**RESEARCH ARTICLE**

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# Unified protocol in online group versus blended format for treating emotional disorders in university students: Preliminary results on feasibility at 6-month follow-up

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**Abstract**

**Introduction:** Emotional Disorders (EDs) are highly prevalent among university students, with only a small percentage (16.4%) receiving treatment. This study examines the feasibility and acceptability of delivering the Unified Protocol (UP) in two scalable formats and explores preliminary clinical outcomes in a university student population.

**Methods:** Thirty-five university students (80% women, mean age = 21.29 years, SD = 1.87) with primary diagnoses of EDs were randomly assigned to either the blended-UP condition ($n = 18$) or the synchronous online UP condition ($n = 17$). The intervention involved 8 UP modules, delivered as either 9 weekly 2-h synchronous online group sessions or a blended format (4 synchronous online group sessions for modules 1, 4, 6 and 7+ autonomous work via the UP-APP). Depression, anxiety, transdiagnostic variables, difficulties in emotion regulation, maladjustment and quality of life were assessed at baseline, post-treatment and at 3- and 6-month followups. Satisfaction with the intervention received was also measured.

**Results:** Statistically significant changes were observed over time (main effect of time) for all evaluated variables (except in quality of life and positive temperament), with no 'Time × Condition' interaction, meaning that the scores evolved similarly in both conditions. Participants reported

high satisfaction scores (8.91/10 in the blended condition and 9.38/10 in the synchronous online UP condition) and rated highly how the intervention had helped them to properly regulate their emotions (8.83/10 in the blended condition and 9.00/10 in the synchronous online UP condition). **Conclusions:** This study demonstrates that both the blended and synchronous online group formats of the UP are feasible and well accepted by university students, with associated improvements in emotional symptoms, and that the UP in these formats could be an efficient alternative to address the high demand for mental health support among university students.

## INTRODUCTION

In recent years, psychotherapy has advanced towards the implementation of transdiagnostic treatments, focused on the common mechanisms present in different mental health problems that are directly related to their onset and maintenance (Sauer-Zavala et al., 2017), among which the Unified Protocol (UP) for the Transdiagnostic Treatment of Emotional Disorders stands out. This intervention, developed by Barlow's research team, is based on cognitive behavioural therapy and aims at training in adaptive emotional regulation strategies (Barlow et al., 2018).

To date, six systematic reviews, five of them meta-analyses, have amply demonstrated the efficacy of the UP (Ayuso-Bartol et al., 2024; Carlucci et al., 2021; Cassiello-Robbins et al., 2020; Longley & Gleiser, 2023; Sakiris & Berle, 2019; Schaeuffele et al., 2024). In addition, the UP has also shown promising effectiveness when delivered in applied and routine-care formats, such as group-based interventions (Peris-Baquero & Osma, 2023) and online formats (Schaeuffele et al., 2022).

Regarding group and online formats, the development of such cost-effective intervention formats has been a significant advance in psychotherapy. These options present key advantages, such as reduced costs, expanded access to psychological care and the possibility of adaptation to different contexts and populations (Peris-Baquero et al., 2023; Stoll et al., 2020). In line with these advances, with the increased use of smartphones and apps in the last decade, the incorporation of smartphone applications in the field of psychological interventions has also emerged as a potentially cost-effective treatment format (Badesha et al., 2023; Miralles et al., 2020). However, the efficacy of these types of apps for the treatment of mental health problems is still inconclusive (Lu et al., 2022), and previous research suggests that combining digital tools with therapist guidance, commonly referred to as blended formats, may yield more consistent outcomes (Weisel et al., 2019).

Blended interventions have been associated with several advantages, such as boosting patient compliance, increasing the treatment dose and improving the transfer of content seen in sessions with the therapist into daily life (Kooistra et al., 2016). In addition, blended formats could also help to reduce dropout rates, save professionals' time and maintain or even increase face-to-face treatment outcomes (Erbe et al., 2017). In this regard, available evidence indicates that blended cognitive–behavioural interventions can achieve effectiveness comparable to face-to-face treatments for anxiety disorders (Leterme et al., 2020). In the case of major depressive disorder, pilot studies suggest that blended formats are feasible and acceptable and are associated with promising preliminary clinical outcomes (van Schaik et al., 2023). Overall, blended psychological interventions represent a promising approach to

enhance the efficiency and reach of evidence-based treatments while supporting clinically meaningful improvements.

A specific population that could particularly benefit from a transdiagnostic approach and cost-effective treatment formats is university students. Emotional disorders (EDs)—including anxiety, mood and related disorders (Bullis et al., 2019)—are highly prevalent in this group worldwide, with data ranging from 18.6% to 39% for generalised anxiety disorder and 21.2% to 33.6% for major depressive disorder (Auerbach et al., 2016; Auerbach et al., 2019; Li et al., 2022). Although these data were collected prior to the COVID-19 pandemic, recent findings suggest a notable increase in social anxiety and obsessive-compulsive symptoms among university students in the aftermath (e.g., Soler et al., 2025).

Despite the high prevalence of EDs, only 16.4% of students experiencing a mental health disorder receive treatment (Auerbach et al., 2016), highlighting a substantial treatment gap. Moreover, university Psychological Care Services (PCS) are experiencing growing demand (Auerbach et al., 2019; Soler et al., 2025; Tabor et al., 2021), which further underscores the importance of exploring innovative strategies to optimise available resources.

An additional advantage of implementing the UP in university settings is that it has been designed to be delivered by therapists with different levels of clinical experience, including graduate students (Ellard et al., 2010). In these services, it is common for treatment to be provided by master's or doctoral students, who often have limited clinical training. The UP is particularly well suited for this context, as it targets a broad range of EDs, conditions that are highly prevalent among university students (Auerbach et al., 2019; Li et al., 2022). Moreover, the blended format provides a structured and standardised intervention process, which can support protocol adherence and improve treatment fidelity, especially when implemented by less experienced therapists (Romijn et al., 2021).

In this direction, regarding the application of the UP in the university context, six studies can be found, five with a preventive approach and one with a clinical sample. On the one hand, regarding the studies with a preventive approach, all of them applied adaptations of the UP in groups, but with different application formats (online, face-to-face) and different numbers of sessions (from 1 group session to 12 weekly sessions), obtaining results that indicate that brief programmes based on the UP could be useful for preventing EDs in this population (Arrigoni et al., 2021; Bentley et al., 2018; Castro-Camacho et al., 2022; Sauer-Zavala et al., 2021; Socías-Soler et al., 2024). Finally, regarding the only study in which the UP was applied in a clinical sample of university students, this was carried out at the PCS of the University of the Balearic Islands and consisted of the application of the UP in individual and face-to-face format to 17 students with an ED diagnosis. After the intervention, encouraging results were obtained, indicating that the UP may be a useful intervention for the treatment of EDs in university PCS, with only two participants maintaining the diagnosis of ED after the intervention and reductions in depressive and anxious symptomatology in all but one participant (Socias-Soler et al., 2022). From the six studies, only two used a randomised controlled trial (RCT) design, but with a non-active comparison condition, such as waitlist (Sauer-Zavala et al., 2021) or assessment-only condition (Bentley et al., 2018), highlighting the need for further controlled studies in this context that include an active comparison condition.

Despite the growing evidence supporting the UP and the increasing interest in scalable and technology-enhanced delivery formats, important uncertainties remain regarding their real-world implementation in university PCS. In particular, it is not yet clear whether synchronous online group and blended delivery formats can be feasibly implemented and are acceptable to university students with EDs within routine-care settings, where resources are limited, therapist experience may vary and engagement with digital tools cannot be assumed. Moreover, evidence on the implementation of these formats in Spanish university contexts remains scarce. Addressing these uncertainties is a necessary step prior to conducting fully powered trials focused on effectiveness.

In view of the above, taking into account the need to implement services that improve the availability and access to the treatment of EDs in the university context, as well as the advantages of transdiagnostic interventions and cost-effective delivery formats, the present study primarily aims to evaluate the feasibility and acceptability of delivering the UP in two scalable formats: synchronous online group and

blended delivery (online group sessions combined with an UP-based mobile application). These formats were selected because, while both retain the core therapeutic components of the UP, they differ in the degree of therapist involvement, as the blended format partially replaces therapist-led group sessions with app-based modules, potentially reducing therapist time and staffing demands. As a secondary aim, the study explores preliminary clinical outcomes associated with both formats, including changes in emotional symptomatology, as well as adherence and satisfaction indicators, to inform the design of future fully powered RCTs.

## METHOD

### Participants

Our sample was composed of 35 participants (80.0% women), with a mean age of 21.29 years (SD = 1.87, range 18–27). All participants were students attending the PCS of the University of Córdoba (Spain). In terms of principal diagnosis, the most frequent condition was generalised anxiety disorder (42.9%), followed by adjustment disorder (34.3%) and social anxiety disorder (17.1%). Up to 48.57% of participants presented a comorbid secondary diagnosis. The remaining sociodemographic information can be found in Table 1.

This study was designed as a pilot RCT, and the sample size was consistent with recommendations for preliminary testing of feasibility and initial efficacy of psychological interventions (Leon et al., 2011; Whitehead et al., 2016).

The eligibility criteria were: (1) be enrolled at the University of Córdoba (Spain), in any of the degrees; (2) have a diagnosis of an ED (major depressive disorder, dysthymia, panic disorder, agoraphobia, generalised anxiety disorder, social anxiety disorder, illness anxiety disorder, adjustment disorders and unspecified anxiety and depressive disorders) assessed by the Structured Interview for Anxiety and Related Disorders (ADIS-5; Brown & Barlow, 2014), according to the Diagnostic and Statistical Manual of Mental Disorders (5th ed., text rev.; DSM-5-TR; American Psychiatric Association [APA], 2022); (3) be at least 18 years; (4) be fluent in Spanish; (5) have a technological device (computer, tablet, mobile phone) with internet connection; (6) have a smartphone device with Android 8 or higher operating system; (7) in case of taking pharmacological treatment for the treatment of the ED, maintenance of the same doses and medications for at least 3 months before starting their participation in the study and during the whole treatment; (8) signing the informed consent form.

Exclusion criteria included: (1) present a diagnosis of obsessive-compulsive disorder or post-traumatic stress disorder; (2) present a severe condition that requires priority for treatment, such as a severe mental disorder (e.g., personality disorder, schizophrenia, an organic mental disorder), suicide risk at the time of assessment or substance abuse in the last 3 months.

Although post-traumatic stress disorder and obsessive-compulsive disorder are included in the group of EDs (Bullis et al., 2019), both were excluded due to their specific clinical characteristics and treatment requirements, which often involve additional individualised sessions. Although the UP has been applied to these conditions, their inclusion in brief and intense interventions with eight therapy sessions in a synchronous online group and blended formats within a university routine-care setting could have introduced additional clinical complexity and safety considerations, potentially compromising group homogeneity and feasibility.

### Measures

In accordance with implementation research frameworks (Proctor et al., 2011), the present study assessed feasibility, acceptability and preliminary clinical outcomes. Feasibility was evaluated using

**TABLE 1** Sociodemographic characteristics of the participants of the total sample ($N=35$), the synchronous online UP condition participants ($n=17$) and the blended-UP condition participants ($n=18$) along with chi-squared test for differences between conditions.

| | Synchronous online UP condition | | Blended-UP condition | | Total | | $\chi^2$ | |
|---|---|---|---|---|---|---|---|---|
| | *n* | % | *n* | % | *n* | % | $\chi^2$ | *p* |
| Sex | | | | | | | | |
| Woman | 14 | 82.35% | 14 | 77.77% | 28 | 80.00% | 0.14 | .735 |
| Man | 3 | 17.64% | 4 | 22.22% | 7 | 20.00% | | |
| Marital status | | | | | | | | |
| Single | 8 | 47.06% | 8 | 44.44% | 16 | 45.71% | 0.024 | .877 |
| In couple/married | 9 | 52.94% | 10 | 55.56% | 19 | 54.29% | | |
| Employment situation | | | | | | | | |
| Employed | 0 | 0.00% | 1 | 5.56% | 1 | 2.94% | 0.972 | .324 |
| Unemployed | 17 | 100% | 17 | 94.44% | 34 | 97.14% | | |
| Academic programme | | | | | | | | |
| Undergraduate | 15 | 88,23% | 18 | 100% | 33 | 94.28% | 2.25 | .134 |
| Postgraduate | 2 | 11.76% | 0 | 0.00% | 2 | 5.71% | | |
| Principal diagnosis | | | | | | | | |
| AD | 7 | 41.17% | 5 | 27.78% | 12 | 34.29% | 3.96 | .553 |
| SAD | 2 | 11.76% | 4 | 22.22% | 6 | 17.14% | | |
| GAD | 7 | 41.17% | 8 | 44.44% | 15 | 42.86% | | |
| MDD | 1 | 5.88% | 0 | 0.00% | 1 | 2.86% | | |
| IAD | 0 | 0.00% | 1 | 5.56% | 1 | 2.86% | | |
| Secondary diagnosis | | | | | | | | |
| None | 7 | 41.18% | 11 | 61.11% | 18 | 51.43% | 1.695 | .638 |
| SAD | 2 | 11.76% | 1 | 5.56% | 3 | 8.57% | | |
| GAD | 3 | 17.65% | 3 | 16.67% | 6 | 17.14% | | |
| MDD | 5 | 29.41% | 3 | 16.67% | 8 | 22.86% | | |

Abbreviations: $\chi^2$, chi-squared test; AD, adjustment disorder; GAD, generalised anxiety disorder; IAD, illness anxiety disorder; MDD, major depressive disorder; SAD, social anxiety disorder.

indicators of treatment uptake, session attendance, completion rates, adherence to the intervention and usage metrics of the mobile application (e.g., number of completed modules and time spent using the app). Acceptability was assessed through participant-reported satisfaction with the treatment and delivery format, perceived usefulness of the intervention and its components and usability of the mobile application. Preliminary clinical outcomes were examined as secondary, exploratory measures and included changes over time in anxiety and depressive symptoms, transdiagnostic processes and quality of life.

To determine whether participants met the study's inclusion criteria, each individual completed a clinical interview administered by a psychologist from the research team, utilising the ADIS-5 (Brown & Barlow, 2014). As part of the pre-intervention assessment, participants completed an ad hoc sociodemographic questionnaire designed specifically for this study. This instrument gathered information on gender, age, marital status, employment situation, level of education (including undergraduate studies, postgraduate training such as master's degrees, continuing education courses and doctoral programmes), academic degree and field of study, as well as the year of university enrolment. Details regarding the primary and secondary outcome measures are provided in Table 2.

**TABLE 2** Primary and secondary outcome measures.

| Instrument | Construct | Reliability ($\alpha$) — present sample | Response range |
|---|---|---|---|
| Feasibility outcomes | | | |
| Attendance records | Session attendance | NA | Number of sessions attended |
| Completion rates | Treatment completion | NA | Completed/not completed |
| Dropout rates | Attrition | NA | Yes/no |
| App usage metrics | Modules completed, time spent using the app | NA | NA |
| Acceptability outcomes | | | |
| STQ (adaptation of CSQ-8; Larsen et al., 1979) | Satisfaction with the treatment and format of delivery (including quality, alignment with initial expectations, willingness to recommend the treatment, effectiveness of the techniques learned, overall satisfaction with the intervention, likelihood of choosing a similar intervention in the future, and discomfort experienced during the treatment). | NA | 7 items; 4-point Likert scale ranging from 0 (bad/nothing) to 4 (excellent/very much). Higher scores are associated with greater satisfaction with the intervention. |
| Questionnaire of the UP modules | Usefulness of the programme and the modules to improve emotional regulation | NA | 7 items; 11-point Likert scale ranging from 0 (not at all) to 10 (very much) |
| SUS (Brooke, 1996; Sevilla-González et al., 2020) | Usability of the app | .78 | 10 items; 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). Higher scores are associated with greater usability scores. The original validation and the Spanish adaptation reported Cronbach's alpha values ranging from .81 to .85 (Brooke, 1996; Sevilla-González et al., 2020). |
| Preliminary clinical outcomes | | | |
| ADIS-5 (Brown & Barlow, 2014) | Principal diagnosis of ED | NA | Structured interview for Anxiety and Related Disorders |

**TABLE 2** (Continued)

| Instrument | Construct | Reliability ($\alpha$)— present sample | Response range |
|---|---|---|---|
| ODSIS (Bentley et al., 2014; Osma et al., 2019) | Severity and impairment of depressive symptoms | .95 | 5 items; 5-point Likert scale ranging from 0 (I didn't feel depressed) to 4 (constant depression). Higher scores are associated with greater depression symptoms and symptom interference. The Spanish adaptation reported a Cronbach's alpha of .94 (Osma et al., 2019). |
| OASIS (Norman et al., 2006; Osma et al., 2019) | Severity and impairment of anxiety symptoms | .82 | 5 items; 5-point Likert scale ranging from 0 (I didn't feel anxious) to 4 (constant anxiety). Higher scores are associated with greater anxiety symptoms and symptom interference. The Spanish adaptation reported a Cronbach's alpha of .87 (Osma et al., 2019). |
| MEDI (Rossellini & Brown, 2019; Osma et al., 2023) | Transdiagnostic dimensions of EDs: Neurotic temperament, positive temperament, depressed mood, autonomic arousal, somatic anxiety, social anxiety, intrusive cognitions, traumatic re-experiencing, and avoidance. | .60 (positive temperament) to .94 (social anxiety) | 49 items; 9-point Likert response scale ranging from 0 (not characteristic of me/ does not apply to me) to 8 (completely characteristic of me/applies to me very much). Higher scores are associated with greater scores in each dimension. The original validation and the Spanish adaptation reported Cronbach's alpha values ranging from .66 to .91 (Osma et al., 2023). |
| EuroQol (Brooks, 1996; Badia et al., 1999) | Quality of Life Assessment through the EuroQol Visual Analogue Scale (EQ-VAS) | NA | Thermometer from 0 (worst imaginable health status) to 100 (best imaginable health status) |

(Continues)

**TABLE 2** (Continued)

| Instrument | Construct | Reliability (α)– present sample | Response range |
|---|---|---|---|
| DERS (Gratz & Roemer, 2004; Hervás & Jódar, 2008) | Total Score of Emotional Dysregulation | .94 | 28 items; 5-point Likert scale ranging from 1 (never or very rarely) to 5 (very often or always). Higher scores are associated with greater emotional regulation difficulties. The original validation and the Spanish adaptation reported Cronbach's alpha values ranging from .73 to .93 (Gratz & Roemer, 2004; Hervás & Jódar, 2008). |
| MI (Echeburua, 2000; Osma et al., 2024) | The extent of the patient's psychological problems affects areas of daily life: (1) work/studies; (2) social life; (3) free time; (4) relationship with partner; (5) family life, and (6) global | .88 | 6 items; 6-point Likert scale ranging from 0 (not at all) to 5 (extremely). Higher scores are associated with greater maladjustment or impairment. The instrument demonstrated good internal consistency, with Cronbach's alpha values ranging from .84 to .94 in prior studies (Echeburua, 2000; Osma et al., 2024). |

*Note:* Scale reliability corresponds to the Cronbach's alpha coefficient.

Abbreviations: ADIS-5, Anxiety and Related Disorders Interview Schedule for DSM-5; App, Application; CSQ-8, Client Satisfaction Questionnaire; DERS, Difficulties in Emotion Regulation Scale; ED, Emotional Disorder; MEDI, Multidimensional Emotional Disorder Inventory; MI, Maladjustment Inventory; NA, not applicable; OASIS, Overall Anxiety Severity and Impairment Scale; ODSIS, Overall Depression Severity and Impairment Scale; STQ, Treatment Satisfaction Questionnaire; SUS, The System Usability Scale.

## Procedure

Participants were recruited through the PCS at the University of Córdoba (Spain). Individuals whose primary reason for seeking support was related to emotional difficulties—such as anxiety and/or depressive symptoms—were referred to the research team by the PCS. These potential participants were then contacted via email and provided with an information sheet about the study, along with the informed consent form, which they could review and sign electronically through a Google Forms link.

Subsequently, each participant took part in two individual interviews. During these sessions, the diagnostic assessments were conducted by doctoral candidates in Psychology, all of whom were licensed General Health Psychologists and had completed postgraduate master's-level training in clinical psychology. All interviewers had received specific training in the administration of the ADIS-5 semistructured diagnostic interview. Using the ADIS-5, interviewers evaluated whether participants met the diagnostic criteria for an ED. Diagnostic decisions were based on the Clinical Severity Rating (CSR), which provides a dimensional assessment of symptom severity and associated distress or interference on a Likert scale ranging from 0 (none) to 8 (extreme). A CSR score of 4 or higher was used as the cut-off for assigning a clinical diagnosis, whereas subclinical diagnoses were assigned when CSR scores were 3 or below. Individuals who did not fulfil the inclusion criteria were referred back to a professional at the PCU.

To enhance diagnostic reliability, interviewers met weekly to discuss diagnostic uncertainties, including differential diagnoses and the distinction between primary and secondary diagnoses. These meetings were supervised by an experienced mid-level clinician and a senior clinician, both with extensive expertise in the assessment and treatment of EDs.

Following the diagnostic assessment, participants received a link to complete the pre-intervention evaluation via Google Forms. Upon completion, they were informed that they would receive an email specifying the intervention condition to which they had been randomly allocated: (1) UP in blended format combining synchronous online group sessions with the use of a UP-based app (RegulEm app) or (2) UP in a synchronous online group format. Random assignment to the study conditions was conducted using the Randomizer software. Each treatment group was composed of six to eight participants. All groups were facilitated by a therapist with advanced-level training in the UP (UP-Level II: Becoming a UP Therapist), which involves supervised delivery of a full UP treatment course, accompanied by a co-therapist. All professionals involved were either current doctoral candidates or had completed a PhD in Psychology, specifically within the field of Personality, Assessment and Psychological Treatment. Among the lead therapists (two out of three were male), they had accumulated an average of 4.6 years of clinical experience. Ongoing supervision was provided by an expert clinician with advanced certification in the UP (UP-Level III: Becoming a UP Trainer), reflecting extensive supervised experience and authorisation to supervise other clinicians, with the aim of addressing clinical questions and ensuring treatment fidelity across both conditions.

At the end of the intervention, participants were invited via email to complete the post-treatment evaluation, again using a Google Forms link. Follow-up assessments were carried out at 3 and 6 months after the intervention concluded. These assessments took place during an online group meeting, after which participants filled out the follow-up questionnaires using the same procedure as the post-treatment evaluation. Although the initial trial registration on ClinicalTrials.gov included only the 3-month follow-up, an additional follow-up at 6 months was incorporated into the final design to gather preliminary data on the medium-term stability of treatment effects and to align with existing literature on follow-up intervals in transdiagnostic interventions. The flowchart of the study is illustrated in Figure 1.

This trial is registered on ClinicalTrials.gov (NCT06432829), and all procedures to be carried out were approved by the Research Ethics Committee of the Autonomous Community of Aragón under number PI23/624, dated 24 January 2024.
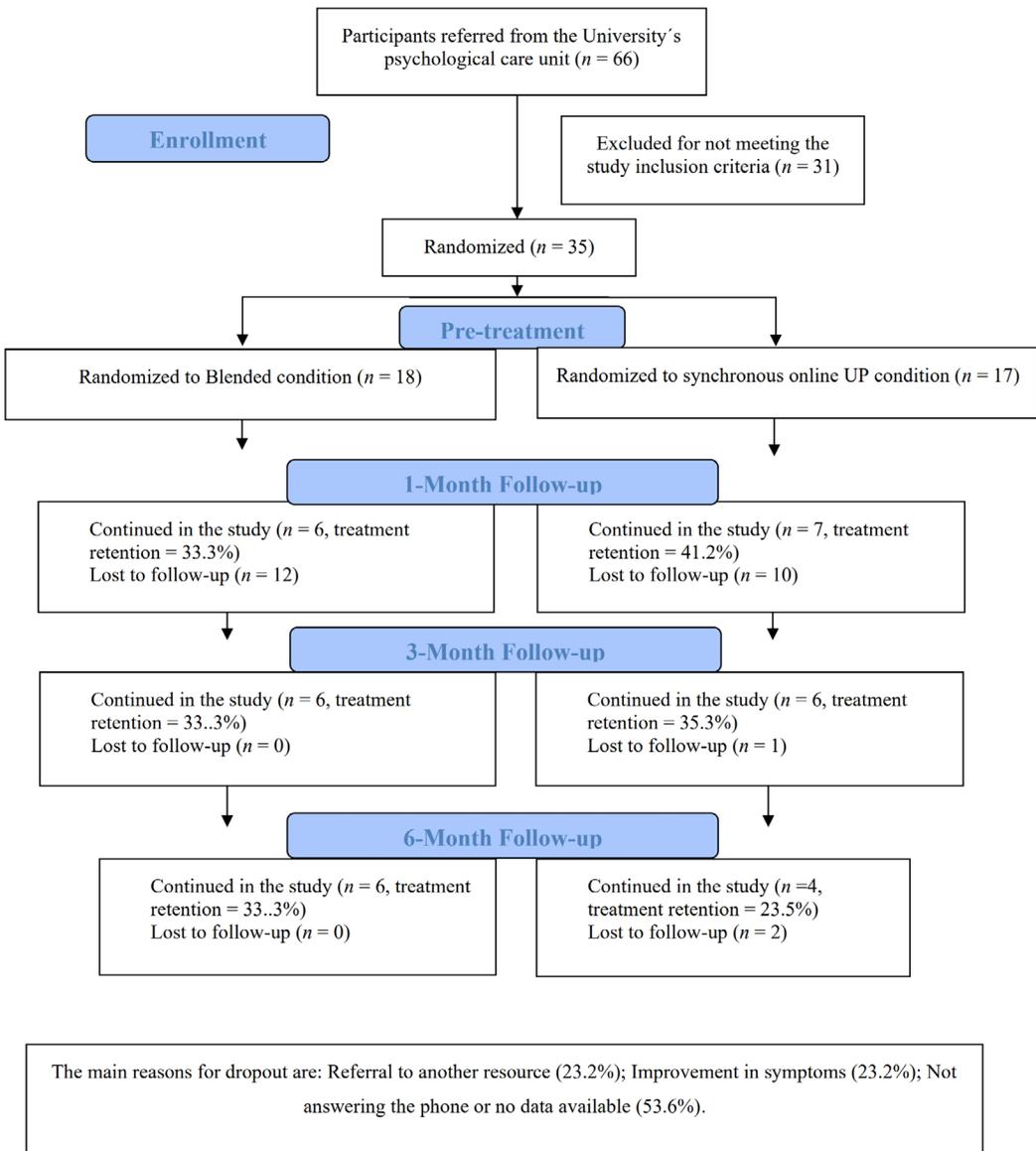
**FIGURE 1** Flowchart of study participants following the CONSORT guidelines.

## Treatment conditions

### a. Blended-UP condition

Participants received the intervention in nine sessions. Four of the UP modules (Modules 1, 4, 6 and 7) were delivered through synchronous online group sessions, while the remaining four modules were completed individually using a UP-based smartphone application (RegulEm app). The synchronous online group sessions lasted 2 h and were conducted via the Google Meet platform. As in the Synchronous Online UP condition, the delivery of Module 7 was scheduled 1 month prior to the final session to allow participants enough time to carry out emotional exposure exercises. In the ninth session, participants reviewed their exposure experiences and completed Module 8.

The UP-APP employed in this condition, called RegulEm, is based on the UP 2nd edition manual for patients (Barlow et al., 2018) and had been previously designed and developed by the research team within the framework of earlier studies (Osma et al., 2021), incorporating feedback from both professionals and users experienced with the UP (Martínez-García et al., 2024; Osma et al., 2022). Intellectual property rights registration number for RegulEm is no. 00765-02388060. Participants in this group were granted access to the full range of UP content through the app, including exercises and associated worksheets. The application contained materials for both the modules addressed in the online group sessions and those intended for individual completion (for a more detailed description of the app, see Osma et al., 2021).

b. Synchronous online UP condition

In this condition, participants engaged in the UP delivered entirely in a synchronous online group format. The intervention consisted of nine weekly sessions, each lasting 2 h, conducted through the Google Meet platform. Every session was aligned with one of the original eight modules of the UP, except for the module on *emotional exposure*. This module was covered across two sessions: the first focused on the development of an exposure hierarchy, and the second on reviewing the participants' progress and ensuring the correct application of the concepts presented. A ninth session, dedicated to promoting maintenance and preventing relapse, was conducted 1 month later to allow participants enough time to engage in exposure practices. Participants in this condition were provided with the UP 2nd edition manual for patients (Barlow et al., 2018). Detailed information regarding session content and delivery format is provided in Table 3.

## Data analysis

First, descriptive statistical analyses were conducted to examine the sociodemographic characteristics of the participants. Following this, normality tests were performed, specifically using the Shapiro–Wilk test, to assess whether the data followed a normal distribution. Afterward, comparisons of means between groups were carried out at each time point using Student's $t$-tests for continuous variables and chi-squared tests for categorical variables. Finally, mixed linear models were conducted following the structure [Dependent variable $\sim$ Time $\times$ Experimental Group + (1 | Participant)], including analysis of the main effects of the variables 'Time' and 'Condition' to assess whether there were changes over time and differences between groups. A random intercept for participants was included to account for the non-independence of repeated measures within individuals. Additionally, interaction effects of 'Time $\times$ Condition' were analysed to examine if participants' scores evolved differently over time depending on the treatment condition. Effect sizes were also calculated using Cohen's $d$ statistic, interpreted as small ($d=.2$), medium ($d=.5$) and large ($d=.8$) (Cohen, 1988). All statistical analyses were performed using SPSS software (version 25.0) (IBM Corp, 2017).

## RESULTS

### Differences in variables and sociodemographic characteristics among groups

No significant differences were found in participants' age across treatment conditions ($t=1.06$, $p>.001$). Moreover, as can be found in Table 1, chi-squared analyses revealed no significant differences between the two treatment conditions with respect to gender distribution ($\chi^2=0.14$, $p>.05$), marital status ($\chi^2=0.02$, $p>.05$), employment status ($\chi^2=0.97$, $p>.05$), type of academic programme ($\chi^2=2.25$, $p>.05$), principal diagnosis ($\chi^2=3.96$, $p>.05$) and secondary diagnosis ($\chi^2=1.69$, $p>.05$). Similarly, no

**TABLE 3** Overview of Unified Protocol module implementation, attendance rates and app usage in online group versus blended delivery formats.

| Session | Synchronous online UP condition (N=17) | | | Blended-UP condition (N=18) | | | | | |
| | Content | Format | Session attendance rate | Content | Format | Session attendance rate | UP-app modules completed | Minutes spent $M$ (SD) | Range |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 1 | Motivation for change and commitment to treatment | Online group session | 82.35% | Motivation for change and commitment to treatment | Online group session | 100% | 83.33% | 31.42 (21.96) | 0–79 |
| 2 | Understanding the adaptive value of emotions and learning to recognise and analyse them. | Online group session | 100% | Understanding the adaptive value of emotions and learning to recognise and analyse them. | RegulEm app | 83.33% | 83.33% | 35.75 (26.77) | 0–91 |
| 3 | Emotional awareness training | Online group session | 94.11% | Emotional awareness training | RegulEm app | 83.33% | 83.33% | 95.58 (183.22) | 0–668 |
| 4 | Cognitive flexibility | Online group session | 94.11% | Cognitive flexibility | Online group session | 100% | 72.22% | 26.33 (26.78) | 0–71 |
| 5 | Emotional avoidance and emotion-driven behaviours | Online group session | 70.58% | Emotional avoidance and emotion-driven behaviours | RegulEm app | 61.11% | 61.11% | 17.00 (19.59) | 0–46 |
| 6 | Awareness and tolerance of physical sensations | Online group session | 52.94% | Awareness and tolerance of physical sensations | Online group session | 77.5% | 61.11% | 11.00 (16.54) | 0–53 |
| 7 | Emotional exposure | Online group session | 70.58% | Emotional exposure | Online group session | 88.88% | 50% | 23.92 (51.19) | 0–179 |
| 8 | Emotional exposure | Online group session | 70.58% | Achievements, maintenance and relapse prevention | RegulEm app | 33.33% | 33.33% | 7.17 (19.62) | 0–67 |
| 9 | Achievements, maintenance and relapse prevention | Online group session | 64.70% | Achievements, maintenance and relapse prevention | Online group session | 83.33% | - | - | - |
| 3-month follow-up | Follow-up | Online group session | 70.58% | Follow-up | Online group session | 83.33% | - | - | - |
| 6-month follow-up | Follow-up | Online group session | 70.58% | Follow-up | Online group session | 66.66% | - | - | - |
| Total | Follow-up | Online group session | 76.46% | Follow-up | Online group session | 72.19% | - | - | - |

Abbreviations: $M$, mean; SD, standard deviation; UP, Unified Protocol.

statistically significant differences were observed between groups on any variable prior to treatment ($p > .05$) (Table 1).

As can be found in Table 4, regarding post-treatment conditions, no significant differences were found between the two groups for most variables ($p > .05$). However, participants in the synchronous online UP condition reported significantly lower anxiety levels at post-treatment ($t = 4.73$, $p < .001$), as well as reduced autonomic arousal at the 3-month follow-up ($t = 2.66$, $p = .026$).

Finally, no significant differences were observed at baseline in sociodemographic characteristics, nor in primary or secondary outcomes, between participants who completed the evaluation batteries and those who did not ($p > .05$).

## Evolution of scores over time

Linear mixed models revealed significant main effects of time in most outcome variables. Specifically, large effect size improvements were observed over time in anxiety symptoms ($F = 6.23$, $p < .001$), neurotic temperament ($F = 8.13$, $p < .001$), Multidimensional Emotional Disorder Inventory (MEDI)'s depressive mood ($F = 15.32$, $p < .001$), intrusive cognitions ($F = 8.97$, $p < .001$), avoidance ($F = 8.98$, $p < .001$), emotion regulation difficulties ($F = 13.05$, $p < .001$) and maladjustment ($F = 5.79$, $p = .001$). Also, moderate effect size was found in autonomic arousal ($F = 4.68$, $p = .003$), somatic anxiety ($F = 4.52$, $p = .004$), social anxiety ($F = 4.43$, $p = .005$) and traumatic re-experiencing ($F = 5.06$, $p = .002$). No significant time effects were found for positive temperament or quality of life.

Regarding the main effect of the conditions, only the anxiety measure (Overall Anxiety Severity and Impairment Scale [OASIS]) showed a significant difference between treatment groups ($F = 4.71$, $p = .041$), favouring the synchronous online UP format. No other outcome demonstrated significant differences between conditions. The interaction effects (Time × Condition) were not significant for any of the outcome variables ($p > .05$), indicating that changes over time were consistent across both treatment formats. The detailed results can be seen in Table 5.

## Feasibility and acceptability outcomes: Adherence, app usage, satisfaction and perceived usability

In line with the primary feasibility and acceptability aims of the study, Table 3 presents detailed data regarding adherence to the intervention across both conditions, as well as app usage parameters in the blended-UP group. In the online synchronous group, attendance ranged from 52.94% to 100% across sessions, with a mean session attendance rate of 76.46%. In the blended-UP condition, group session attendance was slightly lower, ranging from 33.33% to 100%, with a mean attendance rate of 72.19%. Within this condition, participants attended a mean of 85.67% of the four synchronous online group sessions (range: 77.5%–100%). In contrast, the average completion rate across the four self-applied modules of the RegulEm app was lower, with a mean of 65.28%. Regarding engagement with the digital component, 83.3% of participants in the blended-UP group completed at least the first three modules of the RegulEm app. Notably, only four participants (33.33%) completed all the app's modules. In turn, the mean number of total accesses to the RegulEm app by the participants was 45.33 (SD = 34.74, range 0–105). Regarding the time spent on each app module, module 3—focused on mindfulness—had the highest average number of minutes invested, followed by module 2, which covered emotional psychoeducation. Finally, the mean number of exercises completed in total by the participants was 15.17 (SD = 8.32, range 0–23).

Participants' perceived usability of the RegulEm app was evaluated using the System Usability Scale (Brooke, 1986; Sevilla-Gonzalez et al., 2020) at post, 3- and 6-month follow-ups, with mean scores of 95 (SD = 4.68, range 90–100), 96 (SD = 5.18, range 87.5–100) and 96.25 (SD = 5.65, range 85–100), respectively, indicating high perceived usability (Bangor et al., 2009).

**TABLE 4** Means, standard deviations and mean differences between groups.

| | Treatment condition | PRE M (SD) | t | p | 1-MFU M (SD) | t | p | 3-MFU M (SD) | t | p | 6-MFU M (SD) | t | p |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ODSIS | Blended-UP condition | 5.78 (4.36) | −.58 | .563 | 5.67 (4.41) | 1.19 | .260 | 3.6 (4.83) | −.02 | .982 | 5.33 (4.59) | −.93 | .379 |
| | Synchronous online UP condition | 6.71 (5.03) | | | 3.00 (3.70) | | | 3.67 (4.68) | | | 8.25 (5.25) | | |
| OASIS | Blended-UP condition | 8.00 (3.07) | −.40 | .690 | **6.00 (4.00)** | **4.73** | **.001** | 5.20 (3.27) | .34 | .739 | 7.50 (3.15) | .85 | .420 |
| | Synchronous online UP condition | 8.47 (3.83) | | | **1.57 (1.27)** | | | 4.33 (4.76) | | | 5.50 (4.36) | | |
| MEDI_NT | Blended-UP condition | 26.56 (7.05) | .18 | .861 | 22.33 (6.62) | 1.03 | .323 | 21.60 (9.91) | .68 | .513 | 23.50 (5.61) | .33 | .750 |
| | Synchronous online UP condition | 26.18 (5.56) | | | 18.71 (5.99) | | | 17.67 (9.22) | | | 21.75 (11.3) | | |
| MEDI_PT | Blended-UP condition | 25.56 (6.94) | −.51 | .614 | 29.5 (5.32) | −.29 | .781 | 30.6 (6.80) | −.02 | .982 | 29.17 (3.13) | −2.68 | .028 |
| | Synchronous online UP condition | 26.76 (7.09) | | | 30.43 (6.27) | | | 30.67 (2.34) | | | 35.00 (3.74) | | |
| MEDI_DM | Blended-UP condition | 17.28 (9.91) | −.42 | .679 | 11.83 (8.23) | .69 | .506 | 9.00 (6.44) | 1.10 | .301 | 13.33 (6.56) | 1.29 | .232 |
| | Synchronous online UP condition | 18.71 (10.32) | | | 9.00 (6.63) | | | 5.83 (2.79) | | | 8.50 (4.2) | | |
| MEDI_AA | Blended-UP condition | 18.00 (10.23) | 1.07 | .291 | 12.17 (8.52) | 1.36 | .200 | **14.00 (5.61)** | **2.66** | **.026** | 15.00 (4.98) | 1.01 | .340 |
| | Synchronous online UP condition | 14.47 (9.15) | | | 7.00 (4.97) | | | **5.00 (5.59)** | | | 11.25 (6.80) | | |
| MEDI_IC | Blended-UP condition | 19.11 (13.00) | −.87 | .390 | 17.50 (16.94) | .86 | .409 | 17.20 (11.78) | 2.04 | .071 | 14.83 (7.08) | .58 | .575 |
| | Synchronous online UP condition | 22.88 (12.61) | | | 11.57 (6.58) | | | 6.50 (4.85) | | | 11.75 (9.71) | | |
| MEDI_SOM | Blended-UP condition | 17.33 (9.68) | .18 | .861 | 14.33 (6.44) | .53 | .606 | 16.40 (6.23) | 2.22 | .054 | 20.50 (7.94) | 1.26 | .243 |
| | Synchronous online UP condition | 16.76 (9.42) | | | 12.43 (6.45) | | | 8.33 (5.82) | | | 13.50 (9.61) | | |
| MEDI_SOC | Blended-UP condition | 19.67 (12.49) | .08 | .936 | 13.83 (9.20) | −.48 | .642 | 15.40 (11.01) | 1.01 | .337 | 17.00 (11.3) | .42 | .686 |
| | Synchronous online UP condition | 19.35 (10.46) | | | 16.57 (11.13) | | | 9.33 (8.87) | | | 13.25 (17.25) | | |

**TABLE 4** (Continued)

| | Treatment condition | PRE | | | 1-MFU | | | 3-MFU | | | 6-MFU | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | M (SD) | t | p | M (SD) | t | p | M (SD) | t | p | M (SD) | t | p |
| MEDI_TRM | Blended-UP condition | 13.94 (13.10) | −.68 | .501 | 11.83 (10.82) | .65 | .528 | 13.00 (12.23) | 1.71 | .121 | 11.50 (9.03) | .93 | .380 |
| | Synchronous online UP condition | 16.71 (10.71) | | | 8.71 (6.18) | | | 4.17 (3.37) | | | 6.75 (5.62) | | |
| MEDI_AVD | Blended-UP condition | 27.00 (13.13) | −1.17 | .249 | 18.17 (12.81) | .15 | .885 | 18.80 (12.89) | .72 | .489 | 15.17 (9.06) | −.82 | .436 |
| | Synchronous online UP condition | 32.00 (12.03) | | | 17.29 (8.46) | | | 13.83 (9.99) | | | 20.50 (11.56) | | |
| DERS | Blended-UP condition | 84.22 (23.24) | −.43 | .671 | 64.33 (19.20) | .47 | .649 | 64 (33.73) | .78 | .454 | 69.67 (20.48) | .62 | .553 |
| | Synchronous online UP condition | 87.35 (19.75) | | | 59.57 (17.50) | | | 51.83 (16.65) | | | 60.75 (25.05) | | |
| EUROQOL | Blended-UP condition | 7.67 (1.75) | 1.04 | .307 | 7.83 (2.14) | −.80 | .443 | 8.40 (1.14) | .59 | .568 | 6.60 (2.22) | −1.43 | .175 |
| | Synchronous online UP condition | 7.06 (1.71) | | | 8.57 (1.13) | | | 8.00 (1.10) | | | 8.00 (1.10) | | |
| MI | Blended-UP condition | 14.22 (7.58) | −.95 | .351 | 12.00 (6.93) | 1.39 | .192 | 10.80 (9.26) | .79 | .451 | 10.5 (7.84) | .14 | .895 |
| | Synchronous online UP condition | 16.76 (8.31) | | | 7.71 (4.03) | | | 6.83 (7.47) | | | 9.75 (9.54) | | |

*Note:* Bold values indicate $p < .05$.

Abbreviations: DERS, Difficulties in Emotional Regulation Questionnaire; MEDI_AA, Autonomic arousal; MEDI, Multidimensional Emotional Disorder Inventory; MEDI_AVD, avoidance; MEDI_DM, depressed mood; MEDI_IC, intrusive cognitions; MEDI_NT, neurotic temperament; MEDI_PT, positive temperament; MEDI_SOC, social anxiety; MEDI_SOM, somatic anxiety; MEDI_TRM, traumatic re-experiencing; MFU, month of follow-up; MI, Maladjustment Inventory; OASIS, Overall Anxiety Severity and Impairment Scale; ODSIS, Overall Depression Severity and Impairment Scale.

**TABLE 5** Main effects of the linear mixed models.

| | Main effect | | | | | | Interaction effects | | |
| | Time | | | Condition | | | Time × condition | | |
| | F | p | d | F | p | d | F | p | d |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| ODSIS | 2.37 | .067 | 0.53 | 0.04 | .850 | 0.07 | .70 | .596 | 0.29 |
| OASIS | **6.23** | **<.001** | **0.87** | **4.71** | **.041** | 0.76 | 2.18 | .085 | 0.51 |
| MEDI_NT | **8.13** | **<.001** | **0.99** | 0.78 | .383 | 0.31 | 0.92 | .463 | 0.33 |
| MEDI_PT | 2.21 | .086 | 0.52 | 0.69 | .412 | 0.29 | 1.14 | .352 | 0.37 |
| MEDI_DM | **15.32** | **<.001** | **1.36** | 0.00 | .991 | 0.00 | 0.54 | .705 | 0.25 |
| MEDI_AA | **4.68** | **.003** | **0.75** | 0.33 | .569 | 0.20 | 0.91 | .469 | 0.33 |
| MEDI_SOM | **4.52** | **.004** | **0.74** | 0.14 | .706 | 0.13 | 0.71 | .592 | 0.29 |
| MEDI_SOC | **4.43** | **.005** | **0.73** | 0.06 | .801 | 0.08 | 0.77 | .548 | 0.31 |
| MEDI_IC | **8.97** | **<.001** | **1.04** | 0.02 | .875 | 0.04 | 0.91 | .467 | 0.33 |
| MEDI_TRM | **5.06** | **.002** | **0.78** | 0.07 | .796 | 0.09 | 0.92 | .461 | 0.33 |
| MEDI_AVD | **8.98** | **<.001** | **1.04** | 0.00 | .986 | 0.00 | 1.56 | .202 | 0.43 |
| DERS | **13.05** | **<.001** | **1.26** | 0.15 | .699 | 0.13 | 0.33 | .853 | 0.20 |
| Euroqol | 2.03 | .103 | 0.49 | 0.00 | .954 | 0.34 | 0.81 | .495 | 0.31 |
| MI | **5.79** | **.001** | **0.84** | 0.16 | .692 | 0.29 | 1.14 | .351 | 0.37 |

*Note*: Bold values indicate $p < .05$.

Abbreviations: DERS, Difficulties in Emotional Regulation Questionnaire; MEDI, Multidimensional Emotional Disorder Inventory; MEDI_AA, autonomic arousal; MEDI_AVD, avoidance; MEDI_DM, depressed mood; MEDI_IC, intrusive cognitions; MEDI_NT, neurotic temperament; MEDI_PT, positive temperament; MEDI_SOC, social anxiety; MEDI_SOM, somatic anxiety; MEDI_TRM, traumatic re-experiencing; MI, Maladjustment Inventory; OASIS, Overall Anxiety Severity and Impairment Scale; ODSIS, Overall Depression Severity and Impairment Scale.

Satisfaction with the intervention was high across both conditions (Table 6). Mean total satisfaction scores were 8.91 (SD=1.11; range: 3.50–9.33) in the blended-UP group and 9.38 (SD=0.68; range: 1.00–9.86) in the online synchronous group, with no statistically significant between-group differences ($t=-0.95$, $p=.360$). Programme quality was rated at 9.33 (SD=0.81) and 9.29 (SD=0.75), respectively, while satisfaction with the programme received was rated at 9.17 (SD=1.16) in the blended group and 9.14 (SD=0.90) in the online group. The item on treatment-related discomfort had the lowest scores in both conditions: 3.50 (SD=2.25) in the blended group and 1.00 (SD=1.00) in the online group. Regarding satisfaction with the different components of the UP, all were considered very useful for regulating emotions in both conditions, with emotional awareness being the best valued by participants in the blended-UP condition ($M=9.17$; SD=1.60) and cognitive flexibility by participants in the synchronous online UP condition ($M=9.09$; SD=1.22). On the other hand, the lowest valued skill for those who received the blended condition was psychoeducation and functional analysis ($M=8.33$; SD=1.03), while for those who received the synchronous online condition it was tolerance to physical sensations ($M=7.55$; SD=2.50). Finally, participants who received the synchronous online UP condition rated slightly better, although very similarly to those who received the blended-UP condition, how the intervention helped them to properly regulate their emotions, with a mean of 9.00 (SD=1.18) out of 10 versus 8.83 (SD=1.47).

Overall, these indicators provide complementary information on feasibility (session attendance, treatment completion and app engagement) and acceptability (participant satisfaction and perceived usability) across both delivery formats.

In addition to the quantitative data collected, qualitative information was gathered on the participants' opinions of the intervention format received. In the synchronous online format, participants' comments showed a favourable opinion in terms of accessibility and diversity of shared experiences, highlighting that this format allowed learning about different perspectives, made participants feel accompanied by the others and facilitated the participation of people from different places. However, some participants

**TABLE 6** Answers to our CSQ-8 adaptation and to the UP-modules questionnaire, including satisfaction with the intervention, contents and application format.

| | Blended-UP condition | Synchronous online UP condition |
|---|---|---|
| | $M^A$ (SD)$^B$ | $M^A$ (SD)$^B$ |
| Satisfaction evaluation | | |
| How would you rate the quality of the treatment programme you received? | 9.33 (0.81) | 9.29 (0.75) |
| Did you find the kind of psychological intervention you were looking for? | 9.33 (1.21) | 9.14 (1.90) |
| If a friend or family member needed similar help, would you recommend our treatment program? | 9.17 (1.60) | 9.86 (0.37) |
| Did the content you learned help you cope more effectively with your problems? | 9.00 (1.09) | 9.29 (0.75) |
| Overall, how satisfied are you with the treatment programme you received? | 9.17 (1.16) | 9.14 (0.90) |
| To what extent has this treatment programme caused you discomfort? | 3.50 (2.25) | 1.00 (1.00) |
| If you were to seek help again, would you choose a group treatment program? | 8.83 (2.85) | 9.43 (1.13) |
| Total average | 8.91 (1.11) | 9.38 (0.68) |
| Evaluation of satisfaction with the UP modules | | |
| How much do you think the programme has helped you to regulate your emotions properly? | 8.83 (1.47) | 9.00 (1.18) |
| *How much do you consider that each of the emotion regulation skills learned has helped you to regulate your emotions properly?* | | |
| Psychoeducation on emotions and functional analysis | 8.33 (1.03) | 8.55 (2.21) |
| Emotional awareness | 9.17 (1.60) | 8.91 (1.30) |
| Cognitive flexibility | 9.00 (1.26) | 9.09 (1.22) |
| Countering emotional behaviours | 8.00 (0.63) | 8.36 (1.50) |
| Tolerance to physical sensations | 8.50 (0.55) | 7.55 (2.50) |
| Tolerance to intense emotions | 8.50 (0.55) | 8.36 (1.86) |

*Note*: 0 = No quality/Not at all useful/I would not recommend it at all/They have not helped me at all/Not satisfied at all/Not at all uncomfortable/Not at all/Not at all; 10 = Maximum quality/Totally useful/I would highly recommend it/They have helped me a great deal/Totally satisfied/Maximum discomfort/Yes, without hesitation/Very much.

Abbreviations: CSQ-8, Client Satisfaction Questionnaire; $M^A$, mean; SD$^B$, standard deviation; UP, Unified Protocol.

mentioned that the group format could be complicated at the beginning for those with greater difficulty in expressing themselves and sharing with others, as well as that the attention was less individualised. On the other hand, in the blended format, participants also valued positively the accessibility of the synchronous online sessions, highlighting the fact that participants did not need to move to attend the sessions. In turn, participants appreciated the combination of group sessions with the use of the app, highlighting positively the possibility of using the app whenever and wherever desired, as well as being able to review the content of the app modules at any time. However, on the other hand, participants mentioned the importance of group sessions to make the work through the app useful, as well as to work on motivation to use it.

# DISCUSSION

The present study aimed to evaluate the feasibility, acceptability and preliminary clinical outcomes of the UP delivered in two cost-effective formats, online group and blended. Overall, the findings suggest

that both delivery formats are feasible and highly acceptable, and show promising preliminary clinical utility, as they were associated with improvements in core emotional symptoms and transdiagnostic processes, and participants reported high levels of satisfaction. Consistent with previous findings on the effectiveness of the UP delivered through cost-effective formats (Peris-Baquero & Osma, 2023; Schaeuffele et al., 2022), and in line with growing evidence supporting blended cognitive–behavioural therapy interventions (Leterme et al., 2020; van Schaik et al., 2023), both conditions in the present study yielded significant reductions in anxiety and depressive symptoms over time. When compared to other digital mental health interventions for university students, such as those reviewed by Madrid-Cagigal et al. (2025), our results showed a comparable effect size for depression on the ODSIS ($d=0.53$), which aligns closely with their reported average effect size (Cohen's $d=0.55$). However, in our study, the depressed mood subscale of the MEDI yielded a much larger effect size ($d=1.36$), suggesting that the MEDI subscale may be more sensitive to detecting changes in mood. In contrast, for anxiety, we observed a large effect size ($d=0.87$), which exceeds the moderate effects typically found in similar interventions (e.g., Cohen's $d=0.46$). Furthermore, large effect sizes were also observed in transdiagnostic variables such as emotion regulation difficulties ($d=1.26$), neuroticism ($d=0.99$) and experiential avoidance ($d=1.04$). These findings add to the growing body of literature supporting the value of addressing shared emotional vulnerabilities across diagnostic categories, as emphasised in transdiagnostic treatment models (Barlow et al., 2011; Peris-Baquero et al., 2023). Importantly, these findings also extend the still limited evidence on the UP in university contexts, which has been largely preventive in nature and has relied mainly on brief group-based interventions or non-active control designs (Arrigoni et al., 2021; Bentley et al., 2018; Castro-Camacho et al., 2022; Sauer-Zavala et al., 2021; Socías-Soler et al., 2024). By examining two scalable delivery formats in a clinical university sample, the present study contributes to the growing literature supporting the transdiagnostic approach as a theoretically coherent and practically applicable framework for addressing EDs in university populations.

Consistent improvements were found across time in nearly all outcome variables, indicating a general reduction in symptomatology regardless of the intervention format. Specifically, significant main effects of time emerged for all variables except quality of life and positive temperament, suggesting robust short- to mid-term improvements. In this regard, the lack of statistically significant changes over time in the variables of quality of life and positive temperament may be attributed to the high baseline scores already observed in participants, which were comparable to those reported in non-clinical samples of university students without EDs (mean positive temperament=28.49; Osma, Martínez-Loredo, Quílez-Orden, et al., 2021; mean EuroQol=7.56; Osma, Martínez-Loredo, Díaz-García, et al., 2021).

In addition, the absence of significant Time × Condition interactions ($p>.05$) suggests that symptom change followed a similar trajectory across both formats. Only the anxiety measure (OASIS) showed a statistically significant difference between treatment conditions across all time points ($F=4.71, p=.041$), with results favouring the synchronous online UP format. These findings may indicate that, while both modalities appear to promote improvement, the online group format may offer a slight advantage in reducing anxiety symptoms specifically.

This pattern of results deserves further consideration, particularly in relation to the differences in therapist involvement between formats. While both conditions involved some level of therapist participation and guidance, in the blended format only half of the modules were delivered in a synchronous online format, with the remaining ones completed independently through the RegulEm app. This partial automation may explain the comparable effects across most outcomes, as well as the small differences observed in anxiety reduction. These results have relevant implications for the scalability and implementation of the UP in university settings. The absence of broader difference between formats suggests that therapist involvement could be reduced without compromising treatment effectiveness (Erbe et al., 2017), particularly through the strategic use of technology such as mobile applications (Miralles et al., 2020). Such an approach could contribute to improving cost-effectiveness, optimising the therapist-to-student ratio and helping manage increasing demand on university mental health services (Auerbach et al., 2019; Soler et al., 2025; Tabor et al., 2021). Future studies with larger samples and longer follow-up periods are required to identify the minimum level of therapist involvement required

to maintain clinical outcomes and inform the development of stepped-care models tailored to varying levels of need (Soler et al., 2025).

Treatment satisfaction was high across both intervention formats, with participants rating the programme positively on various aspects, including perceived quality, usefulness and overall satisfaction. Mean scores were above 8.8 out of 10 in both groups, with no significant differences observed between conditions. These findings indicate that both delivery formats were generally well received by participants. In addition, participants in both conditions rated very highly and similarly how the intervention had helped them to adequately regulate their emotions, with a mean score of 8.83 out of 10 in the blended condition and 9 in the synchronous online condition. In relation to the specific components of the UP worked on in the different modules, the best rated by the participants who received the blended condition was emotional awareness, as opposed to psychoeducation and functional analysis, which were the lowest rated. On the other hand, those who received the synchronous and online condition rated the cognitive flexibility component with the highest score, compared to tolerance to physical sensations, with the lowest score. However, in both conditions, all UP components were rated highly, with no major differences in the scores between conditions. The absence of differences in satisfaction, despite variations in therapist involvement and delivery format, indicates that both modalities may be equally acceptable for this population. These findings align with previous literature highlighting the potential of technology-assisted interventions to maintain user engagement while offering flexible and accessible treatment options (Erbe et al., 2017; Kooistra et al., 2016).

Despite the high levels of treatment satisfaction reported by participants, dropout rates were high. In the synchronous online UP condition, 29.42% of participants discontinued the intervention by the end of the treatment phase, with this rate remaining stable throughout the follow-up period. Attendance was particularly low in the ninth session. In the blended-UP condition, dropout rates were acceptable, reaching approximately 16.67% by the end of treatment, not accounting for the notably low completion of Module 8 via the app (33.33%). By the 6-month follow-up, non-attendance increased to 33.34%, despite all participants having completed the initial treatment phase, suggesting that attrition occurred primarily during follow-up. In line with previous evidence suggesting that blended formats may help reduce dropout (Erbe et al., 2017), higher dropout in the synchronous online format in the present study may reflect the greater time and scheduling demands of fully synchronous interventions, which can be challenging for university students. In contrast, the blended format may reduce perceived burden by combining fewer synchronous sessions with asynchronous app-based modules, offering greater flexibility. These findings suggest that partially automated formats may enhance feasibility and scalability in real-world university PCSs.

Compared to previous studies of interventions in university populations, the dropout rates observed in the present study fall within, or even below, expected ranges. However, the lack of systematic assessment of adherence in many trials complicates direct comparisons. For instance, the systematic review by Rith-Najarian et al. (2019) reported adherence data in only 49% of group-based interventions, 69% of online formats and 67% of self-administered programmes. Several factors may help explain the relatively favourable adherence observed in our sample: participants were part of a digitally native generation familiar with technology from an early age (Madrid-Cagigal et al., 2025), and the interventions incorporated therapist contact, personalised feedback following initial assessments, reminders, and interactive therapeutic work elements (Beatty & Binnion, 2016; Biswal et al., 2024; Linardon & Fuller-Tyszkiewicz, 2020). Nonetheless, the acceptable adherence rates observed in our sample contrast sharply with the low rates of post-treatment and follow-up assessment completion, which ranged from only 23.5% to 41.2%. Maintaining participant engagement remains a significant challenge in psychological interventions targeting university students (Barnett et al., 2021). Lower adherence has been linked to depressive symptoms and online enrolment methods, while higher adherence is associated with therapist contact, personalised feedback, reminders, interactive content and monetary incentives (Barnett et al., 2021; Beatty & Binnion, 2016; Biswal et al., 2024; Linardon & Fuller-Tyszkiewicz, 2020). All of these components were included in the present study, except for monetary incentives. Low follow-up response rates may reflect time constraints, lengthy assessments

or reduced motivation due to symptom improvement, rather than symptom severity, since no significant clinical or sociodemographic differences were found between completers and non-completers. Future studies may benefit from shorter evaluation protocols and the inclusion of incentives to improve follow-up completion.

Despite these promising findings, several limitations must be acknowledged. First, the sample was drawn from a single university, which may constrain the generalisability of the results. Second, the predominance of female participants in the sample may limit the representativeness of the findings across more diverse student populations. Third, although the study included follow-up assessments extending to 6 months, long-term outcomes remain unknown. Additionally, despite achieving acceptable adherence rates, there was substantial data attrition at follow-up assessments. Future research should consider incorporating strategies such as more frequent reminders, shorter assessments or financial incentives to enhance retention and data completeness. It is also important to note that this study constitutes a pilot RCT, with participants randomly allocated to intervention conditions. The primary aim was to evaluate the preliminary effectiveness and feasibility of the interventions within a real-world university context among students diagnosed with EDs. Although randomisation strengthens the internal validity of the findings, the limited sample size typical of pilot studies constrains the broader applicability of the results. Therefore, future investigations should seek to conduct fully powered RCTs with larger and more diverse samples to rigorously assess intervention efficacy and support wider generalisation of the outcomes.

In conclusion, this study offers initial evidence that both the synchronous online and blended group formats of the UP are feasible, acceptable, and associated with promising preliminary clinical outcomes for the treatment of EDs in university students. These preliminary findings support the continued exploration and careful implementation of transdiagnostic interventions in scalable, technology-enhanced formats as a promising strategy to improve mental health care delivery in higher education settings. In particular, the blended format may offer practical advantages for implementation by balancing therapist involvement with flexibility, potentially facilitating greater reach and more efficient use of limited clinical resources. Notably, this is the first study to directly compare satisfaction and acceptability of the UP across synchronous online and blended group formats in a university clinical context, contributing to the growing literature on blended-UP delivery by providing empirical data on implementation-relevant outcomes. However, confirmation of long-term clinical effectiveness will require future large-scale RCTs.

## AUTHOR CONTRIBUTIONS

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## CONFLICT OF INTEREST STATEMENT

The authors declare no conflict of interest regarding this manuscript.

## DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

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