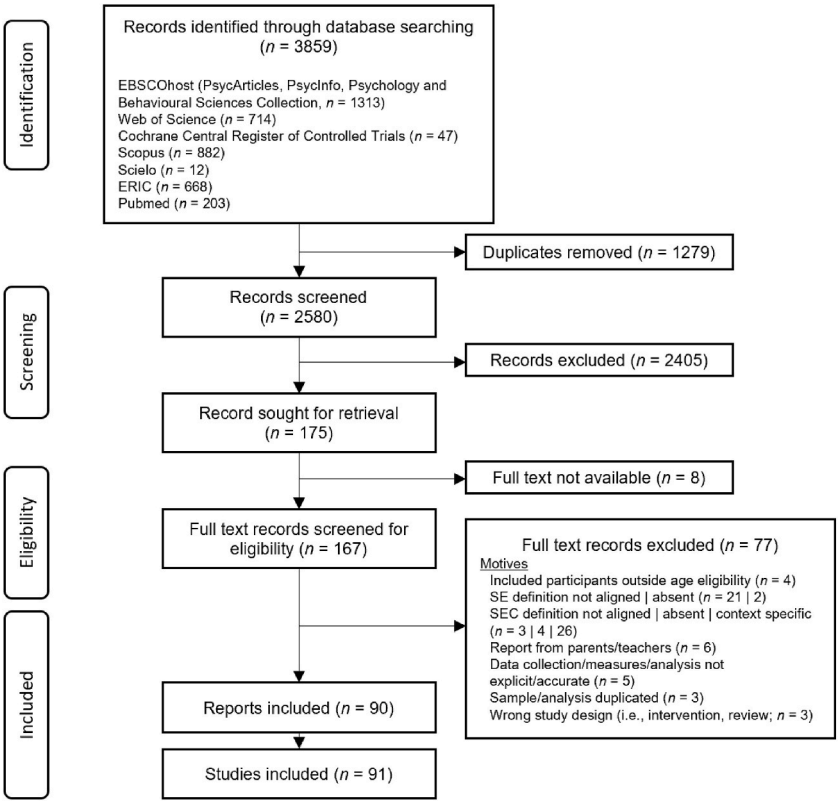

Fig. 1. Prisma diagram of search process.

Table 1
Overall characteristics of the included studies.

Characteristics	Frequency	Percent
Country		
United States of America	39	42.9
Australia	14	15.4
China	9	9.9
Turkey	5	5.5
Germany	3	3.3
Malaysia	3	3.3
Portugal	2	2.2
Spain	2	2.2
Bahamas	1	1.1
Canada	1	1.1
England	1	1.1
Iceland	1	1.1
India	1	1.1
Iran	1	1.1
Ireland	1	1.1
New Zealand	1	1.1
Philippines	1	1.1
Puerto Rico	1	1.1
Samoa	1	1.1
Scotland	1	1.1
Slovak Republic	1	1.1
USA & Ghana	1	1.1
Year of publication		
2004–2009	5	5.5
2010–2015	31	34.1
2016–2020	55	60.4
Publication type		
Cross-sectional	67	73.6
Longitudinal	24	26.4
Sample size		
75-500	47	51.6
501-1000	24	26.4
>1000	20	22.0
Sample type		
Mixed | diverse backgrounds	66	72.5
Vulnerable youth	22	24.2
Privilege youth	3	3.3
School level		
Middle school	20	22.0
High school	24	26.4
University	5	5.5
Middle and high school	18	19.8
High school and university	1	1.1
School level information missing	23	25.3
Social and emotional competencies*		
Self-awareness	33	35.87
Self-management	43	52.17
Social awareness	7	7.69
Relationship skills	33	40.22
Responsible decision making	22	26.09
Student engagement*		0.00
Student engagement	23	25.00
Emotional engagement	63	69.23
Behavioural engagement	16	17.39
Cognitive engagement	7	7.69
Disengagement	7	7.69

Note: * These categories are not mutually exclusive: an article may include information about more than one category.

information for all studies.

To summarise these studies, the following data were extracted: i) publication information (year of publication, authors, title, journal); ii) observations; iii) country of investigation; iv) sample size; v) school level; vi) age (mean, standard deviation and range); vii) gender (frequency and percentage of females); viii) sample type (e.g., vulnerable youth with identification, students from diverse backgrounds or privileged groups); ix) study design (i.e., cross-sectional or longitudinal); x) social and emotional competencies variable name, measure and authors; xi) student engagement variable, measure and authors; and xii) main results.

In the case of studies in which more than one dimension of student engagement was analysed or when data was provided for two or

Table 2
Characteristics and main findings of the studies included in the systematic review.

Main author, (year), Country	Study type	Sample Size & Type	School level	Age	% Gender M | F	Social and emotional competencies	Student engagement	Main findings
Acosta et al. (2019), USA	C/S	2834; Mixed	Middle school	11-12 (79%)	51 | 49	Peer attachment Assertiveness and Empathy	School connectedness (SC)	Peer attachment had a moderate positive association with SC ($r = .42$, $p < .05$). Assertiveness had a moderate positive association with SC ($r = .44$, $p < .05$). Empathy had a moderate positive association with SC ($r = .35$, $p < .05$).
Aldridge et al. (2016), Australia [a]	C/S	2122; Mixed	Middle and high school	Min-Max = 12–17	49 | 50	Resilience	School connectedness (SC)	SC ($\beta = .28$, $p < .001$) was associated with a greater sense of resilience.
Aldrup et al. (2018), Germany [b]	Long. (2 W)	5607; Mixed (vocational track)	Middle and high school	5th grade ($M = 11.14$, $SD = 0.59$) 8th grade ($M = 14.26$, $SD = 0.67$)	54 | 46	Self-esteem	Truancy School satisfaction (SS)	Self-esteem was not associated with truancy ($p =$ ns), though it was associated with SS at the student ($r = .27$, $p < .001$) and class level ($r = .78$, $p < .001$).
Alvarez-Rivera and Fox (2010), Puerto Rico	C/S	298; Mixed	High school	$M = 16$, $SD = 0.98$, Min-Max = 14–19	– | 54	Self-control	School attachment (SA)	Self-control showed a weak positive association with SA ($r = .12$, $p < .05$), while friends' attachment showed a weak negative association with SA ($r = -.29$, $p < .001$).
Awang-Hashim et al. (2015), Malaysia	C/S	2381; Mixed		$M = 15$	47 | 53	Resilience	School engagement (SE) overall value and behavioural (BE), psychological (PE) and cognitive engagement (CE).	Resilience showed a moderate positive association with SE ($r = .35$, $p < .01$) and CE ($r = .40$, $p < .01$) and weak positive associations with PE ($r = .25$, $p < .01$) and BE ($r = .07$, $p < .01$). Comparison of correlation coefficients showed that resilience is highly associated with CE than PE (Z-score:5.80, $p < .001$) or BE (Z-score:12.19, $p < .001$), and also highly associated with PE than BE (Z-score:6.39, $p < .001$).
Batanova and Loukas (2014), USA [c]	Long. (2 W)	481; Mixed	Middle school	1st wave: $M = 11.68$, $SD = 0.75$, Min-Max = 10–14	46 | 54	Empathy measured by Empathic Concern and Perspective Taking	School Connectedness (SC)	Empathy showed a positive weak association with SC for both males and females (Empathic Concern: $r_{Males} = .14$, $p < .05$; $r_{Females} = .23$, $p < .01$; Perspective Taking: $r_{Males} = .20$, $r_{Females} = .28$, $ps < .01$). Gender comparison of correlation coefficients showed no differences between males and females ($p =$ ns).
Bogg et al. (2016), USA	C/S	355; Mixed (had consumed alcohol at least once)	University	$M = 20.45$, $SD = 1.55$, Min-Max = 18–23	– | 52	Self-control	College investment[d] and College satisfaction	Self-control showed a weak positive association with college investment ($r = .26$, $p < .05$) and satisfaction ($r = .19$ $p < .05$).
Brandt et al. (2019), USA [e]	Long. (6 W)	8204; Mixed		Min-Max_{T1} = 10–21	51 | –	**Impulse control Relationships with peers**	**Academic engagement (AE)[f] School satisfaction (SS)**	Impulse control was positively associated with AE ($13 < r < .18$, $p < .05$; T2: $r = .14$) and SS ($.08 < r < .19$, $p < .05$), with the lowest correlation values being observed at T6 (18–19 years old). An increase in students' general level of

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Table 2 (*continued*)

Main author, (year), Country	Study type	Sample Size & Type	School level	Age	% Gender M |F	Social and emotional competencies	Student engagement	Main findings
								impulse control at age 16–17 was associated with an increase in school satisfaction two years later (β_{16-18} = .061, p = .015). Also, an increase in students' SS at 14–15 was associated with increased impulse control two years later (β_{14-16} = .068, p < .001). No other cross-lagged relations between SS and impulse control were found in later adolescence. Relations with peers showed a weak positive association with AE (.05<r < .19, p < .05) and SS (.18<r < .29, p < .05), with the lowest correlation values being observed at T6 (18–19 years old). Students reporting higher levels of academic engagement were also more satisfied with the school and found it easier to make friends and get along with peers.
Bryce et al., 2020), USA [g]	C/S	643; Mixed	Middle and high school		– | 48	**Cognitive Hope Intentional self-regulation** was assessed via three subscales: selection, optimization, and compensation	**Cognitive engagement (CE) and psychological engagement (PE)**	Cognitive hope was associated with both CE (Middle school students: B = .30, p < .01| High school students: B = .21, p < .01) and PE (Middle school students: B = .26, p < .01 | High school students: B = .25, p < .01). In the Intentional self-regulation model, only for middle school students was selection associated with CE (B = .12, p < .01) and PE (B = .15, p < .01). Also, in the same model, optimization was associated with CE (Middle school students: B = .25; p < .01| High school students: B = .19, p < .01) and PE (Middle school students: B = .19, p < .01| High school students: B = .34, p < .01). Compensation was not associated with engagement dimensions for middle and high school students' (p = ns).
Burns and Rapee (2016), Australia	C/S	838; Mixed	Middle and high school	M = 14.5, SD = 1.63, Min-Max = 11–18	58 | 42	**Prosocial behaviour**	**School connectedness (SC)**	Prosocial behaviour had a moderate positive association with SC (r = .32, p < .01). Gender differences were observed, with girls reporting higher SC (F(1, 834) = 6.238, p < .05). No age differences were found (p = ns).

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Table 2 (*continued*)

Main author, (year), Country	Study type	Sample Size & Type	School level	Age	% Gender M | F	Social and emotional competencies	Student engagement	Main findings
Çakar and Karataş (2017), Turkey	C/S	369; Mixed	High school	$M = 16.2$, Min-Max = 15–19	51 | 49	**Self-Esteem Positive Coping**	**School attachment (SA)**	Positive coping ($r = .13$, $p < .01$) showed a weak positive association with SA. Contrarily, self-esteem was not associated with SA ($r = .07$, $p =$ ns).
Calmeiro et al. (2018), Portugal	C/S	3494; Mixed	Middle and high school	$M = 14.94$, $SD = 1.3$	46 | 54	**Social competence, Self-regulation and Peer support**	**School connectedness (SC)**	Peer support ($r = .20$, $p < .01$), social competence ($r = .16$, $p < 01$) and self-regulation ($r = .17$, $p < .01$) had a weak positive association with SC.
Cunningham et al. (2004), Australia [h]	C/S	300; Mixed (Lower to middle socioeconomic background)	High school	$M = 15.33$, $SD = 0.81$, Min-Max = 14–17	45 | 55	**Coping Self-Efficacy**	**School connectedness (SC)**	SC was positively associated with productive coping (direct effect: $\beta = .48$, $p < .05$) and with self-efficacy (direct effect: $\beta = .62$, $p < .05$).
Curcio et al. (2017), Australia [i]	C/S	663; Mixed	High school and university	High school: $M = 14.17$, $SD = 1.30$, Min-Max = 13-17; University: $M = 19.92$, $SD = 1.68$, Min-Max = 18–24	– | 60	**Empathy**	**School connectedness (SC)**	Empathy showed a weak positive association with SC in 13–14 ($r = .15$, $p < .01$) and 15–17 ($r = .21$, $p < .01$). Contrarily, there were no significant correlations between variables in 18–20 ($r = .09$, $p =$ ns).
Dang (2014) USA	C/S	150; Vulnerable (maltreated homeless youth)		$M = 18$, Min-Max = 14-21	– | 57	**Self-Esteem**	**School Connectedness (SC)**	Self-esteem was positively associated with SC ($r = .17$, $p < .05$).
Datu et al. (2017), Philippines	C/S	606; Privilege (private school)	high school	$M = 13.87$	50 | 50	**Happiness**	**Emotional (EE) and Behavioural engagement (BE)**	Happiness showed positive weak associations with both BE ($r = .12$, $p < .01$) and EE ($r = .13$, $p < .01$). Path analysis showed that subjective happiness was positively associated with BE ($\beta = .08$, $p < .01$) and EE ($\beta = .08$, $p < .01$) even after controlling for gender.
Dehyadegary et al. (2014), Iran	C/S	1200; Mixed	high school	Min-Max = 12–18	– | –	**Emotional Intelligence**	**Academic Involvement (AI)** [j]	Regression analysis results showed that emotional intelligence was associated with AI ($\beta = .57$, $p < .05$)
Demirci (2020), Turkey	C/S	322; Mixed	Middle school	$M = 13.01$, $SD = 0.92$, Min-Max = 11–15	47 | 53	**Social competence Hope**	**School Engagement (SE), also Cognitive (CE), emotional (EE) and behavioural engagement (BE)**	Social competence showed moderate positive associations with SE ($r = .56$, $p < .01$); CE ($r = .48$, $p < .01$); EE ($r = .49$, $p < .01$); and BE ($r = .38$, $p < .01$). Hope also showed moderate positive associations with SE ($r = .58$, $p < .01$); BE ($r = .35$, $p < .01$); EE ($r = .49$, $p < .01$); CE ($r = .53$, $p < .01$). The comparison of correlation coefficients showed that there are no differences in social competence between engagement dimensions. Moreover, hope is similarly related to EE and CE but is highly correlated with EE and CE than BE (Z-score: .2.15, $p = .031$; Z-score: 1.99, p

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Main author, (year), Country	Study type	Sample Size & Type	School level	Age	% Gender M | F	Social and emotional competencies	Student engagement	Main findings
								= .047, respectively). Gender differences were found for SE and its dimensions, with females reporting higher values than males.
Demirtas-Zorbaz et al. (2018), Turkey	C/S	411; Mixed	High school		43 | 57	**Social Competence**	**Student engagement (SE)**[k]	Positive correlations between social competence and SE ($21<r<.36$, $p < .01$).
Dinh et al. (2020), USA	C/S	222; Mixed	High school	$M = 15.80$, $SD = 1.18$	51 | 49	**Peer attachment**	**School Attachment (SA)**	Peer attachment had a positive association with SA ($r = .33$, $p < .001$). Neither gender nor age on SA differences were observed.
Dixson and Stevens (2018), USA	C/S	117; Vulnerable (African american)	High school	$M = 16.2$, $SD = 1.53$, Min-Max = 14–19	– | 54	**Hope**	**School belonging (SB)**	Hope was positively associated with SB ($r = .47$, $p < .001$). Neither gender nor age were associated with SB.
Fox and Bouffard (2015), USA [l]	Long. (3 W)	8433; Mixed	Middle and high school	$M_{T1} = 14.81$, $SD_{T1} = 1.08$, Min-Max$_{T1}$ = 12–16	47 | 53	**Self-control**	**School Attachment (SA)**	Self-control was positively associated with SA ($r = .33$, $p < .01$).
Frydenberg et al. (2009), Australia	C/S	536; Privilege (catholic/private schools)	Middle school	Min-Max = 12–14	45 | 55	**Productive coping**	**School connectedness (SC)**	Path analysis showed that productive coping was positively associated with SC ($r = .28$, $p < .05$). Gender differences were found for SC, with females reporting higher values than males.
Gao et al. (2020), China	C/S	347; Mixed	High school		42 | 58	**Resilience**	**Student engagement (SE)**	Resilience was positively associated with SE ($r = .63$, $p < .01$). Mediation analysis showed that resilience's direct effect on student engagement was positive ($\beta = .81$, $p < .001$).
Halgunseth et al. (2013), USA [m]	Long. (3 W)	324; Mixed	Middle school	$M_{T1} = 12$, $SD_{T1} = 0.44$	– | 50	**Problem-solving**	**School adjustment and bonding (SAB)**	Problem-solving showed a moderate positive association with SAB ($r = .51$, $p < .001$).
Ho et al. (2015), China	C/S	775; Mixed	Middle school	$M = 12.28$, $SD = 0.77$, Min-Max = 12–14	– | 56	**Resilience** **Self-efficacy**	**School Connectedness (SC)**	Self-efficacy showed a weak positive association with SC ($r = .26$, $p < .001$), whereas with resilience and SC ($r = .43$, $p < .001$), a moderate association was observed. Age was not associated with SC (p = ns).
Hopkins et al. (2020), USA [n]	C/S	547; Mixed	University		– | –	**Self-efficacy**	**Academic (AE)**[o] **and cognitive engagement (CE)**	Self-efficacy was positively associated with AE ($r = .28$, $p < .05$*) and CE ($r = .29$, $p < .05$*) Path analysis confirmed the correlation results showing a direct effect of self-efficacy on both AE ($\beta = .30$, $p < .001$) and CE ($\beta = .33$, $p < .001$)

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Main author, (year), Country	Study type	Sample Size & Type	School level	Age	% Gender M |F	Social and emotional competencies	Student engagement	Main findings
Hu et al. (2019), China	C/S	505; Mixed		$M = 12.97$, $SD = 1.26$, Min-Max = 11–16	45 | –	**Self-control**	**School Engagement (SE)**	Self-control was positively associated with SE ($r = .52$, $p < .01$). Path analysis showed a direct effect of self-control on SE ($\beta = .30$, $p < .001$). Gender was not associated with SE. Age was weakly and negatively associated with SE ($r = -.16$, $p < .01$), with older students reporting lower values.
Hurd and Sellers (2013), USA	C/S	259; Vulnerable (Black or African American, bi-racial or multi-racial)	Middle and high school	$M = 13.56$, $SD = 0.96$	– | 58	**Social skills**	**Behavioural engagement (BE)**	Positive correlation between social skills and BE ($r = .53$, $p < .05$). Neither gender nor age differences on BE were found (ps = ns).
İhtiyaroğlu and Ates (2018) , Turkey	C/S	587; Mixed	High school		44 | 56	**Self-Confidence and Optimism**	**School attachment (SA)**	Self-confidence had a moderate positive association ($r = .41$, $p < .01$) with SA, while optimism had a weak positive association with SA ($r = .23$, $p < .01$). Regression analysis with SA as the dependent variable showed that self-confidence ($\beta = .48$, $t(167) = 1.67$, $p < .01$) maintained its association with SA, whereas optimism did not.
Jiang et al. (2019), USA	Long. (2 W)	892; Mixed	Middle school	$M = 12.8$, $SD = 0.8$, Min-Max = 11–15	47 | 51	**Problem Solving**/Self-reliance	**School satisfaction (SS)**	Problem-solving and SS showed moderate positive association at both T1 ($r = .30$, $p < .01$) and T2 ($r = .40$, $p < .01$). Problem-solving at T1 was associated with SS at T2 ($r = .23$, $p < .01$), and SS at T1 also showed a positive association with problem-solving at T2 ($r = 29$, $p < .01$). Path analysis showed that SS at T1 predicted problem-solving at T2 ($\beta = .15$, $p < .001$). Though, problem-solving at T1 did not predict SS at T2. SS at both waves was associated ($r_{T1\text{-}T2} = .34$, $p < .01$) Grade level (7th or 8th) was not associated with SS, though gender differences were found for females reporting higher SS than males at T1 and T2.
Jones and Lafreniere (2014), Bahamas	C/S	103; Mixed	Middle and high school	$M = 14.25$, $SD = 1.26$, Min-Max = 13–17	– | 64	**Self-efficacy Resilience**	**Positive involvement and positive experiences with school**[P]	Self-efficacy was positively associated with positive involvement ($r = .26$, $p < .01$), though self-efficacy and positive experiences were not associated (p = ns). Resilience was also positively associated with positive involvement ($r = .41$, $p < .001$) and positive experiences ($r = .27$, $p < .01$).

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Main author, (year), Country	Study type	Sample Size & Type	School level	Age	% Gender M | F	Social and emotional competencies	Student engagement	Main findings
								Neither gender nor grade was associated with school involvement variables (p = ns).
Kaur et al. (2019), Malaysia	C/S	324; Mixed	University	M = 18.85, SD = 1.22, Min-Max = 18–19	73 | 27	**Prosocial behaviour**	**Student engagement (SE)**[q]	Prosocial behaviour had a moderate positive association with SE (r = .33, p < .001). Path analysis showed no direct effect of SE on prosocial behaviour.
Khawaja et al. (2017), Australia [r]	C/S	221; Vulnerable (migrant and refugee)		M = 14.92, SD = 1.72, Min-Max = 11–18	49 | 51	**Resilience**	**School connectedness (SC)**	Resilience had a moderate positive association with school connectedness (r = .51, p < .01).
D. H. Kim et al. (2018), (2018), USA	C/S	638; Vulnerable (Low-income African-American)		M = 16, SD = 1.4, Min-Max = 12–22	46 | 54	**Self-esteem**	**School bonding (SB)**	Linear regression analysis showed that self-esteem was associated with SB, meaning that students reporting higher self-esteem were more likely to have higher SB (B = 0.18; 95% CI = 0.13, 0.22). No gender differences in SB were observed.
E. K. Kim et al. (2019), USA [s]	C/S	1867; Mixed	High school		46 | 52	**Belief in Self**, **Belief in others** and **Engaged in Living**	**School connectedness (SC)**	Positive association between Belief in Self (r = .50, p < .01); Belief in Others (r = .55, p < .01); (r = .36, p < .01); Engaged Living (r = .53, p < .01) with SC.
Krauss et al. (2014), Malaysia	C/S	895; Mixed	High school	M = 16.06, SD = 0.25, Min-Max = 16–17	50 | 50	**Prosocial behaviour** **Peer support** **Thriving behaviour**	**School engagement (SE)**[t]	Prosocial behaviour (r = .30; p < .001) and thriving behaviour (r = .34, p < .001) were moderately positively associated with SE, while peer support showed a weak association with SE (r = .22, p < .001).
Law et al. (2013), Australia	C/S	563; Mixed	Middle and high school	Min-Max = 9–16.6	36 | 64	**Self-Esteem** **Ego Resilience** **Peer Connectedness**	**School Connectedness (SC)**	Self-esteem showed a positive moderate association with SC (r = .64, p < .01) as well as Ego Resilience and SC (r = .50, p < .01) and peer connectedness and SC (r = .44, p < .01)
Lehrer et al. (2017), USA	C/S	510; Mixed (All-girls public school)	Middle and high school	Min-Max = 11–18	– | 100	**Hope** **Adaptive Coping** **Resilience**	**School connectedness (SC)**	Positive moderate associations were observed between Hope and SC (r = .55, p < .01); Adaptive Coping and SC (r = .45, p < .01); Resilience and SC (r = .37, p < .01).
Li et al. (2013), China	C/S	2758; Mixed		M = 13.53, SD = 1.06, Min-Max = 10–19	46 | –	**Self-control**	**School connectedness (SC)**	Self-control was positively associated with SC (r = .30, p < .001). Gender was not associated with SC, though age showed a weak negative association (r = −.15, p < .001), with older students reporting lower SC.
Liu et al. (2020), USA[u]	C/S	908; Mixed	Middle school		– | 51	**Social skills**	**School connectedness (SC)**	Social skills were positively associated with SC for students at Grades 5 (B = .43, p < .001), 6 (B = .53, p < .001), 7 (B =

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Main author, (year), Country	Study type	Sample Size & Type	School level	Age	% Gender M |F	Social and emotional competencies	Student engagement	Main findings
								.29, $p < .05$), but not for grade 8 (p = ns). No gender differences regarding SC (p = ns).
Loukas et al. (2010), USA[v]	Long. (2 W)	476; Mixed	Middle school	$M_{T1} = 11.69$, $SD_{T1} = .76$, Min-Max$_{T1}$ = 10–14	– | 54	**Effortful control**	**School connectedness (SC)**	Effortful control had shown a moderate positive association with SC ($r = .33$, $p < .01$). Gender was associated with SC ($r = -.18$, $p < .001$), meaning that females had higher values than males peers.
Lynch et al. (2013), USA [w]	Long. (2 W)	1718; Mixed	Middle school	$M_{T1} = 10.99$, $SD_{T1} = 0.012$	46 | 54	**Self-worth** **Friendship satisfaction**	**Behavioural engagement (BE)**	Regression analysis (hierarchical linear modelling) showed that self-worth, age and gender at T1 did not hold a predictive effect on SE at T2 (p=ns). Though, BE (B = .34, $p < .001$) and friendship satisfaction (B = .16, $p < .05$) at T1 were positively associated with BE at T2.
Maguire et al. (2017), Ireland	C/S	91; Mixed	University		40 | 60	**Emotional intelligence**	**Emotional (EE) and cognitive engagement (CE)**	Emotional intelligence showed a moderate positive association with both college CE ($r = .40$, $p < .001$) and EE ($r = .35$, $p < .01$). There were no significant correlations between emotional intelligence and both CE and EE at school. CE at school and college was not associated, but EE at the different academic points were (r = .50, $p < .01$). To note that engagement was asked retrospectively. Regression analysis confirmed that for cognitive engagement at college, only emotional intelligence was associated ($\beta = .44$, $p < .001$), whereas for EE at college, previous affective engagement ($\beta = .40$, $p < .001$) and emotional intelligence and TEI ($\beta = .29$, $p < .01$) were associated. Gender was not associated for college CE or EE.
Marbell-Pierre et al. (2019), Ghana & USA	C/S	401; Mixed	Middle school	$M = 12.87$, $SD = 0.68$	– | 61	**Self-worth**	**Behavioural engagement (BE)**	Self-worth was positively correlated to BE for USA students ($r = .52$, $p < .001$) but negatively correlated with BE for Ghana students ($r = -.47$, $p < .001$). Gender was not associated with BE (p = ns).
Mariscal (2020), USA	C/S	601; Vulnerable (under child maltreatment investigation)		$M = 13.51$, $SD = 1.83$, Min-Max = 11–17.5	– | –	**Social and Adaptive Skills** **Peer Relationships**	**School engagement (SE)**	Social and adaptative skills showed a moderate positive association with SE ($\beta = .36$, $p < .001$), as well as peer relationships and SE ($\beta = .36$, $p < .001$).

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Main author, (year), Country	Study type	Sample Size & Type	School level	Age	% Gender M | F	Social and emotional competencies	Student engagement	Main findings
								Gender and age were not associated with SE (*ps* = ns).
Marques (2016), Portugal [x]	Long. (2 W)	367; Mixed	Middle and high school		– | 53	**Hope**	**Student engagement (SE)**	Hope and SE were moderately associated at both times ($rT1 = .44$, $rT2 = .41$, $ps < .01$). Hope at T1 was predictive of SE at T2 ($r = .39$, $p < .01$), and SE at T1 was also predictive of hope at T2 ($r = .40$, $p < .01$). Comparison of longitudinal correlation coefficients showed no difference, meaning a reciprocal influence. Regression analysis showed that when T1 SE was controlled for, T1 hope scores were significant predictors of T2 SE scores ($F(1, 353) = 6.42$, $p < .05$, $\Delta r^2 = .02$, $r^2 = .31$). SE was longitudinally associated ($r_{T1\text{-}T2} = .43$, $p < .01$)
Martin et al. (2013), Australia[y]	Long. (2 W)	249; Vulnerable (at-risk youth)	Middle and high school	$M = 14.4$, $SD = 1.55$	52 | 48	**Self-esteem**	**Enjoyment of school (ES)[z], class participation (CP), disengagement**	Self-esteem was positively correlated to ES ($r = .48$) and CP ($r = .50$), and negatively correlated to disengagement ($r = -.49$) Age showed a weak negative association with both ES ($r = -.19$, $p < .01$) and CP ($r = -.13$, $p < .01$) and a positive association with disengagement ($r = .22$), but gender presented no association with the engagement variables.
Martin et al. (2015), Australia	C/S	969; Mixed		$M = 16.5$, $SD = 0.84$, Min-Max = 16–20	57 | 43	**Resilience**	**Academic Engagement**	Resilience showed a strong association with academic Engagement ($r = .65$, $p < .001$). Neither gender nor age were associated with academic engagement (*ps* = ns).
McGeown et al. (2018), Scotland [aa]	C/S	439; Mixed	High school	$M = 14.3$, $SD = 1.6$, Min-Max = 11–18	49 | 51	**Control of emotions, confidence in personal abilities, and interpersonal confidence**	**Disengagement**	Interpersonal confidence ($r = -.21$, $p < .01$), confidence in abilities ($r = -.45$, $p < .001$) and control of emotions ($r = -.30$, $p < .001$) showed negative weak associations with disengagement. Age had a weak positive association with disengagement ($r = .15$, $p < .01$), but gender and disengagement were not associated.
Mihalec-Adkins and Cooley (2020), USA [ab]	C/S	235; Vulnerable (youth living in out-of-home care)		$M = 14.24$, Min-Max = 11–17	46 | 54	**Self-esteem Social skills**	**School engagement**	A weak positive association was observed between social skills and SE ($r = .28$, $p < .01$), as well as between self-esteem and SE ($r = .22$, $p < .01$). Gender was associated with SE ($r = -.20$, $p < .01$), with females reporting higher

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Main author, (year), Country	Study type	Sample Size & Type	School level	Age	% Gender M | F	Social and emotional competencies	Student engagement	Main findings
								engagement, but age was not associated with SE (p = ns).
Muenks et al. (2017), USA	C/S	539; Mixed (private high school, no information on this matter about the university)	High school and university	High School: M = 16.33, SD = .51; College: M = 20.16, SD = 2.65	– | 65	**Self-control** **Grit**	**Behavioural engagement (BE) and behavioural disaffection**	Conscientiousness showed a moderate positive association with BE ($r_{High\text{-}school}$ = .43, $r_{College}$ = .38, $p < .01$) and negative with behavioural disaffection ($r_{High\text{-}school}$ = −.40, $r_{College}$ = −.42, $p < .01$), similarly for both education levels. Self-control showed a moderate positive association with BE ($r_{High\text{-}schooll}$ = .48, $r_{College}$ = .42, $p < .01$) and negative with behavioural disaffection ($r_{High\text{-}school}$ = −.53, $r_{College}$ = −.51, $p < .01$), similarly for both education levels. Grit-CI showed a moderate positive association with BE ($r_{High\text{-}school}$ = .30, $r_{College}$ = .16, $p < .01$), similarly for both education levels. Grit-CI showed a negative association with behavioural disaffection ($r_{High\text{-}school}$ = − .50, $r_{College}$ = −.35, $p < .01$), with this correlation being stronger for high school students (Z-score = 2.06, p = .04). Grit-PE showed a moderate positive association with BE ($r_{High\text{-}school}$ = .48, $r_{College}$ = .42, $p < .01$) and negative with behavioural disaffection ($r_{High\text{-}school}$ = −.53, $r_{College}$ = −.51, $p < .01$), with the association being stronger for high school students (BE: Z-score = 3.28, p < .001; BD: Z-score = 3.84, p < .001). Gender was not associated with engagement or disengagement (ps = ns).
Murphy and McKenzie (2016), Australia	C/S	75; Mixed	Middle school	M = 10.84, SD = 0.66, Min-Max = 10–12	39 | 61	**Self-efficacy** and **optimism**	**School connectedness**	Optimism (r = .57, $p < .01$) and self-efficacy (r = .67, $p < .01$) showed a strong positive association with SC.
O'Connor et al. (2012), Australia [ac]	C/S	1158; Mixed		Min-Max = 19–20	44 | 56	**Social competence** **Emotional control** **Relationship with peers**	**School Bonding (SB)**	Social competence (r = .39, $p < .01$), emotional control (r = .29, $p < .01$) and peer relationships (r = .29, $p < .01$) showed moderate positive associations with SB.
Oldfield et al., 2016), England	C/S	203; Mixed		Min-Max = 11–16	53 | 47	**Prosocial behaviour** **Peer Attachment**	**School connectedness (SC)**	Prosocial behaviour showed a moderate positive association with SC (r = .33, $p < .01$), as well as peers' attachment and SC (r = .41, $p < .01$). Hierarchical multiple regression analyses showed that higher levels of peer attachment (β = .224, $p < .01$) and of SC

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Main author, (year), Country	Study type	Sample Size & Type	School level	Age	% Gender M |F	Social and emotional competencies	Student engagement	Main findings
								(β = .187, $p < .01$) were related to higher levels of prosocial behaviour. There were no gender or age associations with SC.
Oshri et al., 2018), USA [ad]	Long. (4 W)	1461; Vulnerable (families investigated for child maltreatment)		$M_{T1} = 12.22$, $SD_{T1} = 1.58$	– | 56	**Self-esteem**	**School engagement (SE)**	Self-esteem and SE were associated at the three waves ($r_{T1} = .32$, $r_{T2} = .29$, $r_{T3} = .26$, $ps < .01$). Self-esteem at T1 was associated with SE at T2 an T3 ($r_{T2} = .13$, $r_{T2} = .13$, $ps < .01$), and Self-esteem at T2 with SE at T3 (.19, $p < .01$). SE T1 also showed a positive association with self-esteem at T2 ($r = .20$, $p < .01$) at T3 ($r = .17$, $p < .01$), and SE T2 with self-esteem at T3 ($r = .16$, $p < .01$). Longitudinal comparison of correlation coefficients showed no differences, meaning that self-esteem and SE seem to have a reciprocal association over time. Gender showed positive weak association with SE ($r_{T1} = .09$, $r_{T2} = .07$, $r_{T3} = .12$, $ps < .05$) while age showed negative weak association with SE ($r_{T1} = -.14$; $r_{T2} = -.11$, $ps < .01$, T3, p = ns) SE showed high agreement between waves ($r_{t1\text{-}T2} = .42$, ($r_{t2\text{-}T3} = .37$, $r_{t2\text{-}T3} = .46$, $ps < .01$).
Padilla-Walker et al. (2013), USA [ae]	Long. (3 W)	325; Mixed		$M_{T2} = 12.34$, $SD_{T2} = 1.06$, Min-Max^{T2} = 11–14	– | 52	**Self-regulation** **Optimism** **Self-esteem** **Persistence** **Prosocial behaviour**	**School engagement (SE)**	Self-regulation ($r = .30$, $p < .001$), optimism ($r = .33$, $p < .001$) and self-esteem ($r = .34$, $p < .001$) at T2 showed moderate positive association with SE at T4. Persistence at T3 showed moderate positive association with SE at T4 ($r = .38$, $p < .001$) Prosocial behaviour at T4 showed a moderate positive association with school engagement at T4 ($r = .40$, $p < .001$). Girls reported higher SE than boys ($p < .01$).
Peng et al. (2019), China	C/S	2758; Mixed	Middle and high school	$M = 13.53$, $SD = 1.06$, Min-Max = 10–19	– | 54	**Emotional Intelligence** **Self-esteem** **Peer relationships**	**School disconnectedness (SD)**	Emotional intelligence showed a weak negative association with SD ($r = -.26$, $p < .05$), as well as self-esteem ($r = -.33$, $p < .05$) and peer relationships ($r = -.19$, $p < .05$) with SD. SD had a positive association with age, meaning that older participants had

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Main author, (year), Country	Study type	Sample Size & Type	School level	Age	% Gender M | F	Social and emotional competencies	Student engagement	Main findings
								higher school SD. Gender was not associated with SD (p = ns).
Peterson et al. (2013), New Zealand	C/S	297; Mixed	High school	M = 14.2, SD = 0.50	– | 69	**Self-management**	**School Connectedness (SC)**	Self-management showed a moderate positive association with SC (β = .35, p < .05).
Phillips (2011), USA [af]	C/S	270; Mixed	University		34 | 66	**Hope** **Self-efficacy** **Peers relationships**	**Student engagement (SE)** **Emotional engagement (EE)**	Hope showed a positive association with EE (Females: r = .17, p < .05; Males: r = .31, p < .01) and SE (Females: r = .29, p < .05; Males: r = .26, p < .01) Self-efficacy showed a positive association with SE (Females: r = .28, p < .05; Males: r = .28, p < .01) but not with EE. Peers' relationships showed a positive association with EE (Females: r = .35, p < .05; Males: r = .24, p < .01), though only for females was peers relationships associated with SE (r = .15, p < .05). The comparison of correlation coefficients showed no differences between gender on the association of the variables analysed (p = ns).
Quimby et al. (2018), USA	Long. (3 W)	316; Vulnerable (black American students)	Middle school	M = 11.65	– | 60	**Self-esteem** **Peers relationship**	**School connectedness (SC)**	Self-esteem and SC were positively associated at T1 (r = .28, p < .01), T2 (r = .28, p < .01) and T3 (r = .23, p < .01). Longitudinally, Self-esteem at T1 predicted SC at T2 (r = .24, p < .01) and T3 (r = .12, p < .05) and self-esteem at T2 predicted SC at T3 (r = .18, p < .01). Similarly, SC at T1 predicted Self-esteem at T2 (r = .13, p < .01) and SC at T2 predicted self-esteem at T3 (r = .24, p < .01). SC at T1 was not associated with self-esteem at T3. Longitudinal comparison of correlation coefficients showed no differences, meaning that self-esteem and SC exert reciprocal influence. Peers' relationships showed a weak association with SC at T2 (r = .16, p < .10) and T3 (r = .22, p < 01). Longitudinally, there was a positive effect of T1 SC on T2 Peers relationships (r = .14, p < .05) and T2 SC on T3 Peers relationships (.34, p < 01), and of T1 Peers relationship on T2 SC (r = 13*, p < .05). No other associations were observed (p = ns). There was no effect of gender on SC.

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Main author, (year), Country	Study type	Sample Size & Type	School level	Age	% Gender M | F	Social and emotional competencies	Student engagement	Main findings
Raval et al. (2018), India	C/S	450; Mixed	High school	Min-Max = 14–17	– | 46	**Emotion regulation**	**Behavioural engagement (BE)**	Emotion regulation showed no association with BE (p = ns).
Rodríguez-Fernández et al., 2016), Spain	C/S	1250; Mixed	High school	M = 13.72, SD = 1.09, Min-Max = 12–15	49 | 51	**Self-esteem** **Resilience** **Peer support**	**Emotional (EE), behavioural (BE) and cognitive engagement (CE)**	Resilience showed moderate to weak associations with EE (r = .32, p < .01), BE (r = .23, p < .01) and CE (r = .30, p < .01). Similarly, self-esteem showed moderate to weak associations with EE (r = .34, p < .01), BE (r = .24, p < .01) and CE (r = .16, p < .01). Peer support had weak positive associations with EE (r = .22, p < .01) and BE (r = .06, p < .01) but not with CE (p = ns). Comparison of correlation coefficients showed that resilience is more associated with EE than BE (Z-score = 2.43, p = .015). Similarly, self-concept is more associated with EE than BE (Z-score = 2.73, p = .006) or CE (Z-score = 4.82, p < .001), and is more associated with BE than CE (Z-score = 2.08, p = .037). Peer support was also more associated with EE than BE (Z-score = 4.08, p < .001).
(Rodríguez et al., 2020), Spain	C/S	7099; Mixed		M = 15.83, SD = 0.29, Min-Max = 15–16	50 | 50	**Self-efficacy**	**School belonging (SB)**	Self-efficacy had a weak positive association with SB (r = .25, p < .05) After covariates control, results indicate SB differences between the three groups (natives, first-generation, and second-generation immigrants) (F(2,7093) = 63.15; p < .001; η_p^2 = .017). Post hoc analysis showed that native students reported higher SB than immigrant students. Moreover, second-generation immigrant students had reported higher SB than first-generation immigrant students. No gender or age differences in SB (p = ns).
Ross et al. (2010), Australia	C/S	127; Mixed	Middle school	Min-Max = 10–13	34 | 66	**Social skills**	**School connectedness (SC)**	Social skills had a moderate positive association with SC (r = .47, p < .01)
Šeboková et al. (2018), Slovak Republic	Long. (2 W)	139; Mixed	High school	M = 15.16, SD = 0.43	38 | 62	**Self-esteem** **Engagement, perseverance, optimism, connectedness, happiness**	**School belonging (SB)**	Self-esteem showed a strong positive association with SB (r = .73, p < .01). (Self-esteem and SB were assessed only once). Moreover, there were positive associations between engagement (r_{T1} = .22, p < .01), perseverance (r_{T1} = .27, p

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Main author, (year), Country	Study type	Sample Size & Type	School level	Age	% Gender M |F	Social and emotional competencies	Student engagement	Main findings
								< .01), optimism ($r_{T1} = .59$, $r_{T2} = .36$, ps < .01), connectedness ($r_{T1} = .50$, $r_{T2} = .56$, $ps < .01$) and happiness ($r_{T1} = .70$, $r_{T2} = .50$, $ps < .01$) with SB. Engagement and perseverance at T2 were not associated with SB. No gender differences in SB were observed (p = ns).
Sevil-Gülen and Demir (2021), Turkey	C/S	1312; Vulnerable (low socioeconomic districts)	High school	$M = 15.67$, $SD = 1.18$, Min-Max = 13–19	49 | 51	**Self-esteem** **Resilience** **Peer support**	**School belonging (SB)**	Self-esteem ($r = .41$), resilience ($r = .37$), and peer support ($r = .49$) showed a moderate positive association with SB ($ps < .01$).
Slaten et al. (2019), USA [ag]	Long. (2 W)	852; Mixed	Middle school		51 | 49	**Self-esteem** **Resilience**	**School belonging (SB)**	Self-esteem ($r = .20$, $p < .05$) and resilience ($r = .20$, $p < .05$) showed a weak positive association with SB.
Smalls (2010), USA	C/S	94; Vulnerable (African American vulnerable youth)	Middle school	Min-Max = 11–14	– | 54	**Persistence**	**Academic engagement (AE)**[ah]	Persistency showed a moderate positive association with AE ($r = .58$, $p < .01$)
Smokowski et al. (2009), USA [ai]	Long. (2 W)	281; Vulnerable (migrant students)		$M = 15$, $SD = 1.8$, Min-Max = 11–18	– | 55	**Self-esteem**	**School bonding (SB)**	Self-esteem and SB were not associated ($r = -.02$, p = ns). No gender differences on SB (p = ns).
Stefansson et al. (2018), Iceland	Long. (4 W)	561; Mixed	High school	$M = 14.3$, $SD = 0.3$	– | 46	**Self-regulation**	**School engagement (SE)**	Self-regulation and SE showed a strong positive association at each wave ($r_{T1} = .64$, $r_{T2} = .63$, r_{T3}:.67, $r_{T4} = .56$, $ps < .001$). Path analysis revealed strong associations between SE and self-regulation within each measurement occasion (.56–.67, $ps < .001$), as well as strong correlations between school engagement and self-regulation across consecutive measurement occasions (.50–.66, $ps < .001$). Note that SE at T2 had a moderate association with self-regulation at T4 ($r = .43$, $p < .001$), but self-regulation at T2 had a higher association with SE at T4 ($r = .54$, $p < .001$). A comparison of correlation coefficients showed a difference (Z-score = −2.41, $p = .016$). Moreover, the association between SE at T3 and self-regulation at T4 ($r = .50$, $p < .001$) was weaker than self-regulation at T3 and SE at T4 ($r = .66$, $p < .001$; (Z-score = −4.07, p = .001), meaning that longitudinally, self-regulation might excerpt more influence on SE than the contrary.

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Table 2 (*continued*)

Main author, (year), Country	Study type	Sample Size & Type	School level	Age	% Gender M | F	Social and emotional competencies	Student engagement	Main findings
Steinmayr et al. (2018), Germany [aj] **Study 1**	Long. (2 W)	225; Privilege (high socio-economic status)	High school	$M = 16.45$, $SD = 0.63$	40 | 59	**Grit**, two dimensions: consistency of interest and perseverance of effort.	**Behavioural engagement (BE) and Disaffection**	Also, there was a small effect of gender on SE ($\beta = 0.10$, p-value not displayed). Consistency of interest ($r = .32$, $p < .01$) and perseverance of effort ($r = .49$, $p < .01$) showed positive weak to moderate associations with BE Whereas consistency of interest ($r = -.34$, $p < .01$) and perseverance of effort ($r = -.45$, $p < .01$) showed negative weak to moderate associations with behavioural disaffection.
Steinmayr et al. (2018), Germany **Study 2**	C/S	591; Mixed	Middle and high school	$M = 14.01$, $SD = 0.83$	54 | 46	**Grit**, two dimensions: consistency of interest and perseverance of effort.	**Behavioural (BE), emotional (EE) and cognitive engagement (CE)**	Consistency of interests was only associated with BE ($r = .18$, $p < .01$) but not with EE or CE (p = ns). Perseverance of effort was associated with BE ($r = .23$, $p < .01$), CE ($r = .24$, $p < .01$), and EE ($r = .16$, $p < .01$). Note that comparison of correlation coefficients showed no differences between engagement dimensions and perseverance of effort. Conscientiousness was associated with BE ($r = .48$, $p < .01$), CE ($r = .23$, $p < .01$), and EE ($r = .28$, $p < .01$). Comparison of correlation coefficients showed that conscientiousness is higher associated with BE than with CE (z-score = 4.95, p < .001) or EE (z-score = 4.03, p < .001), with no differences between the association of conscientiousness with CE or EE.
Stevens and Hardy (2013), Samoa	C/S	310; Mixed	High school	$M = 16$, $SD = 1.34$, Min-Max = 13–19	40 | –	**Empathy**	**School engagement (SE)**	Empathy was positively associated with SE ($r = .20$, $p < .05$)
Stoddard et al. (2011), USA	C/S	164; Mixed		$M = 12.1$, $SD = 0.54$	48 | 52	**Hope**	**School connectedness (SC)**	Hope and SC were positively moderately associated ($r = .48$, $p < .01$)
Taylor et al. (2020), USA	Long. (2 W)	123; Vulnerable (immigrants)	Middle school	$M = 11.54$, Min-Max = 10–12	– | 59	**Resilience Optimism**	**School attachment (SA)**	Resilience had a moderate positive association with SA: ($r = .53$, $p < .05$) (both assessed only at T1). Optimist at both T1 ($r = .44$, $p < .05$) and T2 ($r = .33$, $p < .05$) was associated with SA at T1. Neither gender nor grade were associated with SA (p = ns).
Tolan et al. (2013), USA [ak]	Long. (3 W)	315; Vulnerable (at high-risk for aggressive behaviour)		$M_{T1} = 12.41$, Min-Max$_{T1}$ = 11–14	100 | –	**Prosocial values Coping effectiveness Engagement in prosocial activities**	**School engagement (SE)**	Prosocial values at T2 showed a weak positive association with SE at T3/T4 ($r = .19$, $p < .05$). Engagement in prosocial activities at T2 had a weak positive association with SE at T3/T4 ($r = .17$, p

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Table 2 (*continued*)

Main author, (year), Country	Study type	Sample Size & Type	School level	Age	% Gender M | F	Social and emotional competencies	Student engagement	Main findings
								< .05). Coping effectiveness at T2 was not associated with SE at T3/T4. Results from the model with SE as the dependent variable indicated a negative direct effect of age (b = −.22, $p < .01$) and a positive main effect of prosocial activities (b = .14, $p < .05$).
Tozer et al. (2018), Australia	C/S	93; Vulnerable (refugees)		$M = 15.46$, $SD = 1.55$, Min-Max = 12–18	46 | 54	**Resilience**	**School connectedness (SC)**	Resilience was positively associated with SC ($r = .59$, $p < .01$). Neither gender nor gender were associated with SC (*ps* = ns).
Ungar and Liebenberg (2013), Canada	C/S	497; Vulnerable (vulnerable youth engaged with multiple services.		$M = 17$, $SD = 1.87$	57 | 43	**Resilience**	**School engagement (SE)**[al]	Hierarchical regression analysis to predict SE showed that while resilience individual assets associated with resilience were not associated with SE for the minority sociocultural group (p = ns), they were associated with SE for majority youth students (β = .25, $p < .001$).
Van Ryzin et al. (2009), USA	Long. (2 W)	283; Mixed		$M_{T1} = 15.33$, $SD_{T1} = 1.64$	52 | 48	**Hope** **Peer Support**	**Student engagement (SE)**[am]	Hope and SE were associated both at T1 ($r = .52$, $p < .001$) and T2 ($r = .42$, $p < .001$). Hope at T1 was shown to be predictive of SE at T2 ($r = .43$, $p < .001$) and also SE at T1 showed to be predictive of hope at T2 ($r = .38$, $p < .001$). Peer support and SE were associated both at T1 ($r = .54$, $p < .001$) and T2 ($r = .55$, $p < .05$). Peer support at T1 was shown to be predictive of SE at T2 ($r = .42$, $p < .001$) and also SE at T1 was shown to be predictive of peer support at T2 ($r = .54$, $p < .001$). Comparison of longitudinal correlation coefficients showed no difference; thus, peer support and hope and SE seem to have a reciprocal influence. SE was strongly associated at both times ($r = .75$, $p < .001$).
Venta et al. (2019), USA[an]	C/S	78; Vulnerable (recently immigrated high school students)	High school	$M = 19$, $SD = 2$	59.9 | –	**Resilience**	**Behavioural (BE) and emotional engagement (EE) and behavioural disaffection (BD)**	Resilience showed a moderate positive association with BE ($r = .37$, $p < .01$) and EE ($r = .38$, $p < .001$), though no association was observed with BD (p = ns).
Vera et al. (2017), USA	C/S	163; Mixed (though 86% of the students' families live below the poverty level)	Middle schools	Min-Max = 12–15	– | 39	**Social skills** **Personal control**	**School belonging (SB)**	Social skills showed a moderate positive association with SB ($r = 40$, $p < .01$), but personal control and SB were not associated (p = ns).

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Table 2 (*continued*)

Main author, (year), Country	Study type	Sample Size & Type	School level	Age	% Gender M |F	Social and emotional competencies	Student engagement	Main findings
Voisin et al. (2018), USA	C/S	633; Vulnerable (African American vulnerable youth)		$M = 15.8$, $SD = 1.42$, Min-Max = 12–22	46 | 54	**Self-esteem**	**School bonding (SB)**	linear regression analyses, self-regard was positively associated with higher SB ($\beta = .31$, $p < .001$) while controlling for age, gender, sexual orientation, and free or reduced school lunch indicated. Also, the group of students with higher (odds ratio (OR) = 6.01, $p < .05$) or moderate (OR = 2.80, $p < .05$) levels of SB were 1.2 and 1.1. times (respectively) more likely to have positively self- compared to those with the lowest values.
M. Q. Wang et al. (2005), USA	C/S	790; Vulnerable (substance abuse high risk families)		Min-Max = 11–16	42 | 58	**Self-control**	**School connectedness (SC)**	Self-control was positively correlated to SC ($\beta = 0.56$, $p < .01$). Comparison of coefficients of variation showed no gender differences (p = ns).
Waters et al., 2010), Australia [ao]	Long. (2 W)	5159; Mixed	Middle and high school	Mode: 12 and 13	– | –	**Prosocial behaviour**	**School connectedness (SC)**	Prosocial behaviour showed weak to moderate positive association with SC in grade 8 ($r = .36$, $p < .001$) and grade 9 ($r = .26$, $p < .001$). Multivariable student-level model showed that students were more likely to have higher levels of SC in grade 8 if they had greater prosocial skills ($\beta = .16$, $p < .001$). Likewise, students reported higher levels of SC in Grade 9 if they also reported higher levels of prosocial behaviour ($\beta = .11$; $p < .001$). (Prosocial behaviour was assessed only once). No gender differences were observed regarding SC in Grade 8 or Grade 9 (p = ns).
Wong et al. (2014), China	C/S	1917; Mixed	Middle school	$M = 13.36$, Min-Max = 12–15	– | –	**Empathy** **Self-Esteem**	**School belonging (SB)**	Self-efficacy showed a moderate association with SB ($r = .39$, $p < 01$) Empathy showed a weak association with SB ($r = .27$, $p < .01$) No gender differences on SB (p = ns).
Yeh et al. (2014), USA	C/S	286; Vulnerable (immigrant, low-income families)	High school	$M = 19.02$, $SD = 1.13$, Min-Max = 16–22	53 | 47	**Trust and Communication**	**School bonding (SB)**	Neither peer trust nor peer communication were associated with SB (p = ns).
Yorgason et al. (2011), USA	Long. (2 W)	500; Mixed	Middle school	$M = 11.3$, $SD = 1.01$, Min-Max = 10–14	– | 49	**Prosocial behaviour**	**School engagement**	Prosocial behaviour has a moderate positive association with SE at T1 (2 parents: $r = .47$, p < .01; 1parent: $r = .49$, $p < 001$) and T2 (2 parents: $r = .45$, $p < .001$; 1parent: $r = .27$, $p < .001$). T1 Prosocial behaviour had a moderate effect on SE at T2 (2 parents: $r = .33$, $p < .001$; 1parent: $r = .28$, $p < .001$), as well

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Main author, (year), Country	Study type	Sample Size & Type	School level	Age	% Gender M |F	Social and emotional competencies	Student engagement	Main findings
								as T1 SE on prosocial behaviour at T2 (2 parents: $r = .33$, $p < .001$; 1parent: $r = .39$, $p < .001$). Longitudinal comparison of correlation coefficients showed no differences, meaning that these variables have a reciprocal association. T-test analysis showed differences between groups, with students that live with both parents reporting higher levels of prosocial behaviour (at T1) and SE (both times) than those living in monoparental families ($.05 < ps < .01$).
Zhang et al. (2021), China	C/S	1167; Mixed	Middle and high school	$M = 13.34$, $SD = 0.95$, Min-Max = 11–15	– | 52	**Self-compassion**	**School belonging (SB)**	Self-compassion was positively associated with SB ($r = .22$, $p < .01$).
Zhao and Zhao (2015), China	C/S	504; Mixed	High school	$M = 16.86$, $SD = 0.68$, Min-Max = 16–18	37 | 63	**Reappraisal**	**School connectedness**	Reappraisal had a moderate positive association with SC ($r = .33$, $p < .01$). Gender differences in SC were observed, with males reporting lower levels of SC ($p < .01$).
Zhen et al. (2020), China	Long. (3 W)	342; Vulnerable (earthquake survivors)	Middle and high school	$M = 15.06$, $SD = 1.69$, Min-Max = 12–18	– | 53	**Gratitude**	**Behavioural (BE) and psychological engagement (PE)**	For BE, two different trajectories were observed: both had an initial high level, though, Group 1 had a posterior stable tendency across waves, and Group 2 had a decreasing tendency at T2 and T3. Gratitude significantly differentiated BE trajectories (OR = 0.85, 95% CI:0.75–0.96, $p < .01$) and was more associated with the high–stable BE. For PE, two different trajectories were observed: Group 1 had an initial low level of engagement followed by an increasing tendency from T2 to T3, whereas Group 2 had an initial high level of engagement and stable posterior. Gratitude was not associated with PE trajectories. The trajectories of BE and PE showed a high agreement.

Note: *M* = Mean, *SD*=Standard Deviation, Min-Max = Minimum to Maximum, ns = non-significant; C/S=Cross-sectional; Long. = Longitudinal; W = Data collection wave. When information was absent (i.e., age ($n = 11$), gender ($n = 6$), school level or grade ($n = 23$)) space was left blank.

[a] No information regarding peer connectedness and school connectedness association was provided.

[b] Data retrieved related to the second wave.

[c] Data retrieved related to the first wave.

[d] College investment reflects the affective and cognitive dimensions of Fredricks et al.'s (2004) student engagement concept.

[e] For the purpose of summing the sample sizes of all studies the minimum value of the sample was chosen ($n = 8204$).

[f] Academic engagement reflect the affective and cognitive dimensions of Fredricks et al.'s (2004) student engagement concept.

[g] In this study Intentional self-regulation was conceived as behavioural hope, though we used the term proposed by the authors of the scale.

[h] Reliability value was not explicitly displayed for all variables.
[i] School connectedness variable reliability value for 21–24 years old group was below the threshold ($\alpha < .60$), therefore data was not extracted.
[j] Academic involvement has three subscales: behavioural, emotional and cognitive engagement.
[k] Measured with five dimensions, namely internal, school environment, program, administration and teacher engagement.
[l] it is a longitudinal study, but for this review only the data collected at Wave 1 is of interest.
[m] The study is longitudinal, though the data retrieved for this study pertains only to the third data collection.
[n] Exact *p*-value was not displayed; thus, it was assumed the 95% CI.
[o] Academic engagement definition is similar to the behavioural engagement definition of Fredricks et al. (2004).
[p] Positive involvement and positive experiences with the school are aligned with the emotional student engagement of the multidimensional measure of Fredricks et al.'s (2004).
[q] Student engagement reflects the emotional and behavioural engagement dimensions of Fredricks et al.'s (2004) student engagement concept.
[r] It is mentioned that this study is part of a longitudinal study, though it is not clear if the data analysed was from different time points. As such, we assumed these results as pertaining to a cross-sectional design.
[s] Reliability value was not displayed for the big five personality traits dimensions. The authors measured emotional competence, but because it was composed of empathy, emotional regulation, and delay of gratification dimensions which pertain to totally different areas (empathy - social awareness; emotional regulation, delay of gratification - self-management), the information was not retrieved.
[t] School engagement reflects the emotional and cognitive engagement dimensions of Fredricks et al.'s (2004) student engagement concept.
[u] This study included children at 4th grade, though results and sample size extracted data does not include the participants of the 4th grade.
[v] Data retrieved pertains to the first wave.
[w] Social competence in this study was conceived as how the students are popular or not, which was not in accordance with CASEL' social competences definition, thus this variable was not included. Also, even though the authors refer to student engagement, the items used were relative to the definition of behavioural engagement according to Fredricks et al. (2004), thus, results were coded in terms of behavioural engagement.
[x] Age and gender descriptive are related to T2, since analysis used this sample and did not mage analysis with those that responded at only T1. Since grade was only reported at T1, Middle and high school was attributed to account for those who progressed but also for those who might have failed school.
[y] Correlation values were compositive of the two waves, so, each variable appear only once in the matrix and not twice.
[z] Enjoyment of school is related to emotional engagement and class participation is related to behavioural engagement dimensions of Fredricks et al. (2004) conceptualization.
[aa] Only study 1 was analysed, since study 2 did not analysed a student engagement variable.
[ab] In the study, self-esteem was analysed negatively, thus to facilitate comprehension, we invert the signal of the association.
[ac] Trust and tolerance variable had a reliability value below the eligible threshold (a<.60), thus it was not included.
[ad] Even though the SEC was assessed with the "Negative Self-Esteem Subscale", the authors indicated that the summed scores were coded such that higher scores indicated higher self-esteem.
[ae] This study is part of a project with 4 waves, though, this study used data collected at waves 2, 3 and 4.
[af] Male percentage was recalculated, since the value in the paper was wrongly reported as 44%.
[ag] The study is longitudinal, though the data retrieved pertains only to the second data collection. Also, only the study 2 data was analysed, since study 1 served to the factorial analysis of one of the MYBS.
[ah] Academic engagement reflects the emotional and behavioural engagement dimensions of Fredricks et al.'s (2004) student engagement concept.
[ai] The data retrieved solely pertain to W2.
[aj] The data retrieved solely pertains to wave 2.
[ak] This study is part of a project with 4 waves, though, this study used data collected at waves 2, 3 and 4.
[al] School engagement reflects the emotional and behavioural engagement dimensions of Fredricks et al.'s (2004) student engagement concept.
[am] Student engagement reflects the emotional and behavioural engagement dimensions of Fredricks et al.'s (2004) student engagement concept.
[an] Since reliability values for prosocial, emotional disaffection and behavioural disaffection was below the minimum threshold ($\alpha < .60$).
[ao] Age and gender values were not explicitly displayed, though authors informed that "Equal proportions of respondents were male and female and most were aged 12 or 13 at the time of recruitment.".

Table 3
Matrix regarding social and emotional competencies and their related CASEL 5 domains by Student engagement, Emotional engagement, Behavioural Engagement, Cognitive engagement and Disengagement.

CASEL 5 domains	Competence	Student engagement	Emotional engagement	Behavioural engagement	Cognitive engagement	Disengagement
Self-awareness (33 studies)	Self-compassion		Zhang et al. (2021)			
	Self-esteem/Self-worth	Padilla-Walker et al. (2013) Mihalec-Adkins and Cooley (2020)Mihalec-Adkins and Cooley (2020) Oshri et al. (2018)	Aldrup et al. (2018) Çakar & Karataş, 2017 Dang (2014) Kim, D. et al. (2018) Law et al. (2013) Martin et al. (2013) Quimby et al. (2018) Rodríguez-Fernández et al. (2016) Šeboková et al. (2018)Sevil-Gülen and Demir (2021) Slaten et al. (2019) Smokowski et al. (2009) Voisin et al. (2018) Wong et al. (2014)	Lynch et al. (2013) Marbell-Pierre et al. (2019) Martin et al. (2013) Rodríguez-Fernández et al. (2016)	Rodríguez-Fernández et al. (2016)	Aldrup et al. (2018) Martin et al. (2013) Peng et al. (2019)
	Self-efficacy	Phillips (2011)	Cunningham et al. (2004) Ho et al. (2015) Jones and Lafreniere (2014) Murphy and McKenzie (2016) Phillips (2011) Rodriguez et al., 2020	Hopkins et al. (2020)	Hopkins et al. (2020)	McGeown et al. (2018)
	Self-confidence/belief in self		İhtiyaroğlu and Ateş (2018) Kim, E. et al. (2019)			
	Happiness		Datu et al. (2017) Šeboková et al. (2018)	Datu et al. (2017)		
Self-management (43 studies)	Adaptative emotion regulation strategies - reappraisal		Zhao & Zhao et al., 2015			
	Control of emotions/Emotional control		O'Connor et al., 2012	Raval et al. (2018)		McGeown et al. (2018)
	Emotional intelligence	Dehyadegary et al. (2014)	Maguire et al. (2017)		Maguire et al. (2017)	Peng et al. (2019)
	Coping/Coping effectiveness/Positive coping/Productive coping	Tolan et al. (2013)	Çakar & Karataş, 2017 Cunningham et al. (2004) Frydenberg et al. (2009) Lehrer et al. (2017)			
	Resilience	Awang-Hashim et al. (2015) Gao et al. (2020) Ungar & Liebenberg, 2013^	Aldridge et al. (2016) Awang-Hashim et al. (2015) Ho et al. (2015) Jones and Lafreniere (2014) Khawaja et al. (2017) Law et al. (2013) Lehrer et al. (2017)	Awang-Hashim et al. (2015) Martin et al. (2015) Rodríguez-Fernández et al. (2016) Venta et al. (2019)	Awang-Hashim et al. (2015) Rodríguez-Fernández et al. (2016)	Venta et al. (2019)

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CASEL 5 domains	Competence	Student engagement	Emotional engagement	Behavioural engagement	Cognitive engagement	Disengagement
CASEL 5 domains	**Competence**	**Student engagement**	**Emotional engagement**	**Behavioural engagement**	**Cognitive engagement**	**Disengagement**
Self-management (cont.)	Resilience (cont.)		Rodríguez-Fernández et al. (2016) Sevil-Gülen and Demir (2021) Slaten et al. (2019) Taylor et al. (2020) Tozer et al. (2018) Venta et al. (2019)			
	Self-control/Self-regulation/Self-management/Personal control/impulse control/Effortful control	Brandt et al., 2019● Bogg et al., 2016● Hu et al. (2019) Padilla-Walker et al. (2013) Stefansson et al. (2018)	Alvarez-Rivera and Fox (2010) Brandt et al. (2019) Bogg et al. (2016)Bryce et al. (2020) Calmeiro et al. (2018) Fox and Bouffard (2015) Li et al. (2013) Loukas et al. (2010) Peterson et al. (2013) Vera et al. (2017) Wang et al. (2005)	Muenks et al. (2017)	Bryce et al. (2020)	Muenks et al. (2017)
	Thriving behaviour	Krauss et al., 2014●				
Social awareness (7 studies)	Empathy/Perspective tacking	Stevens and Hardy (2013)	Acosta et al. (2019) Batanova and Loukas (2014) Curcio et al. (2017) Wong et al. (2014)			
	Gratitude		Zhen et al. (2020)	Zhen et al. (2020)		
	Prosocial values	Tolan et al. (2013)				
Relationship skills (33 studies)	Assertiveness Communication Connectedness Interpersonal confidence/Trust		Acosta et al. (2019) Yeh et al. (2014) Šeboková et al. (2018) Yeh et al. (2014)			McGeown et al. (2018)
	Peers relationships/Peer support/Peer attachment	Brandt et al., 2019● Krauss et al., 2014● Mariscal et al., 2020 Phillips (2011) Van Ryzin et al., 2009^	Acosta et al. (2019) Alvarez-Rivera and Fox (2010) Brandt et al. (2019) Calmeiro et al. (2018) Dinh et al. (2020) Law et al. (2013) O'Connor et al., 2012 Oldfield et al. (2016) Phillips (2011) Quimby et al. (2018) Rodríguez-Fernández et al. (2016) Sevil-Gülen and Demir (2021)	Lynch et al. (2013) Rodríguez-Fernández et al. (2016)	Rodríguez-Fernández et al. (2016)	Peng et al. (2019)

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CASEL 5 domains	Competence	Student engagement	Emotional engagement	Behavioural engagement	Cognitive engagement	Disengagement
	Prosocial behaviour/Engagement in prosocial activities	Yorgason et al. (2011) Kaur et al., 2019ˆ Krauss et al., 2014● Padilla-Walker et al. (2013) Tolan et al. (2013)	Burns and Rapee (2016) Oldfield et al. (2016) Waters et al. (2010)			
	Social competence/Social skills	Demirci (2020) Demirtas-Zorbaz et al. (2018) Mariscal et al., 2020 Mihalec-Adkins and Cooley (2020)Mihalec-Adkins and Cooley (2020)	Calmeiro et al. (2018) Demirci (2020) Liu et al. (2020) O'Connor et al. (2012) Ross et al. (2010) Vera et al. (2017)	Demirci (2020) Hurd & Sellers et al., 2013	Demirci (2020)	
CASEL 5 domains	**Competence**	**Student engagement**	**Emotional engagement**	**Behavioural engagement**	**Cognitive engagement**	**Disengagement**
Responsible decision making (22 studies)	Engaged living (gratitude, zest, optimism)		Kim, E. et al. (2019) Šeboková et al., 2018 [2]			
	Grit – consistency of interest		Steinmayr et al., 2018[2]	Muenks et al. (2017) Steinmayr et al., 2018 [1] Steinmayr et al., 2018 [2]	Steinmayr et al., 2018[2]	Muenks et al. (2017) Steinmayr et al., 2018 [1]
	Grit – perseverance of effort/persistence	Padilla-Walker et al. (2013) Smalls, 2010ˆ	Steinmayr et al., 2018[2]	Muenks et al. (2017) Steinmayr et al., 2018 [1] Steinmayr et al., 2018 [2]	Steinmayr et al., 2018[2]	Muenks et al. (2017) Steinmayr et al., 2018 [1]
	Hope	Demirci (2020) Phillips (2011) Marques et al., 2016 Van Ryzin et al., 2009ˆ	Bryce et al. (2020) Demirci (2020) Dixson and Stevens (2018) Lehrer et al. (2017) Phillips (2011)Stoddard et al. (2011)	Demirci (2020)	Bryce et al. (2020) Demirci (2020)	
	Optimism	Padilla-Walker et al. (2013)	İhtiyaroğlu and Ateş (2018) Murphy and McKenzie (2016) Šeboková et al. (2018) Taylor et al. (2020)			
	Problem-solving		Halgunseth et al. (2013) Jiang et al. (2019)			

Note: ˆ = Student engagement including emotional and behavioural engagement dimensions; ● = Student engagement including emotional and cognitive engagement dimensions; 1 = Study 1; 2 = Study 2.

CASEL 5 domains	Competence	Overall engagement	Emotional engagement	Behavioural engagement	Cognitive engagement	Disengagement
Self-awareness	Self-compassion	0	1	0	0	0
	Self-esteem/Self-worth	3	14	4	1	3
	Self-efficacy	1	6	1	1	1
	Self-confidence/belief in self	0	2	0	0	0
	Happiness	0	2	1	0	0
Self-management	Emotion regulation strategies – reappraisal	0	1	0	0	0
	Control of emotions/ Emotional control	0	1	1	0	1
	Emotional intelligence	1	1	0	1	1
	Coping/Coping effectiveness/Positive coping/ Productive coping	1	4	0	0	0
	Resilience	3	13	4	2	1
	Self-control/Self-regulation/ Self-management/ Personal control/impulse control/ Effortful control	5	11	1	1	1
	Thriving behaviour	1	0	0	0	0
Social awareness	Empathy/Perspective tacking	1	4	0	0	0
	Gratitude	0	1	1	0	0
	Prosocial values	1	0	0	0	0
	Trust	0	1	0	0	0
Relationship skills	Assertiveness	0	1	0	0	0
	Communication	0	1	0	0	0
	Connectedness	0	1	0	0	0
	Interpersonal confidence/ Trust	0	1	0	0	1
	Peers relationships/ Peer support/Peer attachment	5	12	2	1	1
	Prosocial behaviour/ Prosocial activities	5	3	0	0	0
	Social competence/ Social skills	4	6	2	1	0
Responsible decision making	Engaged living (gratitude, zest, optimism)	0	2	0	0	0
	Grit - consistency of interest	0	1	3	1	2
	Grit - perseverance of effort/ persistence	2	1	3	1	2
	Hope	4	6	1	2	0
	Optimism	1	3	0	0	0
	Problem-solving	0	2	0	0	0

Note: Studies can be part of more than one linkage cell.

Fig. 2. Distribution of studies and evidence map across the linkage between social and emotional competencies and student engagement.

more groups or variables, we analysed the comparison of correlation coefficients (MedCalc Software Ltd., 2022) to examine differences between groups or between SECs and each engagement domain. Regarding the longitudinal studies, we compared the longitudinal correlation coefficients (i.e., SEC_{T1} correlation with SE_{T2} and SE_{T1} correlation with SEC_{T2}) to understand if the association was reciprocal or not.

2.4.1. Operational definitions

The SECs were first categorised according to the CASEL-5 framework, which includes five broad interrelated areas of competence, namely self-awareness, self-management, social awareness, relationship skills, and responsible decision-making (CASEL, 2019). Secondly, resilience was included as a competence comprised in the self-management domain, in line with a framework proposed by the European Commission Network of Experts on Social Aspects of Education and Training (NESET), considering the term resilience skills as the competencies related to overcoming difficulties and setbacks and keep thriving (Cefai et al., 2018). Peers' relationship and attachment were also included as part of the relationship skills CASEL category since the studies used questionnaires measuring communication and trust skills (e.g., Armsden and Greenberg (1987)'s questionnaire in the included study of O'Connor et al. (2012)) and connection (e.g., González and Hernández (2014)'s questionnaire in the included study of Rodríguez-Fernández et al., 2016).

Student engagement was categorised as a multidimensional concept in line with Fredricks et al.'s (2004) definition, comprising three subdomains: cognitive, behavioural, and emotional engagement. Moreover, in line with Korpershoek et al.'s (2020) proposal, the terms school belonging (Goodenow, 1993), bonding (e.g., Fleming et al., 2010; O'Donnell et al., 1995), attachment (e.g., Hirschi, 1969; Iyaroglu, 2014), satisfaction (e.g., Huebner, 1994) and psychological SE (Appleton et al., 2006; Christenson & Anderson, 2002) were included within the emotional SE subdomain. Additionally, items related to disengagement or disconnectedness, disaffection, and truancy were grouped into one single category named disengagement. The codification of the SE variables (overall SE, subdomains, and disengagement), if not explicitly identified, included the search for the measure and the examination of the items used to correctly attribute the term.

2.5. Quality appraisal

The criterion for quality assessment was defined according to the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) checklist for longitudinal and cross-sectional studies (Vandenbroucke et al., 2007), which was used to evaluate the information that should be presented in the studies analysed. Therefore, each article was evaluated for study design, setting, participants, variables, data sources/measurement, bias, study size, quantitative variables, and statistical methods (Methods section), and for participants, descriptive data, outcome data, and main results (Results section). Each item was scored from 0 to 2, where 0 means "not comply" or "not reported" in the study, 1 means that "complies partially" and 2 means that "complies completely". Total scores were derived into three categories, namely weak (0-13), moderate (14–19), or strong (20–26). Two of three authors independently coded quality appraisal (A.C.S., M.F.S and I.F.). The coders were initially trained using five articles. An agreement of 100% was achieved with regard to the qualitative total score categories. A detailed analysis of the 13 items coded quantitatively showed an overall interrater reliability agreement of 90% ($k_{mean} = 0.62$), with final results reached by consensus. At the end of the coding process, some systematic inconsistency was noted in the assessment of bias and the report of missing data in the descriptive data section. Thus, group agreements were made, and the coders reassessed these categories. The agreement increased by 8%. The score for each item and the total scores with a quality descriptor are reported in Table S2 in the supplementary material. None of the articles was weak in quality. Although two articles were of moderate quality, the authors agreed to include them since the information available allowed retrieval of results and their analysis.

3. Results

3.1. Deviation from protocol

After preregistration of the protocol, we decided to exclude studies in which teachers and/or parents performed the students' asessment. A systematic review of SE measurement indicated that agreement between teachers and students tended to be higher for the behavioural dimension of SE and lower for emotional dimension of SE (Fredricks & McColskey, 2012). The authors also propose that teachers' SE report is more relevant for younger children, who may have lower reading proficiency and difficulties in self-reflection. Therefore, six reports were excluded.

As described earlier, scholars have typically conceptualised engagement as a multidimensional construct comprising three domains: behavioural, emotional, and cognitive engagement. Therefore, we focused only on studies that used this conceptualization. Some researchers have based their conceptualization of engagement on theories of happiness by proposing a different three-dimensional structure comprising vigour, dedication, and absorption, which has been measured using the Utrecht Work Engagement Scale for Students (Schaufeli et al., 2002) or the Schoolwork Engagement Inventory (Salmela-Aro & Upadaya, 2012). However, because the theoretical basis differs from the conceptualization we selected, we excluded studies that employed this scale or model.

3.2. Study characteristics

There were 91 studies included in the final review. Table 1 summarises the characteristics of the studies, and Table 2 shows the main findings and their characteristics.

The majority of the studies were published in the United States of America ($n = 39$, 42.9%), followed by Australia ($n = 14$, 15.4%) and China ($n = 9$, 9.9%), with only one study reporting cross-country comparisons. Studies employed both cross-sectional (73.6%) and longitudinal designs ($n = 24$, 26.4%), with data collection points for longitudinal studies ranging from two ($n = 15$, 62.5%) to six waves ($n = 3$, 12.5%). All studies used student self-report data. Most studies were published from 2016 onwards (60.4%), denoting an increase in research in this field over the years.

The total sample comprised 92879 students, ranging from 75 to 8433 participants, with a mean age of 14.66[3] ($SD = 2.13$), ranging from 10.84 to 20.45 years old. Most studies had a mixed sample, with participants from diverse backgrounds ($n = 66$, 72.5%), with 22 focussing on vulnerable samples (24.2%). Also, most studies included middle and/or high school students, with only six counting university students ($n = 6$, 6.59%). Average gender percentages were somewhat equivalent, though, there were more female (53.82%) than male students (48.39%) in the samples.

Overall, the quality of the studies was strong ($M = 23.82$, $SD = 1.49$), ranging from 18 to 26 points (see Table S2 in the Supplementary Material for detailed information). Common strengths presented in all studies were found in the methodology section regarding study design explanation, participants' sample description about eligibility criteria, sources and selection, and quantitative variables eligibility criteria and measures used. Conversely, the most common limitations were the lack of a complete description of the characteristics of study participants (e.g., no age or school level information), report of possible confounding variables, or providing information regarding missing data ($n = 61$, 67%%). Another relevant and common limitation was the absence of references to the missing data handling method ($n = 41$, 45.1%). A minor proportion of studies also had limitations in terms of outcome data, namely, not providing complete information ($n = 16$, 17.6%) and lack of reporting efforts to address potential sources of bias ($n = 14$, 15.4%). Some of the most mentioned methodological concerns were i) the randomisation of schools and/or classes, ii) the addition of

[3] Regarding age mean, for two studies (Curcio et al., 2017; Muenks et al., 2017) there were no overall mean age, but instead the mean age for the two groups under analysis. Thus, mean age for these two studies is the average of the two values provided.

confounding variables in the statistical analysis, iii) the presence of a researcher/technician that could read the questionnaire out loud to reduce differences in completion time that could decrease participants' motivation (due to potential differences in reading proficiency), and iv) the inclusion of attention check questions.

The results were synthesised into each of the five areas of the CASEL framework: self-awareness, self-management, social awareness, relationship skills, and responsible decision-making. Additionally, the results were analysed according to age or gender differences and by SE dimensions (i.e., emotional, behavioural, and cognitive engagement) (studies that analysed at least two of these). As shown in Table 3 and Fig. 2, there is great heterogeneity in the results regarding competencies within the five areas of SECs and SE variables. Consequently, we did not perform a meta-analysis. School level (i.e., middle school, high school, university level) and sample type (i.e., mixed, vulnerable, or privileged) were also unevenly distributed, and thus no accurate comparison was possible either.

3.3. Data synthesis

The overall SE multidimensional concept (as a total score) appeared in 23 studies, of which seven considered two (i.e., emotional and cognitive, or emotional and behavioural engagement) or three dimensions of SE (for details see the note in Table 3). Furthermore, ten studies included data on two or more dimensions of SE separately. There were 63 studies that analysed emotional engagement, of which 49 devoted attention exclusively to emotional engagement (and its synonyms), indicating that this is the more studied dimension of engagement. In contrast, cognitive engagement was the least studied. SECs and disengagement association analysis are also scarce in research, with only seven studies included.

Despite the variability in the strength of the correlations, ranging from weak to strong, in general, the vast majority of the studies showed that SECs are positively associated with SE and its dimensions and negatively associated with disengagement. However, 13 studies reported at least one nonsignificant association between SECs and engagement (Brandt et al., 2019; Bryce et al., 2020; Curcio et al., 2017; Liu et al., 2020; Lynch et al., 2013; Marbell-Pierre et al., 2019; Phillips, 2011; Raval et al., 2018; Smokowski et al., 2009; Tolan et al., 2013; Yeh et al., 2014; Zhen et al., 2020; Çakar & Karataş, 2017). For instance, a longitudinal study reported a positive association with behavioural engagement, but not with psychological engagement (Zhen et al., 2020). Two reported the absence of a significant correlation between SECs (i.e., self-esteem and resilience, respectively) and disengagement (Aldrup et al., 2018; Venta et al., 2019), and another two reported that the association was no longer significant longitudinally (Brandt et al., 2019; Lynch et al., 2013; Tolan et al., 2013) or for older groups (Bryce et al., 2020; Curcio et al., 2017; Liu et al., 2020). One study reported a significant positive association among USA students, but a negative association among Ghana students (Marbell-Pierre et al., 2019), while another reported a negative association between friends' attachment and school attachment (i.e., emotional engagement) (Alvarez-Rivera & Fox, 2010).

3.3.1. Self-awareness and student engagement

Self-awareness was reported in 33 studies, with five groups of competencies being registered: self-compassion ($n = 1$), self-esteem ($n = 21$), self-efficacy ($n = 8$), self-confidence ($n = 2$), and happiness ($n = 3$) (see Table 3 and Fig. 2 for details).

Eighteen studies indicated a significant positive association between self-esteem and SE, emotional, behavioural, and cognitive engagement, while two studies reported a negative association with disengagement. Nonetheless, a study with a sample of German students in the vocational path showed a positive association between self-esteem and emotional engagement but a nonsignificant result for disengagement (Aldrup et al., 2018). Moreover, the only cross-cultural study included in this review reported a moderate positive association between self-esteem and behavioural engagement for USA students but a negative for Ghana students (Marbell-Pierre et al., 2019), with the authors, also reporting a higher level of academic engagement for Ghanaian students than for American students. Also, two studies reported nonsignificant associations between self-esteem and emotional engagement (Smokowski et al., 2009; Çakar & Karataş, 2017).

One study found a negative association between self-efficacy and disengagement (McGeown et al., 2018), while another reported a positive association between self-efficacy and overall SE, but not with emotional engagement (Phillips, 2011). The other six studies showed positive associations between self-efficacy and emotional engagement (see Table 3 and Fig. 2 for details). The four studies reporting weak correlations had mixed students ranging from 12 years old onwards (Ho et al., 2015; Hopkins et al., 2020; Jones & Lafreniere, 2014; Rodríguez et al., 2020), whereas the two studies reporting strong correlations had a sample of vulnerable youth (Cunningham et al., 2004) and younger students between 10 and 12 years old (Murphy & McKenzie, 2016).

3.3.2. Self-management and student engagement

Forty-three studies investigated the association between self-management and the total score of SE, disengagement, and dimensions of SE, with data on the following competencies: self-regulation ($n = 16$), resilience ($n = 17$) and thriving behaviour ($n = 1$), coping ($n = 5$), emotional intelligence ($n = 3$), emotion regulation ($n = 3$), and emotion regulation strategies ($n = 1$) (see Table 3 and Fig. 2 for details).

Four of the five studies that analysed coping strategies showed positive associations with emotional engagement in middle school girls (Lehrer et al., 2017) and students from mixed backgrounds in high school (Cunningham et al., 2004; Frydenberg et al., 2009; Çakar & Karataş, 2017). The only study which examined coping and SE overall score reported a non-significant correlation (Tolan et al., 2013). However, this was a study with a sample of boys at high risk for aggressive behaviour, a population that may have, due to its vulnerability, a smaller repertoire of coping strategies.

It is worth noting that a study with vulnerable youth engaged with multiple community services, including social-cultural majority

and minority (i.e., non-white), analysed resilience through three domains: individual competencies, primary relationships, and contextual resources (Ungar & Liebenberg, 2013). The study showed that the context subscale was significantly associated with SE for both social-cultural minority and majority youth. Although individual characteristics were not associated with SE in the minority group, they were in the case of the majority of youth students (Ungar & Liebenberg, 2013). A comparison of correlation coefficients, calculated in the scope of this review, also showed that for the majority of the youth group, individual characteristics were more highly associated with SE than contextual-cultural factors.

A central aspect of self-management is the ability to regulate emotions. In this regard, studies have shown a positive association with emotional engagement (O'Connor et al., 2012), a negative association with disengagement (McGeown et al., 2018) and a nonsignificant association with behavioural engagement (Raval et al., 2018). Only one study that focused on specific emotion regulation strategies (i.e., reappraisal) showed a moderate positive association with emotional engagement (Zhao & Zhao, 2015).

3.3.3. Social awareness and student engagement

In this review, data on social awareness and engagement were present only in seven studies, indicating that this dimension is the less investigated of the SECs' area in association with engagement, with two results for the SE total score, five for emotional engagement and one for behavioural engagement. The competencies analysed were empathy or perspective taking ($n = 5$), gratitude ($n = 1$) and prosocial values ($n = 1$). Note that all studies reported positive associations between social awareness and SE.

3.3.4. Relationship skills and student engagement

There were 33 studies, almost all reporting significant positive associations between relationship skills and SE (and its related subdimensions), or negative associations with disengagement. These included peer relationship and support ($n = 17$), interpersonal confidence ($n = 2$), assertiveness ($n = 1$), communication ($n = 1$), connectedness ($n = 1$), social competence ($n = 10$), and prosocial behaviour ($n = 8$) (see Table 3 and Fig. 2 for more details). Among the five SEL domains, the relationship skills domain is the one where more studies used the multidimensional definition of SE. Positive association results obtained in this category were observed for mixed and vulnerable samples within the three school levels. Only one study reported a nonsignificant association, with immigrant students in the United States of America showing no association between trust and communication with peers and emotional engagement (Yeh et al., 2014).

3.3.5. Responsible decision making and engagement

Twenty-two studies reported positive associations between responsible decision-making related competencies and SE, its related subdimensions, and disengagement. These included engaged living ($n = 2$), optimism ($n = 5$), hope ($n = 8$), problem-solving ($n = 2$), and grit ($n = 4$). The latter comprised two dimensions (i.e., consistency of interests and perseverance of effort/persistence), with both showing positive associations with SE (Padilla-Walker et al., 2013; Smalls, 2010), with emotional, behavioural and cognitive SE (Steinmayr et al., 2018), and negative associations with disengagement (Muenks et al., 2017).

Specifically, optimism was found to be positively associated with SE (Padilla-Walker et al., 2013) and emotional SE in the case of vulnerable (Z. E. Taylor et al., 2020) and mixed (İhtiyaroğlu & Ateş, 2018) groups of students in middle (Murphy & McKenzie, 2016) and high school (İhtiyaroğlu & Ateş, 2018), in both cross-sectional (Murphy & McKenzie, 2016; İhtiyaroğlu & Ateş, 2018) and longitudinal (Padilla-Walker et al., 2013; Šeboková et al., 2018; Z. E. Taylor et al., 2020) study designs.

3.3.6. Student engagement dimensions

Eleven studies present data on two or three SE dimensions. A comparison of correlation coefficients between dimensions revealed similar results in five studies (Datu et al., 2017; Hopkins et al., 2020; Maguire et al., 2017; Martin, 2013; Venta et al., 2019) but also differences in five studies (Awang-Hashim et al., 2015; Rodríguez-Fernández et al., 2016; Steinmayr et al., 2018; Zhen et al., 2020). Unfortunately, it was not possible to compute such analysis in Bryce et al.'s (2020) study, since no correlation values were reported. Furthermore, no differences were found between social competence and SE dimensions in one study, but differences were found in the association with hope, with higher correlation values for emotional and cognitive SE than for the behavioural dimension (Demirci, 2020).

Interestingly, a study with a vulnerable group in high school reported no differences between resilience and SE dimensions (i.e., emotional and behavioural SE), but two studies with high school samples from mixed backgrounds, reported higher association values for emotional and cognitive SE than for behaviour SE (Awang-Hashim et al., 2015; Rodríguez-Fernández et al., 2016). In the study of Rodríguez-Fernández et al. (2016), we also found that self-esteem and peer support correlation values were higher for emotional SE, followed by behavioural SE and lastly, cognitive SE. Peer support and cognitive SE association was not significant, but in the second study by Steinmayr et al. (2018), the consistency of interests was more associated with behavioural than emotional or cognitive SE, with no differences between the latter.

Finally, in the only longitudinal study with three waves of data collection that analysed personal SE trajectories, gratitude was found to be associated with behavioural but not with emotional SE (Zhen et al., 2020). Two different behavioural SE trajectories were observed: both had an initial high level, though one group had a posterior stable tendency across waves, whereas the other group had a decreasing tendency at the second and third waves, with gratitude differentiating the trajectories and being more associated with the high stable behavioural SE group (Zhen et al., 2020).

3.3.7. Gender and age differences

Thirty-nine studies (42.86%) included gender in their analysis, with 28 reporting no gender associations. Nine studies reported

gender differences, all indicating that female students reported higher levels of SE than male students (Burns & Rapee, 2016; Demirci, 2020; Frydenberg et al., 2009; Jiang et al., 2019; Loukas et al., 2010; Mihalec-Adkins & Cooley, 2020; Oshri et al., 2018; Padilla--Walker et al., 2013; Zhao & Zhao, 2015).

Twenty-six studies included age in their analysis, with seven reporting age differences, all indicating that older students reported lower SE (Hu et al., 2019; Li et al., 2013; Martin et al., 2013; Oshri et al., 2018; Tolan et al., 2013) or higher disengagement (Martin et al., 2013; McGeown et al., 2018; Peng et al., 2019) than younger students.

For instance, in Curcio et al. (2017), empathy was not associated with SE in the older age group (19–20). The empathy scale for the older group ($\alpha_{18\text{-}20} = .66$) had lower reliability values compared to the younger students ($\alpha_{13\text{-}14} = .71$, $\alpha_{15\text{-}17}.74$), which can indicate that for university students, the measure might be less suitable. The study by Brandt et al. (2019) also showed that the association between impulse control and peers' relationship with SE was lower for older participants (18–19 years old). Another study showed that social competence was associated with emotional SE from 5th to 7th grade but not for 8th grade (Liu et al., 2020).

However, the study by Muenks et al. (2017), in addition to showing similarities in the relation between behavioural SE/disengagement and consistency of interests/self-control among both middle- and high-school students, also showed that the association between the perseverance of effort and behavioural SE and disengagement was higher for high-school students.

Furthermore, the longitudinal study by Stefansson et al. (2018) stressed that among high school students, the association between self-regulation and SE throughout the four collection moments was high ($0.56<r<.67$, $ps < .001$). Additionally, another study that reported its results by school level (i.e., middle vs high school students) indicated that hope and self-regulation optimization were similarly associated with cognitive and emotional SE among both middle- and high-school students. However, self-regulation selection was only associated with SE dimensions for middle school students (Bryce et al., 2020).

3.3.8. Longitudinal studies

Twenty-four studies used a longitudinal design. In 16 of these studies, it was not possible to analyse the association between the measures longitudinally. In nine studies, the retrieved data pertained to just one time (Aldrup et al., 2018; Batanova & Loukas, 2014; Fox & Bouffard, 2015; Halgunseth et al., 2013; Loukas et al., 2010; Martin et al., 2013; Slaten et al., 2019; Smokowski et al., 2009; Steinmayr et al., 2018) and in the remaining seven, one of the variables retrieved was measured just once (Lynch et al., 2013; Padilla-Walker et al., 2013; Taylor et al., 2020; Tolan et al., 2013; Waters et al., 2010; Zhen et al., 2020; Šeboková et al., 2018).

In the remaining eight longitudinal studies, the analysis of correlation coefficients showed mixed findings. In six studies, there were no longitudinal differences. These six studies analysed impulse control and peers' relationships with emotional and cognitive SE (Brandt et al., 2019; Quimby et al., 2018), self-esteem (Oshri et al., 2018; Quimby et al., 2018), hope (Marques, 2016; Van Ryzin et al., 2009) and prosocial behaviour with SE (Yorgason et al., 2011). On the contrary, in the study by Jiang et al. (2019), although the correlation values did not show any difference, the path analysis showed a predictive value of school satisfaction in the first data collection to problem-solving in the second data collection, but not the other way round. Finally, in the study by Stefansson et al. (2018) with four data collection times and a high school mixed background sample, in addition to the strong associations between SE and self-regulation within each measurement occasion, the differences between longitudinal correlation coefficients suggest that self-regulation might exert more influence on SE than the other way around.

4. Discussion

The present systematic review aims to explore i) whether youth students with higher social and emotional competencies (SECs) report higher student engagement (SE), ii) what are the SECs most studied in association with SE and iii) if there were differences in SE as a function of age/school level and gender.

4.1. Association between student engagement and social and emotional competencies

This systematic analysis reviewed the evidence related to student engagement (SE) and social and emotional competencies (SECs) in young people. Based on the results of 91 studies, the majority ($n = 75$) reported significant positive associations between SECs and SE (or its subdomains) and negative associations with disengagement. These results are consistent with previous systematic reviews that analysed emotional SE (Allen et al., 2018; Korpershoek et al., 2020).

In line with the CASEL framework, the domains most studied about their association with SE were, by order of magnitude, self-management (e.g., self-regulation, resilience and coping), self-awareness (e.g., self-esteem and self-efficacy), relationship skills (e.g., peers' relationships, overall social competencies and prosocial behaviour), responsible decision making (e.g., optimism, hope, grit) and social awareness (e.g., empathy).

Relationship skills was the domain more studied in association with overall SE. Educational institutions are "social environments for learning" (Boocock, 1973), in which students spend a significant part of their day, so this result does not come as a surprise. Moreover, the Portuguese report of the Health Behaviour in School-aged Children showed that relationships with peers and teachers were among what they liked the most at school (Matos et al., 2018). Thus, the higher the social competence, the higher the level of SE (and vice-versa), as verified throughout this systematic review.

Only the study of Yeh et al. (2014) with migrant students revealed no association between relationship skills (i.e., trust and communication with peers) and emotional SE, highlighting the need to explore differences between migrant and non-migrant students. Perhaps this nonsignificant finding may be related to the sample. Trust or communication might differ between migrant-migrant or native-native since they may have distinct cultural habits and values, which may hinder their sense of security among native peers. It is

also possible that native students have difficulties trusting or accepting migrants, which may trigger difficulties in peer relationships. For example, Plenty and Jonsson (2017) found that immigrant students were more rejected than native students and experienced more social exclusion when they were part of classes with fewer immigrant peers.

Research in the area of emotional competence, and in particular emotion regulation, has been showing its impact on education and learning (Pekrun et al., 2017), psychological flexibility, resilience, and well-being (Morrish et al., 2018). However, our findings indicate that information on the association between emotion regulation and SE is scarce. Future studies should urgently consider not only the need to identify which strategies tend to work best but also the specificities in terms of development, as the maturity of emotion regulation strategies seems to be non-linear (Zimmermann & Iwanski, 2014). Moreover, it is essential to consider the interaction between strategies, individuals, and social contexts, as some theories have highlighted. For example, the regulatory fit theory (Higgins, 2005) suggests that self-regulation will be more effective if the person employs strategies aligned with their goals or typical self-regulation strategies. These theoretical perspectives reinforce the need to invest in SEL during youth to allow young people to acquire and increase their repertoire of strategies and provide opportunities for practice, thus improving the adequacy of their decisions and feedback responsiveness (Cefai et al., 2018; Chernyshenko et al., 2018).

4.2. Student engagement and its dimensions

A previous literature review observed that most SE research focused on behavioural SE (Fredricks, 2015). Our review, however, shows that when addressing the association between SECs and SE, most studies focused on emotional SE rather than overall, behavioural or cognitive SE. The three-dimensional analysis of SE seems to constitute a more sensitive analysis, allowing us to understand which dimensions are most associated with which SECs areas. As can be observed from Fig. 2 and Table 3, the skills in the five areas of the CASEL framework have different definitions, despite being part of general constructs (e.g., within self-awareness, one can find self-compassion, self-esteem/self-worth, self-efficacy, self-confidence). Unfortunately, the small number of studies that analysed two or three areas of SE by each SEC did not allow us to carry out a meta-analysis by SE dimensions. Only in resilience (included in the self-management domain) did we find more than one study that presented results from two or three dimensions of SE. Of these, no differences between dimensions were observed in one study, which indicates that resilience was similarly associated with the three SE dimensions, while two studies showed higher correlations with cognitive and emotional SE than with behavioural SE. The study in which no differences between dimensions were observed had a vulnerable group, while the other two had mixed backgrounds. These findings highlight the importance of reporting results for each SE dimension, in addition to SE overall values. More importantly, this indicates that resilience, despite its association with emotional and cognitive dimensions of SE, may be especially relevant for those in vulnerable conditions to persist and participate actively in the classroom (i.e., to express behavioural SE) than for students from diverse backgrounds.

Despite the importance of individual skills, and given that personal resources are more depleted the higher the risk in the context (Hobfoll et al., 2015), it will be important to continue investigating how and in which conditions are coping strategies related to SE, by accounting for the resources available in the environment (Ungar & Liebenberg, 2013). In this respect, it is relevant to consider to what extent contextual vulnerability characterizes the environment in which students live. Indeed, SE appears to be highly influential in student persistence in school and sequential degree engagement, especially for those from high-risk contexts (Ungar et al., 2014). The conservation of resources (COR) theory is based on the tenet that people have an inner motivation to acquire and protect their resources that protects them when confronted with stress (Hobfoll, 1989). As the COR theory advocates, three principles impact resources' conservation: i) resilience is characterised by environments that have great personal and material resources, that provide easy access to their acquisition and that protect resources loss and promote resources growth; ii) people that live in rich environments tend to increase their resources and those who live in poor environments tend to decrease their resources; iii) over time, resources' decrease is faster and more influential that resources' growth (Hobfoll et al., 2015). Thus, the educational system must provide personal and material resources and ensure that people have the knowledge and full access to the available resources. Moreover, since SECs are powerful internal resources, they must be promoted universally and preventively to account for all students' needs. In this respect, schools and universities can be places that promote resilience and protect against individual risk factors.

4.3. Longitudinal studies

The methodology in most longitudinal studies does not allow us to draw conclusions on the possible causality between SECs and SE. Nevertheless, the findings seem to suggest that self-management and responsible decision-making influence SE increase, but not vice versa, whereas self- and social awareness and relationship skills and SE might have reciprocal associations over time. Future longitudinal studies should assess SECs and SE at more than one point in time and also focus on cross-lagged models to better understand this relationship, compare moments of change, the impact of significant life events (e.g., change of school, family, going to university), and examine populations with different characteristics (e.g., social and economic status).

4.4. Gender and age differences

Several studies, especially cross-sectional, have addressed the role of gender. Interestingly, gender differences in SE were not found in more than half of the studies. In those where differences were verified, all were consistent that girls reported higher levels of SE. Given the results obtained, gender should continue to be included as a possible confounder. Educational institutions need to be aware of the greater vulnerability of boys to engage in disengagement trajectories.

A relevant proportion of studies that included age in their analyses reported no association with SE. When differences were reported, older students were found to have lower SE or higher disengagement than younger students. Previous studies have argued that as students get older, SE may decrease due to the poor match between their needs and the school setting (Eccles & Roeser, 2009; M.-T. Wang et al., 2013).

With regards to age as a moderator between SECs and SE, our review indicated that self-regulation was associated with SE in both middle and high school, as well as consistency of interests and SE. In the case of the other SECs however, this effect seems to depend on the type of competencies, with empathy, impulse control, and peer relationship being highly correlated with SE in middle and first years of high school, but not amongst older students (i.e., last years of high school or university). Social competence had a higher correlation value with SE among middle school students than among high school students, while perseverance of effort had a higher correlation value with SE with high school than for middle school students. Nevertheless, these conclusions require caution in their interpretation since most associations are derived from one study only.

Additionally, we found few studies of university students in the five SEC areas in the CASEL framework. Notably, there were no studies with university students with SE and relationship skills or responsible decision-making. This target population requires more attention in future studies, as the number of university students has increased over the years (UNDP, 2019). Also, many college students are between 18 and 25 years of age, a period of life often called emerging adulthood (Arnett, 2018), characterised by personal identity exploration. Moreover, this period may represent a time of instability, with the predominance of "feeling in-between" (i.e., "not adolescent but not fully adult either") (Arnett, 2013). Furthermore, the university setting is rich in human interactions and challenges (Reis & Matos, 2019). Ultimately, SE can also impact the way emerging adults engage with their first employment experiences (Reschly & Christenson, 2012).

Person-oriented research has explored developmental trajectories. In most studies, SE seems to remain relatively stable over the years (Y. Li & Lerner, 2011; Symonds et al., 2016). However, there are groups of students where gradual or abrupt decreases in SE are evident (Y. Li & Lerner, 2011; Symonds et al., 2016). Although students in disengagement trajectories may have relatively small proportions, the impact of a disengagement trajectory has several negative effects on individual health, as well as social and economic contribution, namely higher levels of substance use, poorer psychological well-being, less likelihood to attend university and more likelihood of unemployment (Symonds et al., 2016). Although the studies showed a consistent negative association between SECs and disengagement, this warrants further research, given the limited number of studies retrieved. Moreover, only one study used a cross-cultural design (Marbell-Pierre et al., 2019), reporting opposite findings between the two countries analysed, reinforcing the need for future studies to deepen our understanding of the cross-cultural influence on the association between SECs and SE.

4.5. Limitations

Despite the important findings of this systematic review, some limitations should be recognised. First, the uneven number of studies analysing the three dimensions, or the overall SE, since most included studies focused on emotional SE. We suggest that future studies include a multidimensional concept of SE, instead of just one of the three dimensions, to promote a more integrated SE assessment. Second, almost all studies used self-report measures to assess SE. Although self-reporting is especially beneficial in the assessment of emotional or cognitive dimensions of SE since they cannot be observed directly (Fredricks & McColskey, 2012), future studies may invest more in direct observations of behavioural SE. For example, only one study (Aldrup et al., 2018) analysed truancy, which can be construed as active behavioural disengagement (Keppens & Spruyt, 2020). Third, students with specific learning disabilities were excluded from this review. Future analysis needs to consider the inclusion of these students, since they are more prone to disengagement, to express less autonomy, self-efficacy, and peer support (Lombardi et al., 2021). Systematic analysis including these studies will be helpful in understanding the SECs that could better support such students in coping with academic challenges.

5. Conclusion

To the best of our knowledge, this is the first systematic review focused on the association between social and emotional competencies and SE. We also integrated data from the last 16 years, a period in which this line of research has made significant advances. The studies identified represent data from 22 countries and mainly included middle- and high-school students from both mixed and vulnerable backgrounds. Since SE is amenable to change and is a relevant protective factor, educational institutions must actively and systematically promote it through social and emotional learning school-based programmes. This review showed that SECs showed positive associations with SE and negative associations with disengagement, with most studies focussing on self-awareness, self-management, and relationship skills and less on responsible decision making and social awareness. Moreover, longitudinal studies suggest that self-management and problem-solving competencies might impact SE more highly than vice versa, suggesting a possible causal path. The longitudinal correlations between SE and self- and social awareness and relationship skills show similar values, suggesting reciprocal associations. Numerous studies report nonsignificant associations between SE and age or gender, but those studies that did find a difference indicated that girls and younger students exhibited higher SE than boys and older students. Finally, future research should prioritise the multidimensional concept of SE, longitudinal designs, the inclusion of university students, and the potential effect of different personal and sociocultural cofounding variables.

Author statement

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Declaration of competing interest

None.

Data availability

No data was used for the research described in the article.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.edurev.2023.100535.

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