

Affective balance as a psychoeducational monitoring tool in university students: A measurement procedure

Equilibrio afectivo como herramienta de monitoreo psicoeducativo en estudiantes universitarios: un procedimiento de medida

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Abstract

Background: University students often interact over extended periods, which fosters the development of an emotional microclimate within the group. In this context, the types of emotions shared (both positive and negative affect) and how they are managed (emotion regulation) can lead to affective imbalances within the group. Measuring and analyzing affective balance may be valuable in educational settings due to its association with students' well-being and academic performance. **Objective:** This study proposes and develops a novel procedure for measuring and analyzing affective balance and examines its relationship with emotion regulation. **Method:** After developing the step-by-step procedure for measuring and analyzing affective balance, it was applied to two groups of university students (G1: 30 students; G2: 25 students), aged 18 to 26 years. Participants completed questionnaires to measure affect (PANAS) and emotional dysregulation (DERS). **Results:** No significant affective imbalances were observed within the groups. However, G1 exhibited higher levels of negative affect than G2, which were directly and moderately associated with greater difficulties in emotion regulation. **Conclusion:** The proposed procedure provides a valuable tool for identifying affective imbalances, which may inform educational decisions, such as implementing psychoeducational interventions aimed at promoting students' emotional well-being.

Keywords: affective balance, classroom, educational context, university students, emotion regulation.

Resumen

Antecedentes: los estudiantes universitarios conviven durante largos periodos de tiempo, lo que propicia la formación de un microclima emocional dentro del grupo. En ese contexto, el tipo de emociones compartidas (afecto positivo y negativo) y la forma de gestionarlas (regulación emocional), pueden dar lugar a un desequilibrio afectivo en el grupo. La medida y análisis del equilibrio afectivo podría ser relevante en contextos educativos por su relación con el bienestar y rendimiento académico de los estudiantes. **Objetivo:** se propone y desarrolla un novedoso procedimiento de medida y análisis del equilibrio afectivo, y se analiza su relación con la regulación emocional. **Método:** una vez desarrollado paso a paso el procedimiento de medida y análisis del equilibrio afectivo se aplicó a dos grupos de estudiantes universitarios (G1: 30 estudiantes; G2: 25 estudiantes), con edades comprendidas entre 18 y 26 años. Los participantes completaron un cuestionario para medir el afecto (PANAS) y otro para medir la desregulación emocional (DERS). **Resultados:** no se observó desequilibrio afectivo en los grupos de estudiantes. Sin embargo, G1 presentó niveles más elevados de afecto negativo en comparación con G2, y estos se asociaron de manera directa y moderada con mayores dificultades en la regulación emocional. **Conclusión:** el procedimiento propuesto facilita la identificación de desequilibrios afectivos, lo que podría ser valioso para guiar decisiones educativas, como la implementación de intervenciones psicoeducativas orientadas a promover el bienestar emocional de los estudiantes.

Palabras clave: equilibrio afectivo, aula, contexto educativo, estudiantes universitarios, regulación emocional.

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Introduction

In the educational context, positive emotions such as enjoyment, pride, and hope are linked to motivation and improved academic performance, whereas negative emotions, particularly anxiety, tend to interfere with learning and negatively affect students' well-being and academic performance (Aristizábal et al., 2025). Emotions can arise from experiences of educational success or failure, as well as from students' appraisals and attributions regarding these outcomes (Pekrun et al., 2007). However, emotions are typically short-lived episodes triggered by the appraisal of specific events (e.g., success or failure); nevertheless, these emotional episodes can influence behavior through their action tendencies and may accumulate into more stable patterns over time (Scherer, 2001). To gain a more comprehensive understanding, we need a variable that reflects emotional experiences but is more stable over time. One such variable is affect, which prior studies have linked to various aspects of student behavior and daily functioning (Vidal-Bustamante et al., 2022). The affect experienced by students influences not only their learning but also the quality of teaching and their overall well-being (Pekrun & Linnenbrink-Garcia, 2014, Salazar et al., 2021). Therefore, further investigation of the determinants of affect within the educational context is essential (Mendzheritskaya & Hansen, 2019).

Affect is a psychological process encompassing two independent dimensions: positive and negative affect (Bradburn, 1969). Positive affect is closely linked to traits such as optimism (Parra-Gaete & Hermosa-Bosano, 2023), extraversion (Smillie et al., 2015), and resilience (Mayor-Silva et al., 2024). Individuals who consistently maintain high levels of positive affect (i.e., those who are consistently happy) tend to experience better physical health outcomes, including fewer hospital visits, reduced medication usage, lower rates of absenteeism due to illness, and a higher quality of life, even in conditions like cancer (Lyubomirsky et al., 2005; Pressman et al., 2019).

Furthermore, positive affect acts as a resilience resource, buffering the impact of stress and reducing symptoms of depression and anxiety (Egan et al., 2024; Van Steenbergen et al., 2021). Conversely, individuals with elevated negative affect experience greater anxiety symptoms (Flückiger et al., 2025) and are more likely to perceive tasks as more demanding due to mood-congruent appraisals (Gendolla et al., 2001). These individuals also tend to appraise situations as more stressful and report higher levels of stress when facing them (Eaton & Bradley, 2008). In the educational context, mental well-being, closely related to positive affect, has been shown to influence academic self-efficacy (Shareefa et al., 2025), and achievement emotions influence students' motivation, cognitive processes, and self-regulation, including effort and the use of learning strategies, which in turn affect academic performance (Camacho-Morles et al., 2021). Moreover, positive affect, as reflected in academic emotions, is associated with stronger self-regulated learning, and this reciprocal relationship contributes to higher academic achievement (Sun & Zhang, 2026). On the other hand, negative affect correlates with behavioral problems, difficulties in peer relationships, hyperactivity, and lower levels of prosocial behavior (Sánchez-García et al., 2018). Additionally, it is associated with cognitive interference, which negatively impacts academic achievement (Papantoniou et al., 2012).

To better understand the variables that influence affect in the educational context, it is essential to differentiate between emotions that arise from external and internal factors. As previously discussed, external factors relate to emotional responses linked to the reinforcements and punishments experienced during students' academic activities (Pekrun et al., 2007). In contrast, internal factors are tied to personal experiences and affective processes that reflect an individual's personality or associated behaviors. Affective variables can, therefore, serve as both inputs and outputs within the personality system (Augustine & Larsen, 2015), influencing emotion regulation strategies in students (Purnamaningsih,

2017). Effective emotion regulation is crucial for students' overall personal and academic well-being (Liang & Mao, 2025). The processes involved in emotion regulation can either facilitate or hinder adolescents' emotional health, influencing levels of depression, anxiety, and positive affect during this critical developmental stage (Chen et al., 2026). In recent years, the significance of emotion regulation within the academic environment has been explored in various psychological processes, including stress, anxiety and depression (Öztekin et al., 2025), self-regulation skills (Järvenoja et al., 2019), coping strategies (Chen-Bouck et al., 2024), peer and teacher support, as well as socialization processes (Sun et al., 2026), and the psychological well-being of students (Canedo et al., 2019). Additionally, emotion regulation has been linked to teaching quality and the well-being of both teachers and students (Mendzheritskaya & Hansen, 2019).

Analyzing affect in the classroom represents a valuable approach to identifying affective imbalances within student groups. Affective balance is operationally defined as the difference between the levels of positive and negative affect experienced by a group of students at a specific moment. Traditionally, affective balance has been conceptualized as the predominance of positive over negative affect, primarily at the individual level (Bradburn, 1969). Within this framework, well-being has commonly been operationalized as the difference or ratio between positive and negative affect. However, these approaches present important limitations when applied to educational settings, as they do not account for the distribution of affective experiences across group members nor for the intensity of emotional experiences. In classroom contexts, where emotional processes emerge through social interaction and emotional contagion, and shared experiences, it becomes necessary to conceptualize affective balance as a group-level phenomenon.

This balance can fluctuate over time due to processes of emotional contagion. Interactions within

social groups can lead to the transmission of emotions, which facilitates behavioral synchrony (Herrando & Constantinides, 2021). For instance, when someone smiles at us during a social interaction, we typically respond by smiling back (Smith & Rose, 2020), effectively aligning ourselves with the emotional states of others (Prochazkova & Kret, 2017). Emotional contagion within groups, however, occurs subconsciously and relies on automatic and physiological mechanisms (Neumann & Strack, 2000). In this regard, understanding affective phenomena in an educational context is crucial because students often spend several years together, creating an emotional climate that can be detrimental or beneficial. This climate has been linked to academic competence, satisfaction, and psychological well-being. However, the relationship between affect and other classroom factors remains unclear (Alonso-Tapia & Nieto, 2019).

To address this knowledge gap, two key variables must be considered. First, the percentage of students who score above and below average in both positive and negative affect should be examined using an affective questionnaire (affective quantity). This is important because a higher percentage of students scoring above average in negative affect, compared to those scoring below average, increases the likelihood of emotional contagion. This, in turn, leads to a shift toward negative affect in the group. Second, attention should also be given to differences in affective intensity (affective magnitude) among students who score above and below the mean for negative affect. Even a small group of students with high negative affect scores and elevated emotional intensity can significantly impact the group's overall emotional trajectory.

The procedure for measuring group affect proposed in this paper provides a more precise approach to this research by considering both the quantity and intensity of emotions. It enables teachers to quickly assess the affective state of their students using a brief affective state questionnaire, presenting

precise, graphical, and easy-to-interpret results across multiple measurements throughout the course. Moreover, facilitating communication among teachers regarding students' affective states, along with analyzing variables that may negatively impact the group's affective balance, would allow for more targeted interventions to prevent adverse effects on students' psychological well-being and academic performance. In summary, this research proposes and develops a method for analyzing affective balance in the educational context and explores its relationship with internal emotional variables such as emotion regulation.

Despite the growing interest in affect within educational contexts, there is still a lack of systematic and operational procedures that allow for the assessment of affective balance at the group level, integrating both the distribution (quantity) and intensity (magnitude) of affective experiences. This gap limits the possibility of monitoring the emotional climate of the classroom and designing data-driven psychoeducational interventions. Unlike previous conceptualizations of affective balance focused on individual differences, the present proposal introduces a group-based analytical framework that incorporates both distributional and intensity parameters, providing decision criteria for identifying affective imbalance in real educational settings. Accordingly, the objectives of this study are: (1) to develop and describe a systematic procedure for measuring and analysing affective balance in groups of university students; (2) to apply this procedure in real classroom settings in order to identify potential affective imbalances; and (3) to examine the relationship between affective balance and emotional dysregulation, as a relevant internal variable in the educational context.

Based on the proposed objectives, the following hypotheses were formulated: H1. The integration of affective quantity and affective magnitude will yield distinct quantitative indicators of positive and negative affective balance within each student group. H2. The affective balance indicators obtained through the

proposed procedure will differ between student groups in their positive and negative affective balance profiles. H3. Higher levels of negative affect will be positively associated with greater emotional dysregulation among university students.

Method

Design

This study followed a non-experimental, cross-sectional design with a descriptive, comparative, and correlational approach.

Participants

The sample comprised 55 students (81.5% female), aged 18 to 26 years ($M = 18.36$, $SD = 1.08$), all in their first year of the Occupational Therapy Degree program at the University of Salamanca, Spain. Specifically, the students were divided into two groups based on their class schedules: Group 1 met from 16:15 to 17:45 ($M_{Age} = 19.07$, $SD = 1.11$; 3 males, 27 females), while Group 2 met from 19:00 to 20:30 ($M_{Age} = 19.28$, $SD = 1.62$; 3 males, 22 females). The groups were chosen to participate in the research due to their similar sociodemographic characteristics, as they were taught in the same classroom and had the same teacher. This allowed control of variables that could influence the affective measurements but were not part of the research objectives. All participants voluntarily agreed to participate in the study after signing an informed consent form. Data was collected one month after the start of the second semester.

Instruments

Positive and Negative Affect Scale (PANAS; Watson et al., 1988): consists of 20 items that assess both positive affect and negative affect on a scale ranging from 1 («Not at all») to 5 («Very much»). Each subscale comprises 10 items. The original validation (Watson et al., 1988) and the Spanish validation (Sandín et al., 1999) have demonstrated

distinct positive and negative affect factors and strong psychometric properties. In the present study, Cronbach's alpha coefficients were .76 for the positive affect scale and .70 for the negative affect scale, indicating acceptable reliability. Participants were instructed to evaluate their affective state over the previous month, which coincided with the duration of their attendance in class.

Difficulties in Emotion Regulation Scale (DERS; Gratz & Roemer, 2004) was adapted for the Spanish population by Hervás and Jódar (2008). This self-report scale measures clinically relevant difficulties in emotion regulation. The Spanish version demonstrated good internal consistency across all subscales, with Cronbach's alpha values ranging from $\alpha = .71$ to $\alpha = .73$. The Spanish version was reduced to 28 items (from the original 36) and includes five subscales: Inattention: difficulties in attending to and being aware of emotions; Confusion: difficulty in understanding and clarifying the emotions being experienced; Rejection: reactions of non-acceptance towards one's distress; Interference: difficulties in concentrating and performing tasks while experiencing negative emotions; Uncontrolled: challenges in maintaining control during negative emotional experiences. The questionnaire utilizes a Likert-type scale (1 = Almost never; 2 = Sometimes; 3 = Half the time; 4 = Most of the time; 5 = Almost always), with higher scores indicating greater difficulties in emotion regulation. In the current study, the following reliability indices were obtained: Inattention ($\alpha = .72$); Confusion ($\alpha = .81$); Rejection ($\alpha = .86$); Interference ($\alpha = .92$); Uncontrolled ($\alpha = .86$).

Procedure

All participants completed online questionnaires as part of the assessment procedure, measuring affect (PANAS) and emotional dysregulation (DERS) one month after the start of classes. Subsequently, the data were analyzed to assess the levels of affective balance within the groups. Before analyzing the data

from the student groups involved in this research, the following section presents the proposed procedure for measuring and analyzing affective balance, clearly outlining the phases of the procedure.

Affective balance analysis procedure

1. *Sample description*: Analyze the distribution of the data in each of the variables (affect and emotional dysregulation): mean, median, mode, frequency, kurtosis, and skewness.
2. *Study of the affective balance*: Analyze to what degree and in what sense (positive or negative) the students experience affect. The proposed procedure for assessing affective balance is grounded in the bidimensional conceptualization of affect as comprising relatively independent positive and negative dimensions (Bradburn, 1969; Watson et al., 1988). Building on this framework, the procedure integrates two complementary components: (a) the distribution of affect within the group (affective quantity), operationalized through the proportion of students scoring above and below a theoretically meaningful reference point, and (b) the intensity of affective differences (affective magnitude), captured through effect size indices. This dual approach addresses limitations of traditional methods focused exclusively on mean differences, allowing for a more nuanced and ecologically valid assessment of group-level affective dynamics in educational contexts. The following steps will be followed for this purpose:

- 2.1. *Midpoint of the scale in positive and negative affect*: A PANAS score of 30 represents the midpoint of the scale in positive and negative affect [10-30-50]. Values below 30 reflect medium-low positive and negative affect levels, while those above 30 reflect medium-high positive and negative affect levels. The use of the midpoint of the PANAS scale (score = 30) as a reference value is theoretically justified, as it represents

the central value of the response range and allows for the classification of affective levels into relatively low and high categories.

- 2.2. *Percentage of participants scoring at the mean value, below the mean value, and above the mean value (affective quantity)*: Obtain the percentage of students scoring at a value of 30, below 30, and above 30 on the positive and negative affect measures. The use of percentages enables the characterization of the distribution of affect within the group, which is particularly relevant in contexts where group dynamics and emotional contagion may influence overall affective balance.
- 2.3. *Calculation of effect size (point biserial correlation; r_{bp} , Cohen, 1988)*: Obtain the effect size of the differences in positive affect between groups formed with participants scoring above and below 30 (r_{bp} -Positive). Obtain the effect size of the differences in negative affect between groups formed with participants scoring above and below 30 (r_{bp} -Negative). The inclusion of effect size as a correction factor allows for the incorporation of the magnitude of differences between subgroups, preventing overestimation of affective imbalance based solely on frequency distributions.
- 2.4. *Positive and negative affective balance (AB)*. To obtain these values, the percentage of participants scoring below 30 is subtracted from those scoring above 30. Thus, in both negative and positive affect, negative values indicate that more participants are scoring below than above 30, and positive values indicate that more participants are scoring above than below 30. Scores equal to the midpoint value (30) were excluded from the AB calculation, as they do not reflect a directional tendency toward either lower or higher affect levels. Including these neutral scores could dilute the estimation of group-

level affective balance, which is based on the relative predominance of values above and below the reference point.

- 2.5. *Transformation of the AB to angular measurements (degrees)*: using a linear transformation where the 100% percentage of the value obtained in the AB corresponds to an angle of 90°.
- 2.6. *Effect size correction (affective magnitude)*: The correction of the AB from the effect size is necessary because the uncorrected AB scores are determined only by the number of participants scoring above and below 30 of the average PANAS value. That is, individual students' scores on positive and negative affect are not considered individually. Therefore, if most students have high levels of negative affect, the probability that the whole group will evolve in this direction is higher, hence the importance of considering the number of participants. However, if the negative affect scores between the low and high negative affect groups were not very different (mild effect size), we would be overestimating the weight of negative affect simply because more participants score above the average value than those who score below it. To avoid this, it is necessary to use effect size as a correction factor for AB. This reasoning also applies to positive affect. The correction threshold was set at 0.5, as effect size values above this level are considered large, indicating a clear separation between groups. Under these conditions, the correction is not applied, and the original AB value is preserved. Table 1 shows the equivalences of the AB after applying the correction for effect size values of 0.1 (small), 0.3 (moderate) and 0.5 (high).

$$AB_{PA} \times (0.5 + r_{bp\text{-Positive}})$$

$$AB_{NA} \times (0.5 + r_{bp\text{-Negative}})$$

AB_{PA} = Affective Balance of positive affect.

AB_{NA} = Affective Balance of negative affect.

$r_{bp-Positive}$ = Effect size differences between positive affect groups (lower vs. higher).

$r_{bp-Negative}$ = Effect size differences between negative affect groups (lower vs. higher).

Table 1

Affective Balance (AB) equivalences (degrees) after correction for effect sizes of 0.1, 0.3 and 0.5. Applicable in the calculation of AB_{PA} and AB_{NA}

AB	AB * (0.5 + r_{bp})		
	$r_{bp} = 0.1$	$r_{bp} = 0.3$	$r_{bp} \geq 0.5$
90°	54°	72°	90°
80°	48°	64°	80°
70°	42°	56°	70°
60°	36°	48°	60°
50°	30°	40°	50°
40°	24°	32°	40°
30°	18°	24°	30°
20°	12°	16°	20°
10°	6°	8°	10°

Note. AB correction was applied when $r_{bp} < 0.5$.

2.7. Decision criteria:

2.7.1. *Negative Partial imbalance (NPI)*. The criterion to determine a negative partial imbalance (only occurs in negative affect) is established from an AB above + 45° in negative affect. This value implies that more than half of the students score in negative affect with medium-high values.

2.7.2. *Positive Partial Imbalance (PPI)*. The criterion to determine a partial positive imbalance (only occurs in positive affect) is established from an AB below - 45° in

positive affect. This value implies that more than half of the students score in positive affect with medium-low values.

2.7.3. *Total Imbalance (TI)*. The criterion to determine a total imbalance (it occurs in both positive and negative affect) is established based on an AB in negative affect above +45° and an AB in positive affect below -45°. This value implies that more than half of the students score in negative affect with medium-high values, and more than half of the students score in positive affect with medium-low values.

Data analysis

Descriptive analyses were conducted to characterize the distribution of all study variables across groups, including measures of central tendency and dispersion. Second, the affective balance of each of the groups was calculated, using the procedure described in the previous section, which integrates both affective quantity and magnitude. Comparative analyses were then performed to examine potential differences in affective balance between groups. Finally, the relationship between affect (positive and negative) and the levels of emotional dysregulation was analyzed in each group using Spearman's rank-order correlation, due to the non-normal distribution

of some variables. The datasets generated and analyzed during the current study are available in the Dataverse repository: https://osf.io/r6ey7/?view_only=dbdd42226db7455fad64deb64e69047a

Results

Descriptive analysis

Descriptive statistics for all variables in each group are presented in Table 2. No statistically significant differences were found between group 1 (G1) and group 2 (G2) in the levels of positive ($z = -.46$, $p = .647$) and negative affect ($z = -1.15$, $p = .249$).

Table 2

Descriptive measures of affect (PANAS) and emotional dysregulation (DERS) in group 1 (N = 30) and 2 (N = 25)

Variables	GROUP 1						
	<i>M</i>	<i>SD</i>	<i>Min-Max</i>	<i>Range</i>	<i>S-W</i>	<i>Asymmetry</i>	<i>Kurtosis</i>
PANAS Positive	31.0	5.70	19-43	[10,50]	.587	-.082	0.114
PANAS Negative	28.9	5.38	18-38	[10,50]	.511	-.260	-0.494
DERS Inattention	9.5	3.05	4-16	[4,20]	.632	.153	-.492
DERS Confusion	9.6	3.07	6-17	[4,20]	.003	1.08	.708
DERS Rejection	15.5	6.66	7-34	[7,35]	.003	1.23	1.022
DERS Interference	13.0	3.89	7-19	[4,20]	.029	.090	-1.343
DERS Uncontrolled	18.9	6.13	9-35	[9,45]	.286	.700	.453
Variables	GROUP 2						
	<i>M</i>	<i>SD</i>	<i>Min-Max</i>	<i>Range</i>	<i>S-W</i>	<i>Asymmetry</i>	<i>Kurtosis</i>
PANAS Positive	30.4	5.48	20-40	[10,50]	.637	-.06	-.56
PANAS Negative	27.1	6.36	14-42	[10,50]	.637	.19	-.02
DERS Inattention	9.0	3.35	4-16	[4,20]	.186	.35	-.99
DERS Confusion	8.9	2.69	5-14	[4,20]	.041	.44	-.44
DERS Rejection	14.9	5.20	7-27	[7,35]	.106	.80	.27
DERS Interference	13.8	4.72	7-20	[4,20]	.006	-.08	-1.56
DERS Uncontrolled	20.2	7.68	9-36	[9,45]	.348	.43	-.77

Note. Emotion Regulation Questionnaire (ERQ); Difficulties in Emotion Regulation Scale (DERS); Shapiro-Wilks (S-W); Positive (P) and negative (N) affect questionnaire (PANAS).

Affective balance results for Group 1 and Group 2

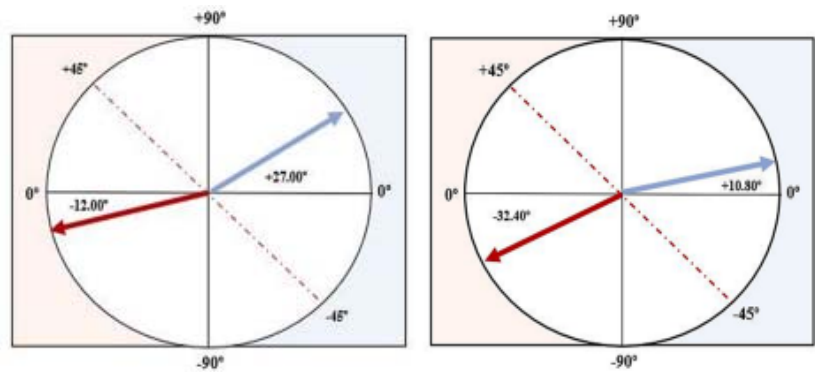
- Group 1: The analysis of frequencies for negative affect shows no participants at the midpoint of the PANAS scale (0.00%), with 17 participants scoring below (56.67%) and 13 scoring above this value (43.33%). In contrast, the analysis of frequencies for positive affect reveals 1 subject in the middle range (3.33%), 10 below it (33.33%), and 19 above it (63.33%). The effect size calculated for the differences between the participants scoring above and below 30 for negative affect was $r_{bp} = .83$, while for positive affect, it was $r_{bp} = .80$. Based on these results, the calculation of the affective balance does not indicate the presence of affective imbalance (Table 3-Left: $-12.00^\circ / +27.00^\circ$). Since the effect size exceeds 0.5 (indicating a large effect size), no adjustment to the AB is necessary (refer to Table 1 for equivalences).
- Group 2: The analysis of frequencies for negative affect shows no participants at the midpoint of the

PANAS scale (0.00%), with 17 participants scoring below (68.00%) and 8 scoring above (32.00%). For positive affect, the analysis shows 2 participants in the middle range (8.00%), 10 below it (40.00%), and 13 above it (52.00%). The effect size was $r_{bp} = .82$ for negative affect and $r_{bp} = .84$ for positive affect. Consequently, the calculation of the affective balance does not reveal any affective imbalances (Table 3-Right: $-32.40^\circ / +10.80^\circ$). As in Group 1, since the effect size is greater than 0.5 (indicating a large effect), no correction to the AB is required (refer to Table 1 for equivalences).

Correlations within each group between affect (positive and negative) and the dimensions of emotional dysregulation (DERS) showed a stronger association between negative affect and emotional dysregulation in Group 1 than in Group 2. However, no statistically significant differences were found between Group 1 and Group 2 in the dimensions of emotional dysregulation (Table 4).

Table 3
Analysis of the affective balance of group 1 and 2

Procedure	Range PANAS [10-50]	AB correction (when $r_{bp} < 0.5$)			
		GROUP 1 (N = 30)		GROUP 2 (N = 25)	
		Negative affect	Positive affect	Negative affect	Positive affect
2.2	< 30 (%)	56.67	33.33	68.00	40.00
	= 30 (%)	0.00	3.33	0.00	8.00
	> 30 (%)	43.33	63.33	32.00	52.00
2.3	r_{bp}	.83	.80	.82	.84
2.4	AB (%) (> 30 - < 30)	-13.34	+30.00	-36.00	+12.00
2.5	AB (degrees)	-12.00°	+27.00°	-32.40°	+10.80
2.6	AB (correction)	-12.00°	+27.00°	-32.40°	+10.80



Note. Affective Balance (AB), affect questionnaire (PANAS).

Table 4
Group correlation analysis between affect levels (PANAS: positive and negative) and dysregulation scales (DERS)

DERS	CORRELATIONS				DIFFERENCE BETWEEN GROUPS				
	Negative affect		Positive affect		Mean		Statistics		
	Group 1	Group 2	Group 1	Group 2	Group 1	Group 2	<i>z</i>	<i>p</i>	<i>r</i>
Inattention	.342*	.006	-.265	-.192	9.50	9.00	-.60	.546	.08
Confusion	.501**	.384*	-.187	-.165	9.57	8.96	-.52	.602	.07
Rejection	.430**	.110	-.164	-.483**	15.50	14.02	-.08	.939	.01
Interference	.447**	.274	-.333*	-.572**	13.03	13.76	-.51	.610	.07
Uncontrolled	.386**	.572**	-.326*	-.495**	18.90	20.20	-.48	.630	.06

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

Discussion

This research examined affective balance in two groups of university students and its association with emotional dysregulation. Although differences in affective balance were observed between the groups, neither group met the criteria for affective imbalance (see Table 3). Correlation analyses between positive and negative affect and the dimensions of emotional dysregulation revealed distinct patterns depending on the student group. In Group 1, a stronger relationship was observed between negative affect and all dimensions of emotional dysregulation. This suggests that emotional dysregulation may be associated with a moderating variable influencing affective balance in this group. These findings are consistent with recent research indicating that emotional dysregulation is associated with the development of negative affect and psychosomatic symptoms among university students (Teixeira et al., 2022). The authors emphasize the importance of implementing developmental programs focused on emotion regulation to support students effectively. Therefore, while neither group exhibited affective imbalance, Group 1 showed higher levels of negative affect than Group 2. Additionally, it is important to consider that the measure of affect was taken one month after the start of classes, suggesting that affective balance may vary over time throughout the academic year, potentially leading to increased levels of imbalance. Based on these findings, educators may consider intervening proactively to mitigate potential issues by assessing affect at various points throughout the academic year and implementing strategies to reduce negative affect and enhance positive affect if the criteria for affective imbalance are met.

The integration of emotion regulation into academic curricula has gained significant relevance in recent years (Chatterjee & Duraipappah, 2020). A range of tools now exists to enhance emotion regulation skills in both teachers and students (Hoffmann et al., 2020). In particular, social and emotional learning (SEL) programs implemented in

school settings facilitate the development of social and emotional intelligence, enabling individuals to understand and manage their emotions, establish and maintain positive relationships, make responsible decisions, and adopt adaptive behaviors. Promoting these skills has been linked to increased academic engagement, improved behavior, stronger attachment to school, protection for at-risk youth, and enhanced academic performance (Green et al., 2021). Furthermore, SEL programs have demonstrated significant benefits within higher education contexts (e.g., Elmi, 2020). Emotion regulation skills develop throughout adolescence, marked by significant changes, including academic pressures and evolving personal relationships, heightening the demands of adapting to one's environment. Effective emotion regulation in academic settings has been associated with students' learning, participation, and overall academic performance (Jacobs & Gross, 2014). Additionally, research indicates that difficulties in emotion regulation can adversely affect the psychological well-being of college students (Khalil et al., 2020).

Emotion regulation may play a crucial role in modulating the affective levels within student groups. Therefore, using affective balance to monitor these groups may provide a useful framework for analyzing emotional dynamics in the classroom. This approach could be compatible with personalized interventions and may also be beneficial in addressing individual students while considering their interactions within the group, thereby potentially enhancing the effectiveness of educational interventions. Moreover, continuous analysis of affective balance could be implemented throughout the academic development of student groups, allowing for systematic monitoring of their emotional evolution and offering insights into the group's overall affective trends. The proposed analyses could also be conducted using various questionnaires beyond those employed in this research. Notably, many educational interventions often lack a systematic analytical methodology, relying heavily on the subjective judgment of

educators. The analytical methods introduced in this research may represent an advancement toward establishing clear criteria to help identify the psychological variables influencing the development and evolution of affect in the classroom. This is important because, to date, few procedures provide a comprehensive measurement of the affective balance in student groups—one that integrates both the quantity and intensity of emotions. The procedure presented in this article may allow the analysis of how a group's emotional state evolves during the academic year. It assesses the percentage of students whose emotions are above or below the mean (affective quantity) and the intensity of their emotional expressions (affective magnitude). This method aligns with current educational trends that emphasize the development of socioemotional intelligence and advocate for a holistic approach to student growth, integrating both cognitive and emotional aspects of learning (Devis-Rozental & Farquharson, 2020). A reliable procedure for measuring the group's affective state could help educators evaluate the effectiveness of teaching strategies designed to foster an integrated emotional and cognitive learning experience at various points throughout the year.

Additionally, it is important to consider more precise measures of affect that is spatially and temporally limited. In this research, participants completed the questionnaires online. For future studies aimed at validating this procedure, it would be beneficial to include measures of affect that specifically account for the educational context, thereby minimizing the influence of other interaction contexts that may affect students' emotional levels. To this end, PANAS is recommended, instructing students to respond to the items with reference to the educational context, specifically classroom affect. Furthermore, administering the questionnaire in the classroom can enhance students' affective awareness when evaluating their emotional state. Other factors that may influence levels of affect should also be taken into account, such as the type of studies, schedules, and class attendance. Additionally, this

approach could also be applied in other contexts, such as healthcare, where issues like anxiety and depression can significantly impact the performance and mental health of healthcare workers. This was particularly evident during the COVID-19 pandemic (Sun et al., 2021), highlighting that, beyond specific emergencies, affective imbalances can have detrimental consequences for the mental health of these professionals, which in turn affects patient care.

No affective imbalances were detected among the student groups analyzed in the present investigation. Should such imbalances be identified in future research, it may be advisable to implement social and emotional learning (SEL) programs, which have demonstrated effectiveness in various studies (Elmi, 2020; Green et al., 2021; Hoffmann et al., 2020). Additionally, it is important to identify contextual variables that may influence negative affect, aiming to mitigate or eliminate these factors. For instance, research by Llinares et al. (2021) has shown that cool-toned colours on classroom walls can enhance arousal, attention, and memory. Additionally, coloured lighting in the classroom has been found to positively impact both cognitive and emotional processes (Quiles-Rodríguez & Palau, 2024). More broadly, factors such as lighting, temperature, air quality, and colour have all been associated with students' academic performance (Barrett et al., 2015). In this study, the different schedules of the student groups analyzed could be interpreted as a potential modulating variable affecting affective balance.

The findings of this study should be interpreted with caution due to several limitations: First, the proposed procedure for assessing affective balance should be considered exploratory, as further research is needed to examine its psychometric properties, including its reliability, sensitivity, and predictive validity. Second, affect was measured at a single time point and through self-report instruments, which may be influenced by contextual or subjective factors. Third, the relatively small sample size may limit the generalizability of the results and reduce the statistical

power of the analyses, and the cross-sectional design does not allow causal relationships to be established between affective balance and emotional dysregulation. Future research should prioritize longitudinal studies that assess affect at multiple time points to explore its relationship with intervention strategies and academic performance.

In conclusion, this proposal for analyzing affect in the educational context may offer several potential benefits: 1) It may facilitate a rapid, clear, and updated assessment of student affect; 2) It may help to frame affect in terms of affective balance, aiding interpretation through established thresholds that inform teachers about the necessity for psychoeducational interventions; 3) It could enable ongoing monitoring of students' affective states throughout the academic year; and 4) It may provide insights into the group's overall affective balance.

Conflict of interest

The authors declare no conflict of interest.

Ethical responsibility

All procedures involving human participants were conducted in accordance with the ethical standards set forth by the institutional and/or national research committee, as well as the 1964 Helsinki Declaration and its subsequent amendments. The study received approval from the Research Ethics Committee of the University of Salamanca (code 1281).

Authorship contributions

FGL: Conceptualized and proposed the research problem, participated in the review, selection, analysis, and interpretation of the results, as well as in the revision and drafting of the manuscript.

AJO: Participated in the review of the literature, selection of materials, and contributed to the drafting and critical revision of the manuscript.

AVC: Contributed to the selection and preliminary analysis of materials, as well as to the drafting of specific sections of the manuscript.

LMH: Participated in the review of the literature and provided input for the interpretation of the results.

GGG: Assisted in the organization of materials and contributed to the review of the manuscript.

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