PSICOLOGIA

Revista da Associação Portuguesa de Psicologia
ISSN 2183-2471

Revista PSICOLOGIA, Vol. 40(1), 2026, 13-29, https://doi.org/10.17575/psicologia.2003

Improving Emotional Regulation and Mental Health: The Impact of an Online Intervention for University Students

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Abstract: Emotion regulation difficulties and mental health problems are common among university students, underscoring the need for scalable preventive interventions. This non-randomized clinical trial evaluated a synchronous online group intervention designed to improve emotion regulation and well-being. Two hundred and six students were assessed, and eligible participants were allocated to intervention or control groups according to availability. The intervention comprised six weekly 90-minute videoconference sessions focused on emotional psychoeducation, awareness, acceptance, impulse control, and cognitive reappraisal. Outcomes were assessed before, immediately after, and 30 days after the intervention using validated measures and analysed with Mann–Whitney and Friedman tests. Compared with controls, intervention participants showed improvements in emotion regulation, reduced anxiety, depression, and stress, and increased psychological and subjective well-being, with gains maintained at follow-up. Findings indicate that brief synchronous online group interventions may be a feasible and scalable strategy for promoting university students' mental health.

Keywords: *Emotional regulation; Mental health; Online psychological intervention; University students.*

Emotions play a fundamental role in human experience, yet there is no consensus on a unified concept that encompasses all their facets. In this study, we adopt John Gross's process model of emotion regulation (Gross, 2015), which highlights the significance of an individual's attention and appraisal of specific situations as key elements in emotional generation. This model suggests that emotions, being adaptable and flexible, can be regulated even in situations of high emotional intensity.

Emotional regulation (ER) refers to the processes that initiate, maintain, modify, intensify, or determine the duration of emotions, aiming to adapt the emotional response to the individual's needs (Gross, 1998; Gross & Thompson, 2007). The effectiveness of these processes is closely linked to the prevention of mental disorders and the promotion of well-being, underscoring that the mere absence of clinical symptoms is not enough to ensure a meaningful and happy life.

Recent studies have shown that emotional dysregulation (ED) is a common feature of various mental disorders, including depression and anxiety. Individuals with ED often struggle with emotional clarity, acceptance of emotional responses, and managing unpleasant emotions (Aldao et al., 2016; Colombo et al., 2020). These associations are supported by meta-analytic evidence indicating that emotion-regulation strategies are systematically linked to symptoms across multiple forms of psychopathology (Aldao, Nolen-Hoeksema, & Schweizer, 2010; Compas et al., 2017). These challenges highlight the importance of adaptive emotion-regulation skills, which are essential not only for treating disorders but also for enhancing overall well-being.

Interventions focused on emotional regulation are increasingly being used not only for treatment but also for the prevention of disorders and the promotion of health. According to the World Health Organization (World Health Organization, 1948), health is conceptualized as a state of complete physical, mental, and social well-being, and not simply the absence of disease. In line with this perspective, recent studies underscore the relevance of subjective evaluations of one's life and behaviour for understanding mental health and well-being (Heatherton et al., 2018; Kraiss et al., 2020; Santana & Gondim, 2016). This study aims to test an emotional regulation intervention protocol specifically designed for university students, evaluating its effectiveness in improving emotional regulation capacity and, consequently, enhancing well-being and preventing emotional disorders in this demographic group.

Traditional treatment protocols in mental health often target specific disorders. However, these protocols have limitations in the context of public health, such as the need for specialized professional training and difficulties in integrating these practices into routine clinical care (Bar-low, 2016). The

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frequent comorbidity of mental disorders has led to the adoption of transdiagnostic interventions, which have been highlighted by the former Institute of Medicine of the United States National Academies as a promising strategy to improve clinical efficacy through more flexible and comprehensive approaches (Barlow, 2016; Barlow et al., 2017). Traditional diagnosis-specific protocols, although effective, can be difficult to disseminate widely because they are time-intensive, require substantial training, and are often not easily integrated into routine care (Barlow, 2016). Consistent with calls from public health frameworks, including those of the former Institute of Medicine, to increase the population impact of evidence-based mental health interventions, transdiagnostic approaches have been proposed as a way to enhance scalability and address comorbid emotional disorders more efficiently (Barlow et al., 2017; Barlow et al., 2018).

These transdiagnostic protocols generally incorporate elements of Cognitive Behavioural Therapy, Process-Based Therapy, Acceptance and Commitment Therapy, and Mindfulness practices (Peixoto & Gondim, 2020). Such methods help patients align their thoughts, physio-logical sensations, and behaviours with their goals, values, and objectives. The protocols typically include sessions on psychoeducation, motivation, reassessment of situations and unpleasant emotions, emotional acceptance, and relapse prevention (Barlow et al., 2017).

With technological advancements, internet-based interventions have emerged as powerful tools in clinical psychology, providing access to evidence-based treatments through digital platforms (Andersson & Titov, 2014; Chibanda et al., 2016). Recent meta-analyses show that such interventions can produce significant improvements in depression, anxiety, stress, and quality of life among adolescents and university students, including through online mindful-ness-based programmes (Harrer et al., 2018; Wang & Zhang 2023; Gong et al 2023). In addition to their clinical benefits, digital formats reduce costs and overcome barriers related to geography, stigma, and time, thereby increasing the scalability of mental health care for students (Jiménez-Molina et al., 2019). Additionally, the accessible nature of these resources allows patients to revisit the intervention content as needed, enhancing learning and information retention (Andersson & Titov, 2014).

The contribution of this study lies not in proposing a new theory of emotion regulation, but in testing the integration of transdiagnostic emotion-regulation components in a brief, synchronous, online group format tailored to university students. By combining psychoeducation, emotional awareness, acceptance, impulse control, cognitive flexibility, and reappraisal within a preventive university-based intervention, the study extends existing emotion-regulation models to a feasible format for mental health promotion in higher education.

In the context of promoting Emotional Regulation as a preventive tool through virtual platforms, this study evaluates the efficacy of a group-based emotional regulation intervention programme conducted online. The goal is to determine whether this approach can effectively improve the emotion-regulation skills of university students, thereby contributing to the promotion of their overall well-being.

METHOD

Study Design

This study utilized a non-randomized clinical trial design. Participants were divided into two groups (control and intervention) based on their availability for weekly meetings. Those who were unable to attend the meetings were allocated to the control group.

Participants

A total of 206 university students participated in the pre-intervention assessment. The majority of participants were women (74.3%), residents of the State of Bahia (90.3%), single (87.9%), had a family monthly income exceeding five minimum wages (42.2%), and were enrolled in private institutions (73.3%). The mean age of participants was 24 years (SD = 6.5), as detailed in Table 1.

Inclusion and Exclusion Criteria

For the intervention group, inclusion criteria were operationalized using the baseline assessment data collected via the online survey platform. First, DASS-21 total and subscale scores were calculated, and students whose depression, anxiety, or stress levels were classified as mild, moderate, or severe according to Brazilian norms (Vignola & Tucci, 2014) were flagged as potentially eligible. Second, emotional dysregulation was evaluated using the emotion regulation scales (DERS, ERQ, and LESS-II), and participants whose scores indicated clinically relevant difficulties in emotion regulation were identified by the research team. Only students who met both criteria and confirmed their interest were invited to take part in the group intervention. They were asked to sign a new informed consent form (ICF) specifically for the intervention phase.

Exclusion criteria were assessed at the same stage. Students who reported not having stable internet access or adequate devices to participate in the videoconference sessions were excluded from the intervention. In addition, participants who did not complete all questionnaires at the three assessment time points (pre-intervention, post-intervention, and 30-day follow-up) were excluded from the longitudinal analyses. The control group comprised students who met the inclusion criteria but did not have sufficient time availability to attend the weekly group sessions, as well as those who began the intervention but attended no more than two sessions and subsequently withdrew for personal or scheduling reasons. Figures 1 and 2 illustrate the flow of participant selection, inclusion, exclusion, and allocation to the intervention and control groups.

Table 1. Sociodemographic Data of Study Participants

		n	**%**
Gender	Female	153	74.3
	Male	52	25.2
	Prefer not to declare	1	0.5
State of Residence	Bahia	186	90.3
	Ceará	1	0.5
	Minas Gerais	2	1
	Piauí	1	0.5
	Rio de Janeiro	1	0.5
	Santa Catarina	14	6.8
	São Paulo	1	0.5
Marital Status	Married	15	7.3
	Separated	2	1
	Single	181	87.9
	Other	8	3.9
	n	**%**	
Monthly Income	1–3 Minimum Wages	77	37.4
	4–5 Minimum Wages	42	20.4
	+ 5 Minimum Wages	87	42.2
Type of Institution	Public	55	26.7
	Private	151	73.3
Age	Mean *(SD)*	24.0 (6.48)	

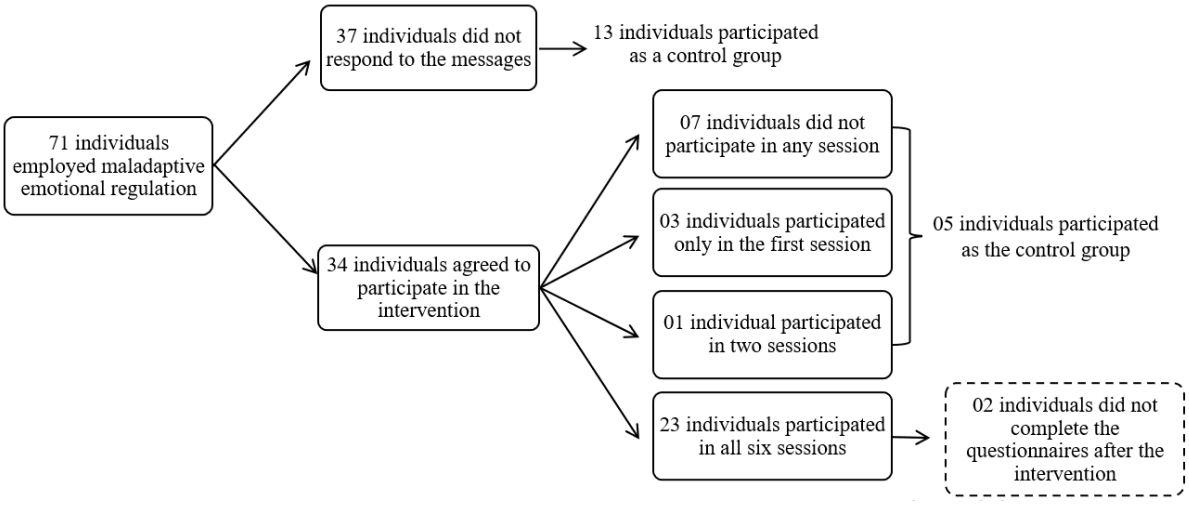

Figure 1. Flowchart of the selection, inclusion, and exclusion steps of participants in the intervention

Table 2. Sociodemographic Data of Participants in the Intervention Study

		n	%
Gender	Female	31	79.5
	Male	8	20.5
State of Residence	Bahia	36	92
	Minas Gerais	2	5
	Santa Catarina	1	3
	Married	4	10
	Separated	1	2.5
	Single	33	85
	Other	1	2.5
Monthly Income	1 – 3 Minimum Wages	18	46
	4– 5 Minimum Wages	9	23
	+ 5 Minimum Wages	12	31
Type of Institution	Public	16	41
	Private	23	59
Age	Mean *(SD)*	24.051 (5.515)	

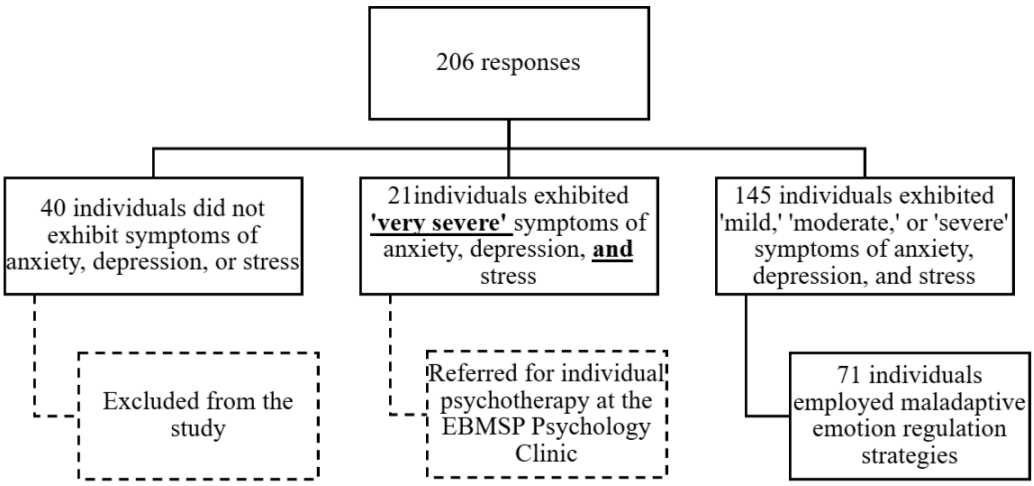

Figure 2. Flowchart of the steps for dividing the control and intervention groups

Procedures

Students who met the inclusion criteria were individually contacted via instant messaging apps to confirm their availability for weekly intervention sessions. They were also provided with a new link to the RedCap system to sign an updated informed consent form agreeing to participate in the intervention.

a) Psychotherapeutic Phase (Intervention Programme): The psychological intervention consisted of six weekly sessions, each lasting 90 minutes, conducted via the Zoom Cloud Meeting video conferencing app. Participants were grouped based on their availability, with each group containing up to six people. The interventions were carried out between May and November 2021.

b) Monitoring and Follow-up: Upon completing the six sessions, students received a new RedCap link to complete six scales assessing emotional regulation, mental health, and well-being. This procedure was repeated 30 days after the conclusion of the interventions (follow-up).

Assessment Instruments

Emotional regulation, mental health, and well-being were assessed using a battery of validated self-report instruments adapted for Brazilian populations. All scales were administered online at the three assessment points (pre-intervention, post-intervention, and 30-day follow-up).

Emotion regulation measures

Difficulties in Emotion Regulation Scale (DERS). The DERS, developed by Gratz and Roemer (2004) and adapted for Brazil by Cancian et al. (2016), assesses global difficulties in emotion regulation. It comprises 36 items rated on a 5-point Likert scale ranging from 1 (almost never) to 5 (almost always), grouped into six dimensions: difficulties engaging in goal-directed behaviour, impulse control difficulties, lack of emotional awareness, lack of emotional clarity, limited access to emotion regulation strategies, and non-acceptance of emotional responses. Higher scores indicate greater emotion dysregulation, and in the present study both total and subscale scores were used.

Emotion Regulation Questionnaire (ERQ). The ERQ, developed by Gross and John (2003) and adapted for Brazil by Boian, Soares, and Silva (2010), measures the frequency of two main emotion regulation strategies. It contains 10 items rated on a 7-point Likert scale from 1 (strongly disagree) to 7 (strongly agree), yielding two subscales: cognitive reappraisal and expressive suppression. Higher scores on each subscale reflect more frequent use of the corresponding strategy.

Leahy Emotional Schema Scale II (LESS-II). The LESS-II, developed by Leahy, Tirch, and Napolitano (2013) and adapted for Portugal by da Silva et al (2023), evaluates beliefs and attitudes about emotions. The scale consists of 28 items rated on a 6-point Likert scale from 1 (very false) to 6 (very true), covering multiple emotional schemas, such as accusation, duration, excessive rationality, guilt and shame, incomprehensibility, invalidation, lack of control, low consensus, low expression, non-acceptance of feelings, numbness, rumination, and a simplistic view of emotions. Higher scores indicate stronger endorsement of each emotional schema.

Mental health and well-being measures

Depression, Anxiety, and Stress Scale – 21 items (DASS-21). The DASS-21, developed by Lovibond and Lovibond (1995) and adapted for Brazil by Vignola and Tucci (2014), assesses symptoms of depression, anxiety, and stress over the previous week. It comprises 21 items rated on a 4-point scale from 0 (did not apply to me at all) to 3 (applied to me very much, or most of the time), forming three subscales. In the present study, subscale scores were used to classify symptom severity and as continuous outcomes.

Brief Psychological Well-Being Scale (BPWS). The BPWS, based on Ryff's model (Ryff & Singer, 2008) and adapted for Brazil by Novo (2005), assesses eudaimonic well-being. It includes 18 items (nine positively and nine negatively worded) rated on a 6-point Likert scale from 1 (very false) to 6 (very true), covering autonomy, environmental mastery, personal growth, positive relations, life goals, and self-acceptance. Higher scores indicate greater psycho-logical well-being.

Subjective Well-Being Scale (SWS). The SWS, developed by Albuquerque and Tróccoli (2004), measures hedonic well-being. It consists of 62 items divided into two subscales: 47 items assessing positive and negative affects (1 = not at all to 5 = extremely) and 15 items assessing life satisfaction (1 = strongly disagree to 5 = strongly agree). The scale yields three dimensions: negative affect, positive affect, and satisfaction–dissatisfaction with life, with higher scores reflecting greater intensity of each component.

Statistical Analyses

Statistical analyses were conducted by entering the questionnaire data into a digital data-base using SPSS, version 20. Descriptive analyses of the social and demographic data for the overall sample and for each group were performed.

To assess whether the Emotional Regulation (ER) and mental health indices were equivalent across the different groups (control and intervention) before and immediately after the intervention, the non-parametric Mann-Whitney U test was applied using Jeffrey's Amazing Statistics Program (JASP).

Friedman's ANOVA was conducted to explore whether ER and mental health factors in the control group remained consistent across the two assessment points, as well as in the intervention group before, immediately after the intervention, and at follow-up. For the intervention group, effect sizes were calculated using Kendall's W; differences between paired groups were assessed using the Conover post-hoc test; and variances among individuals at different time points were examined using Mauchly's test of sphericity, with the Greenhouse-Geisser correction applied where necessary. All tests used a significance threshold of $p < 0.05$.

Construction of the Emotional Regulation Intervention Programme

The intervention was developed by the research team based on Gross's process model of emotion regulation and on transdiagnostic cognitive-behavioural approaches for emotional disorders, incorporating elements, such as psychoeducation, monitoring of emotional episodes, acceptance-based exercises, and cognitive reappraisal training (Gross, 1998; Gross & Thompson, 2007; Barlow, 2016; Barlow et al., 2017).

Session 1 – Introduction and motivation for change. The first session aimed to introduce the programme's rationale and structure, establish group norms, and enhance participants' motivation to engage in change. After a brief explanation of how emotional regulation difficulties can maintain emotional distress, the psychologist facilitated exercises to identify personal goals for the group (e.g., "what would you like to be different in the way you deal with your emotions?") and to clarify expectations about confidentiality and participation.

Session 2 – Psychoeducation on emotions and emotional awareness. This session focused on basic psychoeducation about emotions, including their functions, components (physio-logical, cognitive, behavioural), and the difference between primary and secondary emotions, using examples drawn from students' daily lives. Emotional awareness was promoted through monitoring exercises in which participants were asked to describe recent emotional episodes in terms of triggers, bodily sensations, thoughts, action tendencies, and behaviours, and to practice labelling emotions with more precise vocabulary (e.g., distinguishing sadness, frustration, and disappointment).

Session 3 – Maladaptive and adaptive regulation strategies. The third session introduced maladaptive strategies (e.g., suppression, excessive rationality) and adaptive strategies (e.g., acceptance, cognitive reappraisal) within Gross's framework. Participants identified their typical coping styles using brief vignettes and were guided to practice cognitive reappraisal by generating alternative, more balanced interpretations for emotionally salient situations, as well as acceptance exercises focused on observing internal experiences without acting on them immediately.

Session 4 – Emotional acceptance, impulse control, and emotion duration. This session aimed to strengthen acceptance and impulse control skills and to challenge beliefs about the uncontrollability and endless duration of emotions. The psychologist conducted exercises in which students practiced delaying impulsive responses (e.g., pausing before sending a message when angry) and noticing how emotional intensity naturally rises and falls over time, using brief mindfulness-of-breath practices and exposure to mild emotional cues.

Session 5 – Cognitive flexibility and positive reappraisal. The fifth session focused on broadening participants' repertoires of flexible thinking and promoting positive reappraisal of stressful academic and interpersonal situations. Through guided group discussions and written exercises, students generated multiple alternative perspectives on recent stressors (e.g., exams, conflicts with peers) and identified personal values that could guide more adaptive responses.

Session 6 – Consolidation and relapse prevention. The final session aimed to review the main concepts and skills covered in the programme and to develop individualized maintenance plans. Participants summarized the strategies that had been most helpful for them, anticipated high-risk situations for emotional dysregulation (e.g., exam periods), and formulated concrete coping plans and self-monitoring strategies to support continued practice after the end of the intervention.

Ethical Aspects

The protocol and informed consent for this study were approved by the Research Ethics Committee of the *Escola Bahiana de Medicina e Saúde Pública* (Bahiana School of Medicine and Public Health) under CAAE number 40033120.9.0000.5544. All participants were fully informed about the study's purpose and content. Afterward, each participant read and signed the Informed Consent Form, confirming their willingness to participate. Participants who exhibited "very severe" levels of depression, anxiety, or stress were referred for individual psychotherapy at the Psychology Clinic of the Bahiana School of Medicine and Public Health.

RESULTS

Using the assessment instruments, the efficacy of the intervention programme on emotional regulation, mental health, and well-being of university students was assessed. Students completed the scales at three time points: before the intervention, immediately after the intervention, and 30 days post-intervention. Additionally, the effect of time was evaluated on students who did not participate in the intervention programme.

At the start of the study, similar socio-demographic data was shown in the two groups studied, as demonstrated in Table 3.

Table 3. Comparison of Sociodemographic Data by Group

		Control Group (*n* = 22)		Intervention Group (*n* = 17)	
		n	%	*n*	%
Gender	Female	19	86	12	70
	Male	3	14	5	30
State of Residence	Bahia	22	100	14	82
	Minas Gerais	0	0	2	12
	Santa Catarina	0	0	1	6
Marital Status	Married	3	14	1	6
	Separated	0	0	1	6
	Single	19	86	14	82
	Other	0	0	1	6
Monthly Income	1 – 3 Minimum Wages	12	54	6	35.3
	4– 5 Minimum Wages	3	14	6	35.3
	+ 5 Minimum Wages	7	32	5	29.4
Type of Institution	Public	10	45	6	35
	Private	12	55	11	65
Age	Mean *(SD)*	23.68 (5.286)		24.53 (5.928)	

When comparing the control and intervention groups in terms of Emotional Regulation (ER) measures before the intervention, only 3 out of the 25 factors from the scales showed significant differences (Table 4). These results suggest that the control and intervention groups exhibited few differences in emotional regulation prior to the intervention programme. Specifically, participants in the control group demonstrated greater emotional dysregulation (LESS-II), U = 258, mean *(SD)* = 4.9 (1.0), $p = 0.04$. On the other hand, participants in the intervention group showed higher levels of excessive rationality (LESS-II), U = 111.5, mean *(SD)* = 4.4 (1.1), $p = 0.03$ and greater rumination (LESS-II), U = 109.5, mean *(SD)* = 5.3 (0.7), $p = 0.02$.

Table 4. Comparison Between Control and Intervention Groups, Before the Intervention

BEFORE THE INTERVENTION								
Scale		Control Group (*n* = 22)		Intervention Group (*n* = 17)		***W***	***p***	**Rank-Biserial Correlation**
		M	*SD*	*M*	*SD*			
Difficulties in Emotion Regulation Scale (DERS)	Difficulties in engaging in goal-directed behaviours	19.2	4.9	20.5	3.1	166.0	0.55	-0.112
	Impulse control difficulties	17.6	6.8	16.3	6.8	207.0	0.58	0.107
	Lack of emotional awareness	16.6	5.8	17.2	4.4	177.0	0.78	-0.053
	Lack of emotional clarity	14.5	5.1	15.1	3.3	170.5	0.64	-0.088
	Limited Access to ER Strategies	23.7	5.4	25.2	6.9	165.5	0.55	-0.115
	Non-acceptance of emotional responses	17.5	6.8	19.9	4.6	148.0	0.27	-0.209
Emotional Regulation Questionnaire (ERQ)	Cognitive reappraisal	4.6	1.5	4.5	1.3	191.5	0.91	0.024
	Emotional suppression	3.8	1.2	4.1	1.6	163.5	0.51	-0.126

Table 4. Continued.

Scale		Control Group (*n* = 22)		Intervention Group (*n* = 17)		W	*p*	Rank-Biserial Correlation
		M	*SD*	*M*	*SD*			
Leahy Emotional Schemas Scale (LESS-II)	Accusation	4.3	1.1	4.4	0.8	173.5	0.70	-0.072
	Disconnection from values	4.4	1.1	4.4	1.0	189.5	0.95	0.013
	Duration	3.2	1.3	3.1	1.0	203.5	0.64	0.088
	Excessive Rationality	3.6	1.3	4.4	1.1	111.5	0.03*	-0.404
	Guilt and shame	3.0	1.4	3.2	1.3	174.0	0.72	-0.070
	Incomprehensibility	4.3	1.1	3.9	0.9	239.0	0.14	0.278
	Invalidation	3.0	0.8	3.0	0.9	197.0	0.78	0.053
	Lack of Control	4.9	1.0	4.1	1.2	258.0	0.04*	0.380
	Low Consensus	3.7	0.9	3.8	0.6	181.5	0.88	-0.029
	Low Expression	4.2	0.7	4.3	0.9	169.5	0.62	-0.094
	Non-Acceptance of Feelings	4.5	0.9	4.2	0.8	222.0	0.32	0.187
	Numbness	3.2	1.2	3.1	0.9	200.5	0.70	0.072
	Rumination	4.7	1.0	5.3	0.7	109.5	0.02*	-0.414
	Simplistic View of Emotion	4.9	1.2	4.8	1.1	199.5	0.72	0.067
Anxiety, Depression and Stress Scale (DASS-21)	Anxiety	17.0	9.9	18.1	9.3	173.5	0.71	-0.072
	Depression	17.1	9.2	21.1	12.0	154.0	0.35	-0.176
	Stress	25.8	8.6	26.2	8.2	177.0	0.78	-0.053

Note. For the Mann-Whitney test, effect size is given by the rank biserial correlation. Mann-Whitney U Test. $p > .05$

Table 5 presents the comparison of Emotional Regulation (ER) and mental health factors between the intervention and control groups after the intervention procedure. A significant difference in ER and mental health factors was observed in 10 out of the 25 compared factors.

Participants who did not undergo the intervention showed a greater belief that little can be done to effectively regulate emotions (limited access to ER strategies), U = 270, mean *(SD)* = 20.7 (6.1), $p = 0.01$. They also exhibited increased difficulty in controlling impulses, U = 258, mean *(SD)* = 14.5 (5.3), $p = 0.04$, delays in recognizing the emotion being experienced (lack of emotional clarity) (U = 273.5, mean *(SD)* = 12.8 (2.4), $p = 0.01$, and delays in perceiving and being aware of emotional responses (lack of emotional awareness), U = 267.5, mean *(SD)* = 18.0 (5.8), $p = 0.02$.

Additionally, those in the control group had poorer indices in accepting emotions (non-acceptance), U = 294, mean *(SD)* = 15.1 (5.8), $p < 0.01$, and more difficulty recognizing that their emotions were justified and not caused by another person's actions or their absence (accusation), U = 274, mean *(SD)* = 4.5 (0.9), $p = 0.01$. They also struggled with allowing themselves to feel emotions (lack of control), U = 286, mean *(SD)* = 4.0 (1.3), $p < 0.01$.

Furthermore, higher levels of anxiety, U = 291.5, mean *(SD)* = 13.1 (8.0), $p < 0.01$, depression, U = 263, mean *(SD)* = 13.0 (8.8), $p = 0.03$, and stress, U = 302.5, mean *(SD)* = 21.6 (9.9), $p < 0.01$ were observed in those who did not participate in the intervention.

Table 5. Comparison between the control group and intervention group after the intervention

AFTER THE INTERVENTION								
Scale		**Control Group (*n* = 22)**		**Intervention Group (*n* = 17)**		***W***	***p***	**Rank-Biserial Correlation**
		M	*SD*	*M*	*SD*			
Difficulties in Emotion Regulation Scale (DERS)	Difficulty engaging in goal-directed behaviour	15.4	4.6	14.6	4.3	210.0	0.523	0.123
	Impulse control difficulties	14.5	5.3	11.4	4.5	258.0	0.045*	0.380
	Lack of awareness	18.0	5.8	13.9	5.1	267.5	0.023*	0.430
	Lack of emotional clarity	12.8	2.4	10.8	3.0	273.5	0.014*	0.463
	Limited access to strategies	20.7	6.1	15.8	5.1	270.0	0.019*	0.444
	Non-acceptance of emotional response	15.1	5.8	10.1	5.1	294.0	0.002*	0.572
Emotion Regulation Questionnaire (ERQ)	Cognitive reappraisal	5.9	4.0	4.6	1.3	220.5	0.349	0.179
	Emotional suppression	3.6	1.5	2.8	1.2	250.0	0.076	0.337
Leahy Emotional Schemas Scale (LESS-II)	Accusation	4.5	0.9	3.5	1.2	274.0	0.014*	0.465
	Disconnection from values	4.9	0.9	4.6	1.1	212.0	0.477	0.134
	Duration	3.4	1.3	2.9	1.0	234.0	0.184	0.251
	Excessive Rationality	3.4	1.2	3.0	1.3	223.0	0.310	0.193
	Guilt and shame	2.6	1.4	2.0	1.0	233.0	0.191	0.246
	Incomprehensibility	3.3	1.2	2.9	1.1	219.5	0.360	0.174
	Invalidation	3.1	0.8	3.0	0.7	209.0	0.534	0.118
	Lack of Control	4.0	1.3	2.8	1.2	286.0	0.005*	0.529
	Low Consensus	3.7	0.6	3.7	0.5	174.0	0.713	-0.070
	Low Expression	4.7	0.7	5.0	0.7	148.5	0.269	-0.206
	Non-Acceptance of Feelings	4.1	0.8	3.7	0.5	234.5	0.170	0.254
	Numbness	2.9	1.3	2.7	1.3	202.0	0.678	0.080
	Rumination	4.0	1.2	3.5	1.0	242.0	0.117	0.294
	Simplistic View of Emotion	4.8	1.0	4.5	1.3	203.5	0.643	0.088
Depression Anxiety Stress Scale (DASS-21)	Anxiety	13.1	8.0	6.4	7.4	291.5	0.003*	0.559
	Depression	13.0	8.8	7.1	6.2	263.0	0.031*	0.406
	Stress	21.6	9.9	11.4	7.4	302.5	0.001*	0.618

Note. For the Mann-Whitney test, effect size is given by the rank biserial correlation. Mann-Whitney U Test

Table 6 presents the results of the comparison of the control group at two different time points, highlighting the effect of time passage. The findings indicate that 5 out of the 25 items analysed showed significant differences over time.

The Wilcoxon Signed Rank Tests revealed that difficulty in maintaining goal-directed behaviours increased over time (mean *(SD)* = 17.6 (6.8), $p < 0.01$; $r = 0.80$), as did low emotional expression (mean *(SD)* = 4.7 (0.7), $p = 0.02$; $r = -0.58$) at the second assessment. On the other hand, decreases were observed in lack of control (mean *(SD)* = 4.9 (1.0), $p = 0.01$; $r = 0.68$), incomprehensibility (mean *(SD)* = 3.3 (1.2), $p < 0.01$; $r = 0.68$), and rumination (mean *(SD)* = 4.0 (1.2), $p = 0.04$; $r = 0.55$) at the follow-up assessment.

Table 6. Comparison of the control group at two different times

Control group (n = 22)								
SCALE		**First Data Collection**		**Second Data Collection**		***W***	***p***	**Rank-Biserial Correlation**
		M	*SD*	*M*	*SD*			
Difficulties in Emotion Regulation Scale (DERS)	Difficulty engaging in goal-directed behaviour	17.6	6.8	14.5	5.3	167.5	0.07	0.450
	Impulse control difficulties	19.2	4.9	15.4	4.6	189.0	0.00*	0.800
	Lack of awareness	16.6	5.8	18.0	5.8	93.0	0.28	-0.265
	Lack of emotional clarity	14.5	5.1	12.8	2.4	159.0	0.13	0.377
	Limited access to strategies	23.7	5.4	20.7	6.1	181.0	0.07	0.431
	Non-acceptance of emotional response	17.0	6.8	15.1	5.8	163.5	0.09	0.416
Emotion Regulation Questionnaire (ERQ)	Cognitive reappraisal	4.6	1.5	5.9	4.0	75.0	0.16	-0.351
	Emotional suppression	3.8	1.2	3.6	1.5	145.5	0.54	0.150
Leahy Emotional Schemas Scale (LESS-II)	Accusation	4.3	1.1	4.5	0.9	70.0	0.50	-0.181
	Disconnection from values	4.4	1.1	4.9	0.9	30.5	0.09	-0.492
	Duration	3.2	1.3	3.4	1.3	77.5	0.49	-0.184
	Excessive Rationality	3.6	1.3	3.4	1.2	118.0	0.36	0.242
	Guilt and shame	3.0	1.4	2.6	1.4	117.0	0.17	0.368
	Incomprehensibility	4.3	1.1	3.3	1.2	160.5	0.00*	0.689
	Invalidation	3.0	0.8	3.1	0.8	52.0	0.66	-0.133
	Lack of Control	4.9	1.0	4.0	1.3	128.5	0.01*	0.680
	Low Consensus	3.7	0.9	3.7	0.6	85.0	0.69	0.111
	Low Expression	4.2	0.7	4.7	0.7	44.0	0.02*	-0.581
	Non-Acceptance of Feelings	4.5	0.9	4.1	0.8	101.0	0.25	0.320
	Numbness	3.2	1.2	2.9	1.3	145.5	0.30	0.260
	Rumination	4.7	1.0	4.0	1.2	132.5	0.04*	0.550
	Simplistic View of Emotion	4.9	1.2	4.8	1.0	84.0	0.73	0.098
Depression Anxiety Stress Scale (DASS-21)	Anxiety	17.0	9.9	13.1	8.0	142.0	0.17	0.352
	Depression	17.1	9.2	13.0	8.8	153.5	0.19	0.329
	Stress	25.8	8.6	21.6	9.9	174.5	0.12	0.379

Note. Wilcoxon signed-rank test. $p > 0.05$

In the analysis of the intervention group across three time points (before, immediately after the intervention, and at follow-up), six variables required the Greenhouse-Geisser sphericity correction: guilt and shame, lack of control (LESS-II); anxiety (DASS-21); life goals and self-acceptance (EBEP); and dissatisfaction with life (EBES).

After correcting for sphericity, a Friedman ANOVA was performed to examine the changes in factors related to Emotional Regulation (ER), mental health (MH), and well-being (BE) over time (see Table 7). The results indicated that all six factors on the Difficulties in Emotion Regulation Scale (DERS) were statistically significant.

Table 7. Comparison of the results of the intervention group before, immediately after the intervention, and at follow-up

Intervention group (n = 17)									
SCALE		**Before the intervention**		**After the intervention**		**Follow-up**		***p***	**Kendall's W**
		M	***SD***	***M***	***SD***	***M***	***SD***		
Difficulties in Emotion Regulation Scale (DERS)	Difficulty engaging in goal-directed behaviour	16.3	6.8	11.4	4.5	10.0	3.3	.00*	0.367
	Impulse control difficulties	20.5	3.1	14.6	4.3	13.7	4.4	< .001*	0.555
	Lack of awareness	17.2	4.5	13.9	5.1	10.5	3.5	< .001*	0.416
	Lack of emotional clarity	15.1	3.3	10.8	3.0	9.1	2.5	< .001*	0.696
	Limited access to strategies	25.2	6.9	15.8	5.1	14.1	4.7	< .001*	0.757
	Non-acceptance of emotional response	19.9	4.6	10.1	5.1	10.0	4.1	< .001*	0.718
Emotion Regulation Questionnaire (ERQ)	Cognitive reappraisal	4.5	1.3	4.6	1.3	4.7	1.6	0.36	0.059
	Emotional suppression	4.1	1.6	2.8	1.2	2.5	1.3	< .001*	0.407
Leahy Emotional Schemas Scale (LESS-II)	Accusation	4.5	0.8	3.5	1.2	3.5	0.9	0.02*	0.226
	Disconnection from values	4.5	1.0	4.6	1.1	5.1	0.8	.198	0.095
	Duration	3.1	1.0	2.9	1.1	2.1	0.9	.00*	0.276
	Excessive Rationality	4.5	1.1	3.0	1.3	2.6	1.1	< .001*	0.433
	Guilt and shame	3.2	1.3	1.9	0.9	1.2	0.5	< .001*	0.623
	Incomprehensibility	3.9	0.9	2.9	1.0	2.3	1.0	< .001*	0.568
	Invalidation	3.0	0.9	2.9	0.6	2.9	0.5	.78	0.014
	Lack of Control	4.1	1.2	2.8	1.2	2.0	1.1	< .001*	0.426
	Low Consensus	3.8	0.6	3.7	0.5	3.5	0.8	0.05*	0.171
	Low Expression	4.3	0.9	4.9	0.7	5.0	0.8	0.05*	0.174
	Non-Acceptance of Feelings	4.2	0.8	3.7	0.5	3.5	0.7	.00*	0.379
	Numbness	3.1	0.9	2.7	1.3	2.5	0.8	.14	0.113
	Rumination	5.3	0.7	3.5	1.0	3.5	1.2	< .001*	0.684
	Simplistic View of Emotion	4.8	1.0	4.5	1.3	4.7	1.2	.31	0.067
Depression Anxiety Stress Scale (DASS-21)	Anxiety	18.1	9.3	6.5	7.5	5.7	9.1	< .001*	0.608
	Depression	21.1	12.0	7.1	6.2	7.0	8.7	< .001*	0.651
	Stress	26.2	8.2	11.2	7.5	11.0	7.6	< .001*	0.706
Brief Psychological Well-Being Scale (BPWS)	Autonomy	9.0	3.6	10.5	3.6	10.9	4.0	.13	0.117
	Environmental Mastery	7.3	2.9	10.0	3.0	10.9	3.0	.00*	0.301
	Life Goals	12.2	2.9	14.3	2.5	15.0	2.6	< .001*	0.418
	Personal Growth	14.5	2.2	15.7	2.3	16.1	1.9	.07	0.153
	Positive Relationships with Others	10.5	3.7	11.9	3.6	12.1	3.5	.22	0.087
	Self-acceptance	10.7	3.7	14.1	3.3	14.7	3.0	< .001*	0.601
	Total Psychological Well-Being Psychological	64.5	12.0	76.7	11.9	79.8	10.9	< .001*	0.596
Subjective Well-Being Scale (SWS)	Dissatisfaction with life	22.9	6.6	18.1	6.5	16.7	6.8	< .001*	0.452
	Life satisfaction	25.1	5.7	28.8	6.2	29.8	5.6	.02*	0.224
	Negative affects	78.8	17.1	53.0	14.2	47.3	11.6	< .001*	0.540
	Positive affects	54.8	15.5	68.8	15.3	70.7	14.5	.00*	0.315

Note. *Friedmann Test*; $p > 0.05$.

Limited Access to ER Strategies: The Chi-square test, $\chi^2(2) = 25.754$, $p < 0.001$, W = 0.757, revealed significant differences, with the mean score being higher before the intervention (M *(SD)* = 25.2 (6.9)) compared to immediately after, M *(SD)* = 15.8 (5.1), $p < 0.001$, $r = 3.952$, and at follow-up, M *(SD)* = 14.1 (4.7), $p < 0.001$, $r = 4.743$). There was no significant change between post-intervention and follow-up.

Difficulty in Controlling Impulses: The mean score was significantly higher before the intervention (M *(SD)* = 16.3 (6.8)) than immediately after, M *(SD)* = 11.4 (4.3), $p = 0.038$, $r = 2.162$ and at follow-up, M *(SD)* = 10.0 (3.3), $p = 0.001$, $r = 3.513$. No significant change was observed between post-intervention and follow-up.

Difficulty in Maintaining Goal-Directed Behaviour: Significant differences were observed, $\chi^2(2) = 18.875$, $p < 0.001$, W = 0.555, with the mean score higher before the intervention, M *(SD)* = 20.5 (3.1), compared to immediately after, M *(SD)* = 14.6 (4.3), $p = 0.002$, $r = 3.365$, and at follow-up, M *(SD)* = 10.0 (4.1), $p < 0.001$, $r = 4.074$, with no significant change be-tween post-intervention and follow-up.

Lack of Emotional Clarity: The mean score significantly decreased from before the intervention, M *(SD)* = 15.1 (3.3), to immediately after, M *(SD)* = 10.8 (3.0), $p < 0.001$, $r = 3.716$, and at follow-up, M *(SD)* = 9.1 (2.5), $p < 0.001$, $r = 4.581$, with no significant change be-tween post-intervention and follow-up.

Lack of Emotional Awareness and Non-Acceptance of Emotional Response: Significant improvements were observed post-intervention, particularly in reducing non-acceptance of emotional responses from before the intervention to follow-up.

Emotion Regulation Questionnaire (ERQ) - Suppression Factor: Significant reductions were found, $\chi^2(2) = 13.841$, $p < 0.001$, W = 0.407, from before the intervention, M *(SD)* = 4.1 (1.6), to immediately after, M *(SD)* = 2.8 (1.2), $p = 0.005$, $r = 3.037$, and at follow-up, M *(SD)* = 2.5 (1.3), $p = 0.002$, $r = 3.394$.

Leahy Emotional Schema Scale II (LESS-II): Nine of the fourteen factors showed statistically significant changes, particularly in blame, low expression, and guilt and shame, indicating improvements in emotional regulation strategies post-intervention.

DASS-21 Scale for Anxiety, Depression, and Stress: All three factors showed statistically significant improvements, with a marked decrease in symptoms of anxiety and depression from before the intervention to follow-up.

Psychological Well-Being Scale (BPWS). In the intervention group, several dimensions of psychological well-being showed significant improvements over time (Table 7). Life goals increased from 12.2 ($SD = 2.9$) before the intervention to 14.3 ($SD = 2.5$) after the intervention and 15.0 ($SD = 2.6$) at follow-up, with a significant time effect ($p < .001$, Kendall's W = 0.418). Self-acceptance also increased substantially, from 10.7 ($SD = 3.7$) at baseline to 14.1 ($SD = 3.3$) post-intervention and 14.7 ($SD = 3.0$) at follow-up, again with a significant time effect ($p < .001$, Kendall's W = 0.601). Consistent with these findings, the total BPWS score rose from 64.4 ($SD = 12.0$) to 76.7 ($SD = 11.9$) and 79.8 ($SD = 10.9$), with a significant time effect ($p < .001$, Kendall's W = 0.596), indicating a broad enhancement in psychological well-being among participants in the intervention group.

Subjective Well-Being Scale (SWS). The intervention group also showed significant changes in subjective well-being over time (Table 7). Dissatisfaction with life decreased from 22.9 ($SD = 6.6$) before the intervention to 18.1 ($SD = 6.5$) after the intervention and 16.7 ($SD = 6.8$) at follow-up, with a significant time effect, $p < .001$, Kendall's W = 0.452. Negative affects scores decreased markedly from 78.8 ($SD = 17.1$) at baseline to 53.0 ($SD = 14.2$) post-intervention and 47.3 ($SD = 11.6$) at follow-up, $p < .001$, Kendall's W = 0.540, indicating reduced negative emotionality. Positive affects increased from 54.8 ($SD = 15.5$) to 68.8 ($SD = 15.3$) and 70.7 ($SD = 14.4$), with a significant time effect, $p = .001$, Kendall's W = 0.315, reflecting higher levels of positive emotions after the intervention and at follow-up.

These results highlight the effectiveness of the intervention in significantly improving various aspects of emotional regulation, mental health, and well-being over time.

DISCUSSION

This study examined the efficacy of an emotion regulation–based intervention delivered via a digital platform to improve university students' capacity to manage emotions. Before the intervention, the control and intervention groups differed significantly in only three of the 25 factors assessed, indicating that baseline disparities in emotion regulation were present but not widespread. After the intervention, significant between-group differences emerged in ten of the 25 factors, suggesting a robust impact of the programme on the targeted processes.

Students who did not receive the intervention tended to endorse stronger beliefs that emotions are difficult or impossible to regulate, reported greater difficulty responding to emotions without acting impulsively, and showed more delays in recognizing and becoming aware of their emotional experiences. This pattern is consistent with evidence that maladaptive regulation strategies, such as experiential

avoidance and poor emotional awareness, contribute to ineffective emotional management and increased vulnerability to psychopathology.

The control group also showed greater difficulty accepting their emotions as valid experiences, without attributing them primarily to the actions or omissions of others, and reported more problems allowing themselves to experience emotions, indicating marked resistance to emotional acceptance. In parallel, this group presented higher levels of anxiety, depression, and stress over time, illustrating how inadequate emotion-regulation skills can be associated with worsening psychological symptoms in the absence of targeted intervention.

In contrast, participants in the intervention group demonstrated significant improvements in all six dimensions of the Difficulties in Emotion Regulation Scale (DERS), including limited access to regulation strategies, impulse control difficulties, problems maintaining goal-directed behaviour, lack of emotional clarity, lack of emotional awareness, and non-acceptance of emotional responses. These changes reflect a broader increase in adaptive emotion regulation capacities and are consistent with models that conceptualize these processes as transdiagnostic mechanisms in emotional disorders.

The intervention group also showed reductions in expressive suppression and in several maladaptive emotional schemas, such as tendencies toward blame, low emotional expression, low perceived consensus, guilt and shame, lack of control, and rumination. Complementing these findings, scores on the DASS-21 indicated decreases in anxiety, depression, and stress in the intervention group, whereas the control group did not show similar improvements. Together, these results support the conclusion that the programme was effective in enhancing emotion-regulation skills and reducing adverse psychological symptoms, reinforcing the relevance of emotion regulation–based interventions for promoting mental health in university students.

The initial profile of participants indicated that many students believed little could be done to effectively regulate their emotions and tended to respond impulsively to emotional stimuli. Such patterns are consistent with evidence that emotion regulation is closely linked to academic functioning, with poorer regulation predicting worse academic performance, higher perceived stress, and more maladaptive coping strategies (Andrés et al., 2017; Usán Supervía & Quílez Robres, 2021). Difficulties in regulating emotions therefore appear to affect not only students' mental health, but also their engagement, motivation, and performance in the academic context.

Recent studies have also highlighted other factors associated with the mental health of university students, such as limited mental health literacy and reduced engagement in learning and leisure activities (Campbell et al., 2022). In line with this, research has shown that mindful-ness and emotion-regulation skills are associated with lower psychological distress in this population, with higher mindfulness scores predicting fewer symptoms (Ünlü Kaynakçı & Yerin Güneri, 2023). Taken together, these findings suggest that interventions that explicitly target emotion regulation and related competencies may play a central role in protecting university students' mental health.

In the present study, observations of the control group over time showed that, although some aspects of emotion regulation changed with the mere passage of time, the pattern was mixed and not uniformly positive. Difficulties in maintaining goal-directed behaviour and low emotional expression increased, whereas lack of control, incomprehensibility, and rumination decreased. This heterogeneous pattern reinforces the idea that spontaneous changes are insufficient and that structured, targeted interventions are needed to foster more adaptive emotion regulation profiles, with potential benefits for both academic and mental health outcomes.

By contrast, the intervention group showed improvements in all six DERS dimensions, as well as reductions in emotional suppression and in several maladaptive emotional schemas captured by the LESS-II (e.g., blame, low emotional expression and consensus, guilt and shame, lack of control, and rumination), alongside decreases in depression, anxiety, and stress on the DASS-21. These results converge with findings from online emotion-regulation programmes that have demonstrated reductions in depressive mood and perceived stress and sustained gains in self-compassion and regulation skills among young adults (Chen, 2024). They are also consistent with studies using video-based training that reported increases in cognitive reappraisal, reductions in suppression, and lower frustration and anxiety in university students (Engelmann & Bannert, 2019), supporting the potential of online interventions to enhance emotion regulation competencies.

The content of the present intervention was designed to target specific skills: psychoeducation about emotions, emotional awareness and clarity, impulse control, emotional acceptance, flexibility, and cognitive reappraisal. Psychoeducation can help students understand the functions and components of emotions and thereby regulate them more effectively (Lemes & Ondere Neto, 2017). Emotional awareness and clarity enable individuals to recognize and differentiate their emotional states in the moment, which facilitates more deliberate and balanced responses (Tasneem & Panwar, 2022; Wang et al., 2023).

Emotional acceptance—acknowledging emotions without avoidance or suppression—has been identified as an adaptive regulation strategy associated with better psychological outcomes (Lu et al., 2022), while flexibility and cognitive reappraisal, by promoting alternative perspectives on stressful situations, are key mechanisms for modifying emotional responses (Riepenhausen et al., 2022).

Overall, the pattern of results in this study and in the broader literature highlights the im-portance of educational and therapeutic strategies focused on emotion regulation for students' personal and academic development. Online emotion-regulation interventions have shown promising effects in improving regulatory skills and reducing distress among university students, although their impact may vary depending on adherence and engagement with the pro-gram. In the present intervention, participants not only improved across all dimensions of emotion regulation, but also showed reductions in anxiety, depression, and stress, as well as increases in psychological and subjective well-being, including self-acceptance, environmental mastery, life goals, positive affect, and life satisfaction, together with reduced negative affect and dissatisfaction with life. These findings align with evidence that emotion regulation is a central determinant of well-being (Kraiss et al., 2020; Santana & Gondim, 2016) and with studies showing that broader emotional repertoires and more adaptive regulation strategies are associated with better mental health (Colombo et al., 2020; Batista & Noronha, 2018; Nelis et al., 2011).

In contrast, students who did not receive the intervention did not exhibit meaningful improvements in emotion regulation or in levels of depression, anxiety, and stress across assessment points, which suggests that the changes observed in the intervention group are unlikely to be attributed to time effects alone. Together, these findings indicate that the programme effectively supported more adaptive emotion regulation, greater emotional awareness and clarity, increased openness to emotional experience, and better impulse control in the face of intense emotions, resulting in lower psychological distress and higher well-being in university students.

Several limitations of this study should be acknowledged when interpreting the findings. First, the non-randomized design and allocation of participants to groups based on time availability may have introduced selection bias and limit the strength of causal inferences. Although the intervention and control groups were largely comparable at baseline on most emotion regulation and mental health measures, unmeasured variables such as motivation for change or previous help-seeking may have differed between groups.

Second, some participants allocated to the control group attended up to two intervention sessions before discontinuing, which may have partially contaminated the comparison between conditions. Although these participants were kept in the control group to preserve sample size, brief exposure to the intervention content could have attenuated differences between groups and led to conservative estimates of the programme's effects.

Third, all outcomes were assessed using self-report instruments, which are subject to shared-method variance, social desirability, and recall bias, and do not capture behavioural or physiological indicators of emotion regulation. The relatively short follow-up period (30 days) also prevents conclusions about the long-term maintenance of gains.

Finally, the sample consisted predominantly of women, students from private institutions, and residents of a single Brazilian state, which may restrict the generalizability of the results to other regions, public universities, or more diverse student populations in terms of gender, socioeconomic status, and cultural background.

Another limitation concerns the analytical strategy. Because of the small final sample and the exploratory nature of the study, non-parametric tests were used. However, this approach required multiple univariate comparisons across several outcomes and time points, increasing the possibility of chance findings. Future studies with larger samples should use linear mixed-effects models to test group-by-time interactions, handle missing data more appropriately, and estimate intervention effects with confidence intervals and sensitivity analyses.

Future research should prioritize fully randomized controlled trials with larger and more heterogeneous samples of university students, including participants from different regions, public and private institutions, and diverse socioeconomic backgrounds. Such designs would allow stronger causal inferences about the effects of emotion regulation interventions and would help clarify for whom and under which conditions these programmes are most effective.

It would also be valuable to extend follow-up assessments beyond 30 days to examine the durability of changes in emotion regulation, symptoms, and well-being, and to test whether booster sessions or online maintenance modules are necessary to sustain gains over time. Future studies could incorporate behavioural tasks, ecological momentary assessment, or third-party reports (e.g., peers, teachers) to complement self-report measures and provide a more comprehensive picture of emotion regulation in daily life.

In addition, dismantling or component-based designs could be used to identify which elements of the programme—such as psychoeducation, monitoring of emotional episodes, acceptance-based exercises, or cognitive reappraisal training—contribute most strongly to change. Finally, it would be important to adapt and test the intervention in different formats (e.g., fully self-guided, blended with individual counselling, or integrated into curricular activities) and de-livery platforms, to evaluate feasibility, engagement, and cost-effectiveness in real-world university settings.

In conclusion, this study provides evidence that a brief, synchronous, online group intervention focused on emotion regulation can improve key regulatory processes, reduce symptoms of depression, anxiety, and stress, and enhance psychological and subjective well-being among university students. By targeting transdiagnostic mechanisms such as emotional aware-ness, acceptance, impulse control, and cognitive reappraisal, the programme appears to offer a feasible and scalable strategy for promoting mental health in higher education settings. Despite the methodological limitations noted, the findings highlight the potential value of incorporating emotion regulation–based interventions into university mental health services and underscore the need for further rigorous research to refine, expand, and implement such programmes on a larger scale.

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Historial do artigo

Recebido	13/11/2024
Aceite	26/05/2026
Publicado online	-
Publicado	04/07/2026