



Placing Social and Emotional Support at the Center of School Climate: A Scoping Review of Measures for Middle and Secondary Schools

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Abstract

School climate can be defined as the perceptions of students, teachers/staff, and families, and the patterns of experiences that guide their daily life at school. There are a multitude of largely consensual theoretical approaches that seek to define school climate, but similar constructs are often operationalized and measured with different designations. Additionally, there has been an increase in research, practice, and public policy on the social and emotional learning (SEL) of students, but the support for this domain is rarely explicitly reflected in school climate instruments. This scoping review aims to conduct an exhaustive search for existing school climate measures, and to (1) identify the ones most frequently used, and (2) critically assess the integration of support for social and emotional learning in their composition. Results reveal a proliferation of school climate measures, with 965 studies using 404 different instruments. An analysis of those used more than five times in the literature ($n=43$) shows that approximately 5% of measures (less than 1% of all subscales) explicitly address SEL; two thirds include items operationalizing social and emotional skills in students (6% of all items); and 91% include subscales shown to be directly related to SEL in the literature (55.04% of all subscales). This study adds clarity to the conceptualization of school climate and its relationship with the support for students' social and emotional learning, and its results contribute to increased monitoring of quality in school practices, placing students' social and emotional development at the center.

Keywords School climate · Social and emotional learning · Classroom climate · Secondary school · Scoping review

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School climate generally describes *how a school is*, and is operationalized as the perceptions of students, teachers, staff, families, or other stakeholders, and the patterns of experiences that guide their daily life at school (National School Climate Center - NSCC, 2012; Wang & Degol, 2016). Cohen and colleagues' (2009) widely cited definition describes school climate as "the quality and character of school life", reflecting its "norms, goals, values, interpersonal relationships, teaching and learning practices, and organizational structures" (Cohen et al., 2009, p. 182). School climate is, thus, broadly understood as a multidimensional, latent construct, composed of several sub-aspects related to interactions between peers, relationships between students and teachers, principal leadership, or sense of security and belonging to school.

Researchers have acknowledged the multidimensionality of school climate as a construct, sharing some level of understanding regarding its underlying dimensions. The most commonly cited frameworks agree on dimensions of safety, relationships, and teaching and learning (Cohen et al., 2009; NSCC, 2012; Thapa et al., 2013; Wang & Degol, 2016), while also including environmental-structural aspects (Cohen et al., 2009), the institutional environment (NSCC, 2012; Thapa et al., 2013; Wang & Degol, 2016), and school improvement processes (Thapa et al., 2013).

Despite overall consensus on the main dimensions that factor into school climate, researchers still identify great variability in the composition, naming, and operationalization of these dimensions and subdimensions. For instance, as summarized by Lewno-Dumdie and colleagues (2020), Cohen et al.'s (2009) framework of school climate integrates student engagement as part of the dimension of *relationships*, whereas the ones by NSCC (2012) and Thapa et al. (2013) consider this aspect is part of the *institutional environment*. These discrepancies have implications for measurement, because subscales and items are operationalized reflecting differences in frameworks.

In addition, conceptualizations of school climate often overlook the domain of support for students' social and emotional learning (SEL; Osher & Berg, 2017). Schools stand as more than an academic learning setting; they are also a place where children and youth acquire and develop the skills which allow them to become healthier, better adjusted, functioning adults (OECD 2024a). Such skills include learning how to cooperate, solve social problems, think creatively and critically, in interaction with peers and adults (Chernyshenko et al., 2018). The development of these skills in the school context must be embedded into the conceptualization and measurement of school climate, given that school offers a key developmental context for social and emotional skills (Kools et al., 2020).

During adolescence, young people's systems of development widen, and peers and the overall school context take on a more substantial role (Verhoeven et al., 2019). This is a critical period for SEL, since teens are testing new roles by engaging in new and more complex interactions with colleagues and other adults (Evans et al., 2018; Waters et al., 2014), and skills such as critical thinking, social problem solving, or resilience become key to navigating their daily lives at school (Kim et al., 2024; Ma et al., 2022; Ross et al., 2019). The literature indicates more complex social emotions develop during puberty - research on the Theory of Mind shows this ability to attribute mental states to others is particularly developed in adolescence (Valle et al., 2015), as opposed to childhood (O'Grady & Nag, 2022). There is also evidence of the

importance of this developmental period for social-emotional processing both genetically (Warrier & Baron-Cohen, 2018) and in brain functioning (Fan et al., 2025; Goddings et al., 2012).

Taking into account the importance of social and emotional learning in school settings, particularly during adolescence, and the often neglect of the domain of SEL support in school climate measures, this study aims to produce a scoping review of school climate measures for middle and secondary school, identifying the ones most commonly used, as well as to critically assess the integration of support for SEL in the development and operationalization of these measures. We also propose to do so by adopting a search strategy which takes into account the conceptual confusion in the field of school climate, broadening it to related constructs. The critical assessment of the embedding of SEL support in school climate measures, the methodological options regarding the search strategy and the exclusion process, and the description of included studies in the review (and not only of included measures) stand as distinctive contributions from this research (Fig. 1).

Conceptualization, Dimensionality and Scope

Researchers generally agree on the meaning of school climate. Several literature reviews on school climate measures provide overviews of dimensions, showing evidence of this consensus regarding relationships, safety, teaching and learning, and the institutional environment (González et al., 2023; Lenz et al., 2021; Lewno-Dumdie et al., 2020; Marraccini et al., 2020; Ramelow et al., 2015) including for secondary school settings (Baumsteiger et al., 2023; Grazia & Molinari, 2021).

Despite conceptual alignment, many instruments name and operationalize school climate dimensions and subdimensions differently, as found by Lewno-Dumdie et al.

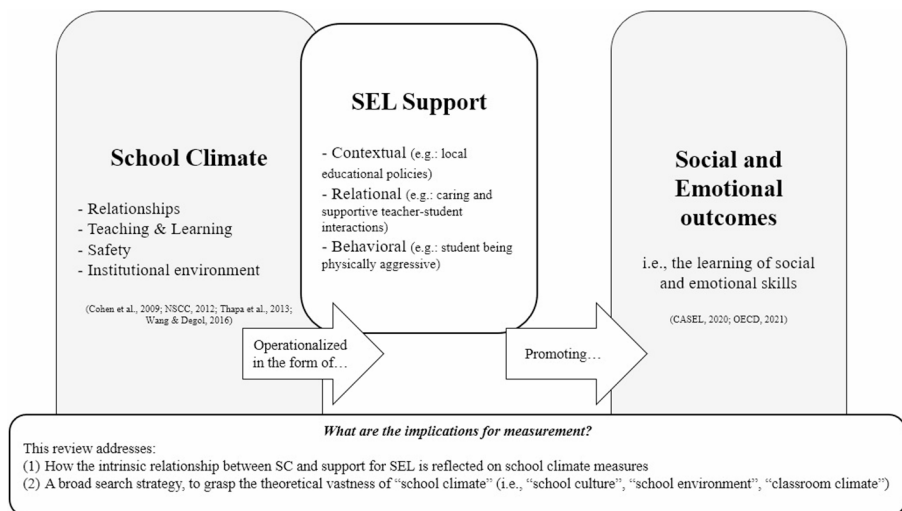


Fig. 1 Proposed conceptual framework. Previous theoretical evidence is in gray boxes, and main contributions of the study are in white, bold-delimited boxes

(2020). In their review of dimensions of school climate, guided by three of the most cited school climate frameworks (i.e., Cohen et al., 2009; NSCC, 2012; Thapa et al., 2013), the authors organize over one hundred differently named factors into higher-order dimensions - for instance, dimension *Relationships*, subdimension *Student-Teacher*, which includes differently named subscales such as “Teacher Support”, “Teacher-Student Relationships”, “Connection to Teachers”, among others found in different measures (Lewno-Dumdie et al., 2020). This misalignment stands as a gap in the field, which is widely acknowledged in almost all publications related to school climate (e.g., Grazia & Molinari, 2021).

Several hypotheses can explain the conceptual misalignment. First, a universal definition may be difficult to achieve because school climate necessarily varies by age and grade. For example, teaching and learning practices, or relationships with teachers and peers, are intrinsically different constructs and processes in elementary/middle school and upper middle or high school (Bacon & Kearney, 2020; Kearney et al., 2020).

Second, such constructs may also vary across cultures (Shukla et al., 2019; Whitehouse et al., 2021). For example, Su and Lee (2023) show differences in disciplinary climate and teacher support between western (Finland, USA) and eastern (China, Korea) countries; and Veletić et al. (2023) indicate country effects in teachers’ and principals’ perceptions of school climate, suggesting a role of cultural norms in defining high-quality schools across educational systems.

Third, school climate is also often confused with other related terms, such as school culture or school environment. For instance, research on school culture frequently addresses aspects of school life such as leadership, collaboration, discipline, or involvement (e.g., Morris et al., 2020; Salfi & Saeed, 2007), thus overlapping with typical school climate dimensions. As van Houtte and van Maele (2011) argue, the two constructs are used interchangeably, and are often defined and utilized in similar manner and for similar purposes. However, traditional conceptualizations define school culture more towards norms, beliefs and values implicitly shared by all members of the school (Higgins-D’Alessandro & Sath, 1997; Maslowski, 2006), whereas school climate encompasses ecology, milieu, and the social system (Barr, 2011).

The term “school environment” is often used in research evaluating any variable pertaining to the school life. From physical resources to quality of relationships, authors often refer to “aspects of the school environment” freely, only to measure them with instruments which address either some dimensions of school climate or the construct as a whole (e.g., Fisher & Fraser, 1990; Román-Calderón et al., 2017; Wang & Holcombe, 2010). Because aspects of the school environment are indeed part of school climate, it is important for reviews to also consider this nomenclature, in order to add thoroughness and rigor to research in this field. To our knowledge, no reviews have done this to date.

It is also important to distinguish between school climate and classroom climate, as these are related but conceptually distinct constructs. School climate refers to the broader school environment, encompassing shared norms, values, rules, and organizational processes, whereas classroom climate concerns students’ immediate learning environment and interactions within a specific classroom (Schweig & Yuan, 2019). Evidence suggests that perceptions of school climate are not simply aggregated per-

ceptions of classroom climate; rather, the two constructs have different implications for student outcomes. For example, a meta-analysis by Erdem and Kaya (2023) found a small effect of classroom climate on academic achievement but a medium effect of school climate. Moreover, classroom climate can vary considerably within the same school due to differences in teaching practices, class composition, and student characteristics (Boone et al., 2018; He, 2024; Heinschel et al., 2024), while classroom-level factors such as teacher characteristics, class size, and the concentration of students with behavioral problems have also been shown to predict perceptions of school climate (Koth et al., 2008). Despite these distinctions, the two constructs are frequently used interchangeably in the literature; for instance, Pulido et al. (2021) described their assessment as measuring school climate while employing the Classroom Environment Scale (Moos & Trickett, 1974; Fernández & Sierra, 1989), a measure originally designed to assess classroom climate.

These other related constructs, such as school culture, school environment, and classroom climate, often used in the literature have, to our knowledge, been disregarded in all previous school climate reviews.

The Relationship Between School Climate and Social and Emotional Learning

Schools are key for students' social and emotional development, because it is at school that the most significant interactions with peers and (non-family) significant adults take place. When describing and measuring school climate, support for students' social and emotional development must be taken into account as a domain that both affects and is affected by this context (Osher & Berg, 2017).

In this paper, we use the term SEL support to refer to processes through which different school climate dimensions promote social and emotional outcomes. These processes may pertain to broader contextual supports, such as school or local policies and practices; for instance, research has shown a positive link between school SEL resources (SEL evaluation, SEL promotion, and SEL training), and the social and emotional skills of their students (Shi et al., 2023). These supports may also be relational, such as caring and supportive teacher-student interactions, and positive peer relationships; or behavioral, including classroom management and teaching practices, and student behaviors, such as cooperating with classmates or, conversely, being physically aggressive in situations of conflict.

These different forms of SEL support are thought to, in turn, contribute to the promotion of students' social and emotional skills. We refer to two main widely cited frameworks, namely the CASEL approach to social and emotional learning (CASEL, 2020), and the OECD framework for social and emotional skills (Chernyshenko et al., 2018). The first approach has been widely implemented for decades, in research, practice, and policy; it defines the process of social and emotional learning according to five dimensions: self-awareness, self-management, responsible decision-making, relationship skills, and social awareness, considering them to be shaped by context, in a systemic view of human development. The latter approach frames a set of 15 social and emotional (SE) skills in a five-domain model, inspired by the Big Five model of personality: open-mindedness (curiosity, tolerance, creativity), task performance (responsibility, self-control, persistence), engaging with others (sociability,

assertiveness, energy), collaboration (empathy, trust, cooperation), and emotional regulation (resilience, optimism, and emotional control). Albeit more recent, the OECD approach resulted in the first global effort to measure SE skills and the contextual characteristics which may promote or hinder their development in children and youth (OECD, 2021), resulting in further research and practice efforts in several countries. Both frameworks consider social and emotional skills to be malleable to context characteristics, and to be *learned* as a function of how individuals interact with their developmental settings.

Research shows that overall school climate relates to students' social and emotional learning (McGiboney, 2021). The same is true for some of its specific dimensions, such as peer relationships (Pollak et al., 2024), teacher-student relationships (Poling et al., 2022), collaborative learning (Zagni et al., 2025), or teacher behavior in classroom management (Şimşek & Mutlu, 2021). A study by Castro et al. (2024) demonstrates how relationships with peers have a positive effect on all social and emotional skills, with larger effects on sociability, trust in others, optimism, and cooperation; or the adoption of active learning pedagogies, with small positive effects on resilience and emotional control (Castro et al., 2024). These results add to the evidence that quality of relationships with peers and with teachers are of the utmost importance for child and youth development, and should be at the center of both research and practice in school climate and SEL.

This support for students' SEL can be operationalized across different school climate dimensions, including relationships with peers and teachers. It is in moments of collaboration, interpersonal conflict, or free play among peers that students have the opportunity to practice social and emotional skills such as cooperation, creativity, or empathy (Laible, 2007; Pollak et al., 2024). Similarly, by playing the role of significant adult figure in school settings, teachers support student SEL development by guiding processes of emotional regulation, or by boosting (or hindering) responsibility and resilience in daily academic activities (OECD 2024b).

Specific classroom practices may also play a role in supporting student social and emotional learning. The relationship between classroom management and students' positive attitudes toward school has been found to be mediated by teacher-student relationships, hinting how these aspects intertwine in daily school life (Obermeier et al., 2024). Evidence of effects on social and emotional learning have also been found for classroom practices such as cooperative learning (Dyson et al., 2021; Kusumaningsih & Sun, 2025) or active learning strategies (Meland & Brion-Meisels, 2024).

Other important dimensions of school climate, although more distal in their relation to SEL support, also play a role in this proposed framework. Aspects of safety (both physical and psychological) are essential to ensure a space for students to thrive, including social-emotionally: when students feel safe, they are more socially confident and learn more effectively (La Salle et al., 2021).

Lastly, school leadership has also shown an important role in supporting student SEL, both through the effective implementation of SEL policies, and through the promotion of overall positive relationships at school. School leaders who place social and emotional learning as a pedagogical priority, who ensure staff feels supported and valued, and who promote a safe space for students to grow, show a clear effort in supporting social and emotional development (Shi et al., 2023; Thierry et al., 2023).

These links between school climate and the learning of social and emotional skills support the argument that the social and emotional domain permeates all dimensions of school climate, being operationalized (and measured) in a multitude of indicators: student and teacher behavior expressing social and emotional skills, relationship quality affected by social and emotional skills, social and emotional safety at school, or organizational norms and procedures that place the implementation and evaluation of social and emotional learning explicitly in curricula and pedagogical practice.

School Climate, SEL and Adolescence

School climate dimensions, particularly at a relational level, may play different roles for students of different ages. The adolescent years are characterized by substantial cognitive and biological changes and shifting relational dynamics. Chronological age is not the only factor - a longitudinal study by Sweijen et al. (2025) found that different forms of prosocial behavior were more strongly explained by pubertal maturation than by age in adolescence.

The adolescent years also bring a shift in relational dynamics, with peers playing a substantially more significant role in this developmental stage. For instance, research shows peer attachment relates negatively to conduct problems and emotional difficulties, and positively to prosocial behavior (Schoeps et al., 2020), while facilitating emotional regulation in adolescence (Sahi et al., 2023). An exploratory meta-analysis by Mitic and colleagues (2021) corroborates the importance of social and emotional skills in supportive peer relationships (Mitic et al., 2021), suggesting the school environment as a privileged setting for intervention. There is also a steady increase in caregiver autonomy, with adult support playing a qualitatively different part when compared to younger ages. During adolescence, students' relationships with teachers qualitatively changes, tending to become more distant, less warm, and less focused on emotional regulation support (Ansari et al., 2020; Ettekal & Shi, 2020).

Concurrently, social and emotional skills are also expressed differently for students of different ages (Feraco & Meneghetti, 2023; Huo & Ning, 2025). If pre-school aged children are to be taught emotional regulation, self-control, and cooperation by not hitting their peers or by sharing a toy, adolescents are increasingly expected, as they grow older, to be able to verbally express their emotions, negotiate conflict, or critically assess diverging points of view.

As such, not only do different school climate dimensions have the potential to support different forms of social and emotional learning, but this process must also be interpreted in light of students' developmental stage, both in terms of particular middle and secondary school climate characteristics, and the expected developmental stage of social and emotional skills in adolescence. Research must take this into account while designing studies, as is the case with this scoping review.

Social-Emotional Learning in School Climate Measures

Previous research has been pointing to the clear role different aspects of school climate play in the social and emotional development of students in school settings (e.g.: Castro et al., 2024). This social and emotional domain of school climate is,

thus, worthy of acknowledgment when discussing both the conceptualization and the measurement of school climate. However, the field of school climate measurement seems to fail to explicitly address the intertwine between the two constructs, often ignoring the social and emotional domain across dimensions of school climate.

A review by Baumsteiger et al. (2023) shows that, despite being an emerging trend in school climate research, only 23.9% of measures address SEL, and this is decreasing in recently developed measures. Similarly, the review by Lewno-Dumdie et al. (2020) shows few school climate measures address aspects of social and emotional safety - only 10 out of 140 dimensions, across 18 different instruments.

However, the inclusion of social and emotional support on school climate measures was not the goal of these reviews. They are also limited in scope, including only student-report measures, or the USA context. To date, no research has identified if the support for social and emotional development is embedded in secondary school climate measures across dimensions (relationships, teaching and learning, safety, or institutional aspects), respondents, and countries.

Previous Measurement Reviews

The abundance of theoretical frameworks for school climate necessarily reflects on its measurement. The field is laden with instruments, similar in structure and scope, but including and operationalizing dimensions of school climate differently (e.g., Lewno-Dumdie et al., 2020). To make matters worse, educational departments, NGOs, and academics worldwide continue developing their own instruments, tailored to their contexts and current research needs (Kohl et al., 2013).

This plethora of instruments, and the issue of dimensionality content disagreement, have been subject to plenty of reviews, of different scopes and depths, over the past couple of decades (Grazia & Molinari, 2021). Previous reviews focus on specific measurement formats (e.g.: student-report measures; Baumsteiger et al., 2023; Lewno-Dumdie et al., 2020; Marraccini et al., 2020; Ramelow et al., 2015), specific languages (e.g., Spanish-speaking students; Rocha et al., 2019), or the psychometric properties of the instruments (e.g., González et al., 2023).

Two recent systematic reviews (Baumsteiger et al., 2023; Grazia & Molinari, 2021) focus on secondary school climate measurement only, which illustrates the relevance of distinguishing between educational settings for younger and older students. Some key dimensions of school climate (e.g., relational aspects, or the learning process in the classroom) are intrinsically different for different developmental stages, as argued by these authors. This justifies the need to acknowledge these conceptual differences for different age groups, and to design these reviews accordingly.

This Study

To our knowledge, this is the first paper to (1) focus on how the intrinsic relationship between school climate and support for social and emotional learning is reflected on school climate measures, (2) use a search strategy broad enough to grasp the theoretical vastness of this construct, contemplating not only “school climate”, but also related terms such as “school culture”, “school environment”, or “classroom

climate”, and (3) provide a descriptive overview of included studies, and not only included measures, which helps to better understand the field of school climate measurement, and where, how, and for what purpose these measures are used.

By thoroughly identifying school climate measures for middle and high schools, this scoping review aims to (1) identify existing school climate measures, indicating the most commonly used, (2) assess the integration of support for social and emotional learning aspects within these measures, (3) characterize each measure regarding its structural characteristics, and scope (classroom *versus* whole-school). By adopting a scoping review methodology, this study aims to map a wide range of literature in order to provide a clarifying, detailed, comprehensive description of the field (Grant & Booth, 2009; Sutton et al., 2019), and contribute substantially to our understanding of how school climate can effectively support students’ social and emotional development, with implications for the daily practice of schools.

Method

The process of identification of studies for this scoping review is described in the flow diagram recommended by the Preferred Reporting Items for Systematic Reviews and Meta-Analyses Extension for Scoping Reviews (PRISMA-ScR; Tricco et al., 2018). Each step is detailed in Fig. 2.

The study procedures follow standard recommendations and practices for scoping reviews (e.g.: Fong et al., 2024; Munn et al., 2018; Peters et al., 2020; Ritoša et al., 2023), namely detailed stages of data search, study screening, data extraction, and interrater agreement levels.

The PRISMA-ScR checklist is a more suited resource to guide a scoping review methodology. It also specifies that some steps, such as the critical appraisal of sources of evidence, the assessment of risk of bias, or additional analysis, are not applicable or not required in scoping reviews. We believe this resource more accurately depicts our methodological process and presents a stronger case for our methodological options.

The methodological procedures included the following steps:

1. Literature search.
2. Title and abstract screening of selected studies.
3. Full-text screening of studies selected based on title and abstract.
4. Data extraction and data synthesis.

Literature Search

Our database search included Scopus, Web of Science, and PsycINFO, and the search terms used were “school climate” OR “school culture” OR “school environment” OR “classroom climate” OR “classroom quality” AND “validation” OR “measure*” OR “assessment” OR “scale” OR “test” OR “questionnaire” OR “survey” OR “inventory” OR “instrument”. We limited the search to studies written in English, Spanish, or Portuguese, and published between 2000 and 2024. Other review studies (Baumsteiger et al., 2023; Demirtas-Zorbaz et al., 2021; Ramelow et al., 2015) identify the

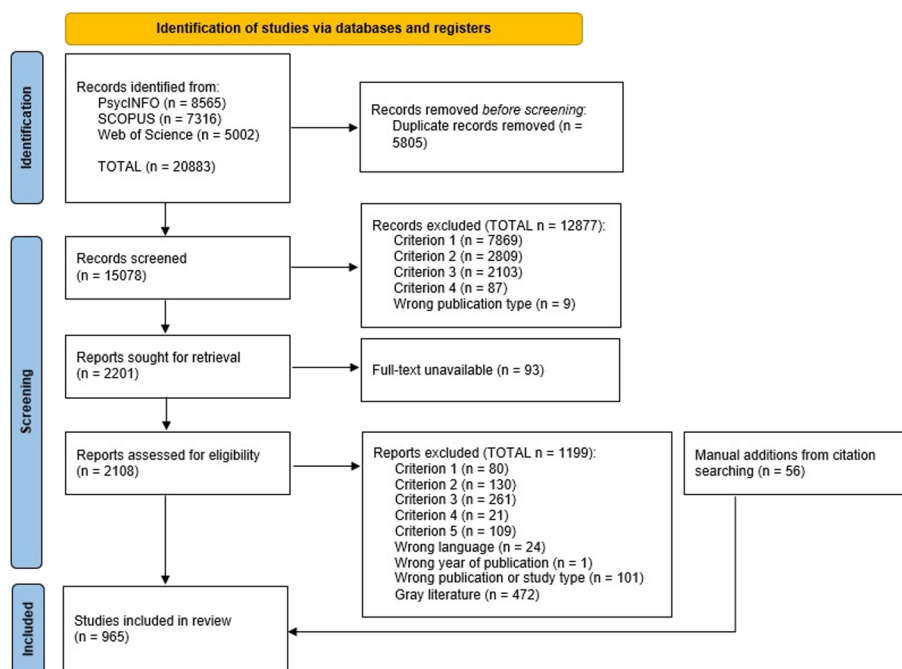


Fig. 2 PRISMA-ScR diagram for the record identification and selection process. Criterion (1) It does not measure school or classroom climate, environment, or culture; Criterion (2) Sample only below 7th grade or above 12th grade; Criterion (3) Only measures one climate dimension (e.g.: bullying; sexual diversity climate); Criterion 4: Non-traditional and/or non-formal educational setting; Criterion 5: Does not name or describe the instrument used

early 2000's as a turning point in educational practices, definitions of school climate, and life habits of adolescents (e.g., introduction of smartphones), hence we opted for this time frame for our search. The search was conducted on July 8th, 2024.

Screening of Studies

We first selected studies based on title and abstract reading. This stage, conducted with the Rayyan software, involved two researchers screening all manuscripts independently. The two researchers conducted an initial test on 500 studies, to discuss inconsistencies in screening decisions, before proceeding to screen the total sample of studies. By the end of the title and abstract screening process, the agreement rate was 92.72% (i.e., proportion of equal decisions to include or exclude between the two coders). Conflicting decisions were resolved by mutual agreement and, if agreement was not reached, a third senior researcher would decide. A total of 2201 records were included at this stage. We then proceeded to full-text screening on reference management software Mendeley, primarily (but not exclusively) focusing on the “Methods” sections of each manuscript. A final sample of 965 records was included for data extraction.

Both stages of selection of studies obeyed a set of exclusion criteria. A study was excluded if it:

1. Did not *measure* school or classroom climate, culture or environment;
2. Included only respondents (students, teachers, families, or others) of samples below 7th grade or above 12th grade (i.e., not including upper middle or high school);
3. Only measured one dimension of school climate (e.g., teacher-student relationships; bullying climate), or measured climate only from the standpoint of a minority subsample (e.g., sexual or ethnic diversity climate);
4. Was only administered in a non-traditional school setting (e.g., boarding schools, after-school programs, religious schools);
5. Did not indicate nor describe the measure that was used (i.e., the authors mention school climate was measured, but do not name or describe the measuring tool). This criterion was applicable only to the full-text screening stage.

These exclusion criteria were set with the aim of grasping a multidimensional conceptualization of school climate, fit for the general student population within this age group. We also excluded review studies (meta-analysis, systematic reviews, or others), non-peer reviewed publications, gray literature, and qualitative studies. These decisions were made after the initial search, as a result of team discussions, in order to narrow the focus and add clarity to the present study.

Data Extraction and Synthesis

The final pool of selected records was then subject to data extraction. The extracted data was summarized in an Excel spreadsheet, and coded in several categories for each study, including data on the study (year and country of publication, type of data), on the measure used (subscales included, number of subscales, number of items, format of measure, internal consistency levels), and on the sample of the study (size, respondents, age of participants, percentage of females).

Descriptive data *at the measure level* was used to address each of our research aims. However, we deemed it necessary to also present an overview of data *at the study level*, since the scoping nature of this review aims to provide a detailed picture of the state of the literature. Such has not been done in any previous school climate measurement reviews.

One of the aims of this study was to identify the school climate measures most commonly used in the literature, mapping their relevance in the current state of the art. As such, at the measure level we present data pertaining to instruments used five or more times in our sample of studies, corresponding to the 43 most used measures. This decision was made based on two quantitative criteria: (1) when analysing frequency distributions, frequencies of five or more studies seemed to be a natural cutoff (see Supplementary Fig. 1), and (2) these 43 measures are used in more than half of our sample of studies (51.45%, $n = 532$ publications).

Initial descriptive data corroborates the fact that most publications measuring school climate adopt the same measurement tools, hence the pertinence of looking

into this pool of measures in greater detail. We do so because we deem it more useful to narrow the analysis to the most frequent instruments used in the literature. Those measures used less frequently were often developed and used by a single team (often the one developing the material), or in a single country or context. These tools may come to be very useful and widely used in the future, but the current state of the art would require more extensive use, by multiple teams or in varied settings, to attest to their quality. We note, however, that frequency of use does not necessarily equal measurement quality, and this selection criterion should not be interpreted as such. We adopt this quantitative cutoff point in order to focus on a sample of resources able to provide a more comprehensive picture and increased learning utility.

At the study level, descriptive data on the above-mentioned categories is summarily presented. At the measure level we present summarized data for instruments used more than five times in the literature ($n=43$), on the following variables: original number of subscales, subscales used in included studies (Min., Max., Mean, *SD*), original number of items, items used in included studies (Min., Max., Mean, *SD*), format (questionnaire/survey, observational, other), respondents in our sample of studies (students, teachers/staff, families), sample size (Min, Max, Mean, *SD*), scope (whole-school, classroom, or both), and mean internal consistency. A coding manual is available in supplementary materials (Supplementary Table 3), detailing coding categories. A full list of all identified measures and their frequency of use in the included articles, as well as further detailed characteristics of these 43 most used measures, are provided in the supplementary materials (Supplementary Tables 1 and 2, respectively).

Most categories resulted in descriptive quantitative data. However, to address the *inclusion of SEL*, and *whole-school versus classroom scope*, data analysis for these variables implies content analysis at the subscale and item levels, hence a qualitative approach.

Lastly, to meet the primary goal of this study, data on how each measure addressed the support for social and emotional learning was analysed at three levels:

1. Does the measure include an explicitly SEL-oriented subscale? (e.g., subscale “Student social and emotional learning”);
2. Does the measure include items operationalizing social and emotional skills in students? (e.g., “My classmates know how to cooperate”);
3. Does the measure include subscales which the literature shows to be conceptually related to SEL support? (e.g., “Positive peer relationships”, “Teacher support”).

For questions one and three, the unit of coding was defined at the subscale level (i.e., one subscale equals one unit), whereas for level two, the unit of coding was defined at the individual item level (i.e., one item equals one unit). This dual-level approach was necessary because the research questions required different specificities of qualitative data. We note that the third level of analysis does not provide evidence of direct assessment of SEL support, but rather of conceptual linkage between the two constructs, by indicating the presence of SC dimensions which are conceptually relevant to the support for social and emotional learning. The coding of these three levels of

analysis is further detailed in the coding manual in supplementary materials (Supplementary Table 3).

One researcher coded this information for all 43 measures, while another researcher independently coded a randomly selected subsample of 30% of measures ($n=14$). Inter-rater reliability was assessed using percentage agreement, yielding an overall agreement rate of 84.51% across all coded units (i.e., proportion of equal coding of items and subscales between the two researchers). Percentage agreement was deemed the most appropriate metric due to the descriptive nature of the qualitative data extraction, where chance agreement was minimized by the highly specific, multi-layered coding criteria. Conflicting decisions and borderline or ambiguous cases were resolved by mutual agreement during frequent consensus discussions between the two raters. If consensus was not reached, a third senior researcher made the final decision. An example of such an ambiguous item would be “I know the goals for this class” (from the *What Is Happening In this Class?* Questionnaire, Fraser et al., 1996) which could be considered the operationalization of a skill such as responsibility, or rather interpreted as a cognitive and classroom task-related indicator. The coding criteria were iteratively discussed as a team.

Results

Overview of Included Studies and Measures

The final selection of manuscripts resulted in 965 included studies, which equaled 1034 data entries, because the same study may use more than one school climate measure, or different versions of the same instrument (e.g., student and teacher versions). For this reason, although 965 studies were selected, we refer to a total of 1034 units.

We identified 766 (74.08%) studies using an instrument which has been used more than once in the literature. This means 268 (25.92%) studies applied an instrument used only once - most often, developed for the purpose of that study, and then not administered again by colleagues in the same field.

Included records showed a total of 404 different school climate measures found, of which 136 (33.66%) were used more than once in this sample of studies. Fifty-one instruments (12.62%) are considered “unnamed” (i.e., the authors of the manuscript did not name or clearly identify the instrument used, nor their original authors, if not themselves).

Description of Included Studies

Table 1 shows descriptive characteristics of included studies. Almost half (42.94%) were published in the past five years, more frequently in the USA ($n=375$), China ($n=87$), and Spain ($n=65$). A large proportion of studies comprised secondary data analysis (35.6%).

Regarding the measures used in these studies, the format was more often a questionnaire or survey (97.97%; e.g., Cuestionario de Clima Social del Centro Escolar,

Table 1 Summary characteristics of included studies

		<i>N</i>	%	<i>M</i> (SD)	Min	Max
Study - Year of publication	2000–2004	52	5.03			
	2005–2009	96	9.28			
	2010–2014	142	13.73			
	2015–2019	300	29.01			
	2020–2024	444	42.94			
Study - Country	North America	398	38.5			
	Asia	223	21.6			
	Europe	216	20.9			
	Central and South America	64	6.2			
	Multiple countries	52	5.0			
	Australia & New Zealand	47	4.5			
	Africa	34	3.3			
	Primary	654	63.2			
	Secondary	368	35.6			
Data	Both	11	1.1			
	Survey/Questionnaire	1013	97.97			
	Observational	16	1.54			
Format of measure	Other	5	0.5			
	N subscales	981		4.81 (3.09)	1	31
	N items	948		27.72 (19.06)	2	217
N sample	1			26 663.19	3	6 219
	007			(211 932.29)		166
% Female		824		54.41 (11.19)	0	100
Respondents	Students	710	68.7			
	Teachers/Staff	235	22.7			
	Students and Teachers/staff	43	4.2			
	Family	18	1.7			
	Other ¹	18	1.7			
	Students, Teachers/staff, and Family	5	0.5			
	Students and Family	2	0.2			
	Teachers/staff and Family	1	0.1			
	Age	385		14.34 (1.31)	8.88	19.62
Grades	Adult respondents	57		40.92 (9.4)	24.00	50.70
	Secondary	314	30.4			
	Middle and secondary	267	25.8			
	Middle	189	18.3			
	Primary, middle and secondary	96	9.3			
	Primary and middle	43	4.2			
	Kindergarten, primary, middle, and secondary	28	2.7			
	Kindergarten, primary, and middle	5	0.5			
	Middle, secondary, and university	2	0.2			

¹“Other” types of participants may include schools or classrooms as the unit of analysis

by Trianes et al., 2006), with very few using observational measures or other methodologies (e.g., interactive tools; e.g., School Climate Walkthrough Tool, Hoffmann et al., 2022). The most commonly used observational measure is the Classroom Assessment Scoring System - Secondary ($n=5$; CLASS-S; Pianta et al., 2010).

As for sample characteristics, participants were more often students (68.7%), with data collected more often in secondary school grades only (30.4%), followed by a mix of middle and secondary school (25.8%).

Description of Included Measures

Table 2 shows summarized characteristics of the 43 most used measures identified in this review, with descriptive data retrieved from the studies in which each measure was used. A full list of these 43 instruments and their corresponding descriptive information can be found in supplementary materials (Supplementary Table 2).

In their original formats, the total number of subscales varied between one and 23, and the total number of items varied between six and 140. However, shorter adaptations were preferred in this sample of studies: the total number of subscales varied between one and 18, and the total number of items varied between three and 95. Examples of unidimensional measures include the Georgia Brief School Climate Inventory (GaBSCI; White et al., 2014), and the Perceived School Climate Questionnaire (PSCQ; Bao et al., 2013).

As for format, questionnaires/surveys were the most frequent (97.67%; e.g., Perceived School Climate Scale, by Jia et al., 2009). In our sample of studies, these 43 different measures were most commonly used only with students (e.g., Inventory of School Climate-Student, by Brand et al., 2003), followed by measures used with both students and teachers/staff (e.g., Effective School Battery, by Gottfredson, 1984). Families were more rarely involved, and always in combination with students or teachers/staff. Measures most often addressed whole-school climate (e.g., Dual School Climate and School Identification Measure - SCASIM, by Lee et al., 2017), but some were developed for the classroom scope (e.g., Classroom Environment Scale - CES, by Moos & Trickett, 1974), and some others measured a combination of both school and classroom climates (i.e., an instrument proposes to measure school climate, but also contains at least one item addressing classroom variables; e.g., School-Level Environment Questionnaire - SLEQ, by Fisher & Fraser, 1990).

Support for Social and Emotional Learning

1. Inclusion of an explicitly SEL-oriented subscale.

Results showed two subscales, in the 43 most used measures, address SEL explicitly and intentionally: subscale “Youth Development and Social-Emotional Learning”, from the California School Climate, Health, and Learning Surveys - California Healthy Kids Survey (CHKS; California Department of Education, 1998; WestEd, 2004), and subscale “Socio-emotional classroom”, from the Schools and Staffing Survey - SASS (National Center for Education Statistics; this subscale is a factor result-

Table 2 Summary characteristics of identified measures (data from identified records using each measure)

	<i>N</i>	%	<i>M</i> (<i>SD</i>)	Min	Max
Original subscales	37		7.51 (4.39)	1	23
Subscales across studies	43		4.99 (2.14)	1	18
Original items	36		49.11 (33.86)	6	140
Items across studies	43		28.89 (12.97)	3	95
Format	42	97.67			
Questionnaire/survey	1	2.33			
Observational	18	41.86			
Students	14	32.56			
Students and teachers/staff	8	18.61			
Teachers/staff	2	4.65			
Students, teachers/staff, and families	1	2.33			
Observational	43		25 680.44 (72 796.53)	100.80	403 137.19
Sample	26	60.47			
Scope	5	11.63			
Whole-school	12	27.91			
Classroom	42		0.830 (0.055)	0.694	0.965
Both	16		0.877 (0.056)	0.738	0.950
Alpha	1		0.736	0.736	0.736
Omega	1		0.758	0.758	0.758
KR20	1				
Raykov's rho	1				
Unreported	1				

ing from an exploratory factor analysis conducted by Suárez & Wright, 2019 with items from the SASS). This represents 4.65% of measures, and 0.72% of subscales.

2. Inclusion of items operationalizing social and emotional skills in students.

We found 113 items (6.39% of all items), across 25 different measures (58.14%), which operationalize social and emotional skills in students' daily life at school. Examples include items such as "Students help one another", from the Perceived School Climate Scale (Jia et al., 2009), "[School] encourages students to care about how others feel", from the CHKS, or "[Opportunities at school to] learning to stop and think about things before speaking/ acting", from the School Culture Scale (Higgins-D'Alessandro & Sadh, 1997). This analysis did not include nine measures, from which the full list of items is not publicly available.

3. Inclusion of subscales shown to be conceptually related to SEL in the literature.

Across the 43 analysed measures, subscales measuring school climate dimensions which the literature has shown to be conceptually related to students' SEL were present in 39 instruments (90.7%), in a total of 153 subscales (55.04% of all subscales). Examples include "Teacher-student relations" (Delaware School Climate Survey – Student version; Bear et al., 2011), "Student Engagement" (Virginia Secondary School Climate Survey - Authoritative School Climate Survey; Cornell et al., 2013), "Peer relationships" (Percepción del Alumnado sobre el Clima Escolar; Escalante-Mateos et al., 2020), or "Supportive Learning Environment" (CHKS). Results of this third level of analysis do not indicate direct assessment of explicit SEL indicators in these measures, but rather evidence of the presence of subscales conceptually related to student SEL.

Figure 3 Inclusion of SEL support for each of the three levels of analysis, for the 43 analysed measures.

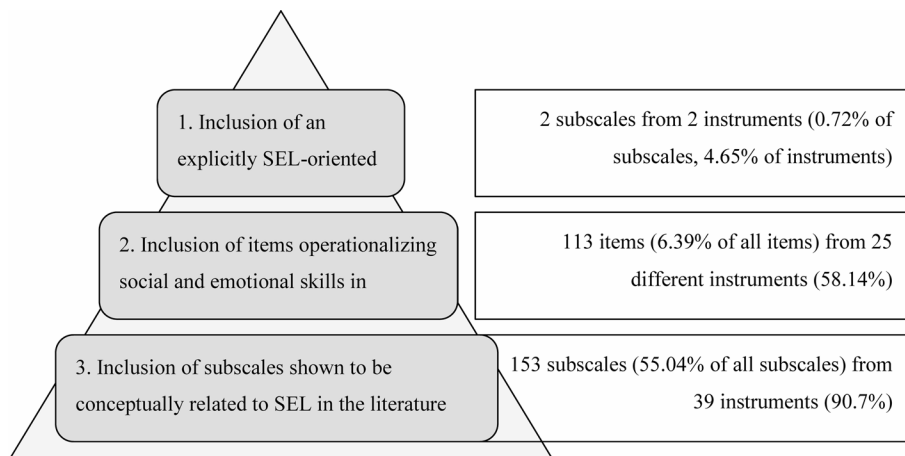


Fig. 3 shows results for each level of analysis

Discussion

The present scoping review aimed to explore the literature on school climate measures for upper middle and secondary school, in order to critically assess the integration of support for social and emotional learning aspects in these instruments.

An overview of the large pool of included studies illustrated how school climate is a relevant construct in child and youth research and is considered by researchers to play an important role in different developmental areas (Wang & Degol, 2016). Indeed, students' more positive perceptions of school climate are strongly related to student outcomes, such as academic engagement and achievement (Cocoradă et al., 2018; Đordić, 2020), psychological wellbeing (Bond et al., 2007), or prosocial behavior (Barr & Higgins-D'Alessandro, 2007; Li et al., 2023). This evidence supports the high value placed by researchers on school climate as a relevant construct when studying school settings.

Description of Studies and Measures of School Climate

Results from this study show an overabundance of school climate measures, with new instruments being developed when there are several available options. This finding confirms those of other reviews (e.g., Baumsteiger et al., 2023), and remains a main issue identified in the field.

However, our data also shows that three fourths of included studies applied a measure used more than once in the literature; yet, this set of measures (i.e., used more than once) corresponded only to a third of our sample of instruments, while two thirds of measures are found to be used only once in the literature. This means most studies tend to administer a previously validated measure, widely valued by peers in this field. Despite our subsample of 43 measures used at least five times corresponding to more than half of our pool of studies, many researchers feel the need to develop measures tailored to their intervention settings, contributing to an overabundance of measures which have little transferability to other settings, or may go unnoticed by other research teams. However, we reemphasize that frequency of use does not equal measurement quality, nor quality in how these measures integrate support for SEL. Evidence of measurement quality is needed to support this notion. In addition to this issue, we also found a large set of "unnamed" measures. These findings suggest the need for greater rigour in the field, particularly when reporting methodological decisions, and the need for training in responsible research and innovation (Chen et al., 2022; Tokalić et al., 2021) applied to measurement instruments.

As expected, most measures were in questionnaire or survey format and developed for student respondents. This means perspectives of families, teachers, or other educational staff were less often considered, and the contribution of methodologies other than self-report (e.g., observation) was also not frequent. This is a common finding (Grazia & Molinari, 2021; Wang & Degol, 2016) and hints the need for greater triangulation of methods and informants. Research shows triangulation increases validity and reliability, helps understand discrepancies, and minimizes both analytical and ethical risks (Baird et al., 2021; De Los Reyes et al., 2019; Fàbregues et al., 2022; Genachowski et al., 2023). This would provide a more comprehensive, insightful

view of the phenomena, and future studies should consider including more than one informant in their design.

Results on *whole-school v. classroom* scope showed that most measures of school climate asked respondents to reflect on the school as a whole. However, some of these most used instruments intentionally referred to classroom climate, but asked participants about school climate, as was seen in some of these included studies. We also saw between a fourth to a third of analysed instruments intending to measure school climate but, to some extent, including items or subscales referring to the classroom. This points to a need for greater conceptual clarity when designing these studies, since the school and classroom domains are inherently different in their climate characteristics. More specifically, while classroom climate is dependent on teachers' classroom management, and more direct teacher-student interactions (Evans et al., 2009), school climate also encompasses broader social and structural feats (Koth et al., 2008). To an extent, perceptions of climate are shared among individuals experiencing the same setting (Molinari and Grazia 2023a, b). As such, this distinction is even more relevant for older students since, in most countries, secondary school students may switch between classrooms, teachers, or even classmates throughout the day (Evans et al., 2018).

Support for Social and Emotional Learning in School Climate Measures

Results on the integration of support for social and emotional learning showed very few instruments included an explicitly SEL-oriented subscale. However, a large number included items operationalizing social and emotional skills, i.e., asking respondents about specific behaviors taking place at school. Examples included students trusting each other, treating teachers with respect, persisting in difficult school tasks, collaborating, or listening to their peers' perspectives. This exemplifies how social and emotional skills translate into behaviors that are an integral part of everyday school climate (Baumsteiger et al., 2022). Most of these items address cooperation, trust and empathy between students, but also resilience, perseverance and responsibility in managing schoolwork. This means SEL integrates everyday conceptualizations of SC, although rarely explicitly addressed as such. This stands as an innovative contribution from this research as, to the best of our knowledge, no previous studies had covered an extensive body of literature to explore how the social and emotional domain permeates school climate in different forms of daily expression.

Lastly, almost all analysed instruments included at least one subscale referring to a domain which the literature shows to be conceptually related to students' social and emotional learning, most frequently aspects such as relationships (with peers, teachers), belonging, or teaching and learning practices (e.g., collaborative work, academic support). Some of these dimensions are also the ones most frequently addressed in school climate instruments, particularly relationships, as shown in most school climate measurement reviews. Such is most likely because these aspects are more directly related to several student outcomes, such as overall adolescent well-being and mental health (Aldridge et al., 2018) or academic performance (Kwong & Davis, 2015). The same is true for social and emotional skills, with evidence showing, for instance, how relationships with peers, relationships with teachers, or sense of school

belonging positively support students' social and emotional learning process (e.g., Al Nasser et al., 2014; Castro et al., 2024; Long et al., 2021; Luque González et al., 2022; Preiss et al., 2015). As such, results from this third level of analysis are to be interpreted as evidence of conceptual relevance and of the articulation between the two constructs, instead of as direct proof of SEL support measurement.

These results add to the evidence that social and emotional skills - developed through the process of social and emotional learning - are a vital part of daily life at school (Greenberg et al., 2017), and that these instruments, to some extent, acknowledge this relationship. It also shows that there is room for improvement in explicitly addressing SEL when measuring school climate (Baumsteiger et al., 2023). However, developing new measures, which would differ only slightly from previously existing ones, would add to an ongoing issue in the field. Instead, one solution would be to combine school climate instruments with theoretically aligned SEL modules. An example is the Delaware School Climate Survey (Bear et al., 2011; the most used instrument found in this study) - it can be combined with social and emotional learning and competencies surveys (Bear et al., 2021), to provide a detailed picture of how these two constructs complementarily interact in a school. These instruments were developed to complement each other, under the same conceptual framework, and their combined use can serve as theoretically sound and logistically pragmatic strategy to measure school climate in a given setting, with a given population, while also taking into account their social and emotional domain.

Proposed Integrative Model of the Social and Emotional Domain in School Climate Dimensions

The findings of our study suggest that the social-emotional domain is not to be framed as an additional dimension of school climate, but rather as a domain that permeates all school climate dimensions. Relationships at school, safety, teaching practices, leadership practices, among others, all have inherent social and emotional aspects, which can be operationalized as different forms of SEL support – behavioral, relational, or policy oriented – in turn directly or indirectly affecting the development of students' social and emotional skills. For instance, when observing a classroom, we can see students working in pairs solving a disagreement between them and collaborating; a teacher motivating a student who is struggling with a difficult exercise; or a SEL-focused instruction hour, instructed by the principal as a part of the curriculum. These different forms of explicit expression of social and emotional behaviors, relationships, and policies affect (more or less proximately) student social and emotional development, thus representing the SEL domain of daily school climate.

Figure 4 revisits the conceptual framework of the study (Fig. 1) by illustrating this proposed integrative model: the domain of SEL support permeates the different school climate dimensions through different forms of operationalization, contributing to the promotion of social and emotional skills in students.

When measuring school climate, researchers and practitioners should consider this framework and critically assess to what extent the available school climate instruments do so. We expect the current scoping review to support this interpretation and provide guidelines as to how a school climate measure for upper middle and sec-

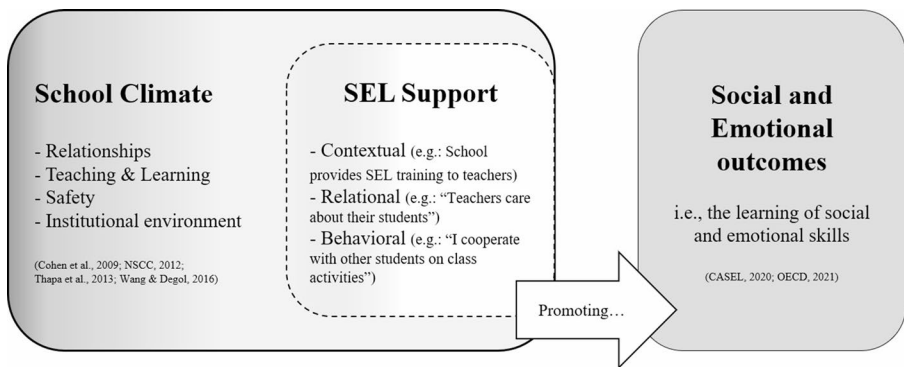


Fig. 4 Proposed integrative model of the social and emotional domain in school climate dimensions

ondary school settings embeds the support for social and emotional learning. We encourage researchers and practitioners to apply our three-level criteria, to critically assess if a given school climate measure satisfies the integration of SEL support to be implemented in their settings.

Altogether, these results illustrate how the field of school climate measurement supports the relationship between these two constructs (school climate and SEL), by including, although rarely explicitly, both SEL-oriented behavior and SEL-related school climate dimensions in their design. This study contributes to providing a clearer conceptual framework of how school climate measures can be improved to address their social and emotional domain more explicitly, at different levels and in different dimensions of school climate, particularly through the following approaches: (1) invest in subscales or items addressing the operationalization of social and emotional behaviors at school (e.g.: teachers motivate students to persist in challenging tasks, students collaborate in the classroom), (2) include the assessment of school and local SEL practices, policies and resources (e.g.: are SEL interventions implemented?, is teacher SEL training promoted?, does the school administration prioritize student SEL?), and (3) complement these SC scales with theoretically aligned social and emotional skills assessment modules, as does the Delaware School Climate Survey (Bear et al., 2011) example detailed earlier.

Limitations and Recommendations for Research and Practice

Limitations of this study include narrowing the search to records in English, Spanish, or Portuguese, limiting findings of work from other countries, as well as excluding gray literature and qualitative research. These selection criteria have some implications for our findings, since they may skew the analysis to particular regions of the globe and methodological options. There is research conducted in non-peer-reviewed publications, such as the work of NGOs or local educational departments, which fell out of the scope of this review, and which may be of utility for school practitioners. The embedding of social and emotional aspects of school climate may also be portrayed differently in non-included publications.

The same is true for our option to analyse in greater detail the 43 most used measures – this decision leaves out of the scope of this review measures less used in research, which may also limit the interpretation of our findings. We have laid out quantitative and qualitative criteria for this methodological choice which we hope will inform other researchers conducting studies in this field. This study aims to provide a conceptual basis for understanding how school climate measures integrate the support for student SEL, and this subsample of measures provides a quantitatively representative pool of data to do so. However, without thorough quality appraisal, findings must be interpreted taking this limitation into account, and future research can expand on our findings by including measures our study did not.

The analysis of psychometric properties of the included instruments (other than internal consistency) fell out of the scope of this study and may be the subject of attention for future research. Despite having been conducted elsewhere (González et al., 2023; Lenz et al., 2021; Marraccini et al., 2020; Ramelow et al., 2015), this appraisal is in need of constant updating, with data from more recent studies conducted in different settings and with broader populations. As acknowledged by Grant and Booth (2009), since scoping reviews do not typically include a process of quality appraisal, readers ought not to interpret these findings based on the mere existence of studies (or measures), but on their quality instead, particularly given our option to focus on the 43 most used measures. Thus, we refer researchers and practitioners in search of appraisal of school climate measures to these previous works, integrating learning from our study and from others looking into different aspects of the quality of these measures.

The same applies to the evaluation of the quality of included studies, in which a tool such as COSMIN (COnsensus-based Standards for the selection of health status Measurement INstruments) - a checklist for evaluating the methodological quality of studies on measurement properties (Mokkink et al., 2006, 2010), would be useful.

It would also be a valuable contribution to further analyse the list of identified measures, i.e., those used less than five times in the literature, since it may provide clues on how these instruments are structured, and why their development was necessary, even when other options were available and extensively validated. The focus on the 43 most used measures (i.e., those used at least five times in the literature) limits this research by narrowing the view of the field, since it highlights research conducted in certain countries (e.g., USA), and following more survey-based measurement traditions. This, in turn, has implications for the analysis of SEL domains in these measures, since it restricts the inclusion of other cultural approaches to SEL, or newer instruments which may take this domain into greater consideration. We attempted to mitigate this bias by providing a full characterization of all included studies, and by highlighting previous reviews with data regarding SEL in school climate instruments; however, this aspect must be taken into account when interpreting the results of this review.

Future research with this data may consider including a dimensional review of subscales. Although already conducted in previous review studies (e.g.: Lewno-Dumdie et al., 2020), this is also a step in need of constant updating, necessary to add clarity to the field of school climate. This is especially true when the scope of included studies and measures also considers school culture, school environment, and

classroom climate, as is the case of this study. We could expect different domains of school climate to be prioritized, with school culture or school environment-focused measures valuing aspects of leadership and structural indicators, whereas classroom climate-oriented measures would possibly highlight direct student-teacher and student-student interactions.

Similarly, future research on school climate measurement should consider including gray literature (including unpublished academic production). Despite not being covered by scientific peer-review procedures, this vast body of work, conducted by school districts and educational practitioners globally, still influences school climate measurement decisions at schools daily.

Research aiming to make use of the contributions of this study should take into account the development of social and emotional skills, and how different school climate dimensions interact with this development longitudinally - including by combining both school- and classroom-wide settings. For researchers and practitioners aiming to measure school climate while taking into account the support for student SEL - in designing and assessing interventions, or monitoring school policies -, this review provides guidance for a more rigorous and theoretically sound approach, by describing how a school climate measure can integrate the social and emotional domain of SC, specifically for upper-middle and secondary school students.

In order to better inform more macro-level systematic monitoring and accountability, more research is needed. However, some local examples are noteworthy. With the Study on Social and Emotional Skills (OECD, 2021) as a starting point and learning from the data resulting from their participation in the first edition of the study, the Municipality of Sintra, Portugal, launched the “Socioemotional DNA of Sintra 2.0” initiative. This local project, highlighted by the OECD in their most recent SSES study report (OECD 2024a), was developed by the local Education Department as an effort to learn from local and school-level data and incentivize schools to define priorities and strategies to promote students’ social and emotional skills. It aims to provide technical and scientific support to all schools in the municipality in the implementation, monitoring and evaluation of interventions to promote social and emotional skills in students.

This intervention stands as an example of data-based local policy investment in high-quality, evidence-based social and emotional skills promotion in school settings, and as prime evidence of contexts in which results from this study would be of great relevance - by helping practitioners widen their assessment of school climate dimensions, while maintaining the focus on the support for the development of social and emotional skills (Barata et al., 2024). Results from this study support researchers and practitioners in taking into account the intertwine between climate dimensions at school (relationships, safety, pedagogical practices) and the social and emotional development of their students, providing clarity in what are the best available tools to monitor daily school activity, or assess the impact of interventions with students.

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Author Contribution All authors contributed to the study conception and design. Catarina Castro conducted the literature search, retrieval of studies, title and abstract screening, full-text screening, data extrac-

tion and data analysis. Rita Santos conducted title and abstract screening, and data analysis. Maria Clara Barata and Joana Alexandre contributed to study conception and design, discussion, and critical review of the work. The first draft of the manuscript was written by Catarina Castro, and all authors reviewed and commented several versions of the manuscript. All authors read and approved of the final manuscript.

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Declarations

Competing interests The authors have no relevant financial or non-financial interests to disclose.

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