

Research article

Psychological well-being and emotional intelligence in undergraduate nursing students as predictors of academic success

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ABSTRACT

Background: Academic performance is influenced by a complex interplay of multiple factors whose relationships often do not follow straightforward patterns. Despite extensive research, understanding of these dynamics remains inconclusive. In particular, several studies highlight that higher emotional intelligence is associated with better academic outcomes and that people with elevated levels of psychological well-being also tend to achieve higher grades.

Objective: This study examines the associations between emotional intelligence, psychological well-being and academic performance among undergraduate nursing students. Specifically, it seeks to deepen our understanding of how emotional intelligence affects academic achievement, with psychological well-being potentially serving as a mediator.

Design: A cross-sectional correlational design was employed.

Settings: The study involved a convenience sample of undergraduate nursing students from various degree programmes affiliated with the primary author.

Participants: 394 undergraduate nursing students participated in the study, 249 identified as female and 145 as male.

Methods: Participants completed a quantitative survey during class hours, providing data on demographics, academic average scores and self-report measures of perceived emotional intelligence and psychological well-being. Data were evaluated using Pearson's correlations and serial multiple mediation analyses.

Results: The findings revealed significant positive relationships between emotional intelligence, psychological well-being and academic performance. Serial mediation assessments indicated that dimensions of emotional intelligence influence academic performance both directly and indirectly through psychological well-being. Specifically, flourishing partially mediated the relationship between emotional intelligence and academic performance, directly influencing academic outcomes.

Conclusions: This study underscores the critical role of emotional management skills in academic performance, with psychological well-being acting as a partial mediator in this relationship. Consequently, undergraduate nursing students with enhanced emotional management abilities and higher levels of psychological well-being are likely to achieve better academic outcomes.

1. Introduction

Academic performance (AP) is considered one of the most important predictors of professional success for healthcare professionals (Roth et al., 2005). The performance of college students depends on the combination of multiple variables whose relationships and effects do not necessarily follow the same pattern. On the one hand, several factors

have been identified that negatively influence academic results, such as stress, frustration, anxiety about exams, and demotivation (Beltrán-Velasco et al., 2021; Ito and Umemoto, 2022; Meindl et al., 2019). On the other hand, other factors have been found to facilitate academic success, including cognitive intelligence, optimism and responsibility (Hidalgo-Fuentes et al., 2021; Köller et al., 2019; Martínez and Medina, 2019).

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Traditionally, factors that negatively influence performance have been investigated more extensively than those that exert a positive influence. However, studies analysing resources that promote academic performance have found that while cognitive intelligence is essential for learning and academic success (Deary et al., 2007), it is insufficient. Other factors, such as emotional intelligence (EI) (MacCann et al., 2020; Sánchez-Álvarez et al., 2020; Somaa et al., 2021) and psychological well-being (PWB) (Chattu et al., 2020; Huaman and Berona, 2021; Tape et al., 2021), also significantly impact AP.

1.1. Emotional intelligence and academic performance

The ability model defines EI as a set of four socioemotional skills: perceiving, understanding, using and regulating one's and the others' emotions (Mayer and Salovey, 1997). Studies based on this theoretical model demonstrate the importance of EI in academic outcomes. Evidence indicates that EI is moderately associated with student AP (MacCann et al., 2020; Sánchez-Álvarez et al., 2020), with some research showing a positive correlation between EI levels and academic success among nursing students (Llego, 2021; Sharon and Grinberg, 2018).

Although empirical evidence shows that nursing student performance is positively associated with their overall levels of EI (Beauvais et al., 2011), the relationships between EI and AP depend on the specific socio-emotional skills analysed. For instance, results indicate that emotional repair exhibits the strongest positive correlations with AP (Fernández-Lasarte and Sáez, 2019) and clinical professional performance (Fernández-Martínez et al., 2019). In contrast, high emotional attention negatively affects their academic results (Gilar-Corbi et al., 2020).

To explain the significant link between these variables, several underlying mechanisms have been proposed. These include the regulation of negative emotions typical in the academic context (e.g. stress, anxiety, frustration) and the facilitation of positive emotions that enhance motivation (e.g. interest, illusion, joy) (MacCann et al., 2020; Trigueros et al., 2019; Zhoc et al., 2018).

EI among nursing students evolves based on their years of education and age, suggesting that these skills can be developed and improved (Budler et al., 2022). Therefore, the development of EI is crucial in the training of nursing students, as it positively correlates with their performance, critical thinking skills, self-esteem, resilience and well-being (Ahmed et al., 2023; Ang and Lau, 2024; Ariga et al., 2020; Carvalho et al., 2018). Core competencies for health professionals include the ability to recognise, comprehend and control emotions (Vesty et al., 2024). However, more studies are needed to better understand the EI-AP link, considering other factors that may mediate this relationship.

1.2. Psychological well-being as a mediator between emotional intelligence and academic performance

The study of human well-being has been examined from two different but complementary approaches: hedonism, or subjective well-being, related to the feeling of living without pain and having pleasurable experiences, and eudaimonia or psychological well-being (PWB), referring to self-realisation and the search for opportunities for personal growth (Baselmans and Bartels, 2018). The second approach defines well-being as flourishing, which encompasses emotional, psychological and social well-being (Fowers et al., 2024). In this sense, Diener et al. (2010) consider that the main dimensions that define this concept are the sense of competence, self-acceptance, optimism and contribution to the well-being of others, while Huppert and So (2013) point out that the main characteristics composing it are: positive emotions, delivery, interest, meaning and purpose; and an additional set of competencies: self-esteem, optimism, resilience, vitality, self-determination and positive relationships. Therefore, both hedonic and eudaimonic components are present simultaneously. Several authors use the terms “flourishing” and

“well-being” interchangeably, considering both as concepts that describe an optimal state of mental health and personal fulfilment (Diener et al., 2010; Keyes and Simoes, 2012; Ryff, 2023; Seligman, 2011). Although this variable has not been extensively studied in AP, some research indicates that PWB is positively related to the AP of university students and their cognitive achievements (Datu, 2018; Grande et al., 2021; Ramírez-Coronel et al., 2020; Van Zyl and Rothmann, 2012) and negatively related to procrastination (Howell, 2009). Furthermore, it has been found to mediate the relationship between EI and AP in adolescents (Chamizo-Nieto et al., 2021). Recent research on the relationship between EI and PWB suggests that emotionally intelligent people report higher levels of well-being and flourishing in terms of self-esteem, purpose in life, optimism, and psychological and social growth (Callea et al., 2019; Di Fabio and Kenny, 2019; Ruiz-Ortega and Berrios-Martos, 2023), which in turn would favour AP (Quílez-Robres et al., 2021; Usán et al., 2022; Vizoso et al., 2019). However, empirical research on these relationships is still scarce. Therefore, it is necessary to analyse the joint influence of EI and PWB on AP and the mechanisms that explain these relationships.

To the best of our knowledge, there has yet to be a comprehensive examination within the existing literature that explores the impact of EI on the PWB and AP of nursing students, a group with high emotional demands whose success and well-being depend to a large extent on the socio-emotional skills they possess to cope with these demands. Therefore, this study analysed the relationships between the EI, PWB and AP of undergraduate nursing students. This general objective is translated into the following specific objectives: (1) check if there are significant positive relationships between EI, PWB and AP of nursing students. Based on previous literature, we expect undergraduate nursing students with better EI to report higher levels of PWB and achieve better academic results; (2) investigate whether PWB plays a mediating role in the relationship between the dimensions of EI and AP of undergraduate nursing students. With respect to this goal, we hope to find PWB as a significant mediator between the EI and the AP relationship.

2. Methods

2.1. Study design, sampling, and recruitment

The study used a cross-sectional study using online questionnaires with purposeful sampling. It was conducted within the Faculty of Nursing of a private university located in a city in Central-South Chile. Students from all academic years were invited to participate, given that nursing programmes last five years in Chile. In particular, the nursing training curriculum at the university does not include coursework specifically addressing PWB and EI.

Convenience sampling was used to recruit nursing students. The inclusion criterion was enrollment in the nursing programme during the second semester of 2022 and voluntary participation. The exclusion criteria encompassed absence of data, including participants with incomplete data or inadequate responses to the questionnaire. The study group consisted of 394 undergraduate nursing students ranging in age from 18 to 25 years. The average age of the participants was 21.08 ± 2.19 years, with 249 women (63.2 %) and 145 men (36.8 %).

2.2. Measures

2.2.1. Emotional intelligence

EI was assessed using the Trait Meta Mood Scale (TMMS-24), developed by Salovey et al. (1995) and translated into Spanish by Fernández-Berrocá et al. (2004). This instrument evaluates the perception of IE, explicitly focussing on each individual's knowledge of their emotional abilities. It consists of 24 items, rated on a 5-point Likert scale ranging from “strongly disagree” (1) to “strongly agree” (5), and encompasses three dimensions: “emotional attention”, which gauges the ability to feel and express one's feelings, adequately and emphasises the

awareness and identification of emotions; “emotional clarity” which assesses the perceived ability to understand and discriminate between feelings; and “emotional repair”, crucial for effective emotional management as it evaluates the perceived ability to properly regulate moods, repair negative states and prolong positive ones. This instrument demonstrates adequate psychometric properties with satisfactory internal consistency indexes. The “attention to feelings” index yielded an α value of 0.84, the “emotional clarity” index had an α value of 0.82, and the “emotional repair” index had an α value of 0.81.

2.2.2. Psychological well-being

The scale was developed to complement existing measures of well-being, align with the concept of human flourishing and to enhance other indicators of positive mental states. PWB was evaluated using the Flourishing Scale (FS), initially formulated by Diener et al. (2009). While the scale does not individually assess each facet of well-being, its items encapsulate broad and significant aspects of human functioning, including competence, engagement and interest, meaning and purpose, optimism, self-acceptance, supportive and rewarding relationships, contribution to the well-being of others, and respect. This comprehensive approach captures an individual's perceived success across fundamental domains such as self-esteem, optimism, relationships and purpose. Comprising eight items, respondents rate each statement on a 7–1 point Likert scale ranging from 1 (totally disagree) to 7 (totally agree). The FS yields a single score representing PWB. The Spanish adaptation of the FS exhibited strong reliability, with an Omega coefficient (Ω) of 0.89 (Ramírez-Maestre et al., 2017).

2.2.3. Academic performance

AP was evaluated by asking participants to report their average grade point for the academic year using a scale ranging from 1 (minimum) to 7 (maximum), consistent with the grading system used in Chile to quantify academic achievement.

2.3. Data collection

Data was collected through an online survey using Google Forms from September 2022 to November 2022. During regular class hours, participants completed an online questionnaire, which typically took 15 to 20 min. Prior to beginning the survey, students were required to voluntarily provide informed consent and participants had to agree to proceed. Participants were briefed on the voluntary nature of their participation, the confidentiality of their responses, the absence of incentives and their right to withdraw at any time.

2.4. Data analysis

Statistical processing of the data was performed using SPSS software. The statistical power was calculated with “G* Power”. A representative sample of 60 was estimated to determine the sample size, considering a z-value of 1.96 (95 % confidence interval) and a margin of error of ± 2 % (Schoemann et al., 2017). The missing values were analysed using the ‘expectation–maximization (EM)’ data imputation process (Graham, 2012), with a percentage of missing values less than 1 % (total values lost 0.063 %).

Initially, descriptive and correlational analyses were conducted. A sequencing strategy was employed for mediation analyses. Sociodemographic data, such as sex and age, were included as covariates in the various analyses. The hierarchical model of relationships between dimensions of EI follows the linear sequential cascade theory of the mental process during emotional activities (Joseph and Newman, 2010). Mediation analysis was conducted using the PROCESS macro for SPSS (Hayes, 2017), with sex and age controlled in the mediation model.

This analytical process estimates direct and indirect effects, standard errors and confidence intervals, using Model 6 for three mediators with the 5000 subsamples bootstrapping technique. Confidence intervals (CI)

of 95 % with bias correction were used to determine statistical significance. If the 95 % CI with bias correction does not contain zero, the indirect effect is considered statistically significant, indicating mediation (Hayes, 2018).

2.5. Ethical considerations

The research was carried out according to the Declaration of Helsinki. The study relied solely on survey-based measurements and did not involve verbal responses, qualitative analysis, or sensitive content. An Ethics Committee approved the study for Experimentation (CEUMA: 93-2020-H) on November 11, 2020.

3. Results

3.1. Descriptive and correlation analysis

Of the 411 students approached, a total of 394 agreed to participate and were included in the analysis, yielding a response rate of 95.86 %. All participants voluntarily agreed to participate in the study. Participants were distributed across the five years. All details are in Table 1.

A correlation analysis was conducted to determine the existence of relationships between the dimensions of EI, well-being, and AP. The correlation coefficients are presented in Table 1. The results indicate that the dimension of attention to feelings has a significant relationship with well-being ($r = 0.14$), EI emotional clarity shows a high positive correlation with well-being ($r = 0.47$), and the emotional repair dimension of EI has a high positive correlation with PWB ($r = 0.50$). Significant positive correlations were found between the dimensions of EI and AP: attention to feelings ($r = 0.18$), emotional clarity ($r = 0.19$), and emotional repair ($r = 0.25$). Furthermore, PWB exhibits a moderate positive correlation with AP ($r = 0.25$). Table 1 also provides information on the average scores, standard deviations and reliability indices of the variables involved in this study.

3.2. Mediation analysis

Next, a multiple serial mediation analysis was conducted, referencing the hierarchical process of relationships between the dimensions of EI (Joseph and Newman, 2010) and its influence on PWB and its subsequent impact on academic performance. The results showed partial mediation effects of PWB on the relationship between emotional skills and AP, as illustrated in Fig. 1.

Regarding the main direct effects, it was noted that the dimensions of EI positively and directly affect both PA and PWB. Specifically, attention to feelings and emotional repair have a direct influence on PA ($\beta = 0.13$ and $\beta = 0.14$, respectively), while emotional clarity and repair directly influence PWB ($\beta = 0.29$ and $\beta = 0.34$, respectively). Additionally, PWB significantly affects AP ($\beta = 0.15$). Overall, the combination of EI dimensions and PWB outcomes explained 12 % of the variance in AP (see

Table 1
Means, standard deviations, and correlations between variables of interest.

	1	2	3	4	5
1. Attention	–				
2. Clarity	0.21***	–			
3. Repair	0.12*	0.52***	–		
4. Psychological well-being	0.14**	0.47***	0.50***	–	
5. Academic performance	0.18***	0.19***	0.25***	0.24***	–
M	3.26	3.06	3.22	3.93	5.06
SD	0.28	0.24	0.51	0.13	0.50
α	0.86	0.89	0.85	0.85	–

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

Demographic data: (average age: 21.08 ± 2.19 years; 63.2 % women, 36.8 % men). Academic distribution: 32.5 % first year, 20.3 % second year, 10.9 % third year, 8.9 % fourth year, 27.4 % fifth year.

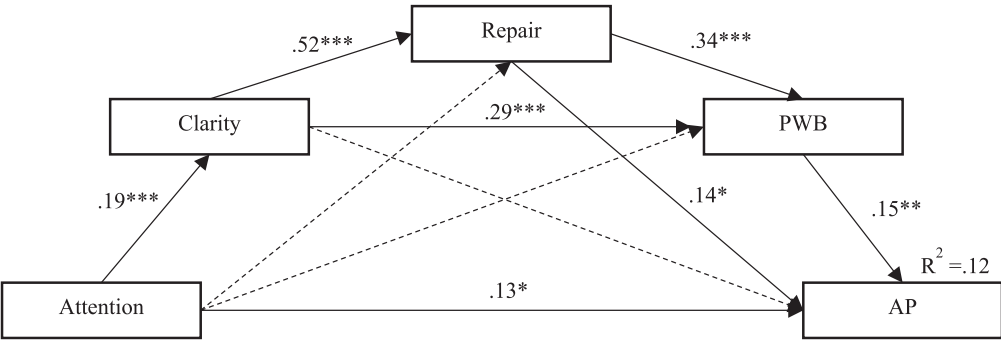


Fig. 1. Results of serial multiple mediation analysis of dimensions of EI, PWB and AP.
Note: Covariate Sex and age. * $p < .05$, ** $p < .01$, *** $p < .001$. PWB: Psychological Well-Being. AP: Academic Performance.

Fig. 1). At the same time, indirect effects were evaluated to determine their significance by checking whether zero fell within the estimated confidence interval. The indirect path from attention to emotions to AP was found to be significant ($\beta = 0.01$), mediated by clarity and emotional repair. Similarly, the indirect path from attention to emotions to AP was significant ($\beta = 0.01$), mediated by emotional clarity and PWB. Finally, the indirect path from attention to emotions to AP was significant ($\beta = 0.01$), mediated by clarity, emotional repair and PWB. These serial indirect effects demonstrate the sequential processing of emotional information, its impact on PWB, and its subsequent effects on AP. As shown in Table 2, the total indirect effects were mild ($\beta = 0.03$, 95 % CI = 0.01, 0.07).

4. Discussion

The present research aimed to examine the role of the dimensions of EI in relation to PWB and AP and to evaluate PWB as a mediating factor in the relationship between the dimensions of EI and AP. Regarding our first hypothesis, the results support the positive and significant relationship between EI, PWB and AP. According to several studies (Sánchez-Álvarez et al., 2016; Rey et al., 2019; Trigueros et al., 2019), students with higher levels of EI achieve superior scores in measures of PWB and improved AP. Concerning our second hypothesis, the mediating role of PWB in the relationship between the dimensions of EI and AP of nursing students was confirmed in two ways: direct and indirect. With respect to the direct effects, the dimensions of attention to feelings and emotional repair influence AP and appear to be fundamental to it. This finding is consistent with other studies that found correlations between attention and repair dimensions and AP (Jiménez & López-Zafra, 2013). Students with high levels of attention to feelings (e.g. rumination, closely related to attention) (Roso-Bas et al., 2016) are more concerned about their grades and, therefore, spend more hours studying (Brackett et al., 2012). Other studies also highlight the effect of emotional repair or regulation on AP (Fernández-Lasarte and Sáez, 2019; MacCann et al., 2011), which reduces the detrimental effects of emotions on AP by increasing

concentration and, consequently, learning (Saklofske et al., 2012). The contribution to AP can be explained by successfully controlling emotions, such as limiting negative emotions and preventing them from affecting intellectual functioning. Furthermore, people with high emotional clarity and repair excel in emotional mastery, perseverance, discipline and motivation (Fernández-Berrocal et al., 2004), fundamental competencies for achieving academic success. Intellectual development involves using and regulating emotions to facilitate thinking and improve concentration (Valadez et al., 2013). On the other hand, the specific dimensions of EI that play an important role in PWB are emotional clarity and repair. Similar investigations have obtained results consistent with those found in this study (Extremuera et al., 2011; Ferragut and Fierro, 2012; Guerra-Bustamante et al., 2019; Rey et al., 2011; Vergara et al., 2015). Clarity is generally more associated with intraregulation related to discomfort and promotion of well-being, which is related to PWB (Cerezo et al., 2022; Costa et al., 2013). Emotional clarity is related to PWB through various processes, such as affective regulation, acquiring and maintaining meaning in life and constructing interpersonal relationships (Lischetzke and Eid, 2017). In other words, accurately perceiving emotions contributes to improving well-being. People who can identify their emotions and believe that they can repair their negative moods generate more positive emotions and greater well-being (Extremuera et al., 2011). Emotional repair plays a crucial dual role in the achievement of academic success and the PWB of nursing students. Effective emotional management promotes an environment conducive to PWB, and the ability to recover emotionally from adverse situations contributes positively to AP, facilitating greater achievement of educational goals and significant personal growth. Regarding indirect effects, PWB plays a facilitating role in the relationship between EI and AP. A cascading effect of the emotional information process was observed in PWB and AP, recorded through indirect effects. These results coincide with other studies that indicate that EI indirectly influences academic success (MacCann et al., 2011) by mediating student mental health variables. Being emotionally intelligent indicates good psychological balance, which is also related to and influences AP (Fernández-Berrocal and Extremuera, 2001) in such a way that some authors claim that EI would act as a moderator of the effects of cognitive abilities on AP (Gil-Olarte Márquez et al., 2006; Pérez and Castejón, 2007). This effect aligns with the hierarchical model of relationships between dimensions of EI (Joseph and Newman, 2010), where the latter follow a progressive pattern. However, it should be considered that this model evaluates performance-based EI. Other research is consistent with this idea, suggesting that people with emotional imbalances experience more problems during their studies and would benefit from developing emotional skills to cope with these difficulties (Petrides et al., 2004). Acquiring adequate emotional skills facilitates thinking as it involves a cognitive effort to use and manage emotions to concentrate, control impulsivity and manage stress, thereby increasing intrinsic motivation (Mestre et al., 2006).

Table 2
Standardized indirect effects of serial multiple mediation analysis of EI dimensions, PWB and AP.

	β	SE	95 % CI
Attention > Clarity > AP	−0.001	0.013	−0.027 0.024
Attention > Repair > AP	0.001	0.008	−0.015 0.017
Attention > PWB > AP	0.005	0.007	−0.010 0.020
Attention > Clarity > Repair > AP	0.015	0.007	0.002 0.032
Attention > Clarity > PWB > AP	0.010	0.005	0.001 0.020
Attention > Repair > PWB > AP	0.001	0.003	−0.005 0.008
Attention > Clarity > Repair > PWB > AP	0.005	0.003	0.001 0.013
Total standardized indirect effect	0.034	0.017	0.007 0.703

4.1. Implications

The present study provides evidence to support the incorporation of emotional knowledge into the nursing curriculum. These findings have significant practical implications as they could inform interventions to enrich student EI through their training, thus fostering greater well-being (Pulido-Martos et al., 2016) and, concurrently, academic achievement. The development of these competencies is reflected in the ability to make appropriate clinical decisions, use evidence and information in practice and provide quality care, all of which are essential competencies in nursing practice (Kaya et al., 2018). Teaching and training emotional skills in university students is crucial to ensure their future job satisfaction (Pool and Qualter, 2012). Implementing specific training programmes tailored to the needs of nurses could address the work situations that nursing students will encounter when entering the job market. The absence of programmes and training aimed at improving emotional management skills and improving feelings of well-being throughout the undergraduate nursing curriculum can contribute to the lack of preparedness of students for practice. The findings of this study contribute to improving learning and can be used to promote programmes incorporating effective pedagogical methods in nursing education, thus not only enhancing academic qualifications, but also improving competencies and well-being, and so preparing nurses for better professional practice.

4.2. Limitations

This study also presents some limitations that warrant consideration. First, due to its cross-sectional methodology, causal relationships between variables cannot be determined. Future research should employ longitudinal approaches using mediational models to better understand these relationships. Second, to mitigate the subjectivity inherent in self-reports, future studies could incorporate skill tests, such as the Mayer-Salovey-Caruso Emotional Intelligence Test (MSCEIT), to measure EI. Additionally, exploring how EI dimensions influence predictions of other well-being measures, such as life satisfaction, or utilising instruments that assess both hedonic (e.g. positive affect, happiness) and eudaimonic (e.g. psychological growth, purpose in life) aspects of well-being would be beneficial.

5. Conclusions

The conclusions drawn from this study emphasise the significant impact of EI on the PWB and AP of nursing students. Beyond confirming a positive and meaningful relationship between EI, PWB and AP, thus corroborating prior research highlighting EI's importance for academic success, this study also unveils the mediating role of PWB in this relationship. This suggests that PWB acts as a conduit between the dimensions of EI and AP, highlighting the criticality of fostering an emotionally supportive environment for the optimal academic advancement of nursing students. Recognising that EI influences academic achievement and student general well-being, the development of tailored training programmes for future nurses could be indispensable to adequately equip them for the emotional and professional rigours of their careers.

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CRediT authorship contribution statement

Ana M. Ruiz-Ortega: Writing – original draft, Visualization, Investigation, Conceptualization. **Nicolás Sánchez-Álvarez:** Validation, Software, Methodology, Formal analysis, Data curation. **M. Pilar Berrios-Martos:** Writing – review & editing, Supervision.

Declaration of competing interest

No conflicts of interest have been declared by the authors.

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