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Instituto de Psicologia

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Health promotion and school engagement in youth: the influence of social and emotional competencies

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To my mother and my grandmother

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Abstract

Student engagement (SE) is associated with higher academic performance and persistence, influencing academic completion. Social and emotional competencies (SECs) are fundamental protective factors for a healthy development. Despite being associated with SE, there are research gaps in this area. Therefore, our goal was to analyse the association between SECs and SE, accounting for individual and environmental factors. At first, a systematic review was performed to summarise previous research. Then, a questionnaire to assess emotion regulation strategies (ERS) in youth was validated. Subsequently, four quantitative studies were performed to examine the association between SECs and SE: the first, focused on ERS and included a representative sample of Portuguese youth (10-25 years old), the second one compared students who lived with their parents vs in residential care, and integrated school success perception and absenteeism; the third one had a sample of university students from nine countries and analysed the influence of the country's development index, and the fourth used a longitudinal methodology and also analysed the impact on mental health. Our findings suggest that SECs are positively associated with higher SE and lower absenteeism, regardless of family or sociocultural context; SE protects the maintenance of SECs in adverse environments; school success perception decreases absenteeism; and CSEs seem to be predictive of higher SE and better mental health. To enhance the effectiveness of health-promoting programmes, and based on evidence, we highlight that: social and emotional learning (SEL) programmes must be universal and integrated into the academic curriculum (including at university), but consider the developmental characteristics and needs of individuals; SE is fundamental to promote health, especially for the most vulnerable students and in adverse situations; SE support must include the implementation of youth-friendly policies.

Keywords: development, health promotion, social and emotional competencies, student engagement, youth.

Resumo

O envolvimento académico (EA) está associado a melhor desempenho e persistência, tendo impacto na conclusão dos estudos. As competências sociais e emocionais (CSE) são fatores de proteção fundamentais para um desenvolvimento saudável. Apesar das CSE estarem associadas ao EA, a investigação nesta área apresenta algumas lacunas. Por isso, analisámos a associação entre CSE e EA considerando fatores individuais e contextuais. Inicialmente, uma revisão sistemática foi realizada para sintetizar a investigação existente. Depois, foi validado um questionário de estratégias de regulação emocional (ERE). Posteriormente foram realizados quatro estudos quantitativos que analisaram a associação entre CSE e EA, sendo que o primeiro se focou nas ERE e incluiu uma amostra representativa de jovens portugueses (10-25 anos), o segundo comparou estudantes que viviam com os pais ou em casas de acolhimento e integrou a perceção de sucesso académico e o absentismo, o terceiro incluiu estudantes universitários de nove países e analisou a influência do índice de desenvolvimento do país, e o quarto utilizou uma metodologia longitudinal e analisou também o impacto na saúde mental. Os resultados sugerem que: as CSE estão associadas positivamente a maior EA e menor absentismo, independentemente do contexto familiar ou sociocultural; o EA protege a manutenção das CSE em contextos adversos; a perceção do sucesso académico diminui o absentismo; e as CSE parecem ser preditivas de EA e saúde mental mais elevados. Para melhorar a eficácia dos programas de promoção da saúde, e com base na evidência, salientamos que: os programas de aprendizagem socioemocional (ASE) devem ser universais e integrados no currículo académico (incluindo o ensino universitário), mas considerar as características e necessidades específicas ao longo do desenvolvimento; o EA é fundamental na promoção da saúde, especialmente para os estudantes mais vulneráveis e em situações adversas; o apoio ao EA deve incluir a implementação de políticas amigas da juventude.

Palavras-chave: competências sociais e emocionais, desenvolvimento, envolvimento académico, juventude, promoção da saúde.

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List of Abbreviations

CASEL – Collaborative for Academic, Social, and Emotional Learning

CERQ – Cognitive Emotion Regulation Questionnaire

CFA – Confirmatory Factor analysis

CFI – Comparative Fit Index

CI – Confidence Interval

ER – Emotion Regulation

ESCQ – Emotional Skills and Competence Questionnaire

GAD – Generalised Anxiety Disorder

HBSC – Health Behaviour School-Aged Children

HDI – Human Development Index

HKRAM – Healthy Kids Resilience Assessment Module

OECD – Organisation for Economic Co-operation and Development

PHQ – Patient Health Questionnaire

PISA – Program for International Student Assessment

PRISMA – Preferred Reporting Items for Systematic Review and Meta-analysis

PSS – Perception of School Success

RMSEA - Root Mean Square Error of Approximation

SDQ - Strengths and Difficulties Questionnaire

SE – Student Engagement

SECs – Social and Emotional Competencies

SEL – Social and Emotional Learning

SSP – School Success Perception

SRMR - Standardised Root Mean Square Residual

TLI – Tucker-Lewis Index

UN – United Nations

UNICEF – United Nations International Children's Emergency Fund

UNESCO – United Nations Educational, Scientific and Cultural Organization

WEIRD – Western, Educated, Industrial, Rich, and Democratic

WHO – World Health Organization

General Introduction

1. Introductory Note

"Education shall be directed to the full development

of the human personality"

(UN General Assembly, 1948)

Nowadays, having access to education is considered a universal right. Included as one of the 17 Goals of the 2030 Agenda for Sustainable Development of the United Nations, the overall Goal 4 aims to ensure access to inclusive and equitable "quality education" and promote opportunities of lifelong learning for all people. It proposes that all people must have the right to acquire the knowledge and skills necessary for sustainable development and healthy lifestyles (United Nations, 2015). Specifically, it draws attention to the necessity to increase the opportunities for non-cognitive skills acquisition (target 4.4.), to enhance equity in education (target 4.5) and to ensure that all students have access to an education for sustainable development (target 4.7.), namely schools that promote peace, global citizenship and cultural diversity recognition and healthy lifestyles (United Nations, 2015).

In connection with the United Nations 2030 goals and universal rights, educational institutions should be concerned with fostering positive development in all students and thought of as places of protection, where curiosity and lust for learning should be perfectly present. Consequently, going to school is defended by the majority as a critical path to achieve a healthy, prosperous and purposeful life. Unfortunately, school throughout academic life can also be a synonym of confusion, failure and fear. For those with such an experience of academic life, the commitment, effort and connectedness with learning and the related activities and people tend to diminish, leading to students who do not like school, who fail, skip classes or even drop out.

The Health Behaviour School-Aged Children study, which included 220,000 adolescents with 11, 13 and 15 years old from 45 countries/regions, reported that between 2014 and 2018, in around a third of the countries/regions, adolescents were less likely to like school (Inchley et al., 2020), with Portuguese students' school satisfaction below the European medium score (Matos et al., 2018). Similarly, the Program for International Student Assessment (PISA) survey, assessing 540,000 15-year-old students from 72 countries, found that 27% of students

felt disaffected from school, with 26% reporting skipping at least one class in the two weeks before the survey, and 20% reporting skipping the entire school day at least once [Organization for Economic Co-operation and Development, (OECD), 2016)]. Thus, access to education is not enough for a student to thrive and succeed academically. One must be engaged.

Student engagement (SE) is a broad concept that depicts students' commitment, motivation, concentration, interaction, effort, and connectedness with teachers and classmates, academic coursework, curriculum, and academic activities that support learning and achievement (Fredricks, 2015; Fredricks et al., 2004, 2016). To study SE in adolescence is to address youth health, since SE is considered an important protective and moderating factor with a positive effect on mental health (Bond et al., 2007; Salmela-Aro & Upadyaya, 2020), higher academic performance and attainment (Bond et al., 2007; Lei et al., 2018; M.-T. Wang & Hofkens, 2020).

In this regard, recent studies have shown that people who study more, namely college graduation or master's degree, had substantially higher life expectancy when compared with those who studied not as much, namely high school or less (Raghupathi & Raghupathi, 2020; Roy et al., 2020; Singh & Lee, 2021). The same studies show that those in poverty and vulnerable conditions experience lower life expectancy. Furthermore, there is also evidence that youth in vulnerable conditions are also those who tend to study less (Garcia-Molsosa et al., 2021). Hereupon, Ungar et al. (2019) claim that a strong SE is even more relevant for youth in vulnerable conditions, considering that it is more critical for these students to achieve schooling completion than to aim for high grades. A strong SE supports students throughout their school trajectory and protects them in stressful situations (Fredricks et al., 2016; Wang & Eccles, 2013). In such contexts, school attendance might protect against peer, familial or community risk factors (Fredricks et al., 2004).

The health concept in the present thesis focuses on the individual's capacity to adapt and regulate when confronted with physical, emotional and social challenges in life (Huber et al., 2011). This concept emphasises people's self-management and ability to cope with new situations and adversity; thus, its association with resilience is evident. In the present thesis, resilience is acknowledged not as a unique ability or dispositional trait but rather a set of competencies that can be developed in different ways in continuous relationship with the context (Trzesniak et al., 2012). Resilience reflects the adaptability, available at a given time and context, that can be used to respond positively and successfully to the current or future challenges that the person faces, through different processes and connections (Masten & Barnes, 2018). Also, the success of the resilience process can be assessed concerning the level

of the person goals achievement and the adaptation to the context (i.e., positive functioning) (Trzesniak et al., 2012).

The present thesis emphasises the individual internal resources and highlights the well-established perspective that considers the presence or development of Social and Emotional Competencies (SECs) as a precondition for the manifestation of resilience (Masten & Tellegen, 2012; Reyes et al., 2013; Rutter, 2013). SECs, or the "21st-century skills", or the "non-academic skills", or even the "career readiness skills" (Jagers et al., 2019), are necessary to effectively recognise and regulate our emotions, to solve problems, to make responsible decisions, to set and attain goals, and to establish caring and positive relationships with others (Weissberg et al., 2015). SECs will allow youth students, together with the knowledge integrated with the regular curricula, to adapt to adverse and new situations, while maintaining physical, emotional and social health, and well-being throughout their lives and to also be able to contribute consciously and actively to an economically and socially sustainable society.

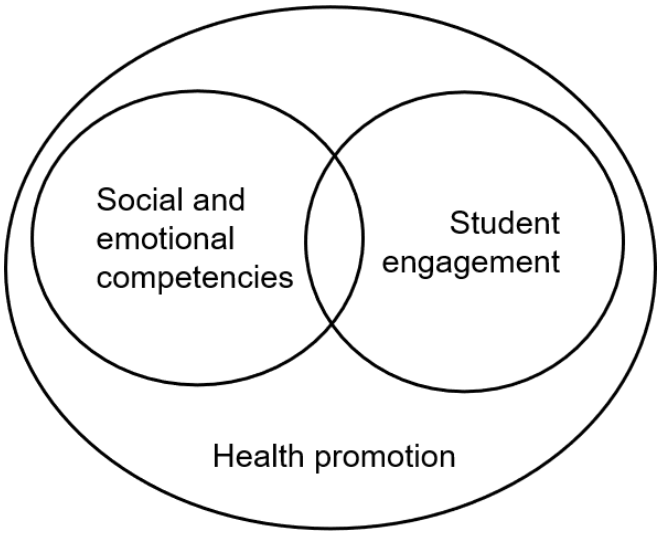
Since the present thesis is aligned with a developmental perspective, the Bioecological Model served as its theoretical framework (Bronfenbrenner, 1979; Bronfenbrenner & Morris, 2006). In this model, development is defined as the phenomenon of continuity and change, integrating the individuals and the groups/contexts with whom they interact directly and indirectly (Bronfenbrenner, 1979; Bronfenbrenner & Morris, 2006). The bioecological model of human development was chosen because it allowed us to understand the phenomenon under study (i.e., the association between person's resources and school relationship), while accounting for other influential variables, such as person's characteristics (i.e., age and gender), and the role of contexts and time changes.

2. Thesis Organisation and Research Objectives

The present thesis is constituted of six studies presented in article format, which are intended to be organised and coherent with the referred proposal and whose structure is aligned with the bioecological model of human development, namely with the proximity of the contexts in relation to the person in development, the adolescent. This set of studies is based on an initial section - a narrative review integrating the concepts under analysis, and will be concluded with a general and integrated discussion section where major results, contributions and conclusions are presented. In between, there are the six empirical studies, including abstract, introduction, method, results, discussion/conclusions, and related references. Overall, the studies focused on

three main areas (see Figure 1), with the general aim of understanding the role of SECs (see chapters II-VII), and emotion regulation in particular (see chapters III, IV), on student engagement, within the scope of health promotion in youth.

Figure 1. *Diagram of the Areas in Analysis in the Thesis*



Grounded on the general objective and in the areas under study, the following objectives were defined:

a) review and summarise previous research regarding SECs and SE in adolescence;

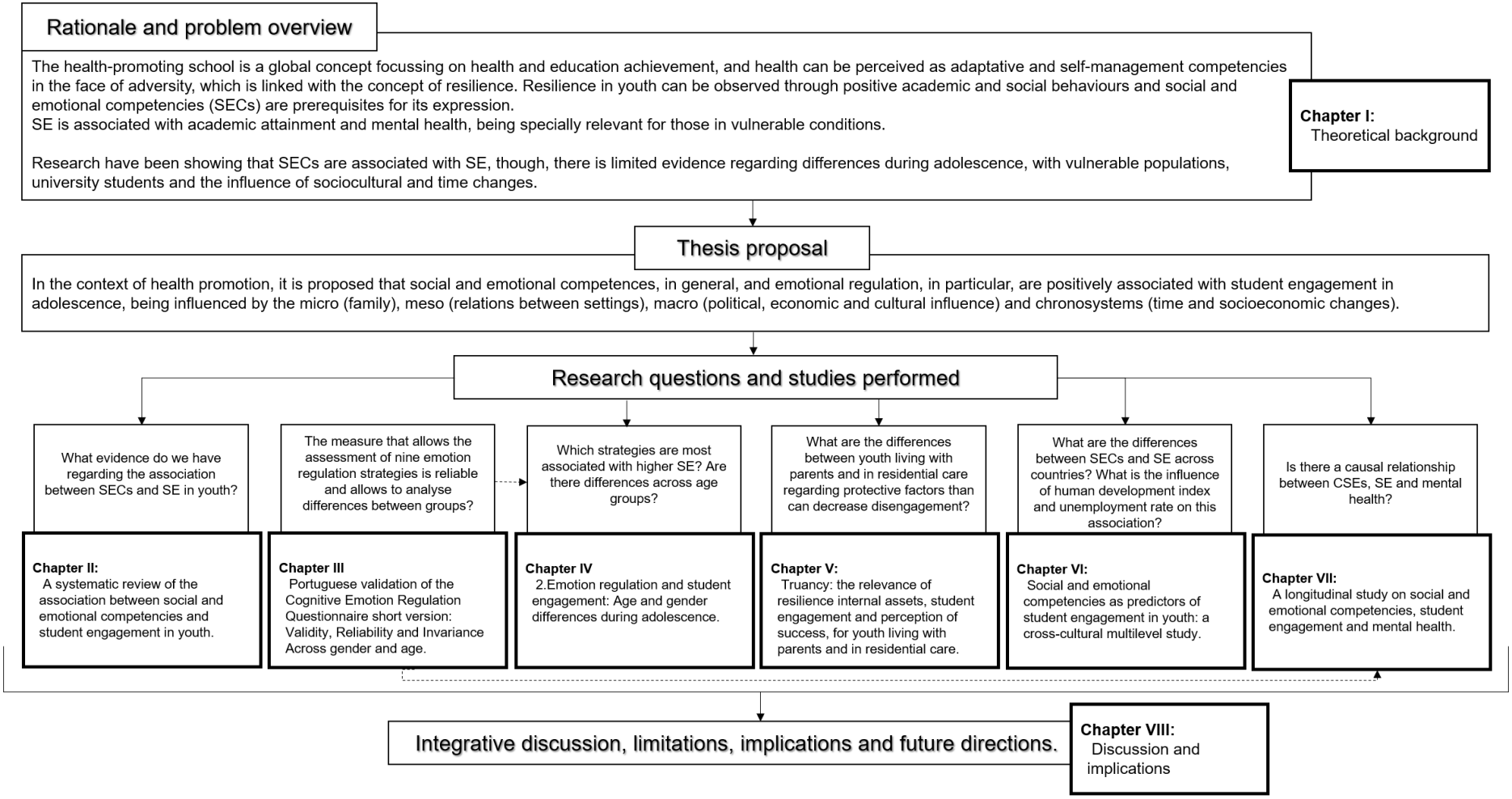
b) analyse the reliability of measures to assess a group of adaptative and maladaptive emotion regulation strategies;

c) investigate SECs and SE and their interrelations at different age stages;

d) explore the impact of different systems - micro, meso, macro and chronosystems - on the relation between SECs and SE.

Ultimately, this thesis is intended to provide empirical evidence on the association between SECs and SE, provide a better understanding of its relevance for health-promoting schools, to recommend strategies for educational professionals, researchers, policymakers, and for the community in general. In this way, we, as a society, can provide the best contexts and opportunities for healthy and sustainable development in adolescence, despite adversities. Considering the objectives outlined, the thesis is organised into eight chapters. Figure 2 presents a summary of the rationale, the problem overview, and the main research objectives that guided this work. It also presents how each chapter is aligned with each specific research question.

Figure 2. *Diagram of the Thesis Structure*



The first chapter offers a general theoretical background, presenting the conceptual frameworks and definitions that guided the studies outlined, namely SECs, health and resilience, student engagement, and emotion regulation and how they intertwine and interrelate. This chapter also outlines the relevance of this research and presents its specific objectives.

The second chapter comprises a systematic review focusing on the conceptual association between SECs and SE in youth from 2004 to 2020. This study aimed to synthesise previous research on the role of SECs on SE in students from 10 to 25 years old. It raises awareness on the less studied associations and other literature gaps considered in the subsequent studies.

The third chapter presents the Portuguese validation of the Cognitive Emotion Regulation Questionnaire, in its short version (CERQ-Short). In this validation, the results of three conceptual models are presented, concerning the organisation of emotion regulation strategies, which resulted in a first-order model with nine strategies correlated and their organisation in the categories of adaptive and non-adaptive strategies (second-order models). The metric invariance was investigated by age groups and gender for the model with the best fit. This study aimed to offer a Portuguese short version of a widely used emotion regulation strategies questionnaire and show its usability for age-group and gender comparisons. To the best of our knowledge, this is the first study of measurement invariance with the CERQ-short. Additionally, this study addressed the association between emotion regulation strategies with positive and negative emotional states, anxiety and depression symptoms. The CERQ-short was used in two studies and that can be found in the fourth and seventh chapters.

The fourth chapter analysed the use of emotion regulation strategies (using the CERQ-short, previously validated) and school engagement across age groups and by gender. To the best of our knowledge, this is also the first study to examine student engagement in a sample of students from 10 to 25 years old. This article also examined the association of each emotion regulation strategy on SE by looking into different age groups that are closely spaced since relevant developmental changes might be masked when comparing only major age periods (e.g., adolescence vs adulthood or children vs adolescence).

The fifth chapter includes an empirical study regarding truancy (or school absenteeism) in youth living in residential foster care. Truancy is considered an active behaviour of school disengagement (Keppens & Spruyt, 2020). Also, those in vulnerable social and economic situations are at higher risk of disengagement (Ungar et al., 2019), as are students living in residential care. Thus, the study in this chapter aimed to understand the role of resilience-related internal assets, student engagement and school success perception as protective factors for truancy. Also, it examined the differences between a sample of students living in residential

care and students living with their parents. Finally, it is also the goal of the present study to reflect upon the practices that can be implemented both at residential care and educational settings, considering the role of resilience related assets, success perception, student engagement and, potentially a decrease in school absenteeism.

The sixth chapter was sought to investigate the association between SECs and SE, not only at an individual level, but also including a cross-cultural perspective, examining the potential moderation of socioeconomic development (Human Development Index, HDI) and unemployment rate (country level variables) on the relation between SECs and SE. To the best of our knowledge, no previous studies have analysed the role of these contextual variables on the association between SECs and SE. Additionally, this paper presents data from nine countries, four from non-WEIRD (Western, Educated, Industrial, Rich, and Democratic) nations, such as Angola, Brazil, Cape Verde, and Mozambique, which are commonly underrepresented in cross-cultural studies (Moshontz et al., 2018).

The seventh chapter examined the relation between SE, SECs and psychological distress before and during two confinement periods, using a longitudinal design. This study has data from students in secondary and tertiary education in the first wave of data collection (2019), who continued in the two sequential years in graduation. During these last two years (2020 and 2021), youth have experienced drastic changes in their lives. One particular change was relative to the teaching-learning process, which during long periods was maintained exclusively on a virtual mode as a result of the Covid-19 pandemic containment measures. Online learning was associated with mental health decrease (Rao & Rao, 2021) academic stress and school workload (Branquinho et al., 2020, 2022). Also, systematic reviews have concluded that youth reported increased distress, anxiety and depression symptoms (e.g., Elharake et al., 2022; C. Wang et al., 2021). . Given that the present thesis was developed during this pandemic period we explored the reciprocal associations between the SECs, SE and mental health.

The eighth and last chapter presented an integrative discussion, through which it is intended to present an overview of the studies, its main findings and principal contributions. This section also presents a reflection on how this work can inform and impact SEL programmes targeting youth health and engagement promotion, including those in tertiary education. Finally, we reflect on the implications of our findings for future research and policymakers.

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CHAPTER I

Theoretical Background

1. Health Prevention and Promotion in Youth

"*An adolescent who is healthy is the best foundation for a healthy adult life, which will in turn influence future generations' health*. (..)"
(The Lancet, 2012, para. 4)

Adolescence is a unique period of life, when biological, neuronal, cognitive, emotional, and social reorganisation occurs (Dahl et al., 2018; Patton et al., 2016). Given the changes one may face, this is a period of both vulnerability and great opportunity. Adolescence begins with the typical changes of puberty, which can start around the age of 10, and typically ends when individuals assume adult roles and responsibilities, which, in Western society, may occur around the age of 24 years (Hall, 1904; Patton et al., 2016; Sawyer et al., 2018). In this expanded definition of adolescence, we also include 25-year-olds in agreement with other authors (Curtis, 2015; Riediger & Klipker, 2014) since the second critical period of neurodevelopment ends with the completion of cortical organisation around 25 years of age (Chung & Hudziak, 2017). It is a period of heightened sensitivity to social contexts, which can influence the development of adolescents' executive functions and behaviours (Blakemore & Mills, 2014; Fuhrmann et al., 2015). At the same time, it is also a susceptible period for the onset of psychoemotional disorders which can represent a relevant burden for life course, social adjustment and productivity later in life (Patton et al., 2016).

Educational institutions constitute fundamental social environments in adolescents' lives. They are privileged places for health prevention and promotion since a significant number of students can be reached (Greenberg et al., 2017), especially those with greater vulnerability. Research regarding social and emotional competencies (SECs) has shown that besides the "promoting pathway", which leads directly to healthy development, for those exposed to higher levels of risk, there is the "protecting pathway" (Kia-Keating et al., 2011). Thus, social and emotional education can serve as a resilience strategy (Cefai et al., 2018).

Considering the significant changes that occur during adolescence, the competencies acquired during this stage tend to greatly impact the health and well-being of adolescents, as well as their life trajectories and of future generations (Patton et al., 2016).

Health can be conceptualised as the “ability to adapt and to self-manage, in the face of social, physical and emotional challenges” (Huber et al., 2011). This definition was proposed in 2011 as a result of an international health experts conference, in order to offer an alternative

to the World Health Organization (WHO) definition of health, formulated in 1948 as "a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity" (WHO, 2014, p.1). Huber et al. (2011) argue that there was a problem in proposing the word "complete", which is difficult to operationalise and measure, and refers to an absolutist term, mainly concerning individual well-being (Huber et al., 2011). In other words, complete health would mean that many individuals could be considered as not healthy very often or most of the time. Nowadays, health conditions that do not impact (or impact minimally) people's well-being are frequently diagnosed, and considering the increase in life expectancy and the detection of chronic diseases, many people could no longer be considered healthy. Thus, the current definition of health emphasises people's ability to deal autonomously (i.e., adapt and regulate) with life's ever-changing physical, emotional, and social adversities and function with fulfilment and a feeling of well-being despite chronic diseases or disabilities (Huber et al., 2011).

The focus on resilience within the currently outlined health conceptualisation is relevant for this thesis since resilience is a crucial factor when studying youth health prevention (Salmela-Aro & Upadyaya, 2020). Resilience has been defined as a dynamic construct and an interactive multisystemic developmental process, which integrates individual and contextual characteristics, resources and exchanges (Masten & Wright, 2010; Ungar, 2018; WHO, 2017). Resilience can be considered the degree to which the organism can minimise the allostatic load, which is related to the psychophysiological cost of adaptation in the face of stressors (Feder et al., 2011). In other words, resilience is the ability to recover and return to a balanced state of health, involving adaptation to the stressful event and maintaining an adjusted trajectory (Masten & Wright, 2010; Zimmerman & Brenner, 2010). Integrating the idea of adaptive maintenance of physiological, behavioural and developmental states in the face of significant threats or adversities, that is, an adaptive response of the organism to stress to maintain allostasis[1] (Pfau & Russo, 2015).

Research has shown that the way challenges are overcome depends significantly on the individual and on the available contextual resources that can be recruited and negotiated throughout the process of dealing with challenges (Wright et al., 2013). Also, resilience involves simultaneously: 1) prevention of mental health problems; 2) mitigation of health

[1] The term allostasis can be defined as the regulation of balance that allows the adaptation of physiological parameters over the course of change (Fink, 2017). In this sense, the concept of allostatic load is related to the predominant effects of stress and represents the psychophysiological consequences of chronic and repeated exposure to exaggerated neuroendocrine responses, with the cumulative effect of these responses being a risk factor for the decrease of mental health (Osório et al., 2017).

problems that arise after facing adversity, and 3) recovery from mental health problems (Rutter, 2013). A set of relevant resilience-related resources included a combination of internal assets or social and emotional competencies that allow people to deal with adversity and protect their health and well-being (Ungar & Liebenberg, 2011; World Health Organisation [WHO], 2017).

Furthermore, research has shown that education progression and accomplishment are associated with higher health resources (Raghupathi & Raghupathi, 2020; Roy et al., 2020; Singh & Lee, 2021). Moreover, schools capable of motivating and engaging students represent spaces of health. Two systematic reviews have found lower rates of unhealthy behaviours (i.e., smoking, alcohol and drug use) among students who attended schools with positive approaches (Bonell et al., 2013; Fletcher et al., 2008). In these schools students have a higher likelihood of completing studies and lower absenteeism (Bonell et al., 2013), or higher school belonging and better teachers relationships (Fletcher et al., 2008).

To achieve health and education for all through schools, an integrated initiative was launched in 1995 by WHO, UNESCO and UNICEF (WHO & UNESCO, 2021), which was designated "health-promoting schools". A health-promoting school was defined as "a school constantly strengthening its capacity as a safe and healthy setting for living, learning and working" (J. T. Jones & Furner, 1998, p. 2), with health promotion being "the process of enabling people to increase control over, and to improve, their health" (World Health Organisation [WHO], 1986, p.1).

Another important research domain for the present thesis is "Prevention Science", which focuses on solving public health problems by integrating epidemiology and life course development perspectives (Herman et al., 2012). In prevention science it is stablished the relevance of studying behaviour and social processes, especially during key life transitions, to better recognise intervention targets by the identification of risk and protective factors relevant to particular developmental periods (Herman et al., 2012). Within the field of prevention science, systematic evidence-based decision-making grounded on scientific evidence are pretended, as well as implementing interventions according to the best practices focused on fostering positive outcomes (Salmela-Aro & Upadyaya, 2020). A theoretical comparison between prevention science and positive youth development perspectives - a strengths-based approach, concluded that both perspectives are complementary since there is a need to reduce risk factors and enhance protective factors and resilience to foster healthy development (Catalano et al., 2002).

Finally, since the present thesis is aligned with a developmental perspective, the Bioecological Model served as its theoretical framework (Bronfenbrenner, 1979;

Bronfenbrenner & Morris, 2006). In the bioecological model, development is defined as the phenomenon of continuity and change, integrating the individuals and the groups/contexts with whom they interact directly and indirectly (Bronfenbrenner, 1979; Bronfenbrenner & Morris, 2006). The four defining properties of the bioecological model are:

1) the process (i.e., the interactions between the person and the environment/context),

2) the person (i.e., the personal characteristics that influence inner development, namely demand characteristics: age or gender; resource characteristics: competencies or experiences; force characteristics: temperament or motivation),

3) the context (i.e., the four ecological systems that interact and influence the person in development: the microsystem representing the most immediate environments in which the person is highly involved, such as family or school/university; the mesosystem representing the interconnections and processes within the microsystems; the exosystem which represents the environments that indirectly influence the person's development, such as the educational, economic and political systems; and the macrosystem representing the values and norms of a given culture or subculture), and

4) the time, or the chronosystem (i.e., the changes over time) (Bronfenbrenner & Morris, 2006; Tudge et al., 2009).

The bioecological model of human development was chosen because it supports understanding the phenomenon under study - the interaction between SECs and SE (which entails personal characteristics, environment resources and the relation between the student and the school contexts). At the same time the model account for a) person demand characteristics variability (i.e., age and gender differences), b) social contexts impact (i.e., family environment, cultural and economic influences) and c) time changes that shape adolescents' development.

2. Student Engagement as an Expression of Health in Youth

Student engagement (SE), which has also been named school engagement (Fredricks et al., 2004) or academic engagement (Fredricks, 2015), is a broad concept that depicts students' involvement in educational institutions. Overall, SE is related to students' commitment, motivation, concentration, interaction, effort and connectedness with the curriculum, learning activities or school-based extracurricular activities that support learning and achievement and also the relationships with the educative community, such as teachers and peers (Fredricks, 2015; Fredricks et al., 2004).

Students with adequate SE tend to develop the abilities or competencies and values necessary, not only for school completion, but also for a healthier adulthood transition (Reschly & Christenson, 2012). Engagement with learning and school/university is a developmental process and does not begin with the formal school entrance (Reschly & Christenson, 2012). It can start with ideation, preparation, involvement and expectations from parents and preschool experiences. Also, engagement does not end with compulsory education, continuing into post-secondary attendance (Kahu, 2013; Wang & Eccles, 2012a) or into emerging adults' life with the first employment experiences (Reschly & Christenson, 2012).

In most research, 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 other authors these concepts are distinct and associated with different outcomes, meaning the absence of positive engagement and the presence of negative engagement in school (Skinner et al., 2009). Either way, disengagement can be manifested through lack of participation and effort, disrupting class, withdrawal, skipping classes and usage of superficial learning strategies (Fredricks, 2014).

Despite the different conceptualisations proposed over the last few years for SE, most authors agree upon its multidimensionality (Fredricks, 2015; Salmela-Aro et al., 2021). In this thesis, we will also consider the three-dimensional perspective, which includes emotional/affective, behavioural and cognitive engagement (Fredricks, 2015; Fredricks et al., 2004; Furlong & Rebelez-Ernst, 2013).

Emotional or affective engagement corresponds to a disposition to learn, and more specifically to the students' emotional responses towards school, learning, and the academic community, namely teachers and peers (Fredricks et al., 2004). It is also related to the value students attribute to education, their perception of belongingness and the attention given to

teachers' instructions (Fredricks, 2015). Behavioural engagement involves actions that can be observable indicators of persistence and active participation in academic tasks and school-based extracurricular activities (Fredricks et al., 2004; Furlong & Rebelez-Ernst, 2013). Also, it can be observed as the students' adequate or adaptative behaviour in school/classes and absence of disruptive behaviour (Fredricks, 2015). Cognitive engagement comprises student self-efficacy, motivation, expectations, and beliefs related to teachers and or peers (Fredricks et al., 2004), also the use of self-regulatory strategies, investment in learning (e.g. efforts for comprehension mastering of complex ideas and difficult skills) and use of depth learning strategies (Fredricks, 2015).

Actions that consider the study and promotion of SE and its facilitators in adolescence are necessarily an integral part of the movement to promote health in schools. SE is considered an important protective and moderating factor with positive effects on the physical and psychological health of students (Marques, 2016; Salmela-Aro & Upadyaya, 2020), life satisfaction and psychological well-being (Demirci, 2020; Rodríguez et al., 2020). A longitudinal study has also shown a reciprocal relation between life satisfaction and mental health and SE (Marques, 2016). Moreover, those who report greater SE tend to report high expectations and future aspirations (Virtanen et al., 2018), aspire for education beyond secondary school (Wang & Eccles, 2012a), critical thinking (Carini et al., 2006), persistence (Kuh et al., 2008), higher academic performance and attainment/completion (Lei et al., 2018; Wang & Hofkens, 2020).

Students who report greater SE indicate less behavioural or psychoemotional difficulties, such as depression and anxiety symptomatology (Curcio et al., 2017; Tozer et al., 2018) and anger expression, impulsivity or sensation seeking (Curcio et al., 2017; Oshri et al., 2018). Students with high SE also tend to express less involvement in disruptive behaviours such as truancy (Virtanen et al., 2018), delinquent behaviours (Kulig et al., 2019), substance use/abuse and school dropout (Li & Lerner, 2011; Wang & Fredricks, 2014).

Furthermore, a greater sense of resilience was found for those who also report higher levels of SE (Khawaja et al., 2017; Sevil-Gülen & Demir, 2021). In this sense, research has indicated that vulnerable students are those who benefit the most from a high SE, namely those in adverse contexts (Ungar et al., 2019) or those with cognitive difficulties (Carini et al., 2006) SE is associated with the decrease of the likelihood of academic dropout (Fredricks, 2015).

SE has gained much attention in the past years due to its influence in the apprenticeship trajectory (Lei et al., 2018) and because it is amenable to change (Fredricks et al., 2016). In

this sense, the role of the educational institution is paramount since it is highly influenced by the expectations and the support from teachers, parents and family (Ungar et al., 2014, 2019).

One of the major concerns that the scientific community has raised over the years is related to the general tendency of SE to decrease in adolescence, with younger and female students reporting higher levels of engagement and satisfaction with school compared to males and older students (Amir et al., 2014; Hartono et al., 2019; Inchley et al., 2020), especially during secondary education (Fredricks, 2015). For instance, in a longitudinal study, Wang and Eccles (2012b) found that school identification and subjective valuing of learning decreased from 7th to 11th grade. Regarding gender, females are also found to express higher engagement values than males (Amir et al., 2014; Hartono et al., 2019).

Nevertheless, person-oriented research has been exploring these tendencies and identifying the different developmental trajectories, showing that for the majority, SE seems to remain relatively stable over the years (Li & Lerner, 2011; Symonds et al., 2016). However, there are groups of students where gradual or abrupt decreases in their involvement are evident (Li & Lerner, 2011; Symonds et al., 2016). Although students in disengagement trajectories may constitute the smallest proportions, the impact of disengagement has several negative effects on the individual health, but also on social and economic impact, namely higher levels of substance use, poorer psychological well-being, less probability to attend university and increased likelihood of experience unemployment (Symonds et al., 2016). In addition, governments worldwide promised to leave no one behind, and health promotion policies are designed and thought to include all students. The mission of health-promoting schools can only be completed when educational institutions are able to respond to every one according to their needs, desires and potential.

Recently, a study in elementary school found a promising small proportion of students with increased emotional, behavioural and cognitive engagement trajectories over the time (Zhen et al., 2020). Another longitudinal study with early and middle adolescents, including data from before and during COVID-19[2], showed similar proportions (Salmela-Aro et al., 2021), with the majority of students pertaining to the group that maintain their engagement, showing a smaller group of students with a SE downward trajectory, but also a group of students showing a SE upward trajectory. These recent studies are great motivations to keep

[2] In December 2019, the sars-covid-2 or COVID-19 virus emerged in China, which spread worldwide during the first quarter of 2020. In order to contain the virus pandemic, governments have imposed a set of security measures, including social isolation, which led to schools' closure for several months, and consequentially to a radical transformation from face-to-face to online teaching.

on drawing attention to engagement and to promoting the conditions that may indirectly and directly enhance engagement. Thus, research that focuses on identifying SE predictors is needed considering different levels of interaction with youth. For instance, studies researching individual and contextual protective factors, but also others that explore engagement at different stages of development, particularly in moments when students change school contexts and in developmental transitions (Fredricks, 2015), as happen between 10 and 25 years old, the age group depicted in the studies of this thesis.

To promote health and prevent internalised and externalised disorders, especial attention must also be given to vulnerable groups. In the context of SE research, it has been identified two groups that are especially vulnerable, which are commonly found at opposite extremes of socio-economic status: at-risk youth or marginalised youth (e.g., young people in residential care) (Ungar et al., 2014, 2019) and students with high levels of student engagement and exhaustion (Salmela-Aro et al., 2016; Tuominen-Soini & Salmela-Aro, 2014). For at-risk youth, higher levels of SE are more associated with resilience than academic achievement (Ungar et al., 2014). On the one hand, this association is linked to the fact that youth who are involved with the school, who see a purpose in their schooling and believe that school can make a difference in their life trajectory, seem to have higher well-being than those with high achievement per se (Dotterer et al., 2009). On the other hand, for young people at risk, school can offer a space and time of protection from peer, family and community risk factors (Fredricks et al., 2004). Also, school can provide experiences that contribute to the development of hope, self-regulation, self-efficacy (Dixson & Stevens, 2018), positive relationships with peers and teachers (Ungar et al., 2014; Virtanen et al., 2018), and which are associated with SE. Interestingly, cross-cultural research has shown that students from lower socioeconomic status tend to report higher levels of school satisfaction, than students from higher socioeconomic status (Inchley et al., 2020).

For students with high levels of SE the emphasis is placed on the possible emergence of mental health disorders. Intending to integrate the positive and negative sides of engagement along with SE profiles in high-school students in Finland and the United States of America (USA), authors showed that the prevalence of the 'engaged-exhausted' students was high, being the biggest group in Finland (45.8%) and the second in the USA (33.3%, with the biggest group in the USA being the "moderately burned out" group with 40.7% participants) (Salmela-Aro et al., 2016). These findings suggest that some students may experience simultaneous engagement and exhaustion, and even that maintaining high values of high engagement can lead to burnout (Salmela-Aro et al., 2016). Moreover, students experiencing engagement and exhaustion

simultaneously tend to suffer more stress and failure fear and, in the long term, to decrease engagement levels, which leads to considering these students at risk of developing burnout and depression symptomatology (Tuominen-Soini & Salmela-Aro, 2014). Finally, another study showed that students who reported higher values of SECs were more likely to not belong to the stressed or burnout groups (Salmela-Aro & Upadyaya, 2020). Thus, the promotion of healthy SE must be accompanied by the promotion of SECs in youth.

3. Social and Emotional Competencies for Healthy and Engaged Youth

Society has been the target of intense and increasingly sudden transformations, and we have witnessed continuous changes in economic, social and environmental conditions that impacted our lives, namely the way we relate and work (Cefai et al., 2021). Consequently, educative institutions need to prepare today's young people for a reality that we are not yet aware of but will undoubtedly be new and challenging. Discussions regarding education reforms have argued that social, emotional, and cognitive development are indistinguishably linked, co-organising and sustaining thoughts and behaviours (Cantor et al., 2019). Neuroscience literature has been supporting these discussions, stating that people are co-regulated and shape each other's psychobiological through all kinds of interactions and relationships, including the formal cognitive systems needed for education (Immordino-Yang & Gotlieb, 2017). Thus, in a constantly changing world, technical and scientific knowledge is not enough for our students as tools in an unpredictable future (Chernyshenko et al., 2018). It is necessary to teach/learn and promote SECs that, in interaction with the context, will allow the individual to regulate their emotions, thoughts and behaviours in an adaptative and healthy way (Chernyshenko et al., 2018).

Fortunately, there is a broad agreement between parents, educators and governments regarding the importance of social and emotional competencies (SECs) being taught at schools since they facilitate learning, are predictors of resilience, promote prosocial behaviour and provoke pluralistic thinking (Cefai et al., 2018). In Portugal, for example, the Students' Profile at the End of Compulsory Schooling (Martins et al., 2017), approved by the Order nº 6478/2017 July 26, establishes the matrix of principles, values, and competence areas to which the development of the curriculum must comply. Within the defined areas of competence, we highlight those related to the SECs described above: personal development and autonomy,

interpersonal relationships, communication, critical and creative thinking, problem-solving and well-being, health, and the environment.

Currently, one of the goals of education must be to promote and support the healthy development of students at a behavioural, emotional and social level (Whitcomb & Feuerborn, 2020). Thus, social and emotional learning (SEL) is increasingly becoming at the central aims in educative institutions, such as technical and scientific knowledge or academic skills (Cefai et al., 2018, 2021; Mahoney et al., 2021).

SEL is based on positive youth development models (Ross & Tolan, 2018) which simultaneously focuses on reducing risk factors and equipping young people with the competencies needed to make healthy and responsible decisions. The main aim of SEL is to allow students to surpass adversities while maintaining health and support them to achieve successful outcomes in life, consequently promoting personal health and well-being (Greenberg et al., 2017). Thus, SEL is aligned with a prevention science perspective (S. M. Jones et al., 2019) within the branch of human development (Herman et al., 2012). SEL is also based on theories of social and emotional processing and emotional intelligence with its intervention approach aiming to enhance people's SECs, create supportive contexts, and promote constructive interactions between the person in development the contexts (Shek et al., 2019). SECs include, but are not necessarily limited to, effectively recognising and regulating our emotions, solving problems, making ethical and responsible decisions, setting and attaining goals, and establishing caring and positive relationships with others while avoiding maladaptive behaviours (Weissberg et al., 2015).

One of the most well-known frameworks supporting SECs is the CASEL 5 (Collaborative for Academic, Social, and Emotional Learning) framework (Borowski, 2019; CASEL, 2003; Weissberg et al., 2015) which addresses five broad and interrelated areas of competence, namely self-awareness, self-management, social awareness, relationship skills and responsible decision-making:

1) Self-awareness refers to the ability to recognise accurately owns emotions and thoughts, as well as their consequent influence on behaviour; it also includes the capability to accurately identify personal strengths and weaknesses, supported by an adequate sense of confidence and self-efficacy, maintaining a growth mindset and developing interests and a sense of purpose.
2) Self-management is related to accurately recognise, labelling and regulating emotions, thoughts and behaviours in different situations, contexts and interactions; this is also related to effective stress management, being courageous to take the

initiative, being organised and being able to practice self-discipline and self-motivation for the establishment and accomplishment of personal, academic and collective goals.

3) Social awareness corresponds to understanding others' perspectives, strengths and needs and showing empathy and compassion for them, treating everyone with equal justice and equity regardless of theirs' diverse backgrounds and cultures; it is also related to the understanding of social behaviour and ethical norms and the recognition of family, school, work and other community resources and supports.
4) Relationship skills refer to the ability to create and maintain healthy and rewarding relationships with diverse individuals and groups, which requires communicating efficiently and effectively and active listening, cooperating with others, resisting inappropriate social pressure, being able to negotiate conflict constructively and seeking and offer help when needed, including advocating for others.
5) Responsible decision-making is associated with demonstrating curiosity and open-mindedness, identifying solutions for personal and social problems, making constructive and respectful choices regarding personal behaviour and social interactions based on the well-being of self, on a realistic assessment of the consequences of certain behaviours, safety concerns, ethical standards, and social norms.

According to the CASEL 5 model, changing the core five areas of competence will positively impact proximal outcomes and contexts and, consequently, will lead to improvements in more distal outcomes. As such, the model advocates that SECs will directly impact school achievement and also indirectly affect it through the increase of SE and the decrease of mental health difficulties (CASEL, 2003). A recent study tested this model using a longitudinal methodology including a recognised SEL program implementation, having found evidence only for the indirect path via decreased mental health difficulties (Panayiotou et al., 2019). Though, this result should not discourage the model use. Since the measure used to assess SE, may have failed to analyse the multidimensionality of the construct, as the authors refer, given the inconsistencies that arise around the SE conceptualisation and associated measures.

Moreover, this unexpected result may also have been confounded by the impact of mental health difficulties (Panayiotou et al., 2019). Thus, studies in this regard will provide a better understanding of the relation between health, SECs and SE. In addition to the above, a recent

meta-analysis with secondary students concluded that SECs are significant predictors of school belonging (i.e., emotional school engagement) (Allen et al., 2018).

Results from observational studies have been supporting the importance of SECs for healthy development. For instance, a longitudinal study that measured a sample with low socio-economic status (around 700 children in kindergarten, after high school and at 25 years old) to track the impact of social competencies (e.g., cooperation, conflict resolution, perspective-taking), found that socially competent children were more likely to graduate from high school, complete a college degree, and obtain stable employment (D. E. Jones et al., 2015). Conversely, children with lower social competence scores were more likely to be arrested, live in public housing or receive public assistance, and engage in substance abuse (D. E. Jones et al., 2015). Another longitudinal study, which focused on self-management following 1,000 participants from birth to 32 years old, showed the predictive power of self-regulation on later physical health, substance dependence, personal finances, and criminal outcomes (Moffitt et al., 2011). They also showed that siblings with better self-regulation competencies had better outcomes, despite the shared familial context (Moffitt et al., 2011).

Research regarding universal SEL school-based programmes also indicate the importance of SECs in the youth's positive development. The most recent meta-analysis of follow-up effect including 38 SEL school-based programmes with a total of 97,406 students from kindergarten to high school, concluded that participants scored higher than controls across all SECs, improved attitudes, well-being, academic performance, and lower on emotional distress and drug use (Taylor et al., 2017). The study also stated that the benefits were similar despite students' race and socio-economic background. Furthermore, the authors reported that although few studies report data on attendance, graduation, and sexual safe behaviours, interventions also had positive impacts on these indicators. This information is aligned with the previous meta-analysis on the field, studying both immediate and long term effects documenting positive effects on six identified areas: SECs, attitudes toward self and others, positive social behaviour, conduct problems, emotional distress, and academic performance (Durlak et al., 2011; Wigelsworth et al., 2016). Moreover, they demonstrated that SECs can be taught and have a significant positive effect on people's lives, and also that educative institutions are proper places to do so (Durlak et al., 2011; Wigelsworth et al., 2016). Since when SEL programmes are well designed and applied, competencies can be acquired by all promoting positive adjustment and reducing disruptive behaviours, SEL implementation has to integrate school curricula within the scope of health prevention (Domitrovich et al., 2017).

Beyond the person in development, SEL also has an impact on the classroom climate and promotes a positive school culture and conditions for learning that are caring, cooperative, culturally responsive, and safe (Panayiotou et al., 2019).

3.1. Emotion Regulation: A Key Competence

Among the five areas of competence proposed by the CASEL 5 framework, this work emphasises the area of self-management, specifically emotion regulation competencies. This emphasis is justified due to the scarcity of literature on the relationship between emotion regulation and SE in youth, especially studies focusing on the role of adaptative emotion regulation strategies.

Emotion regulation is a dynamic and multifaceted regulatory process through which individuals manage their emotions, the way they are experienced or expressed (Gross, 2015). The emotion regulation process is influenced by the individual's goals and motivation, personal characteristics and beliefs (Ford & Gross, 2018), and the context and the specifics of the emotion to regulate (Gross, 2015). Moreover, emotion regulation focuses on the possibility of altering duration and emotional intensity in favour of adaptation (Thompson, 2014) concerning a past, present or future situation or stimulus (Zimmermann & Iwanski, 2014), including emotions of positive and negative valence (Gross, 2014).

In contrast to children or adults, adolescents experience more frequently high-intensity positive and negative emotions, greater emotional intensity and instability (Bailen et al., 2019; Riediger & Klipker, 2014). These characteristics of the emotional experience during adolescence are mediated by adolescents' ability to regulate their emotions (Opitz et al., 2012). Thus, emotion regulation becomes increasingly important across adolescent development and promotes psychological flexibility, resilience, and well-being (Morrish et al., 2018).

Emotion regulation is the way for adolescents to remain focused, regulate distractions and maintain task engagement (Morrish et al., 2018). Emotions significantly impact learning (Pekrun, 2017; Pekrun & Linnenbrink-Garcia, 2014), in particular the ability to diminish the emotional impact of disruptive and distractive stimuli when learning (LeBlanc et al., 2017). Studies with high school students showed that emotional competence was associated with higher academic involvement (Dehyadegary et al., 2014). Also, another study with high school students had shown that those who reported higher emotion regulation abilities had lower school disengagement and more self-confidence, sense of life control (McGeown et al., 2018) and self-esteem (Peng et al., 2019). Moreover, a study with university students showed that

emotional competence was positively correlated with cognitive and affective engagement (Maguire et al., 2017).

A recent mixed-methods study, with first-year university students, showed that emotionally competent students also had higher levels of SE and academic achievement, with qualitative findings adding that those students were also more goal-directive, used assertiveness more frequently and had higher levels of emotional regulation ability (Zhoc et al., 2021). The same authors were led to the same conclusions with the results from a longitudinal study methodology (Zhoc et al., 2020).

Research shows that adolescents are more sensitive to relevant emotional cues, meaning that emotion regulation can impact selectively disrupted or improved academic performance, depending on whether they feel engaged with the task and the environment (Somerville, 2016). Moreover, emotion regulation may promote engagement by managing potential emotional barriers through engagement with people or activities (Morrish et al., 2018). The association between emotional competence and SE may be due to the ability to deal with academic challenges and frustration associated with the learning process, and also because students with greater emotional competence are better able to feel comfortable at school and to adapt to the academic environment, given their ability to regulate their emotions and to establish supportive relationships with teachers and peers (Eisenberg et al., 2010; Sánchez-Pérez et al., 2018). Students who possess strategies to regulate motivation and emotion show greater SE than those who have not developed such strategies (Fried & Chapman, 2012).

Besides school-related outcomes, emotional regulation skills can be a protective factor in the emergence of psychosomatic symptoms and other emotional and behavioural difficulties, contributing to resilience (Troy & Mauss, 2011). Emotion regulation relates to higher perceived well-being, mental health, and socioemotional adjustment (Chervonsky & Hunt, 2019; Schäfer et al., 2017).

Developmental research suggests an increase in emotional regulation ability from childhood to adolescence and then to adulthood. This increase may be due to a progressively sophisticated understanding of emotion-eliciting events and a cumulative repertoire of regulatory strategies (Riediger & Klipker, 2014). Along with the growing maturation of the executive functions (LeBlanc et al., 2017; Zimmermann & Iwanski, 2014) that enable the decrease of neuronal connections, stronger, more regular and more effective synapses develop, which results in more efficient, flexible cognitive processes (Kuhn, 2006) and well-adaptative emotional and behavioural regulation (Berk, 2017). However, development in emotional regulation ability does not seem to follow a linear trajectory growth. There is some evidence

denoting a maladaptive shift, which includes an overall decrease of adaptive strategies (e.g., adaptive regulation, seeking social support, problem solving, distraction, forgiveness, acceptance and humour enhancement) and a growth of maladaptive strategies (e.g., giving up, withdrawal, aggressive actions) between 13-15 years old (Cracco et al., 2017; Zimmermann & Iwanski, 2014). More studies are needed to understand how variations in the use of certain strategies impact various domains of development, such as SE.

4. Current work: Relevance, Purpose and Main goals

This thesis's primary goal is to study the role of social and emotional competencies (SECs) on student engagement (SE) within the perspective of human development and the scope of health promotion and prevention in schools during youth. The analysis of the relation between the mentioned areas was guided by the Bioecological Model of Human Development (Bronfenbrenner, 1979; Bronfenbrenner & Morris, 2006). Moreover, the studies performed also included personal, contextual and temporal domains that influence youth development.

The current notion of academic success has been expanded to include both SECs and academic competencies acquisition. From a psychobiological developmental perspective, SECs, particularly emotional regulation, seem to allow and encourage engagement in learning activities and adjustment to social task demands in the classroom context (Blair & Raver, 2015). The SEL framework advocates a whole-school approach, considering the interactions and influences between the acquisitions of personal and social competencies and the contexts with which the adolescent interacts, as supported by the bioecological model of human development, but also by evidence. A positive school and/or classroom climate is often associated with better satisfaction with peers and greater involvement with the school, and with the decrease of problem behaviours (Bonell et al., 2013; Fletcher et al., 2008), with engagement as a mediator between school climate and achievement (Lei et al., 2018). Furthermore, positive and responsible social behaviour, and intra and interpersonal competencies, are central components of adaptation during and after school years and have major influence on health trajectories that impact health, social and economic areas of our society (Cantor et al., 2019; Cefai et al., 2018; Chernyshenko et al., 2018; Patton et al., 2016). Research about SECs and SE promotion, in addition to meet the fourth goal for sustainable development regarding quality education, also entails the third goal, relative to good health and well-being. Additionally, the

tenth goal, as it aims to reduce inequalities between students from different socio-economic contexts and emotional vulnerability. SEL is intended to promote equity and excellence among youth since it is anchored in the notion of justice-oriented citizenship (Jagers et al., 2019). Research on SE and SECs can be included in the WHO aims regarding health-promoting schools, namely, creating health and preventing disease by conducting research related to improving school health prevention (J. T. Jones & Furner, 1998). Also, it aligns with the recently published WHO and UNESCO (2021) global standards and indicators for making every school a health-promoting school, namely in the domain of adolescent well-being, where it addresses the relevance of social and emotional competencies that are associated with increased school attendance and engagement. Moreover, the research done is in accordance with the goals of 1) building capacities for equity in schools and 2) increasing sustainable development (J. T. Jones & Furner, 1998). Furthermore, the characteristics of SE and SEL and their mentioned positive outcomes are intrinsically related to health promotion in schools since each constitute protective factors related to healthy lifestyles. Their association can, even more, contribute to the prevention of school failure, goals outlined by WHO and UNESCO (2021) that every health-promoting school should embrace.

Thus, in the context of prevention science and health promotion, it is proposed that social and emotional skills, in general, and adaptative emotional regulation strategies, in particular, are positively associated with student engagement in adolescence, being influenced by micro, meso, macro and chronosystems. In this thesis, we focus on adolescent students, using an extended definition of adolescence because there is still a need to understand SE age and gender specificities during this unique development period, also marked by several changes and adaptations in the academic environment.

In the educational setting, a child moving through adolescence and emerging adulthood may encounter many varied and different institutions. In the typical path, students transition to larger and more formal institutions (i.e., regularly, preschools and primary schools tend to be smaller, with more close and affective relationships than middle schools, high schools or universities). These transitions can be fraught. Also, adolescents are more vulnerable to the onset of psychological difficulties, and SE seems to decrease during development (Hartono et al., 2019; Inchley et al., 2020). Academic requirements increase after primary school, again in high school and then again in university, with an increasing workload and more cognitively demanding tasks (Juvonen, 2007). Students are successively exposed to a larger number of teachers and subjects throughout their academic path, with less individual support and increased competition (Wang & Hofkens, 2020). Moreover, despite the lack of life experience

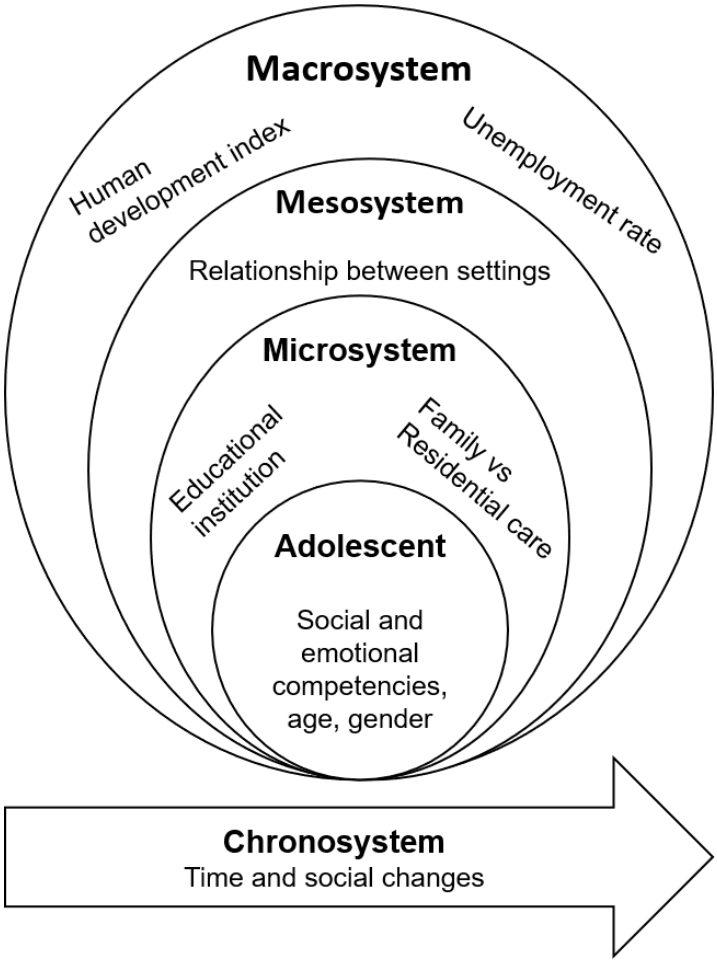
in most cultures, adolescents and emerging adults must make important educational and occupational paths decisions (Somerville, 2016).

Although there is some evidence about the impact of SE during high school on SE at college (Maguire et al., 2017; Symonds et al., 2016), observational studies comparing students at compulsory education with those in university are scarce. Also, SE research with college students is limited (Kahu, 2013). For instance, as far as we know, systematic reviews and meta-analysis published until this moment on SE only include primary to secondary students (e.g., Allen et al., 2018; Korpershoek et al., 2020; Salmela-Aro et al., 2021).

Another area demanding research attachment is the influence of sociocultural factors on SE. One recent meta-analysis regarding student belonging and psychoemotional and behavioural outcomes even reported that conclusions about the moderator effect of country was absent due to the lack of studies addressing cross-cultural comparisons (Korpershoek et al., 2020). In addition, and despite the existing research supporting the relationship and influence of SECs on school belonging (Allen et al., 2018; Korpershoek et al., 2020), less is known regarding the association between specific emotion regulation strategies on SE and of SECs on SE using a multidimensional perspective.

Figure 3 presents a Veen diagram adapted from the bioecological model of human development, indicating the variables analysed in relation to each context. All the studies, except one, include the analysis of the interaction between the person, namely personal resources characteristics (i.e., social and emotional competencies) and the microsystem representing the school (measured by school engagement). The exception pertains to Chapter III, in which only personal characteristics were analysed due to our interest in validating a measure of emotional regulation strategies for use in subsequent studies. The first three studies (Chapters II-IV) conveyed the association between the person and the microsystem and added knowledge regarding person demand characteristics, namely age and gender. The study four (Chapter V) addressed another microsystem, represented by the variable living with both parents vs residential care, and the exosystem, since in this article the interaction between two systems (i.e., academic and familiar context) is analysed. Then, a study investigating the macrosystem is present by identifying cross-cultural influence (Chapter VI). Finally, the chronosystem influence is investigated through a longitudinal study design also incorporating social changes into the analysis since data were collected before and during the confinement periods of the COVID pandemic (Chapter VII).

Figure 3. *Veen Diagram Adapted from the Bioecological Model of Human Development Depicting the Variables Analysed in the Thesis' Studies*



In order to accomplish the main goal of this thesis, the following specific goals were developed:

a) synthesise previous research on the role of SECs on SE in youth from 10 to 25 years old and highlight the literature gaps through a systematic review;
b) analyse the psychometric properties of a widely used measure, in its short version, that can assess different emotion regulation strategies in youth and to establish its measurement invariance, thus allowing reliable age-group differences testing;
c) identify developmental differences in the usage of emotion regulation strategies and SE expression, with particular attention to the transitional stages;
d) investigate the developmental differences on the association between emotion regulation strategies and SE;
e) identify the role of resilience internal assets, SE and perception of success on active disengagement behaviour in adolescents living with parents or in residential care;

f) understand the association between SECs, and SE in students of different socio-economic and cultural contexts, also considering country-level variables that can have an impact on engagement, namely human development index and unemployment rate;
g) explore the causal association between SECs and SE in youth before and during high levels of stress, namely during confinement periods due to SARS-CoV-2 containment measures.

With our findings, we aim to provide scientific evidence to inform researchers, professionals, and policy makers about the association between SEC and SE in adolescence, the differences in SECs' usage and SE expression at different stages in the realm of health promotion and prevention. We also aim to create awareness regarding the different contexts that may affect SECs and SE, and to provide guidelines for some strategies that can be useful for society in general. If "to raise a child it might take a village" there is no reason to do it differently when speaking about adolescents' development.

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CHAPTER II

A Systematic Review of the Association between Social and Emotional Competencies and Student Engagement in Youth.

This chapter is submitted in the Educational Research Review journal:

Santos, A. C., Simões, C., Melo, M. H. S., Santos, M., Freitas, I., Branquinho, C., Cefai, C., Arriaga, P. (submitted). A systematic review of the association between social and emotional competencies and student engagement in youth.

Abstract

Social and emotional competencies (SECs) are well established as critical skills for healthy and adaptative youth development. Student engagement (SE) is known as one of the most relevant predictors of academic achievement and completion. This systematic review investigated the associations between SECs and SE in 10 to 25 years old students. The review followed PRISMA guidelines. Nine databases were searched for peer-reviewed literature published between 2004-2020. A total of 91 studies were selected, including 92879 youth students. 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. The number of studies in each CASEL domain is uneven, with more studies focussing on self-management, self-awareness and relationship skills. Studies that reported age and gender differences regarding SE, found unanimously higher SE values for girls and younger students. Longitudinal findings provided some evidence that self-management and responsible decision-making competencies might impact SE higher than the contrary, whereas self and social awareness and relationship skills and SE might have a reciprocal association.

There is a clear need for studies using the multidimensional SE concept, including university students and cross-cultural analyses.

Keywords: Adolescents, education, systematic review, social and emotional competencies, student engagement.

1. Introduction

Education access is an established human universal right (UN General Assembly, 1948) associated with poverty decrease 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 greater vulnerability/risk 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).

Student engagement (SE) is a broad concept that depicts students' commitment, motivation and concentration toward the curriculum, academic tasks, school-based extracurricular activities (Fredricks, 2015; Fredricks et al., 2004) and also 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 for Eastern students,

and behavioural engagement and academic achievement being higher for western students (Lei et al., 2018).

Unfortunately, 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).

One important moderator of academic stress seems 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).

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), being fundamental competencies to 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 supporting SECs is the CASEL 5 (Collaborative for Academic, Social, and Emotional Learning) framework (Borowski, 2019; Weissberg et al., 2015), which addresses 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, student's 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, responsive cultural, and safety (Panayiotou et al., 2019), which in turn seems to affect SE engagement (Acosta et al., 2019).

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, parent, peer and teacher support, gender, race and ethnicity, extracurricular activities, and environmental/school safety. Additionally, authors 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 regarding 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 SECs concept umbrella and identify the competencies that can be enhanced and promoted following the CASEL 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 works (Allen et al., 2018; Korpershoek et al., 2020). It shall be noted that 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 males and older students (Amir et al., 2014; Hartono et al., 2019). However, a systematic analysis of these associations is still lacking. Also, to the best of our knowledge, systematic reviews and meta-analyses only included students enrolled in primary to 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 the increasing awareness of the impact of SECs on several beneficial outcomes and their connection with 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. The following research questions were addressed:

- Do youth students with higher SECs tend to report higher SE?
- Which SECs have been most studied in association with SE in youth?
- Are there differences in SE as a function of age/school level or gender?

2. Method

2.1. Design

This review's objectives, inclusion criteria, and analysis methods 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[3]; 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 comply with the criteria specified above; ii) participants were younger than ten years old, in class levels below 5th grade or older than 25 years old[4]; iii) participants had clinical symptoms or a diagnose in the

[3] 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.
[4] 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).

Neurodevelopmental Disorders cluster, based on DSM-5 (American Psychiatric Association, 2013); iv) the reliability values were below the lower limit of acceptability, $\alpha < .60$ (Hair et al., 2014); v) engagement was not academic-related; vii) SEC was relative to one specific context, such as academic or familial context, not addressing SECs broad definitions 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 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 EBSCOhost research platform), Web of Science, Cochrane Central Register of Controlled Trials, Scopus, Scielo, ERIC and Pubmed in 24/04/2021, which was repeated in 12/05/2021.

The search algorithm was composed of Boolean combinations, wild cards characters and truncation operators (Siddaway et al., 2019). A building block strategy was created, where the query was divided into key concepts A, B, C, inclusive of variants and 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 the Boolean AND, with the search strategy being 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 Appendix, Supplementary Table A). Filters were used to limit search results to peer-reviewed empirical research articles published in the English, Portuguese, French, and Spanish languages. No restrictions on the location of studies were applied.

2.4. Screening and Data Extraction

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

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. Following, 167 full-text articles were assessed for eligibility, with analysis being performed independently by two of three review authors (first, fourth and fifth authors), of which 78 were excluded for several reasons (see Figure 4). 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 (second author) was involved when consensus on inclusion or exclusion was not reached, until agreement on inclusion or exclusion.

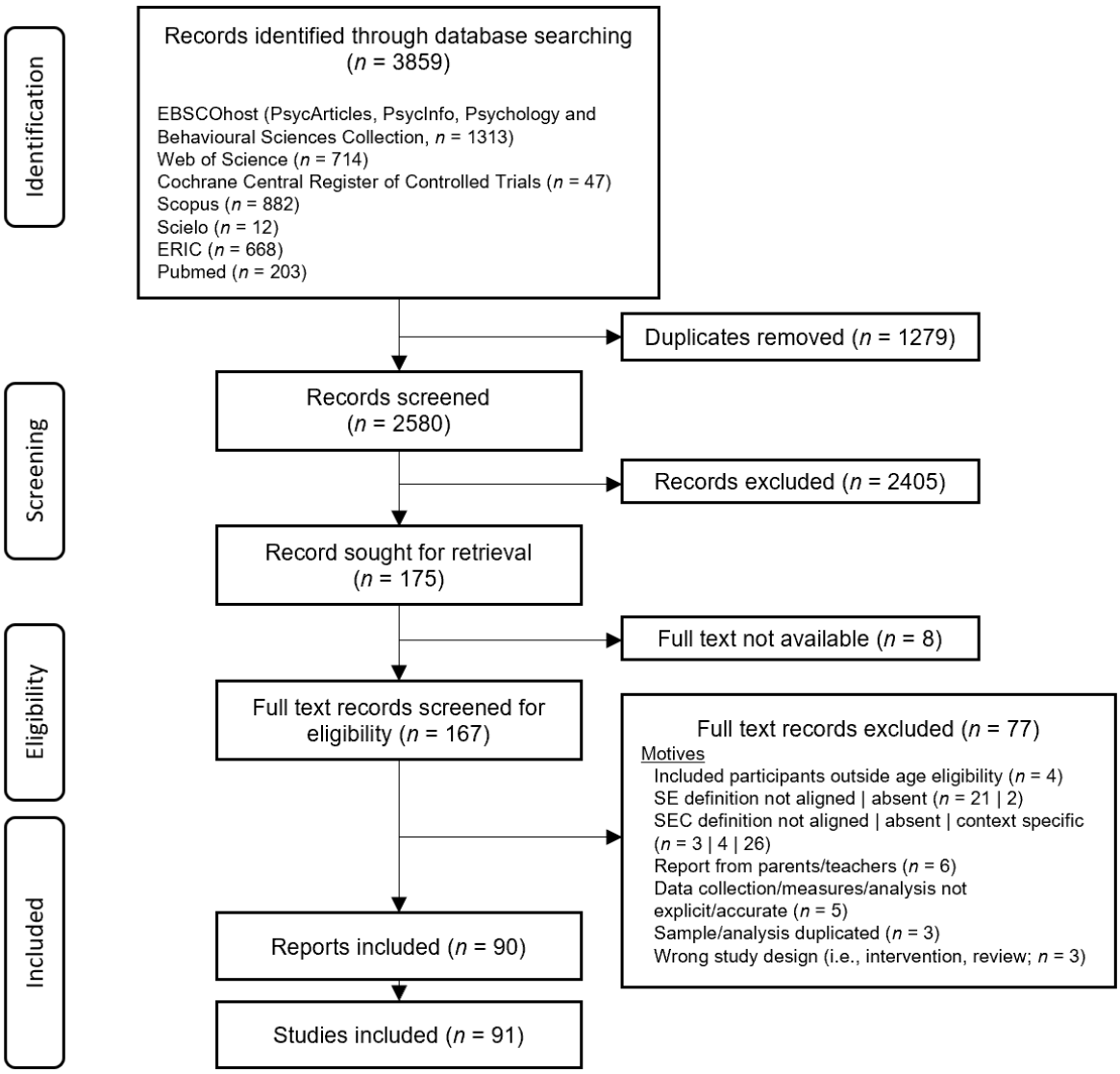
The remaining 90 articles progressed to the data extraction stage, one article/record (Steinmayr et al., 2018) included two studies with different data samples, variables and goals. Thus, we concluded with 91 studies. In accordance with PRISMA guidelines, the unit of analysis is the study and not the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

Data were independently extracted by two of three review authors (first, fourth and fifth authors), with an inter-rater reliability agreement of 87.5% (k_{mean} = 84.2). To ensure accurate data extraction, the second and third authors visually inspected the coding and the agreement between coders, with disagreements being corrected with reference to the original material. Also, data were 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, as previously done (Carroll et al., 2011; Moshontz et al., 2018).

To summarise these studies, the following data were extracted: i) publication information (year of publication, authors, title, journal); ii) observations; iii) country of the 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.

For studies in which more than one dimension of student engagement was analysed or when data was provided for two or 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. For 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.

Figure 4. *Prisma Diagram of Search Process*



2.4.1. Operational definitions

First, the SECs were primarily categorised according to the CASEL-5 framework, 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, 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 variables were also included since the studies used questionnaires measuring communication and trust skills (e.g., Armsden & Greenberg (1987) questionnaire in the included study of O'Connor et

al. (2012)) and connection (e.g., González & Hernández (2014) questionnaire in the included study of Rodríguez-Fernández et al. (2016)).

Student engagement was categorised as a multidimensional concept in line with the Fredricks et al. (2004) definition, comprising three subdomains: cognitive, behavioural and emotional engagement. Also, and following the proposal of Korpershoek et al. (2020), 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) or psychological SE (Appleton et al., 2006; Christenson & Anderson, 2002) were included in 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 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 using 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. Thus, each article was assessed in the methods section for study design, setting, participants, variables, data sources/measurement, bias, study size, quantitative variables, and statistical methods, and in the results section for participants, descriptive data, outcome data, and main results. 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 totally". 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 (first, fourth and fifth authors). The coders were initially trained using five articles. An agreement of 100% was achieved regarding the qualitative total score categories. A detailed analysis of the 13 items coded quantitatively showed an overall inter-rater reliability agreement of 90% (k_{mean} = .62), with final results being 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 re-assessed these categories. The agreement increased 8%. The score for each item and the total scores with a descriptor of the quality are reported in the Supplementary Table B, in the Appendix. None of the articles were weak in quality. Although two articles were of moderate

quality, the authors agreed to include them since the information available allowed the retrieval of results and their analysis.

3. Results

3.1. Deviation from Protocol

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

As described before, scholars have typically conceptualised engagement a multidimensional construct, referencing three domains: behavioural, emotional, and cognitive engagement. Therefore, we focused only on studies that used this conceptualisation. Some researchers have based their conceptualisation 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, as its theoretical basis differs from the conceptualisation 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 studies' characteristics. Moreover, Figure 5 presents the distribution of studies and the linkage between SECs and SE with Table 2 supporting it by presenting the references. Also, Table 3[5] 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

[5] Table 3 was placed in the end of the chapter to not disturb the reading. It can be found at p. 75.

ranging from two (*n* = 15, 62.5%) to six waves (*n* = 3, 12.5%). All studies used students' self-report data. Also, 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[6] (*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 focusing 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, more female (53.82%) students than male students (48.39%) constituted the samples.

Overall, the quality of the studies was strong (*M* = 23.82, *SD* = 1.49), ranging from 18 to 26 points (see Appendix, Supplementary Table B 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 absence on 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 confounding variables in the statistical analysis, iii) the presence of a researcher/technician that could read the questionnaire out loud to reduce differences on completion time that could decrease participants' motivation (due to potential differences on reading proficiency), and iv) the inclusion of attention check questions.

[6] 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.

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
501-100	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	32	35.87
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.

Figure 5. *Distribution of Studies and Evidence Map across the Linkage between Social and Emotional Competencies and Student Engagement.*

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.

Table 2. *Matrix regarding Social and Emotional Competencies and their related CASEL 5 domains by overall Student Engagement, its Dimensions 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 & Cooley, 2020 Oshri et al., 2018	Aldrup et al., 2018 Cakar & Karatas, 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 Sebokova et al., 2018 Sevil-Gulen & Demir, 2020 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 & Lafreniere, 2014 Murphy & 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		Ihtiyaroglu & Ates, 2018 Kim, E. et al., 2019			
	Happiness		Datu et al., 2017 Sebokova 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	Cakar & Karatas, 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 & 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

CASEL 5 domains	Competence	Student engagement	Emotional engagement	Behavioural engagement	Cognitive engagement	Disengagement
Self-management (cont.)	Resilience (cont.)		Rodríguez-Fernández et al., 2016 Sevil-Gulen & Demir, 2020 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 & Fox, 2010 Brandt et al., 2019 Bogg et al., 2016 Bryce et al., 2019 Calmeiro, et al., 2018 Fox & 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., 2019	Muenks et al., 2017
	Thriving behaviour	Krauss et al., 2014●				
Social awareness (7 studies)	Empathy / Perspective tacking	Stevens & Hardy, 2013	Acosta et al., 2019 Batanova & 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		Acosta et al., 2019 Yeh et al., 2014 Sebokova et al., 2018			
	Interpersonal confidence / Trust		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 Ryzin et al., 2009^	Acosta et al., 2019 Alvarez-Rivera & 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-Gulen & Demir, 2020	Lynch et al., 2013 Rodríguez-Fernández et al., 2016	Rodríguez-Fernández et al., 2016	Peng et al., 2019
	Prosocial behaviour / Engagement in prosocial activities	Yorgason et al., 2011 Kaur et al., 2019^ Krauss et al., 2014● Padilla-Walker et al., 2013 Tolan, et al., 2013	Burns & 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 & 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 Sebokova 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, 2010^	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 Ryzin et al., 2009^	Bryce et al., 2019 Demirci, 2020 Dixson & Stevens, 2018 Lehrer et al., 2017 Phillips, 2011 Stoddard et al., 2020	Demirci, 2020	Bryce et al., 2019 Demirci, 2020	
	Optimism	Padilla-Walker et al., 2013	Ihtiyaroglu & Ates, 2018 Murphy & McKenzie, 2016 Sebokova et al., 2018 Taylor et al., 2020			
	Problem solving		Halgunseth et al., 2013 Jiang et al., 2019			

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

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), for studies that analysed at least two of them. As shown in table 2 and figure 5, there is great heterogeneity in the results regarding competencies within the five areas of SECs and SE variables. For this reason, we did not perform a meta-analysis. Also, school level (i.e., middle school, high school, university level) and sample type (i.e., mixed, vulnerable, or privileged) were unevenly distributed. Thus, no accurate comparison was possible either.

3.3. Data Synthesis

In what concerns engagement, SE overall multidimensional concept appeared in 23 studies, also nine studies assessed two (i.e., emotional and cognitive, or emotional and behavioural engagement) or three dimensions of SE. Though, there were 24 studies that within the SE dimensions devoted attention to emotional engagement (and its synonyms) exclusively, indicating that this is the engagement dimension more studied. In contrast, cognitive engagement was the less studied. SECs and disengagement association analysis are also scarce in research, with only seven studies being included.

Overall, despite the variability in the correlations' strength, ranging from weak to strong, the great majority of the studies showed that SECs are positively associated with SE and its dimensions, and negatively associated with disengagement. Though, 13 studies reported at least one non-significant association between SECs and engagement (Brandt et al., 2019; Bryce et al., 2020; Çakar & Karataş, 2017; 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). 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 the older groups (Bryce et al., 2020; Curcio et al., 2017; Liu et al., 2020), and one reported a significant positive association among USA students, but a negative association among Ghana students (Marbell-Pierre et al., 2019). Finally, one study 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 figure 5 for details).

Eighteen studies indicated a significant positive association between self-esteem and SE, emotional, behavioural and cognitive engagement, and two studies reported a negative association with disengagement. Nonetheless, a study with a sample of German students in the vocational track showed a positive association between self-esteem and emotional engagement but a non-significant 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 academic engagement level for Ghanaian students than for American students. Also, two studies reported non-significant associations between self-esteem and emotional engagement (Çakar & Karataş, 2017; Smokowski et al., 2009).

Regarding self-efficacy, one study was found to have a negative association with disengagement (McGeown et al., 2018), and one study showed a positive association with 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 figure 5 for details). To note that 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 to 12 years old (Murphy & McKenzie, 2016).

3.3.2. Self-management and Student Engagement

Forty-three studies studied the association between self-management and SE total score, disengagement and SE dimensions, 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 figure 5 for details).

Four of the five studies analysing coping strategies showed positive associations with emotional engagement in middle school girls (Lehrer et al., 2017) and students from mixed backgrounds in high school (Çakar & Karataş, 2017; Cunningham et al., 2004; Frydenberg et

al., 2009). The only study regarding 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 sample that may have, due to its vulnerability, a smaller repertoire of coping strategies.

In this line, it might be 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 contexts resources (Ungar & Liebenberg, 2013). This 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 for the minority group, this association prevailed for the majority of youth students (Ungar & Liebenberg, 2013). Also, a comparison of coefficients of correlation, computed in the realm of this review, showed that for the majority youth group, individual characteristics were highly associated with SE than contextual-cultural factor.

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 non-significant association with behavioural engagement (Raval et al., 2018). Only one study focussing 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 regarding social awareness and engagement were present only in seven studies, indicating this dimension to be the less investigated SECs' area in association with engagement, with two results for 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). To 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, being found the following competencies: 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 figure 5 for more details). Among the five areas of CASEL, this is the one where more studies were found that 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 non-significant association, with immigrant students in the United States of America showed 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 were found to present positive associations between responsible decision-making related competencies and SE, its related subdimensions and disengagement, being found the following competencies: engaged living (*n* = 2), optimism (*n* = 5), hope (*n* = 8), problem-solving (*n* = 2), and grit (*n* = 4). The latter comprehended 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), emotional, behavioural and cognitive SE (Steinmayr et al., 2018), and negative associations with disengagement (Muenks et al., 2017).

Specifically, optimism showed to be positively associated with SE (Padilla-Walker et al., 2013) and emotional SE with vulnerable (Z. E. Taylor et al., 2020) and mixed (İhtiyaroğlu & Ateş, 2018) samples of students in the middle (Murphy & McKenzie, 2016) and high school (İhtiyaroğlu & Ateş, 2018) levels, in both cross-sectional (İhtiyaroğlu & Ateş, 2018; Murphy & McKenzie, 2016) and longitudinally (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 for two or three SE dimensions. The 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., (2020) study, since there were no correlation values reported Also, no differences were found between social competence and SE dimensions in one study, but differences regarding the association with hope, with correlation values being higher for emotional and cognitive SE than for the behavioural dimension (Demirci, 2020).

Interestingly, one study with a vulnerable sample in high school reported no differences between resilience and SE dimensions (i.e., emotional and behavioural SE). Though, in two studies with samples from mixed backgrounds also from high school (but younger), differences were found, with 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, following behavioural SE and lastly, cognitive SE. Peer support and cognitive SE association were not even significant. Still, in the second study of Steinmayr et al. (2018), consistency of interests was more associated with behavioural SE, 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 associated with behavioural but not with emotional SE (Zhen et al., 2020). In this study, 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. Though, nine reported gender differences (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), all indicating that female students reported higher levels of SE than male students.

Regarding age, 26 studies included age in their analysis, with 15 reporting no age association with SE and seven reporting age differences, of these all indicated 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). Note that the empathy scale for the older group ($\alpha_{18\text{-}20}$=.66) had lower reliability values in comparison with 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 of 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). Still, 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 of Muenks et al. (2017), in addition to showing similarities in the relation between behavioural SE/disengagement and consistency of interests/self-control for both middle and high school students, it 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 ($.56<r<.67$, $ps<.001$). Additionally, one study reported its results by school level (i.e., middle vs high school students), indicating that hope and self-regulation optimization were similarly associated with cognitive and emotional SE for both middle and high school students, as well as the non-association between self-regulation compensation and SE dimensions (Bryce et al., 2020). 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. Of these, in 16 there was no possibility of analysing the association between the measures longitudinally: in nine, the retrieved data pertain to just one moment (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 seven one of the variables retrieved was measured just once (Lynch et al., 2013; Padilla-Walker et al., 2013; Sebokova et al., 2018; Taylor et al., 2020; Tolan et al., 2013; Waters et al., 2010; Zhen et al., 2020).

From the remaining eight studies, the comparison of correlational coefficients showed mixed findings. In six of the studies, there were no longitudinal differences. These six studies analysed impulse control and peers' relationships with emotional and cognitive SE (Brandt et al., 2019; D. Quimby et al., 2019), self-esteem (Oshri et al., 2018; D. Quimby et al., 2019), hope (Marques, 2016; Van Ryzin et al., 2009) and prosocial behaviour with SE (Yorgason et al., 2011). Contrarily, in the study of Jiang et al. (2019), even though the comparison of correlation values showed no difference, the path analysis showed a predictive value of school satisfaction at the first data collection to problem-solving at the second data collection, but not the contrary. Finally, in the study of Stefansson et al. (2018) with four data collection moments

and a mixed background sample in high school, differences between longitudinal correlation coefficients suggest that self-regulation might excerpt more influence on SE than the contrary, besides the strong associations between SE and self-regulation within each measurement occasion.

4. Discussion

The present systematic review goals were to understand if i) youth students with higher social and emotional competencies (SECs) tend to report higher student engagement (SE), ii) what were 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.

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

According with the CASEL framework, the most studied domains in 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).

Also, among the five CASEL areas, relationship skills was the domain more studied in association with overall SE. Educative 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 2018 report of the Health Behaviour in School-aged Children showed that relationships with peers and teachers were among what they liked 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 non-significant finding may be related to the sample. Trust or communication between migrants

and non-migrants might differ from 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 natives have difficulties in trusting or accepting migrants, which may trigger difficulties among peers. For instance, 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 regarding the association between emotion regulation and SE is scarce. Future studies should urgently consider not only the understanding of 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 perspective reinforce the need to invest in SEL during youth to allow them to acquire and increase their strategies repertoire and provide opportunities for practice, thus improving the adequacy of their decisions and feedback responsiveness (Cefai et al., 2018; Chernyshenko et al., 2018).

A previous literature review observed that most SE research focused on behavioural SE (Fredricks, 2015). Though, our review showed that when addressing the association between SECs and SE, most studies focused on emotional SE rather than overall SE, 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 figure 5 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 for resilience (included in the self-management domain) did we found more than one study presenting results from two or three SE dimensions. Of these, no differences between dimensions were observed in one study, meaning that resilience was similarly associated with the three SE dimensions, and two studies showed higher correlations with cognitive and emotional SE dimensions than

with behavioural SE. To note that the study in which no differences between dimensions were observed had a vulnerable sample, while the other two had mixed backgrounds samples. These findings highlight the importance of reporting results for each SE dimension, besides SE overall values. More importantly, this indicates that resilience, despite their association with emotional and cognitive SE dimensions, might 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 with SE, by accounting for the resources available in the environment (Ungar & Liebenberg, 2013). In this sense, it is relevant to consider how much contextual vulnerability characterizes the environment in which students live. Indeed, SE seems to be highly influential for students' persistence in school and sequential degree engagement, especially 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). Though, 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 educative system must provide personal and material resources and be aware if 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. Following this path, schools and universities can be places that promote resilience and protect against risk individual factors.

Concerning longitudinal studies, the methodology in most of them does not allow us to draw conclusions on the possible causality between SECs and SE. Nevertheless, findings seem to suggest that self-management and responsible decision-making competencies influence SE increase but not the contrary, whereas self and social awareness and relationship skills and SE might evidence 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

milestones (e.g., change of school, family, going to university), and examine populations with different characteristics (e.g., social and economic status).

Regarding sociodemographic variables, a large number of studies, especially cross-sectional studies, addressed the role of gender. Interestingly, gender differences regarding 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. Also, educative institutions should be aware of the higher vulnerability of boys to enrol in disengagement trajectories.

In what concerns age, a relevant proportion of the studies that included the variable in their analyses reported no association with SE. Though, when differences were mentioned, it was observed that older students reported a lower SE or higher disengagement than younger students. Previous studies have argue that as students get older, SE may decrease because of the poor match between their needs and school settings (Eccles & Roeser, 2009; M.-T. Wang et al., 2013).

With reference to age as a moderator in the relation between SECs and SE, our review indicated that self-regulation was associated with SE for both middle and high school, as well as consistency of interests and SE. Though for other SECs, this effect seems to depend on the type of skill, with empathy, impulse control, and peers' relationship highly correlated with SE for middle and first years of high school, but not for older students (i.e., last years of high school or university). Social competence had a higher correlation value with SE for middle school students than for high school, and perseverance of effort had a higher correlation value with SE for high school students 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 including university students across the five SEC areas defined under the CASEL framework. Notably, there were no studies with university students with SE and relationship skills or responsible decision-making. This target population calls for more attention in future studies as pursuing university students increases over the years (UNDP, 2019). Also, many college students have between 18 and 25 years of age, a period of life often named emerging adults (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 be in the smallest proportions, the impact of a disengagement trajectory has several negative effects on individual health, but also on social and economic contribution, namely higher levels of substance use, poorer psychological well-being, less likely to attend university and more likelihood of experience unemployment (Symonds et al., 2016). Thus, the association between disengagement and SECs claims for further research, given the reduced number of studies retrieved. Though, studies found showed a consistent negative association between SECs and disengagement.

Additionally, only one study used a cross-cultural design (Marbell-Pierre et al., 2019), having reported values of correlations of opposite directions between the two countries analysed, which reinforces the need for future studies to deepen our understanding regarding cross-cultural influence on the association between SECs and SE.

Despite the important findings of this systematic review, some limitations should be recognised. First, the uneven number of studies analysing the three dimensions, or even 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 (i.e., emotional, behavioural and cognitive SE) in order to promote a more integrated SE assessment. Second, almost all studies used self-report measures to assess SE. Although self-reporting is especially beneficial for emotional or cognitive SE dimensions assessment, since they cannot be observed directly (Fredricks & McColskey, 2012), future studies should invest more in direct observations of behavioural SE. For instance, only one study (Aldrup et al., 2018) analysed truancy, which can be conceived as active behavioural disengagement (Keppens & Spruyt, 2020). Third, students with specific learning disabilities were excluded. Thought, future analysis should consider the inclusion of these students, since they are more prone to disengagement, to express less autonomy, self-efficacy and peer support in comparison with students with or without learning difficulties (Lombardi et al., 2021). Systematic analysis including these studies will be of help to understand the SECs that might better support them to deal with the academic adversities.

Notwithstanding, to the best of our knowledge, this is the first systematic review focused on the association between social and emotional competencies and SE. Also, we integrated data from the last 16 years, a period in which this line of research made significant advances. The studies identified represent data from 22 nations and mainly included middle and high school students from both mixed backgrounds and vulnerable contexts. Since SE is amenable to change and is a relevant protector factor, educational institutions should 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. Also, longitudinal studies suggest that self-management and problem-solving competencies might impact SE more highly than the contrary, suggesting a possible causality path. Whereas the longitudinal correlations between SE and self- and social awareness and relationship skills show similar values, suggesting reciprocal associations. Many studies report non-significant associations between SE and age or gender. Though, those where differences were reported indicated that girls and younger students expressed higher SE than boys and older students. Future research should prioritise the multidimensional concept of SE, longitudinal designs, the inclusion of university students and the effect of different personal and sociocultural possible confounding aspects.

Table 3. *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 [7]	C/S	2122; Mixed	Middle and high school	Min-Max= 12-17	49 | 50	Resilience	School connectedness (SC)	SC (β = .28, p<.001) was associated with a greater sense of resilience.
Aldrup et al., (2018), Germany [8]	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 & 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 & Loukas, (2014), USA [9]	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 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 and College satisfaction	Self-control showed a weak positive association with college investment (r=.26, p<.05) and satisfaction (r=.19 p<.05).

[7] No information regarding peer connectedness and school connectedness association was provided.
[8] Data retrieved related to the second wave.
[9] Data retrieved related to the first wave.

Main author, (year), Country	Study type	Sample Size & Type	School level	Age	% Gender M | F	Social and emotional competencies	Student engagement	Main findings
Brandt et al., (2019), USA [10]	Long. (6 W)	8204; Mixed		Min-Max$_{T1}$= 10-21	51 | --	**Impulse control Relationships with peers**	**Academic engagement (AE)**[11] **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 to 19 years old). An increase in students' general level of 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 to 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 [12]	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 & 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).
Çakar & 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 [13]	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: β=.48, *p*<.05) and with self-efficacy (direct effect: β=.62, *p*<.05).

[10] For the purpose of summing the sample sizes of all studies, the minimum value of the sample was chosen (*n*=8204).
[11] Academic engagement reflects the affective and cognitive dimensions of Fredricks' (2004) student engagement concept
[12] In this study Intentional self-regulation was conceived as behavioural hope, though we used the term proposed by the authors of the scale.
[13] Reliability value was not explicitly displayed for all variables.

Main author, (year), Country	Study type	Sample Size & Type	School level	Age	% Gender M | F	Social and emotional competencies	Student engagement	Main findings
Curcio et al., (2017), Australia [14]	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 positive weak association with SC at 13-14 (r=.15, p<.01) and 15-17 (r=.21, p<.01) Contrarily, there were no significant correlations between variables at 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 (β=.08, p<.01) and EE (β=.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)** [15]	Regression analysis results showed that emotional intelligence was associated with AI (β=.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 on social competence between engagement dimensions. Moreover, hope is similarly related with EE and CE, but is highly correlated with EE and CE than BE (Z-score:-.2.15, p=.031; Z-score:-1.99, p=.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)** [16]	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 or age on SA differences were observed.
Dixson & 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 or age were associated with SB.

[14] School connectedness variable reliability value for 21-24 years old group was below the threshold (α<.60), therefore data was not extracted.
[15] Academic involvement has three subscales: behavioural, emotional and cognitive engagement
[16] Measured with five dimensions, namely internal, school environment, program, administration and teacher engagement.

Main author, (year), Country	Study type	Sample Size & Type	School level	Age	% Gender M | F	Social and emotional competencies	Student engagement	Main findings
Fox & Bouffard, (2015), USA [17]	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 direct effect on student engagement was positive (β=.81, p<.001).
Halgunseth et al., (2013), USA [18]	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 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 [19]	C/S	547; Mixed	University		-- | --	**Self-efficacy**	**Academic (AE)** [20] **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 (β=.30, p<.001) and CE (β=.33, p<.001)
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 (β=.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 & 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).
Ihtiyaroglu & Ates, (2018), Turkey	C/S	587; Mixed	High school		44 | 56	**Self-Confidence and Optimism**	**School attachment (SA)**	Self-confidence had a positive moderate association (r=.41, p<.01) with SA, while optimism had a positive weak association with SA (r=.23, p<.01). Regression analysis with SA as the dependent variable showed that self-confidence (β=.48, t(167)=1.67, p<.01) maintained its association with SA, whereas optimism did not.

[17] it is a longitudinal study, but for this review only the data collected at Wave 1 is of interest
[18] The study is longitudinal, though the data retrieved for this study pertains only to the third data collection.
[19] Exact p-value was not displayed; thus, it was assumed the 95% CI.
[20] Academic engagement definition is similar to the behavioural engagement definition of Fredricks et al. (2004).

Main author, (year), Country	Study type	Sample Size & Type	School level	Age	% Gender M | F	Social and emotional competencies	Student engagement	Main findings
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 positive moderate 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 (β=.15, p<.001). Though, problem solving at T1 did not predicted 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 with females reporting higher SS than males at T1 and T2.
Jones & 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**[21]	Self-efficacy was positively associated with school positive involvement (r=.26, p<.01), though, self-efficacy and positive experiences were not associated (p=ns). Resilience was also positively associated with school positive involvement (r=.41, p<.001) and positive experiences (r=.27, p<.01). Neither gender not 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)**	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 [22]	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 positive moderate 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 on SB were observed.
E. K. Kim et al., (2019), USA [23]	C/S	1867; Mixed	High school		46 | 52	**Belief in Self**, **Belief in others** and **Engaged 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)**	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)

[21] Positive involvement and positive experiences with school are aligned with the emotional student engagement of the multidimensional measure of Fredricks (2004).
[22] 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.
[23] 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, 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.

Main author, (year), Country	Study type	Sample Size & Type	School level	Age	% Gender M | F	Social and emotional competencies	Student engagement	Main findings
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 negative weak association (r=-.15, p<.001), with older students reporting lower SC.
Liu et al., (2020), USA[24]	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=.29, p<.05), but not for grade 8 (p=ns). No gender differences regarding SC (p=ns).
Loukas et al., (2010), USA[25]	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 positive moderate 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 [26]	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 positive moderate association with both college CE (r=.40, p<.001) and EE (r=.35, p<.01). There was 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 (β=.44, p<.001), whereas for EE at college, previous affective engagement (β=.40, p<.001) and emotional intelligence and TEI (β=.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 positive moderate association with SE (β=.36, p<.001), as well as peer relationships and SE (β=. 36, p<.001). Gender and age were not associated with SE (ps=ns).

[24] This study included children in 4th grade, though results and sample size extracted data do not include the participants of the 4th grade.
[25] Data retrieved pertains to the first wave
[26] Social competence in this study was conceived as how the students are popular or not, which was not in accordance with CASEL's social competencies 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.

Main author, (year), Country	Study type	Sample Size & Type	School level	Age	% Gender M | F	Social and emotional competencies	Student engagement	Main findings
Marques, (2016), Portugal [27]	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, Δr^2=.02, r^2= .31). SE was longitudinally associated ($r_{T1\text{-}T2}$=.43, p<.01)
Martin et al., (2013), Australia [28]	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)** [29], **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 negative weak association with both ES (r=-.19, p<.01) and CP (r=-.13, p<.01) and 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 [30]	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 positive weak association with disengagement (r=.15, p<.01), but gender and disengagement were not associated.
Mihalec-Adkins, Christ, et al., (2020), USA [31]	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 engagement, but age was not associated with SE (p=ns).

[27] 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 were attributed to account for those who progressed but also for those who might have failed school.
[28] Correlation values were compositive of the two waves, so each variable appears only once in the matrix and not twice.
[29] Enjoyment of school is related to emotional engagement, and class participation is related to behavioural engagement dimensions of Fredricks's (2004) conceptualization.
[30] Only study 1 was analysed since study 2 did not analyse a student engagement variable.
[31] In the study, self-esteem was analysed negatively; thus, to facilitate comprehension, we inverted the signal of the association.

Main author, (year), Country	Study type	Sample Size & Type	School level	Age	% Gender M | F	Social and emotional competencies	Student engagement	Main findings
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 ($r_{High-school}$=.43, $r_{College}$=.38, *p*<.01) and negative with behavioural disaffection ($r_{High-school}$=-.40, $r_{College}$=-.42, *p*<.01), similarly for both education levels. Self-control showed a moderate positive association with BE ($r_{High-school}$=.48, $r_{College}$=.42, *p*<.01) and negative with behavioral disaffection ($r_{High-school}$=-.53, $r_{College}$=-.51, *p*<.01), similarly for both education levels. Grit-CI showed a moderate positive association with BE ($r_{High-school}$=.30, $r_{College}$=.16, *p*<.01), similarly for both education levels. Grit-CI showed a negative association with behavioural disaffection ($r_{High-school}$=- .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 ($r_{High-school}$=.48, $r_{College}$=.42, *p*<.01) and negative with behavioral disaffection ($r_{High-school}$=-.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 (*p*s=ns).
Murphy & 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 [32]	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 positive moderate 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 (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 [33]	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, *p*s<.01). Self-esteem at T1 was associated with SE at T2 an T3 (r_{T2}=.13, r_{T2}=.13, *p*s<.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, *p*s<.05) while age showed negative weak association with SE (r_{T1}=-.14; r_{T2}=-.11, *p*s<.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, *p*s<.01).

[32] Trust and tolerance variable had a reliability value below the eligible threshold (a<.60), thus, it was not included.
[33] 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.

Main author, (year), Country	Study type	Sample Size & Type	School level	Age	% Gender M | F	Social and emotional competencies	Student engagement	Main findings
Padilla-Walker et al., (2013), USA [34]	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 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 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 positive moderate association with SC (β=.35, p<.05).
Phillips, (2011), USA [35]	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 variables association 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.
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).

[34] This study is part of a project with 4 waves, though this study used data collected at waves 2, 3 and 4.
[35] Male percentage was recalculated since the value in the paper was wrongly reported as 44%.

Main author, (year), Country	Study type	Sample Size & Type	School level	Age	% Gender M | F	Social and emotional competencies	Student engagement	Main findings
(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).
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), 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).
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)
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)**	Hope and SE were associated both at T1 (*r*=.52, *p*<.001) and T2 (*r*=.42, *p*<.001). Hope at T1 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 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).
Sebokova 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 assessed only once). Moreover, there were positive associations between engagement (r_{T1}=.22, *p*<.01), perseverance (r_{T1}=.27, *p*<.01), optimism (r_{T1}=.59, r_{T2}=.36, *p*s<.01), connectedness (r_{T1}=.50, r_{T2}=.56, *p*s<.01) and happiness (r_{T1}=.70, r_{T2}=.50, *p*s<.01) with SB. Engagement and perseverance at T2 were not associated with SB. No gender differences on SB were observed (*p*=ns).
Sevil-Gülen & 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 (*p*s<.01).
Slaten et al., (2019), USA [36]	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 weak positive association with SB.

[36] 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 as the factorial analysis of one of the MYBS.

Main author, (year), Country	Study type	Sample Size & Type	School level	Age	% Gender M | F	Social and emotional competencies	Student engagement	Main findings
Smalls, (2010), USA	C/S	94; Vulnerable (African American vulnerable youth)	Middle school	Min-Max= 11-14	-- | 54	**Persistence**	**Academic engagement (AE)**	Persistency showed a moderate positive association with AE (r=.58, p<.01)
Smokowski et al., (2009), USA [37]	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 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 to .67, ps<.001), as well as strong correlations between school engagement and self-regulation across consecutive measurement occasions (.50 to .66, ps<.001). To 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. Also, there was a small effect of gender on SE (β=0.10, p-value not displayed).
Steinmayr et al., (2018), Germany [38] **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**	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 that 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 & 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 moderate associated (r=.48, p<.01)

[37] The data retrieved solely pertain to W2.
[38] The data retrieved solely pertains to W2.

Main author, (year), Country	Study type	Sample Size & Type	School level	Age	% Gender M | F	Social and emotional competencies	Student engagement	Main findings
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 positive moderate 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 or grade were association with SA (*p*=ns).
Tolan et al., (2013), USA [39]	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 positive weak association with SE at T3/T4 (*r*=.19, *p*<.05). Engagement in prosocial activities at T2 had a positive weak association with SE at T3/T4 (*r*=.17, *p*<.05). Coping effectiveness at T2 was not associated with SE at T3/T4. Results from the model with SE as 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 or gender were associated with SC (*p*s=ns).
Ungar & Liebenberg, (2013), Canada	C/S	497; Vulnerable (vulnerable youth engaged with multiple services.		*M*=17, *SD*=1.87	57 | 43	**Resilience**	**School engagement (SE)**	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).
Venta et al., (2019), USA [40]	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 positive moderate 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 (thought, 86% of the students' families living below poverty level)	Middle schools	Min-Max= 12-15	-- | 39	**Social skills Personal control**	**School belonging (SB)**	Social skills showed a positive moderate association with SB (*r*=40, *p*<.01), but personal control and SB were not associated (*p*=ns).
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 (β=.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 positive self-compared to the those with the lowest values.
M. Q. Wang et al., (2005), USA	C/S	790; Vulnerable (high risk families for substance abuse)		Min-Max= 11-16	42 | 58	**Self-control**	**School connectedness (SC)**	Self-control was positively correlated to SC (β=0.56, *p*<.01). Comparison of coefficients of variation showed no gender differences (*p*=ns).

[39] This study is part of a project with 4 waves, though, this study used data collected at waves 2, 3 and 4.
[40] Since reliability values for prosocial, emotional disaffection and behavioural disaffection was below the minimum threshold (*α*<.60).

Main author, (year), Country	Study type	Sample Size & Type	School level	Age	% Gender M | F	Social and emotional competencies	Student engagement	Main findings
Waters et al., 2010), Australia [41]	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 had greater prosocial skills (β=.16, p<.001). Likewise, students reported higher levels of SC in Grade 9 if also reported higher levels of prosocial behaviour (β=.11; p<.001). (Prosocial behaviour was assessed only once). No gender differences were observed regarding SC on 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 moderate association with SB (r=.39, p<01) Empathy showed 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 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 & 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 on SC was 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.

[41] 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.".

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CHAPTER III

Portuguese validation of the Cognitive Emotion Regulation Questionnaire short version in Youth: Validity, Reliability and Invariance across Gender and Age

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Abstract

The Cognitive Emotion Regulation Questionnaire (CERQ) is a multidimensional measure widely used to access nine cognitive emotion regulation strategies. In this study, we examined the psychometric properties of the CERQ-Short Portuguese version. A sample of 1052 adolescents (aged 10-25 years old, 60.53% females) completed the CERQ-Short form, the Positive and Negative Affect Schedule, the Generalised Anxiety Disorder Scale, and the Patient Health Questionnaire. Confirmatory factor analyses showed that the nine latent dimensions of CERQ-Short provided an acceptable fit to the data. Measurement invariance (for gender and three age-groups), reliability and construct validity were adequate. The adaptative strategies were positively associated with higher positive affect, and maladaptive strategies with higher negative affect, symptoms of generalised anxiety and depression. These results suggest that CERQ-Short is a valid and reliable measure for Portuguese speaking samples. Moreover, CERQ-Short's length makes it a cost-effective tool for both clinicians and researchers.

Keywords: adolescents; CERQ; coping; emotion regulation; measurement.

1. Introduction

Emotion regulation is a dynamic and multifaceted process through which people manage their experiences and emotions (Gross, 2015). Children develop more efficient and flexible cognitive processes as they become young adults. As emotion-eliciting events are better decoded, there is an increase in regulatory strategies (Sanchis-Sanchis et al., 2020). Throughout childhood and adolescence, individuals become better at regulating their emotions independently, contrary to infants and younger children who rely more on their significant adults to regulate emotions.

The Cognitive Emotion Regulation Questionnaire (CERQ) measures self-regulatory cognitive emotion regulation strategies (ERSs) in response to stressful life events (Garnefski et al., 2001). The CERQ evaluates cognitive processes after the experience of negative or stressful situations to comprehend how these processes affect the course of emotional development (Garnefski et al., 2001). The CERQ has 36 items, with four items per each of the nine ERSs dimensions: *Acceptance*, *Positive Refocusing*, *Refocus on Planning*, *Positive Reappraisal*, *Putting into Perspective*, *Catastrophizing*, *Rumination*, *Self-blame*, and *Other-blame* (Garnefski et al., 2001). The CERQ authors also provide an 18-item short version, with two items per dimension, allowing faster screening and its inclusion in larger assessment protocols (Garnefski & Kraaij, 2006).

The CERQ is a commonly employed emotion regulation measure. Originally in Dutch, the CERQ-Short has been validated in other languages (Orgilés et al., 2019; Cakmak & Cevik, 2010; Ireland et al., 2017), with studies reporting adequate psychometric properties for this short version. While the CERQ-36 has been validated in Portuguese (Costa Martins et al., 2016; Moreira et al., 2020), CERQ-Short has not. The goal of this study is to validate the CERQ-Short version in a young Portuguese population.

Research has shown gender and age differences in CERQ dimensions. Though measurement invariance testing is scarce, some evidence shows adequate invariance for both age (Moreira et al., 2020) and gender (Chamizo-Nieto et al., 2020). To the best of our knowledge, measurement invariance was only tested in the CERQ36. Consequently, we will also investigate whether invariance holds across age and gender in the CERQ-Short.

Although the adaptability of ERSs is context-related, extensive research indicates ERSs can be maladaptive given certain mental health disorders (Schäfer et al., 2017). Thus, the first five ERSs are considered adaptative strategies associated with positive affect (Ireland et al., 2017), emotional intelligence and gratitude (Chamizo-Nieto et al., 2020), whereas the latter

four are considered maladaptive and associated with high levels of depression and anxiety (Chamizo-Nieto et al., 2020; Costa Martins et al., 2016; Garnefski & Kraaij, 2018).

Based on previous findings, we hypothesise that the nine-factor structure will have the best fit to our sample and subsamples (gender, age). Also, we hypothesise that the CERQ-Short adaptative strategies (Acceptance, Refocus on Planning, Positive Refocusing, Positive Reappraisal, Putting into Perspective) will negatively correlate with generalised anxiety symptoms (GAS), depressive symptoms, and negative affect while positively correlating with positive affect. In contrast, we expect the maladaptive strategies (Rumination, Catastrophizing, Self-blame and Other-blame) to correlate positively with GAS, depressive symptoms, and negative affect, while correlating negatively with positive affect.

2. Method

2.1. Participants

The collected sample comprised 1264 participants, though 212 participants had to be removed due to: i) total nonresponse, participants who opened the survey but failed to respond (n = 35), ii) participants that failed attention or seriousness check (n = 37), iii) missing values above 50% in each scale (Hair et al., 2014) (n = 59), iv) other nationality or information absent (n = 81). The final sample comprised 1052 Portuguese participants, aged 10-25 years old (M = 15.97, SD = 3.08; 10-14 age-group: n = 324, 30.84%, 15-17 age-group: n = 402, 38.22%, and 18-25 age-group: n = 326, 30.94%), and the majority being female (n = 637, 60.53%). Gender was proportional within each age group, with no observed differences ($X^2(4, N = 1040) = 5.54$, p = .236). Participants attended schools from rural and urban areas, and were on different educational paths (e.g., regular and alternative compulsory education, technical and vocational education, and universities).

2.2. Measures

ERSs were measured with the CERQ-Short by selecting the items with the highest factor loadings in each dimension (Garnefski & Kraaij, 2006). The Portuguese version, translated and validated by Martins et al (2016), was used. The CERQ-Short has 18 items, with two items for each dimension, and uses a 5-point scale (from 1 = never to 5 = always). Previous Portuguese studies with the CERQ36 have reported adequate psychometric properties, with most Cronbach's alpha coefficients above .70, excepting for Acceptance, Refocus on Planning, Self-blame ($62 < \alpha < .70$) (Martins et al., 2016; Moreira et al., 2020).

Positive and negative affect were assessed using the Portuguese version of the *Positive and Negative Affect Schedule Short-Form* (PANAS-SF; Galinha et al., 2014). PANAS-SF includes ten items, five for positive and five for negative affect. All items used a 5-point scale (from 1 = Very slightly or not at all to 5 = Very much so). The two-factor model of the measure showed a good fit to our sample (CFI = .97, TLI = .96, SRMR = .04, RMSEA = .05 with 90% CI [.04, .06]). Good internal consistency values were obtained for both the positive (α=.77, 95%CI [.75, .79]) and negative subscales (α = .79, 95% CI [.77, .81]).

GAS was assessed using the Portuguese version of the Generalised Anxiety Disorder 7-item scale (GAD-7; Bártolo et al., 2017), with answers given on a 4-point scale (0 = never to 3 = nearly every day). The unifactorial model of the measure showed a good fit to the data (CFI = .98, TLI = .97, SRMR = .03, RMSEA = .06 with 90% CI [.05, .08]) and a high internal consistency (α = .85, 95% CI [.83, .86]).

Depressive symptoms were assessed using the Portuguese version of the Patient Health Questionnaire 9-item scale (PHQ-9; Ferreira et al., 2018), with answers given on a 4-point scale (0 = never to 3 = nearly every day). The unifactorial model of the measure showed an acceptable fit to the data (CFI = .91, TLI = .88, SRMR = .05, RMSEA = .08 with 90% CI [.08, .10]) and a high internal consistency (α = .83, 95% CI [.82, .84]).

2.3. Procedure

The ISCTE-University Institute of Lisbon Ethics Committee (ref. 17/2019) approved all procedures. The study was disseminated through social networks and in classes at one university. Researchers collected data from randomly selected classes at five district schools. At the schools, researchers instructed students on how to complete the survey, answered questions and offered to read aloud to minimise differences between reading proficiency levels. Data collection took about 25 min. Contact details were provided. All adult participants provided informed consent, whereas parents/legal guardians provided it for minors. For ethical purposes, the school directors kept the physical signed consent forms in safe deposit boxes. To ensure comprehension of the younger participants, we conducted a pilot study in March 2019, and no changes were needed.

2.4. Data Analysis

The expanded definition of adolescence may better reflect the development of adolescents in developed countries like Portugal (Sawyer et al., 2018). However, based on this definition, adolescence includes young people at very different stages, who must be disaggregated within

age frames (Sawyer et al., 2018). Also, development may be represented better as a series of discrete stages (Leung & Shek, 2020) since it does not always follow a linear trajectory with cumulative changes (Santos et al., 2021). In this study, we disaggregate the 10-14, 15-17 and 18-25 age-groups, according to Arnett's (2013) definitions of early adolescence, late adolescence and emerging adulthood.

The percentage of missing values across the 46 variables varied between 0.1% and 1.24%. In total, 97 out of 1052 cases (9.2%) were incomplete. Graham (2009) describes multiple imputation as the preferred missing data handling technique. We imputed missing data using multivariate imputation by chained equations, using *mice* (3.2.0) (van Buuren & Groothuis-Oudshoorn, 2011) and *miceadds* (3.11-6) (Robitzsch & Grund, 2021) R packages (R Core Team, 2021; version 4.0.5). We used the *pmm* imputation method (excepting for gender-*logreg*), set the number of iterations in the *mice* algorithm to 20, and created 10 different imputed datasets. In the proceeding analysis, each dataset was analysed separately, and results were subsequently pooled using Rubin's rules (Rubin, 1987).

Confirmatory factor analyses (CFAs) and multi-group CFA's were estimated using R package *semTools* (0.5-4; Jorgensen et al., 2021) with a robust estimator (MLR - maximum likelihood estimation with robust Huber-White standard errors). First, we tested the original Garnefski and Kraaij (2006) nine-factor model. Then, we tested two higher-order factor models: one with the nine dimensions grouped into two latent dimensions of adaptive strategies and maladaptive strategies (Garnefski et al., 2001), and another proposed by Liu et al. (2016) which includes Acceptance in the less adaptative strategies. We considered the following indices for establishing model fit criteria: Comparative Fit Index (CFI) ≥ .95; Tucker-Lewis Index (TLI) ≥ .90; Standardised Root Mean Square Residual (SRMR) < .08; and Root Mean Square Error of Approximation (RMSEA) ≤ .08 with a 90% confidence interval (CI) (Hair et al., 2014). Further, measurement invariance by age and gender were evaluated by a series of multiple-groups CFA processes for configural, metric and scalar invariance. As a pre-requisite, the functional equivalence (i.e., the model fit in each group) was confirmed (Milfont & Fischer, 2010). We evaluated the fit of successive models with increasingly stringent constraints, namely ΔRMSEA ≤ .015, ΔCFI ≤ −.010. Also, two ΔSRMR thresholds were used, ΔSRMR ≤ .030 to test factor loading invariance and ΔSRMR ≤ .010 when testing intercepts invariance (Chen, 2007). The same R package was used to investigate the correlation coefficients since these were based on the latent variables' correlations to account for the measurement error. Cronbach's alpha (α) coefficient with a CI 95%, means, standard deviations, minimum and maximum of the scales are presented.

3. Results

3.1. Confirmatory Factor Analysis

Three versions of the CERQ-Short were tested. The first-order nine-factor model of the Portuguese CERQ-Short presented a good fit to the data (CFI = .96, TLI = .94, SRMR = .03, RMSEA = .04 with CI 90% [.04, .05]), thus confirming the nine conceptually distinct scales. The standardized factor loadings ranged from .58 to .95 (all $p < .001$), showing an adequate performance of all items (see Table 4).

3.2. Measurement Invariance

The hypothesised nine-factor model was tested for each group separately (see Table 5). The fit was good in all subsamples. Therefore, configural, metric and scalar invariance were subsequently tested.

Considering gender, metric and scalar invariance between two groups (males = 415, 39.47%, females = 637, 60.53%) was observed (see Table 5), since differences between successive models were below standard thresholds (Chen, 2007). Regarding age invariance with the three groups of participants (young-adolescents: 10-14, n = 324, 30.84%, middle-adolescents: 15-17, n = 402, 38.22%, and old-adolescents:18-25, n = 326, 30.94%), fit indices were good for both the unconstrained and constrained models (see Table 5), with differences between models below the thresholds. Standardized factor loadings and explained variance for age-groups and gender are presented in the Supplementary Table C in the Appendix.

3.3. Summary Statistics

Mean values (see Table 6) suggest that adaptative strategies were reported more often, especially Positive Reappraisal (M = 3.90, SD = 0.90) and Acceptance (M = 3.64, SD = 0.84). The two least reported were Other-blame (M = 2.03, SD = 0.87) and Catastrophizing (M = 2.81, SD=1.08). Also, mean values for state affect revealed that participants reported feeling more positive affect, with values above the mid-point (M = 3.18, SD = 0.72) and less negative affect, with values below the mid-point (M = 2.01, SD = 0.77). Finally, mean values for GAS (M = 7.44, SD = 4.55) and depressive symptoms (M = 7.64, SD = 5.21) fall in the mild category, according to the authors' guidelines (Kroenke et al., 2001; Spitzer et al., 2006).

Table 4. *Standardised Factor Loadings (λ), Explained Variance (R2) and (e) Standardized Error Variances for the Cognitive Emotion Regulation Questionnaire short version*

Factor	Item	λ	R^2	*e*
Acceptance	1. I think that I have to accept that this has happened.	0.66	0.44	0.56
	5. I think that I have to accept the situation.	0.83	0.68	0.32
Refocus on Planning	12. I think about how to change the situation.	0.69	0.47	0.53
	15. I think about a plan of what I can do best.	0.74	0.55	0.45
Putting into perspective	13. I think that it hasn't been too bad compared to other things.	0.62	0.39	0.62
	16. I tell myself that there are worse things in life.	0.70	0.49	0.51
Positive reappraisal	3. I think I can learn something from the situation.	0.69	0.48	0.52
	8. I think that I can become a stronger person as a result of what has happened.	0.75	0.56	0.44
Positive refocusing	7. I think of pleasant things that have nothing to do with it.	0.59	0.34	0.66
	11. I think of something nice instead of what has happened.	0.95	0.90	0.10
Rumination	2. I often think about how I feel about what I have experienced.	0.58	0.34	0.66
	6. I am preoccupied with what I think and feel about what I have experience.	0.76	0.57	0.43
Catastrophizing	9. I keep thinking about how terrible it is what I have experienced.	0.73	0.53	0.47
	17. I continually think how horrible the situation has been.	0.80	0.64	0.36
Self-blame	4. I feel that I am the one who is responsible for what has happened.	0.72	0.51	0.49
	14. I think that basically the cause must lie within myself.	0.81	0.66	0.34
Other-blame	10. I feel that others are responsible for what has happened.	0.76	0.59	0.41
	18. I feel that basically the cause lies with others.	0.80	0.64	0.36

Table 5. *Confirmatory Factor Analysis Fit Statistics for the Total sample, by Gender and Age groups and Measurement Invariance.*

Model		Goodness-of-fit statistics						Model comparison		
		X^{2a}	df[a]	CFI[a]	TLI[a]	SRMR	RMSEA [90% CI][a]	ΔCFI	ΔSRMR	ΔRMSEA
CERQ-short	**Model 1**	264.289	99	.960	.938	.034	.042 [.036, .049]			
models'	**Model 2**	452.353	125	.918	.900	.062	.054 [.049, .060]			
comparison	**Model 3**	677.795	125	.866	.836	.091	.069 [.064, .074]			
Gender										
CFA by group	Females	216.110	99	.956	.932	.037	.046 [.037, .054]			
	Males	151.580	99	.964	.944	.041	.038 [.025, .049]			
Measurement	Configural	367.649	198	.959	.936	.037	.043 [.036, .049]			
invariance	Metric	386.245	207	.956	.936	.039	.043 [.036, .050]	-.003	.002	.000
	Scalar	395.271	216	.956	.938	.040	.042 [.035, .049]	.000	.001	-.001
Age										
CFA by group	Young Adolescents	163.428	99	.951	.925	.050	.046 [.033, .059]			
	Middle Adolescents	156.688	99	.963	.942	.042	.040 [.028, .052]			
	Old Adolescents	143.694	99	.968	.951	.040	.039 [.024, .052]			
Measurement	Configural	377.329	297	.977	.965	.041	.029[.019, .037]			
invariance	Metric	385.715	315	.980	.971	.042	.027 [.016, .035]	.003	.001	-.002
	Scalar	402.968	333	.980	.973	.043	.026 [.015, .034]	.000	.001	.001

Note. Model1 = nine-factor structure by Garnefski and Kraaij, 2006; Model 2 = second-order structured by Garnefski and Kraaij, 2001; Model 3 = second-order structured by Liu et al., 2016; [a] Method Robust; CFI = Comparative fit index; TLI = Tucker-Lewis Index; SRMR = Standardized root mean square residual; RMSEA = Root mean square error of approximation; CI = Confidence interval; ΔCFI, ΔSRMR and ΔRMSEA = change in fit indices between contiguous nested models

Table 6. *Descriptive, Reliability and Pearson correlations between the scales of the Portuguese version of Cognitive Emotion Regulation Questionnaire short version*

Variables	**Descriptive**				**Reliability**	**Correlations between latent variables**											
	M	*SD*	Min	Max	alpha	1	2	3	4	5	6	7	8	9	10	11	12
1. Acceptance	3.64	0.83	1.00	5.00	.71 [.67, .74]	-											
2. Refocus on planning	3.58	0.87	1.00	5.00	.67 [.63, .71]	.45***	-										
3. Putting into perspective	3.31	0.97	1.00	5.00	.61 [.56, .65]	.41***	.62***	-									
4. Positive reappraisal	3.90	0.91	1.00	5.00	.68 [.64, .72]	.53***	.71***	.53***	-								
5. Positive refocusing	2.97	1.05	1.00	5.00	.71 [.68, .75]	.26***	.45***	.42***	.41***	-							
6. Rumination	3.58	0.92	1.00	5.00	.61 [.56, .65]	.15**	.10	.08	.08	-.21***	-						
7. Catastrophizing	2.81	1.08	1.00	5.00	.74 [.71, .77]	-.09	-.19***	-.15**	-.21***	-.30***	.74***	-					
8. Self-blame	2.99	1.02	1.00	5.00	.74 [.70, .77]	.08	.02	.03	-.15**	-.28***	.57***	.55***	-				
9. Other-blame	2.03	0.87	1.00	5.00	.76 [.73, .79]	-.01	.03	.10*	.02	.11*	.15*	.27***	.03	-			
10. Positive affect	3.18	0.72	1.00	5.00	.77 [.75, .79]	.09	.35***	.22***	.37***	.27***	-.15**	-.22***	-.16***	.01	-		
11. Negative affect	2.01	0.77	1.00	4.80	.79 [.77, .81]	-.09*	-.16***	-.07	-.21***	-.22***	.35***	.37***	.42***	.06	-.28***	-	
12. GAS	7.44	4.55	0.00	21.00	.84 [.83, .86]	-.08	-.13**	-.05	-.16***	-.26***	.51***	.47***	.44***	.02	-.38***	.76***	-
13. Depression symptoms	7.64	5.21	0.00	27.00	.83 [.81, .84]	-.08	-.24***	-.14**	-.25***	-.33***	.48***	.52***	.54***	-.02	-.50***	.68***	.88***

Note. GAS = Generalised Anxiety Symptoms, *M* = Mean, *SD* = Standard Deviation * $p < .05$, ** $p < .01$, *** $p < .001$

3.4. Reliability

Most factors obtained values of acceptable internal consistency varying between .71 (Acceptance) and .76 (Other-blame), though some presented values below .70, with the minimum value being observed for Putting into Perspective and Rumination (α = .61). Inter-correlations were weak to strong. The stronger associations are observed between Positive Reappraisal and Refocus on Planning (r = .71, p < .001) and between Rumination and Catastrophizing (r = .74, p < .001), as in the original CERQ-Short development study (Garnefski & Kraaij, 2006). To note that correlations between dimensions considered as adaptative and those considered maladaptive are weak, like in the original version (Garnefski & Kraaij, 2006), confirming they correspond to different constructs. Inter-item correlations scores were between .44 (Putting into Perspective) and .60 (Other-blame), being above the threshold of .30 (Hair et al., 2014).

3.5. Construct Validity

Regarding positive affect, we found weak to moderate positive associations with perceived adaptative ERSs (i.e., Refocus on Planning, Putting into Perspective, Positive Reappraisal and Positive refocusing; .22 < r < .37, p < .001) and weak negative association with three maladaptive ERSs: Catastrophizing (r = -.22, p < .01), Self-blame (r = -.16, p < .001) and Rumination (r = -.15, p < .01). For negative effect, the results were in the opposite direction of positive affect, presenting weak negative associations with adaptative ERSs (i.e., Acceptance, Refocus on Planning, Positive Reappraisal and Positive Refocusing; -.09 < r < -.22, p < .05) and positive moderate associations with maladaptive ERSs (i.e., Rumination, Catastrophizing and Self-blame; .35 < r < .42, p < .001). These associations agree with the results in Ireland et al. (2017). For anxiety and depression symptoms, weak to moderate negative correlations were found with adaptative ERSs (Refocus on Planning, Putting into perspective, Positive reappraisal and Positive refocusing; -.13 < r < -.33, p < .01) and moderate to large positive correlations with maladaptive ERSs were found (i.e., Rumination, Catastrophizing and Self-blame; .44 < r < .54, p <.001). Similar results have been reported in previous CERQ validation studies (Garnefski et al., 2001; Garnefski & Kraaij, 2006; Min et al., 2013; Orgilés et al., 2019), though, in most studies except two (Garnefski et al., 2001; Min et al., 2013) the effect size of maladaptive ERSs with anxiety and depressive symptoms were weak to moderate and not large, as found in the present study.

4. Discussion

The aim of the present study was to analyse the psychometric properties of the CERQ-Short in a Portuguese sample of 1117 youth participants. The results revealed the best fit for the nine-factor structure, which was consistent with previous studies (Ireland et al., 2017; Moreira et al., 2020), though the second-order model proposed by Garnefski and Kraaij (2006) also showed good fit to the data. The good fit of the Portuguese CERQ-Short found in this study has also been established in other languages (Cakmak & Cevik, 2010; Ireland et al., 2017; Orgilés et al., 2019). The factor loadings were all above the threshold of .40, indicating good fit. The fit obtained in the present study is better than the fit obtained by the two Portuguese studies that analysed CERQ36 (i.e., CFI = .88, SRMR = .06, RMSEA = .05 with CI 90% [.04, .05], (Moreira et al., 2020); CFI = .90, RMSEA = .050; IFI = .90, (Martins et al., 2016)), which is consistent with Ireland et al.'s (2017) findings.

In addition, we assessed the measurement invariance. Functional, configural, metric and scalar invariance were tested since violations of measurement invariance can hinder significant data interpretation. The multi-group analyses showed that the nine-factor structure was adequate for different ages and gender, which strengthens this measure's use for group comparisons. According to the literature, this is the first study that investigated measurement invariance with the CERQ-short version and our results show that the instrument is able to make valid comparison between gender and age. Our results are consistent with those obtained for the CERQ36 version regarding invariance for age (Moreira et al., 2020) and gender (Chamizo-Nieto et al., 2020). This suggests that the Portuguese CERQ-Short version is a psychometrically adequate measure of cognitive ERSs for both gender and young (10-14), middle (15-17) and older adolescents/young adults (18-25 years old).

The CERQ-Short showed adequate internal consistency values for the majority of the nine dimensions. Regarding scale inter-correlation, our findings also provided a pattern similar to other CERQ validation studies, with stronger correlations among adaptative and among maladaptive ERSs, and negative associations between adaptative and maladaptive strategies (Cakmak & Cevik, 2010; Garnefski & Kraaij, 2006; Ireland et al., 2017).

Our third hypothesis was also confirmed. Adaptative ERSs were associated with more positive affect and less symptomatology. In contrast, higher scores in maladaptive ERSs were related to higher negative affect, GAS and depressive symptoms. These relations were expected and provided evidence of construct validity for the CERQ-Short Portuguese version, which is in line with the already reported relation between ERSs and mental health indicators (Schäfer

et al., 2017). Similar findings were found in previous studies using CERQ with children, adolescents (Chamizo-Nieto et al., 2020; Garnefski & Kraaij, 2006, 2018) and adults (Costa Martins et al., 2016).

Before concluding, some limitations must be mentioned. First, we have not analysed test-retest reliability and other forms of validity (e.g., convergent, discriminant or predictive validity). Second, four of the latent variables had reliability values below .70; Refocus on Planning, Putting into Perspective, Positive Reappraisal, Rumination. A low value may be due to only two items being used on each scale. Cronbach's alpha is positively related to the number of items in the scale, making it harder for scales with fewer items to show high values (Hair et al., 2014). Nevertheless, values were all above .60, which is considered the lower limit of acceptability (Hair et al. 2014). Third, we performed no clinical disorder screenings, and based on a meta-analytic review, clinical samples report more maladaptive emotional strategies than non-clinical samples (Aldao et al., 2010). Nevertheless, our sample had mean values in the minimal or mild categories for GAS and depression symptoms, with 69.8% (n = 734) and 68.9% (n = 724) of participants in each scale scoring in the referred categories, suggesting that most our sample are non-clinical regarding the assessed symptomatology. Fourth, we used a non-representative sampling procedure, although our sample was diverse, including adolescents from rural and urban areas and on different scholastic paths. Finally, not all participants underwent the same procedure (i.e., while the majority responded at school in the presence of a researcher, some 18-year-olds filled out the questionnaire alone). Regardless, participants could ask questions using the provided contact information and participants at schools responded independently. Future studies should investigate whether different data collection procedures (as the ones used) affect the responses.

To conclude, CERQ-Short Portuguese version is a valid and reliable tool to evaluate ERSs. It integrates a wide variety of ERSs in a single questionnaire, can be used in multiple settings and in a broad range of age groups (Ireland et al., 2017). Its brief nature allows for easier integration into assessment protocols. This study validates CERQ-Short use among Portuguese speakers and participation in cross-cultural studies.

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CHAPTER IV

Emotion Regulation and Student Engagement: Age and Gender Differences during Adolescence

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Abstract

Research has documented the role of emotions in learning and emotion regulation for student engagement (SE). However, knowledge regarding the predictive power of emotion regulation strategies (ERSs) on SE at different age-groups was lacking. Also, our study aimed to provide data on ERSs use based on age and gender since findings are mixed. This cross-sectional study included a representative sample (N = 1507) of Portuguese students between 10 and 25 years. The sample was divided into four age-groups (10-12, 13-15, 16-18, 19-25). Results indicated ERSs varied with age, with some having a linear developmental pattern (e.g., Putting into Perspective) and others a non-linear (e.g., Positive Reappraisal). SE was higher in females and the youngest and oldest age-groups. Higher SE was related to using more adaptive strategies, and the ERS Refocus on Planning best correlated with the higher SE scores for every age-group.

Keywords: adolescents, emotion regulation, gender, student engagement, youth.

1. Introduction

Student Engagement (SE) is the construct that best depicts students' involvement in school and learning activities. SE is not only related to better schooling trajectories and academic outcomes, but, being related to resilience (Wang & Eccles, 2012) it is a protective factor that may reduce the negative impact of several risk factors in life (Fredricks et al., 2016). SE is particularly relevant for those under high stress and in vulnerable situations (Ungar & Liebenberg, 2013). Thus, considering the significant impact of SE on academic outcomes and health trajectories, there is a need for further understanding of the factors that influence SE at different times during adolescence.

Our study aligns with the Collaborative for Academic, Social, and Emotional Learning (CASEL) framework. CASEL addresses five interrelated areas of competence: self-awareness, self-management, social awareness, relationship skills, and responsible decision-making. Studies on Social-Emotional Learning (SEL) have been showing its positive impact on students' engagement (Greenberg et al., 2017), connectedness and sense of belonging (Taylor et al., 2017). Based on this framework, the present research focuses on the student level, specifically on self-management, by analysing the impact that emotion regulation strategies (ERSs) have on SE.

Emotions have a significant impact on learning (Pekrun et al., 2017; Pekrun & Linnenbrink-Garcia, 2014), namely the ability to diminish disruptive and distractive stimuli when learning (LeBlanc et al., 2017). Research has shown that adolescents are more sensitive to relevant emotional cues, which can selectively disrupt or improve academic performance, depending on their level of engagement with the task and their environment (Somerville, 2016).

Emotion regulation may also promote engagement by managing potential emotional barriers that facilitate engagement with people or activities (Morrish et al., 2018). Students who use strategies to regulate motivation show higher SE than those who have not developed such strategies (Fried & Chapman, 2012). Aldao and Nolen-Hoeksema (2012) found that participants used adaptive strategies (e.g., Acceptance and Problem-Solving) over more cross-situational variability (e.g., emotion intensity, type of emotion, social vs academic circumstances) than maladaptive strategies, suggesting that those strategies can be successfully implemented in response to a broad range of contexts demands. Different ERSs may have a distinct influence on SE, but information on this relationship is lacking. Whilst research on how emotions influence SE and its consequences are well documented, less is known about how ERSs use predicts and can promote SE.

The present study focuses on adolescence; when biological, cognitive, emotional, and social reorganisation occurs (Susman & Rogol, 2013). Given the changes one may face, this is a period of both vulnerability and opportunity. Adolescence begins with the typical changes of puberty, that can start around the age of 10, and typically ends when individuals assume adult roles and responsibilities, which, in Western society, may occur around the age of 24 years (Hall, 1904; Sawyer et al., 2018). To this expanded definition of adolescence, we also included 25-year-olds in agreement with other authors (Curtis, 2015; Riediger & Klipker, 2014; Society of Adolescent Medicine (SAM), 1995), since the second critical period of neurodevelopment ends with the completion of cortical organisation around 25 years of age (Chung & Hudziak, 2017) and because, in the Portuguese financial and social security systems, considers 25-year-olds as "dependents".

In the educational setting, a child moving through adolescence and emerging adulthood may encounter many varied and different institutions. In the typical path, students transition to larger and more formal institutions (i.e., regularly preschools and primary schools tend to be smaller, with more close and affective relationships than in middle schools, high schools or universities). These transitions can be fraught; in the transition from childhood to adolescence, for example, adolescents are more vulnerable to the onset of psychological difficulties and SE seems to decrease (Hartono et al., 2019; Inchley et al., 2020). Academic requirements increase after primary school, again in high school and then again in university, with an increasing workload and more cognitively demanding tasks (Juvonen, 2007). Throughout their academic path, students are successively exposed to a larger number of teachers and subjects, with less individual support and increased competition (Wang & Hofkens, 2020). Moreover, in most cultures, despite the lack of life experience, children and emerging adults must make important educational and occupational paths decisions (Somerville, 2016).

Developmental knowledge and research on SE are scarce. To the best of our knowledge, this is the first study to examine SE in a sample of students from 10 to 25 years old. In this study, we aimed to analyse the relation between ERSs and SE at transitional ages. Moreover, university students were included, since university is a highly demanding environment where relevant transformations in life trajectories can occur (Reis & Matos, 2019). The main goal of the study was to examine the predictive potential of ERSs on SE by looking into different age-groups that are closely spaced, since relevant developmental changes might be masked when comparing only major age periods (e.g., adolescence vs adulthood or children vs adolescence). Also, we will investigate age and gender differences in both ERSs and SE to examine the relationship between ERSs and SE at different adolescent stages. In doing so, we aim to

enhance knowledge regarding two important assets in adolescence related to resilience and positive developmental trajectories (Ungar et al., 2019).

1.1. Student Engagement

SE is a broad concept that encompasses students' commitment, interaction, and connectedness with academic coursework, curriculum, and activities that support learning and achievement (Wang & Hofkens, 2020). In current educational research, SE has been conceptualised as a three-dimensional construct: emotional/affective, behavioural and cognitive engagement (Fredricks et al., 2004; Furlong & Rebelez-Ernst, 2013). Emotional or affective engagement is linked to the willingness to learn and refers to students' emotional response towards school, learning, and the academic community (Fredricks et al., 2004). Behavioural engagement entails actions that are observable indicators of persistence and active participation in extracurricular and academic activities (Fredricks et al., 2004; Furlong & Rebelez-Ernst, 2013). Cognitive engagement comprises student self-efficacy, motivation, expectations, and beliefs related to teachers and or peers (Fredricks et al., 2004).

SE has gained much attention in the past years due to its influence in the apprenticeship trajectory, its value as a protective factor against internalised and externalised difficulties, and because it is amenable to change (Fredricks et al., 2016). SE relates to well-being, academic achievement (Pietarinen et al., 2014), physical and psychological health (Salmela-Aro & Read, 2017) and continuing one's education beyond secondary school (Wang & Eccles, 2012).

The Program for International Student Assessment (PISA) survey assessing 540,000 15-year-old students from 72 countries found that 27% of students felt disaffected from school, with 26% reporting skipping at least one class in the two weeks before the survey, and 20% reporting skipping the entire school day at least once [Organization for Economic Co-operation and Development, (OECD), 2016)]. Similarly, the Health Behaviour School-Aged Children, which included 220,000 adolescents (11, 13 and 15 years old) from 45 countries/regions, reported that between 2014 and 2018, in around a third of the countries/regions, adolescents were less likely to like school (Inchley et al., 2020), with Portuguese students' school satisfaction below the European medium score (Matos et al., 2018). Such findings underline the need to research SE during adolescence. Moreover, younger and female students tend to report higher levels of engagement and satisfaction with school than older and male students (Amir et al., 2014; Hartono et al., 2019; Inchley et al., 2020). However, such studies did not analyse SE in compulsory education in comparison with SE at university. In this regard, a study

with university students found that retrospective affective SE predicted later affective engagement (Maguire et al., 2017).

1.2. Emotion Regulation Processes and Strategies

Emotion regulation (ER) is a dynamic and multifaceted process through which individuals manage their emotions, how the emotions are experienced or expressed (Gross, 2015). The ability to regulate emotions can be a protective factor in the emergence of psychosomatic symptoms and other emotional and behavioural difficulties, contributing to resilience (Troy & Mauss, 2011). ER relates to higher perceived quality of life, well-being, mental health, academic performance, and socioemotional adjustment (Chervonsky & Hunt, 2019; Greenberg et al., 2017; Schäfer et al., 2017). Extensive research indicates that ERSs can be classified as either adaptive or maladaptive according to its relation to mental health (Dryman & Heimberg, 2018; Schäfer et al., 2017). For instance, in a meta-analysis on adolescence, reappraisal, acceptance and problem solving were negatively related to anxiety and depression, but suppression, avoidance and rumination were positively associated (Schäfer et al., 2017).

In contrast to children or adults, adolescents tend to experience more frequent and high-intensity emotions, both positive and negative, and high emotional instability (Bailen et al., 2019; Guyer et al., 2016). During adolescence, the ability to regulate emotions mediates the emotional experience characteristics (Somerville, 2016). Research on age-related ER competence suggests a tendency to increase adaptive ER from childhood to adolescence and then to adulthood (P. Zimmermann & Iwanski, 2014). This increase may be related to a progressively more sophisticated understanding of emotion-eliciting events and a cumulative repertoire of regulatory strategies, along with the growing maturation of the executive functions (LeBlanc et al., 2017). In later adolescence, the maturation of the cerebral structure (mainly the frontal lobes) enables the decrease of neuronal connections. Although, more regular and more effective synapses arise, which results in more efficient, flexible cognitive processes, and well-adaptative emotional and behavioural regulation (Berk, 2017).

Development in ER ability does not seem to follow a linear growth trajectory. There is some evidence denoting a maladaptive shift between 13-15 years of age, which includes an overall decrease of adaptive strategies (e.g., Seeking Social Support, Problem-Solving, Distraction, Forgiveness, Acceptance) and a growth of maladaptive ER strategies (e.g., Giving Up, Withdrawal, Aggression) (Cracco et al., 2017; P. Zimmermann & Iwanski, 2014). Also, in middle adolescence, there is evidence that the prefrontal cortex and the amygdala are under

temporary alterations that affect synaptic transmission and connectivity, exposing those in the 13-16 years of age to great stress vulnerability (K. S. Zimmermann et al., 2019).

The ERS suppression of emotions expression showed a different pattern, being reported less often during early and middle adolescence compared to young adults. Even though younger adolescents reported using rumination more, its use was relatively stable (P. Zimmermann & Iwanski, 2014).

This information underscores the importance of measuring different strategies to understand how the ER selection process changes during adolescence. To the best of our knowledge, no previous study has analysed these strategies (Refocus on Planning, Positive Refocusing, Catastrophising, Other-blame or Self-blame) age differences and their influence on SE levels.

Another key goal of the study was to confirm gender differences on ERSs use. Zimmermann and Iwanski (2014) have shown that females reported more social support seeking and rumination, while males reported more passivity, avoidance, and suppression. Another study found that female participants reported greater use of Acceptance, Positive Refocussing, Putting into Perspective, Catastrophising, and Rumination (Garnefski & Kraaij, 2018). Some authors explain these differences by referring to the different hormonal and physical stages of development which could affect emotional experience (Bailen et al., 2019). While other authors pointed out that these differences can be a consequence of socialisation, exposure to contemporary culture and social media (LeBlanc et al., 2017).

1.3. Study Hypotheses

Findings relative to ERS development are mixed, although studies indicate fewer reports of ER adaptative strategies and greater reports of maladaptive strategies in the 13-15 age-group in comparison with younger and older groups (Cracco et al., 2017). Therefore, we hypothesise a non-linear relation between age and ERSs (H1) with higher values for both the younger and older age-groups. Regarding SE, we expect that the youngest group (10-12) will have higher SE levels than the 13-15 and 16-18 age-groups (H2). Given the scant studies concerning the relationship between engagement in the younger age-groups and the 19-25 age-group, we will explore these differences.

Based on prior studies (e.g., Amir et al., 2014; Hartono et al., 2019), we hypothesise female participants would report higher levels of SE compared with male participants (H3). Also, we expect that higher SE will be positively related with more adaptive strategies (Acceptance, Refocus on Planning, Positive Refocussing, Positive Reappraisal and Putting into

Perspective) (H4) and negatively related with maladaptive strategies (Rumination, Catastrophising, Other-blame and Self-blame) (H5). Finally, we will explore the moderator role of gender and age for these variables, as well as the predictive power of ERSs on higher SE.

Additionally, we explored the results for each of the three student engagement dimensions (i.e., affective, behavioural, and cognitive) and identified differences when observed.

2. Method

2.1. Participants

A total sample of 1713 participants was collected. However, 324 participants were removed from analysis due to: i) total nonresponse, corresponding to participants that opened the survey but failed to respond (n = 98), ii) failing the attention and seriousness checks[42] (n = 43), iii) missing values above 50% in each scale (as recommended by Hair et al., 2014) (n = 30). The final sample had 1542 participants (completion rate 90.02%), aged 10-25 years (M = 15.63, SD = 3.01), the majority were female (n = 886, 57.5%) and Portuguese (n = 1443, 93.6%), and all were attending Portuguese public schools or universities. Participants were from rural and urban areas, from the mainland and the islands, were following different educational paths (e.g., regular and alternative compulsory education, technical and vocational education, technical colleges, and university education). The sample was representative of the Portuguese population in terms of age, considering a margin of error of 2.50% with a 95% confidence level. Population data were obtained from the Portuguese National Statistics Institute (INE; https://www.ine.pt).

2.2. Measures

The ERSs were measured with the *Cognitive emotion regulation questionnaire short version* (CERQ-short, Garnefski & Kraaij, 2006), using a Portuguese validated version (E. C. Martins et al., 2016). The CERQ-short measures cognitive strategies that characterise the individual's style of responding to stressful events. The CERQ-short has 18 items, distributed

[42] For the attention check, we combined an instructed-response item inserted in the middle of the emotion regulation questions and at the end of the questionnaire participants were asked if they had read all the questions and phrases carefully/with attention. For the seriousness check, also at the end of the questionnaire, participants were asked if they had answered seriously and honestly.

in the nine different dimensions, each with two items measured on a 5-point scale (from 1= never to 5 = always): *Self-blame* (e.g., "I feel that I'm the one to blame for it"); *Other-blame* (e.g., "I feel that basically, the cause lies with others"); *Acceptance* (e.g., "I think that I have to accept the situation"); *Refocus on Planning* (e.g., "I think of what I can do best"); *Positive Refocussing* (e.g., "I think of pleasant things that have nothing to do with it"); *Rumination* (e.g., "I am preoccupied with what I think and feel about what I have experienced"); *Positive Reappraisal* (e.g., "I think I can learn something from the situation"); *Putting into Perspective* (e.g., "I tell myself that there are worse things in life"), and *Catastrophising* (e.g., "I continually think how horrible the situation has been"). Except for Putting into Perspective (α = .59), acceptable internal consistency was obtained (Hulin et al., 2001), ranging from .66 (Refocus on Planning) to .74 (Other-blame and Self-blame) (see the Supplementary Table D, in the Appendix). Scores were averaged with higher scores corresponding to greater use of that ERS.

SE was assessed with the *Student Engagement Scale* (SES) developed from an international study with 12 countries (Lam et al., 2014). SES comprises three subscales: affective/emotional (nine items; e.g., "I am very interested in learning."), behavioural (12 items; e.g., "When I'm in class, I participate in class activities."), and cognitive (12 items; e.g., "I try to understand how the things I learn in school fit together with each other."), all answered on a 5-point scale, ranging from 1 (Strongly disagree/Always) to 5 (Strongly agree/Never). SE can also be used with the average score of all the items, with higher scores reflecting higher academic engagement (Lam et al., 2016). Good internal consistency was obtained (α = .93) (see the Supplementary Table D, in the Appendix).

Sociodemographic data comprised age, gender, academic year, and nationality.

2.3. Procedure

The University Ethics Committee approved all procedures. The survey was distributed through social networks and data were collected in person and online, at one university and at nine public school groups. Data from participants under 18 years old were only collected at schools. Researchers made initial contact with the schools via email and telephone, followed up every two weeks. After an agreement, a researcher and the directory boards randomised the classes and scheduled the data collection. Data collection at schools was performed in the presence of a researcher, who would give verbal instructions on how to complete the survey, answer any question and offer to read aloud the instructions and questions to minimise potential differences in reading proficiency levels. Informed consent was obtained from all participants and parents or legal custodians of those under 18 years old. For ethical purposes, the school

directors kept the physical signed consent forms in safe-deposit boxes. The data collection took place between April and December 2019, with the questionnaire taking about 15 to 25 min to complete.

2.4. Data Analysis

The expanded definition of adolescence may better reflect the development of adolescents nowadays. However, this means that adolescence includes young people at very different stages (Sawyer et al., 2018). Thus, developmental studies need to disaggregate data within adolescent age frames. Also, development may not always follow a linear trajectory with cumulative changes, but may be represented better as a series of discrete stages (Leung & Shek, 2020). For instance, regarding ERS usage, there are reports of a maladaptive shift between 13 and 15 years of age (Cracco et al., 2017). At the same time, in this age range, adult-level maturity is achieved with significant gains in information processing speed and response inhibition (Luna et al., 2004). In the present study, we wanted to disaggregate this period (13-15) as opposed to the periods before (10-12) and after (16-25). Regarding the older adolescents, we also disaggregated them to better depict the academic transitions according to the Portuguese school system, that is one group of secondary school students (grades 10-12; 16-18 years of age at data collection) and another comprising those at university/college level or finishing their vocational education. Therefore, in the present study, we have analysed data according to four age-groups: 10-12, 13-15, 16-18 and 19-25 years of age.

Data analyses were performed with IBM SPSS Statistics (Version 25.0). Though, effect sizes, standardised Cronbach's alpha coefficient, and confidence intervals were calculated using JASP (Version 0.13, JASP Team, 2020). All variables were checked for data inaccuracy. Measures showed acceptable skewness and kurtosis values (>|1|). For each variable, missing data were below 2%. The results of Little's missing completely at random (MCAR) test were significant for both scales, indicating that the distribution of the missing data was not random. Additional analysis showed that missing data were related to age. Older participants had fewer missing values than younger participants [for ERS scale, $r(1509) = -.11$, and for SE, $r(1509) = -.12$, both $p < .001$]. This correlation supported the assumption that the data had a Missing at Random (MAR) character and allowed us to proceed with expectation-maximisation imputation procedure. To estimate the internal consistency of the CERQ-short scales with two items, we considered the Spearman-Brown coefficient. Also, the standardised Cronbach's alpha (α) coefficient and CI 95% are reported. Statistical assumptions for all statistical tests were verified to ensure that there was no violation. A two-way Analysis of Variance (ANOVA) was

conducted to explore the impact of gender and age-groups on levels of SE and ERS. The significance level was set at $p < .05$, except for variables where homogeneity of variance was violated, in which cases a more stringent significance level was used ($p < .01$; Pallant, 2020). In post hoc analyses, Bonferroni corrections for multiple comparisons were applied since it allows for unequal sample sizes comparison (Lee & Lee, 2018). Pearson linear correlations were computed to analyse the associations between the variables. Multiple linear regression (MLR) analysis was used to understand the role of ERSs on SE while controlling for gender.

4. Results

4.1. Emotion Regulation Strategies

Regarding average scores, the two ERSs most reported were Positive Reappraisal and Acceptance (see the Supplementary Table D, in the Appendix), both considered adaptative ERSs. In contrast, the least two used strategies for all groups were Other-blame and Catastrophising, both considered maladaptive.

For ERSs, a set of two-way between-groups ANOVAs was conducted to examine age and gender differences for each of the nine subscales. The ANOVAs showed the main effects of age and gender, although no significant interaction effect was found.

Age differences were observed in seven ERS subscales, namely on Refocus on Planning, Putting into Perspective, Positive Reappraisal, Positive Refocussing, Rumination, Self-blame and Other-blame, though small effect sizes were verified. Statistical results can be found in Table 7. Post-hoc comparisons indicated that two adaptive strategies (Refocus on Planning and Positive Reappraisal) were significantly lower in the 13 to 15-year-olds than the 19-25 year age-group, with the second strategy showing a significantly lower value for the 13-15 and 16-18 age-groups. Regarding Putting into Perspective strategy, both the 10-12 group and the 13-15 group had lower mean values than the 19-25 group. The mean score of the Positive Refocussing strategy for the 10-12 group was higher than those observed in the other three age-groups. In contrast, participants in the 10-12 group reported lower Rumination than the other three groups. Finally, participants in the 19-25 year age-group reported higher use of the other-blame ERS than those 13-15 years of age. Also, note that Refocus on Planning, Positive Reappraisal strategies seem to have a non-linear, roughly U-shaped, developmental pattern with the 13-15 years age-group in the vertex (see the Supplementary Figure A in the Appendix). Other-blame, considered a maladaptive strategy, also showed the same pattern. On the

contrary, Rumination, Self-blame, and Putting into Perspective showed a more linear pattern, with the older age group (19-25) reporting more use of these strategies than the younger adolescents.

Despite small effect sizes, gender differences were found for the four ERSs considered maladaptive strategies. Female participants reported higher use of Rumination, Catastrophising, and Self-blame, while male students reported higher use of Other-blame strategies, as seen in Table 8.

4.2. Student Engagement

For the SE, the two-way ANOVA yields main effects for both age and gender. Again, the interaction was not statistically significant, $F(3, 1478) = 1.17$, $p = .320$, $\eta_p^2 = .002$. Student engagement, like some ERSs, showed a non-linear development pattern between the four age-groups (see the Supplementary Figure A, in the Appendix). Post-hoc comparisons showed that the youngest group (10-12 years) reported significantly greater engagement than the other three age-groups. Also, the 13-15 year and 16-18 year age-groups reported lower levels of engagement compared with the 19-25 year age-group, as shown in Table 7.

No significant interaction effect was found for the behavioural and cognitive engagement dimensions of SE. Though an interaction between age and gender was identified in the affective dimension, $F(3, 1478) = 3.61$, $p = .013$, $\eta_p^2 = .007$, meaning that in both the 13 to 15-year-olds and the 16 to 18-year-olds, males expressed significantly lower emotional engagement with school. In the age-group 19-25, emotional engagement increased in comparison to the previous two age-groups, but only for females.

Regarding gender, female participants reported higher engagement for all three dimensions (see Table 8).

Table 7. *Means and Standard Deviation values of Cognitive Emotion Regulation strategies and Student Engagement (total scale and the three dimensions) by age group.*

Variables	Age-groups				*F*	*p*	η_p^2
	10-12 (*n* = 259)	13-15 (*n* = 483)	16-18 (*n* = 507)	19-25 (*n* = 237)			
	M (SD)	*M (SD)*	*M (SD)*	*M (SD)*			
Acceptance	3.60 (0.96)	3.51 (0.84)	3.58 (0.86)	3.70 (0.83)	2.23	.083	0.005
Refocus on planning[a]	3.56 (1.06)	3.42[b] (0.93)	3.56 (0.85)	3.68[b] (0.75)	5.20	**.001**	0.010
Putting into perspective[a]	3.23[a] (1.08)	3.24[b] (1.00)	3.33 (0.95)	3.49[a,b] (0.87)	4.13	**.006**	0.008
Positive reappraisal[a]	3.84 (1.05)	3.74[b,c] (0.97)	3.93[b] (0.88)	4.06[c] (0.82)	6.37	**<.001**	0.013
Positive refocussing[a]	3.36[b,c,d] (1.15)	3.03[b] (1.09)	2.90[c] (0.98)	3.01[d] (0.98)	11.27	**<.001**	0.022
Rumination[a]	3.32[b,c,d] (1.11)	3.58[b] (0.93)	3.56[c] (0.88)	3.74[d] (0.88)	5.81	**<.001**	0.012
Catastrophising	2.94 (1.19)	2.81 (1.07)	2.79 (1.06)	2.77 (1.05)	2.05	.105	0.004
Self-blame	2.79[b] (1.04)	2.98 (1.09)	2.97 (1.01)	3.06[b] (0.98)	2.90	**.034**	0.006
Other-blame[a]	2.09 (1.00)	1.93[b] (0.82)	2.03 (0.82)	2.19[b] (0.84)	5.37	**<.001**	0.011
Student engagement	3.70[b,c,d] (0.58)	3.35[b,e] (0.56)	3.37[c,f] (0.55)	3.45[d,e,f] (0.56)	28.85	**<.001**	0.055
Affective	3,75[b,c] (0.72)	3.36[b,d,e] (0.66)	3.48[c,d,f] (0.65)	3.76[e,f] (0.66)	26.48	**<.001**	0.051
Behavioural	3.80[b,c,d] (0.58)	3.42[b,e] (0.63)	3.30[c,e] (0.63)	3.33[d] (0.56)	43.39	**<.001**	0.081
Cognitive	3.57[b,c] (0.70)	3.28[b,d] (0.68)	3.37[c,e] (0.70)	3.52[d,e] (0.62)	13.83	**<.001**	0.027

Note. [a] To account for homogeneity assumption violation a $p < .01$ was used in the main effect analysis. [b-f]Means in a row with a common superscript letter are different at $p < .05$.

Table 8. *Means and Standard Deviation values of Cognitive Emotion Regulation strategies and Student Engagement (total scale and the three dimensions) by gender.*

Variables	Gender		*F*	*p*	η_p^2
	Male (*n* = 603)	Female (*n* = 883)			
	M (SD)	*M (SD)*			
Acceptance	3.59 (0.88)	3.58 (0.85)	0.057	.811	0.005
Refocus on planning[a]	3.56 (0.88)	3.52 (0.92)	2.00	.157	0.001
Putting into perspective[a]	3.24 (0.95)	3.36 (1.00)	2.71	.100	0.002
Positive reappraisal[a]	3.87 (0.89)	3.88 (0.97)	0.01	.918	0.000
Positive refocussing[a]	3.07 (1.03)	3.02 (0.08)	0.46	.500	0.000
Rumination[a]	3.32 (0.97)	3.71 (0.90)	51.09	**<.001**	0.033
Catastrophising	2.67 (1.08)	2.93 (1.08)	15.93	**<.001**	0.011
Self-blame	2.83 (1.01)	3.04 (1.05)	9.09	**.003**	0.006
Other-blame[a]	2.19 (0.89)	1.93 (0.83)	33.75	**<.001**	0.022
Student engagement	3.39 (0.59)	3.48 (0.55)	10.40	**<.001**	0.007
Affective	3.47 (0.70)	3.58 (0.68)	12.48	**<.001**	0.008
Behavioural	3.39 (0.63)	3.46 (0.64)	6.79	**<.001**	0.005
Cognitive	3.34 (0.72)	3.43 (0.67)	4.93	**.027**	0.003

Note. [a] To account for homogeneity assumption violation a $p < .01$ was used in the main effect analysis.

4.3. Associations between Cognitive Emotion Regulation Strategies and Student Engagement

Correlations between cognitive ERSs and SE for each age-group are presented in the Supplementary Table E (see Appendix). As expected, adaptive ERSs are related to SE generally, with Refocus on Planning and Positive Reappraisal, showing weak to moderate positive correlations in all the age groups ($.14 < r < .52$, $p < .05$). Acceptance, Putting into Perspective, and Positive Refocussing showed weak to moderate positive associations with SE ($.10 < r < .39$, $p < .05$) in the age groups of 10-12, 13-15, and 16-18 year groups. In contrast, the 19-25 age-group did not show an association with the previously mentioned ERSs and SE. Surprisingly, Rumination showed a positive, although weak, association ($r = .14$, $p < .05$), with

SE in the 13-15 age-group, with this correlation being expressed only for cognitive engagement. In the 19-25 age-group, only Refocus on Planning correlated with affective and behavioural engagement.

Catastrophising showed a weak negative association with SE (r = -.07, p < .01), though, in the analysis of correlations by age-group, this relationship was observed only for 13-15 age-group. The analysis by SE dimensions showed Catastrophising was negatively correlated with emotional (for the 13-15 age-group) and behavioural engagement (for the 10-12, 13-15 and 16-18 age-groups), but not with cognitive engagement. Regarding Self-blame and Other-blame, no association was observed for SE, affective or cognitive engagement, however, a weak association was observed with behavioural engagement.

4.4. Predictors of Student Engagement as a Function of Emotion Regulation Strategies and Gender for each Age Group

Hierarchical MLR analysis (HMLRA) assessed the ERSs' ability to predict SE levels after controlling for gender. For the 10-12 age-group, a simultaneous MLR analysis, instead of a hierarchical one, was used since gender differences were absent. Table 9 shows the results of the HMLRAs for each age-group. Assumptions of sample size, multicollinearity, normality, linearity, homoscedasticity, and independence of the residuals were met[43]. In each regression model, variables were only included if significantly related to SE (i.e., p < .05).

As shown in Table 9, all models were statistically significant, with explained variance ranging from 35% (10-12 age-group) to 14% (19-25 age-group). Except for the youngest age group, gender correlated with SE. Consequently, it was included in the models in Step 1, though the models indicated that by itself, gender explains no more than 3% of the perceived SE. Overall, Refocussing on planning was the ERS that had the most significant predictive power in SE for all groups (.27 < β < .36, p < .001). Acceptance seems to predict SE only for the youngest group. Although Positive Reappraisal was associated with SE among all age-groups, when included in the model with the other predictors, it did not remain statistically significant for the older group (19-25 years old). We also found that Rumination and Positive Refocussing remained significant predictors of SE in the HMRA for 13 to 15-year-old adolescents.

[43] According to the critical values for evaluating Mahalanobis' distance values, one participant in the 13-15 year age-group was identified as being slightly above the threshold, though considering the sample of 478 participants in this age-group, as proposed by Pallant (2020), the case was not deleted.

Table 9. *Multiple Regression Model predicting Student Engagement at Different age-groups.*

	Model 1 (10-12 age-group)			Model 2 (13-15 age-group)			Model 3 (16-18 age-group)			Model 4 (18-25 age-group)		
	B	SE	β	B	SE	β	B	SE	β	B	SE	β
Step 1[a]												
Gender				0.12	0.05	.11*	0.11	0.05	.10*	0.17	0.07	.17**
R^2					.01			.009			.03	
Adjusted R^2					.009			.007			.02	
F					5.50*			4.75*			6.81**	
Step 2												
Gender				0.10	0.05	.08*	0.10	0.05	.09*	0.22	0.06	.21***
Acceptance[c]	0.09	0.04	.14*	0.02	0.03	.03	0.02	0.03	.03			
Refocus on planning	0.17	0.04	.32***	0.16	0.03	.27***	0.18	0.03	.28***	0.23	0.05	.36***
Putting into perspective	0.01	0.03	.01	0.01	0.03	.02	0.04	0.03	.07			
Positive reappraisal[c]	0.11	0.04	.20**	0.09	0.03	.16***	0.09	0.03	.14**	-0.02	0.04	-.03
Positive refocussing	0.05	0.03	.09	0.05	0.02	.10*	-0.04	0.03	-.07			
Rumination[b]				0.05	0.03	.09*						
R^2		.35			.22			.16			.14	
Adjusted R^2		.33			.21			.15			.13	
F		28.06***			21.75***			18.05***			15.68	

Note. * $p < .05$, ** $p < .01$, ***$p < .001$; [a] not included in the analysis of Model 1 because gender was not correlated with student engagement at 10-12 age-group; [b] not included in the analysis because Rumination was not correlated with student engagement at 10-12-, 16-18- and 18-25 age group. [c] not included in the analysis because Acceptance and Positive reappraisal were not correlated with student engagement at 18-25 age group.

Regarding the analysis of each dimension of SE (see the Supplementary Tables F, G, H in the Appendix) gender was also not included in the regression for emotional engagement for age-group 13-15, for behavioural engagement at age-groups 16-18 and 19-25 and for cognitive engagement at age-group 19-25. In addition, main differences from the regression results showed Putting into Perspective to be significant for the 16-18 age-group for emotional engagement. Contrarily, for behavioural engagement, Positive Reappraisal at age 16-18 did not show to be significant and at age 19-25, only Refocus on Planning remained significant. Finally, for cognitive engagement, rumination was significant at age 13-15 (for SE total score as well) but also for 18-25 age-group.

5. Discussion and Conclusions

Research has documented the role of emotions in learning (Pekrun et al., 2017) and emotion regulation on engagement (Morrish et al., 2018). A study of middle school students presented that those with better ER competence showed higher SE (Fried & Chapman, 2012). However, knowledge regarding the predictive power of ERSs on SE at different age-groups was lacking. Since findings are mixed, our study aimed to provide data on which ERSs are most reported by age-group and gender.

Overall, the results showed that most participants reported a medium level of SE and used adaptative ERSs more often than those considered maladaptive. These adaptive strategies have previously been associated with adequate health, mental health, and resilience (Chervonsky & Hunt, 2019; Salmela-Aro & Read, 2017). It was also the oldest age-group (19-25 years) who reported using these adaptive strategies more often. Garnefski et al. (2002) found similar results, in which the group of adults reported more adaptative strategies in comparison with adolescents. These results may be a consequence of the greater ability of older adolescents to reflect on past stressful experiences, become aware of the strategies they used, and consequently assign a certain value accordingly (Quigley et al., 2013). These reflections are highly cognitively demanding and may become easier with the development of neural structures (Berk, 2017).

We also found that Acceptance and Positive Reappraisal were the two most reported ERSs. These adaptive strategies have been associated with positive biopsychosocial outcomes in different stages of life (Chervonsky & Hunt, 2019). In contrast, the least reported ERSs were catastrophising and other-blame, which are maladaptive because of their positive relationships

with anxiety and depression in adolescence (Schäfer et al., 2017). Other studies have found similar findings (Garnefski & Kraaij, 2006; Sanchis-Sanchis et al., 2020).

In accordance with the hypotheses, ERS use seems to vary as a function of age, but we could not find a consistent pattern for all ERSs. On the one hand, students in the 13-15 age-group reported lower use of Refocus on Planning, Positive Reappraisal strategies and Other-blame, in contrast to the oldest group (19-25) who reported using these strategies more often. On the other hand, the youngest group (10-12) reported using Positive Refocussing more often than the other three age-groups. These results are consistent with neurobiological and cognitive research indicating that as children and youth mature, they develop better cognitive abilities and use more adaptative strategies, such as Positive Reappraisal and Refocus on Planning (Berk, 2017; LeBlanc et al., 2017). Also, this is the only adaptive strategy in which this younger group (10-12) scored higher than the older group (19-25). Again, this difference may be related to the development of cognitive and neuronal structures that allows older adolescents to prefer using strategies that seem to be more cognitively demanding, such as cognitive reappraisal (Gross, 2015), instead of strategies that seem to involve attention deployment (e.g., thinking of other pleasant matters instead of the actual event) or distraction (B. Martins et al., 2018).

Regarding maladaptive strategies, and in contrast to H1, Rumination showed a more linear pattern, with significant differences between the first age-group and the other groups, meaning that youngest students reported less usage of this strategy than the others. It is also worth noting that self-blame shows a similar gradual increase across age-groups, with differences between the groups 10-12 and 19-25, with the latter having a higher value. Both Rumination and Self-blame are associated with mental health problems (Schäfer et al., 2017). In the 19-25 age-group, participants were mainly students in the last year of compulsory education (including special or vocational educational paths) and university students. Some students may find themselves in stressful situations, where anxiety and depression have been documented (Brown, 2018; Reis & Matos, 2019). Although research shows that from adolescence to adulthood (50 years old) general adaptative regulation increases (P. Zimmermann & Iwanski, 2014), there is a need for preventive programmes to help young people cope effectively with challenges.

Finally, Acceptance and Catastrophising showed stability across the age-groups, though one can observe (see the Supplementary Figure A in the Appendix) a tendency for the former to be more used than the latter across age-groups. Attention should be given to Acceptance since it is related to better mental health and is the most reported strategy in many different situations (Aldao & Nolen-Hoeksema, 2012). Summing up, our data suggest that ER

development does not follow a linear progression, and that the maladaptive shift proposed by Cracco et al. (2017) was not found for every ERS. It suggests that a more refined lens is needed since some strategies (e.g., Putting into Perspective) follow a more linear path in line with the neuronal and cognitive abilities development (Berk, 2017; LeBlanc et al., 2017). However, other strategies (e.g., Refocus on Planning, Positive Reappraisal), despite older adolescents using them to a higher degree, have been reported to be less used in the 13-15 and 16-18 groups in contrast to the 10-12 age-group, recalling a non-linear pattern, which may be linked to pubertal changes (Guyer et al., 2016). Moreover, during this age-period, temporary neuronal alterations occur, leading to greater vulnerability and enhanced neural plasticity (K. S. Zimmermann et al., 2019).

When applied to the practice, these results suggest that ER training may become more effective as youth mature. Since different age-groups may rely upon different strategies, intervention should take advantage of the knowledge regarding natural development. Thus, in addition to considering age-group trends, successful interventions should provide the awareness and promote opportunities for youth to acquire more adaptative ER strategies in general. Future studies may seek to understand the motivational reasons for each age-group to use each ERS since this is a fundamental aspect of ER selection (Gross, 2015). Additionally, it is not clear if the choice of an ERS is conscious and if they consider the expected outcome when selecting an ERS. These aspects are related to the success of ER and can be more closely adapted to the context and the needs of each individual if adequately addressed in prevention or intervention programmes.

Age differences in SE agreed with our expectations (H2), with the youngest group (10-12) reporting the highest engagement (Hartono et al., 2019; Wang & Eccles, 2012). Although our study is not longitudinal, these age differences also suggest an increase in SE in the oldest group (19-25) relative to the other age-groups. This result may be because a university course is for many students a choice that relates to personal motivation and future career desires. Thus, they may feel that learning has more meaning and relevance to their goals. Moreover, the same thoughts can be applied to those in technical-professional schools, where the learning process uses more active methodologies than those in the regular curriculum. SE has links to the self-determination theory, which states that adolescents are better engaged when they feel connected, have opportunities to be autonomous, and have a sense of competence growth (Ryan & Deci, 2017). Furthermore, research has supported this theory, showing higher SE when adolescents make meaningful decisions, work on significant tasks, and have genuine close relationships with teachers and peers (Fredricks, 2014).

As H3 predicted, female participants reported more use of Rumination, Catastrophising and Self-blame than males (Cracco et al., 2017; Garnefski & Kraaij, 2018; P. Zimmermann & Iwanski, 2014) and more SE, as in other studies (Amir et al., 2014; Hartono et al., 2019). Male participants, though, reported greater use of Other-blame. In line with existing literature, no gender differences were found in other strategies, such as Acceptance, Positive Refocussing, and Putting into Perspective (e.g., Sanchis-Sanchis et al., 2020).

Our results support H4 by showing that adaptative ERSs relate to SE at different ages, specifically Refocus on Planning and Positive Reappraisal, which had moderate correlations. However, the data provided only partial support for H5 since not all maladaptive strategies were negatively related to SE. Rumination showed a positive, though weak, correlation with SE in the 13-15 age-group (and for cognitive engagement also in the 19-25 age-group), with this association maintaining its significance in the regression analysis. This association can be due to Rumination entailing the persistence of negative thoughts, which tend to be related to academic activities such as exams and other assessment forms. Furthermore, its predictive power was lower in comparison with the other adaptative strategies mentioned above about the relation with SE.

Refocus on Planning was the only strategy that remained a predictor of SE (i.e., for both the total score and the three dimensions) for all age groups, suggesting that it is a relevant strategy over and above the Acceptance, Putting into Perspective, Positive Reappraisal and Positive Refocussing ERSs that were introduced in the regression model. Acceptance showed that it has some influence but only in the 10-12 age-group (observed in SE total score, behavioural and cognitive engagement), whereas Positive Refocussing and Putting into Perspective showed some influence only with the 13-15 and 16-18 age-groups, respectively. This finding allows us to distinguish the two strategies that seem to have more impact on SE for all ages and reveal age-specificities that should be taken into account in educational programmes that aim to foster school belonging.

A detailed analysis of the meaning of the two most powerful ERSs in SE showed that Refocus on Planning involves problem-solving: the act of thinking about the steps required to manage the stressful event, emphasises problem-solving skills, self-determination and requires knowledge about personal qualities that will help in stressful events. Positive Reappraisal is related to reframing the event by attributing a positive meaning to it, which requires the capacity to focus on positive aspects and move to a more positive mindset, which will probably lead to an increase in motivational strength. Both strategies, besides their association with

mental health (Schäfer et al., 2017), include competencies that are known to be relevant for educational progression and resilience (Troy & Mauss, 2011).

This study has some limitations that need to be taken into consideration. First, the cross-sectional design does not allow us to infer causality from the pattern of relations. Second, equal distribution between gender and age-groups were not attained. In most schools, computers were not accessible, requiring a larger number of participants to use paper, making it harder to control for age and gender proportion. Though, given the representativeness of the sample, we believe that the uneven gender composition did not bias the findings. Also, only for the oldest group (19-25), less gender equivalence was observed (66.1% were females). Third, we did not question participants about pubertal maturation. This factor should be included in future analysis, since previous research had found that gender differences in depression disappeared when pubertal maturation level was considered (Susman & Rogol, 2013). Finally, even though the sample is diverse (i.e., rural and urban areas, mainland and islands, different educational paths) and we made an effort to have a representative and stratified (not proportional) sample, we did not identify each case by such variables, thus limiting the possibility to analyse their impact on the results obtained. Therefore, it would be relevant for future studies to acknowledge the mentioned variables.

Despite these limitations, this study has contributed to understanding ERSs and SE development during adolescence and their relationship. The present study aimed to have participants of different ages, levels, and types of education in order to strengthen the variability of perspectives in our sample. Our findings regarding ERSs and SE trajectories support the need to include SEL universal school-based programmes throughout all youth: compulsory education and university. By promoting SEL, which includes ER, schools and universities can enhance education equity among those at a significant disadvantage, for example, disengaged students who tend to be male. Many studies, including ours, show that males 13 and older demonstrate lower values of SE (e.g., Amir et al., 2014; Hartono et al., 2019) and thus are at risk of becoming disengaged. Additionally, those in vulnerable social and economic situations (e.g., migrants and refugees) are also at risk of disengagement (Ungar et al., 2019).

We have shown that in all age groups, Positive Reappraisal and Refocus on Planning seem to have a relevant impact on SE. Positive Reappraisal can be promoted by giving students opportunities to understand the difference between positive or negative thinking styles through group discussion, presentation of real-life cases, fictionalised stories or role-play. Also, it may be essential to teach students to become aware of the positive unplanned situations that happen

to them, or to help them to become aware of skills they learned in difficult situations but that are useful to them, as well as strategies to increase gratitude (e.g., the gratitude diary). To become more prone to Refocus on Planning, students need to be aware of the problem-solving steps and effective planning. Also, activities to support students to get to know themselves better can help, such as naming their qualities and resources beneficial to them in challenging learning situations.

This study provides new evidence on the predictive power of specific ERSs (i.e., Refocus on Planning and Positive Reappraisal) on SE during adolescence using a representative sample, thus refining the knowledge of ER and SE. These findings also support the need for universal SEL programmes in academic settings because students with better emotional regulation strategies are more engaged, and in turn tend to have better educational results (for more details, see Greenberg et al., 2017). Through the promotion of competencies and giving students access to experiences of power and control (Ungar et al., 2019), schools can diminish student boredom and dissatisfaction, feelings which are related to pupil disengagement (Fredricks et al., 2016). Furthermore, the acquisition of ERSs in adolescence fosters resilience (Troy & Mauss, 2011). For adolescents, ER allows them to remain focused, regulate distractions and maintain engagement (Morrish et al., 2018). Schools and universities are critical locations for promoting SEL, as they also allow the development of other adaptive competencies within a universal democratic perspective (Greenberg et al., 2017). An educational setting is not only a social institution that provides academic knowledge, but a singular and relevant protective space against risk trajectories.

6. References

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CHAPTER V

Truancy: The Relevance of Resilience Internal Assets, Student Engagement and School Success Perception in Youth living with Parents and in Residential Care

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[44] According with the journal guidelines, this chapter is in American English.

Abstract

School absenteeism is associated with multiple negative short and long-term impacts, such as school grade retention and mental health difficulties. The present study aimed to understand the role of resilience-related internal assets, student engagement, and perception of school success as protective factors for truancy. Additionally, we investigated whether there were differences in these variables between students living in residential care and students living with their parents. This study included 118 participants aged 11 to 23 years old (M = 17.16, SE = 0.26). The majority were female (n = 61, 51.7%) and Portuguese (n = 98, 83.1%), with half living in residential care. In this cross-sectional study, participants responded to self-report questionnaires. Hierarchical regression analysis was used to understand the factors associated with truancy. There were no group differences in resilience-related internal assets and their perception of school success. On the contrary, participants in residential care reported more unexcused school absences, more grade retentions, higher levels of depression, and lower levels of student engagement. Moreover, hierarchical linear regression controlling for key variables (i.e., living in residential care or with parents, school grade retention, and depression) showed that perception of school success and resilience-related internal assets significantly contributed to truancy. Results are discussed in the context of universal and selective interventions. These interventions can foster individual strengths and provide opportunities for every student to experience success. Consequently, they promote engagement and reduce the likelihood of school absences, especially for those in more vulnerable situations such as youth in residential care.

Keywords: foster care, student engagement, social and emotional competencies, school absenteeism, youth.

1. Introduction

School absenteeism is often seen as a lack of regular attendance during compulsory education. It leads to multiple negative short and long-term impacts on young people's lives, which follow through to adulthood (Kearney et al., 2019). A topic of interest in recent decades, the literature has shown that school absenteeism can have severe impacts academically, such as reduced educational performance and fewer literacy skills, school grade retention, and dropping out of school (Cabus & De Witte, 2015; Gottfried, 2014; Smerillo et al., 2018). A study using a Bayesian duration model showed that the risk of truants leaving school before finishing their compulsory education was 37.4% higher than their peers who attend school regularly (Cabus & De Witte, 2015). Regarding health, school absenteeism is associated with increased risk-taking behaviors (Eaton et al., 2008), somatic symptomatology, and mental health problems (Gonzálvez et al., 2018), together with the consequences in emotional and social domains (e.g., Gottfried, 2014; Kearney, 2016; Maynard et al., 2012; Santibañez & Guarino, 2021). From the U.S. Department of Education's (2019) perspective, school absenteeism can be considered a public health problem and a concealed educational crisis. Moreover, a meta-analysis concluded that truancy was associated with high levels of depression, meaning poor school attendance may indicate depression (Finning et al., 2019).

Truancy, one of the oldest terms for school attendance problems, generally refers to illegal or unexcused school absenteeism (Kearney et al., 2019) and is perceived as an active behavior of school disengagement (Keppens & Spruyt, 2020). Furthermore, students in vulnerable social and economic situations are at higher risk of disengagement (Ungar et al., 2019), including young people in residential care. Known for their difficulties in following a regular educational course, considering the interruptions, deviations, or restarts that their life may suffer (Erdei & Kovács, 2020), they also are more vulnerable and prone to poor mental health when compared with the general population (Lou et al., 2018). Furthermore, youth who live in residential care experience a greater risk of failure and dropping out of school from an early age (Garcia-Molsosa et al., 2021). Although a meta-analysis also reported that children in residential care with higher levels of resilience had better developmental outcomes (Lou et al., 2018).

1.1. Social and Emotional Competencies, Resilience and Engagement

The Collaborative for Academic, Social, and Emotional Learning (CASEL) framework addresses five interconnected areas of social and emotional competencies that are developed and should be promoted throughout life, namely self-awareness, self-management, social

awareness, relationship skills, and responsible decision-making (Greenberg et al., 2017). Research in this area maintains that social and emotional learning (SEL) should be set as a public health approach in education since, in the short term, there are benefits such as augmented school performance, improved self-confidence, and diminished problem behaviors (Greenberg et al., 2017). A meta-analysis of follow-up effects showed that participants in SEL programs report higher overall well-being, social and emotional competencies and attitudes compared with control groups, thus concluding that SEL promotes positive youth development (Taylor et al., 2017). Moreover, a recent cross-cultural study showed that social and emotional competencies are associated with student engagement despite cross-cultural variables (Santos et al., 2022). Grounded in the CASEL framework and given the heightened risk children in residential care homes face, our study also aligns with the integrative and conceptual model for healthy development proposed by Kia-Keating and colleagues (2011). The authors proposed a model of healthy and positive development for adolescents based, on one hand, on resilience and, on the other hand, on the positive development approach. In the resilience approach, which presupposes some form of risk exposure, the author advocates for a path of protection, of overcoming vulnerability, as well as overcoming adversity. In the perspective of positive youth development, the focus is placed on promotion, specifically the promotion of resources leading to positive development. In either of these approaches (i.e., the promoting and protecting pathway), healthy development requires the growth of internal resources (i.e., social and emotional competencies) and a positive relation with school/education that can support young people and enable competence building. The model also underlines the need for students to develop their self-efficacy, motivation, and sense of academic success within the developmental domains selected from the areas targeted in successful school-based programs (i.e., social, emotional, physiological and educational domains). Moreover, this model focuses on the protection pathway (despite promotion) to highlight the need to mediate or buffer risk factors. Based on this framework, the present research focuses on young people living in residential care and therefore exposed to more risk factors, and on those with a more protective environment, such as young people living with their parents.

Resilience can be seen as the individual ability to successfully adapt and persevere in the face of significant challenges and stressors that threaten functioning or future development (Masten & Barnes, 2018). During youth, resilience can be observable through different outcomes: positive social and emotional competencies; academic engagement behaviors, such as good academic performance; establishing and maintaining healthy relationships; feelings of well-being; and absence of internalization or externalization problems (Masten, 2011). It is

defined as a dynamic, interactive, multisystemic, and developmental process involving external and internal assets (Southwick et al., 2014; Ungar, 2018). Since internal assets interact as moderators of adverse life events on well-being (Simões et al., 2015), their presence is necessary for the resilience process to be successful. Internal resilience assets include, for example, cooperation and communication, empathy, problem-solving, self-efficacy, self-awareness, and goals and aspirations (Hanson & Kim, 2007). Developing competencies associated with resilience means not only overcoming adversity but, more broadly, reflects one's capacity to develop sufficient self-efficacy to problem solve, think creatively and purposefully, and develop trusting relationships with a sense of moral connectedness (Padesky & Mooney, 2012). Children with adverse childhood experiences have lower rates of SE, though those who show higher scores in resilience also report higher engagement (Bethell et al., 2014).

Student engagement (SE) is a broad concept that explains students' commitment, interaction, and connectedness with academic coursework, curriculum, and activities that support learning and achievement (Wang & Hofkens, 2020). SE is not only related to better school trajectories and outcomes (Lei et al., 2018; Virtanen et al., 2018), but it is also associated with well-being (Pietarinen et al., 2014), life satisfaction (Santos et al., 2019), and better physical and psychological health (Salmela-Aro & Read, 2017).

Furthermore, higher resilience levels were found for those who reported higher levels of SE (Khawaja et al., 2017; Sevil-Gülen & Demir, 2021). This can be due to the fact that SE is associated with a decrease in the likelihood of academic dropout (Fredricks, 2015) and that students with high SE also tend to express less involvement in disruptive behaviors, such as truancy (Virtanen et al., 2018) or delinquent behaviors (Kulig et al., 2019). Moreover, for at-risk youth, higher levels of SE seem to be even more relevant (Ungar et al., 2014). For instance, the school can offer a space and time of protection from peer, family, and community risk factors (Fredricks et al., 2004). The school can also provide experiences that might contribute to the development of hope, self-regulation, self-efficacy (Dixson & Stevens, 2018) and positive relationships with peers and teachers (Ungar et al., 2014; Virtanen et al., 2018), which are associated with SE.

Finally, in this study, we wish to draw attention to an aspect that has been almost ignored in the literature: perception of school success (PSS). PSS is a subjective indicator of general school performance (Soetan, 2020) and is positively associated with self-efficacy and engagement (Guntern et al., 2017; Santos et al., 2019), with students who have high academic performance usually appraising themselves as successful (Soetan, 2020). PSS can be considered a protective factor. A study has found that students who report higher PSS also

report a higher quality of life and school satisfaction and lower school-related stress (i.e., homework, the perception of high and complex workload and parental pressure for good grades (Santos et al., 2019).

The Health Behaviour School-Aged Children (HBSC) study, which included 220,000 adolescents (11, 13, and 15 years old) from 45 countries/regions, showed that between 2014 and 2018, in around a third of the countries/regions, school satisfaction decreased over time (Inchley et al., 2020). Moreover, data from the HBSC in 2018 showed that Portuguese students' school satisfaction level was below the European medium score (Matos et al., 2018).

Additionally, data from two different studies with representative adolescent Portuguese samples showed that high school students reported lower levels of school satisfaction, PSS (Santos et al., 2019) and SE (Santos et al., 2021) than middle school students, suggesting a decreasing tendency across school years.

Although research regarding SE and resilience with youth in foster care has increased, literature on those in residential care is still scarce. A study that compared types of alternative care showed that young people in residential care suffered more interpersonal trauma and had higher emotional and behavioral needs and risk behaviors than those in foster homes (Sim et al., 2016), which reinforces the need for research and reflection upon young people in residential care.

1.2. The Present Study

Truancy is highly associated with adverse health, social, and economic outcomes throughout youth and adulthood. Even though resilience-related internal assets have been shown to protect against risk factors and increase SE and PSS, there is little previous research into resilience and school outcomes in children in residential care. It is highly needed, since they are more prone to being less engaged with school and more likely to experience worst school outcomes.

Based on previous knowledge, we hypothesized that participants living with parents will experience less grade retention, truancy, and depression symptoms and will report higher scores of SE, PSS, and resilience than their peers in residential care. We also hypothesized that SE, PSS, and resilience will be negatively associated with truancy, while grade retention and depression symptoms will be positively associated with truancy. Finally, we will explore the association of SE, PSS, and resilience with truancy.

2. Method

2.1. Participants

A sample of 64 participants was collected at foster care homes. However, five participants were removed due to missing values above 50% on each scale (as recommended by Hair et al., 2014). The final sample combined 59 participants living in institutional care and a comparable subsample of 59 participants living with their parents. The equivalence was established regarding the geographical area, age, and gender. Though, when age was unavailable and school year and grade retention were, these were used to get a suitable comparable participant for the comparative sample. The comparison sample was retrieved from a representative sample of Portuguese students published elsewhere (Santos et al., 2021). The two samples were collected during the same period and belong to a larger research project about the analysis of student engagement and social and emotional competencies in youth in Portugal.

The total sample included 118 participants, aged 11-23 years (M = 17.16, SE = 0.26), the majority being female (n = 61, 51.7%) and Portuguese (n = 98, 83.1%), and all were attending Portuguese public schools or universities. Demographic characteristics of the total sample and groups' differences can be found in table 10.

Table 10. *Demographic Characteristics of the Total Sample and for the Groups*

Variable	Total sample		Group: RC		Group: LP		χ^2	p
	N	%	*n*	%	*n*	%		
Gender							3.18	.204
Women	61	51.7	30	51.7	31	52.5		
Men	53	44.9	25	43.1	28	47.5		
Portuguese nationality	98	83.1	44	88.0	54	91.5	7.33	.502
School level							4.29	.232
Late primary (5th and 6th)	11	9.3	7	6.9	4	6.9		
Middle school (7th to 9th)	39	33.1	23	41.1	16	27.6		
High school (10th to 12th)	54	45.8	22	39.3	32	55.2		
University (undergraduates)	10	8.5	4	7.1	6	10.3		
	M	*SE*	*M*	*SE*	*M*	*SE*	*t*	*p*
Age	17.16	0.26	17.35	0.37	17.00	0.37	-0.66	.507
Truancy	0.44	0.06	0.65	0.10	0.24	0.07	-3.58	< .001
School grade retention	1.19	0.11	1.71	.16	0.68	0.14	-4.92	< .001
Depression	8.20	0.50	9.67	0.80	6.73	0.55	-3.02	.003
Student engagement	3.26	0.06	3.12	0.09	3.40	0.06	2.7	.007
Perception of school success	2.68	0.06	2.73	0.10	2.63	0.08	-.81	.417
Resilience internal assets	3.10	0.04	3.05	0.06	3.14	0.05	1.19	.236

Note. RC = Residential care; LP = Living with parents, M = Mean, SE = Standard Error

2.2. Measures

Sociodemographic data comprised age, gender, academic year, nationality, truancy (unexcused school absences, answers could be "never" (0), "sometimes" (1), or "yes, frequently" (2)), and school retention (i.e., the number of school grade retentions until that moment, answers could go from "never" (0) to "4 times or more" (4)).

PSS was assessed through a single item asking participants to indicate their school success ("How successful do you find yourself in school/college?") on a 4-point scale ranging from 1 ("I think I'm a student without any success") to 4 ("I think I'm a very successful student"). This item has been used in previous studies using the HBSC protocol (Matos et al., 2018; Santos et al., 2019).

Depressive symptoms were assessed with the Patient Health Questionnaire 9-item scale (PHQ-9; Ferreira et al., 2018; Kroenke et al., 2001). PHQ-9 includes nine items, using a 4-point scale, ranging from 0 (never) to 3 (nearly every day), and scores ranging between 0-27. Internal consistency was good (α = .82, 95% CI [.77, .86]).

Resilience-related internal assets were measured with the internal resources subscale of the Healthy Kids Resilience Assessment Module (HKRAM; Constantine & Benard, 2001; Martins, 2005). This subscale has 18 items related to six domains, with three items each: empathy, communication, self-awareness, achievement motivation, problem-solving, and self-efficacy, which are the positive developmental outcomes of asset-rich environments. All were answered on a 5-point scale, ranging from 1 (Never) to 5 (Always). Higher values represent higher resilience-related internal assets. Good internal consistency was obtained (α = .83, 95% CI [.79, .87]).

SE was measured through the Student Engagement Scale developed from an international study with 12 countries (Lam et al., 2014). SES has 33 items related to affective (nine items; e.g., "I am very interested in learning."), behavioral (12 items; e.g., "When I'm in class, I participate in class activities."), and cognitive engagement (12 items; e.g., "I try to understand how the things I learn in school fit together with each other."), all answered on a 5-point scale, ranging from 1 (Strongly disagree/Always) to 5 (Strongly agree/Never). Higher scores reflect higher SE (Lam et al., 2014). Good internal consistency was obtained (α = .93, 95% CI [.91, .95]).

2.3. Procedure

The ISCTE-University Institute of Lisbon Ethics Committee (ref. 17/2019) approved all procedures. A list of the residential care homes for young people in the metropolitan region of Lisbon was made. Then, the principal investigator (PI) made initial contact with the residential care homes via email and, when necessary, followed up via telephone a week later. The nine institutions that were willing to participate were invited to a meeting (face-to-face or phone call) to explain the study and the exclusion criteria (i.e., children under ten years old and those with cognitive difficulties that could compromise the questionnaire understanding were excluded). Data collection with participants living with parents was performed at schools. The procedure was similar since the PI made initial contact with the schools via email and telephone, and followed up every two weeks. After an agreement, the PI and the directory boards had a meeting, randomized the classes, and scheduled the data collection. The survey was also distributed through social networks to reach university students. In total, data was collected in person and online at one university, three public school groups, and four residential care facilities. Data from participants under 18 years old was only collected in the presence of the PI (either at schools or residential care homes), who would give verbal instructions on how to complete the survey, answer any question, and offer to read the instructions and questions aloud to minimize potential differences in reading proficiency levels. Informed consent was obtained from all participants and parents or legal custodians of those under 18 years old. For ethical purposes, the school directors kept the physically signed consent forms in safe-deposit boxes. The data collection took place between April and December 2019, with the questionnaire taking about 15 to 25 minutes to complete.

2.4. Data Analysis

Data analyses were performed with IBM SPSS Statistics (Version 26.0). The percentage of missing values across the 68 variables varied between 0.8% and 7.5%. In total, 19 out of 120 cases (15.83%) were incomplete. Sociodemographic data, such as age, gender, school year, and nationality, were not imputed, considering that these are concepts themselves and not part of a concept (Lodder, 2014). These variables would only serve to characterize our sample and not to include in the regression analysis, although they were used in the imputation model as predictors. The multiple imputation method (MI) was used for the other variables since it is described as the preferred missing data handling technique (Graham, 2009). We used MI to create and analyze five multiply imputed datasets. Incomplete variables were imputed under fully conditional specification (Markov chain Monte Carlo method), with ten iterations

maximum for each imputation as recommended (Reiter & Raghunathan, 2007). Results from the five datasets were pooled.

All variables were checked for data inaccuracy. Statistical assumptions for all statistical tests were verified to ensure no violation. The significance level was set at $p < .05$. Confidence intervals for reliability were calculated with intraclass correlation coefficient as Baumgartner & Chung (2001) suggested. T-tests for independent samples were used to analyze the differences between the groups (i.e., youth living with parents and in a residential care home). Bivariate Pearson linear correlations were computed to analyze the associations between the variables for the total sample and between groups. Hierarchical multiple linear regression (HMLR) analysis was used to understand the role of resilience-related internal assets, SE, and PSS in truancy while controlling for living in a residential care home or with their parents, school grade retention, and depression. The effect size for multiple regression was calculated and interpreted according to Cohen's (1988) guidelines, $f^2 \geq 0.02$, $f^2 \geq 0.15$, and $f^2 \geq 0.35$ represent small, medium, and large effect sizes, respectively.

3. Results

As shown in Table 10, groups did not differ on sociodemographic variables, showing their equivalence. Additionally, no differences between groups were found regarding PSS and resilience internal assets ($p > .05$), with participants reporting levels slightly above the mean (Min-Max = 1-4, $M = 2.68$, $SE = 0.06$) for PSS and mild levels (Min-Max = 1-5, $M = 3.10$, $SE = 0.04$) for resilience. On the contrary, our results show differences in the other outcomes, meaning that participants living in residential care reported more unexcused school absences, more school grade retentions, higher levels of depression, and lower SE (ps <. 01). To note that overall engagement and depression scores are mild.

The analysis of the pooled correlation results between all variables across both groups can be found in the Supplementary Table I (see Appendix). As expected, and despite the weak to moderate values, truancy showed a positive association with grade retention ($r = .34$, $p < .01$) and depression ($r = .29$, $p < .01$), with grade retention also being positively associated with depression ($r = .21$, $p < .05$). These associations mean that students that have experienced school retention more often, as well as reporting more symptoms of depression were also more prone to skipping school.

In contrast, truancy was negatively associated with PSS (r = -.33, p < .01), resilience internal assets (r = -.32, p < .01), and SE (r = -.27 p < .01). Likewise, depression showed negative weak associations with resilience (r = -.28, p < .01) and SE (r = -.21, p < .05), and grade retention showed negative weak associations with resilience (r = -.20, p < .05), PSS (r = -.20, p < .05) and SE (r = -.16, p < .05). This means that students with higher engagement, resilience and perception of success are more likely to attend classes, not fail school grades or experience depression symptoms. Moreover, SE showed a moderate positive association both with resilience internal assets (r = .37, p < .01) and PSS (r = .36, p < .01). Resilience and PSS were also positively associated (r = .22, p < .05), meaning that students with higher internal resources and a positive perception of their school success tend to be more academically engaged.

An analysis of the correlations by group (see Table 11) shows differences in some relations that must be reported. For instance, moderate positive associations between truancy and grade retention (r = .34, p < .01), truancy and depression (r = .43, p < .01) and negative association between PSS and depression (r = -.43, p < .01) are only present in the group of students that live with parents. On the contrary, there is only a moderate negative association between truancy and PSS (r = -.44, p < .01) and a positive moderate association between resilience-related internal assets and SE (r = .42, p < .01) in the group of students living in residential care.

Despite the association between PSS and SE being significant in both groups, there was a moderate association in those living in residential care (r = .47, p <.01) and a weak association for those living with parents (r = .28, p <.01), meaning that PSS might be more associated with SE for those in residential care.

Table 11. *Pearson correlations as Function of with whom the Participants live (parents or in residential care).*

Variables	1	2	3	4	5	6
1. Truancy	-	**.34****	**.43****	-.14	-.26	**-.37****
2. School grade retention	.19	-	-.00	-.01	**-.26***	-.28*
3. Depression	.13	.18	-	-.10	**-.43****	-.23
4. Student engagement	-.25	-.10	-.18	-	**.28***	.24
5. Perception of school success	**-.44****	**-.26***	-.08	**.47****	-	.15
6. Resilience internal assets	**-.27***	-.10	**-.28***	**.42****	**.28***	-

Note. Correlations for participants living with both parents are presented above the diagonal and correlations for participants living in residential care are presented below the diagonal; ** $p < .05$, *** $p < .01$.

3.1. Truancy

Hierarchical multiple linear regression analysis was run with truancy as the dependent variable. Living in a residential care home or with parents and school grade retention was entered as the first set of variables focusing on demographics. Depression symptoms were included in Step 2, and finally, resilience-related internal assets, SE, and PSS were included in Step 3.

At Step 1, the demographic variables accounted for 15% of the variance, with both variables making a significant contribution ($R^2 = .15$, $F(2, 115) = 10.49$, $p < .001$). Students who live in residential care ($\beta = 0.21$, $p < .05$) and have failed school previously ($\beta = 0.26$, p < .01) are more prone to truancy. Beyond the variance explained at Step 1, school grade retention ($\beta = 0.24$, p < .05) and depression ($\beta = 0.20$, $p < .05$), made a significant contribution to this model, explaining 18% of the variance in average at Step 2 ($R^2 = .19$, $F(3, 114) = 8.88$, $p < .001$). At step 3, the model increased the explained variance of truancy to 29% ($R^2 = .29$, $F(6, 111) = 7.74$, $p < .001$), with PSS (-.25, $p < .01$) and resilience internal assets (-.18, $p < .01$) making a significant contribution to this model, with a medium effect size. SE was not significant, despite being significantly associated at the bivariate level. Living in residential care also remained significant through this final step, while school grade retention and depression symptoms did not (see Table 12).

Table 12. *Hierarchical Regression Analysis predicting Truancy.*

	Regression 1			Regression 2			Regression 3		
	B	SE	β	B	SE	β	B	SE	β
Living in residential care	0.27	0.12	.21*	0.22	0.12	.16	0.30	0.13	.22*
School grade retention	0.14	0.05	.26**	0.13	0.05	.24*	0.08	0.05	.14
Depression symptoms				0.02	0.01	.20*	0.01	0.01	.10
Student engagement							-0.02	0.10	-.02
Perception of school success							-0.24	0.09	-.25**
Resilience internal assets							-0.29	0.15	-.18*
R^2		.15			.19			.29	
Adjusted R^2		.14			.17			.25	
F		10.49***			8.88***			7.64***	
Cohen's f^2		18			23			29	

Note. n = 118, * p < .05, ** p < .01, ***p < .001, Living in residential care: 0 = with parents; 1= residential care home.

4. Discussion

The present study examined the relevance of resilience-related internal assets, student engagement (SE), and perception of school success (PSS) in young student's school trajectories and their association with truancy among those living in residential care or with their parents.

Overall, results indicated that truancy was positively associated with school grade retention and depression and negatively associated with SE, PSS, and resilience internal assets. These results are in accordance with our hypothesis since participants living in residential care reported more unexcused school absenteeism or truancy, more grade retention, higher depression, and lower SE. Previous studies have also shown the negative impact of school absenteeism, including an increase in students' likelihood of year retention (e.g., Cabus & De Witte, 2015; Gottfried, 2014; Smerillo et al., 2018) and a lowering of their SE (Keppens & Spruyt, 2020). For young people living with parents, moderate positive associations were also found between depression and truancy, and negative associations between depression and PSS. The association between truancy and depression is frequently reported in the literature, which presents depression as a significant risk factor for truancy (e.g., Askeland et al., 2020; Finning et al., 2019; Gonzálvez et al., 2018). In this sense, educational agents must be aware of this phenomenon, considering that missing classes can also be an explicit behavior that reveals emotional suffering.

In the comparative analysis between groups of young people living with parents and in residential homes, moderate positive associations were observed between truancy and school grade retention in the group living with parents. In contrast, among students living in residential care, there was a non-significant association, meaning that for these students, truancy might be better explained by other variables. Our model suggested that students living in residential care are less likely to skip classes when they perceive themselves as successful students. Based on a meta-analytic review by Gubbels et al. (2019), a negative attitude towards school emerged as the most relevant factor for school absenteeism, and a negative attitude might be increased when students feel low self-efficacy, thus feeling not successful. The same meta-analysis also stated other relevant risk factors of school absenteeism, such as reduced parent-school engagement, substance abuse, and internalizing and externalizing problems. These factors are more likely to be experienced by young people living in residential care.

Additionally, another study pointed out that foster caregivers' involvement with the school was associated with student cognitive engagement (i.e. students' motivation, implication, and effort towards academic activities). However, it was not associated with the

students' future expectations or the quality of relationships at school (Mihalec-Adkins et al., 2020). Therefore, it is important for students to build a solid and positive relationship with education as they grow. Furthermore, a positive view of school must be modeled and mediated by their principal caregivers since students who are engaged and see value in their education are less likely to experience truancy (Gentle-Genitty, 2009).

It must be highlighted that a moderate positive association was found between resilience internal assets and engagement in young people living in residential care settings. This correlation is in line with a systematic literature review of resilience and resilience factors in children living in residential care that revealed the impact of resilience on SE (Lou et al., 2018). Moreover, a literature review regarding interventions to prevent truancy concluded that truant students could benefit the most from interventions related to the SE perspective (Keppens & Spruyt, 2020). Because SE is related to continuing one's education beyond compulsory school (Wang & Eccles, 2012), it is especially relevant for those in residential homes, who are more prone to have minor academic qualifications than their peers (Erdei & Kovács, 2020; Garcia-Molsosa et al., 2021). A factor that must give hope to all professionals working with vulnerable children and youth is that research has pointed out that both engagement (Fredricks et al., 2016) and social and emotional competencies are amenable to change (e.g., Greenberg et al., 2017; Taylor et al., 2017).

Our results also showed that students who perceive themselves as successful students and score higher in resilience assets are more engaged with school and learning and are less likely to miss school. According to our results, this is especially relevant for those in residential care. It is, therefore, very important to work with vulnerable youth to increase their PSS along with social and emotional competencies, namely self-awareness and self-management. Moreover, a study with first-year university students showed that perceived academic success was related to prior academic achievement and satisfaction with what is being taught, study time, and the approach to learning (Valadas et al., 2017). In this regard, residential care homes should have places dedicated to studying and staff to guide them in their learning methods, study approaches, and school motivations. Empowering vulnerable youth must occur through healthy relationships with adults who know their strengths, foster their social and emotional skills, and help them flourish. Research also shows that services for at-risk youth, such as welfare, education or mental health support that use a positive strengths development model are associated with resilience increase (Sanders et al., 2015).

In regard to schools, we have considered the Sir Ken Robinson perspective (Robinson & Aronica, 2016), known for defending the need for school's transformation, namely as a space

for creative exploration so that everyone can create and succeed. Based on their perspective, we propose that educational institutions provide students with opportunities to develop their full potential. Schools and universities can be involved by fostering healthy relationships between peers and between teachers and students, as well as supporting collaborative learning projects based on students' inner motivations and capacities. If educational institutions use this model of action, coupled with the assumption that all areas of study are equally relevant, more students might have more opportunities to experience the success that is valued by their community. Consequently, there is the potential for SE to be maintained or increased. And with these transformations, we will be closer to affirming that no child is left behind.

Since resilience is a dynamic, interactive, and multisystemic process, both external and internal assets must be enhanced (Southwick et al., 2014; Ungar, 2018). Universal school-based SEL programs can affect not only the individual but the surrounding systems, namely the class, school, and community climate, reinforcing positive relationships that can support those in more vulnerable conditions (Greenberg et al., 2017). Moreover, selective interventions should be considered, taking children and youth in residential care into account, since they are at a higher risk exposure. These selective interventions consist of specialized programs that might offer conceptual models that are more adjusted to their needs, as well as being implemented with higher intensity and focus compared to universal interventions (Greenberg et al., 2017).

Before concluding, some limitations must be taken into consideration. Firstly, the cross-sectional study format limits the possibility of understanding directions of influence. Second, PSS relied on a single-item response. Third, our sample is reduced, which obliges us to be cautious when making assumptions about the observed results. We have invited all residential youth care homes in the Lisbon Metropolitan area, though few were responsive. Besides rejection or absence of answers, some potential youngsters had learning difficulties that could influence their understanding of the questionnaire and were also excluded, thus reducing the number of participants per home and our sample overall. Finally, the reduced number of institutions involved might introduce a potential bias in our sample. Thus, future studies should replicate our findings with a larger and more diverse sample.

Our study highlights the role of resilience-related internal assets, PSS, and SE as being associated with fewer instances of truancy. Our results also reinforce the need to adopt different methods and strategies to promote positive development in youth, depending on the context in which students live. In conclusion, if we focus on the integrative and conceptual model of healthy and positive adolescent development (Kia-Keating et al., 2011), we think that young people living in residential support could benefit from a resilience-based approach, and the

group living with their parents from a promotion-based approach. Both groups could benefit from universal school-based promotion and prevention SEL programs, enhancing each person's most positive inner resources and creating opportunities for each student to experience a successful academic path. This will ultimately lead to an increase in SE and, consequently, a decrease in truancy.

5. References

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CHAPTER VI

Social and Emotional Competencies as Predictors of Student Engagement in Youth: A Cross-Cultural Multilevel Study

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Abstract

Student engagement research in university students has been scarce, despite its major positive role on performance, degree completion and mental health. Social and emotional competencies, which are currently called 21st-century skills, exert some impact on student engagement in youth. Since engagement is cultural-sensitive, individual (social and emotional competencies) and cross-cultural (human developmental index and unemployment rate) characteristics were examined in association with student engagement in youth. This study included 2,092 participants from nine countries/regions, aged between 17 and 27 years (M = 21.52, SD = 2.27), mostly self-identified women (n = 1,035, 68.7%) and undergraduate (n = 1,401, 96.2%). Data were collected using a cross-sectional online survey that included the Student Engagement Scale, the Emotional Skills and Competence Questionnaire, and the prosocial behaviour/resources subscale of the Strengths and Difficulties Questionnaire. Multilevel models showed that social and emotional competencies were relevant predictors of student engagement independently of the country-level variables. Moreover, student engagement varied with country/region human development and unemployment rate, with students from higher developed countries/regions and lowered unemployment reporting lower engagement. This study reinforces the need to implement evidence-based social and emotional learning programmes in universities worldwide, as well as public policies that can influence engagement and protect youth.

Keywords: Cross-cultural, emotional competence, social skills, student engagement, youth.

1. Introduction

Student engagement (SE) is understood as one of the most important predictors of academic success. SE is a broad concept that depicts students' commitment, motivation, interaction, and involvement with the educative institution and learning activities (Fredricks et al., 2016). In educational research, SE has been conceptualised as a multidimensional construct (Appleton et al., 2008) with three dimensions – emotional/affective, behavioural, and cognitive (Fredricks et al., 2004; Furlong & Rebelez-Ernst, 2013). Studies using samples of college students have found positive associations between SE and academic achievement (Carini et al., 2006; Gunuc, 2014), school persistence (Kuh et al., 2008), academic satisfaction (Merhi et al., 2018), college completion (Price & Tovar, 2014), physical and psychological well-being (Salmela-Aro & Read, 2017; Schaufeli et al., 2002). In the present study, the association of SE with social and emotional competencies (SECs) from a cross-cultural perspective will be investigated.

The present study is aligned with the Collaborative for Academic, Social, and Emotional Learning (CASEL) framework, considering both the student level (i.e., SECs) and the higher level of interactions, including country practices and policies (Borowski, 2019; Weissberg et al., 2015). Social and emotional learning (SEL) can be perceived as the process of assets development, which includes the competencies to understand and manage emotions, establish and achievement of positive goals, display caring and concern for others, establish and maintain positive relationships, and make responsible decisions (Domitrovich et al., 2017; Shek et al., 2019; Taylor et al., 2017).

Studies addressing SEL have shown its positive association and impact on students' engagement (Greenberg et al., 2017), connectedness, and sense of belonging (Taylor et al., 2017). Even though SEL focuses primarily on psychosocial competencies, this model is currently interpreted as a general model of positive youth development applicable throughout contexts and developmental stages (Shek et al., 2019; Tolan et al., 2016). SECs, in this study, are conceptualised as transactional assets, obtained by developing skills, acquired within a context- and through (formal and informal) cultural-related experiences with others (Lau & Wu, 2012; Mahoney et al., 2021; Saarni, 2011).

SECs can be distinguished into two domains: intrapersonal and interpersonal. Intrapersonal SECs are used for own healthy functioning, whereas interpersonal SECs are used for adequate interactions with others (Domitrovich et al., 2017). Research has shown that these core five interrelated emotional, behavioural and cognitive competencies (i.e. self-awareness,

self-management, social awareness, relationship skills, and responsible decision making) are essential resources in maintaining mental health (Domitrovich et al., 2017), and relevant predictors of well-being, academic performance (Brackett & Rivers, 2013), and college completion (Taylor et al., 2017).

The educational university setting is rich in human interactions and challenges. Thus, SECs are undoubtedly relevant to an adequate higher SE and academic achievement (Wang & Hofkens, 2020). Even though research in this area is vast and continues to grow, the majority of studies use samples of younger students, while less attention has been given to these relations in samples of university students. Prior studies have shown positive associations between: i) SE and self-awareness and responsible decision making, addressing self-efficacy and optimism, respectively (Martínez, Youssef-Morgan, et al., 2019; Merhi et al., 2018; Santos et al., 2019; Vîrgă et al., 2020); ii) between SE and self-management, through the analysis of self-regulation (Dixson & Stevens, 2018), emotion regulation (Santos et al., 2021) and emotional intelligence (Maguire et al., 2017; Urquijo & Extremera, 2017); and iii) between SE and social awareness and relationship skills (Adkins & Cooley, 2019; Padilla-Walker et al., 2012; Quimby et al., 2019; Tian et al., 2016).

Cross-cultural research on SECs has been building slowly in the last decade, although most work focuses on validity and measurement issues. Nevertheless, some studies have also contributed to examine some of the factors associated with SECs by comparing distinct countries and cultures to identify similarities and differences. For example, Demir et al. (2012) have shown that SECs are positively associated with happiness and friendship satisfaction among American and Malaysian college students. Another study reported the negative correlation between SECs and bullying involvement in secondary school students from Spain, Colombia and Ireland (Gómez-Ortiz et al., 2017). A recent survey on Social and Emotional Skills in adolescent students that was conducted in seven member countries of the Organisation for Economic Co-operation and Development (OCDE) (Colombia, Korea, Finland, United States, Turkey, Canada, Portugal) and two partner countries (Russian Federation; People's Republic of China) showed positive associations between SECs and school belonging, student-teacher relationships, and psychological well-being (OECD, 2021).

Another major gap in the literature is related to the fact that the studies are mainly focused on WEIRD (Western, Educated, Industrial, Rich, and Democratic) countries, lacking diversity in the information available.

To the best of our knowledge, social awareness and interpersonal skills were only studied in association with engagement in elementary and high school students. Thus, the present study

aims to add knowledge regarding prosocial behaviour and SE in a different age group. Also, the association between emotional competence and SE was mainly studied conceptualising engagement as a measure of absorption, vigour and dedication (Schaufeli et al., 2002) and not of affective, behavioural and cognitive engagement (Fredricks et al., 2004, 2016), which we will use in this study.

Since SE may vary as a function of sociocultural variables (Kahu, 2013), we will also address in this study the potential moderation of socioeconomic development (Human Development Index, HDI) and unemployment rate (country level variables) on the relation between SECs and SE. To the best of our knowledge, no other studies have analysed the role of these contextual variables on the association between SECs and SE. Moreover, one recent meta-analysis regarding student belonging and psychoemotional and behavioural outcomes, reported that conclusions on the moderator effect of the country were absent due to the lack of studies focused on these aspects (Korpershoek et al., 2020).

However, some SE differences between countries have been investigated with adolescent samples. The association between parental support and SE tend to be stronger in countries with high collectivism compared to those with high individualism, whereas no effects have been found for the HDI (Lam et al., 2016). To the best of our knowledge, no other studies have analysed the HDI's role on SE. Though, Tinsley and Spencer (2010) reported that high school students' educational expectations (how far students expect to go in school, a factor related to school engagement) were predicted by the student's belief in the availability of opportunities in their country, for both younger and older groups.

In this study, we will analyse the HDI role given that countries' human development is associated with access to education, namely with attending higher education (UNDP, 2019). The second country-level predictor to be analysed will be the unemployment rate. The perception of employability seems to be positively associated with students' engagement and negatively associated with perceived stress (Ma & Bennett, 2021). Decisions related to persisting into college completion, transfer (to another degree or university) or dropout generally include thoughts based on how much college students feel their degree will be valued by the job market and the likelihood of getting a job (Stuart et al., 2014). Popenici (2013) even points out that SE can serve as an important indicator of the interactions between the economic, social and cultural contexts in which education takes place, being sensitive to economic and educational political agendas, namely investment (or not) in the education sector and decreasing (or increasing) tuition fees, and youth employment state and related investment.

Based on the above-mentioned studies, we hypothesised that students with high emotional and social competencies would report higher engagement. Also, considering the mixed results presented and, in an attempt, to shed further light on these topics, we will investigate the predictive power of country socioeconomic development and unemployment rate on engagement. Moreover, we will investigate the moderator effect of country socioeconomic development and unemployment rate on the association between SECs and SE.

2. Method

2.1. Participants

The research coordinators (Portuguese team) invited several partners/researchers to participate in this project, using convenience and snowball sampling methods. An overview of the nine countries/regions and the number of participants per lab is provided in table 13. Each country/region targeted a final sample of at least 200 university students. Most countries/regions employed convenience samples of undergraduate students at their universities, and some also used social network dissemination. In total, we recruited 2,703 participants.

Cases were excluded (n = 611) if complete missing data was observed (n = 444) or if participants failed the attention check (n = 167; instructed-response item inserted in the middle of the emotion competence questions).

The final sample included 2,092 participants ranging from 17 to 27 years of age (M = 21.52, SD = 2.27), the majority being undergraduate students (n = 1,401, 96.2%), with 68.7% of the participants self-identified as cisgender women (n = 1,035), 30.4% self-identified as men (n = 458), 0.3% as other (n = 5), 0.5% prefer not to answer (n = 8).

Table 13. *Overview of Countries/Regions Involved and Sample Characteristics and Language*

	Participants	Questionnaire language	Age				Gender				Academic level	
			Min	Max	*M*	*SD*	CisM	CisW	Other	Rather not say	Undergraduates	Graduates
Total	2092 (100%)	Greek, English, Portuguese, Chinese	17	27	21.52	2.27	458 (30.4%)	1035 (68.7%)	5 (0.3%)	8 (0.5%)	1401 (96.2%)	56 (3.8%)
Angola	185 (8.8%)	Portuguese	18	27	22.5	2.09	79 (54.1%)	66 (45.2%)	0 (0%)	1 (0.7%)	136 (97.1%)	4 (2.9%)
Australia	120 (5.7%)	English	18	26	22.9	2.76	30 (27.8%)	78 (72.2%)	0 (0%)	0 (0%)	102 (97.1%)	3 (2.9%)
Brazil	272 (13.0%	Portuguese	17	27	21.6	2.26	55 (27.8%)	141 (71.2%)	2 (1.0%)	0 (0%)	180 (96.8%)	6 (3.2%)
Cape Verde	285 (9.8%)	Portuguese	19	27	22.8	2.07	76 (40.4%)	109 (58.0%)	0 (0%)	3 (1.6%)	174 (97.8%)	4 (2.2%)
Greece	258 (12.3%)	Greek	19	27	21.2	1.90	32 (19.8%)	127 (78.4%)	0 (0%)	3 (1.9%)	149 (92.5%)	12 (7.5%)
Malta	318 (15.2%)	English	18	26	20.3	1.71	31 (16.4%)	155 (82.0%)	3 (1.6%)	0 (0%)	181 (98.4%)	3 (1.6%)
Mozambique	205 (9.8%)	Portuguese	17	27	23.1	2.39	66 (56.9%)	50 (43.1%)	0 (0%)	0 (0%)	107 (100%)	0 (0%)
Portugal	221 (10.6%)	Portuguese	18	26	20.6	1.97	36 (16.7%)	178 (82.8%)	0 (0%)	1 (0.5%)	191 (89.7%)	22 (10.3%)
Taiwan	228 (10.9%)	Chinese	19	26	20.5	1.39	53 (28.8%)	131 (71.2%)	0 (0%)	0 (0%)	181 (98.9%)	2 (1.1%)

Note. Raw data without missing imputation. Min = Minimum, Max = Maximum, M = Mean, SD = Standard deviation, CisM = Cisgender men, CisW = Cisgender women.

2.2. Ethics

All labs received ethical approval from their university ethics committee or institutional review board (the documents can be found at https://osf.io/8z4rc/), except for Taiwan, which explicitly indicated that the study was exempted from IRB review according to the "Regulation of the Scope of Human Research Exempted from Review by the Ethics Committee" (Department of Health of Executive Yuan, 2012). The informed consent was given at the beginning of the survey, with mandatory acceptance required to proceed with the filling. Consent forms differed minimally across labs due to regional differences in requirements, though all were written in line with the principles of the Declaration of Helsinki. All data were stored on a local server at the University of Lisbon, and a summarised database can be shared upon reasonable explanation.

2.3. Procedure

Data were collected online (via Qualtrics software). The data collection took place between April 2019 and December 2020, with the questionnaire taking about 15 to 20 minutes to complete. Participants who answered the questionnaire after the COVID-19 pandemic were asked to rely on their academic experiences and feelings before the lockdown to decrease the potential effect of online teaching mode in SE.

2.4. Measures

This study is part of a large-scale project (https://osf.io/hqkgw/). Measures' means and standard deviations per country/region can be found in Table 14.

2.4.1. Student engagement

SE was assessed with the *Student Engagement Scale* (SES), developed from an international study with 12 countries (Lam et al., 2014). SES can be used as a single composite score or as three related dimensions: affective/emotional engagement (e.g., "I am very interested in learning."), behavioural engagement (e.g., "When I'm in class, I participate in class activities."), and cognitive engagement (e.g., "I try to understand how the things I learn in school fit together with each other."). The SES was answered on a 5-point scale, ranging from 1 (Strongly disagree/Always) to 5 (Strongly agree/Never), with higher scores reflecting higher student engagement (Lam et al., 2016). In this study, only 27 out of the 33 items were used (9, 6 and 12 items for the first, second and third dimensions, respectively), to address issues of measurement invariance (please see more details in the measurement invariance subsection).

The overall engagement measure showed adequate internal consistency (.86 - Mozambique < α < .93 - Australia).

2.4.2. Emotional Competence

Emotional competence, overall, includes identifying emotions and feelings in ourselves and others, adequate emotional expression and emotional regulation when dealing with negative emotions or challenging situations (Saarni, 1999). Emotional competence was measured with the Emotional Skills and Competence Questionnaire (ESCQ; Takšić et al., 2018). The ESCQ has three dimensions: The ability to perceive and understand emotion (e.g., "I can easily detect my friend's mood changes."), Ability to express and label emotion (e.g., "I can express how I feel."), and the ability to manage and regulate emotion (e.g., "I can maintain a good mood even if something bad happens."). However, it can also be used as a total score of global emotional competence. In this study, only 29 out of the 45 items were used (12, 9 and 8 items for the first, second and third dimensions, respectively), to address issues of measurement invariance (please see more details in the measurement invariance subsection). Responses to each item were given on a 6-point scale from 1 (never) to 6 (always). Global emotional competence showed good internal consistency (.70 - Brazil and Cape Verde < α < .92 - Australia, Greece and Malta).

2.4.3. Prosocial behaviour

In our study, we measured self-report prosocial behaviours with the subscale of prosocial behaviour/resources of the *Strengths and Difficulties Questionnaire* (SDQ; Goodman, 2001), which evaluates social awareness and relationship skills. Prosocial behaviour has been documented as the primary component of social competence, being crucial to positive social interactions (Padilla-Walker et al., 2015) and frequently used solely as a measure of social competence (Eisenberg et al., 2006), as in the present paper. Though, we are aware that social competence is a multidimensional construct that can be generally conceived as the skills that allow the individual to succeed in social interactions, thereby achieving personal goals over time and in different contexts (Huber et al., 2019), the SDQ dimension used includes items related to empathy/caring, kindness, sharing, and helping (e.g., "I am helpful if someone is hurt"). The scale was answered on a 3-point scale from 0 (not true) to 2 (certainly true), with higher values representing higher social competencies. In this study, four out of the five items were used to address issues of measurement invariance (please see more details in the measurement invariance subsection). Assuming α = .60 as the lower limit of acceptability (Hair

et al., 2014), acceptable internal consistency was obtained in seven of the nine countries/regions, ranging from .60 (Angola and Greece) to .73 (Brazil). The alpha value was below the acceptance threshold for Malta and Mozambique. Since deletion of further items did not increase the reliability value, and α_{mean}= .63 is close to the value obtained in the validation study (α = .65; Goodman et al., 1998), we decided to include the data from these two countries in the model. Moreover, models' results without Malta and Mozambique data remained similar.

2.4.4. Demographics

Sociodemographic characteristics considered were age, gender and academic level (degree or master study).

2.4.5. Country variables

Country/region variables include socioeconomic development and employment rate. Values for each country can be found in the Supplemental Material (Table S6). The Human Development Index (HDI) provides a global measure of the socioeconomic development of countries worldwide and will be used to capture the degree of socioeconomic development of the countries involved. The United Nations developed this index as a comparative measure of development across countries (UNDP, 2020; Taiwan value was retrieved from https://eng.stat.gov.tw/ct.asp?xItem=25280&ctNode=6032&mp=5), and it combines the following dimensions: i) life expectancy at birth, ii) expected years of schooling, iii) mean years of schooling, and iv) gross national income per capita. The values used in this study refer to the year 2020.

The unemployment rate[45] per country was retrieved from Trading economics, an online platform that provides historical data, economic forecasts, news, and trading recommendations (https://tradingeconomics.com/). Unemployment rates refer to July 2021 data. Due to country report discrepancies, for most of the sample, this value refers to the last trimester of 2020.

2.4.6. Translation

Questionnaires validated for the official language of each country were used whenever available. Validated forms were found for all questionnaires in English (i.e., Australia and Malta) and Portuguese languages (i.e., Angola, Brazil, Cape-Verde, Mozambique and

[45] In the study registration (https://osf.io/q5nb2) we initially included the employment rate as a country variable. However, because this value was absent for two countries (Mozambique and Taiwan) we used the unemployment rate instead.

Portugal), and specific cultural adaptations were made within each language (e.g., European Portuguese vs Brazilian Portuguese). Thus, with the exception of the prosocial behaviour subscale of the SDQ, additional translations were only necessary for Greek and Taiwanese languages. The translation of the questionnaires (SES and ESCQ) was performed as recommended by Sousa & Rojjanasrirat (2011), respecting the following steps: i) an independent translation from English to Greek/Chinese by two bilingual translators, followed by an external agreement; ii) a back-translation by two different, independent bilingual translators, followed by agreement.

2.5. Data Analysis

2.5.1 Missing data

Prior to testing scales measurement equivalence and running multilevel modelling, we imputed missing data using multivariate imputation by chained equations, using *mice* (3.2.0) (van Buuren & Groothuis-Oudshoorn, 2011) and *miceadds* (3.11-6) (Robitzsch & Grund, 2021) R packages (R Core Team, 2021; version 4.0.5). The percentage of missing data points were: 9.98% for SES 33 items, 22.73% for ESCQ 45 items, and 16.43% for SDQ (prosocial behaviour subscale) five items. We used the *pmm* imputation method, set the number of iterations in the *mice* algorithm to 20, and created ten different imputed datasets. In the proceeding analysis, each dataset was analysed separately, and model estimates were subsequently pooled.

2.5.2. Scales' measurement equivalence

We used the R package *semTools* (0.5-4; Jorgensen et al., 2021) to estimate multi-group confirmatory factor analysis (CFA) and subsequent pool estimates from the ten imputed datasets. We started by fitting original scales and then proceeded to remove all items with standardised factor loadings below 0.40 in more than half of the countries/regions. Next, we tested for metric and scalar invariance. Complete details of these analyses are given in the supplemental material (Tables S1 to S4). Briefly, for this study, we used 27 out of 33 SES items, 29 out of ESCQ 45 items, and 4 out of SDQ (prosocial behaviour subscale) 5 items, with the items included and factor loadings per country in the supplemental material (Tables S2 to S4). In the proceeding analysis, SE, emotional competence and prosocial behaviour scores correspond to the equal mean item scores of the corresponding questionnaires (SES, ESCQ and SDQ).

2.5.3. Modelling approach

We used multilevel regression models to analyse SE while controlling for the nested structure of the data (students as level 1 and countries/regions as level 2). We started by fitting a null model (random intercept model) and then added level 1 (prosocial behaviour and emotional competence) and level 2 predictors (HDI and unemployment rate) (model 1). Next, we tested for random effects (i.e., differential effects across countries) of prosocial behaviour and emotional competence (model 2: random intercept and random slopes model). Finally, we included cross-level interactions between level 1 and level 2 predictors (model 3). All predictors were grand-mean centred prior to modelling. Models' regression intercepts represent estimated SE scores for the average student. The alpha level of significance was set at .05 for all analyses (two-tailed). Models were run using *lmerTest* (3.1-3) package in R (Kuznetsova et al., 2016).

3. Results

3.1. Measurement Equivalence

To determine cross-cultural comparability, we tested each measure for configural, metric and scalar invariance. Overall, the present models fit was assessed as adequate based on a combination of rules proposed by Hu and Bentler (1999) for samples above 1,000 participants, such as the Comparative Fit Index (CFI) $\geq .90$, the Tucker-Lewis Index (TLI) $\geq .90$, the Standardised Root Mean Square Residual (SRMR) $\leq .08$ and the Root Mean Square Error of Approximation (RMSEA) $\leq .06$. In addition, for evaluating the fit of the successive models with increasingly stringent constraints, we followed the recommendations by Chen (2007), namely ΔRMSEA $\leq .015$, ΔCFI $\leq -.010$, and ΔSRMR $\leq .030$.

The results showed that the three measures showed a good fit on the construct configural analysis. Configural invariance indicates that the overall factor structure is similar for all the countries and demonstrates that participants from different countries conceptualise the constructs similarly (Milfont & Fischer, 2010). Also, the three measures showed a moderately acceptable fit for the analysis of measurement unit equivalence (i.e., metric). Moreover, the comparison between unconstrained and constrained models showed values below the thresholds for the three measures, resulting in metric invariance (for details, see the Supplementary Tables, Tables J to M), meaning that groups responded to the items in the same

way (Milfont & Fischer, 2010). However, full score equivalence was not observed. Establishing strict or scalar invariance can be a challenge (van de Vijver & Tanzer, 2004). Therefore, as in other cross-cultural studies in the area (e.g., Marôco et al., 2020; Min et al., 2018; OECD, 2021), even though full scalar equivalence was not found, we included the data from the nine countries in the analyses. We believe unexpected results should be published and not go unreported. This way, they can be used as an opportunity to further examine the manifestation of construct expression across groups.

3.2. Summary Statistics

Student means engagement scores varied across countries/regions, from 3.55 (in Taiwan) to 4.33 in Mozambique. In all countries/regions, these values are above the scale mid-point (3), indicating an overall good engagement level. Positive and above the mid-point values were also found for SECs across countries/regions (see details in Table 14). The HDI varied substantially between countries/regions, from .46 (in Mozambique) to .94 (in Australia). According to the Human Development Report (UNDP, 2020), countries above the .70 threshold are considered high human development countries. The same variation and rank order between countries/regions were found for unemployment rates, resulting in a high correlation between the two country-level variables, $r = -.84$, $p < .001$ (see Table 15). Thus, due to the high collinearity of these variables, multilevel modelling analysis was performed separately for each. Since HDI is a broader index that aggregates schooling indices and the gross national income per capita (which is highly related to the employment rate), its data is present in the main document, whereas unemployment rate analysis can be found in the Supplementary Table N.

Student engagement was moderately correlated (Cohen, 1988) with prosocial behaviour ($r = .33$, $p < .001$), emotional competence ($r = .23$, $p < .001$), HDI ($r = .33$, $p < .001$) and unemployment rate ($r = .30$, $p < .001$).

Table 14. *Mean, Standard Deviation and Reliability per Country/Region*

Countries	Student Engagement			Emotional Competence			Prosocial behaviour		
	M	*SD*	α	*M*	*SD*	α	*M*	*SD*	α
Angola	4.17	0.46	.92	3.99	0.38	.72	1.69	0.35	.60
Australia	3.97	0.50	.93	4.61	0.54	.92	1.75	0.35	.70
Brazil	3.88	0.53	.91	3.81	0.38	.70	1.66	0.39	.73
Cape Verde	3.94	0.44	.92	3.97	0.37	.70	1.71	0.34	.66
Greece	3.77	0.49	.91	4.49	0.58	.92	1.59	0.37	.60
Malta	3.76	0.47	.90	4.33	0.61	.92	1.75	0.30	.52
Mozambique	4.33	0.36	.86	4.16	0.35	.72	1.80	0.28	.52
Portugal	3.84	0.42	.89	3.87	0.33	.71	1.87	0.24	.65
Taiwan	3.55	0.49	.93	4.34	0.54	.91	1.46	0.41	.72

Table 15. *Human Development Index and Unemployment Rate for each Country/Region*

Countries	Human Development Index	Unemployment Rate
Angola	.58	30.60
Australia	.94	5.80
Brazil	.77	13.90
Cape Verde	.67	11.29
Greece	.89	15.80
Malta	.90	4.40
Mozambique	.46	25.04
Portugal	.86	7.10
Taiwan	.92	3.90

Note. The overall correlation between the Human Development Index and the Unemployment Rate was $r = -.84$, $p < .001$.

3.3. Multilevel Modelling Analysis

3.3.1. The Null Model

The null model shows that 29% of the variability in engagement scores was related to country differences (ICC = .29), warranting the use of a multilevel model.

3.3.2. Model 1: Random Intercepts Model with Country- and Person-level Predictors

Model 1 tested the hypothesised fixed-effect predictors at the individual and country levels. As detailed in Table 16, emotional competence (β = 0.32, $p < .001$) and prosocial behaviour (β = 0.29, $p < .001$) were significantly and positively associated with SE, whereas HDI was negatively associated with engagement (β = -1.25, $p < .001$), indicating that: i) students with higher social and emotional competencies scored higher on engagement; and that ii) students in countries/regions with higher HDI scored lower on engagement. Figure 1 presents the relation between engagement and HDI. Also, students in countries/regions with higher unemployment scored higher on engagement (β = 0.02, $p < .001$), mimicking the relation found between HDI and engagement (see Supplementary Table N in the Appendix).

3.3.3. Model 2: Random Intercepts and Slopes Model with Country- and Person-level Predictors

Model 2 tested whether the effects of student-level predictors varied between countries/regions. Results show that the effects were similar across countries/regions (e.g., non-significant random slopes). Figures 7 and 8 illustrate the similarity of these associations across countries/regions.

3.3.4. Model 3: Random Intercepts with Cross-level Interactions of Country-level and Person-level Predictors

Cross-level interactions of country-level and person-level predictors were entered into Model 3. Results show no significant moderation effects of these variables (ps > .05).

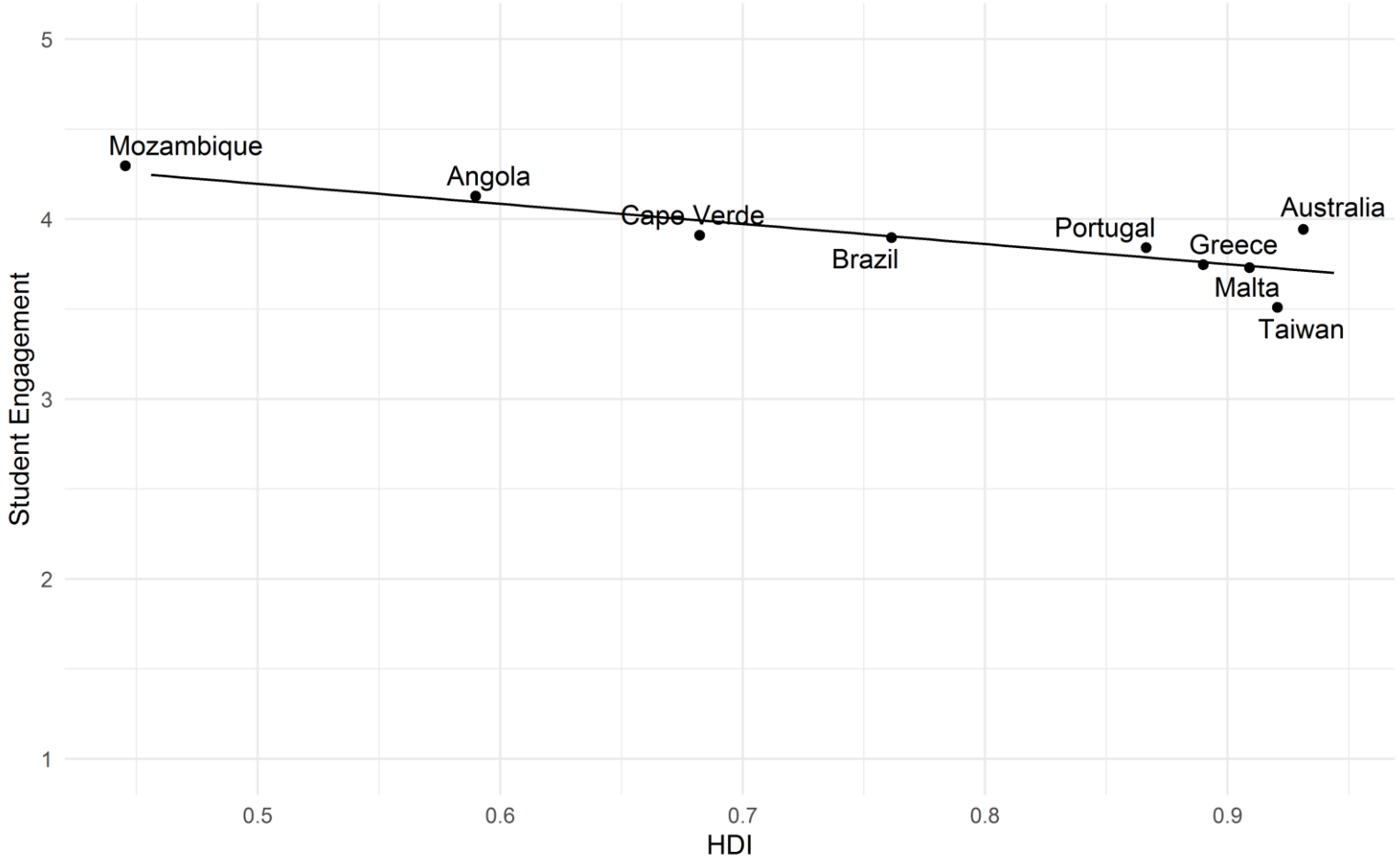
Removing from these analysis two countries with low internal consistency in the prosocial behaviour scale (Malta and Mozambique; α = .52) did not substantially change the model interpretation, except for the interaction between prosocial behaviour and student engagement (β = -0.73, $p = .009$; complete model estimates omitting these two countries available upon request). These results suggest that the association between prosocial behaviour and engagement might be weaker in countries with higher HDI.

Table 16. *Multilevel Regression Models of Student Engagement Predictors*

	Null Model			Model 1a Random Intercept			Model 2a Random Intercept + Slopes			Model 3a Cross-level Interactions		
	Est	*SE*	*p*	*Est*	*SE*	*p*	*Est*	*SE*	*p*	*Est*	*SE*	*p*
Fixed Effects												
Intercept	3.88	0.07	< .001	3.87	0.04	< .001	3.87	0.04	< .001	3.86	0.04	< .001
Level 1 predictors												
Prosocial behaviour				0.29	0.03	< .001	0.29	0.05	< .001	0.29	0.03	< .001
Emotional competence				0.32	0.02	< .001	0.32	0.03	< .001	0.32	0.03	< .001
Level 2 predictors												
HDI				-1.25	0.25	< .001	-1.27	0.26	< .001	-1.24	0.26	< .001
Cross-level interactions												
Prosocial behaviour x HDI										-0.31	0.21	.146
Emotional competence x HDI										0.20	0.16	.227
Random Effects												
Country SD	0.20	0.05	< .001	0.10	0.03	< .001	0.10	0.03	< .001	0.10	0.03	< .001
Residual SD	0.48	0.01	< .001	0.44	0.01	< .001	0.43	0.01	< .001	0.44	0.01	< .001
Prosocial behaviour SD							0.08	0.05	.074			
Emotional competence SD							0.01	0.05	.810			

Note: HDI: Human Development Index; *SE*: standard error; Models 1b, 2b and 3b with unemployment rate, can be found in the Supplementary Table N in the Appendix.

Figure 6. *Association between Human Development Index on Student Engagement*



Note: HDI: Human Development Index; Student engagement scores equal mean scores of the different countries.

Figure 7. *Association between Emotional Competence on Student Engagement by Country/Region*

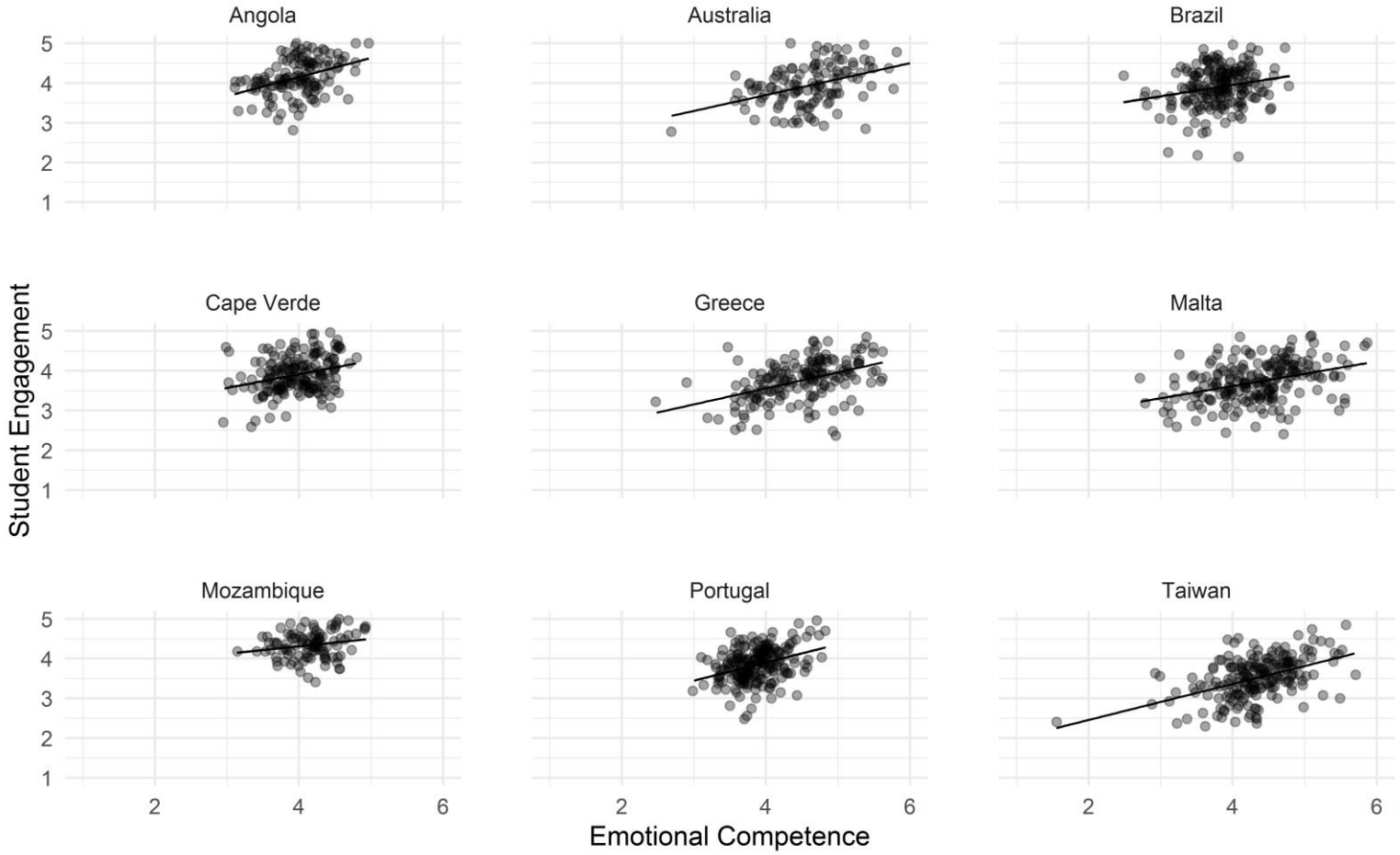
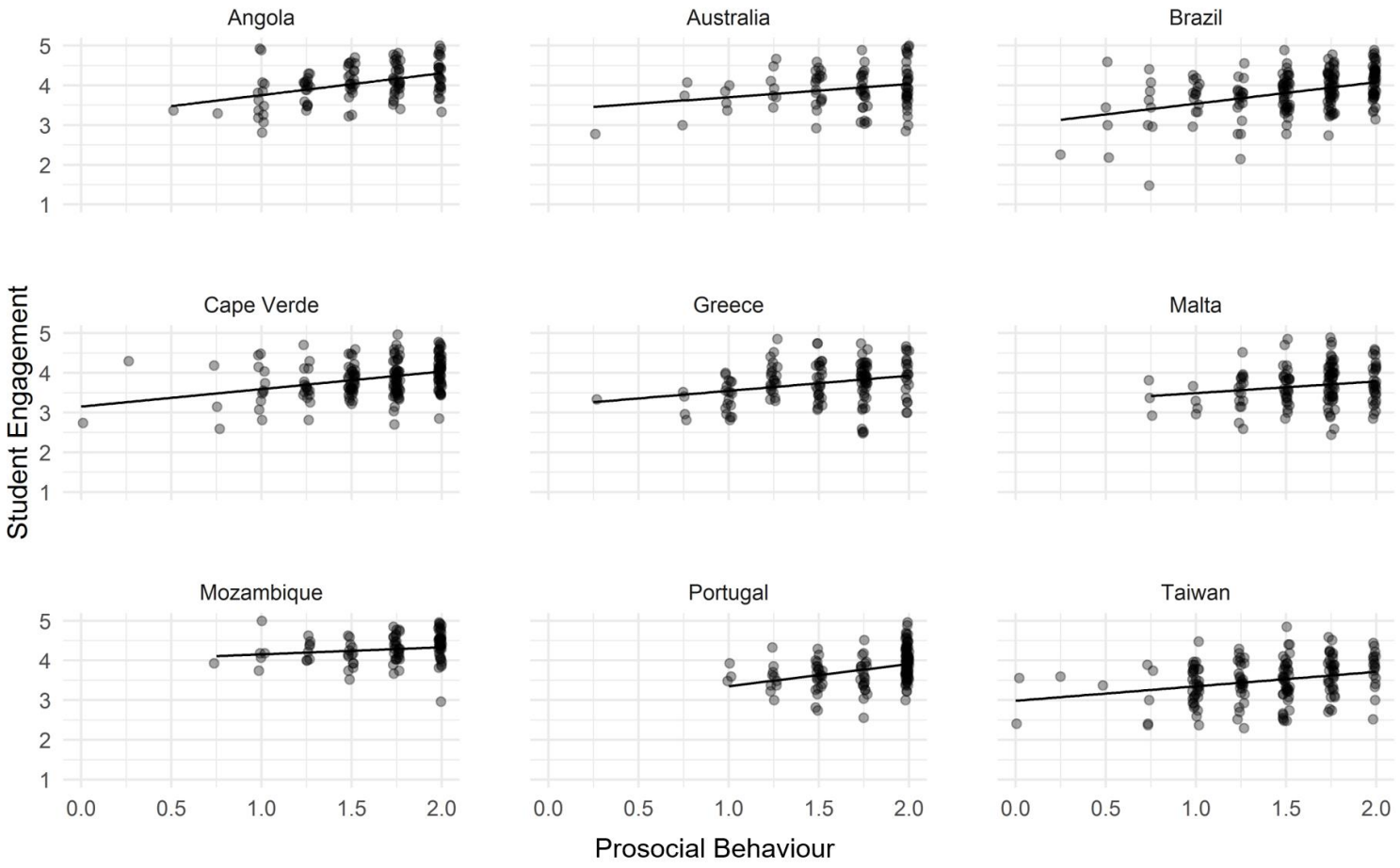


Figure 8. *Association between Prosocial behaviour on Student Engagement by Country/Region*



4. Discussion

The present study aims to expand previous research by analysing social and emotional competencies (SECs) as predictors of student engagement (SE) while accounting for the role of country-level variables, such as HDI and unemployment rate.

Following our predictions, and at the student level, students with higher SECs reported higher engagement. Specifically, the association between emotional competence and SE is in accordance with previous studies (Maguire et al., 2017; Santos et al., 2021; Urquijo & Extremera, 2017). Two prior studies also assessed engagement in university with the same construct used in this study, which involves affective, behavioural, and cognitive engagement elements. In one, researchers showed that emotional intelligence was associated with affective and cognitive engagement (Maguire et al., 2017), although a behavioural component of SE was not included, and the sample was restricted to one university and one course. The second study addressed emotion regulation strategies (Santos et al., 2021) by showing that refocus on planning (which is related to problem-solving to manage a stressful event; Garnefski et al., 2001) was the strongest predictor of SE. The present study also brought knowledge regarding cultural sensitivity issues since a cross-cultural sample was included. As far as we know, this is the first study with university students to report the association between prosocial behaviour and SE since previous studies included younger participants (e.g., Adkins & Cooley, 2019; Quimby et al., 2019; Tian et al., 2016). SE can be perceived as a protective factor (Fredricks et al., 2016), and in college, it is related to better academic performance (Gunuc, 2014; Kuh et al., 2008), critical thinking (Arslan & Sciences, 2016), and psychological well-being (Salmela-Aro & Read, 2017; Schaufeli et al., 2002).

Furthermore, our results also showed that the relation between SECs on SE is similar across countries/regions. Thus, this study reinforces the need for global SEL promotion among university students. SEL promotes equity in education, and, currently, these are listed as the "21st-century skills or college and career readiness skills" (Jagers et al., 2019). The psychobiological co-regulation between humans through all kinds of interactions and relationships also includes the formal neuronal educative systems (Immordino-Yang & Gotlieb, 2017), reinforcing the need for SEL promotion at all life stages. Besides, policymakers should remember that SE and SECs are amenable to change (Fredricks et al., 2016). Currently, some universities invest in such competencies, although the information and the number of validated programs available for this population is still scarce (Reis et al., 2018; Savitz-Romer et al., 2015).

Moreover, our results showed cross-country variability regarding SE, with students in countries/regions with a lower HDI showing higher SE (e.g., Mozambique, Angola, Cape Verde) than students in countries/regions with higher development indices (e.g., Australia, Taiwan, Malta). The negative association of HDI with SE was not found in Lam et al. (2016), although, in our view, a relevant difference separates the two samples. The present study includes university students, whereas the mentioned study had students attending 7th to 9th grade. The observed association may be related to the greater proximity to the reality of entering the labour market, which is naturally greater in university students than in students who attend compulsory education.

One might hypothesise that in countries with higher socioeconomic development, the access to a college education is considered by students as an acquired good or as a regular path that one should follow, contrary to what students from countries with lower development and higher unemployment rates may feel. In highly developed countries, more than half of those with 20 years old are at the university (Human Development Report, 2019). To note that HDI includes two school-related indexes, namely expected years of schooling and mean years of schooling. In countries with a lower HDI, being able to go to college is less probable and might represent an opportunity to have a better life, being perceived as a privilege, or understood as a special social or educational status and hence may motivate higher intrinsic motivation and academic involvement. In this line, future studies should also investigate the impact that social-economic status and first-generation students[46] might have on academic involvement. For instance, a study with college students showed that ethnic minority students had lower academic performance, though they reported more engagement than their college counterparts (Greene et al., 2008).

The results regarding engagement and unemployment also reflect the same association, with higher engagement in countries with higher unemployment rates. A higher unemployment rate is observed in countries with lower HDI, which also supports the reflection made. To note that the employment rate of a country is not the same as degree employability, thus our results are not necessarily contrary to the study of Ma & Bennett (2021), which stated that engagement is related to employability. It would be of interest if future studies could investigate detailed cross-culture differences in this topic. Also, one must consider that in countries with lower unemployment rates and higher HDI many graduates find employment through low-paid

[46] First-generation students are individuals who are part of the first generation in their family to attend college (Gibson & Slate, 2010).

temporary positions (Popenici, 2013). This type of employment contract reduces the country's unemployment rate but places youth in a disadvantaged and precarious social and economic position. Since university tuition costs have increased dramatically, appending the tuition debts that many may face leads students under high economic stress that jeopardises their engagement (Popenici, 2013).

Taking these results into consideration, in countries with higher HDI, it seems urgent to reinforce, through coherent public policies, the employment of qualified young people, as well as to increase their salary, in order to emphasise the effort made in a higher education path. Likewise, it seems urgent to signal the symptoms of anxiety and stress experienced by students. Because research has been calling to attention that some highly engaged students can also experience academic-related burnout, revealing that when students maintain high effort during long periods, it can lead them to exhaustion (Salmela-Aro et al., 2016). Our data show that levels of engagement for Mozambique and Angola (the two countries with lower HDI represented in this study) are quite high, which also deserves further attention in future studies.

Another suggestion for future studies is to examine student engagement components and their specific strength of associations with SECs from a cross-cultural perspective. For instance, in Maguire et al. (2017) study, emotional intelligence was moderately correlated with both engagement dimensions under analysis, with values relatively similar for cognitive and affective engagement dimensions. A similar finding was provided by Thomas and Allen (2021), which also showed emotional intelligence to be positively correlated with emotional and behavioural engagement. It would be relevant to understand if the similarity between SE dimensions is transcultural.

Furthermore, it would be relevant that future studies also include other facets of social competence, such as peers' acceptance, rules adaptation, and social adjustment (Gómez-Ortiz et al., 2017).

This study has some limitations that need to be taken into consideration. First, most participants were cisgender women and undergraduates and from convenience samples. This may threaten both internal and external validity of the results found, thus limiting the generalizability of our findings. Nevertheless, the survey was widely disseminated, and the analyses outlined were as rigorous as possible to account for internal validity enhancement.

Second, the alpha value of the prosocial subscale of the SDQ for two countries (Malta and Mozambique) was below .60. One possible explanation for these low values might be the reduced number of items (n = 4) used, given that Cronbach's alpha is positively related to the number of items on a scale (Hair et al., 2014). Nevertheless, neither deleting additional items

improved reliability nor did the overall findings change with the exclusion of these countries from the analysis.

Third, we did not reach scalar measurement invariance despite our efforts of either selecting measures that have been widely used and validated across countries/regions or following standard translation and backtranslation guidelines for measures that have yet to be validated in some of the sampled countries/regions. This limitation is common in many cross-cultural studies. Full measurement invariance in cross-cultural research is difficult to achieve, as many authors have claimed (e.g., Min et al., 2018; van de Vijver & Tanzer, 2004; Zickfeld et al., 2021), even when cultural reasons are not known (Tan et al., 2020) or the same language is used (Byrne & Watkins, 2003). For instance, the OECD's Survey of Social and Emotional Skills found configural and metric invariance between countries, although scalar invariance was found only for some scales considering gender and age cohorts (OECD, 2021). Other authors found similar invariance difficulties (e.g., Marôco et al., 2020), in line with the perspective outlined by Han et al. (2019), who stated that when testing invariance between many groups there is a need to also consider using more flexible metrics, especially when the questionnaires or scales are extensive, such as the SES and ESCQ used in our study. Thus, despite this limitation, we believe the novelty of this work warrants its findings to be reported.

Forth, the reduced number of countries/regions involved is on the lower end for cross-level analysis requirements. This obliges us to be careful when interpreting the data regarding the effects of second-level variables (country/region level). In this regard, a cross-level interaction was found (when the analysis was repeated without Malta and Mozambique data), suggesting that, in countries with higher HDI values, the association between reports of prosocial behaviour and engagement might be weaker than in countries with low HDI. Again, this result must be carefully considered given the reduced number of countries/regions involved (n = 7) in the cross-level interaction analysis and the lack of a significant effect when all countries/regions are analysed together. Despite the practical difficulties, future studies should try to include a larger sample of countries to better understand the role of these country-level predictors on student engagement. For instance, since our data mostly represent countries with high economic development, future studies should also study the phenomenon with a broader representation of countries and cultures, and also include other country variables that might affect engagement and university relations, such as Hofstede's cultural dimensions (e.g., individualism vs collectivism, long-term vs short term orientation).

Fifth, since our study used a correlational design, we cannot make causal inferences about the relations underlying the observed associations. Future studies with longitudinal and randomised designs would be of great interest to the field.

Sixth, we relied on self-report measures. Future studies should analyse SECs and SE constructs by using behavioural measures or SE facilitators, such as executive functions.

Despite the limitations outlined, this study contributes to understanding SE in university students by adding knowledge regarding SEL in a cross-cultural sample and by deepening the associations of engagement with socioeconomic development and employment. Also, we present data from four non-WEIRD (Western, Educated, Industrial, Rich, and Democratic) nations, namely Angola, Brazil, Cape Verde and Mozambique, which are commonly underrepresented in cross-cultural studies (Moshontz et al., 2018). In addition, the measurement invariance statistics and the information displayed (see supplemental material for details) may enable researchers in other countries to further improve the measures outlined.

To sum up, our study showed that SECs are relevant predictors of SE in a sample constituted of college youth students across nine countries/regions. Moreover, engagement was higher in countries with lower socioeconomic development. If universities want their students to finish their degrees with great well-being and health and be ready for employability, a SECs investment should be prioritised worldwide. Universities need to strengthen their ties with students, providing them more opportunities to enjoy their formal learning experience, either through instructional, curricular, or extracurricular activities.

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CHAPTER VII

A Longitudinal Study on Social and Emotional Competencies, Student Engagement and Mental Health

This chapter is submitted in the Educational Studies journal[47]:

Santos, A. C., Daniel, J. R., Simões, C., Melo, M. H. S., & Arriaga, P. (submitted). A longitudinal study on social and emotional competencies, student engagement and mental health.

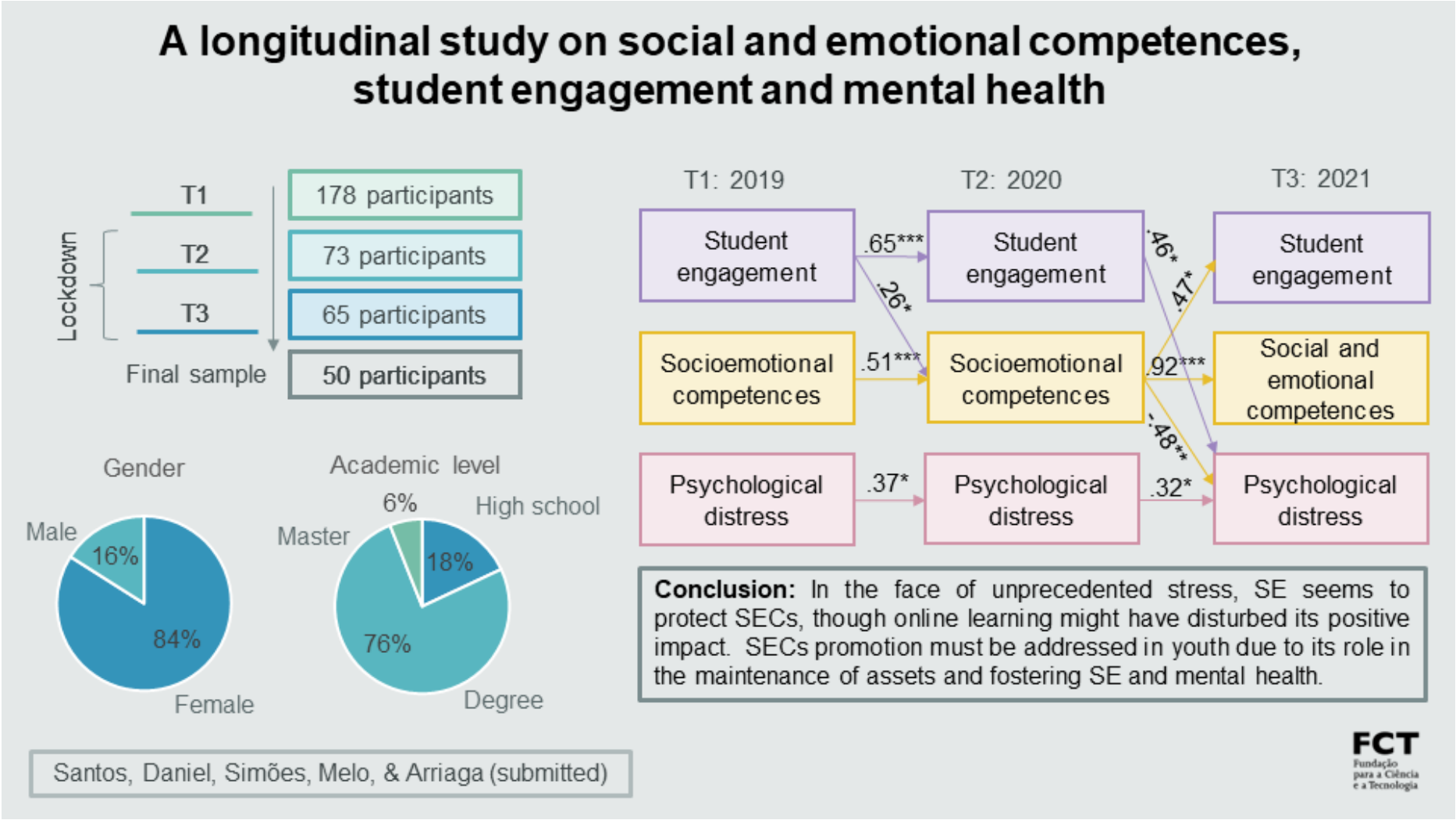
[47] It is published as a preprint and can be found at https://osf.io/preprints/socarxiv/fs5bk/

Abstract

Research has been showing the negative impact of COVID-19 lockdown measures on learning and mental health in youth. The protective factor of socioemotional competencies during lockdown has also been observed. Though, the longitudinal association between these constructs is scarcely documented, especially in research that includes data before and during the lockdown. The present study analysed the relation between socioemotional competencies (SECs), student engagement (SE) and psychological distress in youth to understand how they changed over time during the COVID-19 pandemic and to identify correlation patterns across time. A three-wave (2019-2021) prospective study was developed using data collected during two COVID-19 lockdowns with 50 youth students. Data were analysed using a cross-lagged model. Overall, participants reported good SECs, SE, and low distress levels. In 2020, SECs were predicted by previous SECs levels and SE. Conversely, SECs in 2020 predicted SE and mental health in 2021. Also, SE in 2020 predicted psychological distress in 2021. In the face of unprecedented stress, SE seems to protect SECs, though online learning seems to have disturbed its positive impact. SECs promotion must be addressed in youth due to its role in maintaining assets and fostering SE and mental health.

Keywords: Covid-19, internal assets, mental health, social and emotional competencies, student engagement.

Graphical Abstract



1. Introduction

To contain the Covid-19 pandemic, a general lockdown and the closure of public facilities, including educational establishments, were imposed in 2020. After a strict lockdown and a reopening period, the daily confirmed cases of Covid-19 increased again in 2021. Thus, for two years, students in many countries were forced to have online learning, which contributed to social isolation and routines disruptions for long periods (UNESCO, 2020). Systematic reviews documented the consequences among youth students, including increased distress, anxiety and depression symptoms (Elharake et al., 2022; Wang et al., 2021).

Despite the efforts from the educational system to make online learning an alternative to traditional education, a decline in the learning progress was documented, and many students failed to receive the support they needed (Chen et al., 2022). Students reported less productivity and concentration, and an increase in school overload during confinement (Branquinho et al., 2020).

Research has also shown the role of social and emotional competencies (SECs), such as emotional intelligence (Li et al., 2021), cognitive reappraisal, and adaptative humour, as protective factors amidst the Covid-19 exposure distress (Kuhlman et al., 2021). Moreover, curiosity and grit have been associated with well-being increase and the maintenance of Student Engagement (SE) (Salmela-Aro et al., 2021). Given the importance of SE for school achievement (Lei et al., 2018) and resilience (Ungar et al., 2019) and of SECs for health, social, and economic short and long-term outcomes (Taylor et al., 2017; UNESCO, 2020), we conducted a longitudinal study to analyse the relations between SECs, SE and psychological distress in youth over time.

2. Method

2.1. Participants and Procedure

The Ethics Committee of ISCTE-University Institute of Lisbon (ref.17/2019) and the Lisbon Academic Medical Centre (ref.108/20) approved all procedures.

This study is part of a larger project aiming to analyse the association between SECs and SE. It started in April/May 2019, with a sample of 1713 participants (Santos, Simões, Cefai, et al., 2021). However, because schools closing prevented the use of the same procedure (see (Santos, Simões, Cefai, et al., 2021) for complete procedure), in 2020 and 2021, during the first four weeks of confinement periods, we contacted students above 18 who previously provided

emails, agreed to continue participating, and were still studying. The final sample is composed of 50 students aged 18-25 years old (M = 19.52, SD = 1.49), mostly females (84%) (see in the Appendix, the flowchart in the Supplementary Figure B, the Supplementary Table O, and a detailed participants' description).

2.2. Measures

The *Student Engagement Scale* was used to assess SE, that comprises emotional, behavioural and cognitive dimensions of engagement (Lam et al., 2014).

SECs were assessed with the internal resources subscale of the *Healthy Kids Resilience Assessment Module* (HKRAM) (Martins, 2005) and the adaptative strategies subscale of the *Cognitive Emotional Regulation Questionnaire* (CERQ-Short) (Santos, Simões, Daniel, et al., 2021). HKRAM included self-efficacy, self-awareness, cooperation and communication, goals and aspirations, problem-solving skills, and empathy dimensions.

Psychological distress was measured with the *Generalised Anxiety Disorder scale* (Bártolo et al., 2017) to assess anxiety, and the *Patient Health Questionnaire* (Ferreira et al., 2018) to assess depression symptoms.

All measures showed good internal consistency values (see Table 17) and fit this sample well (see Supplementary Table P in the Appendix).

2.3. Data analysis

Confirmatory factor analyses and a cross-lagged model were estimated using the lavaan package (version 0.6-11) (Rosseel, 2012) in R, with a robust estimator (i.e., weighted least squares mean) and the case-wise maximum likelihood estimation method for handling missing data (which varied between 4.3 to 21.7%). The models' fit were assessed based on a combination of standard rules (Hu & Bentler, 1999).

Table 17. *Variables' Means, Standard Deviations, Correlations and Cronbach's alpha coefficients from time 1 (T1) to time 3 (T3)*

	Student engagement			**Social and emotional competencies**			**Psychological distress**		
	T1	**T2**	**T3**	**T1**	**T2**	**T3**	**T1**	**T2**	**T3**
SE T1									
SE T2	**.65****								
SE T3	**.45****	**.51****							
SECs T1	**.44****	**.39***	.29						
SECs T2	**.44****	**.67****	**.62****	**.64****					
SECs T3	.18	**.43***	**.55****	**.46****	**.81****				
PD T1	-.12	-.14	-.24	**-.38****	-.26	-.10			
PD T2	-.15	-.26	-.30	-.31	-.22	**-.43***	**.44****		
PD T3	.13	.05	-.21	-.17	-.26	**-.43****	.27	.33	
M	3.90	3.85	3.82	3.43	3.35	3.36	1.17	0.99	1.07
SD	0.47	0.35	0.38	0.35	0.44	0.43	0.48	0.48	0.68
α 95% CI	.90 - .96	.81 - .92	.84. - 93	.74 - .89	.86 - .94	.85 - .93	.80 - .91	.84 - .93	.92 - .96

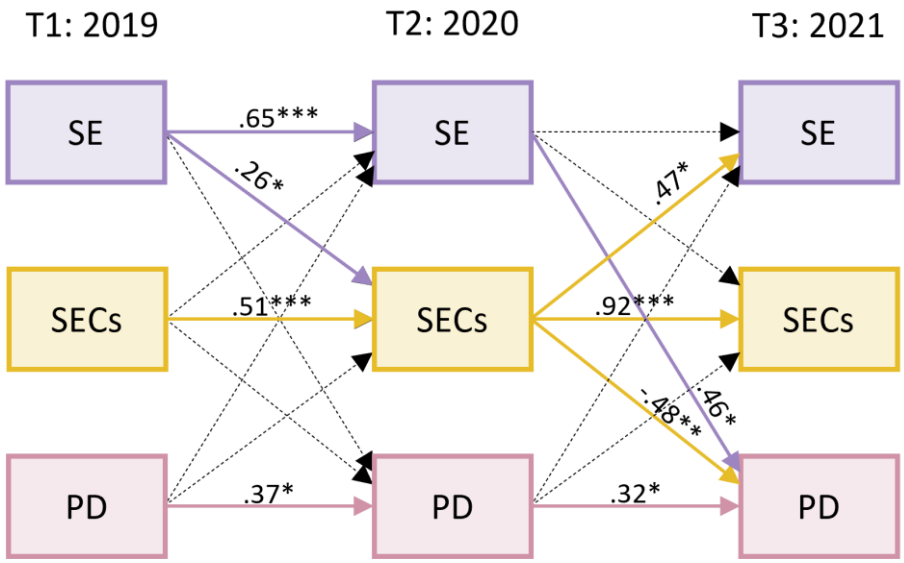
Note: SE = Student Engagement; SECs = Social and Emotional competencies; PD = Psychological Distress; * = p <.05; ** = p <.01; *** = p <.001

3. Results

Overall, SE and SECs mean values were above the scale mid-point (3) at the three-time points, indicating an overall positive engagement level and an adequate level of competencies. Psychological distress values were reduced with values below the mid-point (1.5). Correlational values showed the expected pattern, with positive associations between SECs and SE, and negative associations between SECs and psychological distress.

The cross-lagged model showed an adequate fit (X^2 = 10.74, *df* = 9, CFI = .989, TLI = .956, SRMR = .035, RMSEA [90% CI]) = .058 [.000, .166]). Results (Figure 9) show that the cross-lag association between variables changed over time. In 2020 (T2) and 2021 (T3) all constructs were significantly predicted by their previous year scores, excepting for SE in T3. Psychological distress showed the most stable pattern of auto-correlations. As for the interrelation between the different variables, results show that: a) at T2 only SECs were positively predicted by SEs past scores; b) T3 psychological distress was positively predicted by SE and negatively predicted by SECs T2 scores; and c) T3 SE was positively predicted by T2 SECs.

Figure 9. *Cross-lagged Model showing the predictive Standardised Estimates of Student Engagement, Social and Emotional Competencies and Psychological Distress between the three moments.*



Note: Bold lines represent significative regression values; Dashed lines represent non-significant regression values; SE = Student Engagement; SECs = Social and Emotional competencies; PD = Psychological Distress; * = $p < .05$; ** = $p < .01$; *** = $p < .001$. See also the Standardized coefficients in the Supplementary Table Q in the Appendix.

4. Discussion

These findings are indicative of changes in the pattern of associations over time, potentially due to the constant and unpredictable societal/contextual changes that occurred to deal with the pandemic effects. Of the three constructs only distress was never a predictor of change in other constructs, suggesting a causal pathway from SE and SECs to distress.

In 2020, students answered the survey at the beginning of lockdown, experiencing fear, distress, and exclusive online learning first-ever (Branquinho et al., 2020). The results indicated that previous SE was a protective factor for maintaining internal resources when facing an unexpected and stressful event. As Ungar et al. (Ungar et al., 2019) highlighted, SE is especially important in vulnerability since it fosters resilience. Though, at 2021 (T3), SE was better explained by SECs, and also, SE at T2 was positively predictive of higher psychological distress at T3, which supports Salmela-Aro et al. (Salmela-Aro et al., 2016) study showing that intense SE maintenance for long periods could lead to burnout. Moreover, in 2020, students mentioned that they had never had so much schoolwork and group assignments to handle, which might distracted them from the confinement but might contributed to higher fatigue and stress (Branquinho et al., 2020).

Additionally, SECs at 2020 were predictive of better mental health at 2021 which may denote the acquisition of coping competencies as an adjustment process or post-traumatic growth. Thus, our results are consistent with prior studies highlighting SECs as important internal resources that support individuals when facing adversity, protect their health and feel engaged (Salmela-Aro et al., 2021; Santos, Simões, Cefai, et al., 2021; Taylor et al., 2017; UNESCO, 2020).

Study limitations included a high dropout rate that led to a small sample, which undermined the use of more complex and detailed analytical procedures.

Concluding, this study suggests that previous regular SE protect internal resources in a moment of great unpredictability and change. Also, it indicates that SECs should be promoted during adversity, given their relevance as protective factors for the maintenance of SECs, promotion of SE and mental health.

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CHAPTER VIII

Discussion and Implications

Integrative Discussion

"Young people are our future assets."
(The Lancet, 2012, para. 7).

In the present thesis, our main goal was to increase knowledge concerning the association between Social and Emotional Competencies (SECs) and Student Engagement (SE), within health prevention and promotion approaches, to strengthen awareness regarding their relevance through compulsory learning and at university, while accounting for factors that can influence youth development. The thesis wase designed based on the bioecological model of human development. The choice of this model was due to the fact that it helped to systematise the different analyses, and supports an integrated understanding of healthy development and how the various actors and contexts can influence the increase or maintenance of SE, along with the promotion of SECs. In this intersecting set of studies that provides new information is provided considering the various systems influences, such as micro, meso, macro and chronosystems, and the person intra and interrelated processes. The current chapter presents an overview of the main findings and a general discussion, along with six main ideas to retain from this thesis, its strengths and limitations, and finally, the implications and recommendations for practice, research, and policymakers.

1. Summary of the Main Findings

In **chapter II** we tackled the first objective, which was to review and summarise previous research regarding SECs and SE in adolescence. In the mentioned chapter, 92 studies were gathered from 2004 to 2020. By analysing the existing literature, we concluded that SECs are positively associated with SE and its dimensions, and negatively associated with disengagement, supporting the need to promote SEL to increase SE in youth. Also, all the studies reporting age and gender differences regarding SE found higher values for girls and younger students compared to boys and older students. Moreover, longitudinal findings provided evidence that self-management and responsible decision-making competencies might impact more SE than the contrary, whereas self and social awareness and relationship skills and SE seem to have a reciprocal association.

Throughout this review, we found some research gaps: the need of studies using a multidimensional concept of SE and an extended concept of adolescence by also including university students as their target population. Concerning specific competencies within the CASEL 5 framework, self-management was the domain more frequently studied. Though, studies including competencies within this area, such as emotion regulation competence and specific emotion regulation strategies, which have shown a great impact on learning, are scarce. Moreover, studies using vulnerable populations were lacking. In addition, longitudinal designs and cross-cultural studies are also required, to deepen our understanding about the causal link between SECs and SE and the cultural specificities or universality of this relation.

In **chapter III**, we examined the psychometric properties of the Cognitive Emotion Regulation Questionnaire. This questionnaire proved to be a consistent alternative to its extended form and, overall, an adequate self-report measure to analyse the nine different emotion regulation strategies in youth, suitable for both younger and older adolescents, female and male respondents. Furthermore, our study showed that it was possible to aggregate emotion regulation strategies in two groups, namely adaptative and maladaptive strategies. It also showed that adaptative strategies were positively associated with higher positive affect, and maladaptive strategies were positively associated with higher negative affect, symptoms of generalised anxiety and depression.

The third and fourth objectives regarding the identification of developmental differences in emotion regulation strategies and SE expression, and their association, with particular attention to the transitional stages, were tackled within the study presented in **chapter IV**. We were able to find support for the perspective of the non-linearity of emotion regulation strategies development, which highlight the specificities on emotion regulation development and their association with SE. It was found that the younger (10-12) and older (18-25) year age groups reported higher SE. Conversely, boys and students between 13-15 and 16-18 expressed less engagement. Regarding emotion regulation strategies, refocus on planning and positive reappraisal were positively related to SE for most of the age groups, whereas acceptance, despite being one of the most used strategies for all age groups, was only linked to SE among the younger group.

In **chapter V,** we identified the role of resilience internal assets, SE and perception of academic success on active disengagement behaviour (i.e., truancy) between adolescents living with parents or in residential care. The results showed no group differences in resilience-related internal assets and in their perception of school success. In contrast, participants in residential care reported more unexcused school absences, more grade retentions, higher depression and

lower SE. Moreover, hierarchical linear regression controlling for key variables (i.e., living in residential care or with parents, grade retention and depression) showed that school success perception and resilience-related internal assets were significant variables associated with lower absenteeism.

In **chapter VI,** we analysed the association between SECs, and SE in students of different socioeconomic and cultural contexts, considering country-level variables that could impact SE, such as the human development index and the unemployment rate. This study showed that SECs were associated with SE regardless of the country. Moreover, SE varied with country/region human development index and unemployment rate, with students from higher developed countries/regions and lowered unemployment reporting lower SE.

Finally, in **chapter VII**, we report a longitudinal study which allowed us to explore the causal association between SECs and SE in youth, before and during confinement periods due to SARS-CoV-2 containment measures. Overall, in 2020, SECs were predicted by previous SECs and SE. Conversely, SECs in 2020 predicted SE and mental health in 2021. Also, SE in 2020 predicted psychological distress in 2021. This study suggests that previous positive SE helped explain the maintenance of SECs and SE during the first lockdown. Between lockdowns, SECs were also predictors of high SE and mental health, reinforcing the relevance of SEL in high school and university.

2. The Role of Social and Emotional Competencies and Student Engagement for Healthy Development: Six Ideas to Retain

International and national authorities have given attention to and defined goals for sustainable development regarding: a) the quality of education, in which SECs acquisition is comprised, b) the promotion of good health and well-being; and c) the reduction of inequalities between students from different socioeconomic contexts and with emotional vulnerability. These are three of the 17 Sustainable Development Goals of the United Nations (namely, the fourth, third and tenth goals, respectively). Research has shown that one of the approaches that can support and through which we can tackle these objectives is if we give all youth equal opportunities to develop SECs and if we implement strategies to enhance SE.

Education is fundamental for a healthy adolescence and adulthood. International evidence from the comparison of data from 26 countries showed that adults with higher educational attainment have better health in general and higher life expectancy (Raghupathi &

Raghupathi, 2020). Also, there is evidence that tertiary education is a critical factor of life expectancy (Raghupathi & Raghupathi, 2020; Roy et al., 2020; Singh & Lee, 2021). As such, "population health can be regarded as a precondition for, and an enabler as well as an outcome of, sustainable development." (WHO, 2017, p. 11). The achievement of the Sustainable Development Goals entails an approach towards resilience as they require individuals, micro and macro-level contexts to entail transformations and deal with adversities, while protecting and promoting health (WHO, 2017).

Programmes and policies with multisectoral approaches can reduce inequalities and foster health and resilience (Young et al., 2013). Overall, research has shown that effective health-promoting school programmes take time and, to succeed, require a system of governance that must be flexible, dynamic and based on a whole school approach (WHO & UNESCO, 2021). Thus, it is fundamental that health-promoting actions follow evidenced-base guidelines. Therefore, health-promoting school programmes must include high-quality teacher training, a deep understanding of the school's social and cultural context, promote students' participation and a sense of ownership, establish a great connection between education and health, and should involve all the educational community, such as parents or tutors and other staff members (Young et al., 2013).

The health-promoting schools' concept was designed based on the principle that educational settings can truly impact youth health. These settings constitute one of the most present places in youth lives for at least 10 to 15 years, and they can also influence their families, communities, and future generations (Jensen et al., 2013).

One of the global standards for health-promoting schools is the school curriculum, which should contribute to the students' health literacy, and support physical, psychological, social and emotional aspects of students' health and well-being (WHO & UNESCO, 2021).

Previous systematic reviews have shown positive relations between self-awareness, self-management, relationship skills and school belonging (Allen et al., 2018; Korpershoek et al., 2020). Another systematic review reported that school-based social and emotional learning programmes have a positive impact on emotional SE (Taylor et al., 2017) among middle and high school students. The beneficial outcomes of both SECs and SE per se have also been documented. For instance, a meta-analysis has concluded that high SE is related with stronger academic achievement (Lei et al., 2018). Other systematic reviews and meta-analyses focusing on SEL programmes' impact showed its role on increasing SECs, improving attitudes, well-being, academic performance, and lowering emotional distress and drug use (Durlak et al., 2011; Taylor et al., 2017; Wigelsworth et al., 2016).

Despite the substantial body of research focused on SECs and SECs as health-promoting factors, SE as a multidimensional construct lacked attention until recently. As highlighted in our systematic review, most studies showed that SECs are positively associated with SE, suggesting that educational institutions should implement social and emotional learning programmes (SEL) to increase healthy SE.

The studies carried out within the scope of this thesis, together with previous research, leave no room for doubt: **It is necessary to actively promote both SECs and SE since they can support the expression of a healthy educational trajectory**.

If we want to ensure inclusive and equitable quality education and to promote lifelong learning opportunities for all, as well as good health and well-being, reduce inequalities and ensure no one is left behind, we must acknowledge that **we cannot leave healthy student engagement to develop by chance.**

Adolescents need to be actively engaged with the school/university to develop the competencies and values that will help them thrive despite challenges to accomplish academic graduation and experience a healthy transition into adulthood (Ungar et al., 2014, 2019) and live healthier and longer (Roy et al., 2020; Singh & Lee, 2021). In this section, based on the certainty that coherent and evidence-based public policies must support school practices, the discussion will be framed within six ideas to retain, which emerged through the literature and from our studies. We hope the work from this thesis can contribute to the promotion of SECs and SE along the academic path.

1. SECs are positively associated with higher SE and better mental health and must be integrated into the academic curriculum.

SECs are necessary to effectively recognise and regulate our emotions, solve problems, make responsible decisions, set and attain goals, and establish caring and positive relationships with others (Borowski, 2019; CASEL, 2003; Weissberg et al., 2015). SECs are a precondition for the manifestation of resilience (Cefai et al., 2018; Masten & Tellegen, 2012; Reyes et al., 2013; Rutter, 2013). Our studies are in accordance with previous research, showing that SECs are positively linked with SE. Students with higher SECs also report being more engaged (for more details, see the systematic review and the studies in chapters III-VI) and having a better mental health (see studies in chapters III and VII). Our findings supported that SECs are positively associated with SE in all age groups (including those at university), among both female and male students (see chapter IV), and in the countries that were studied (see chapter

VI). Notwithstanding, there are relevant differences between age groups and gender (see chapter IV) and between living with parents or in residential care (see chapter V), discussed further ahead.

Also, the study in chapter VII with older adolescents showed that higher SECs measured in 2020 were associated with better mental health and higher SE in 2021, with data being collected during a period of confinement. Another study with early and middle adolescents, with data collected during confinement, also showed that students with increasing SE levels expressed an increase in intrapersonal SECs (Salmela-Aro et al., 2021). Likewise, Salmela-Aro and Upadyaya (2020) also showed that students with higher SECs and SE were more protected from suffering from burnout symptoms or distress.

Since social, emotional, and cognitive development are indistinguishably linked, and the three areas contribute in an integrated way to the organisation and management of thoughts and behaviours (Cantor et al., 2019), SECs must be part of the educational curricula. SECs, as Chernyshenko et al. (2018) argue, are the skills that, in interaction with the context, will support the individual in regulating emotions, thoughts and behaviours in an adaptative and healthy way.

2. Every student benefit from the promotion of SECs, which are aligned with healthy SE, but it is necessary to consider developmental characteristics and student's needs.

The promotion of SECs should consider the development stages according to the prevention science perspective (Catalano et al., 2002). In this thesis, we have also dedicated our attention to the link between emotion regulation strategies and SE. Previously, only one study reported information on this matter (as detailed in our systematic review), and it only analysed the association between SE with two strategies (Zhao & Zhao, 2015). Beyond that, emotion regulation plays an essential role in well-being, mental health, and socioemotional adjustment (Chervonsky & Hunt, 2019; Schäfer et al., 2017) and the learning process (Pekrun, 2017; Pekrun & Linnenbrink-Garcia, 2014), namely in regulating distracting stimuli (LeBlanc et al., 2017) and maintaining task engagement (Morrish et al., 2018). Our findings indicate that a) the development of emotion regulation strategies is non-linear for all strategies, b) some strategies are more used in certain age groups, and c) some strategies display a stronger association with SE.

Regarding the development of emotion regulation strategies, our findings showed that the strategy putting into perspective followed a linear pattern. This finding is in line with

neuronal and cognitive abilities development (Berk, 2017; LeBlanc et al., 2017). However, other strategies, such as refocusing on planning and positive reappraisal tend to be less used among students between 13-15 and 16-18 years of age, in contrast to younger (10-12) and older (19-25) students, indicating a non-linear pattern, which may be linked to pubertal changes (Guyer et al., 2016).

In what concerns emotion regulation strategies and SE link, we found that refocusing on planning was positively associated with SE in all four age groups, whereas positive reappraisal-SE link was found in the three age groups of 10-12, 13-15, and 16-18. In contrast, acceptance was only associated with SE among the younger students (10-12). Interestingly, two opposing valence strategies, positive refocussing and rumination, were only associated with SE for the age group between 13 and 15 years. Cracco et al. (2017) warned that this could represent a possible maladjustment period in this age group. Though this is mainly a sensitive age period when temporary neuronal alterations occur, that can lead to greater vulnerability but also enhanced neural plasticity (Zimmermann et al., 2019), which increases their ability to learn. Thus, we proposed that adolescents should be informed about the consequences of typically maladaptive emotion regulation strategies, that is, strategies that are associated with certain mental health disorders (Schäfer et al., 2017), such as high levels of depression and anxiety (Chamizo-Nieto et al., 2020; Costa Martins et al., 2016; Garnefski & Kraaij, 2018).

We should also consider that all strategies can be advantageous or not, depending on the context, the emotion to regulate, our state, goals (Gross, 2008) and developmental stage. Moreover, the success of the emotion regulation process depends on the ability to assess the stressful situation and choose the most appropriate/effective strategy, to monitor the environment feedback, but also on the person's repertoire of strategies (Bonanno & Burton, 2013). Also importantly, adolescents should be taught about adaptative emotion regulation strategies and be given opportunities to practice them to be able to use them effectively when dealing with challenges.

SE was associated with gender, showing that boys express lower SE values than girls. Also, in our study, only among students from the age group 13-15 and onwards was gender associated with SE, which might indicate that girls and boys tend to use the same strategies to deal with academic-related difficulties. Thus, it is essential to understand what demotivates students and how to maintain and/or increase their SE.

Even though our study included in chapter III is not longitudinal, it also suggests an increase in SE in the oldest group (19-25) relative to the other age groups. This increase cannot be explained by the proportion of disengaged students who did not continue to study after

compulsory school because our sample of older students contains both university students and a large proportion (41%) of students still finishing technical and vocational studies in high school, thus still in compulsory school. We believe that the higher level of SE in the older group may be due to the fact that they might be attending school paths that are better related to their motivation and future career goals, as explained by the theory of self-determination. According to this theory, SE might be higher when students are connected, have opportunities to be autonomous, and feel that they are acquiring relevant competencies (Ryan & Deci, 2017). Research has also supported this association, showing higher SE when adolescents make meaningful decisions, work on significant tasks, and have close relationships with teachers and peers (Fredricks, 2014). In this scope, the work developed within SEL programmes is crucial since promoting SECs can support students to discover what is important to them (i.e., goals and plans to achieve them), the areas where they are most skilled, and effective communication strategies that might enhance greater connection with peers and teachers, and skills for them to advocate form themselves and for others.

3. SE is crucial for promoting health, especially for the most vulnerable students and in adverse situations.

Despite studies showing that only a minority proportion of students decrease their SE during adolescence, disengagement has several adverse effects: higher levels of substance use, poorer psychological well-being, less likelihood of pursuing a university degree, and experiencing unemployment (Symonds et al., 2016). Moreover, cross-cultural studies that are developed quadrennially (such as the Program for International Student Assessment and the Health Behaviour School-Aged Children research projects) have been alerting regarding the overall decrease in SE and school satisfaction over the years (Inchley et al., 2020; OECD, 2016).

Recent studies have shown that better academic qualifications increase life expectancy (Raghupathi & Raghupathi, 2020; Roy et al., 2020; Singh & Lee, 2021). There is also evidence that youth in vulnerable conditions tend to study less (Garcia-Molsosa et al., 2021). Thus, Ungar et al. (2019) claimed that a strong SE is even more relevant for youth in vulnerable conditions, considering that it is more critical for these students to achieve schooling completion than to aim for high grades. Since SE might support these students in establishing higher future goals, finishing high school and pursuing a university degree and, consequently, having better health and socioeconomic conditions throughout their lives, it is especially

relevant that educational institutions, teachers and schools are aware of vulnerable youth levels of SE.

Results from the study presented in chapter V showed that participants in residential care reported more unexcused school absences, more grade retentions, higher depression, and lower SE, than students living with their parents. Moreover, SECs showed a moderate positive association with SE (and its dimensions) for students living in residential care homes and a positive weak significant association for students living with their parents, although this relation was only found for emotional SE. Our study supports previous claims about the relevance of the association between SECs and students' sense of belonging to school and their relationship with teachers and peers for students in vulnerable contexts, but also to all students.

Our findings in the study described in chapter VII showed that higher SE in 2019 predicted higher SE in 2020, and higher SECs. These results indicate that in a moment of unprecedented stress, previous positive experiences with education (learning process and tasks, relationships with teachers and peers, cognitive process used for learning, and even school-based extracurricular activities) supported students during the first confinement weeks. Thus, when the life of students' changes, SE seems to work as a protector of internal resources, such as SECs.

4. Promoting the enhancement of school success perception might decrease disengagement.

Educative institutions need to promote competencies and to provide access to experiences of power and control (Ungar et al., 2019), thus helping students to diminish boredom and dissatisfaction, feelings that are related to disengagement (Fredricks et al., 2016).

Findings from the study in chapter V showed that the higher perception of success is linked with stronger SE among students living with parents and those living in residential care homes. Additionally, school success was negatively associated with depression symptoms for those living with parents, whereas for those living in residential care homes, school success was negatively associated with truancy and positively with resilience internal assets. The results show its importance in promoting SE, but also in protecting health.

Previous research has shown that the perception of school success is positively related to academic performance (Soetan, 2020), self-efficacy and SE (Guntern et al., 2017; Santos et al., 2019). The perception of school success can be achieved by allowing students to express their knowledge in different ways and must assume different forms of participation and

communication of competencies, doing justice to the diversity of intelligences and competencies.

The theory of Multiple Intelligences (Gardner, 1983, 1993) suggests that people have different types of intelligences and proposes nine forms of intelligence that are dynamic and independent: visuo-spatial, linguistic-verbal, logical-mathematical, musical, bodily-kinesthetics, naturalistic/spiritual, existential, intra and interpersonal. The latter two are highlighted since they comprise SECs. Intrapersonal intelligence relates to understanding personal emotions and own strengths/weaknesses and desires, which involves self-awareness and self-regulation/motivation. Interpersonal intelligence relates to being empathetic, communicating effectively with others, cooperating and solving conflicts, thus implying social awareness and relationship skills. This theory made important contributions to education, constituting a relevant theoretical foundation for vocational education and personalised teaching (Yavich & Rotnitsky, 2020). Also, in accordance with this theory, the learning process and the assessments should comprise different formats and align with the students' intelligences (Yavich & Rotnitsky, 2020).

Additionally, the concept of "Zone of Proximal Development" (ZPD) within the sociocultural theory of Vygotsky, also emphasises the individual competencies and differences between students, which can be of great value to increasing students' perception of academic success (Gauvain, 2020). Briefly, the ZPD can be defined as the difference between what the person can do independently (i.e., actual development) and what the person can do/learn with the help/guidance or collaboration of others (i.e., potential development) (Vygotsky, 1978). Teachers can use strategies such as peer collaboration, mentoring, or guided participation and transform a passive learning process into a more active and fulfilling one (Gauvain, 2020), which might be conducive to a higher success experience.

Also, we propose that the participation as an active student and engagement may not only be present in regular subjects but also in school-based extracurricular activities. Inviting students to get involved in the decisions, expressing their opinions about what they want to work on, what they want to learn and how, can play an essential role in school success perception and SE.

5. Promoting SECs with healthy SE increases equity and must occur throughout the academic path.

If the promotion of SECs does not occur in the academic space, the likelihood of accentuating inequalities increases, as there will be students who do not have opportunities to develop these skills in other environments. SECs are essential for dealing with adversity throughout their lives (Cefai et al., 2018; Greenberg et al., 2017; Reyes et al., 2013). Therefore, educational institutions, whether at the level of compulsory or optional education (technical-professional training, university and polytechnic), should provide opportunities for the promotion of SECs, through SEL evidence-based, to reduce risk and increase possibilities for growth and healthy development throughout life. The systematic promotion of SECs, by embedding SEL in the regular curriculum, increases equity, as it assumes differences between individuals, recognises their individual characteristics and needs, and promotes equal opportunities (Jagers et al., 2019). In this sense, SEL programmes must also be culturally sensitive and inclusive (Cefai et al., 2021), so that all students feel represented and to increase their sense of belonging.

The importance of SEL in middle school and in secondary school is well established (Cefai et al., 2021; Mahoney et al., 2021), though, unfortunately, much less attention has been given to university students. Research about SECs and SE with this target population is very limited, as highlighted in our systematic review, though studies including university students have shown similar results to those with younger students. The studies with university students showed a positive link between SE (or its dimensions) with self-control (Bogg et al., 2016; Muenks et al., 2017), self-efficacy (Hopkins et al., 2020; Phillips, 2011), prosocial behaviour (Kaur et al., 2019) and emotional intelligence (Maguire et al., 2017).

In this thesis, we included university students in all studies, and the findings were in accordance with previous research. Particularly, the study in chapter VI included university students from nine different countries. The results showed that country-level variables did not impact the association between SECs and SE, meaning that SEL programmes aiming at SE enhancement could be implemented across countries, and positive results could be expected.

One goes from adolescence into adulthood during university years, which makes these years undoubtedly relevant for establishing health trajectories. This is also a period where dramatic changes in adaptation pathways can occur (Obradović et al., 2006). On the one hand, the university experience can be a time to live new and different experiences to enhance knowledge and competencies (Reis et al., 2018). On the other hand, several university students

are away from family and will have to balance academic obligations, leisure time, and house demanding tasks. Furthermore, they are also in a moment of identity exploration while feeling instability (Arnett, 2018), with many of them worried about financial conditions and or labour market challenges (Reis & Matos, 2019).

In general, around 20-50% of the population experience mental health difficulties (Kessler et al., 2007; SAMHSA, 2018), with university students being no exception (Auerbach et al., 2018; Gustavson et al., 2018). Most mental health disorders have their peak onset during young adulthood (Auerbach et al., 2018; Pedrelli et al., 2015), and it is also during these years, that the highest prevalence of any mental illness is found in comparison with adults and seniors (SAMHSA, 2018).

Thus, SEL can be especially relevant for health promotion and prevention (Reis & Matos, 2019) in the university setting. Also, SEL promotion improves and strengthens the relationship between peers and the teacher-student relationship and positively impacts the dynamic of the whole educative institution (for a review Mahoney et al., 2021). SEL in universities would foster healthy relationships and encourage the creation of spaces where everyone counts. SECs promotion is to bet on future resilient citizens. Educative settings can be a place where they can be active in getting involved, caring for others and the available material resources and making responsible decisions. Higher education is one of the last opportunities to equip all youth with the SECs that they will be required to succeed in the labour market.

6. Support SE by implementing youth-friendly policies.

As proposed by the bioecological human development framework, different contexts influence healthy development (Bronfenbrenner, 1979; Bronfenbrenner & Morris, 2006). The macro-level represents a country's culture and exists completely independent from the person in development, though it exerts some influence (Tudge et al., 2016).

Our cross-cultural study in chapter VI showed that SE was higher in countries with lower human development indexes and higher unemployment rates. One of our explanatory hypotheses relied on the fact that students in higher socioeconomic development countries might consider graduation as an acquired good or as a regular path that one has to pursue, which might decrease students' intrinsic motivation. The Human Development Report of 2019 stated that more than half of youth with 20 years old are at the university in highly developed countries. Moreover, in some countries with a lower unemployment rate, many young graduates find employment through low-paid temporary positions (Popenici, 2013), which

places them in disadvantaged and precarious social and economic positions. On the contrary, in countries with a lower socioeconomic development, a university degree might represent more labour opportunities and better socioeconomic life status. For instance, a study with college students showed that ethnic minority students had lower academic performance though higher SE than their peers (Greene et al., 2008).

Also, in western countries, higher education is increasing social inequalities. On the one hand, tuition fees are intensely increasing, leaving students under high economic stress, which jeopardises their engagement (Popenici, 2013). On the other hand, competition is increasing and transforming the social and democratic essence of educative institutions into a market, where grades and degrees have specific labour market values (Kromydas, 2017).

The promotion of SE needs to be supported by the educational sector and the higher education financial management. It is also necessary to hold accountable and involve the Ministry of Labour and Social Security, in order to i) support access to skilled work with dignifying wages; ii) provide economic supplements for those working in typically low paid jobs despite highly qualified; and, iii) reduce university tuition fees, or increase the scholarships.

3. Strengths and Limitations

The findings of the present thesis must be interpreted considering the limitations and strengths of the methodology employed.

First, and according to Tudge et al. (2016), studies based on the bioecological model of human development should be focused on proximal processes and include i) a minimum of two levels of personal characteristics (e.g., high and low levels of student engagement), ii) a minimum of two contexts (e.g., school and family) and iii) use a longitudinal design. They also indicate that few studies include all these prerequisites, despite referring to this conceptual model. All of our various studies focused on proximal process, and all include personal characteristics, thought only two presented two or more contexts (i.e., chapter V: two different home contexts; VI: more than two academic and sociocultural contexts), and only one included the longitudinal aspect (see chapter VII). The last study (see chapter VII) was intended to include all aspects, though as a result of the SARS-COVID-2 virus mitigation rules, it was not possible to collect data in-person in 2020 and 2021, as in 2019, and the confinement also changed students' availability, which resulted in a very small sample and limited our planned

analyses. In addition, the exosystem was not included in our project. Although the model does not require the inclusion of elements from all contexts, it would be important for future studies to analyse the direct influence of the exosystem. For example, analysing the indirect influence of pro-family policies on parents' work on youth development, SE and academic performance.

Another limitation was the reliance on a cross-sectional design (four in five empirical studies conducted), not allowing us to establish causality from the patterns of relations. In addition, we were able to collect a representative sample to analyse emotion regulation strategies and SE (see chapter III), but the same was not possible for the sample of youth living in residential care homes and for the transcultural study, which used a convenience sample. Finally, our longitudinal study was tremendously affected by the covid-19 restrictions, with a considerable loss of participants. These characteristics of our studies affect the generalizability of our findings to the population.

Despite the limitations, this thesis presents several strengths. The systematic review followed the PRISMA guidelines and included a vast search, based on nine databases and considering four languages. The five empirical studies, performed in the realm of this thesis considered a solid methodology based on the systematic review that, through identifying literature gaps, indicated how this work could be more valuable and innovative. Large samples were obtained in several studies (detailed description in chapters II, IV, VI), with the sample of the study in chapter IV constituting a representative sample of the Portuguese population in terms of age. These studies also included adolescent samples with a 15 years age range, allowing a better understanding of some critical transitional moments. Also, all samples were specifically recruited within the thesis context. Samples recruited in Portugal included students from rural and urban areas, the mainland and the islands, and students were following different educational paths (e.g., regular and alternative compulsory education, technical and vocational education, technical colleges, and university education). These characteristics increased the heterogeneity and representation of different paths, even though the differences between these groups were not studied.

Moreover, the study in chapter V included students living in residential care homes, which is a specific and vulnerable population. Also, the study in chapter VI comprised university students from nine countries that required a cross-cultural project's coordination and management. Finally, the sample in the study of chapter VII included three data collection moments during novel and relevant health, educational and social moments.

In order to engage in open science practices, the protocol of the systematic review and the cross-cultural study was registered on online freely available platforms (i.e., PROSPERO

and Open Science Framework, respectively). Also, we submitted supplemental material in all articles to enhance and support the analyses and make more information available.

4. Implications and Recommendations for the Future

The awareness that the school is not an exclusive space for learning technical-scientific knowledge, but also a privileged place for SEL and health promotion (Chernyshenko et al., 2018; Schleicher, 2018) supports the development of human beings as a whole. In this line of thought, the promotion of SECs and SE gain great prominence.

The health promotion concept focuses on caring for oneself and others, making healthy decisions, and taking control over life's circumstances, creating conditions conducive to health (Jones & Furner, 1998). For educative institutions to be places for health promotion, all the contexts that interact directly and indirectly with youth must be actively compromised and involved, being organised within a whole school approach (WHO & UNESCO, 2021).

Coherent and evidence-based public policies must support professional practices. Thus, research and actions within the realm of SECs acquisition and SE enhancement are aligned with the health-promoting schools initiative. Also, the global growth development in adolescence has the potential to substantially increase health actions among youth (Patton et al., 2016).

As has been widely advocated, SEL needs to be consistently implemented (Cefai et al., 2021; Greenberg et al., 2017; Mahoney et al., 2021). Thus, it is necessary to schedule a time for its implementation. Policymakers must provide adequate training, supervision or consultancy, and the human and material resources so that its implementation occurs reliably and consistently, including all academic years (i.e., covering university students too), but be aware of specific needs depending on developmental stage and gender. Also, the most effective interventions are multi-component and multi-contextual, so the family and the community must be all engaged (Patton et al., 2016). Thus, health-promoting actions should also target the active engagement of the whole school community and the health and well-being of the adults who primarily interact with youth since they are relevant role models and can impact students through their relationships or behaviours (Cefai et al., 2021).

Moreover, research has pointed out that SE, as SECs, is amenable to change (e.g., Santos, Simões, et al., 2021; Simões et al., 2019), and recent research has found that a small proportion of students tend to increase SE over time (Salmela-Aro et al., 2021; Zhen et al., 2020). Bottom-

up initiatives, where students' voice are welcomed, expresses the principles of empowerment and democracy and, consequentially, promote SE since students are more prone to engage with relational, interactive and meaningful activities (Cefai et al., 2021).

Thus, promoting strategies such as communication skills, critical thinking, problem-solving, self-esteem, self-efficacy, and self-regulation will support students in participating in the learning-teaching process more actively, will be better able to express their needs and goals and to give opinions and choose, which will foster SE and academic attainment.

Besides the implementation of universal school-based programmes, targeted interventions should be available to provide additional support for the most vulnerable students, such as students at risk or with mental health difficulties, students with special educational needs, vulnerable and marginalised students, students from low-SES, those who have experienced trauma or from migrant backgrounds (Cefai et al., 2021). Targeted interventions, including selective (i.e., for at-risk students) and indicated (i.e., for students already experiencing difficulties) interventions, can be implemented in collaboration with external professionals (Cefai et al., 2021). For instance, professionals at residential care homes could work in articulation with schools to provide an intentional and systemic preventive approach to promote health and resilience through the implementation of SEL programmes. This proposal is especially relevant, as our findings showed resilience internal assets were associated with SE for students living in residential care settings. Also, the articulation and higher engagement between residential care home practitioners and schools can impact youth SE, as observed in the study of Mihalec-Adkins et al. (2020) with foster families.

Regarding research, future studies should investigate the association of SECs and SE, considering different competencies (i.e., for instance, within each of the five areas of the CASEL framework, we can have different competencies), distinct contexts (e.g., rural and urban; levels of socioeconomic status; university first-generation), and include longitudinal designs. In addition, studies with longitudinal designs could use the experience sampling method (i.e., very short repeated systematically for a specific amount of time self-report assessments) to study cognitive and emotional processes (Csikszentmihalyi & Larson, 2014) and obtain more insight into youth daily decisions and competencies used to maintain a healthy SE. For instance, during assessment phases, this ecologic method could provide to both practitioners and researchers relevant information about relevant coping strategies.

In this thesis, we used an extended adolescent definition (Patton et al., 2016; Sawyer et al., 2018) that included youth aged 18-25, which calls for more attention on this subject as our

systematic review found. Future studies should analyse the SE of university students at different ages and graduation years.

Furthermore, it would also be relevant to analyse the impact of being a student worker, or high competition athletes, on SE and, consequently, on academic achievement. Typically, these students have less time to dedicate to their learning, which might lead to less involvement with academic tasks, teachers and peers, and university-based extracurricular activities.

Studies examining the SE trajectory showed that students who decrease engagement or maintain disengagement are a minority (Salmela-Aro et al., 2021; Zhen et al., 2020). Nevertheless, it would be important to identify which personal and contextual attributes characterise these students to be able to promote the protective factors and to address the risk factors. Very few studies have carried out this analysis. The exception is in a country with a high economic development level (Finland; Salmela-Aro et al., 2021) and another with a hybrid economy (China; Zhen et al., 2020). It will be important to address these concerns in other sociocultural contexts to better understanding the phenomenon. Another area that must be considered, concerns the specificities of SE dimensions (i.e., emotional, behavioural, and cognitive engagement) and how they may intertwine and influence each other longitudinally, separately and together, and impact on academic success, health behaviours, mental health, and well-being.

Future research should also take advantage of qualitative methodologies to further examine more deeply the emotion regulation process. For instance, in the selection stage information it would important to examine the reasons why students choose certain strategies and the way they employ the strategies. Also, it would be relevant to understand youth knowledge regarding identifying personal and contextual resources that can favour their relationship with the educative institution.

The association between SECs programmes and the increase in positive attitudes toward self and others, prosocial behaviour, and decrease in conduct problems, emotional distress, and academic performance is clear (Durlak et al., 2011; Sklad et al., 2012; Taylor et al., 2017; Wigelsworth et al., 2016). Albeit its association with SE was also positive, the number of reports in this regard is still scarce (Taylor et al., 2017). Thus, we hope that future studies on SEL programmes' efficacy and effectiveness may also assess the impact on SE at different ages or school levels. Considering that research on SE has increased in recent years, as our systematic review has shown, another necessary study would be the analysis, through a systematic review and/or meta-analysis, of SEL programmes that show evidence regarding the promotion of SE throughout compulsory and optional education - university path. Likewise, it

would be interesting to investigate, using a similar methodology, which SEL programmes promote the skills described in the Future of Jobs Report of the World Economic Forum (2020) as the "most wanted soft skills". These skills are critical thinking, problem-solving, and self-management competencies, such as active learning engagement, resilience, stress tolerance and flexibility. Systematic reviews would help decision-makers regarding SEL programmes implementation and support. It would also help experts to understand what changes could be made to improve existing curricula or other programmes under development or evaluation.

Another avenue for future interventions in healthy youth development should consider how the promotion of SECs and SEs is associated with positive outcomes in the labour market and job interviews. It seems that curriculums envision that after the educative path, one starts working; thus, no specific preparation exists for the event in the middle, representing the entrance into the job market – the job interview. Academic institutions should strengthen youth competencies and provide opportunities to practice the competencies and strategies that can impact this process. In addition to the work carried out within the scope of this thesis, an experimental study was conducted. Its main goals were to test the use of combined emotion regulation strategies since research has focused on analysing the impact of using a strategy per se in a situation of social stress and verifying its impact on self-report, behavioural and physiologic responses (Santos, Arriaga, et al., 2021a). In this study, different instructions were given to each group: one group was instructed to use suppression (a strategy that showed previous good results in a situation of social stress despite negative results at physiological levels), and the other group was instructed to use reappraisal and acceptance in combination. The results showed that the combination of adaptive emotion regulation strategies allowed the participants to experience less physiological stress and higher heart rate variability; their speech was better perceived, and they displayed more affiliative smile and hand gestures than suppression. The task involved (the trier social stress test) resembles a job interview, though a recent study showed that this task induces a stress level similar to an academic oral (Henze et al., 2017). These data show us that using adaptive strategies in combination promotes a better adaptation to the academic and work context.

Another study that we performed aimed at validating an anxiety scale in job interviews and showed that those who were studying and who had not yet had any job interview experience reported more anxiety compared to those who were working or who had a previous job interview experience (Santos, Arriaga, et al., 2021b). Thus, future studies could rely on this information to develop programmes for university students or those in vocational academic

tracks with opportunities to enhance the SECs that can help them deal with such social stress-inducing situations.

5. Conclusion

Health promotion through the implementation of SEL programmes that also impact the school climate and SE has been advocated by researchers and practitioners worldwide. However, research about the association between SECs and SE (as a three-dimensional concept) is still scarce, especially among university and vulnerable students. The studies developed within the scope of this thesis aimed to respond to this gap through research dedicated to factors that can better explain the association between SECs and SE, hoping that the information that emerged will be taken into account in future research, SEL programmes design and politic decisions. This thesis adds relevant information to the literature by demonstrating that SECs are positively associated with higher SE and decreased absenteeism irrespective of the living context (i.e., living with parents or in residential care homes) or country (i.e., socio-cultural and economic context). Despite positive association values for people in different proximal or macro contexts, our results suggest that this is especially relevant for those in vulnerable conditions, such as students in residential care homes.

The thesis also contributed to better understand the association between SE and specific cognitive emotion regulation strategies. Our findings showed that overall, adaptative emotion regulation strategies are related to SE for all ages, particularly the refocus on planning and positive reappraisal strategies. Thus, these strategies can be promoted at all ages (i.e., 10-25 range) to support SE. Additionally, this study showed that acceptance was associated with SE only for the younger group (10-12), and positive refocussing was associated only in the age group of 13-15. In accordance, it shows that there are age-specific strategies associated with SE, which calls for researchers and practitioners to adapt SEL to age developmental characteristics.

Moreover, findings suggested that SE in 2019 protected SECs maintenance in 2020, when students were facing unprecedent stress. Also, SECs in 2020 showed to be predictive of higher SE and better mental health in 2021. Also, we found that in 2020, a year of a great disturbance in social, educational and health domains, SE was predictive of higher psychological distress in 2021. In accordance with the Bioecological Model of Human Development, namely the chronosystem, our results support the perspective that the association between SECs and SE does not only changes with time but also with societal transformations. These findings provide relevant information for the educative institutions and call for a joint

educational plan design that can be used both to shape education onwards and help future pandemics, as the UNESCO Global Education Coalition[48] proposes. Also, these findings reinforce the identification of exclusive online learning as a potentially high-risk for youth mental health cannot be overlooked. Even though all the experience with online learning during confinement periods must be taken into consideration and used to refresh and update teaching and learning methods, reforms must be undertaken with caution.

The results of the studies developed supported the idea that it is not enough to give access to education for free. Educative institutions must be spaces where cultural and social justice and equity are assured. We advocate that it is necessary to promote healthy SE. The implementation of SEL targeting SE must be operated consistently and integrate the various contexts that influence youth development, so students can be fully supported and experience adaptative and healthy developmental trajectories.

[48] https://en.unesco.org/covid19/educationresponse/globalcoalition

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Appendix

Supplementary Tables

Supplementary Table A. *Chapter II - Search Strategy*

Search strategy: **#1 AND #2 AND #3**	**Concept 1**	**Concept 2**	**Concept 3**
Key concepts	**Social-emotional competencies**	**Youth**	**Student engagement**
Free text terms / natural language terms	Social-emotional competenc* Social-emotional skills Social-emotional learning Social and emotional competenc* social and emotional skills social and emotional learning Social competenc* Social skills Social skills training Social development Emotional competenc* Emotional skills Emotion regulation Emotional regulation Emotion intelligence Emotional intelligence Emotional development Life skills Essential skills Behavioural skills Character skills Strengths Assets Coping Soft skills non cognitive skills Self-regulation Self-management Self-control Self-awareness Social awareness Relationship skills Decision making Resilience	Adolescent* Teen* Young* Students University students College students undergraduates	Student attachment Student belonging Student bonding Student connectedness Student involvement Student disengagement School engagement School attachment School belonging School bonding School connectedness School involvement School disengagement Academic engagement Academic attachment Academic belonging Academic bonding Academic connectedness Academic involvement Academic disengagement

Supplementary Table B. *Chapter II - Quality Appraisal report*

		Methods									Main results			
Study	**Total**	**Study design**	**Setting**	**Participants1**	**Variables**	**Data sources**	**Bias**	**Study size**	**Quantitative variables**	**Statistical methods**	**Participants2**	**Descriptive data**	**Outcome data**	**Main results**
Acosta et al., 2019	Strong (25)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Swt	Yes	Yes
Aldridge et al., 2016	Strong (22)	Yes	Yes	Yes	Yes	Swt	No	Yes	Yes	Yes	Yes	Swt	Yes	Yes
Aldrup et al., 2018	Strong (25)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Swt	Yes
Alvarez-Rivera & Fox, 2010	Strong (24)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Swt	Yes	Swt	Yes	Yes
Awang-Hashim et al., 2015	Strong (24)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Swt	Yes	Swt	Yes	Yes
Batanova & Loukas, 2014	Strong (24)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Swt	Yes	Swt	Yes
Bogg et al., 2016	Strong (22)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Swt	Yes	Swt	Yes	Yes
Brandt et al., 2019	Strong (24)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Swt	Swt	Yes	Yes
Bryce et al., 2019	Strong (24)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Swt	Yes	Swt	Yes	Yes
Burns & Rapee, 2016	Strong (23)	Yes	Yes	Yes	Swt	Swt	Yes	Yes	Yes	Yes	Yes	Yes	Swt	Yes
Cakar & Karatas, 2017	Strong (24)	Yes	Yes	Yes	Yes	Swt	Yes	Yes	Yes	Yes	Yes	Swt	Yes	Yes
Calmeiro, et al., 2018	Strong (24)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Swt	Yes	Swt	Yes	Yes
Cunningham et al., 2004	Strong (23)	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Swt	Yes
Curcio et al., 2017	Strong (26)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Dang, 2004	Strong (24)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Swt	Swt	Yes
Datu et al., 2017	Strong (23)	Yes	Yes	Yes	Yes	Swt	Yes	Yes	Yes	Swt	Yes	Swt	Yes	Yes
Dehyadegary et al., 2014	Strong (22)	Yes	Swt	Yes	Yes	Yes	Yes	Swt	Yes	Swt	Yes	Swt	Yes	Yes
Demirci, 2020	Strong (24)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Swt	Yes	Swt	Yes	Yes

Study	Total	Study design	Setting	Participants1	Variables	Data sources	Bias	Study size	Quantitative variables	Statistical methods	Participants2	Descriptive data	Outcome data	Main results
Demirtas-Zorbaz et al., 2018	Strong (22)	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Swt	Yes	Swt	Yes	Yes
Dinh et al., 2020	Strong (25)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Swt	Yes	Yes
Dixson & Stevens, 2018	Strong (26)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Fox & Bouffard, 2015	Strong (23)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Swt	Swt	Swt	Yes	Yes
Frydenberg et al., 2009	Strong (22)	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Swt	Yes	Swt	Yes	Yes
Gao et al., 2020	Strong (20)	Yes	Swt	Yes	Yes	Yes	No	Yes	Yes	Swt	Yes	Swt	Swt	Yes
Halgunseth et al., 2013	Strong (22)	Yes	Yes	Yes	Yes	Yes	Yes	Swt	Yes	Swt	Swt	Swt	Yes	Yes
Ho et al., 2015	Strong (24)	Yes	Yes	Yes	Yes	Yes	Swt	Yes	Yes	Yes	Yes	Swt	Yes	Yes
Hopkins et al., 2020	Moderate (18)	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Swt	Swt	Swt	Swt	Yes
Hu et al., 2019	Strong (25)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Swt	Yes	Yes
Hurd & Sellers, et al., 2013	Strong (24)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Swt	Swt	Yes
Ihtiyaroglu & Ates, 2018	Strong (24)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Swt	Yes	Swt	Yes	Yes
Jiang et al., 2019	Strong (25)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Swt	Yes	Yes	Yes
Jones & Lafreniere, 2014	Strong (24)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Swt	Yes	Swt	Yes	Yes
Kaur et al., 2019	Strong (25)	Yes	Yes	Yes	Swt	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Khawaja et al., 2017	Strong (22)	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Swt	Yes	Swt	Yes
Kim, D. et al., 2018	Strong (23)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Swt	Yes	Swt	Swt	Yes
Kim, E. et al., 2019	Strong (23)	Yes	Yes	Yes	Yes	Swt	Yes	Yes	Yes	Swt	Yes	Swt	Yes	Yes
Krauss et al., 2014	Strong (24)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Swt	Yes	Swt	Yes	Yes
Law et al., 2013	Strong (24)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Swt	Yes	Swt	Yes	Yes

Study	Total	Study design	Setting	Participants[1]	Variables	Data sources	Bias	Study size	Quantitative variables	Statistical methods	Participants[2]	Descriptive data	Outcome data	Main results
Lehrer et al., 2017	Strong (24)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Swt	Yes	Swt	Yes	Yes
Li et al., 2013	Strong (25)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Swt	Yes	Yes
Liu et al., 2020	Strong (25)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Swt	Yes	Yes
Loukas et al., 2010	Strong (22)	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Swt	Swt	Yes	Yes
Lynch et al., 2013	Strong (22)	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Swt	Swt	Yes	Yes
Maguire et a., 2017	Strong (24)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Swt	Yes	Swt	Yes	Yes
Marbell-Pierre et al., 2019	Strong (26)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Mariscal et al., 2020	Strong (24)	Yes	Yes	Yes	Yes	Swt	Yes	Yes	Yes	Yes	Yes	Swt	Yes	Yes
Marques et al., 2016	Strong (21)	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Swt	Swt	Swt	Yes	Yes
Martin et al., 2013	Strong (24)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Swt	Swt	Yes	Yes
Martin et al., 2015	Strong (25)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Swt	Yes	Yes
McGeown et al., 2018	Strong (25)	Yes	Yes	Yes	Yes	Yes	Yes	Swt	Yes	Yes	Yes	Yes	Yes	Yes
Mihalec-Adkins & Cooley, 2020	Strong (24)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Swt	Yes	Swt	Yes	Yes
Muenks et al., 2017	Strong (24)	Yes	Yes	Yes	Yes	Swt	Yes	Yes	Yes	Yes	Yes	Swt	Yes	Yes
Murphy & McKenzie, 2016	Strong (24)	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
O'Connor et al., 2012	Strong (23)	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Swt	Yes	Yes
Oldfield et al., 2016	Strong (24)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Swt	Yes	Swt	Yes	Yes
Oshri et al., 2018	Strong (24)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Swt	Swt	Yes	Yes
Padilla-Walker et al., 2013	Strong (25)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Swt	Yes	Yes	Yes
Peng et al., 2019	Strong (23)	Yes	Yes	Yes	Yes	Swt	Yes	Yes	Yes	Swt	Yes	Swt	Yes	Yes
Peterson et al., 2013	Moderate (19)	Yes	Yes	Yes	Swt	Swt	No	Yes	Yes	Swt	Swt	Yes	Swt	Yes
Phillips, 2011	Strong (21)	Yes	Swt	Yes	Yes	Yes	Yes	Yes	Yes	Swt	Yes	Swt	Swt	Swt

Study	Total	Study design	Setting	Participants1	Variables	Data sources	Bias	Study size	Quantitative variables	Statistical methods	Participants2	Descriptive data	Outcome data	Main results
Quimby et al., 2018	Strong (24)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Swt	Swt	Yes	Yes
Raval et al., 2018	Strong (24)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Swt	Yes	Swt	Yes	Yes
Rodriguez et al., 2020	Strong (24)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Swt	Yes	Swt	Yes	Yes
Rodríguez-Fernández et al., 2016	Strong (26)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Ross et al., 2010	Strong (26)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Ryzin et al., 2009	Strong (23)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Swt	Swt	Swt	Yes	Yes
Sebokova et al., 2018	Strong (24)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Swt	Swt	Yes	Yes
Sevil-Gulen & Demir, 2020	Strong (26)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Slaten et al., 2019	Strong (24)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Swt	Yes	Swt	Yes	Yes
Smalls, 2010	Strong (24)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Swt	Yes	Swt	Yes	Yes
Smokowski et al., 2009	Strong (25)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Swt	Yes	Yes	Yes
Stefansson et al., 2018	Strong (25)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Swt	Yes
Steinmayr et al., 2018*	Strong (25)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Swt	Yes	Yes	Yes
Stevens & Hardy, 2013	Strong (24)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Swt	Yes	Swt	Yes	Yes
Stoddard et al., 2020	Strong (24)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Swt	Yes	Swt	Yes	Yes
Taylor et al., 2020	Strong (23)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Swt	Swt	Swt	Yes	Yes
Tolan, et al., 2013	Strong (24)	Yes	Yes	Yes	Yes	Swt	Yes	Yes	Yes	Yes	Swt	Yes	Yes	Yes
Tozer et al., 2018	Strong (25)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Swt	Yes	Yes	Yes
Ungar & Liebenberg, 2013	Strong (24)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Swt	Yes	Swt	Yes	Yes
Venta et al., 2019	Strong (23)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Swt	Yes	Swt	Swt	Yes

Study	Total	Study design	Setting	Participants1	Variables	Data sources	Bias	Study size	Quantitative variables	Statistical methods	Participants2	Descriptive data	Outcome data	Main results
Vera et al., 2017	Strong (25)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Swt	Yes	Yes	Yes	Yes
Voisin et al., 2018	Strong (26)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Wang et al., 2005	Strong (23)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Swt	Yes	Swt	Swt	Yes
Waters et al., 2010	Strong (24)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Swt	Swt	Yes	Yes
Wong et al., 2014	Strong (24)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Swt	Yes	Swt	Yes	Yes
Yeh et al., 2014	Strong (26)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Yorgason et al., 2011	Strong (24)	Yes	Swt	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Swt	Yes	Yes	Yes
Zhang et al., 2021	Strong (26)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Zhao & Zhao et al., 2015	Strong (26)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Zhen et al., 2020	Strong (23)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Swt	Yes	Swt	Swt

Note. Swt = somewhat; Values: Yes = 2, Somewhat = 1, Not reported/not clear = 0, * Report with two studies, though, as both studies had the same quality results, for simplicity, only one result was presented.

Supplementary Table C. *Chapter III - Measurement Invariance Analysis for Gender and Age-group: Standardized Factor Loadings (λ) and Explained Variance (R2) for the Cognitive Emotion Regulation Questionnaire short version*

		Gender				Age-groups					
		Male *n* = 415, 39.47%		Female *n* = 637, 60.53%		10-14 *n* = 324, 30.84%		15-17 *n* = 398, 38.22%		18-25 *n* = 326, 30.94%	
Scales	Items	λ	R^2	λ	R^2	λ	R^2	λ	R^2	λ	R^2
Acceptance	1	.68	.46	.63	.40	.65	.42	.59	.35	.72	.51
	5	.79	.63	.90	.81	.87	.76	.75	.56	.91	.83
Refocus on Planning	12	.69	.48	.68	.47	.77	.60	.65	.42	.61	.37
	15	.80	.63	.66	.43	.71	.50	.74	.55	.83	.68
Putting into perspective	13	.65	.42	.59	.34	.59	.35	.59	.34	.71	.50
	16	.73	.53	.64	.40	.77	.60	.65	.42	.66	.44
Positive reappraisal	3	.73	.54	.63	.39	.63	.40	.70	.49	.75	.57
	8	.74	.55	.76	.58	.82	.67	.77	.59	.68	.46
Positive refocusing	7	.60	.35	.57	.33	.60	.36	.58	.34	.54	.29
	11	.97	.94	.91	.83	.92	.84	.94	.88	1.03	1.00
Rumination	2	.47	.22	.71	.50	.57	.32	.57	.33	.65	.43
	6	.78	.61	.68	.47	.75	.56	.77	.60	.70	.49
Catastrophizing	9	.74	.55	.70	.48	.74	.54	.73	.54	.70	.49
	17	.81	.65	.79	.62	.79	.63	.78	.61	.85	.72
Self-blame	4	.71	.51	.71	.51	.77	.59	.65	.42	.72	.51
	14	.84	.70	.77	.59	.79	.62	.83	.69	.85	.72
Other-blame	10	.85	.73	.70	.48	.98	.97	.74	.55	.72	.52
	18	.72	.52	.83	.74	.60	.36	.86	.74	.90	.82

Supplementary Table D. *Chapter IV - Descriptive Statistics and Reliability of the Measures*

	Descriptive		Reliability		
	M	*SD*	Spearman-Brown	Cronbach's α*	95% CI
Acceptance	3.58	0.87	.71	.71	[.68, 74]
Refocus on planning	3.53	0.91	.66	.66	[.63, .69]
Putting into perspective	3.30	0.99	.59	.59	[.55, .63]
Positive reappraisal	3.86	0.95	.69	.69	[.66, .72]
Positive refocusing	3.03	1.06	.71	.71	[.68, .74]
Rumination	3.54	0.95	.64	.64	[.59, .67]
Catastrophizing	2.82	1.09	.72	.72	[.70, .75]
Self-blame	2.95	1.04	.74	.74	[.71, .76]
Other-blame	2.04	0.87	.74	.74	[.71, .76]
Student engagement	3.44	0.57	NA	.93	[.93, .94]

Note. M = Mean, SD = Standard Deviation, Min = Minimum, Max = Maximum, CI = Confidence Intervals, NA = Not applicable, *Eisinga et al. (2013) proposes the use of the standardised Cronbach's alpha (α) coefficient and CI 95% for two items dimensions.

Supplementary Table E. *Chapter IV - Pearson Correlation of Cognitive Emotion Regulation strategies and Student Engagement by Age-group*

		Cognitive emotion regulation strategies								
		Acceptance	Refocus on planning	Putting into perspective	Positive reappraisal	Positive refocusing	Rumination	Catastrophizing	Self-blame	Other-blame
	SE total	.23**	.40**	.21**	.33**	.19**	.05*	-.07**	-.03	-.03
	Emotional engagement	.17**	.28**	.17**	.25**	.19**	-.01	-.08**	-.05	-.03
	Behavioural engagement	.14**	.32**	.13**	.24**	.17**	-.011	-.09**	-.08**	-.06*
	Cognitive engagement	.26**	.40**	.23**	.33**	.13**	.14**	-.01	.04	.02
SE total	10-12	.39**	.52**	.30**	.48**	.32**	.001	-.08	-.01	-.02
	13-15	.23**	.41**	.26**	.35**	.24**	.14**	-.11*	-.02	-.06
	16-18	.18**	.36**	.19**	.29**	.10*	.02	-.08	-.03	-.01
	19-25	.10	.32**	.06	.14*	-.09	.11	-.04	.02	-.11
Emotional engagement	10-12	.25**	.37**	.19**	.30**	.31**	-.09	-.09	-.05	-.06
	13-15	.20**	.29**	.18**	.26**	.25**	.04	-.14**	-.08	-.04
	16-18	.14**	.25**	.20**	.24**	.15**	-.05	-.08	-.04	-.02
	19-25	0.02	.15*	.016	0.10	-.05	.08	.002	.01	-.07
Behavioural engagement	10-12	.33**	.44**	.26**	.40**	.30**	-.02	-.12*	-.04	-.02
	13-15	.15**	.36**	.19**	.33**	.18**	.10*	-.12**	-.06	-.07
	16-18	.09*	.31**	.10*	.21**	.07	-.05	-.13**	-.07	-.04
	19-25	0.02	.21**	.01	.04	-.08	.01	-.06	-.06	-.16*
Cognitive engagement	10-12	.41**	.54**	.33**	.51**	.24**	.08	-.002	.05	.03
	13-15	.23**	.38**	.27**	.31**	.20**	.20**	-.03	.06	-.03
	16-18	.20**	.33**	.19**	.27**	.06	.11**	-.004	.03	.04
	19-25	.19**	.38**	.11	.19**	-.08	.16*	-.05	.08	-.05

Note. * $p < .05$, ** $p < .01$, ***$p < .001$

Supplementary Table F. *Chapter IV - Multiple Regression Model predicting Student Emotional Engagement at different Age-groups.*

	Model 1 (10-12 age-group)			Model 2 (13-15 age-group)			Model 3 (16-18 age-group)			Model 4 (18-25 age-group)		
	B	SE	β	B	SE	β	B	SE	β	B	SE	β
Step 1[a]												
Gender							0.13	0.06	.09*	0.36	0.09	.26***
R^2								.01			.07	
Adjusted R^2								.01			.06	
F								4.46*			16.92***	
Step 2												
Gender							0.11	0.06	0.08*	.39	.09	.28***
Acceptance[b]	0.06	0.05	.07	0.06	0.04	0.07	0.02	0.04	0.03			
Refocus on planning	0.17	0.05	.25***	0.12	0.04	0.18***	0.11	0.04	0.15**	.16	.06	.18**
Putting into perspective	-0.02	0.04	-.03	0.00	0.03	0.00	0.07	0.03	0.10*			
Positive reappraisal[b]	0.06	0.05	.08	0.07	0.04	0.10	0.08	0.04	0.11*			
Positive refocussing	0.11	0.04	.18**	0.09	0.03	0.14**	0.01	0.03	0.02			
Rumination[b]												
R^2		.18			.13			.10			.10	
Adjusted R^2		.17			.12			.10			.09	
F		11.69***			13.94***			9.90***			8.56**	

Note. * $p < .05$, ** $p < .01$, ***$p < .001$; [a] not included in the analysis of Model 1 because gender was not correlated with student engagement at 10-12 age-group; [b] not included in the analysis because the strategy was not correlated with student behavioural engagement at that age group

Supplementary Table G. *Chapter IV - Multiple Regression Model predicting Student Behavioural Engagement at different Age-groups.*

	Model 1 (10-12 age-group)			Model 2 (13-15 age-group)			Model 3 (16-18 age-group)			Model 4 (18-25 age-group)		
	B	SE	β	B	SE	β	B	SE	β	B	SE	β
Step 1[a]												
Gender				0.13	0.06	.10*						
R^2					.01							
Adjusted R^2					.01							
F					5.16*							
Step 2												
Gender				0.13	0.06	0.10*						
Acceptance[b]	0.08	0.04	.13*	-0.01	0.04	-0.02	-0.02	0.03	-0.03			
Refocus on planning	0.14	0.04	.25***	0.17	0.04	0.25***	0.21	0.04	0.28***	.156	.05	.21**
Putting into perspective[b]	0.00	0.03	.003	-0.01	0.03	-0.02	-0.01	0.03	-0.01			
Positive reappraisal[b]	0.09	0.04	.17*	0.13	0.03	0.19***	0.06	0.04	0.09			
Positive refocussing[b]	0.06	0.03	.12	0.03	0.03	0.06						
Rumination[b]				0.03	0.03	0.04						
R^2		.25			.17			.10			.04	
Adjusted R^2		.24			.16			.10			.04	
F		17.93***			15.37***			14.79***			10.78**	

Note. * $p < .05$, ** $p < .01$, ***$p < .001$; [a] not included in the analysis of Model 1 because gender was not correlated with student engagement at 10-12 and 16-18 age-group; [b] not included in the analysis because the strategy was not correlated with student behavioural engagement at that age group.

Supplementary Table H. *Chapter IV - Multiple Regression Model predicting Student Cognitive Engagement at different Age-groups.*

	Model 1 (10-12 age-group)			Model 2 (13-15 age-group)			Model 3 (16-18 age-group)			Model 4 (18-25 age-group)		
	B	SE	β	B	SE	β	B	SE	β	B	SE	β
Step 1[a]												
Gender				0.16	0.06	.11*	.15	.06	.10*			
R^2					.01			.01				
Adjusted R^2					.01			.01				
F					6.26*			5.34*				
Step 2												
Gender				0.09	0.06	0.07	0.12	0.06	0.09*			
Acceptance[c]	0.12	0.04	.15**	0.03	0.04	0.04	0.06	0.04	0.08	.05	.05	.07
Refocus on planning	0.21	0.04	.33***	0.18	0.04	0.25***	0.18	0.04	0.22***	.31	.06	.37***
Putting into perspective	0.03	0.04	.04	0.04	0.03	0.06	0.04	0.03	0.05			
Positive reappraisal[c]	0.17	0.04	.25***	0.08	0.04	0.11*	0.08	0.04	0.11*	-.02	.05	-.03
Positive refocussing	-0.01	0.03	-.02	0.04	0.03	0.07						
Rumination[b]				0.11	0.03	0.15**	.05	.03	.07	.10	.04	.14*
R^2		.38			.21			.14			.17	
Adjusted R^2		.37			.20			.13			.16	
F		32.26***			19.30***			16.63***			12.21***	

Note. * $p < .05$, ** $p < .01$, ***$p < .001$; [a] not included in the analysis of Model 1 because gender was not correlated with student engagement at 10-12 age-group; [b] not included in the analysis because the strategy was not correlated with student behavioural engagement at that age group

Supplementary Table I. *Chapter V - Pearson Correlations by Total Sample.*

Variables	2	3	4	5	6	7	8	9
1. Truancy	.34**	.29**	-.33**	-.32**	-.27**	-.18*	-.30**	-.21*
2. Grade retention	-	.21*	-.20*	-.20*	-.16	-.08	-.17	-.14
3. Depression		-	-.18	-.28**	-.21*	-.14	-.26**	-.14
4. School success perception			-	.22*	.36**	.26**	.45**	.23*
5. Resilience internal assets				-	.37**	.36**	.33**	.27**
6. Student engagement (SE)					-	.83**	.85**	.86**
7. Emotional SE						-	.66**	.55**
8. Behavioural SE							-	.55**
9. Cognitive SE								-

Note. * $p < .05$, ** $p < .01$

Supplementary Table J. *Chapter VI - The Comparison of Configural, Metric and Scalar Invariance Models in Student Engagement, Prosocial Behaviour and Emotional Competence*

	Goodness-of-fit				Model comparison		
	CFI	TLI	RMSEA	SRMR	ΔCFI	ΔRMSEA	ΔSRMR
Student engagement							
Configural	.906	.897	.048	.068			
Metric	.902	.899	.048	.083	-.004	0	.015
Scalar	.824	.830	.062	.094	-.078	.014	.011
Emotional Competence							
Configural	.971	.969	.016	.067			
Metric	.983	.983	.012	.071	.012	-004	.004
Scalar	.894	.898	.029	.08	-.089	.017	.009
Prosocial Behaviour							
Configural	.975	.926	.057	.031			
Metric	.972	.964	.04	.051	-.003	-.017	.02
Scalar	.706	.76	.103	.101	-.266	.063	.05

Note. $\chi 2$ = Chi-square test statistic; *df* = degrees of freedom; CFI = comparative fit index; TLI = Tucker–Lewis index; RMSEA = root mean square error of approximation; SRMR = standardized root mean square residual; $\Delta\chi 2$, ΔCFI, ΔSRMR and ΔRMSEA = change in fit indices between contiguous nested models.

Supplementary Table K. *Chapter VI - Unstandardized and Standardized Factor loadings per Country for Student Engagement*

			Standardized Factor Loadings								
Subscale	Item	Unstandardized Factor Loadings	1	2	3	4	5	6	7	8	9
Emotional	5_inv	1.00	0.48	0.47	0.55	0.37	0.30	0.44	0.31	0.41	0.49
Emotional	1	1.16	0.64	0.61	0.68	0.65	0.62	0.58	0.64	0.62	0.56
Emotional	2	1.42	0.69	0.72	0.70	0.67	0.71	0.69	0.56	0.63	0.67
Emotional	3	1.37	0.72	0.77	0.67	0.68	0.71	0.67	0.63	0.65	0.72
Emotional	4	1.07	0.62	0.71	0.70	0.68	0.65	0.53	0.57	0.63	0.61
Emotional	6	1.31	0.64	0.64	0.57	0.48	0.56	0.57	0.49	0.55	0.63
Emotional	7	1.35	0.67	0.53	0.53	0.53	0.54	0.56	0.49	0.53	0.64
Emotional	8	1.33	0.46	0.51	0.51	0.46	0.44	0.51	0.38	0.49	0.62
Emotional	9	1.33	0.70	0.70	0.54	0.50	0.64	0.58	0.50	0.49	0.60
Behavioural	1	1.00	0.62	0.62	0.68	0.59	0.39	0.56	0.59	0.60	0.56
Behavioural	2	1.08	0.69	0.55	0.70	0.62	0.49	0.58	0.67	0.65	0.63
Behavioural	3	0.81	0.53	0.37	0.58	0.49	0.43	0.29	0.51	0.51	0.45
Behavioural	4	1.01	0.69	0.75	0.69	0.61	0.61	0.55	0.60	0.60	0.58
Behavioural	8	0.91	0.54	0.70	0.60	0.53	0.61	0.55	0.51	0.62	0.67
Behavioural	9	0.96	0.56	0.67	0.63	0.50	0.61	0.52	0.53	0.62	0.66
Cognitive	1	1.00	0.72	0.82	0.78	0.72	0.73	0.75	0.65	0.77	0.76
Cognitive	2	0.86	0.58	0.69	0.58	0.61	0.62	0.61	0.56	0.57	0.62
Cognitive	3	0.76	0.48	0.59	0.49	0.49	0.51	0.55	0.47	0.48	0.61
Cognitive	4	0.93	0.62	0.70	0.66	0.62	0.64	0.64	0.57	0.62	0.73
Cognitive	5	0.91	0.54	0.56	0.51	0.53	0.54	0.56	0.49	0.57	0.55
Cognitive	6	1.05	0.68	0.87	0.79	0.74	0.76	0.79	0.63	0.77	0.82
Cognitive	7	1.01	0.63	0.77	0.74	0.69	0.74	0.74	0.59	0.75	0.74
Cognitive	8	1.02	0.68	0.83	0.71	0.68	0.66	0.73	0.63	0.74	0.72
Cognitive	9	1.03	0.69	0.85	0.75	0.72	0.72	0.73	0.69	0.73	0.78
Cognitive	10	1.06	0.71	0.73	0.79	0.72	0.72	0.78	0.63	0.80	0.81
Cognitive	11	0.90	0.52	0.61	0.59	0.56	0.58	0.57	0.51	0.58	0.60
Cognitive	12	1.06	0.64	0.74	0.61	0.67	0.70	0.71	0.63	0.69	0.75

Note: 1 =Angola; 2 = Australia; 3 = Brazil; 4 = Cape Verde; 5 = Greece; 6 = Malta; 7 = Mozambique; 8 = Portugal; 9 = Taiwan.

Supplementary Table L. *Chapter VI - Unstandardized and Standardized Factor loadings per Country for Emotional Competence*

			Standardized Factor Loadings								
Subscale	Item	Unstandardized Factor Loadings	1	2	3	4	5	6	7	8	9
pu	3	1.00	0.32	0.65	0.39	0.35	0.56	0.56	0.36	0.42	0.65
pu	9	1.02	0.41	0.68	0.45	0.45	0.63	0.59	0.46	0.47	0.72
pu	12	1.07	0.44	0.76	0.50	0.48	0.74	0.66	0.50	0.53	0.78
pu	15	0.92	0.33	0.50	0.36	0.36	0.51	0.53	0.35	0.43	0.43
pu	21	0.90	0.38	0.66	0.43	0.38	0.61	0.58	0.40	0.46	0.66
pu	24	1.04	0.39	0.78	0.37	0.42	0.63	0.62	0.41	0.44	0.76
pu	30	1.03	0.35	0.71	0.36	0.38	0.60	0.58	0.39	0.35	0.65
pu	33	0.89	0.30	0.52	0.31	0.30	0.49	0.51	0.33	0.28	0.56
pu	36	0.95	0.34	0.66	0.32	0.33	0.53	0.55	0.38	0.30	0.60
pu	39	1.09	0.44	0.75	0.52	0.45	0.72	0.67	0.45	0.52	0.73
pu	42	0.96	0.37	0.71	0.40	0.41	0.59	0.59	0.43	0.41	0.57
pu	44	0.88	0.36	0.54	0.33	0.36	0.51	0.48	0.39	0.37	0.46
el	2	1.00	0.36	0.59	0.38	0.34	0.47	0.60	0.35	0.30	0.47
el	11	1.30	0.51	0.81	0.48	0.47	0.70	0.75	0.53	0.40	0.71
el	14	1.24	0.46	0.67	0.43	0.45	0.63	0.72	0.45	0.39	0.64
el	17	1.31	0.52	0.74	0.48	0.51	0.67	0.77	0.51	0.44	0.68
el	20	1.24	0.53	0.78	0.50	0.52	0.72	0.75	0.52	0.42	0.72
el	23	1.18	0.51	0.75	0.47	0.50	0.73	0.72	0.47	0.45	0.70
el	32	0.95	0.43	0.61	0.42	0.44	0.57	0.56	0.39	0.36	0.50
el	38	1.31	0.57	0.81	0.49	0.52	0.73	0.77	0.52	0.47	0.61
el	41	1.22	0.55	0.81	0.55	0.53	0.75	0.78	0.53	0.48	0.74
mr	1	1.00	0.23	0.41	0.22	0.21	0.38	0.33	0.23	0.21	0.37
mr	4	1.11	0.23	0.49	0.27	0.24	0.42	0.38	0.26	0.23	0.43
mr	10	1.10	0.36	0.47	0.35	0.32	0.51	0.45	0.31	0.32	0.47
mr	19	1.31	0.37	0.53	0.36	0.35	0.52	0.50	0.34	0.31	0.53
mr	34	1.21	0.35	0.63	0.31	0.32	0.45	0.44	0.35	0.27	0.43
mr	37	1.17	0.31	0.47	0.26	0.26	0.42	0.44	0.28	0.25	0.39
mr	43	1.39	0.48	0.79	0.42	0.44	0.66	0.61	0.48	0.41	0.59
mr	45	1.51	0.41	0.57	0.43	0.38	0.61	0.57	0.40	0.41	0.63

Note: pu = perceive and understand emotion; el = express and label emotion; mr = manage and regulate emotion; 1 =Angola; 2 = Australia; 3 = Brazil; 4 = Cape Verde; 5 = Greece; 6 = Malta; 7 = Mozambique; 8 = Portugal; 9 = Taiwan.

Supplementary Table M. *Chapter VI - Unstandardized and Standardized Factor loadings per Country for Prosocial Behaviour*

		Standardized Factor Loadings								
Item	Unstandardized Factor Loadings	1	2	3	4	5	6	7	8	9
SDQ1	1.00	0.37	0.64	0.64	0.41	0.44	0.52	0.34	0.54	0.55
SDQ9	1.29	0.53	0.58	0.70	0.64	0.67	0.50	0.63	0.63	0.72
SDQ17	1.05	0.45	0.57	0.49	0.52	0.45	0.45	0.43	0.53	0.52
SDQ20	1.27	0.62	0.60	0.71	0.69	0.69	0.52	0.59	0.65	0.74

Note: 1 =Angola; 2 = Australia; 3 = Brazil; 4 = Cape Verde; 5 = Greece; 6 = Malta; 7 = Mozambique; 8 = Portugal; 9 = Taiwan; SDQ = Strenghts and Difficulties Questionnaire.

Supplementary Table N. *Chapter VI - Multilevel Regression Models of Student Engagement Predictors*

	Model 1b Random Intercept			**Model 2b Random Intercept + Slopes**			**Model 3b Cross-level Interactions**		
	Est	*se*	*p*	*Est*	*se*	*p*	*Est*	*se*	*p*
Fixed Effects									
Intercept	3.87	0.05	< .001	3.87	0.05	< .001	3.87	0.05	< .001
Level 1 predictors									
Prosocial behaviour	0.29	0.03	< .001	0.29	0.05	< .001	0.29	0.03	< .001
Emotional competence	0.32	0.02	< .001	0.32	0.03	< .001	0.32	0.03	< .001
Level 2 predictors									
Unemployment Rate	0.02	0.01	< .001	0.02	0.01	< .001	0.02	0.01	< .001
Cross-level interactions									
Prosocial behaviour x Unemployment Rate							0.00	0.00	.278
Emotional competence x Unemployment Rate							0.00	0.00	.503
Random Effects									
Country SD	0.13	0.03	< .001	0.14	0.03	< .001	0.13	0.03	< .001
Residual SD	0.44	0.01	< .001	0.43	0.01	< .001	0.44	0.01	< .001
Prosocial behaviour SD				0.08	0.05	.076			
Emotional competence SD				0.01	0.05	.829			

Detailed participants description

The final sample is composed of 50 students, aged 18-25 years old (M = 19.52, SD = 1.49), with 84% of the participants identified as cisgender woman (n = 42), and 16% as cisgender men (n = 8). The great majority of participants had Portuguese nationality (n = 49, 98%) and one was from Cape Verde. Most students were enrolled in a university degree course (n = 38, 76%), did not work besides studying (n = 40, 80%), do not skip classes (n = 31, 62%) and never failed school (n = 42, 84%). In 2020 and 2021, most students reported following social isolation as recommended (T2 = 74%, T3 = 90%), studying to be occupied (T2 = 64%, T3 = 76%), and were worried with their assessment (T2 = 62%, T3 = 72%).

Supplementary Table O. *Chapter VII - Participants Characterization at First Data Collection*

Variables	T1: 2019	
	n	**%**
Gender		
Male	8	16
Female	42	84
Portuguese nationality	49	98
School level		
High school	9	18
Degree	38	76
Master	3	6
Work besides studying	10	20
Number of school fails		
Never	42	84
Once	6	12
Twice	2	4
Skipping school		
No	31	62
Sometimes	13	26
Yes	6	12

Supplementary Table P. *Chapter VII - Confirmatory Factor Analysis for Student Engagement, Social and Emotional Competencies and Mental Health*

Variables	Goodness-of-fit statistics					
	χ^2	*df*	CFI	TLI	SRMR	RMSEA [90% CI]
Student engagement[1]	979.61	402	.95	.93	.08	.07 [.05, .09]
Socioemotional competencies[2]	389.81	223	.91	.90	.08	.06 [.05, .06]
Psychological distress[3]	174.22	103	.99	.99	.06	.04 [.03, .05]

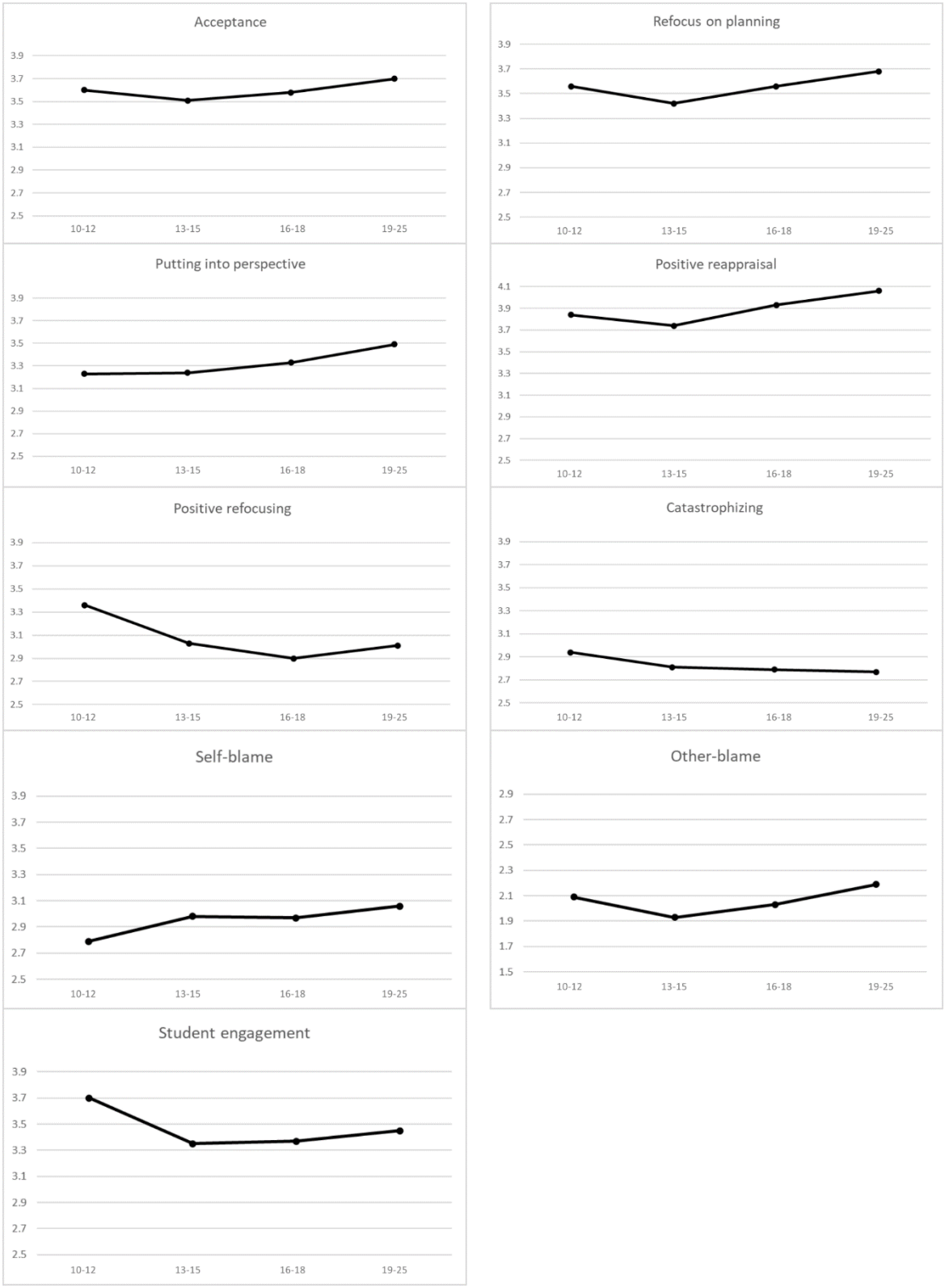
Note: *df* = degrees of freedom, CFI = Comparative fit index; TLI = Tucker-Lewis Index; SRMR = Standardized root mean square residual; RMSEA = Root mean square error of approximation; CI = Confidence interval; 1 = Student engagement scale (30 items: 9 for emotional engagement, 12 for cognitive engagement and 9 for behavioural engagement; items 10, 11 and 12 of the behavioural dimension were not included, since they are related to extracurricular school-based activities that were inactive during confinement periods; 2 = Socioemotional competencies (13 items from the internal assets subscale with items 1, 4, 5, 6 and 7 deleted due to negative inter-item correlations; and 18 items from the adaptative emotion regulation strategies subscale; internal assets competencies subscale and the adaptative cognitive emotional regulation subscale showed a correlation of .50, p=.007); 3 = Psychological distress (7 items for anxiety and 9 for depressive symptoms; anxiety and depressive symptoms scales showed a correlation of .84, p<.001).

Supplementary Table Q. *Chapter VII - Standardized Coefficients of the Cross-lagged Model*

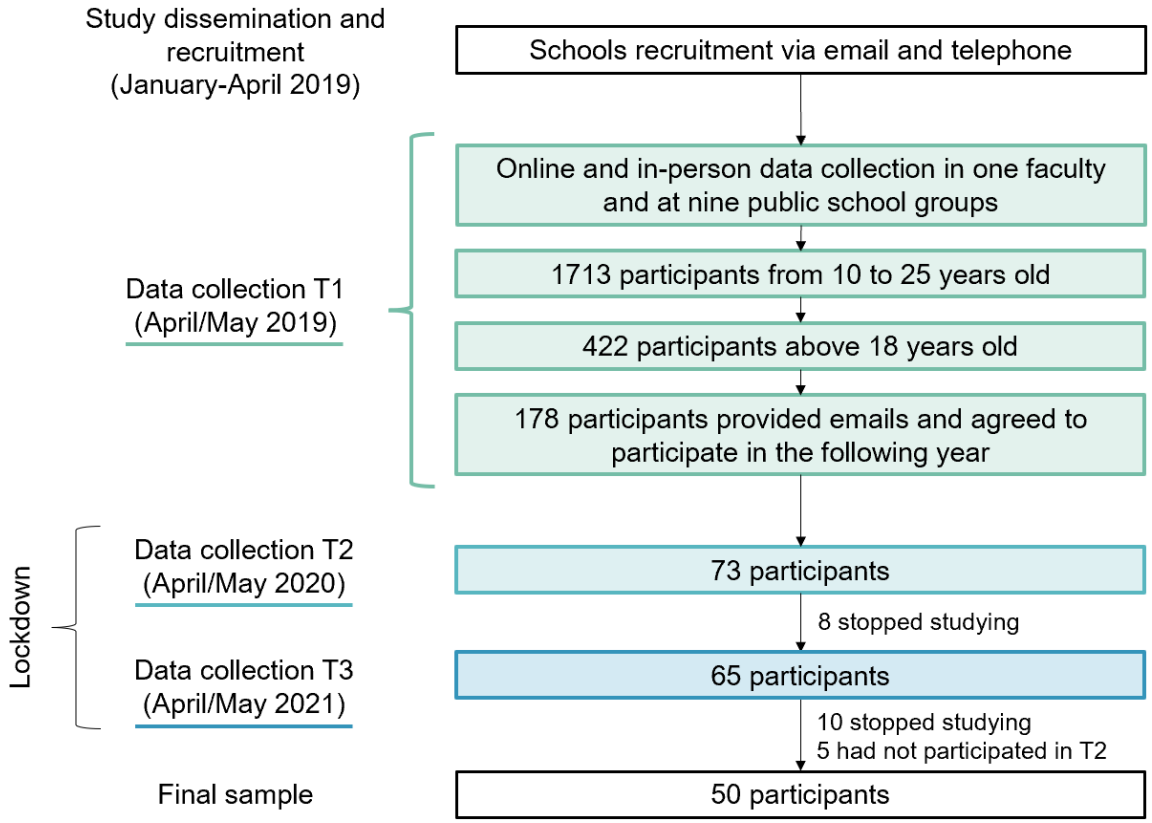
Parameter estimate	**Estimate**	***p***
T1 SE → T2 SE	**.65**	**<.001**
T1 SECs → T2 SE	.09	.494
T1 MH → T2 SE	.08	.622
T1 SE → T2 SECs	**.27**	**.025**
T1 SECs → T2 SECs	**.51**	**<.001**
T1 MH → T2 SECs	.06	.631
T1 SE → T2 MH	.01	1.000
T1 SECs → T2 MH	-.15	0.490
T1 MH → T2 MH	**.37**	**.028**
T2 SE → T3 SE	.23	.124
T2 SECs → T3 SE	**.47**	**.013**
T2 MH → T3 SE	-.10	.451
T2 SE → T3 SECs	-.20	.194
T2 SECs → T3 SECs	**.92**	**<.001**
T2 MH → T3 SECs	-.16	.044
T2 SE → T3 MH	**.46**	**.036**
T2 SECs → T3 MH	**-.48**	**.006**
T2 MH → T3 MH	**.32**	**.027**

Supplementary Figures

Supplementary Figure A. *Chapter IV - Emotion Regulation Strategies and Student Engagement as a Function of Age-groups (10-12, 13-15, 16-18, 19-25).*



Supplementary Figure B. *Chapter VII - Participants Flowchart*



Note: Dropout rate was 58.99% at T2 and 63.48% at T3.

Certificates of Ethical Approval

ISCTE IUL
Instituto Universitário de Lisboa

COMISSÃO DE ÉTICA

PARECER 17/2019

Projeto "Desenvolvimento de competências sociais e emocionais na adolescência e o seu impacto na resiliência e envolvimento escolar"

O Projeto "Desenvolvimento de competências sociais e emocionais na adolescência e o seu impacto na resiliência e envolvimento escolar", submetido pela investigadora Anabela Caetano Santos foi apreciado pelos membros da Comissão de Ética na reunião de 13 de março de 2019.

A informação disponibilizada, em conformidade com o *Formulário de Submissão para Aprovação Ética* em uso no ISCTE-IUL, satisfaz os requisitos éticos exigíveis neste tipo de projetos de investigação, contemplando, nomeadamente:

a) A identificação do problema da investigação, que reside nos desafios decorrentes do contexto social e económico que caracteriza o mundo atual, o qual é indissociável das importantes mudanças biopsicossociais registadas durante a adolescência, entre as quais se contam a resiliência, as competências socioemocionais e a regulação emocional, que, segundo a literatura científica, parecem constituir importantes recursos na manutenção da saúde mental e envolvimento escolar, com repercussões a curto (*e.g.*, sucesso académico) e a longo prazo (*e.g.*, abandono escolar, desemprego), bem assim como em adolescentes expostos a mais fatores de risco, como o são os adolescentes institucionalizados;

b) O objetivo geral visa investigar o desenvolvimento da regulação emocional (RE), em particular, e das competências socioemocionais (CSE), em geral, na adolescência, bem como o seu impacto na resiliência e no envolvimento escolar em adolescentes em diferentes contextos socioeconómicos. São ainda definidos os seguintes objetivos específicos: 1) analisar diferenças de desenvolvimento na utilização de estratégias de RE e de CSE percebidas na adolescência, em especial nas etapas de transição; 2) analisar o impacto e as relações causais das diferenças de RE e CSE em diversas etapas da adolescência relativamente à resiliência, envolvimento escolar e sintomas de ansiedade e depressão; 3) comparar os resultados de adolescentes em diferentes contextos socioeconómicos, e 4) conceber um modelo de mediação das estratégias de regulação emocional e de competências socioemocionais na relação entre fatores de risco e resiliência, envolvimento escolar e saúde mental, e sua comparação com adolescentes institucionalizados;

c) A metodologia a utilizar inclui os seguintes procedimentos:

c.1) Para a recolha de dados em escolas: 1) Submissão do projeto ao MIME (Monitorização de Inquéritos em Meio Escolar); 2) Contacto com agrupamentos de

escolas de conveniência, selecionados aleatoriamente; 3) Estabelecimento de contacto com os professores diretores de turma, visando obter a sua intermediação junto dos encarregados de educação e subsequente consentimento informado por parte destes, e 4) Estabelecimento de contactos para efeitos de esclarecimentos, monitorização do processo e entrega de *vouchers**;

c.2) A recolha de dados em instituições de acolhimento decorrerá do mesmo modo, embora sem o procedimento enunciado no ponto 1) da alínea anterior;

A recolha de dados deverá ter lugar no terceiro período, visto ser este um momento de maior stresse, em dois anos consecutivos (2019 e 2020). No segundo ano, os agrupamentos de escolas, universidades, institutos politécnicos e instituições de acolhimento serão novamente contactados. Os/as participantes com mais de 18 anos de idade, que, no primeiro ano, tiverem indicado o seu *e-mail* e aceitado participar no estudo serão contactados apenas para confirmação do seu propósito. Para alinhamento da informação obtida na recolha de dados realizada em dois momentos distintos, os/as participantes serão instruídos para escrever um código constituído pelas três primeiras letras do seu primeiro e último nomes, e suportado pela data de nascimento.

O preenchimento do questionário terá uma duração estimada de 40 minutos e incluirá perguntas de caracterização sociodemográfica e os seguintes instrumentos:

- *Healthy Kids Resilience Assessment Module* (HKRAM-6 version, Constantine & Benard, 2000, versão portuguesa Martins, 2007);
- *Student's Engagement in School International Scale* (Lam, Jimerson, Wong, Kikas, Shin, ... Zollneritsch, 2014, versão portuguesa Veiga, Bahia, Nogueira, Melo, Caldeira, ... Pereira, 2012);
- *Cognitive emotion regulation questionnaire* (CERQ-short; Garnefski & Kraaij, 2006, versão portuguesa de Castro, Chaves, Pereira, Soares, Pereira, ... Macedo, 2013);
- *Emotional skills and competence questionnaire* (Takšić, Mohorić & Duran, 2009, versão portuguesa de Faria, Santos, Takšić, Räty, Molander, ... Toyota, 2006);
- Questionário de Regulação Emocional - Adolescentes (Gullone and Taffe, 2012, Teixeira, Silva, Tavares, Freire, 2014);
- *Strengths and Difficulties Questionaire* (Goodman, 2001, versão portuguesa de Fleitlich, Loureiro, Fonseca, & Gaspar, 2005);
- *Positive and Negative Affect Schedule*, versão reduzida portuguesa (PANAS-VRP; Watson, Clark, & Tellegen, 1988, versão portuguesa de Galinha, Pereira, & Esteves, 2014);
- *Generalized Anxiety Disorders* (Spitzer, Kroenke, Williams, & Lowe, 2006.

A versão para menores de 18 anos compreenderá os mesmos instrumentos, embora com algumas diferenças, nomeadamente a obtenção de assentimento informado em vez do consentimento informado, e a ausência de registo de e-mail;

d) O estudo será realizado com uma amostra máxima de 2 000 participantes de nacionalidade portuguesa, de ambos os sexos e com idades compreendidas entre os 10 e os 24 anos de idade, a qual incluirá alunos do 5º ano ao 12º ano do ensino obrigatório,

e de cada ano do ensino superior, integrados em agrupamentos de escolas, institutos politécnicos, universidades e instituições de acolhimento;

e) A participação no estudo será voluntária, sendo necessária a concordância manifestada através de assentimento informado para os menores de 18 anos de idade, e de consentimento informado para os de maior idade. Os/as participantes serão recrutados através da divulgação do estudo nas redes sociais e de contactos com Agrupamento de Escolas, Institutos Politécnicos, Universidades, Lares de Acolhimento e Casas de Acolhimento Temporário de conveniência e através de seleção aleatória. Está prevista a atribuição de incentivos à participação no estudo através do sorteio de vouchers – um por cada grupo etário, no valor máximo de 25€;

f) O consentimento informado, livre e esclarecido será assinado previamente pelos encarregados de educação/representantes legais, na escola, em casa ou na instituição. Os/as participantes com mais de 18 anos darão o seu consentimento *online*. Para os/as participantes de língua portuguesa não materna, os instrumentos (formulário de consentimento informado, questionário e *debriefing* e serão disponibilizados em língua inglesa, pelos quais poderão optar em caso de barreira linguística;

g) O formulário de consentimento informado contém a explicação sumária dos objetivos e procedimentos da investigação, a possibilidade de desistência a qualquer momento, a garantia do anonimato e confidencialidade dos resultados obtidos, bem assim como a identificação e o contacto da investigadora principal;

h) O estudo envolve crianças e jovens com menos de 18 anos de idade, alguns dos quais com relações de dependência em contextos onde irá decorrer a investigação, embora as medidas de salvaguarda preconizadas se afigurem adequadas, não sendo de prever riscos para os participantes;

i) A participação voluntária dos sujeitos será assegurada mediante prévio consentimento informado assinado pelos encarregados de educação/representantes legais e assentimento, igualmente informado, manifestado por parte dos menores de 18 anos, antes do início das respostas ao questionário. Ainda assim, importa aqui clarificar que, nos menores de 18 anos, a manifestação de assentimento por parte destes não dispensa o consentimento informado concedido pelos respetivos encarregados de educação/representantes legais, devendo prevalecer o dissentimento dos/das participantes sobre o consentimento dos respetivos representantes legais;

j) Estão previstos incentivos à participação no estudo, que se inserem dentro dos limites habitualmente aceites em projetos desta natureza;

k) As medidas relativas ao *debriefing* e *feedback*, bem assim como a declaração de responsabilidade e de conduta ética da investigadora, obedecem às disposições contidas no *Código de Conduta Ética na Investigação – ISCTE-IUL*.

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Em suma, assegurados que se encontram o voluntariado da participação, a confidencialidade, a privacidade e o anonimato dos participantes e da informação recolhida, o projeto mereceu o parecer favorável da Comissão.

O Presidente da Comissão, *Prof. Doutor Jorge Costa Santos*

O Vogal, *Prof. Doutor Manuel Pita*

A Vogal, *Prof.ª Doutora Sónia Bernardes*

O Vogal, *Prof. Doutor Vítor Basto Fernandes*

Exma. Senhora

Dra. Anabela Caetano Santos

Rua do Carrião, Nº 48 - 1º

1150-094 LISBOA

Lisboa, 7 de Maio de 2020

Nossa Refª. Nº 180/20

Assunto: Projeto "Resiliência, regulação emocional e envolvimento académico durante o período de isolamento"

Relator - *Padre Fernando Sampaio*

Devido à presente situação de pandemia e aos constrangimentos impostos pela fase de mitigação da casuística da infeção pelo vírus SARS-CoV-2, tais como o isolamento social, a Comissão de Ética prescindiu de reunir mensalmente, em observância às recomendações de distanciamento recomendadas, deliberando proceder à análise e parecer dos projetos submetidos, recorrendo apenas ao processamento informático (via eletrónica) dos mesmos, pelo que não é referida a data da reunião mas tão-somente o mês em que fica concluída a avaliação,

Pela presente se informa que o projeto citado em epígrafe obteve, em Maio de 2020, parecer favorável da Comissão de Ética, considerando-se observados os imperativos que fundeiam as Boas práticas clínicas, os preceitos internacionalmente reconhecidos de qualidade ética e científica que devem ser respeitados na conceção e na realização dos estudos clínicos que envolvam a participação de seres humanos.

O presente estudo, a realizar no âmbito de doutoramento em Ciências em Educação, tem como objetivo analisar se as estratégias de regulação emocional identificadas nos resultados do estudo efetuado em 2019 a jovens universitários entre os 18 e os 26 anos, intitulado "Desenvolvimento de competências sociais e emocionais na adolescência e o seu impacto na resiliência e envolvimento escolar", se mantêm face aos constrangimentos decorrentes da pandemia causada pela infeção de covid-19 e qual o seu impacto na manutenção da saúde mental e satisfação com a vida e avaliar ainda se as características associadas à resiliência (2019) predizem um menor nível de stress atual e se o envolvimento académico e perceção de aprendizagem dos alunos universitários permanece.

Pretende a Investigadora construir um modelo explicativo das relações entre as variáveis, esperando-se que a utilização de estratégias de regulação emocional adaptativas e de competências associadas à resiliência (reportadas em 2019) procedam como fatores de proteção e geradoras de um menor stress percebido, menos indiciadores de ansiedade e depressão, maior satisfação com a vida e envolvimento académico (a serem reportadas em 2020).

Será ainda analisada a reação ao número de dias em isolamento, o possível contacto com o vírus, estado da saúde física e o conhecimento do número de infetados em Portugal no dia do preenchimento do questionário

Estima a Comissão de Ética que estudos desta natureza são de incontestável préstimo pois poderão fornecer dados sobre a qualidade das capacidades de reajuste emocional, bem como perceber os mecanismos de coping dos estudantes, e como estes poderão associar-se ao desempenho académico, permitindo aos órgãos competentes adquirir mais informações sobre estes métodos, de modo a conceberem instrumentos de suporte mais eficazes e abrangentes.

No uso das competências próprias constantes do disposto no Decreto-Lei. N.º 97/95 de 10 de Maio, e no exercício das suas funções em observância do deliberado na Lei n.º 21/2014 de 16 de Abril, que aprova a lei da investigação clínica, revista pelo Decreto-Lei n.º 80/2018 (DR n.º 198-2018, Série I de 2018/10/15) que reforça o papel das comissões de ética no contexto da instituição em que se integram nas diversas vertentes relevantes, nomeadamente, assistencial, institucional de investigação e de formação, e ainda em cumprimento dos regulamentos internos do CHULN, dos códigos deontológicos, das convenções, declarações e diretrizes internacionais, a Comissão de Ética avaliou o projeto, que considera obedecer aos requisitos éticos fundamentais que devem ser respeitados, refletindo o primado da dignidade e da integridade humanas.

Encontra-se assegurado o direito à integridade moral e física do participante, cumpre as precauções essenciais, cujo desígnio visa minimizar eventuais danos para os seus direitos de personalidade, bem como o direito à privacidade e à proteção dos dados pessoais que lhe dizem respeito, em harmonia com o respetivo regime jurídico.

Com os melhores cumprimentos

Presidente da Comissão de Ética do CHULN e CAML

Prof. Doutor José Luis B. Duarte Soares