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Emotional intelligence and authentic leadership. A comparative study of university students in Chile, Spain and Mexico

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ABSTRACT

The research consists of a comparative study on emotional intelligence and authentic leadership in university students in Mexico, Chile and Spain. The research concludes that it is relevant to incorporate emotional intelligence in leadership education without distinction by gender or degree program. Integrating both perspectives favours the consideration of emotions. Integrating both perspectives favors the consideration of emotions in the education of emotionally intelligent leadership. It also indicates the importance of adopting different educational strategies in different countries/universities, considering the key role of the dimensions Use of Emotion and Self-awareness, as well as the need to promote the education of interpersonal competencies that are currently underdeveloped compared to intrapersonal competencies.

PUBLIC INTEREST STATEMENT

The research consists of a comparative study on emotional intelligence and authentic leadership in university students in Mexico, Chile and Spain. The research concludes that it is relevant to incorporate emotional intelligence in leadership education without distinction by gender or degree program. Integrating both perspectives favours the consideration of emotions. Integrating both perspectives favors the consideration of emotions in the education of emotionally intelligent leadership. It also indicates the importance of adopting different educational strategies in different countries/universities, considering the key role of the dimensions Use of Emotion and Self-awareness, as well as the need to promote the education of interpersonal competencies that are currently underdeveloped compared to intrapersonal competencies.

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Introduction

Extensive research has examined emotional competencies and leadership, predominantly within organizational settings (Humphrey et al., 2008; Linan et al., 2024). However, research on emotional intelligence (EI) and authentic leadership (AL) in higher education remains scarce (Alshammari et al., 2020; Mafud et al., 2020; Sainz et al., 2021), particularly in Spanish-speaking countries and cross-cultural contexts (Zárate & Matviuk, 2012). Conclusive results regarding the relationship between EI and AL are lacking (Alshammari et al., 2020), hampering the development of targeted interventions to foster leadership through EI among university populations.

Further investigation of the relationship between EI and leadership among university students is required. Such research is critical as higher education institutions are increasingly tasked with cultivating essential professional and civic competencies (Galvis & Castellanos, 2020; Laurito & Benatuil 2019).

To provide information on effective educational practices, this study addressed the following question: What is the relationship between EI and AL among university students in Spain, Mexico and Chile? The analysis identified the key variables relevant to leadership development in higher education. Employing a cross-sectional quantitative design, the study concludes with recommendations for enhancing leadership education.

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This article begins with an overview of EI and AL research in higher education, followed by a detailed description of its objectives and methodology. Subsequently, the results are presented, along with a discussion of the major findings. Finally, this article offers conclusions and prospects for future research that integrates EI into leadership education.

Background

Emotional Intelligence among university students

Groundbreaking work by Howard Gardner in the early 1980s on intrapersonal and interpersonal intelligence laid the foundation for Salovey and Mayer (1990) concept of EI, which they defined as the ability to perceive, understand and manage one's own and others' emotional states. In 1995, Goleman's best-seller *Emotional Intelligence* popularized the construct by demonstrating its significance in social and personal adaptation (Goleman, 1995). Goleman (1998) further argued that the most effective leaders possess emotional competencies, such as self-awareness, emotional self-management and empathy.

Since then, a growing body of theoretical and empirical research has documented positive associations between EI and leadership effectiveness (Caruso et al., 2002; Pitsi et al., 2024; Rosete & Ciarrochi, 2005; Walter et al., 2011), albeit with critiques highlighting the need for refinement of measurement approaches for both constructs (Antonakis et al., 2009; Dasborough et al., 2022; McCleskey, 2014).

While studies of EI in university populations are relatively extensive, including investigations of learning styles (Estrada et al., 2019), academic performance (MacCann et al., 2020), subjective well-being (Cañero et al., 2019), resilience and life satisfaction (Cejudo et al., 2016) and self-awareness (Sánchez-Zafra et al., 2022), research examining the influence of EI on leadership development in this population remains scarce (López González et al., 2024).

Authentic leadership among university students

According to Luthans and Avolio (2003), the emergence of AL was situated within a period of economic crisis characterized by unethical practices and disillusioning behavior across the business, political, and financial sectors. This erosion of trust in leadership underscores the need for and relevance of leadership grounded in ethical principles (Avolio & Gardner, 2005).

Most research on AL among university students has primarily focused on (1) examining the role of personal narratives in fostering self-awareness (Hendricks & Toth-Cohen, 2018), (2) identifying experiential learning methodologies that effectively cultivate AL-related competencies (Corriveau, 2020) and (3) analyzing the influence of personality traits, such as self-efficacy, on the development of AL skills (Jaworski et al., 2022).

Relation between emotional Intelligence and authentic leadership

Duncan et al. (2017) reported that the dimensions assessed using the AL questionnaire showed no significant correlation with EI when measured using self-report instruments. Through a meta-analysis exploring the EI-AL relationship, Miao et al. (2018) found positive but highly heterogeneous effect sizes. More recent research by Alshammari et al. (2020) identified a significant positive association between overall EI and AL scores, while Conejero-Pérez et al. (2022) demonstrated that EI, interpersonal collaboration and job satisfaction accounted for a substantial proportion of the variance in AL.

Despite these contributions, the findings remain inconclusive regarding the strength and consistency of the EI-AL relationship. Moreover, this potential association has yet to be systematically examined in higher education settings or transcultural university contexts.

Objectives

The general objective of this study was to analyze the relationship between EI and AL among university students from three universities in Chile, Spain, and Mexico, with the aim of establishing guidelines for the more effective development of leadership competencies.

The specific objectives of the research were (1) to explore the mean scores and reliability of EI and AL as measured using the Wong and Law Emotional Intelligence Scale (WLEIS) and Authentic Leadership Questionnaire (ALQ) scales; (2) to analyze any statistically significant similarities and/or differences in EI and AL between countries; (3) to analyze any statistically significant differences in EI and AL between degree programs by country; (4) to analyze any statistically significant differences in EI and AL according to gender in different countries; and (5) to evaluate the correlation between the different dimensions of EI and AL.

Methodology

Participants

A total of 1139 undergraduate students participated in this study. All participants were enrolled in Business Administration and Management (BAM), Education, or Psychology programs at the Universidad Finis Terrae (Santiago de Chile), Universidad Francisco de Vitoria (Madrid), and Universidad Anáhuac (Mexico City). These private institutions share the mission of developing leadership competencies that contribute to societal improvement. A potential confounding variable was the socioeconomic status of the participants, which tended to be lower in Chilean universities. The study complied with the ethical guidelines of each university's review board to ensure voluntary participation and the confidential handling of personal data.

Participants were selected using convenience sampling and stratified by degree programs to enhance representativeness within each institution, although probability sampling was not employed. The sample was selected through the collaboration of teachers and university authorities, who agreed to administer questionnaires to their students in the classroom. The inclusion criteria required participants to be at least 18 years old and actively enrolled in one of the degree programs at one of the three universities. Table 1 shows the number of students enrolled in each degree program at each university.

A total of 1139 students participated in the study, of whom 638 were male and 501 were female; 326 were from Chile, 485 from Mexico and 328 from Spain. The students were aged 22–52 years in Chile, 18–28 years in Mexico and 18–32 years in Spain.

Table 2 presents the distribution of the sample by country, age, sex and degree.

As shown in Table 2, the majority of the participants in Mexico and Chile were male, whereas in Spain, the majority were female. The mean and mode ages of the participants were similar for Mexico

Table 1. Population: number of enrolled students by degree program.

Degree	Countries		
	Chile (UFT)	Mexico (UAM)	Spain (UFV)
BAM	1153	550	600
Education	205	59	680
Psychology	502	585	309
Total	1860	1194	1589

Note: UFT: Universidad Finis Terrae; UAM: Universidad Anáhuac de México; UFV: Universidad Francisco de Vitoria

Table 2. Participants by gender, age, and degree by country.

País	Variables	Total N = 1139		Chile (UFT) N = 326		Mexico (UAM) N = 485		Spain (UFV) N = 328	
		n	%	n	%	n	%	N	%
Gender	Women	501	44.0	146	44.8	174	31.1	181	55.2
	Men	638	56.0	180	55.2	359	64.1	147	44.8
Degree	BAM	692	60.8	225	69.0	248	51.1	219	66.8
	Education	145	12.7	20	6.1	48	9.9	77	23.5
	Psychology	302	26.5	81	24.8	189	39.0	32	9.8
Age	Mean	20.69		22.16		20.61		19.31	
	Mode	19		20		19		19	
	SD	3.10		4.67		1.84		1.71	

Note: UFT: Universidad Finis Terrae; UAM: Universidad Anáhuac de México; UFV: Universidad Francisco de Vitoria; n: count; %: percentage; BAM: Business Administration and Management; SD: standard deviation

and Spain, whereas in Chile, the mean age of the participants was slightly higher because of the presence of a greater number of older students.

Instruments

The WLEIS by Wong and Law (2002), adapted to Spanish by Extremera Pacheco et al. (2019), was used to measure the competencies of EI among university students. This instrument has demonstrated an adequate level of validity and reliability (Bru-Luna et al., 2021).

The ALQ (Walumbwa et al., 2008), adapted for Spanish by Moriano et al. (2011), was used to measure AL. The instrument also demonstrated adequate validity and reliability. One advantage of the ALQ is that it has adequate psychometric properties across diverse cultures and geographical regions, including North America, China, Kenya (Walumbwa et al., 2008), Spain (Moriano et al., 2011), Brazil (Cervo et al., 2016) and Poland (Panczyk et al., 2019), among others. It has also been applied to university students in South Africa (Hendricks & Toth-Cohen, 2018), Canada (Corriveau, 2020) and Poland (Jaworski et al., 2022).

Procedure

By leveraging established collaborations between the research team and university administration, a structured implementation plan was devised. Initially, in March 2022, a pilot project was undertaken in Chile with 161 students over the age of 18 enrolled in degree programs at UFT. The sample size and type used in this pilot study met the statistical research criteria (Pardo et al., 2009). The analysis of the pilot data demonstrated strong internal consistency for both instruments, with Cronbach's alpha coefficients of 0.956 for the EI scale and 0.919 for the AL scale, respectively.

The outcome of the pilot project in Chile suggested that neither instrument required any linguistic adaptation or modification, and both questionnaires were retained in their original forms. Nevertheless, in November 2022, minor linguistic refinements were implemented to the three ALQ items to enhance their applicability to the Mexican context. Conversely, no modifications were required for the Spanish administration because both instruments had previously been validated with a Spanish sample.

The data for this study were collected from the second half of 2022 to the first half of 2023.

Data analysis

The data were analyzed using SPSS version 21.0 (SPSS Inc., Chicago, IL), and the following tests were conducted in sequential order:

- a. Descriptive statistics (mean and standard deviation) were computed for EI and AL. Furthermore, the reliability of the WLEIS and ALQ scales was assessed using Cronbach's alpha.
- b. The mean scores of the questionnaires were analyzed to identify statistically significant similarities or differences between EI and AL in relation to sociodemographic variables. Single-factor variance analysis (ANOVA) was used to evaluate differences in mean scores by country and degree. Student's *t*-tests were used for independent samples of men and women. Equality of variance was confirmed using Levene's test. In cases without homoscedasticity, Welch's *t*-test and analysis of variance were conducted. Post-hoc Tukey or Games-Howell tests were performed, depending on the homogeneity of the variance.
- c. Pearson's correlation coefficient was calculated to evaluate the correlation between EI, AL, and their respective dimensions.

Limitations

One limitation of this study is that the sample was selected *via* convenience sampling; future studies should employ random sampling to avoid the limitations associated with convenience sampling. Moreover, this study is confined to three universities in three countries; therefore, the findings cannot be generalized to the broader student population, and additional diverse cultural profiles should be

incorporated into a more comprehensive research design for better ecological validity. Nevertheless, given the sample size, the results are adequate for an exploratory study that allows us to respond to the research objectives.

Furthermore, the use of self-reported questionnaires may have introduced response bias in the participants' evaluations. To address this issue, the results should be triangulated using qualitative methods. A longitudinal design would also help to elucidate changes in outcomes over time. Finally, future research should examine the influence of students' status.

Results and discussion

Mean scores for each scale

Tables 3 and 4 show the mean scores for each dimension of the WLEIS and ALQ scales, comparing these results with those of other relevant studies.

Reliability of the instruments

As shown in Table 5, the reliability of both instruments was good.

The WLEIS demonstrated a high level of internal consistency, which is consistent with the results reported by Wong and Law (2002) in their validation of the WLEIS questionnaire among university students in Hong Kong. The internal consistency, as estimated *via* Cronbach's alpha, yielded the following coefficients: Self-emotion appraisal $\alpha = 0.89$; Other's emotion appraisal $\alpha = 0.89$; use of emotion $\alpha = 0.80$; and regulation of emotion $\alpha = 0.89$ (Law et al., 2004).

The ALQ scale demonstrated satisfactory reliability in this study, although values were slightly lower than those reported by Walumbwa et al. (2008), who developed and validated the ALQ in China, Kenya and the

Table 3. Mean scores in the WLEIS dimensions in different studies.

EI dimensions	This study	Law et al. (2004)	Extremera Pacheco et al. (2019)
	Mean	Mean	Mean
Self-emotion appraisal	5.54	4.01	5.17
Other's emotion appraisal	5.68	4.15	5.16
Use of emotion	5.64	4.09	5.11
Regulation of emotion	5.00	3.78	4.64

Table 4. Mean scores in ALQ dimensions in different studies.

AL dimensions	This study	Walumbwa et al. (2008)	Moriano et al. (2011)
	Mean	Mean	Mean
Relational transparency	3.04	2.13	3.17
Internalized moral perspective	3.19	2.28	3.06
Balanced processing	3.13	2.19	2.94
Self-awareness	3.00	2.00	2.95

Table 5. Mean, standard deviation and Cronbach's alpha of EI and AL.

WLEIS/dimensions	Mean	Standard deviation	Cronbach's alpha
Emotional intelligence	87.5 (5.45)	17.3	0.92
Self-Emotion appraisal	22.2 (5.54)	4.5	0.82
Other's emotion appraisal	22.7 (5.68)	4.2	0.82
Use of emotion	22.5 (5.64)	4.5	0.86
Regulation of emotion	20.0 (5.00)	6.8	0.80
ALQ/dimensions	Mean	Standard deviation	Cronbach's alpha
Authentic leadership	49.4 (3.09)	9.0	0.90
Relational transparency	15.2 (3.04)	3.1	0.71
Internalized moral perspective	12.8 (3.19)	2.6	0.76
Balanced processing	9.4 (3.13)	2.1	0.72
Self-awareness	12.0 (3.00)	2.8	0.76

$N = 1139$.

United States, with Cronbach's alpha coefficients of self-awareness $\alpha = 0.92$; relational transparency $\alpha = 0.87$; internalized moral perspective $\alpha = 0.76$; and balanced processing $\alpha = 0.81$ (Walumbwa et al., 2008).

Mean differences in EI and AL between countries

As shown in Table 6, statistically significant differences were found in EI and AL between students from different countries.

As Table 6 shows statistically significant differences emerged between the countries across all dimensions ($p < 0.05$). However, the small effect size (Cohen's d) indicated that the country variable contributed minimally to the observed variance. Overall, participants from UAM (Mexico) obtained significantly higher scores than those from UFV (Spain). Notably, the Mexican and Chilean participants exhibited scores comparable to those of their Spanish counterparts.

Table 7 presents the differences in the mean AL scores by country.

Students from Mexico obtained higher mean scores than their Spanish counterparts on the overall AL scale and on the Self-Awareness and Balanced Processing subscales. Furthermore, these students scored higher in self-awareness than students from Chile, and while the differences were significant, the effect size was small.

These findings align with previous research that reported cross-cultural variations in EI and AL. For example, a meta-analysis by Zhang et al. (2021) demonstrated that AL scores varied across cultural contexts. Similarly, a study examining EI differences among samples from Hong Kong, the United Kingdom and China found significant and consistent disparities, with participants from the UK scoring higher than those from China (Gökçen et al., 2014).

This study expands our understanding of the differences between countries by studying both variables together within a university context. Although the effect sizes were modest, these differences should inform the development of tailored educational strategies to foster EI and leadership in higher education contexts.

Table 6. Analysis of variance in mean scores in EI by country.

Scales	Country						Mean comparison				
	Chile N = 326		Mexico N = 485		Spain N = 328		ANOVA		Post-hoc tests		
	M	SD	M	SD	M	SD	F	p	Pairs	p	Cohen's d
Emotional intelligence	86.9	17.3	89.8	18.5	84.5	14.7	10.276	<0.001***	Mx vs. Esp	<0.001***	0.317
Self-emotion appraisal	21.9	4.5	22.7	4.6	21.7	4.5	6.027	0.003**	Ch vs. Mx	0.043*	-0.176
									Mx vs. Esp	0.003***	0.220
Other's emotion appraisal	22.3	4.3	23.1	4.6	22.5	3.5	3.504	0.031*	Ch vs. Mx	0.038*	-0.180
Use of emotion	22.6	4.6	23.1	4.6	21.7	4.2	10.365	<0.001***	Ch vs. Esp	0.021*	0.204
									Mx vs. Esp	<0.001***	0.318
Regulation of Emotion	20.1	7.0	20.9	6.7	18.6	6.7	11.363	<0.001***	Ch vs. Esp	0.015*	0.219
									Mx vs. Esp	<0.001***	0.343

Note: Ch: Chile; Mx: Mexico; Esp: Spain; M: mean; SD: standard deviation
* $p < 0.05$, ** $p < 0.01$ and *** $p < 0.001$.

Table 7. Analysis of variance in mean scores in AL by country.

Scales	Country						Mean comparisons				
	Chile N = 326		Mexico N = 485		Spain N = 328		ANOVA		Post hoc tests		
	M	SD	M	SD	M	SD	F	p Value	Pair	p Value	Cohen's d
Authentic leadership	48.9	9.3	50.2	9.6	48.6	7.8	3.937	0.020*	Mx vs. Esp	0.020*	0.183
Relational transparency	15.2	3.2	15.3	3.2	15.2	2.8	0.157	0.855	-	-	-
Internalized moral perspective	12.7	2.7	13.0	2.6	12.6	2.4	2.616	0.074	-	-	-
Balanced processing	9.4	2.2	9.6	2.1	9.1	2.1	4.687	0.009**	Mx vs. Esp	0.005**	0.238
Self-awareness	11.7	3.0	12.4	2.8	11.7	2.5	8.719	<0.001***	Ch vs. Mx	0.002**	-0.241
									Mx vs. Esp	<0.001***	0.264

Note: Ch: Chile; Mx: Mexico; Esp: Spain; M: mean; SD: standard deviation
* $p < 0.05$, ** $p < 0.01$ and *** $p < 0.001$.

Mean differences in EI and AL between degree programs

As shown in Table 8, no significant differences were found in EI or AL across degree programs in different countries.

The results indicate that, regardless of the degree program in which they are enrolled, students in the same country show similar levels of EI and AL. It can be affirmed that there is no evidence that the result is influenced by EI or AL or that the degree has any significant impact on the development of these competencies on the part of students.

Mean differences in EI and AL by gender

As shown in Table 9, there is no evidence of a clear relationship between EI and sex.

Although a slight relationship was identified between AL and sex in the Spanish sample, the effect was minor and limited to this context. Overall, there is no evidence of a consistent relationship between EI and sex. Leadership style appears to be shaped not by gender but by the cultural context in which it is enacted (Cheung & Halpern, 2010).

Furthermore, these results contrast with traditional stereotypes that link leadership to masculinity and EI to femininity (Cheung & Halpern, 2010). Accordingly, our findings underscore the need to challenge gendered assumptions regarding leadership and EI.

Regarding the different dimensions of EI, the findings of this study diverge from prior research that has suggested significant differences in EI among men and women, with some reporting higher EI among men and others reporting the reverse (Ardura & Trancoso, 2023; Deng et al., 2023; Tortosa Martínez et al., 2023).

Correlation between EI and AL

As shown in Table 10, there was a positive correlation with a large effect size ($r > 0.500$) between EI and AL. As expected, there were significant correlations between the dimensions of each scale. However,

Table 8. Comparison of mean scores using variance analysis of EI and AL by country and degree programs.

Country	Degrees						Comparison of mean scores	
	BAM N = 692		Education N = 145		Psychology N = 302		ANOVA	
	M	SD	M	SD	M	SD	F	p
EI								
Chile	86.8	17.4	81.7	21.6	88.7	15.5	2.403	0.131
Mexico	90.5	18.4	92.2	16.1	88.3	19.1	1.254	0.286
Spain	85.1	14.6	83.2	15.2	84.0	14.0	0.489	0.614
AL								
Chile	49.0	9.5	45.8	7.4	49.6	9.0	1.325	0.267
Mexico	50.9	9.7	49.7	8.9	49.4	9.5	1.470	0.231
Spain	48.7	7.1	47.6	9.8	50.0	6.6	1.067	0.345

Note: BAM: Business Administration and Management; M: mean; SD: standard deviation

Table 9. Comparison of mean scores using student's t-test of EI and AL by gender and country.

Country	Gender				Comparison of mean scores	
	Women N = 501		Men N = 638		Student's t-test	
	M	SD	M	SD	t	p
Emotional intelligence						
Chile	88.6	16.3	85.6	18.0	1.566	0.118
Mexico	89.9	18.5	89.7	18.5	0.115	0.454
Spain	84.7	13.8	84.2	15.7	0.252	0.801
Authentic leadership						
Chile	49.6	9.1	48.4	9.4	1.208	0.228
Mexico	50.5	9.6	50.0	9.5	0.543	0.588
Spain	49.4	7.5	47.5	8.0	2.229	0.026*

Note: M: mean; SD: standard deviation

* $p < 0.05$.

Table 10. Pearson correlation coefficients between EI and AL and their dimensions.

	1	2	3	4	5	6	7	8	9	10
1. Emotional intelligence	–	0.894	0.798	0.872	0.873	0.553	0.452	0.484	0.427	0.515
2. Self-emotion appraisal		–	0.694	0.734	0.692	0.497	0.412	0.436	0.383	0.456
3. Other's emotion appraisal			–	0.649	0.515	0.468	0.371	0.435	0.354	0.431
4. Use of emotion				–	0.660	0.515	0.425	0.448	0.399	0.464
5. Regulation of emotion					–	0.445	0.363	0.372	0.346	0.429
6. Authentic leadership						–	0.868	0.861	0.806	0.861
7. Relational transparency							–	0.668	0.580	0.640
8. Internalized moral perspective								–	0.622	0.646
9. Balanced processing									–	0.624
10. Self-awareness										–

$N = 1139$; $p < 0.001$.

there were also significant correlations between certain dimensions of EI and AL. These findings suggested a close correlation between EI and AL.

A positive correlation with a large effect size was found between the global EI and AL scales ($r = 0.553$). Of the EI dimensions, use of emotion showed the highest correlation with AL ($r = 0.515$). The correlation between self-emotion appraisal and the global AL scale was $r = 0.497$, which can be considered high according to Cohen (Ellis, 2010). The correlations between AL and other's emotion appraisal and regulation of emotion were moderate.

The global EI scale showed a strong correlation with the AL dimension of Self-awareness ($r = 0.515$), while the correlations were moderate with the other dimensions of AL. Of these, the Balanced processing dimension showed the least correlation with global EI ($r = 0.427$).

In the EI scale, the other's emotion appraisal dimension showed less correlation with AL dimensions, the lowest being with Balanced Processing ($r = 0.354$) and the highest with internalized moral perspective ($r = 0.435$). The use of emotion dimension showed a greater association with the AL dimensions, ranging from $r = 0.399$ (balanced processing) to $r = 0.464$ (self-awareness).

These findings are consistent with those of other studies conducted in professional contexts, which found that EI among managers influences employee performance while also indicating that AL plays a mediating role in this relationship (Alshammari et al., 2020; Zhang et al., 2021). Nevertheless, differences were found compared with the results of Duncan et al. (2017), which suggests that in the professional context, AL dimensions are not correlated with EI.

These results confirm that, in an academic context, there is a clear interrelation between EI and AL and that certain dimensions are more closely related than others. No prior studies conducted within the context of higher learning were found to contrast with the suggestion that certain dimensions of EI, such as Use of Emotion, can play a more significant role than AL, whereas the AL dimension of Self-awareness can have a more significant influence on EI.

Conclusions and prospectives

Conclusions

1. The results demonstrated a significant association between EI and AL among university students in Mexico, Chile and Spain. The dimensions of both scales were strongly correlated, suggesting that enhanced development of emotional competencies may positively influence leadership behavior. This finding corroborates the results obtained when measuring the relationship between EI and leadership competencies using the virtue-based leadership development questionnaire (LID) (López González et al., 2024). The importance of using emotions in leadership was also confirmed. Self-awareness is also important. Emphasizing these dimensions could optimize the development of both EI and AL.
2. The intrapersonal dimensions yielded the lowest mean scores ($M = 3.2$, $SD = 0.5$), whereas the interpersonal dimensions had the highest scores ($M = 4.1$, $SD = 0.4$). This pattern suggests that participants from the three countries, especially Spain ($M_{\text{intrapersonal}} = 3.1$, $SD = 0.6$) and Chile ($M_{\text{intrapersonal}} = 3.2$, $SD = 0.5$), possessed stronger interpersonal competencies than

intrapersonal competencies. To address this discrepancy, targeted educational interventions such as self-reflection exercises and mentoring should be implemented.

3. There is a significant difference that indicates higher levels of EI and leadership in Mexican students, which is comparable to the results obtained in other studies (López González et al., 2024). Although the effect sizes were modest, these differences underscore the value of disseminating best practices and cross-institutional collaboration to promote competencies that appear less developed in certain contexts.
4. No significant mean score differences emerged across the degree programs within each university. Although this suggests that it is not necessary to create differentiated strategies to foster leadership competencies and EI depending on the degree program, this should be considered with caution and further verified by additional research. Future research should explore the common and/or transversal factors between university degree programs and cultural factors within a higher learning environment.
5. Although the study found that Spanish women scored significantly higher than men, particularly in the dimension of internalized moral perspective, the effect size was limited. It is important to overcome gender stereotypes embedded in training programs for EI and/or leadership.
6. Ultimately, the results suggest that strengthening EI can effectively foster AL, particularly by employing strategies adapted to the specific circumstances of each cultural context within a university. The findings of this study hold substantial significance by providing a transcultural framework for examining the dimensions of EI and AL among university students and enabling comparative analyses across countries, academic disciplines and gender groups.

Prospectives

1. A longitudinal study is recommended to assess the outcomes over time. Further research should be conducted at other universities and countries that will enable the population validity of the results and assist in the development of strategies to foster leadership competencies by incorporating education in EI.
2. An educational model integrating EI and AL that emphasizes the dimensions of the use of emotions and self-awareness should be developed. This recommendation is based on the significant correlation observed between global scales and specific dimensions of EI and AL. It is important to integrate emotional competencies and leadership even in academic curricula (Haber-Curran & Williamson, 2023).
3. The recommendation to establish a learning model that incorporates EI and AL is based on theoretical principles (Avolio & Gardner, 2005). According to Walumbwa et al. (2008), AL is based on fostering positive psychological competencies and capabilities as well as a positive ethical environment between a leader and collaborators. In turn, EI fundamentally deals with the ability to understand and manage one's own emotions and to recognize and influence those of others, which can facilitate decision-making, foster positive and stronger interpersonal bonds, and enable the effective adaptation of individuals to diverse contexts.
4. Education on the use of emotions and self-awareness is related to education in terms of cardinal virtues. The research results revealed a significant correlation between emotional regulation and the virtue of temperance, as well as between emotional assimilation and the virtue of fortitude. Low self-perception of university students regarding their emotional competencies in self-control, impulse control, and emotional regulation has been observed in Spain and Mexico. Assessment and education on cardinal virtues should be included in universities, integrating intelligence, will and affectivity (López González et al., 2025; Rodríguez Barroso et al., 2025).
5. Integrating AL and EI according to this model of integral formation favors the consideration of emotions within a form of leadership that is not only ethical, reflexive, impartial and transparent, but also emotionally intelligent. Thus, from a theoretical perspective, the Use of Emotion (the EI dimension) offers valuable insight into AL, enabling leaders to inspire change and the effective execution of new initiatives. The use of emotion in the exercise of leadership is key to effective decision-making and managing interpersonal relationships, bringing about an understanding of emotional factors in reasoning, communication and problem-solving. In turn, self-awareness (the AL dimension) allows for decision-making aligned with one's moral values and goals (Walumbwa et al., 2008), complementing and enriching EI.
6. Figure 1 offers a visual presentation of a model integrating EI with AL, showing a close relation between use of emotion and self-awareness.

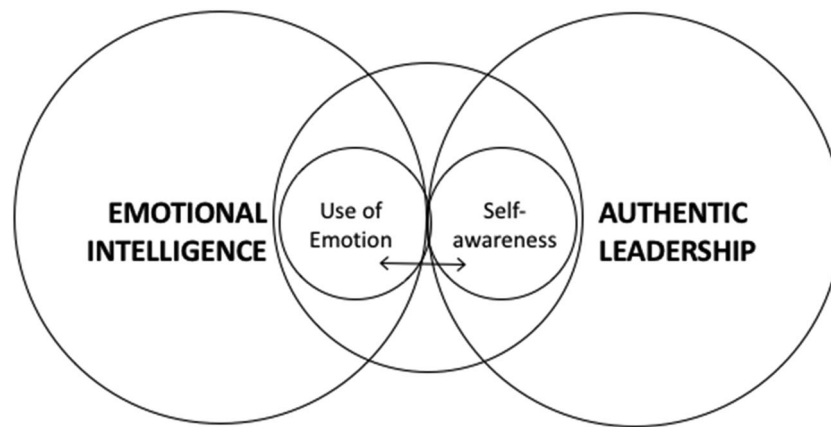


Figure 1. Integration of emotional intelligence and authentic leadership.

This model facilitates closer integration between affective and cognitive processes, enhancing self-awareness and the use of emotions. The model emphasizes the interdependence of emotional and cognitive factors. Recognizing the connection between emotions and cognition will enable improved leadership education. Curriculum and instructional design should consider this proposal.

7. The emotional education of university students, beyond purely cognitive or volitional training, is particularly relevant in complex and dynamic environments and should be integrated into curricula across all degree programs, especially in BAM, Education and Psychology at participating institutions. A model embedding EI and AL within accompanying programs, including group projects and individual coaching and mentoring, would be particularly beneficial. The results showed that mentoring programs applied according to this model have a significant impact, especially on the development of intrapersonal competencies (Crespí et al., 2025).
8. This integration may enhance the development of leadership competencies within professional contexts and improve the effectiveness of work teams and complex decision-making by ensuring that emotional factors are considered. Greater emotional awareness among leaders implies a greater understanding of team members' needs, concerns and perspectives, resulting in decision-making that incorporates emotional factors within an organization beyond cognitive considerations.
9. Finally, an educational model integrating EI and AL can prepare students to fulfill their civic responsibilities, enabling them to contribute positively to society and culture. AL fosters the comprehension of team needs and perspectives, thereby facilitating informed decision-making and promoting a more collaborative, ethical and empathetic workplace climate. By focusing on relevant information and attuning to others' emotions, authentic leaders strengthen their sense of community and collective well-being, leading not only to better decision-making but also to the promotion of a more harmonious and productive environment, benefiting society in general.

Disclosure statement

No potential conflict of interest was reported by the author(s).

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Documents submitted and reviewed by the committee

Research Project

Investigator's Curriculum Vitae

Annex I 'Presentation Form'

Annex II 'Investigator's Commitment'

Annex III 'Academic Unit Support'

Annex IV 'Summary of the Research Project for Ethical Evaluation'

Annex V 'Informed Consent Document'

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Data availability statement

I confirm that I have included a data availability statement in the manuscript according to the following details.

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