



UNIVERSIDADE  
**LUSÓFONA**

**CENTRO UNIVERSITÁRIO DE LISBOA**  
**ESCOLA DE PSICOLOGIA E CIÊNCIAS DA VIDA**  
**MESTRADO EM PSICOLOGIA CLÍNICA E DA SAÚDE**

**PATHWAYS TO ACADEMIC ADJUSTMENT: THE  
INTERPLAY OF EMOTIONAL INTELLIGENCE, SELF-  
ESTEEM, FLOURISHING AND MENTORING IN HIGHER  
EDUCATION**

Dissertação apresentada a provas públicas para a obtenção do grau de Mestre em Psicologia Clínica e da Saúde, orientada por Professora Doutora Stephanie Raquel Gonçalves Alves e Professora Doutora Sara Maria Leitão Jorge Marques de Almeida de Ibérico Nogueira

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**Lisboa**

**2025**

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**Pathways to Academic Adjustment: The Interplay of  
Emotional Intelligence, Self-Esteem, Flourishing and  
Mentoring in Higher Education**

Dissertação defendida em provas públicas na  
Universidade Lusófona – Centro Universitário de  
Lisboa, no dia 13 de Outubro de 2025, perante o júri,  
nomeado pelo despacho de nomeação nº 419/2025,  
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**Lisboa**

**2025**

## **Epígrafe**

*Há pessoas que se assemelham a livros e que nos transformam. Assumem a forma de uma ponte dourada entre nós e eles. Eu chamar-lhe-ia mentores.*

**-Fountain & Newcomer (2016)**

### **Acknowledgements**

Não cabem em poucas palavras os agradecimentos que gostaria de fazer a todas as pessoas que acompanharam o meu percurso académico, que partilharam comigo as minhas conquistas, que estiveram comigo nos momentos difíceis e que comigo fizeram esta jornada marcante e feliz da minha vida.

Um bom professor deixa em cada aluno uma marca, um bocadinho de si, da sua sabedoria, que muitas vezes não é reconhecida, mas está presente, cresce e evolui com cada aluno. Um agradecimento sincero a todos os docentes que tiveram um contributo enorme na minha formação e desenvolvimento pessoal e que deixaram a sua marca.

Agradeço à coordenação do Mestrado de Psicologia Clínica e da Saúde, à Professora Doutora Isabel Santos e ao Professor Doutor Bruno Faustino por todo o apoio. De facto, só não fazem por nós o impossível.

À minha orientadora, Professora Doutora Stephanie Alves, por ter feito os possíveis e os impossíveis para que me fosse possível realizar o sonho de escrever uma dissertação sobre o meu bebé de investigação, o Programa de Mentorado. Foi consigo que publiquei o meu primeiro artigo científico. Por toda a paixão que me passou pela investigação, por todo o seu interesse, por toda a sua disponibilidade, apoio, carinho, por confiar em mim durante todo este processo, por ter deixado uma marca significativa em mim e por ter feito de mim uma melhor profissional e pessoa, todos os agradecimentos não são suficientes.

À minha co-orientadora, Professora Doutora Sara Ibérico Nogueira e à Professora Doutora Paula Paulino, que teve um papel fundamental para o desenvolvimento deste trabalho. Como refere a epígrafe da minha dissertação, me transformaram, sendo as minhas pontes douradas ao longo de todo o meu percurso académico que levo para a vida. Ainda não foram inventadas as palavras que demonstrem o quão agradecida vos sou. Em primeiro lugar, sem vós não havia Programa de Mentorado, ao qual dedico a minha tese, que se tornou numa segunda casa para mim, onde tanto cresci e aprendi, podendo fazer aquilo que me é mais gratificante, ajudar o outro. É muito reconfortante quando conhecemos pessoas que nos fazem sentir bem, nos ajudam e que, todos os dias, nos inspiram a querer ser melhores a todos os níveis e que efectivamente contribuem para isso. Pelo enorme apoio, por terem feito da UL uma segunda casa para mim, por serem modelos de vida, exemplos de sabedoria, humanidade e força que me inspiram diariamente, por todo o interesse, disponibilidade, carinho, pelo enorme impacto e presença que tiveram ao longo do meu percurso académico e pessoal, um eterno e sincero

obrigada. Deixo-vos uma frase do psicólogo Gordon Neufeld que, apesar de eu já não ser uma criança, me faz muito sentido: *"As crianças aprendem melhor quando gostam do Professor e quando acham que o Professor gosta delas. Para chegar à mente das crianças é preciso também chegar-lhes ao coração."* E, as minhas orientadoras, sem dúvida, chegaram ao meu coração.

Ao Professor Doutor Pedro Joel Rosa, por toda a sua disponibilidade, apoio, motivação e entusiasmo contagiante, o meu sincero obrigada.

Um agradecimento especial e sincero à melhor mentora do mundo, uma ponte dourada na minha vida, Ana Valente, pela tua incansável disponibilidade, pelo teu carinho, amizade, apoio incondicional e pelos milhentos telefonemas em que me aturaste, por teres sido a minha rocha no mestrado. Ter-te no meu percurso académico e pessoal, fez de mim melhor pessoa e futura profissional, OBRIGADA!

À Soraia Bragança, a irmã que ganhei ao longo do meu percurso académico por ter sido a minha rocha, a minha metade, por me ter empurrado, acompanhado, estando lá sempre para mim, todos os agradecimentos não são suficientes e não é possível pôr em palavras o quão importante és para mim. Não teria conseguido chegar aqui sem ti.

À Teresa Andrade Dias e à Adriana Luís por terem estado sempre a meu lado nesta caminhada conjunta, por terem aparecido no meu caminho e por serem pessoas tão amigas, carinhosas, empáticas e por terem sido o meu pilar nestes últimos dois anos, anjinhos caídos do céu e por tornarem o meu dia a dia tão feliz e leve.

À Cláudia e ao João que foram os melhores mentorandos possíveis. Como se diz em psicoterapia, nunca nos esquecemos dos primeiros. Como uma relação que começou por ser académica e se tornou numa bonita relação de amizade. Que gratificante tem sido ter-vos por perto.

A todos os mentores, por todo o vosso trabalho, empenho e dedicação, por quererem ajudar o outro e por o fazerem tão bem, o meu profundo e sincero agradecimento. A todos os mentorandos, obrigada pela vossa coragem ao conseguirem pedir ajuda, pela relação que permitiram que se criasse e por se deixarem ajudar.

Um agradecimento a todos os participantes que fizeram parte deste estudo e que me permitiram realizar um sonho, muito obrigada.

Aos meus amigos, em especial à Carolina e ao Diogo, por toda a vossa amizade e compreensão, por perceberem a minha ausência e por compreenderem a minha dedicação total à faculdade e, por ainda assim, cá estarem sempre.

O agradecimento mais importante, à minha família, que me apoiou sempre em todo este processo, quando tive a ideia genial de deixar para trás uma carreira profissional de 10 anos como chef de cozinha, acabando por ser a melhor decisão da minha vida, por estarem sempre presentes e por todo o apoio que me deram nos momentos mais difíceis, e, por partilharem comigo também os momentos mais felizes. Se sou o que sou hoje, a vós o devo, às pessoas mais importantes da minha vida que fizeram os possíveis e os impossíveis por mim. Adoro-vos incondicionalmente, Mãe, Pai e Mana.

## Resumo

A adaptação ao ensino superior (AES) envolve desafios académicos, sociais e emocionais relevantes, sobretudo para estudantes do primeiro ano. Programas de mentorado (PM) têm sido apontados como intervenções eficazes na promoção do sucesso académico e desenvolvimento pessoal. Este estudo examinou o papel da inteligência emocional (IE) na AES, explorando a auto-estima e o florescimento como potenciais mediadores em série, e a participação no PM como um possível moderador.

A amostra é constituída por 267 estudantes de Psicologia (83,9% mulheres), com idades entre 17 e 35 anos ( $M = 19,64$ ;  $DP = 3,17$ ), dos quais 77,5% participaram no PM. Foram preenchidos instrumentos de auto-relato no início do primeiro (T1) e segundo (T2) semestres, avaliando IE, AES, auto-estima, florescimento e variáveis sociodemográficas.

Os resultados demonstraram que a auto-estima e o florescimento mediam parcialmente a relação entre IE e AES, com efeitos mais acentuados em T2 ( $abcs = .10$ ; 95% *bootCI* [.05, .17]). A participação no PM moderou a associação entre florescimento e AES, sendo o efeito mais forte nos estudantes que não participaram no programa.

Os resultados destacam a importância dos recursos emocionais e institucionais no processo de adaptação ao ensino superior, sugerindo o desenvolvimento de intervenções universitárias mais eficazes na AES.

**Palavras-Chave:** Inteligência Emocional, Auto-estima, Florescimento, Adaptação ao Ensino Superior, Programas de Mentorado.

### **Abstract**

Adaptation to higher education (AHE) involves relevant academic, social, and emotional challenges, especially for first-year students. Mentoring programs (MPs) have been identified as effective interventions in promoting academic success and personal development. This study examined the role of emotional intelligence (EI) in AHE, exploring self-esteem and flourishing as potential serial mediators, and participation in the MP as a possible moderator.

The sample consists of 267 psychology students (83.9% women), aged between 17 and 35 ( $M = 19.64$ ;  $SD = 3.17$ ), of whom 77.5% participated in the MP.

Self-report instruments were completed at the beginning of the first (T1) and second (T2) semesters, assessing EI, AHE, self-esteem, flourishing, and sociodemographic variables.

The results demonstrated that self-esteem and flourishing partially mediated the relationship between EI and AHE, with stronger effects at T2 ( $abcs = .10$ ; 95% bootCI [.05, .17]). Participation in the MP moderated the association between flourishing and AHE, with the effect being stronger among students who did not participate in the program.

The results highlight the importance of emotional and institutional resources in the process of adaptation to higher education, suggesting the development of more effective university interventions for AHE.

**Keywords:** Emotional Intelligence, Self-Esteem, Flourishing, Adaptation to Higher Education, Mentoring Programs.

### **List of Abbreviations, Acronyms and Symbols**

% – Percentage

*adbs*- Completely Standardized Sequential Indirect Effect

AHE- Adaptation to Higher Education

AHEQ- Adaptation to Higher Education Questionnaire

bcaCI- bias-corrected and accelerated bootstrapping

BCCI- bias-corrected confidence interval

BPS- Biopsychosocial

EI- Emotional Intelligence

$f^2$ -Effect size f-squared

FS- Flourishing Scale

Ku- Kurtosis

*M* - *Mean*

Max- Maximum

MGA- multi-group analysis

Min- Minimum

MP- Mentoring Program

*p* - *statistical significance level*

PLS- Partial least squares

*r*- *Pearson Correlations*

RSES- Rosenberg Self-Esteem Scale

*SD*- *Standard Deviation*

*SE* - *Standard Error*

SE- Self-esteem

Sk- Skewness

T- T statistic Value

WLEIS- Wong and Law Emotional Intelligence Scale

$\beta$  -Standardized coefficients

$\eta^2_p$  -Partial eta squared

$\phi$  - Phi Coefficient / Effect Size

$\Omega$ - McDonald's Omega

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## **Introduction**

Adaptation to Higher Education (AHE) is a complex, dynamic process involving the development of adaptive behaviors to navigate academic challenges (Campos et al., 2022; Cheng et al., 2020), focusing on experiences, achievements, and institutional engagement (Campos et al., 2022; Kroshus et al., 2021). New students must adjust not only academically but also in building autonomy and new relationships, often within a less structured and potentially less welcoming environment than secondary school (Cobo-Réndon et al., 2023), which demands strategies for managing responsibilities and connecting with peers and professors (Campos et al., 2022; Casanova et al., 2023).

Since the Bologna restructuring, individuals over the age of 23 (M23) can enroll in higher education, which has changed the social and academic profile of most students, bringing both traditional and non-traditional students into university classrooms (Carreira & Lopes, 2020; Corti et al., 2023).

Given the heterogeneity of social and academic paths to university, which contributes to the complexity of the AHE construct due to its interactive, multifactorial and dynamic nature (Campos et al., 2022), and the impact that this period can have on psychological and emotional factors (Kroshus et al., 2021), more research is needed to identify the factors that promote AHE.

### *The Biopsychosocial Model in Higher Education*

The Biopsychosocial (BPS) Model, initially proposed by Engel (1977), presents an integrative perspective on student adaptation to higher education by highlighting the interaction between biological, psychological, and social factors. When applied to the academic context, this model provides a holistic framework for exploring how individual traits, emotional resources, and social support may influence students' AHE (Kranzler et al., 2020; Singha, 2025). Given the numerous challenges that students encounter during AHE, the BPS model is particularly relevant in understanding their well-being and academic success (Singha, 2025; Wong et al., 2021). Psychological resources, such as emotional intelligence and self-esteem, along with social connections and institutional support, have gained significant recognition as pivotal elements in facilitating students' adaptation and thriving in academic environments (Al-Sabbah et al., 2021; Wong et al., 2021).

Research has underscored the value of incorporating biopsychosocial approaches into university settings to promote student overall well-being (Singha, 2025). Emotional intelligence (EI) and self-esteem have been identified as attributes that play a central role in how students navigate academic transitions (Al-Sabbah et al., 2021), and mental health programs grounded in the BPS model have demonstrated benefits for emotional health, coping strategies and social functioning (Wong et al., 2021).

### *Emotional Intelligence and Adaptation to Higher Education*

Research has identified EI as a protective factor for mental health (Drigas & Papoutsis, 2020; Thomas & Zolkoski, 2020), potentially contributing to better adaptation to HE (Cobo-Réndon et al., 2023), higher levels of psychological well-being (Extremiera et al., 2020) and motivation to learn (Chang & Tsai, 2022). According to the studies of Moeller and colleagues (2020) and Shengyao and colleagues (2024), EI is an important predictor of success in HE, being a crucial skill for managing emotions and adapting to environmental demands and students, who demonstrate robust emotional intelligence, tend to cope better with academic and social challenges.

Salovey and Mayer (1990) ability model conceptualizes emotional intelligence as part of social intelligence and their EI ability model includes various dimensions: the appraisal and expression of emotions (in oneself and others), the use of emotions for planning and the emotional regulation, which is conceptualized as the ability to regulate one's emotions, enabling emotional control and a rapid transition from negative emotional states to positive affective states. Salovey and colleagues (2000) extended this model to conceptualize EI as a set of specialized skills for processing emotional information, comprising four interrelated skills: perceiving emotions, using emotions to facilitate thinking, understanding emotions, and managing emotions. Each of these skills operates hierarchically, with increasing levels of complexity, facilitating thinking and promoting the individual's emotional and intellectual development.

Based on this model, Wong and Law (2002) identified four dimensions of EI: appraising and expressing one's own emotions, recognizing emotions in others, regulating emotions, and using emotions to facilitate performance, in line with Salovey and Mayer's (1997) definitions.

EI contributes to a better AHE by promoting emotional regulation, empathy, and social competence, which facilitate supportive social interactions and meaningful

connections (Morales-Rodríguez et al., 2020). Furthermore, the ability to use emotions adaptively enables students to stay motivated and resilient, critical factors in achieving a sense of purpose and fulfilment during the AHE (Extremera et al., 2020).

Several studies have found positive associations between higher levels of EI and higher levels of SE (Alipour et al., 2024; Vilca-Pareja et al., 2022), highlighting the importance of EI-focused interventions to promote students' psychological adjustment (Quílez-Robres et al., 2023).

### *Emotional Intelligence, Self-Esteem and Adaptation to Higher Education*

As a key psychological resource, EI may play a pivotal role in enhancing other psychosocial variables that are particularly relevant during AHE, like self-esteem (SE), which is often challenged during this period and represents a key factor in shaping students' confidence to cope with new academic and personal demands (Alipour et al., 2024). Understanding the mediating processes through which EI influences student adaptation is therefore of great importance, particularly the potential role of SE in this relationship (Barragán-Martín et al., 2021).

Rosenberg (1965) conceptualizes self-esteem as a positive or negative attitude towards oneself, which is part of the self-concept and, according to Siregar and colleagues (2022), higher SE can promote a sense of empowerment and value in the person which is, in turn, associated with positive changes such as academic progress, increased striving for success and increased wellbeing.

Ni and colleagues (2024) also found an association between SE and AHE, suggesting that increasing SE can significantly improve AHE among university students.

EI is also a key factor in this process, as it allows students to recognize, understand and regulate their emotions effectively, which can enhance SE levels by providing a sense of competence and personal value (Barragán-Martín et al., 2021; Vilca-Pareja et al., 2022).

Barragán-Martín and colleagues (2021) explored the relationship between EI, SE, and academic engagement, with a focus on the mediating role of SE. Findings revealed that higher levels of EI were associated with greater SE, which in turn positively mediated academic engagement, indicating that students with higher EI are better equipped to understand and regulate their emotions, fostering a more positive self-perception. This enhanced SE leads to increased confidence in facing academic challenges, ultimately contributing to more effective academic engagement.

Similarly, Vilca-Pareja and colleagues (2022) showed that university students with higher EI reported more positive self-assessments, suggesting that understanding and managing emotions contributes directly to how individuals evaluate themselves.

Moreover, longitudinal data from Morales-Rodríguez and colleagues (2020) supports this association, indicating that increases in students’ EI are predictive of sustained gains in SE over time. Students who develop greater emotional competencies show improvements in self-regard, which in turn motivate them to continue investing in their emotional and personal development.

According to Kim and Dhammasaccakarn (2024), both students’ EI and SE play a crucial role in well-being, with EI not only contributing directly to well-being, but also positively influencing SE, which in turn increases psychological well-being.

Well-being is a dimension that is particularly affected during the transition to university (Kroshus et al., 2021), as students deal with different academic pressures, have to adapt to new social contexts and experience changes in daily routines and their support network (Cobo-Rendón et al., 2023).

### *Emotional Intelligence, Self-Esteem, Flourishing and Adaptation to Higher Education*

Flourishing (FS) has gained recognition as a holistic framework for understanding optimal functioning, integrating the eudaimonic perspective of well-being (i.e., human potential) with the hedonic well-being (i.e., view of happiness) (Diener et al., 2010; Seligman, 2011). The model proposed by Diener and colleagues (2010), unlike models that focus primarily on the absence of psychological problems, values FS as it begins to emphasize excelling across multiple areas of life, including a sense of purpose, fulfilling social relationships, and an optimistic mindset.

In academic contexts, flourishing has been associated with various positive outcomes, such as enhanced motivation (Samsami et al., 2022), better mental health (Maples et al., 2022), and stronger academic engagement (Benlahcene, 2022). Additionally, recent research highlights its potential role as a mediator, linking psychological traits like emotional intelligence (Extremiera et al., 2020) to students’ successful AHE environments (Datu, 2018). Malinauskas and Malinauskiene (2020) found that higher levels of EI were predictive of sustained and improved FS among university students. The study showed that EI facilitates the development of adaptive strategies, emotional regulation and interpersonal effectiveness, which collectively contribute to FS.

Students with high EI showed an upward trajectory of FS, indicating that EI enables students to perceive and manage emotions effectively, which increases their ability to extract meaning and satisfaction from academic and social experiences (Extremera et al., 2020; Malinauskas & Malinauskiene, 2020). By drawing on their emotional competencies, students are better equipped to deal with stressors and maintain a balanced perspective (Thomas & Zolkoski, 2020), which are essential elements of FS (Diener et al., 2010).

Flourishing, as a multidimensional construct, appears to be enhanced by SE by fostering a sense of purpose, achievement, and positive interpersonal connections (Marcionetti & Rossier, 2021). In turn, elevated SE reinforces students’ ability to engage with their academic and social environments effectively, creating a virtuous cycle of psychological growth and adaptation (Kroshus et al., 2021; Orth & Robins, 2022).

According to the studies of Pignault and colleagues (2023) and Tiwari and colleagues (2023), SE plays a fundamental role in fostering FS by promoting a more compassionate and accepting view of oneself. Self-esteem can encourage positive emotions and cognitions that contribute to a greater sense of purpose and FS. It also enables individuals to better understand and navigate challenging situations, making more constructive attributions about themselves and others. This positive self-regard can facilitate emotional growth and self-forgiveness, ultimately enhancing one’s capacity to flourish (Pignault et al., 2023; Tiwari et al., 2023).

Given the important role of SE in fostering FS, its development becomes essential for promoting positive psychological outcomes in the academic context. Cultivating healthy levels of self-esteem can strengthen students’ sense of personal worth and emotional resilience, thereby enhancing their capacity to experience FS during the AHE (Singhal & Prakash, 2020).

Mentoring programs (MP) are increasingly being considered in psychological approaches as valuable tools to support students in higher education, not only by providing direct support (Crisp et al., 2020; Tsang, 2023), but also by promoting mental health (Lane, 2020; Pointon-Hass et al., 2024), facilitating institutional adaptation (Lane, 2020; Paulino et al., 2023), encouraging personal and professional development (Rinfret et al., 2023), and strengthening students’ sense of belonging (Lapon & Buddington, 2024).

### *Mentoring Programs on Higher Education*

Mentoring Programs are based on peer support, which is the support provided by and for individuals with similar conditions, problems or experiences, i.e., higher-year/more experienced students to support lower-year/less experienced students (Crisp et al., 2020; Nabi et al., 2024; Nuis et al., 2023).

Mentoring programs are highly diverse and can be adapted to address the various stages and challenges encountered by students in their educational and professional paths. Some programs are designed to facilitate the transition of first-year students to HE by encouraging their participation in campus activities, clubs, and organizations, fostering social connections, leadership skills, and a sense of belonging (Paulino et al., 2023, Tsang, 2023). These initiatives are particularly beneficial for students from diverse backgrounds and underrepresented groups, as they facilitate the creation of a more inclusive and supportive environment on campus, thereby reducing barriers to success (Heffron, 2020). On the other hand, other MPs are oriented towards preparing students for the transition to the job market (Nuis et al., 2023). These programs are designed to develop career-related skills, including networking, professional communication, and effective job search strategies, which aims to equip students with the tools they need to succeed in their professional lives (Garza & Irby, 2020; Nuis et al., 2023).

In addition, research suggests that MP can be crucial for non-traditional students, such as those returning to higher education later in life or those changing academic fields (Cain et al., 2024). Such students often face specific challenges, such as social and academic integration, and mentoring can provide a key support network, helping them navigate the complexities of a university experience that can differ significantly from that of their younger peers (Collier, 2023). Mentoring Programs aimed at this group not only to facilitate academic adaptation, but also promote the development of interpersonal and emotional skills, which are essential for long-term success (Cain et al., 2024; Collier, 2023).

Mentoring programs are implemented in diverse ways, depending on the institution and the program's objectives. Some are formal and structured, with clear goals and activities (Crisp et al., 2020; Paulino et al., 2023), while others adopt a more informal approach, allowing mentors and mentees to decide the frequency and content of their meetings (Le et al., 2021; Tsang, 2023).

The MP at Universidade Lusófona's School of Psychology and Life Sciences, was launched in 2018, which aims to support first-year students, both local and international, in adjusting to university life. It helps them familiarize themselves with university services, facilities, and platforms while also fostering academic skills such as time management and research. Additionally, it aims to enhance students' satisfaction, well-being, and emotional adjustment. For students from different regions or those participating in mobility programs, the program seeks to promote a sense of belonging and cultural integration (Lapon & Buddington, 2023; Paulino et al., 2023).

The MP offers one-on-one meetings, group sessions, and online resources, including workshops to develop both academic and personal skills. There are two types of mentors: coordinating mentors (faculty members/professors who meet with mentors and mentees four times a year) and student mentors (senior students selected for their academic performance and motivation), who participate voluntarily. These mentors provide personalized support, helping students with study strategies, time management, communication, and emotional well-being (Paulino et al., 2023).

The literature has highlighted the effectiveness of formal mentoring programs in promoting institutional adaptation (Lane, 2020; Paulino et al., 2023), personal and professional growth (Rinfret et al., 2023), and a sense of belongingness (Lapon & Buddington, 2024). Other studies point out that MP are effective in promoting students' academic performance (Shauran, 2021; Venegas-Muggli et al., 2023), and preventing dropout rates (Alonso-García, 2021; Alonso-García et al., 2024) Tsang (2023) found that a semi-formal one-academic-year mentorship program improved thinking skills, motivation levels, and academic resources, also improving the socialization and adaptation to university life in low-achieving first-year students and peer mentors. Le and colleagues (2021) identified that mentoring relationships can exert protective effects through the processes of emotion regulation, leading to a possible decrease in psychological distress.

Mentors can enhance social and emotional well-being by serving as attachment figures, reshaping students' understanding of relationships and emotional experiences, as such, mentors have the potential to play a crucial role in the development of healthy emotion regulation strategies (Lapon & Buddington, 2024; Le et al., 2021) and in student satisfaction levels and psychological well-being (Lane et al., 2020; Pointon-Hass et al., 2024).

However, the literature indicates that mentoring programs act through different support processes, each with potentially different impacts on academic (Venegas-Muggli et al., 2023), emotional (Le et al., 2021), and social outcomes (Alonso-García et al., 2024; Tsang, 2023). Such effects may vary, but remain transversal across different situations of adaptation to higher education, whether they involve students transitioning from secondary education (Lane, 2020), changing courses (Collier, 2023) or entering later in life (Cain et al., 2024).

According to Tsang (2023), further research is needed to evaluate the effectiveness of the MP and to identify the variables in which mentoring programs may have an impact. Alonso-García and colleagues (2024) highlight that the programs can also have a positive influence on psychological well-being and academic motivation, although more research is needed to investigate the effectiveness of the MP on these variables.

Nevertheless, existing evidence suggests that the impact of MP is not equally distributed across all psychosocial variables. While some studies have indicated the potential benefits of MP on SE (e.g., Sibiya et al., 2018), these findings are limited in scope and often derived from small-scale or non-university contexts (Alarcón et al., 2021; Marino et al., 2020). Similarly, although mentoring may indirectly influence emotional intelligence, for instance, through improvements in emotion regulation (Le et al., 2021), few studies have addressed this association directly and systematically (Bryant & Aytes, 2021). On the other hand, the current body of literature offers more robust evidence supporting the role of MP in promoting FS (Boeder et al., 2021; Byrom, 2018; Eryilmaz, 2017; Maples et al., 2022; Pointon- Hass et al., 2024) and AHE (Alonso-García et al., 2024; Graham et al., 2022; Meletiadou, 2022; Venegas-Muggli et al., 2023; Yu et al., 2023). Given the pivotal role that FS plays in students' psychological and academic functioning, it is plausible that its effects on AHE are enhanced in the presence of structured peer support.

### *The present Study*

The identification of mechanisms that support AHE, such as emotional intelligence, contributes to a better understanding of the psychological factors involved in students' adjustment, providing a foundation for the future development of targeted intervention strategies.

Taken together, higher levels of EI are associated with higher levels of SE (Morales-Rodríguez et al., 2020; Vilca-Pareja et al., 2022) and FS (Extremera et al., 2020; Malinauskas & Malinauskiene, 2020), supporting the development of programs aimed at enhancing EI to promote AHE. Although the literature has established associations between EI, SE, and FS, the underlying mechanisms driving these relationships remain underexplored in university students.

Self-esteem and flourishing may function as mediating variables in the association between EI and AHE, directly enhancing students’ ability to adapt positively to their new environment (Kim & Dhammasaccakarn, 2024). Moreover, prior research has identified links between EI and FS (Extremera et al., 2020; Malinauskas & Malinauskiene, 2020) as well as between EI and SE (Barragán-Martín et al., 2021; Kim & Dhammasaccakarn, 2024).

The literature suggests that mentoring programs can promote emotional and social well-being, as well as support students’ AHE (Lane et al., 2020; Le et al., 2021; Lapon & Buddington, 2024; Pointon-Hass et al., 2024). However, to our knowledge, no study has yet examined the serial mediating effect of SE and FS in the relationship between EI and AHE or the potential moderating effect of mentoring programs on the association between FS and AHE.

The present study examines the role of the mentoring program in fostering emotional intelligence, self-esteem, flourishing, and adaptation to higher education by analyzing changes from T1 to T2 and comparing students who attend the program with those who do not.

It also tests whether self-esteem and flourishing sequentially mediate the relationship between emotional intelligence and adaptation to higher education in first-year university students and whether this relationship varies from T1 to T2. It further investigates whether participation in mentoring programs moderates the relationship between flourishing and adaptation to higher education at T2.

Therefore, this study aims to contribute to the enhancement of existing psychological support and mentoring programs, as well as to the development of more appropriate forms of support in HE. Simultaneously, the results of this study might provide a base for the development of practical recommendations that can be implemented in universities, promoting student mental health at a global level.

### *Hypotheses*

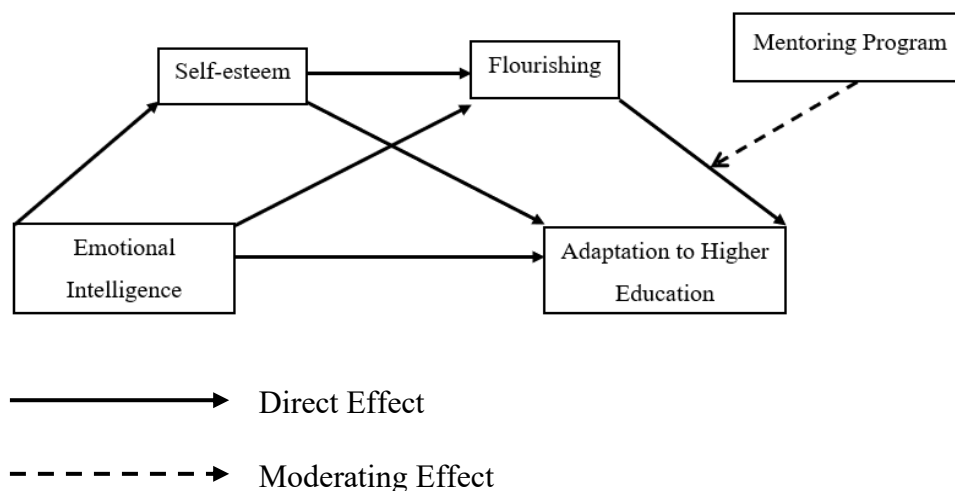
**H1:** Students who participate in the mentoring program will show a significant increase in EI, SE, FS, and AHE, from T1 to T2, compared to those who do not participate in the program.

**H2:** The association between EI and AHE will be serial mediated by students' levels of SE and FS at both T1 and T2. Specifically, higher EI will be associated with greater SE which, in turn, will lead to higher levels of FS that will ultimately improve AHE.

**H3:** The serial mediation effects (from EI to AHE through SE and FS) will be stronger at T2 than T1, reflecting an increase in the cumulative influence of emotional intelligence over time.

**H4:** The association between FS and AHE is moderated by participation in the MP at T2. Specifically, the effect of FS in AHE is stronger for students who participate in the MP.

In summary, the conceptual model underlying our hypotheses is presented in Figure 1.



**Figure 1.** *Proposed Conceptual Model*

## **Method**

### *Participants*

The total sample consisted of 267 psychology undergraduate students, 224 female (83.9%) and 43 male (16.1%), aged between 17 and 35 years ( $M = 19.67$ ;  $SD = 3.17$ ). Of the 267 students, 207 (77.5%) had attended the Mentoring Program (MP). Most of the

participants were single ( $n = 256$ ; 96%), had completed secondary school ( $n = 252$ ; 95%), 195 (73%) were only studying and 72 (27%) were studying and working.

An a priori power analysis was conducted using G\*Power version 3.1.9.7 (Faul et al., 2007) to estimate the required sample size for a repeated measures ANOVA with a within-between interaction. The analysis assumed a medium effect size ( $f = .25$ ), an alpha level of .05, a desired statistical power of .95, two groups (participants in the program vs. non-participants), two measurement time points (pre and post), and a correlation of .50 among repeated measures. The nonsphericity correction was set to 1. The results indicated that a total sample size of 54 participants would be required to detect the expected effect with the specified power.

With regard to the academic year, of the 267 students, 145 (54.3%) entered in 2024/25 and the remaining 122 (45.7%), in 2023/2024. To analyze whether the sub-samples that entered in different academic years differed from each other, differences analyzes were conducted. Fisher's exact test showed that the sub-samples did not differ regarding age group ( $p = .69$ ;  $\phi = -.03$ ), gender ( $p = .07$ ;  $\phi = -.15$ ), adherence to the Mentorship Program ( $p = .47$ ;  $\phi = -.03$ ), and working status ( $p = .78$ ;  $\phi = -.02$ ), which indicates that the total sample is homogeneous.

Regarding the sample justification, we followed Chin's (1998) recommendation of a minimum of 10 cases per estimated parameter. In the serial mediation model, the parameters included 4 path coefficients (including one moderated path), 3 residual variances, 3 intercepts. The total number of parameters ( $4 + 3 + 3 = 10$ ) multiplied by 10 resulted in a minimum sample requirement of 100 participants. In the moderated serial mediation model, a total of 12 parameters were estimated: 5 path coefficients (including the interaction term  $M2 \times W$ ), 4 residual variances, and 3 intercepts. Following Chin's (1998) recommendation of a minimum of 10 cases per estimated parameter, this resulted in a minimum required sample size of 120 participants thereby supporting the adequacy of our sample size.

### *Instruments*

#### *Sociodemographic Questionnaire*

A questionnaire was developed specifically for the study to assess socio-demographic data, including gender, age, marital status, level of education, professional status and MP attendance.

While data on several sociodemographic variables were collected, only the variable referring to participation in the mentoring program was included in the analysis of group differences, except for the purpose of sample characterization.

#### *Wong and Law Emotional Intelligence Scale (WLEIS)*

Emotional Intelligence was assessed using the Portuguese version of the Emotional Intelligence Scale (Rodrigues et al., 2011), originally developed by Wong and Law (2002).

The scale composes 16 items organized into four subscales: Self Emotion Appraisals (SEA; 4 items: "*I understand my emotions well*"), Others' Emotion Appraisals (OEA; 4 items: "*I am sensitive to the feelings and emotions of others*"), Regulation of Emotion (ROE; 4 items: "*I can control my emotions well*"), and Use of Emotion (UOE; 4 items: "*I am a self-motivated person*").

Participants were instructed to indicate their level of agreement with each statement using a 7-point Likert scale, ranging from 1 (*Strongly disagree*) to 7 (*Strongly agree*). The total score for each scale was calculated by averaging the scores of the corresponding items, both at the global level and for each subscale. Higher scores reflect greater levels of emotional intelligence.

The portuguese version of WLEIS revealed adequate internal consistency for all dimensions:  $\alpha = .84$  for SEA,  $\alpha = .80$  for OEA,  $\alpha = .73$  for UOE,  $\alpha = .89$  for ROE, and  $\alpha = .82$  for the global scale. In the present study, only the global scale was used.

#### *Adaptation to Higher Education Questionnaire (AHEQ)*

Adaptation to higher education was assessed using the Higher Education Adaptation Questionnaire (AHEQ), originally developed by Araújo et al. (2014). It consists of 56 items organized into 6 dimensions: career project, social adaptation, personal-emotional adaptation, adaptation to study, institutional adaptation, and commitment to the course.

The reduced version (Campos et al., 2022) was used in the present study, comprising 40 items organized into 5 factors with 8 items each: career project ("*I'm in the university I've always dreamed of*"), social adaptation ("*I feel very close to the group of friends I've made at this university*"), personal-emotional adaptation ("*I've felt more irritable than usual recently at university*"), study adaptation ("*I can take good notes in*

*class") and institutional adaptation ("I like the classrooms and physical spaces at my university").*

Participants were instructed to think about their experiences, opinions, and feelings about their academic adaptation in Higher Education and, for each of the items, to indicate their degree of agreement, on a 5-point Likert scale, ranging from 1 (*totally disagree*) to 5 (*totally agree*). The total scores for the scale and each factor are obtained by averaging the respective items. The items related to personal-emotional adaptation have an inverted score. Higher scores represent better levels of adaptation, apart from the personal-emotional adaptation factor, which is an indicator of lower levels of adaptation in this domain.

The portuguese short version of AHEQ revealed good internal consistency for all dimensions:  $\alpha = .89$  for career project,  $\alpha = .88$  for social adaptation,  $\alpha = .80$  for institutional adaptation,  $\alpha = .79$  for study adaptation,  $\alpha = .86$  for personal-emotional adaptation and  $\alpha = .85$  for the global scale. In the present study, only the global scale was used.

#### *Rosenberg Self-Esteem Scale (RSES)*

Self-esteem was assessed using the Portuguese version of the Rosenberg Self-Esteem Scale (Tagarro & Galinha, 2016), originally developed by Rosenberg (1979). This unidimensional scale is composed of 10 items, designed to measure global self-esteem. The items assess both positive and negative feelings towards oneself (e.g., "*I feel that I have a number of good qualities*" and "*At times I think I am no good at all.*").

Participants were instructed to indicate their agreement with each item on a 4-point Likert scale, ranging from 1 (strongly disagree) to 4 (strongly agree). A total score for the scale is computed by summing the responses to the items, with possible scores ranging from 10 (lowest self-esteem) to 40 (highest self-esteem). Higher scores indicate higher self-esteem. The Portuguese version of the RSES has shown good internal consistency ( $\alpha = .88$ ).

#### *Flourishing Scale (FS)*

Flourishing was assessed with the Portuguese version of the Flourishing Scale (FS; Silva & Caetano, 2013), originally developed by Diener et al. (2009). This 8-item scale measures positive human functioning, with items reflecting the overall construct of well-being ("*I consider myself a good person and have a good life*").

Participants were instructed to indicate their agreement with each item, on a 7-point likert scale, ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). A total score for overall scale can be computed by summing up the respective items, and scores can range from 8 (strongly disagree with all items) to 56 (strongly agree with all items). Higher scores indicate that participants see themselves in a very positive way in key areas of functioning.

The Portuguese version of FS revealed good internal consistency ( $\alpha = .83$ ).

The reliability estimates are presented in Table 2. All the instruments used showed adequate levels of reliability, with McDonald's Omega coefficients between .74 and .93, exceeding the cut-off value of .70, which indicates good internal consistency (DeVellis, 2017).

### *Procedure*

This study is part of a larger project, approved by the Ethics and Deontology Committee for Scientific Research at Universidade Lusófona (Ref. CEDIC-2025-8-26), which aimed to analyze the characteristics of students entering into the first year of the first cycle of studies at Universidade Lusófona - Centro Universitário de Lisboa (UL).

Study inclusion criteria were: 1) To be a student at UL, aged 18 or over, 2) To be able to read, speak, and understand Portuguese. Exclusion criteria were: 1) students who don't give informed consent.

This study has a quantitative and longitudinal design with two data collection moments, with data collection taking place during the first month of classes in the first semester and the second moment at the first month of classes in the second semester. Accordingly, data collection took place from October 2023 until February 2025. Data was collected online using a questionnaire hosted on the Google Forms platform.

The study was designed in compliance with ethical considerations and the integrity of research involving human participants. Participants were fully informed about the nature and aims of the research, and all relevant information was provided on the informed consent form. The form described the aims of the study, the role of the participants, emphasizing that participation was voluntary with no associated rewards, that the data collected would be used for research purposes only, and that the confidentiality and anonymity of the participants would be protected. Participants were informed of their right to withdraw from the study at any time, without repercussions, and that there would be no negative consequences of discontinuing participation.

Participants' anonymity was ensured through the use of a self-generated identification code, made up of four digits and four letters chosen by the participant. This code allowed responses to be compared at different points in the study and participants were instructed to keep their code for the second phase of data collection.

#### *Data preparation and analytical plan*

First, missing data were examined. At the pre-test stage, only participants who had completed all items of the emotional intelligence, self-esteem, flourishing, and higher education adaptation scales were included in the analysis, resulting in a total of 267 valid cases. At the post-test stage, the same inclusion criteria were applied, leading to the exclusion of 92 participants with incomplete responses and a final sample of 175 participants. Secondly, descriptive statistics were computed, including measures of central tendency (mean), dispersion (SD, minimum, and maximum), and shape (skewness and kurtosis) to characterize the main study variables.

Thirdly, chi-squared tests of independence and independent Student's t-tests were conducted to assess for potential confounding variables between the two groups of participants regarding the year of entrance into higher education, participation in the Mentoring Program (attended vs. not attended), gender, age group, and working status. The effect size was measured using Phi ( $\phi$ ) for categorical variables, where 0 indicates no association and 1 indicates perfect association.

Pearson's bivariate correlation ( $r$ ) was used to assess the extent to which the study variables were associated, interpreted according to Cohen's (1988) guidelines:  $r = .10$  (small effect),  $r = .30$  (medium effect), and  $r = .50$  (large effect). For the correlations between MP and the other variables, point-biserial correlation was used, using Cohen's guidelines.

A repeated measures ANOVA was conducted to examine the effect of the Mentoring Program (Yes, No) as a between-subjects factor and Time (T1: Pre-test, T2: Post-test) as a within-subjects factor, in the variable's emotional intelligence, self-esteem, flourishing, and adaptation to higher education. Partial eta squared ( $\eta^2_p$ ) was used as a measure of effect size, interpreted according to Cohen's (1988) criteria: small (.01), medium (.06), and large (.14).

Partial least squares (PLS) was employed to evaluate the serial mediation and the moderated serial mediation model. As outlined by Hair et al. (2011), PLS is particularly

useful for analyzing data with fewer restrictive assumptions, smaller sample sizes, and more complex models with an emphasis on exploration rather than confirmation.

PLS regression-based modeling was employed to evaluate the serial and moderated mediation models, using only manifest variables, specifically, emotional intelligence, self-esteem, flourishing, and adaptation to higher education. This approach differs from PLS-SEM, which involves latent constructs and requires the assessment of a measurement model. Since our models exclusively included manifest variables, there was no need to test for indicator reliability, convergent validity, or discriminant validity (Garson, 2016). PLS regression-based modeling is particularly advantageous in studies with smaller sample sizes, non-normal data distributions, and complex path structures, as it imposes fewer assumptions compared to covariance-based SEM (Hair et al., 2011).

The serial mediation model followed the logic of PROCESS Model 6 (Hayes, 2018), examining whether the effect of X on Y occurred indirectly through two mediators (M1 and M2) in a specific causal sequence ( $X \rightarrow M1 \rightarrow M2 \rightarrow Y$ ). To test this model, we employed a bias-corrected and accelerated bootstrapping procedure (bcaCI) with 10,000 resamples, as recommended by Shrout and Bolger (2002). Mediation was considered significant if the 95% bias-corrected confidence interval (BCCI) for the indirect effect did not include zero.

To examine temporal differences in the serial mediation model, a Multi-Group Analysis (MGA) was performed. This approach allowed us to compare path coefficients across time points. Specifically, we tested whether the serial indirect effect differed between T1 and T2. The MGA results are based on the bootstrapping approach (Sarstedt et al., 2011).

Moderated mediation was considered to be present when the following conditions were met: (1) the effect of the second mediator (M2) on the outcome variable (Y) depends on the moderator (W), and the effect of the independent variable (X) on M2 is significant, or the effect of M2 on Y is significant while the  $X \times W$  interaction also predicts Y; and (2) the conditional indirect effect of X on Y through M2 varies across specific values of W. Methodological recommendations proposed by Hair et al. (2021) were followed, with both variables involved in the interaction being mean-centered prior to the creation of the product term. This second condition is essential for establishing the presence of moderated mediation. Conditional indirect effects were examined at different levels of the moderator

(e.g.,  $\pm 1$  SD from the mean), and significance was determined by verifying whether the bootstrapped confidence intervals excluded zero.

The moderated path tested corresponds to the final segment of the mediation chain ( $M2 \rightarrow Y$ ), consistent with PROCESS Model 87 (Hayes, 2018). Moderation was considered present if the interaction term was statistically significant ( $p < .05$ ) and the confidence interval for the interaction effect did not include zero. All presented effects are standardized.

The size of the serial indirect effect was evaluated using the completely standardized indirect effect (*adbc*s), calculated as the product of the standardized paths from X to M1 (a), M1 to M2 (d), and M2 to Y (b). This effect was interpreted according to the guidelines proposed by Preacher and Kelley (2011), which classify effect sizes as small (.01), medium (.09), and large (>.25). Descriptive, correlational, and comparative statistical analyses were conducted using JASP (version 0.19). Predictive analyses, including the evaluation of the serial mediation and moderated mediation models through the PLS method, were performed using SmartPLS (version 4.1.1.1). The significance threshold for all analyses was set at 5%.

## Results

### 1. Descriptive statistics and correlations

Descriptive statistics are displayed in Table 1. The variables defined in this study were analyzed regarding asymmetry and kurtosis, using the criteria of Hair et al. (2010), which indicate that if the asymmetry values are between the range of -2 and 2, and the kurtosis values between -7 and 7, the variables adhere to a normal distribution. Students who participated in the MP showed higher levels of EI, AHE, SE and FS at both T1 and T2.

**Table 1**

*Descriptive Statistics for the main study variables*

|            | MP  | Valid | <i>M</i> | <i>SD</i> | Min.  | Max.   | Skew. | Kurt. |
|------------|-----|-------|----------|-----------|-------|--------|-------|-------|
| WLEIS (T1) | No  | 63    | 3.95     | .89       | 2.06  | 6.00   | .293  | -.199 |
|            | Yes | 204   | 4.18     | .78       | 1.81  | 6.00   | -.153 | -.084 |
| WLEIS (T2) | No  | 49    | 3.82     | .89       | 1.94  | 5.63   | .153  | -.370 |
|            | Yes | 126   | 4.25     | .78       | 2.31  | 6.00   | .09   | -.440 |
| AHEQ (T1)  | No  | 63    | 137.25   | 24.78     | 74.00 | 190.00 | -.411 | .346  |
|            | Yes | 204   | 144.27   | 19.26     | 64.00 | 195.00 | -.532 | 1.053 |
| AHEQ (T2)  | No  | 49    | 130.00   | 25.10     | 73.00 | 177.00 | -.330 | -.295 |

**Table 1**

*Descriptive Statistics for the main study variables (cont.)*

|           | MP  | Valid | <i>M</i> | <i>SD</i> | Min.  | Max.   | Skew. | Kurt. |
|-----------|-----|-------|----------|-----------|-------|--------|-------|-------|
| RSES (T1) | Yes | 126   | 149.90   | 2.46      | 92.00 | 199.00 | .347  | .357  |
|           | No  | 63    | 27.37    | 5.68      | 12.00 | 40.00  | -.421 | .390  |
| RSES (T2) | Yes | 204   | 28.46    | 4.69      | 15.00 | 40.00  | .171  | .532  |
|           | No  | 49    | 25.78    | 6.43      | 12.00 | 40.00  | .108  | -.275 |
| FS (T1)   | Yes | 126   | 28.47    | 6.32      | 11.00 | 40.00  | -.045 | -.987 |
|           | No  | 63    | 42.54    | 8.36      | 22.00 | 56.00  | -.212 | -.553 |
| FS (T2)   | Yes | 204   | 44.46    | 6.81      | 19.00 | 56.00  | -.827 | 1.057 |
|           | No  | 49    | 40.00    | 8.43      | 21.00 | 56.00  | -.099 | -.423 |
|           | Yes | 126   | 44.79    | 6.75      | 27.00 | 56.00  | -.230 | -.479 |

*Notes.* T1: October 2024, beginning of the first semester; T2: February, beginning of the second semester; WLEIS: Wong and Law Emotional Intelligence Scale; AHEQ: Adaptation to Higher Education Questionnaire; RSES: Rosenberg's Self-Esteem Scale; FS: Flourishing Scale; MP: Mentoring Program; M: Mean; SD: Standard Deviation; Skew: Skewness; Kurt: Kurtosis.

Correlations between study variables and reliability estimates are presented in Table 2. EI correlated positively with AHE at both T1 and T2, showing moderate and strong correlations respectively. It also correlated positively with SE at T1 with a moderate correlation and at T2 with a strong correlation, as well as with FS at both time points with strong correlations. The potentially mediating variables, SE and FS, also correlated positively with each other over time, with moderate correlations observed.

Participation in the Mentoring Program correlated significantly and positively with all the variables at T2, with moderate correlations with AHE and a small correlation with EI, SE and FS.

**Table 2**

*McDonald's Omega reliability estimates, Pearson's Correlations  $r$  and Point Biserial Correlations*

| Variable    | $\omega$ | 1      | 2      | 3      | 4      | 5      | 6      | 7      | 8      | 9 |
|-------------|----------|--------|--------|--------|--------|--------|--------|--------|--------|---|
| 1. MP       | —        | —      |        |        |        |        |        |        |        |   |
| 2. EI (T1)  | .89      | .12*   | —      |        |        |        |        |        |        |   |
| 3. EI (T2)  | .90      | .23**  | .51*** | —      |        |        |        |        |        |   |
| 4. AHE (T1) | .89      | .14*   | .43*** | .25*** | —      |        |        |        |        |   |
| 5. AHE (T2) | .93      | .38*** | .27*** | .23**  | .53*** | —      |        |        |        |   |
| 6. SE (T1)  | .74      | .09    | .49*** | .27*** | .38*** | .33*** |        |        |        |   |
| 7. SE (T2)  | .86      | .19*   | .43*** | .59*** | .22**  | .46*** | .43*** |        |        |   |
| 8. FS (T1)  | .87      | .11    | .60*** | .37*** | .49*** | .31*** | .46*** | .46*** |        |   |
| 9. FS (T2)  | .90      | .29*** | .36*** | .60*** | .32*** | .62*** | .28*** | .62*** | .56*** | — |

*Notes.*  $\omega$ : McDonald's Omega; MP: Participation on the Mentoring Program; EI: Emotional Intelligence; SE: Self-esteem; FS: Flourishing; AHE: Adaptation to Higher Education.

Significant correlation at the level: \*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$ .

## 2. Differences in Emotional Intelligence, Self-Esteem, Flourishing and Adaptation to Higher Education by Group and Time

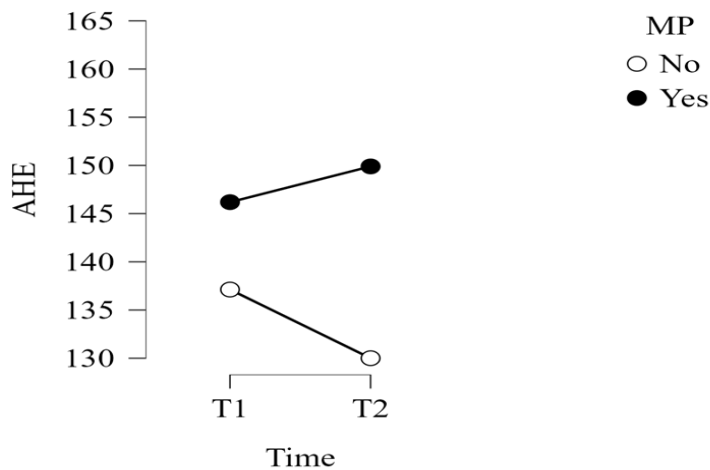
### 2.1. Emotional Intelligence

The mixed ANOVA revealed no significant interaction effect between time and groups on EI,  $F(1, 173) = 2.19$ ,  $p = .141$ ,  $\eta^2_p = .012$ , as well as no significant main effect of time,  $F(1, 173) = 0.07$ ,  $p = .796$ ,  $\eta^2_p = .000$ .

A significant main effect of group was found,  $F(1, 173) = 7.54$ ,  $p = .007$ ,  $\eta^2_p = .042$ , with participants in the MP group ( $M = 4.20$ ,  $SE = 0.06$ ,  $d = .40$ ) reporting higher EI levels compared to those who weren't in the MP group ( $M = 3.88$ ,  $SE = 0.10$ ).

## 2.2. Adaptation to Higher Education

The mixed ANOVA revealed a significant interaction effect between time and participation in the MP on AHE,  $F(1, 173) = 8.79, p = .003, \eta^2_p = .05$ . Participants in the MP group showed an increase in AHE from T1 ( $M = 146.19, SE = 20.09$ ) to T2 ( $M = 149.90, SE = 20.46, d = .17$ ), while those who were not in the MP group showed a decrease from T1 ( $M = 137.12, SE = 25.43$ ) to T2 ( $M = 130.00, SE = 25.10, d = .33$ ), as presented in Figure 2. A significant main effect of group was found,  $F(1, 173) = 20.76, p < .001, \eta^2_p = .11$ , with participants in the MP group ( $M = 148.04, SE = 1.68, d = .67$ ) reporting higher AHE levels than those who were not in the MP group ( $M = 133.56, SE = 2.70$ ). However, the main effect of the time was not significant,  $F(1, 173) = 0.88, p = .351, \eta^2_p = .005$ .



**Figure 2.** Mixed-Model, Repeated-Measures analysis of variance for Adaptation to Higher Education

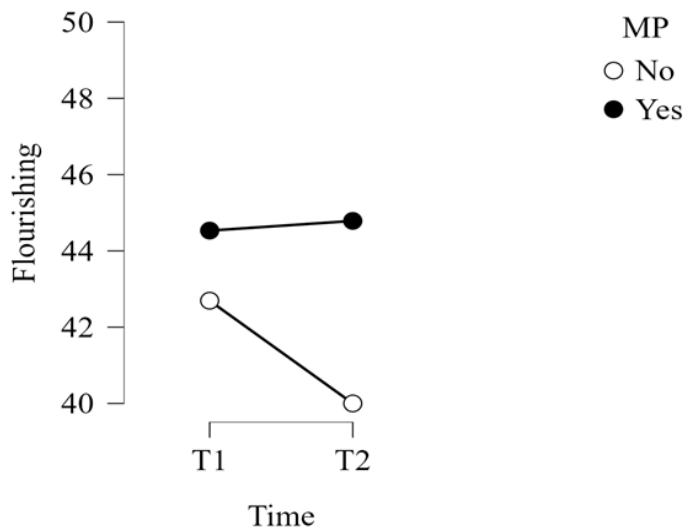
*Notes.* AHE: Adaptation to Higher Education; MP: Mentoring Program; October 2024, beginning of the first semester; T2: February, beginning of the second semester

## 2.3. Self-Esteem

For SE, the interaction effect between time and group was not significant,  $F(1, 173) = 1.80, p = .182, \eta^2_p = .010$ , and no main effect of time was found,  $F(1, 173) = 0.34, p = .564, \eta^2_p = .002$ . However, a significant main effect of group was observed,  $F(1, 173) = 6.22, p = .014, \eta^2_p = .04$ , with participants in the MP group ( $M = 28.27, SE = 0.42, d = 0.35$ ) reporting higher self-esteem levels than those who were not in the MP group ( $M = 26.27, SE = 0.68$ ).

## 2.4. Flourishing

For flourishing, a significant interaction effect between time and group was observed,  $F(1, 173) = 6.68, p = .011, \eta^2_p = .037$ . Participants in the MP group maintained their levels of FS from T1 ( $M = 44.53, SE = 6.48$ ) to T2 ( $M = 44.79, SE = 6.75$ ), while those not in the MP group showed a decrease from T1 ( $M = 42.69, SE = 8.65$ ) to T2 ( $M = 40.00, SE = 8.43, d = .37$ ), as presented in Figure 3. A main effect of group was found,  $F(1, 173) = 9.58, p = .002, \eta^2_p = .052$ , indicating that those in the MP group ( $M = 44.66, SE = 0.57, d = 0.46$ ) reported higher FS levels than those not in the MP group ( $M = 41.35, SE = 0.91$ ). Additionally, a significant main effect of time was revealed,  $F(1, 173) = 4.58, p = .034, \eta^2_p = .026$ .



**Figure 3.** *Mixed-Model, Repeated-Measures ANOVA for Flourishing.*

*Notes.* MP: Mentoring Program; October 2024, beginning of the first semester; T2: February, beginning of the second semester

## 3. Serial Mediation

### 3.1. The serial mediating effect of self-esteem and flourishing in the relationship between emotional intelligence and adaptation to higher education at T1 and T2

At T1, the results revealed a total effect of EI on AHE. EI significantly predicted both SE and FS, and both mediators significantly predicted AHE.

The mediation analysis indicated a small indirect effect of EI on AHE through SE (EI → SE → AHE). In addition, a significant indirect effect was found for the pathway SE → FS → AHE, with a small effect size. A significant indirect effect was also observed

through FS ( $EI \rightarrow FS \rightarrow AHE$ ), with a medium effect size. The sequential indirect effect ( $EI \rightarrow SE \rightarrow FS \rightarrow AHE$ ) was significant, with a small effect size. At T2, the results showed a total effect of EI on AHE. EI significantly predicted both SE and FS. FS significantly predicted AHE, while no direct effect of SE on AHE was found.

The mediation analysis indicated no significant indirect effect of EI on AHE through SE ( $EI \rightarrow SE \rightarrow AHE$ ), while a significant indirect effect was observed through FS ( $EI \rightarrow FS \rightarrow AHE$ ), with a medium effect size. A significant indirect effect was also found for the  $SE \rightarrow FS \rightarrow AHE$  pathway, with a medium effect size. The sequential indirect effect ( $EI \rightarrow SE \rightarrow FS \rightarrow AHE$ ) was significant, with a medium effect size.

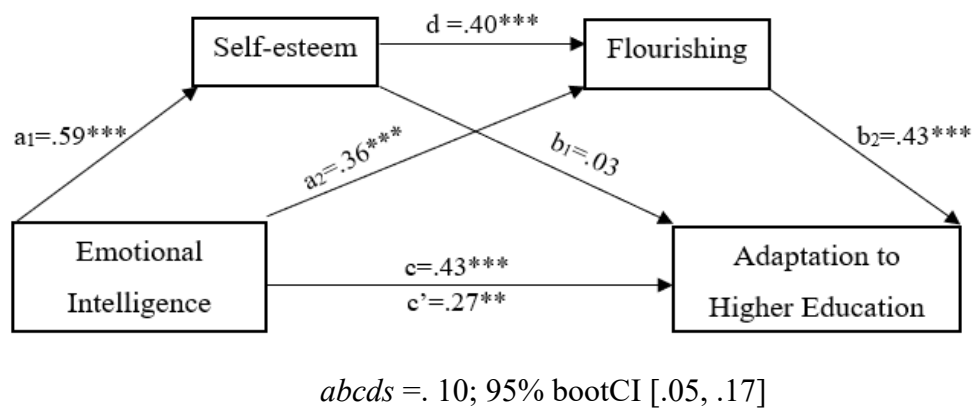
The Standardized Direct and Indirect Effects in the Serial Mediation Model at T1 and T2 are presented in Table 3, and the final model at T2 is presented in Figure 4.

**Table 3**

*Standardized Direct and Indirect Effects in the Serial Mediation Model at T1 and T2*

| Model Pathways          | T1      |       |            |       | T2      |       |            |       |
|-------------------------|---------|-------|------------|-------|---------|-------|------------|-------|
|                         | $\beta$ | T     | 95% bootCI |       | $\beta$ | T     | 95% bootCI |       |
|                         |         |       | Lower      | Upper |         |       | Lower      | Upper |
| <b>Direct Effects</b>   |         |       |            |       |         |       |            |       |
| EI→AHE                  | .43***  | 7.71  | .32        | .54   | .55***  | 7.73  | .40        | .68   |
| EI→SE                   | .49***  | 9.56  | .39        | .59   | .59***  | 12.18 | .49        | .68   |
| EI→FS                   | .49***  | 13.29 | .50        | .68   | .36***  | 12.06 | .50        | .69   |
| SE→FS                   | .22***  | 3.70  | .10        | .33   | .40***  | 6.47  | .28        | .52   |
| SE→AHE                  | .15**   | 3.07  | .08        | .36   | .03     | .43   | -.12       | .19   |
| FS→AHE                  | .32***  | 4.86  | .19        | .45   | .43***  | 5.23  | .26        | .59   |
| <b>Indirect Effects</b> |         |       |            |       |         |       |            |       |
| EI→SE→AHE               | .08**   | 2.20  | .01        | .15   | .02     | .42   | -.07       | .12   |
| EI→FS→AHE               | .16***  | 4.08  | .09        | .24   | .16***  | 4.48  | .10        | .24   |
| SE→FS→AHE               | .07**   | 2.90  | .03        | .13   | .17***  | 3.61  | .09        | .28   |
| EI→SE→FS→AHE            | .03**   | 2.71  | .02        | .07   | .10***  | 3.46  | .05        | .17   |

*Notes.* T1: pretest; T2: post-test;  $\beta$ : standardized beta coefficient; T= t- Statistics; bootCI: bootstrap confidence intervals; \*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < .001$



**Figure 4.** The serial mediating effect of self-esteem and flourishing in the relationship between emotional intelligence and adaptation to higher education at T2.

Notes: \* $p < .05$ , \*\* $p < .01$ , \*\*\*  $p < .001$ ; *adbc*s- Completely Standardized Sequential Indirect Effect; All presented effects are standardized.

#### 4. Serial Mediation over time

To examine the differences between T1 and T2 regarding the effects of EI on SE, FS and AHE, a multi-group analysis (MGA) was conducted. The findings revealed that the indirect effect of EI on FS, the indirect effect of SE on AHE and the indirect effect of EI through SE and FS on AHE were all significant. No significant differences were found regarding the indirect effect of SE in the association between EI and AHE, and FS in the association between EI and AHE. The differences in path coefficients suggested that the impact of EI on the mediators and on AHE was stronger at T2 in comparison to T1. The results of the multi-group analysis are summarized in Table 4.

**Table 4**

*Differences between Indirect Effects Between T1 and T2*

| Relationships | Difference (T1-T2) | <i>p</i> -value |
|---------------|--------------------|-----------------|
| EI→SE → FS    | -.13               | .01*            |
| EI→SE → AHE   | .06                | .34             |
| EI→FS → AHE   | 0.00               | .99             |

**Table 4**

*Differences between Indirect Effects Between T1 and T2(cont.)*

| Relationships  | Difference (T1-T2) | <i>p</i> -value |
|----------------|--------------------|-----------------|
| SE→ FS→ AHE    | -.10               | .04*            |
| EI→SE →FS →AHE | -.07               | .02*            |

*Note.* \* The Differences between the model at T1 and the model at T2 ( $p < .05$ ).

#### 5. Moderated Serial Mediation model

To assess the role of participation in the MP as a moderator in the serial mediation of SE and FS in the relationship between EI and AHE, a moderated serial mediation analysis was conducted. Table 5 presents the estimated direct and interaction effects, which indicates that the effect of SE on FS is significant ( $\beta = .40$ , 95% BCCI = [.28, .52]). In contrast, the direct effect of SE on AHE is not significant ( $\beta = .05$ , 95% BCCI = [-.10, .20]). Moreover, Flourishing exerts a strong positive effect on AHE ( $\beta = .54$ , 95% BCCI = [.34, .73]). EI significantly predicts SE ( $\beta = .59$ , 95% BCCI = [.49, .68]), FS ( $\beta = .37$ , 95% BCCI = [.23, .49]), and AHE ( $\beta = .26$ , 95% BCCI = [.09, .43]). Additionally, participation in the MP has a significant direct effect on AHE ( $\beta = .35$ , 95% BCCI = [.15, .56]).

The interaction between the MP and FS yields a significant negative effect on AHE ( $\beta = -.25$ , 95% BCCI = [-.49, -.01]), suggesting that the positive influence of FS on AHE is stronger among those who do not participate in the MP.

**Table 5**

*Estimated Direct and Interaction Effects with Bootstrapped CIs at T2*

| Model Pathways    | Estimated | 95% bootCI |       |
|-------------------|-----------|------------|-------|
|                   |           | Lower      | Upper |
| SE(T2) → FS(T2)   | .40***    | .28        | .52   |
| SE(T2) → AHE (T2) | .05       | -.10       | .20   |
| FS(T2) → AHE (T2) | .54***    | .34        | .73   |
| EI(T2) → SE(T2)   | .59***    | .49        | .68   |
| EI(T2) → FS(T2)   | .37***    | .23        | .49   |
| EI(T2) → AHE (T2) | .26**     | .09        | .43   |

**Table 5**

*Estimated Direct and Interaction Effects with Bootstrapped CIs at T2 (cont.)*

| Model Pathways         | Estimated | 95% bootCI |       |
|------------------------|-----------|------------|-------|
|                        |           | Lower      | Upper |
| MP → AHE (T2)          | .35***    | .15        | .56   |
| MP x FS(T2) → AHE (T2) | -.25*     | -.49       | -.01  |

*Note.* bootCI: bootstrap confidence intervals; \*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < .001$

Table 6 presents the results of the conditional indirect effects. As shown in Table 6, the indirect effect path (SET2 → FST2 → AHET2) is significant under both MP conditions, when the MP is present ( $\beta = .12$ , 95% BCCI = [.04, .21]), and when it is absent ( $\beta = .22$ , 95% BCCI = [.12, .34]). Similarly, the indirect effect path (EIT2 → FST2 → AHET2) is significant for both conditions, for the MP present ( $\beta = .11$ , 95% BCCI = [0.04, 0.18]) and absent conditions ( $\beta = .20$ , 95% BCCI = [0.12, 0.29]). Additionally, the analysis of conditional indirect effects revealed that both SE and Emotional Intelligence indirectly contribute to Adaptation to Higher Education through their influence on Flourishing, with the mediated effects being more pronounced in the absence of the MP ( $\beta = .13$ , 95% BCCI = [0.07, 0.20]) than when the MP is present ( $\beta = .07$ , 95% BCCI = [0.02, 0.13]).

**Table 6**

*Comparison of Indirect Effects at T2 Under MP vs. No MP Conditions*

| Model Pathways                     | Condition MP | Estimated | 95% bootCI |       |
|------------------------------------|--------------|-----------|------------|-------|
|                                    |              |           | Lower      | Upper |
| SE(T2) → FS(T2) → AHE(T2)          | Yes          | .12**     | .04        | .21   |
|                                    | No           | .22***    | .12        | .34   |
| EI(T2) → FS(T2) → AHE(T2)          | Yes          | .11**     | .04        | .18   |
|                                    | No           | .20***    | .12        | .29   |
| EI(T2) → SE(T2) → FS(T2) → AHE(T2) | Yes          | .07**     | .02        | .13   |
|                                    | No           | .13***    | .07        | .20   |

*Notes.* bootCI: bootstrap confidence intervals; \*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < .001$

## Discussion

The present study aimed to examine the role of MP in promoting emotional intelligence, self-esteem, flourishing, and adaptation to higher education from the first semester (T1) to the second semester (T2). In addition, the study tested a serial mediation model in which SE and FS would mediate the relationship between EI and AHE among first-year university students. It also explored whether this relationship changed between T1 and T2, and whether participation in the mentoring program moderated the association between FS and AHE at T2.

To our knowledge, this is the first study to test the serial mediating role of SE and Flourishing in this relationship, as well as the moderating effect of a Mentoring Program, thus contributing to a deeper understanding of the emotional and contextual mechanisms involved in students AHE.

The findings partially corroborate the initial hypothesis, indicating that students who participated in the MP exhibited higher levels of EI, SE, FS, and AHE at both assessment time points in comparison to non-participating students. Over time, it was observed that MP students exhibited an increase in their levels of AHE from T1 to T2, while those who did not attend MP demonstrated a decrease in their levels of adaptation. With regard to FS, it was also noted that students who did not attend MP exhibited a decrease over time, while those in MP maintained their levels of FS.

However, the results also showed that, at the initial assessment (T1), students who participated in the mentoring program (MP) already presented higher levels of Emotional Intelligence (EI) and Adaptation to Higher Education (AHE) compared to their peers who did not participate. This finding, which was not anticipated in the initial hypothesis, suggests that these students may have sought out the MP due to a greater awareness of the importance of academic integration, as well as the possession of personal strategies and resources that facilitate this process. In line with these findings, Paulino and colleagues (2023), suggest that it is possible that participation in the MP is more likely among students who already exhibit a more adaptive and proactive profile. In this sense, the MP may not only support the development of emotional and academic competencies, but also strengthen and preserve pre-existing resources throughout the academic year.

These findings suggest that participation in MP is associated with an adaptive profile from the beginning of the academic year and could contribute to reinforce and preserve these resources throughout the academic year (Cain et al., 2024; Collier; 2023).

The results are consistent with the conclusions of Alonso-García and colleagues (2024), who determined that engagement in MP is associated with enhanced institutional integration. Additionally, Lane (2020) and Tsang (2023) emphasize that MP can facilitate the development of emotional skills and improve AHE. The establishment of a support network, facilitated by the intervention of the MP, appears to foster a sense of belonging, components that are crucial in AHE (Lane, 2020; Paulino et al., 2023).

The program is predicated on peer support, with group sessions and supervision by the coordinating professors. These sessions may also have allowed a space for learning and sharing, which may ultimately have acted as an emotional scaffolding mechanism, allowing students to gradually develop emotional and academic skills in an environment mediated by supportive relationships. As Le and colleagues (2021) point out, mentors can function as attachment figures, thereby facilitating the development of emotional regulation strategies, thus promoting students' autonomy and well-being (Cain et al., 2024; Collier, 2023).

Regarding hypothesis 2, the findings indicated that the relationship between EI and AHE is sequentially mediated by SE and FS. Specifically, EI proved to be a significant predictor of SE at both T1 and T2, which is consistent with studies by Alipour and colleagues (2024) and Vilca-Pareja and colleagues (2022), who reported that students with higher levels of EI tend to have higher SE. Singhal and Prakash (2020), Çiçek (2021) and Tiwari et al. (2023) also found that high levels of self-esteem seem to promote a sense of purpose and personal growth. Flourishing emerged as a significant predictor of AHE at both time points, confirming its role in promoting AHE (Benlahcene, 2022; Datu, 2018; Mirzaei-Alavijeh et al., 2021).

Regarding the direct effect of SE on AHE, this was only found at T1. However, at T2, although self-esteem continues to influence AHE, it does so indirectly, through FS. This modification in the pattern of relationships may indicate a change in the nature of the most relevant psychological factors as the academic year progresses. At the onset of the academic journey, SE may function as a critical psychological resource, facilitating AHE by providing a sense of security and self-confidence in the face of a new and demanding environment (Alipour et al., 2024). However, as time progresses and students accumulate more university experience, it appears that other factors, such as EI and FS, which encompasses a sense of life, positive relationships, and personal fulfillment, are gaining greater prominence for AHE. This dynamic is consistent with the perspective of Volstad

and colleagues (2020) and Datu (2018), who argue that FS emerges as a crucial indicator for AHE.

Hypothesis 3 was confirmed, as the indirect effects of EI on AHE, mediated by SE and FS, were stronger at T2 than T1, suggesting that over time the mediating mechanisms become more influential as students’ progress in their academic trajectory, and that EI has a progressive and structuring effect, as proposed by Kim and Dhammasaccakarn (2024). It is a cumulative process in which EI contributes to personal FS which, in turn, provides a solid foundation for academic (Venegas-Muggli et al., 2023), emotional (Le et al., 2021), and social adaptation (Alonso-García et al., 2024) to higher education.

Finally, with regard to the moderated mediation model (H4), the findings indicated that the impact of FS on AHE is stronger in students who did not engage with the MP, contrary to our hypothesis. These findings suggest that in students who do not participate in the MP, FS may assume a more pivotal role in AHE, which may be indicative of the necessity to draw on internal resources, given the absence of support from the MP. In line with this, Le and colleagues (2021) showed that students without support networks rely more on their resilience and emotional skills to cope with academic challenges. Similarly, Collier (2023) argues that, in the absence of external support, students mobilize their own emotional and motivational resources more intensely to deal with the university environment. That does not necessarily mean that the inner support is more efficient than the external support. In fact, in the present study, students who attended MP still showed higher AHE, and higher and relatively more stable levels of FS, which suggests that the emotional support, guidance and sense of belonging and social support promoted by MP seem to influence the impact of FS on AHE, reducing the relative weight of intrapersonal variables.

Lane (2020) further emphasizes that mentoring programs operate as structured interventions that foster emotional skills and academic adjustment, functioning as an external protective factor. This may suggest that the direct impact of intrapersonal variables such as flourishing can be partially offset by the presence of a supportive context. In the same line, Lapon and Buddington (2024) highlight that mentoring programs promote a strong sense of belonging and cultural-social integration, which is closely linked to greater institutional adaptation and psychological well-being, thereby reducing the reliance on internal resources.

Taken together, these findings underscore the importance of emotional and social resources in academic adaptation, while also emphasizing the complex interaction between individual competencies and institutional support. This study highlights the critical role of structured mentoring programs in promoting psychological well-being and fostering integration into higher education. By examining these factors, the study offers valuable insights for the development of evidence-based university interventions aimed at enhancing students' academic, emotional, and social adaptation.

### **Implications for practice**

The findings of this study have significant practical implications for higher education institutions, particularly regarding the promotion of students' adaptation to the academic context and the implementation of preventive strategies for psychological and social support. The empirical evidence gathered demonstrates that EI influences AHE both directly and indirectly, through SE and flourishing, and that this pathway is moderated by participation in mentoring programs. Consequently, mentoring programs should be conceived not merely as tools for welcoming new students, but as structured interventions for emotional, social, and academic development with a positive impact on mentees.

This study emphasizes the importance of cultivating emotional skills and structured support networks from the onset of the academic pathway, highlighting the central role of emotional intelligence, self-esteem, and flourishing as psychosocial mechanisms that facilitate successful adaptation to higher education. By demonstrating the impact of the Mentoring Program in enhancing these resources, the findings underscore the necessity of institutionalizing such programs throughout the entire academic trajectory, rather than introducing them solely in response to emerging challenges.

Through an early intervention approach, mentoring programs can act as promoters of mental health by creating informal support networks, strengthening the sense of belonging, and fostering socioemotional competencies essential for both academic and personal success.

At the institutional level, the implementation and reinforcement of mentoring programs should be accompanied by a clear and integrated pedagogical strategy that aligns the goals of the program with psychological support services, course coordination, and academic integration policies. Only through an integrated approach will it be possible to fully harness the positive effects observed, ensuring that all students, regardless of their

background, have access to support networks that promote their adaptation, well-being, and academic success.

### **Strengths, Limitations and Implications for future research**

This study presents several methodological and conceptual strengths. First, its innovative nature, as it is the first to integrate self-esteem and flourishing as serial mediators in the relationship between emotional intelligence and adaptation to higher education, with participation in a mentoring program as a moderator of this relationship. This approach enables a deeper understanding of the underlying mechanisms through which the MP may operate.

Secondly, the use of robust statistical methods, namely the bias-corrected and accelerated bootstrapping (BCaCI) procedure with 10,000 resamples, ensures a rigorous analysis of the complex relationships among the variables under study, thus providing strong statistical and conceptual validity to the results. Furthermore, the use of a longitudinal design allows for causal inferences and the evaluation of students' development over time, as well as the dynamic effects of the Mentoring Program intervention.

Nevertheless, it is important to acknowledge some limitations that should be considered when interpreting the findings. First, the sample included only psychology students from a single institution, which limits the generalizability of the results to other academic fields and university contexts. Future studies should replicate the present research with larger and more diverse samples, including students from different degree programs and institutions. Only self-report questionnaires were used, which may have introduced a bias due to social desirability. The binary nature and way of assessing MP participation may also have limited the accuracy of the analysis.

Information regarding displaced students was not collected and differences between traditional and non-traditional students were not explored. However, these groups may differ in their academic and psychosocial adjustment needs. Non-traditional students often face additional challenges such as time constraints, financial pressure, or family responsibilities (Carreira & Lopes, 2020), while displaced students may experience difficulties related to relocation, such as homesickness, reduced social support, and the need to adapt to a new environment (Paulino et al., 2023). Therefore it would be pertinent to conduct studies that explore the differences between traditional and non-traditional students, as well as displaced students, regarding the MP. These differences could inform

the development of more tailored mentoring approaches, recognizing that a one-size-fits-all model may not be sufficient to meet the diverse needs of all students, particularly if the goal is to provide effective support across varied student profiles.

Another limitation concerns sample attrition. Although 267 students completed the pre-test, only 175 participated in the post-test, representing a substantial dropout rate that may have influenced the results and reduced the statistical power of the longitudinal analyses. Participants who completed both T1 and T2 assessments ( $n = 175$ ) were significantly more likely to have participated in the mentoring program than those who only completed the T1 assessment ( $n = 92$ ),  $\chi^2(1) = 5.47$ ,  $p = .02$ ,  $\phi = .14$ . No significant differences were found between groups in terms of sex, age or academic status (studying only vs. studying and working). Future studies should further investigate the reasons underlying this dropout, as understanding why some students disengage from follow-up assessments, or even from the MP itself, can be key to adapting and improving intervention strategies. Moreover, characterizing students who dropout using the same psychological and academic variables assessed in the present study would allow us to examine whether these students were already more or less adapted at baseline. Such analyses could clarify whether dropout reflects a lack of engagement and adjustment or a profile of students who already felt sufficiently autonomous and therefore less compelled to remain involved. Identifying these patterns would contribute to a more detailed understanding of students' needs and to the design of more adapted and flexible mentoring initiatives.

Finally, this study did not examine the subdimensions of EI and AHE. Future research could explore the relationship between specific dimensions of emotional intelligence (e.g., use of emotions) and the various domains of AHE (e.g., institutional adaptation), in order to identify which aspects of adaptation are most influenced by the Mentoring Program and to capture the nuances of individual adjustment processes.

Given the scarcity of studies examining the impact of mentoring programs on self-esteem and emotional intelligence, further research is needed to investigate these associations in a systematic manner. Clarifying whether, and to what extent, mentoring contributes to the development of these constructs would allow for a more comprehensive understanding of its psychological effects in the context of higher education.

Although this study focused on SE and flourishing as key psychological mechanisms, other mediating variables such as academic self-efficacy, perceived social support and motivation to learn could also be considered in future research, as these factors

are associated with students' ability to adapt, persist and engage in the academic environment. Academic self-efficacy has been shown to influence how students cope with academic demands and shape their expectations and adaptation (Campos et al., 2022). Similarly, motivation to learn and perceived support are associated with greater engagement and success, particularly in emotionally demanding or unfamiliar learning contexts (Chang & Tsai, 2022).

Finally, the mentoring program is characterized by a reciprocal relationship between mentor and mentee, suggesting that the program's benefits extend both to the mentees and the mentors. The utilization of mixed methods designs in future studies could facilitate a more profound comprehension of the extent of engagement and the comprehensive impact of the mentoring program on both mentees and mentors.

Additionally, it would be relevant to explore how the mentor selection process, which has evolved since the program's initial implementation, may influence the quality of mentoring relationships. While in the early stages any student could volunteer to become a mentor, the current approach involves a more careful selection that takes into account personal and relational characteristics, including a short pitch presentation, an individual interview, and a motivation letter. Comparing past and current recruitment and training models may help identify which characteristics are most conducive to positive outcomes. Likewise, examining individual differences among mentors, including interpersonal style, motivation, or previous experience, may help explain variations in mentees' adjustment and perceived support. It would also be important to consider the role of the matching process, which could benefit from greater attention to the compatibility between mentors and mentees in terms of personal characteristics, communication styles, or expectations.

Finally, since the program includes both student mentors and faculty mentors, it would be pertinent to investigate whether these two forms of mentoring have different effects on student outcomes, potentially influencing distinct areas such as emotional support, academic guidance, or institutional engagement (Paulino et al., 2023).

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