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Individualist-collectivist profiles in secondary school: an exploratory study of trait emotional intelligence and academic achievement

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Abstract
An individualist (I) or collectivist (C) cultural orientation affects individuals' attitudes, behaviours and values. This study aimed to identify the first-year secondary-school students' I–C profiles and explore their implications for students' trait emotional intelligence (EI), emotions towards school and academic achievement (GPA) throughout the 3-year secondary-school cycle. A total of 222 secondary-school students (58.6% females; Mage = 15.4; SD = .63 in the 10th grade) were enrolled in a longitudinal study. The cluster analysis identified three distinct I–C profiles: high individualist-low collectivist students, low individualistic-midlevel collectivist students and high individualist–high collectivist students. The results revealed significant differences between the I–C profiles regarding students' trait EI, emotions towards school and GPA throughout secondary school, in particular favouring the high individualist–high collectivist profile. These findings are discussed based on the practical implications for students' outcomes in the current secondary school system.

Keywords Individualism · Collectivism · Trait emotional intelligence · Emotions towards school · Academic achievement

Introduction

Individualism (I) and collectivism (C) are psychological culture dimensions broadly used to differentiate human societies at cultural levels (Fatehi et al., 2020; Kirkman et al., 2006; Triandis, 2018; Tusi et al., 2007). In general, in individualistic or independent cultures, the tendency is to prioritise personal independence and success. Meanwhile in collectivist cultures, more importance is given to interdependence and the sense of duty to the group or to the group's goals and achievements (Ratzlaff et al., 2000).

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Individualism is also distinguished by its emphasis on individuals' emotional independence, self-reliance and independent self-construal (Markus & Kitayama, 2003; Triandis, 2018), which leads people to be more competitive and achievement focussed and less willing to prioritise the goals of the group or society over their own. Additionally, individualism tends to be linked to higher creativity and freedom (Triandis, 2018). Collectivism tends to be characterised by emotional interdependence, relatedness to others, sense of belonging and compromise to maintain harmony and avoid conflicts within the group (Markus & Kitayama, 2003; Triandis, 2018). In collectivist cultures, individuals tend to identify more with group goals and values, and their self-construal is group-based (Ciochină & Faria, 2009; Markus & Kitayama, 2003; Triandis, 2018).

In the comprehensive meta-analytic systematization of Oyserman et al. (2002), seven domains were identified as relating to individualism (independence, goals, competition, uniqueness, private, self-knowing and direct communication) and eight major domains relating to collectivism (relatedness, belonging, duty, harmony, advice seeking, context dependent, hierarchical and group oriented). Nonetheless, the major part of the 83 studies reflected in individualism the value of personal independence, while in collectivism, it was more evident the sense of duty to a group, relatedness to others, seeking others' advice, harmony and working with a group.

While this dichotomy has provided a relevant conceptual framework for cross-cultural research, Schwartz (1990) has noted that it can mask some important group differences. In particular, this dichotomy overlooks values that can serve both individual and collective interests, values that promote the goals of larger groups rather than just in-group goals (e.g. social justice), and leads one to interpret I–C values as being in polar opposition (Schwartz, 1990).

Cross-cultural research has extensively explored behavioural differences across cultures while highlighting the individual variation within the same culture (Leung & Cohen, 2011). Indeed, research has documented that the sources of individual variation can range from relatively stable and fixed over the lifespan and to some extent genetically heritable variables, such as personality traits or cognitive abilities, to more flexible and plastic conditions, such as developmental history, social reward of a given behaviour and also cultural background, as individuals may differ in how they identify with a particular contextual orientation or trait (see review, Mesoudi et al., 2016). In this line, new perspectives that take into account individual differences in the extent to which people differ in the internalisation or endorsement of a cultural ideal and cultural variation, recognising that cultures help to define psychological situations and create different clusters of behaviour according to different logics are emerging (e.g. culture × person × situation approach of Leung & Cohen, 2011).

In the field of I–C, research has noted that regardless of the principal tendency of a given culture or society, individuals can endorse personally distinctive levels of collectivism or individualism (Triandis, 2018). The personal cultural tendency endorsed likely shapes the attitudes and behaviours of the individual in different societal contexts. However, studies that have explored the implications of different personal individualist or collectivist cultural orientations within the same dominant society or cultural context remain scarce. Moreover, research in the academic context has yet to explore how a specific cultural orientation can shape individuals and groups and what are its implications at the educational level. Thus, the present study proposes to contribute to building knowledge in the field by (i) exploring the effects of the cultural tendencies to be more individualists or collectivists within a society in a Western European culture traditionally more collectivist as

the Portuguese one[1] (Chhokar et al., 2007; Heu et al., 2019; World Values Survey Association, 2023); (ii) to deepen the understanding of the effects of individualism and collectivism tendencies in academic context and in secondary school cycle in particular; (iii) exploring whether and how students' cultural tendencies might impact students' trait emotional intelligence, emotions towards school and academic achievement throughout secondary school in a longitudinal design. Therefore, this study aims to address the broad research question: What is the impact of students' I–C cultural tendencies on their emotional and academic outcomes throughout the secondary school cycle?

I–C and emotional outcomes

An individualist or collectivist cultural orientation likely influences how individuals experience and express emotions and how people are socialised by emotions (e.g. Saarni, 1999). The relatively little work that has focussed on cross-cultural comparisons and on the effects of cultural orientation tendencies on emotional outcomes has evidenced particular differences.

Emotional intelligence (EI) can be conceptualized as an ability or as a trait feature. As an ability is generally referred to individuals' perceptions, appraisals and expressions of emotion, the use of emotion to facilitate thought, and understanding and regulation of emotions in themselves and others (Mayer & Salovey, 1997), whether as a trait is referred to individuals' perceptions of their emotional abilities, encompassing a constellation of emotional perceptions (Petrides et al., 2007). Over the past decades, ability and trait EI has been investigated in several contexts, and extensive empirical evidence has indicated its relevance to multiple aspects of emotional and social adaptive functioning (e.g. emotional regulation; Mikolajczak et al., 2008; Velasco et al., 2006); subjective wellbeing (Prado Gascó et al., 2018); mental health, social adaptation (Mestre et al., 2006) and support (Martins et al., 2010; Sarrionandia & Mikolajczak, 2020); and academic (MacCann et al., 2020) and job performance (Miao et al., 2016). In particular, research on cultural orientation tendencies has identified that individuals in individualistic societies tend to exhibit greater values of emotional intelligence (Gökçen et al., 2014; Scott-Halsell et al., 2013). In fact, the literature has indicated that British participants scored higher on different EI trait aspects—such as self-control, emotionality and sociability—than collectivist Chinese participants did (Gökçen et al., 2014). In another study, Scott-Halsell et al. (2013), conducting analyses with a performance measure of EI, found evidence that hospitality students from Eastern cultures scored lower on emotional insight into self, ability to express emotions, social insight and empathy. These findings are supported by the existing literature on individualistic societies that converges on the notion of individuals' positive focus on self-relevant information and tendency to view themselves more positively, in contrast with individuals from collectivist societies, who experienced negative self-relevant information and had a tendency to be more self-critical and self-direct regarding failure (Falk et al., 2009; Heine & Hamamura, 2007; Heine et al., 2001).

[1] Portugal integrates in its cultural background influences of traditional values due toa history of a strong catholic orientation and immigration mostly of African (PALOP) and Latin American (Brazil) societies. However, based on the economic development, following the integration in the EU (from 1986) and the end of dictatorship in the early 1970s has crossed the border to the self-expression values.

Moreover, individuals from collectivist cultures tend to be less emotionally expressive or to restrain emotion compared to those from individualist cultures (Kang et al., 2003; Matsumoto & Wilson, 2022). These findings could indicate a tendency of collectivist societies to avoid conflict and seek harmony between group members, which leads individuals to perhaps refrain from expressing their emotions (Oyserman et al., 2002). Meanwhile in individualistic cultural contexts, members are encouraged to speak their minds and express themselves more freely (Markus & Kitayama, 2003). The lack of practice or experience in the emotional domain, mostly due to the suppression of emotions, will likely lead to fewer opportunities to develop emotional proficiencies or abilities (Scott-Halsell et al., 2013).

However, due to the greater competitiveness of individualistic societies, some studies have also reported higher psychological distress or conflict among their members (Schwartz, 2000) as well as lower intentions to seek professional help when necessary (Scott et al., 2004). In particular, having a more individualistic profile within an already individualistic society was associated with less competence in the emotional management of oneself and others as well as with poorer mental health and less satisfying social support (Scott et al., 2004). The authors argued that the features of an individualist in an individualist society could be exacerbated and, as access to social support networks is limited, higher social and psychological disadvantages could result (Scott et al., 2004).

On the other hand, some studies supported the perspective that higher levels of subjective wellbeing, happiness, life satisfaction and quality of life can be found in people from an individualist culture (Abdur Rahman & Veenhoven, 2018; Suh & Koo, 2008). As previously mentioned, such people focus and invest more on their own goals, which often results in greater happiness and self-esteem (Gökçen et al., 2014). However, several studies highlighted that the levels of wellbeing and happiness are not dependent on countries' wealth (Diener, 1984; Diener et al., 1999; Ryff, 1989), which argues that higher levels of wellbeing or happiness are not exclusive to individualistic societies.

I–C and academic outcomes

The individualist-collectivist cultural orientation of each society presumably impacts the educational system in terms of instruction, practices and experiences, school organisations, learning goals or priorities. In general, cross-culturally, Western cultures (which tend to be more individualist) tend to be independent, focussed on discovery and expression and tend to evidence the differences between the individual and the group. Meanwhile, Eastern cultures (which tend to be more collectivist) tend to be more interdependent and organised into hierarchies to which students seek to belong (Markus & Kitayama, 2003). In line with these orientations, Western education can be characterised as being concentrated on students' individual potentials, where schools are built to support and nourish individual learning, whereas Eastern education can be considered more vocational in shaping and qualifying individuals to become responsible and contributing members to society (Cheng, 1998). American education, for instance, is very supportive of self-exploration, self-expression and self-actualisation, which leads to intellectual creativity (Cheng, 1998), while Chinese education tends to adopt the instructional practices of imitation, modelling and uniformity and to be more markedly focussed on students' basic skills mastery and knowledge (Biggs, 1996).

The literature has also supported the benefits of communal learning contexts compared to individual ones. Communalism is grounded on social interdependence, so sharing and

duty to the group are greatly valued. For some authors, it differs from cooperation since in this case, individuals work in a group to achieve an extrinsic reward or gain, whether in communal practices the reward is providing for the group, thus intrinsic to the group (Boykin et al., 2004). In fact, Boykin and colleagues' study of African Americans confirmed that students subjected to communal learning significantly outperformed their individual-learning context peers on quizzes and comprehensive examinations in the social sciences, with medium-term effects (Boykin et al., 2004). The former group of students was also more successful in performing math estimation tasks (Hurley et al., 2005).

In terms of academic performance, Asiatic students, such as Japanese and Chinese students, tend to outperform American students in mathematics and sciences, while Western ones tend to demonstrate higher levels of creative potential (Stevenson et al., 2000; Zha et al., 2006). Another study comparing individualist and collectivist orientations among African-American individuals (who tend to be more collectivist) and European-American individuals (who tend to be more individualist) found that individualism was not associated with GPA in either of the samples but GPA was related to collectivism in the African–American sample (Komarraju & Cokley, 2008).

More recently, Zeidner and Elemi (2019) explored the cultural membership of Arab individuals, who tend to be collectivist, and Jewish individuals, who can be classified as modern individualists, in Israeli society in terms of their academic motivations and classroom achievements. The findings indicated that Jewish individuals exhibited higher levels of intrinsic motivation and higher GPAs. These findings could perhaps be due to the fact that modern individualist cultural orientations tend to provide individuals with optimal intellectual challenges and encourage autonomous and ability-enhancing feedback (Deci & Ryan, 1985).

Present study

To explore the tendency of secondary school students towards individualist or collectivist orientations, a cluster analysis was selected to describe culturally heterogeneous groups (Freeman & Bordia, 2001) and the distribution of the individuals between them. First, this study identified in the sample of secondary students whether combinations of individualist and collectivist dimensions lead to distinct profiles, defined according to the larger or smaller weight of each of the factors in each profile. Since scales vary widely in what content components they regard as relevant to the measurement of individualism and collectivism (Oyserman et al., 2002), in this study individualism dimension was assessed by competition (i.e. Personal competition and winning), uniqueness (i.e. Focus on one's unique, idiosyncratic qualities) and responsibility (i.e. Freedom, self-sufficiency and control over one's life), while collectivism was assessed by advice (i.e. Turning to close others for decision help) and harmony (i.e. Concern for group harmony and that groups get along) components.

Based on previous evidence, it is expected that at least two profiles will emerge from the analyses: one markedly more individualist (low on collectivism) and another more collectivist (and low on individualism). However, in other studies, a combination of the two (e.g. high or low individualism combined with high or low collectivism) was verified (Shulruf et al., 2011). Second, after defining students' I–C profiles, this study explored whether differences emerged between the proposed profiles and their trait emotional intelligence dimensions, emotions towards school and their academic achievement (GPA) over the

3-year secondary school cycle. Based on the literature, which highlights that individualistic tendencies seem to allow for greater personal emotional development whereas collectivists tend to limit positive and negative emotional displays and experiences, the following hypothesis was outlined:

H1-The profiles that are more individualist will have higher levels of trait emotional intelligence dimensions when compared to profiles that are more collectivist;

Moreover, since the literature has presented inconsistent results, providing evidence of greater psychological distress as well as higher levels of wellbeing, life satisfaction in individualistic orientations, in this study, the following research question was explored: Q1: Which of the I–C profiles exhibits better levels of positive emotions towards school?

Finally, according to the different results in the existing literature related to the effect of cultural tendencies and academic achievement, this study explores the following research question Q2: Which of the I–C profiles exhibits better levels of academic achievement (GPA)?

Method

Participants

A total of 222 Portuguese secondary school students (within 24 classrooms; 58.6% females) from 7 public schools of the Porto district in the North of Portugal took part in a longitudinal study throughout 3 years of secondary school (10^{th} to 12^{th} grade; 42.4% of the initial students' sample in 10th grade, $N=523$; 64.8% of the students' sample in 11th grade, $N=343$). In the 10th grade, the participants ranged from 14 to 18 years old ($M=15.4$; SD = 0.63), and the largest share were from a high parental socioeconomic status (37.7% high, 28.8% middle and 33.5% low). The participants were enrolled in different academic courses, with the majority of the sample enrolled in science and technology (76.1%), followed by languages and humanities (19.4%) and other courses (4.6%), which follows the national trend (Direção-Geral de Estatísticas da Educação e Ciência, 2018).

Instruments

Auckland Individualism and Collectivism Scale (AICS; Shulruf, 2008)

The self-report instrument originally developed by Shulruf et al. (2007) and revised by Shulruf (2008) assesses cultural orientation to individualism and collectivism and comprised 26 items divided into two dimensions: collectivist attributes (11 items: 7 advice (e.g. "It is important to consult close friends and get their ideas before making a decision.") and 4 harmony (e.g. "Even when I strongly disagree with my group members, I avoid an argument.")) and individualist attributes (15 items: 7 competition (e.g. "I define myself as a competitive person."), 4 uniqueness (e.g. "I enjoy being unique and different from others."), 4 responsibility (e.g. "I take responsibility for my own actions.")), answered on a 6-point frequency scale (from "never" to "always").

The original version of the measure provided good psychometric properties: good internal consistency (0.78 collectivism and 0.78 individualism) and adequate goodness of fit (RMSEA = 0.069; Shulruf et al., 2007). This measure also exhibited discriminant validity between different cultural contexts (Portugal and Romania, Ciochină & Faria, 2009; New

Zealand, Portugal, China, Italy and Romania; Shulruf et al., 2011) and between ethnicities in New Zealand (Shulruf et al., 2007). In this study, the AICS exhibited very good internal consistency (total scale: 0.81; dimensions from 0.78 (C) to 0.84 (I)).

Emotional Skills and Competence Questionnaire (ESCQ; Takšić et al., 2009)

The ESCQ is a 42-item self-report measure that assesses the individual's perceptions of emotional intelligence in three dimensions: perceive and understand emotions (14 items—"When I see how someone feels, I usually know what has happened to him or her"), express and label emotions (14 items—"I am able to express my emotions well") and manage and regulate emotions (14 items—"When I am in a good mood, every problem seems solvable"). This instrument was originally developed based on Mayer and Salovey (1997) and by Takšić et al. (2009) for the Croatian context and was adapted to the Portuguese context (Faria et al., 2006). This measure has been used in different cultural contexts with good psychometric properties: dimension intercorrelations (between 0.49 and 0.54), good reliability (between 0.72 and 0.91; Faria et al., 2006; Takšić et al., 2009), cross-cultural measurement invariance (Croatian original scale and Portuguese adapted version; Costa et al. 2016) and good fit indices (NNFI = 0.93; CFI = 0.94; RMR = 0.04; RMSEA = 0.04; Stocker & Faria, 2012). In this study, the ESCQ presented very good reliability (total scale: 0.90; dimensions from 0.72 (MRE) to 0.89 (EE)).

Students' Emotions Towards School (SETS; Costa & Faria, 2020)

This measure assesses students' emotions towards school and includes two subscales: positive (4 items, e.g. "I feel happy"; "I feel proud") and negative emotions towards school (5 items, e.g. "I feel bored"; "I feel ashamed"), with a 6-point frequency answering scale (from 1 = *never* to 6 = *always*). SETS is based on the *Academic Emotions Questionnaire* (Pekrun et al., 2011) and has exhibited acceptable psychometric properties, although Cronbach alphas values are relatively low (α from 0.65 (NE) to 0.73 (PE); Costa, 2020); in this study, the internal consistency presented unsatisfactory values (α total scale 0.69; NE 0.58 and PE 0.71) and therefore only total scale value was included in the analyses, and the total score corresponds to student's positive emotions towards school.

Procedure

Data collection took place during rounds of collective administration in classrooms in the presence of the researcher and class teacher and consisted of students' individual participation on paper-and-pen questionnaires after receiving brief group instructions on the answer formats. All participants were informed about the voluntary nature of their participation, the confidential nature of the study and that nonparticipation would not entail any type of consequence. The underage participants at the time of the study had to provide informed parental consent to participate in the study, and the non-underage students signed their consent to participate.

Students' academic marks were obtained from school records for the last academic period of each year for the 3 consecutive years of secondary school (10^{th}, 11^{th} and 12^{th} grades). From the available subjects (6 mandatory academic subjects in secondary school), grade point averages (GPAs) ranging from 0 to 20 values were calculated for each academic year. This study followed all standards for research with human subjects, in accordance

with the ethical principles of the Helsinki Declaration and received a favourable opinion from the Portuguese National Data Protection Commission (11765/2017), Directorate–General for Education (0614400001) and Faculty's Ethics Committee (2017/10–8).

Data analysis

To identify student subgroups in terms of their I–C orientation, a two-step cluster analysis was conducted. This method was selected since it allowed us to estimate the number of statistically identifiable clusters based on both categorical and continuous variables, provided an automatic selection of the number of clusters and gave us the ability to easily work with large datasets (> 200) efficiently (Dalmaijer et al., 2022; IBM, 2024). The log-likelihood and Bayesian information criterion were used as the distance measure and clustering algorithm, respectively. The profiles were defined from the different combinations of the five I–C factors that the AICS evaluates: advice, harmony, competition, uniqueness and responsibility. In addition, the theoretical feasibility and psychological significance of each of the groups that represented the different I–C profiles were added to this criterion. Moreover, ANOVA analysis tested for I–C feature differences across clusters.

After establishing the different groups through the cluster analysis, a MANOVA was performed to analyse the significance of the differences between groups in students' trait emotional intelligence (dimensions), emotions towards school and academic achievement (GPA). For each result, the effect size was estimated by computing the partial eta-squared (η2). The false discovery rate was calculated to identify between which groups the differences were significant (Glickman et al., 2014; Jafari & Ansari-Pour, 2019). The cluster analysis and MANOVA were conducted using SPSS version 28.0.

Results

Descriptive statistics

The univariate normal distribution of each I–C dimension variable was confirmed according to skewness and kurtosis values that should be lower than 3.0 and 8.0, respectively (Kline, 2005; cf. Table 1). The descriptive of each I–C dimension (total values M and SD) are presented in Table 1.

Correlations

In general, the results of Pearson's correlations demonstrated that all the individualist variables were positively correlated between themselves, and the magnitude of the association ranged from low ($r = 0.17$, $p = 0.011$; "responsibility and competition") to moderate ($r = 0.51$, $p < 0.001$; "responsibility and uniqueness"; cf. Table 1). Among the collectivist variables, a positive moderate correlation was found ($r = 0.33$, $p < 0.001$; "advice and harmony"). Only two variables of individualism and collectivism were significantly related: the individualist "responsibility" and the collectivist "advice" dimensions ($r = 0.36$, $p < 0.001$).

Regarding the association of the I–C and the other emotional outcomes, the results indicated that the individualistic dimensions, in particular, the "responsibility" and "uniqueness", were the ones that achieved the highest correlations with trait EI ($r = 0.37$, $p < 0.001$) and positive emotions towards school ($r = 0.27$, $p < 0.001$). The correlation between these

Table 1 Descriptive statistics and Pearson correlations for all the studied variables

Variables	*Total value M (SD)*	*sk*	*k*	1	2	3	4	5	6	7	8
1. Ind competition	26.08 (7.66)	.07	−.62								
2. Ind responsibility	19.46 (2.87)	−.66	.85	.17*							
3. Ind uniqueness	17.58 (4.08)	−.39	−.59	.45**	.51**						
4. Col advice	28.27 (6.54)	−.10	−.47	.09	.36**	.05					
5. Col harmony	14.56 (3.84)	.11	−.30	−.04	.13	−.03	.33**				
6. EE-10th	57.90 (11.57)	−.36	−.64	.25**	.24**	.23**	.29**	.07			
7. PUE–10th	63.36 (8.53)	−.46	.40	.23**	.21**	.27**	.15*	.05	.21**		
8. MRE–10th	64.25 (7.63)	.94	6.34	.28**	.37**	.30**	.21**	.17*	.53**	.29**	
9. ETS-10th	34.01 (5.62)	−.21	.32	.16*	.19**	.13	.20**	.11	.43*	.05	.54**
10. GPA–10th	14.71 (2.31)	.18	−.83	.07	.19**	.21**	.02	.00	−.10	−.03	.03
11. EE-11th	57.31 (10.89)	−.32	−.35	.18**	.21**	.22**	.14*	−.08	.67**	.15*	.39**
12. PUE–11th	62.72 (8.40)	−.41	.59	−.01	.19**	.10	.17*	.05	.16*	.63**	.20**
13. MRE–11th	64.59 (8.29)	−.20	−.02	.17*	.30**	.24**	.14*	.12	.39**	.21**	.55**
14. ETS-11th	32.97 (6.09)	.06	.08	.06	.12	.04	.15*	.11	.16*	−.01	.30**
15. GPA–11th	14.85 (2.42)	.25	−1.01	.08	.25**	.20**	.08	.01	−.07	.01	.04
16. EE-12th	57.70 (11.25)	−.45	−.37	.14*	.27**	.16*	.17*	−.13*	.54**	.17*	.37**
17. PUE–12th	62.40 (8.25)	−.82	1.7	.02	.23**	.12	.16*	.02	.23**	.48**	.26**
18. MRE–12th	62.86 (8.76)	−.75	1.42	.06	.22**	.10	.16*	.04	.33**	.07	.46**
19. ETS-12th	32.61 (6.15)	−.35	.39	.05	.12	.08	.11	.06	.20**	−.04	.31**
20. GPA–12th	16.13 (1.93)	−.25	−.20	−.14*	.02	−.02	.04	−.02	.01	−.05	.03

Table 1 (continued)

Variables	9	10	11	12	13	14	15	16	17	18	19
1. Ind competition											
2. Ind responsibility											
3. Ind uniqueness											
4. Col advice											
5. Col harmony											
6. EE-10th											
7. PUE–10th											
8. MRE–10th											
9. ETS-10th											
10. GPA–10th	.13										
11. EE-11th	.37**	−.04									
12. PUE–11th	.02	.06	.21**								
13. MRE–11th	.45**	.12	.46**	.36**							
14. ETS-11th	.57**	.09	.16*	.10	.33**						
15. GPA–11th	.14*	.89**	−.04	.09	.13	.09					
16. EE-12th	.29**	.01	.65**	.25**	.38**	35**	.04**				
17. PUE–12th	.11	−.01	.18**	.64**	.27**	.06	.03	.43**			
18. MRE–12th	.43**	.12	.33**	.24**	.57**	.42**	.12	.49**	.46**		
19. ETS-12th	.47**	.13	.12	.08	.29**	.69**	.15*	.24**	.11	.48**	
20. GPA–12th	.17**	.18**	.10	.02	.07	.08	.15*	.05	.00	.05	.03

sk skewness, *k* kurtosis $N=222$. *$p<0.05$; ** $p<0.01$

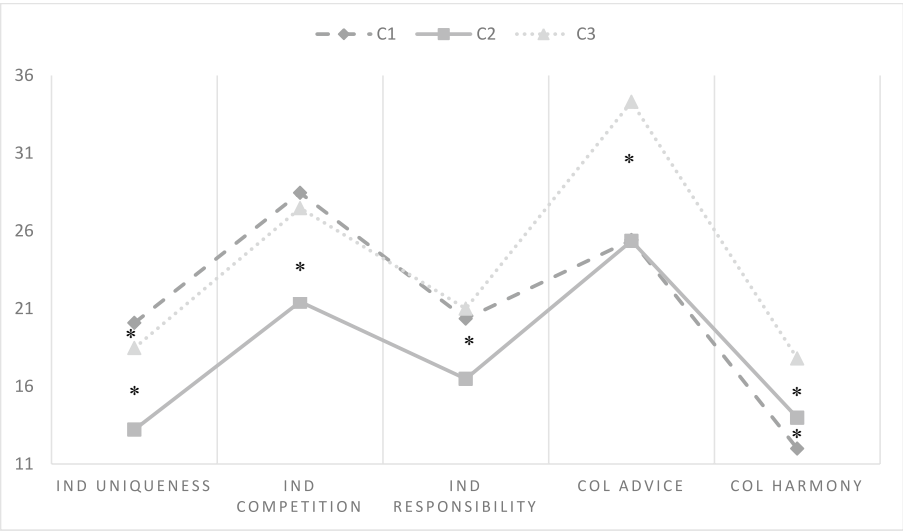

Fig. 1 Distribution of factorial scores by the identified profiles of students. Note: C1, Cluster 1; C2, Cluster 2; C3, Cluster 3; the asterisk "*" indicates the statistical differences ($p < 0.05$) between the clusters

variables tended to decline throughout the secondary school cycle. The advice dimension of collectivism orientation correlated positively at a low level with trait EI ($0.14 < r < .29$, $p > 0.01$) and emotions towards school in 10th and 11th grades ($0.15 > r < 0.20$, $p > 0.01$). In general, students' academic achievement only correlated positively with "responsibility" and "uniqueness" dimensions in 10th and 11th grades ($0.19 > r < 0.25$, $p < 0.001$), and negatively with competition dimension in 12th grade ($r = -0.14$, $p < 0.01$. No correlation was found for academic achievement and collectivistic orientation domains.

Cluster analysis

To identify student subgroups in terms of their conceptions of individualism and collectivism, a two-step cluster analysis was conducted. The procedure automatically estimated 3 as the number of clusters supported by the data. Moreover, two-step analyses with specific numbers of two- and four-cluster solutions were calculated, but based on the sample sizes in each cluster and interpretability of these options, the three-cluster solution was considered the most adequate. In particular, Cluster 1 included 78 students (36.8%) and comprised the highest mean score for individualist "uniqueness" ($M = 20.08$, SD = 2.50) and "competition" ($M = 28.45$, SD = 8.36) and the second highest value of "responsibility" ($M = 20.35$, SD = 2.06) as well as collectivism "advice" ($M = 25.41$, SD = 5.89) and "harmony" ($M = 11.99$, SD = 2.89) below the mean (cf. Figure 1). Cluster 2 comprised 63 students (29.7%) and included the lowest means for individualist factors ($p < 0.05$) and midlevel collectivist mean values ("advice" ($M = 25.35$, SD = 4.62) and "harmony" ($M = 13.98$, SD = 3.38). Cluster 3 included 71 students (33.5%) and all I–C factor values were above the mean ("uniqueness" ($M = 18.46$, SD = 3.31), "competition" ($M = 27.46$, SD = 6.76), "responsibility" ($M = 21.00$, SD = 2.08), "advice" ($M = 28.37$, SD = 6.54) and "harmony" ($M = 17.79$, SD = 2.61).

Table 2 MANOVA with cluster membership as independent variable and the factorial score of the dimensions of EI, emotions towards school (total scale) and GPA as dependent variables

Factors		M_{C1}	SD_{C1}	M_{C2}	SD_{C2}	M_{C3}	SD_{C3}	Z	p	$\eta 2$	FDR correction
10th grade	1. EE	56.93	1.29	53.47	1.45	61.26	1.36	7.78	0.08	0.07	C3 > C2
	2. PUE	64.44	0.95	59.92	1.07	65.53	1.00	8.23	0.08	0.08	C1 > C2;C3 > C2
	3. MRE	64.88	0.85	59.98	0.85	66.35	0.85	12.86	0.13	0.12	C1 > C2;C3 > C2;
	4. ETS	33.71	0.65	32.09	0.73	35.68	0.69	6.51	0.10	0.06	C3 > C2
	5. GPA	15.06	0.26	13.73	0.30	14.99	0.28	6.80	0.06	0.07	C1 > C2; C3 > C2
11th grade	1. EE	58.53	1.24	54.26	1.39	58.46	1.31	3.27	0.05	0.03	___
	2. PUE	62.53	0.97	61.67	1.09	64.49	1.02	1.92	0.02	0.02	___
	3. MRE	65.29	0.95	60.98	1.07	66.95	1.00	8.74	0.08	0.08	C1 > C2; C3 > C2
	4. ETS	32.66	0.71	31.72	0.80	34.56	0.80	3.60	0.04	0.04	___
	5. GPA	15.28	0.27	13.80	0.30	15.24	0.28	8.21	0.07	0.08	C1 > C2;C3 > C2
12th grade	1. EE	59.68	1.29	54.64	1.44	58.95	1.35	3.80	0.05	0.04	___
	2. PUE	63.04	0.91	60.83	1.02	64.36	0.96	3.22	0.04	0.03	___
	3. MRE	63.01	1.01	60.71	1.13	65.02	1.07	3.83	0.04	0.04	___
	4. ETS	32.10	0.72	32.00	0.81	33.76	0.76	1.70	0.03	0.02	___
	5. GPA	16.26	0.23	16.10	0.26	16.38	0.24	0.44	0.00	0.01	___

C1 Cluster 1, *C2* Cluster 2, *C3* Cluster 3, *EE* express and label emotion, *PUE* perceive and understand emotion, *MRE* manage and regulate emotion, *ETS* emotions towards school, *GPA* grade point average. $N = 212$

Differential analyses

As a second aim of our study, potential differences between the three students' I–C clusters in the 10th grade were investigated regarding their perceptions of emotional intelligence, positive and negative emotions towards school and academic achievement (GPA) throughout the secondary school cycle (10th, 11th and 12th grade).

First, the MANOVA was significant [Roy's largest root = 0.35, Z (15, 212) = 4.23, $p < 0.001$; $\eta^2 = 0.260$], and the subsequent multiple comparisons exhibited particular differences between the three clusters for almost all of the different dimensions of EI, emotions towards school and GPAs in all grades (cf. Table 2). The results found that the students in Cluster 2 perceived themselves as having lower levels of trait emotional intelligence, in particular, emotional expression in the 10th grade, perceived and understood emotions, and managed and regulated emotions in the 10th and 11th than the students in Clusters 1 and 3. These results supported the H1, confirming that students with more individualist profiles had better levels of trait EI. Additionally, the students in Cluster 2 exhibited lower levels of positive emotions towards school than did the students in Cluster 3 in the 10th grade, supporting the idea that the profile that balances features of both individualistic and collectivist orientations exhibited higher levels of positive emotions towards school (RQ1). To address the RQ2 potential differences in the academic achievement among the I–C students' profile were explored and the results indicated that students from Cluster 2 differed in the 10th and 11th grades from the students in Clusters 1 and 3 by exhibiting the lowest GPA levels. In the last year of secondary school (12th grade), no significant differences were found among the clusters for any of the dependent variables.

Discussion

This study provides new and updated knowledge about secondary school students' specific heterogeneous combinations of individualism and collectivism orientations. It also offers insights into how they referred to trait emotional intelligence, emotions towards school and academic achievement.

Based on students' predispositions to uniqueness, competitiveness and responsibility as well as their tendency to search for advice or harmony, three clusters were identified in this study: high individualist-low collectivist students (Cluster 1), low individualist-midlevel collectivist students (Cluster 2) and high individualist–high collectivist students (Cluster 3).

In the *high individualist-low collectivist students* cluster, the students presented higher levels of individualistic orientation domains. These students identified themselves as the most competitive and responsible on the one hand and as prizing their uniqueness more on the other. These traits evidenced the tendency to value their personal goals and achievements as well as their individuality within a given group. The features of the students included in this cluster were likely influenced through several years of academic experiences in which students developed self-reliance, autonomy and independence in their learning process. This cluster was expected to be one of the traditional dominant dimensions, in this case, individualism, and it is supported by both the theoretical framework and the existing empirical evidence (Ratzlaff et al., 2000; Shulruf et al., 2007, 2011).

The second cluster was *low individualist-midlevel collectivist* students. Although it was expected to emerge as having more collectivist attributes, the students' distribution in this subgroup was not clearly collectivist, but it was the least individualist. In this subgroup, students exhibited the lowest means for individualism of the 3 clusters and midlevel mean values for collectivism. That is, students reported average values for the harmony dimension and less than the mean values for advice. This cluster featured a combination of students who were less competitive and less focussed on their responsibility and individuality and, on the other hand, who tended to be more group-interdependent, seeking validation or agreement within groups.

The *high individualist-high collectivist* students cluster emerged as the third cluster and referred to the group of students who had a consistently strong balance of individualist and collectivist attributes. These students reported high levels of self-reliance and autonomy in their academic endeavours, expressed by high levels of competition, responsibility and commitment to their goals as well as confidence in their inner worth and in their right to their distinctiveness. On the other hand, these students differed from the *high individualist students* in Cluster 1, as they also sought good relatedness with others mainly through the quest for harmony and the avoidance of conflicts within the group. These students tended to recognise the value of collective efficacy and the importance of the group to the attainment of their personal goals or to value the support of the group to balance the demands of an exacting and challenging educational cycle within an individualist cultural context.

This study also shed light on how the students' I–C clusters at the start of secondary school (10th grade) affected their emotional and academic outcomes throughout the 3-year educational cycle (from the 10th to the 12th grades). In general, the *individualist clusters* (Clusters 1 and 3) perceived themselves as exhibiting better levels of emotional labelling and expression, perceiving and understanding emotions and managing and regulating emotions through the succeeding academic years when compared to the "low individualist—midlevel collectivist students". This finding consistently indicated their lower emotional

intelligence perceptions of ability compared to the other clusters. In particular, *the high individualist–high collectivist* students obtained higher mean trait emotional intelligence averages in 10th and 11th grades. These findings were expected based on the existing literature and confirmed H1, which indicated that individuals with a more individualist orientation tend to have, in general, better EI perceptions of their abilities and better emotional abilities (Gökçen et al., 2014; Scott-Halsell et al., 2013).

Although the previous results were found in cross-cultural research, in this study, within the same cultural context with a collectivist orientation, the findings confirmed the leverage on emotional abilities that individualist students have compared to their collectivist peers and evidenced its weight throughout the secondary academic cycle.

Regarding students' emotions towards school, the results supported that both *individualist clusters* (Clusters 1 and 3) in the first year reported better levels of positive emotions towards school than did the *low individualistic–midlevel collectivist* culture. Although literature has presented inconsistent findings, the higher levels of positive emotions could be explained by the fact that people with an individualist orientation tend to adjust better emotionally (Gökçen et al., 2014; Scott-Halsell et al., 2013) as corroborated by the H1, which can lead to some extent to a better emotional experience in school and foster positive emotions in this setting. However, the observed weight seems to be more relevant in the transition to secondary school—10th grade than throughout the academic cycle. These results could perhaps support the idea that, on the one hand, collectivist-oriented individuals tend to refrain from emotional expression (Kang et al., 2003; Oyserman et al., 2002). Therefore, they are more likely to exhibit or report fewer positive emotions towards school. On the other hand, collectivist-oriented individuals do not have necessarily negative emotional experiences, and at the end of the secondary cycle, they might not even be differentiated from their individualistic-oriented peers. Nonetheless, the interpretation of these findings should also consider that the differences in the student's emotional outcomes might be explained by other possible control variables that were not included in this study. In particular, EI perceptions and experienced emotions in the school context are shaped and determined by a multiplicity of factors such as individual perceptions and evaluations of contextual (e.g. resources) and internal (control and value-appraisals) aspects (Pekrun & Stephens, 2010). Besides, student's personality and previous emotional experiences will simultaneously influence their emotional outcomes.

One of the purposes of this study was to explore whether the different students' orientation clusters, within the same cultural context, could result in differences in their academic achievement (Q2). Differences in academic performance were found in the literature in favour of collectivist cultures (e.g. Asiatic, Japanese and Chinese) in terms of mathematics, logical thinking and sciences when compared to their individualist-oriented peers (e.g. Americans; Stevenson et al., 2000; Zha et al., 2006). Meanwhile within the same cultural context, GPA was found to be linked to collectivism (Komarraju & Cokley, 2008) and individualism (Zeidner & Elemi, 2019). In the present study, the results indicated that the *individualist clusters* (Clusters 1 and 3) exhibited better academic achievement (GPA) in the 10th and 11th grades than did the *low individualistic-midlevel collectivist* student cluster. These results align with those found previously and could be supported by the fact that the GPA measure used to assess students' academic achievement corresponds to a general measure of achievement that could mask potential differences between the students' clusters, as has been found, for instance, for mathematics in previous studies. Moreover, the lower tendency for competition, responsibility and uniqueness, aspects scored less highly in the collectivistic profile, could contribute for lower motivational levels and, in turn, impact students' academic achievement.

In addition, in such a determinant and competitive context as the secondary school cycle, students who are focused on their goals and who exhibit autonomy and responsibility as well as better emotional strategies to regulate their learning and their behaviours could perhaps be better prepared to successfully attain different academic outcomes.

In the Portuguese cultural context, all clusters exhibited generally high mean averages of individualism (competition, responsibility and uniqueness), which might suggest that the observed adolescents may share some features of the individualist orientation, specifically requested in a determinant academic and professional cycle as the secondary school. Nonetheless, the mean averages for collectivism were not clearly low, which suggests the identification of the students with the main collectivist cultural orientation, also representative of Latin cultures, featuring emotional interdependence and relatedness with the group.

The empirical evidence of this study, although exploratory, provide support that I–C features are not necessarily polar opposites (Schwartz, 1990). Indeed, different typical I–C profiles shared some of the cultural orientation's features (in this study, the case of cluster ind-col, or the similar mean values for the Individualism domains in different clusters). Moreover, the Individualism-Collectivism profile tended to have better academic and emotional outcomes, which argues that in order to succeed emotionally and academically and to maximise optimal functioning, one may need to balance the emphasis on individual emotional independence, self-reliance and independent self-construal with social relatedness and sense of belonging. In fact, even for an individual deeply committed to its self-realization, therefore in the search for autonomy and competence, still need to secure its social relatedness in order to fulfil its basic psychological needs (e.g. Self-determination theory; Ryan & Deci, 2002).

This study captured students' values, beliefs, attitudes and behaviours that result from social and cultural transmission. Therefore, implications for the educational context could be drawn. On one hand, secondary school is a particularly demanding and competitive cycle that implies progressive students' responsibility and autonomy for their educational outcomes. It also corresponds to the last mandatory educational training, with implications for students' personal, academic and professional future. Thus, the sample explored here could be exposed to particular challenges and demands that stimulate attributes eminently individualist—such as responsibility, independence, autonomy, self-assurance or self-confidence—which can partially justify the stronger weight of individualism in the different clusters. On the other hand, in such a determinant and demanding academic cycle, the school can perhaps face difficulties in providing opportunities to develop broader or cross-subjects' projects and activities that could favour the development of students' collectivistic features such as cooperation, interpersonal relations, involvement or sense of belonging. Indeed, it could be the case that secondary school cycle could somehow benefit students with more individualistic orientations since can more easily adapt and succeed in this more competitive context.

Moreover, individualistic orientations support the stronger investment and effort to attain personal goals and, in this study, fostered positive outcomes. Although the individualistic features can have an effect on positive student's outcomes, the literature has also indicated that this personal investment can in some cases lead to negative effects such as anxiety, distress, frustration or maladjustment. On the other hand, in this study findings evidenced that collectivistic features, particularly advice, were considered important for students' positive outcomes. Thus, school psychological services, through direct intervention with students and classrooms, either by training or consultation, can have a particularly relevant role in minimizing the negative effects of a more competitive environment, helping them manage and adjust their expectations and behaviour

regarding their success, as well as fostering the development of students social and emotional skills, promoting self and social awareness, tolerance and resilience, while preparing them for active citizenship. On the other hand, teachers can adopt cooperative practices (e.g. PBL, debates, activities in groups,) in their classrooms as well as to extend collaboration with other subjects' teachers developing school and community projects. Moreover, schools should foster recreative, cultural, artistic or scientific projects and social events in, which students can participate according to their interests, and promoting a positive school climate, their identification and sense of belonging to a school that represents all.

The present findings should be considered in the context of the limitations of this research. First, the relatively small sample size of the study, due to the attrition rate of the longitudinal design, and the non-probabilistic sampling limits the generalisability of the results and emphasises the need for replication studies. Second, other prominent sociodemographic (e.g. gender, SES, personality traits); academic (e.g. achievement goal orientation, self-efficacy, motivation, previous academic achievement); and social emotional variables (e.g. wellbeing, anxiety, achievement emotions), if considered in the analyses, could extend the understanding of the influence of I–C on academic context. Moreover, the use of a performance EI measure could have been useful for exploring other indicators of emotional abilities. The low reliability of the emotions towards the school scale (0.69), in particular of the negative emotions dimension (0.59), limited the results analysis to the total scale score, thus further studies would be necessary to deepen the understanding of the possible effects.

Another limitation of this study was the difficulty to distinguish profiles, based solely on the empirical results since both I–C specific domains were scored very similarly in different clusters (drawn by the cluster analysis). To minimize possible bias interpretation the authors labelled clusters based on the empirical analyses results and the theoretical and content framework. Also, replication studies with other measures of I–C would allow for comparative analyses and elaboration of the typical features/domains of I–C. Future research should also address I–C profiles in earlier academic stages in which the diversity and multiplicity of students across emotional, motivational and scholastic levels could contribute to the extension of the empirical evidence.

Although cluster analysis is proven to be relevant to disclose patterns in data for exploratory studies, it entails particular limitations related to internal and external validity, since different methods of clustering can provide different results. Thus, this study constitutes a first attempt to deepen the understanding of the effect of I–C orientations on secondary school students and its impact on emotional and academic outcomes, but more research with different clustering methods would be suggested to confirm the present results.

This study represented an exploratory effort to shed light on the less researched individualist and/or collectivist implications to students' emotional and academic outcomes through the particular demanding cycle of secondary school. In general, the high individualist and collectivist profile students exhibited better positive outcomes, namely, trait emotional intelligence, positive emotions towards school and academic achievement. These results indicate that the students with the best indicators are those who take advantage of the joint features of the individualist and collectivist tendencies. Moreover, this study also adds knowledge to the I–C dynamics within a cultural context with the same dominant orientation, in this case, one that tends to be identified as collectivist as the Portuguese society.

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Data availability The data that support the findings of this study are available from the corresponding author upon reasonable request.

Declarations

Competing Interest The authors do not have any conflicts of interest.

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Current Themes of Research:

Emotional Intelligence, Social and Emotional skills and Implicit Theories of Intelligence and Emotional Intelligence

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Costa, A. & Faria, L. (2015). The impact of Emotional Intelligence on Academic Achievement: A longitudinal study in Portuguese secondary school. *Learning and Individual Differences*, *37*, 38-47. https://doi.org/10.1016/j.lindif.2014.11.011.
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Achievement Motivation; Intelligence and Culture; Emotional Intelligence; Implicit Theories of Intelligence; Social and Emotional Education.

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