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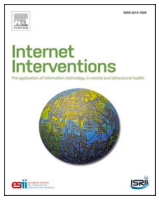

Feasibility, acceptability, and preliminary efficacy of a blended transdiagnostic group CBT for the treatment of emotional disorders

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ABSTRACT

Introduction: The transdiagnostic approach and Internet-based administration can help to implement evidence-based treatments for emotional disorders (ED). However, not all patients benefit from online format and dropout rates are high. Blended format combines the strengths of face-to-face and Internet self-applied interventions to help overcome these barriers. Group format can also help to overcome these difficulties and improve the cost-effectiveness binomial. This study aimed to analyze the feasibility, acceptability, and preliminary efficacy of a blended transdiagnostic group CBT for ED.

Methods: A single-group, open-trial design with three measurement points: pre-treatment, post-treatment and 3-month follow-up. A total of 34 adults (mean age = 32.21 years; 79.4 % female) from a community sample with at least one ED diagnosis according to DSM-5-TR criteria participated in the study. The intervention combined 8 group sessions delivered via videoconference with the completion of 16 online modules in a web-platform.

Results: Of the total participants, 67.6 % completed the treatment and another 14.7 % completed at least half of the modules and attended at least half of the group sessions. The expectations and satisfaction with the treatment were high (47.39 and 49.39 out of 60, respectively). The system usability was above desirable and around 'excellent' (84.02 out of 100 after the first use of the platform and 80.98 out of 100 at post-treatment). Opinions on the online modules and videoconference sessions were good. Participants completed an average of 12.91 online modules out of 16 and attended an average of 5.44 sessions out of 8. There was a significant reduction in anxious and depressive symptomatology at post-treatment and follow-up compared to baseline. There was also a significant change in other secondary clinical measures.

Conclusions: A transdiagnostic protocol applied in blended and group formats seems to be feasible, acceptable and preliminary effective in addressing ED. However, more research is needed to test the efficacy of this innovative format.

1. Introduction

It is essential to develop and implement treatments for emotional disorders (ED) (i.e., anxiety and depressive disorders) that are evidence-based, cost-effective and that reach those in need. ED are among the most disabling psychological disorders and with the highest burden of disease (Ferrari et al., 2013; Kessler, 2012), usually occurring comorbidly (Kessler et al., 2015). Although evidence-based treatments (EBT) for ED exist, many people remain untreated (Moitra et al., 2022). Some reasons include the cost and time of application and the problem of dissemination due to the difficulty of training clinicians in different protocols (McHugh et al., 2009). Furthermore, the management of patients with comorbidity is difficult with disorder-specific treatments (Barlow et al., 2004).

Transdiagnostic perspective emerged to improve the implementation of EBT and to better target comorbid presentations (Mansell et al.,

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2009). This approach posits that ED are manifestations of a common psychopathological vulnerability underlying these disorders, with neuroticism/negative affect/behavioral inhibition and low extraversion/positive affect/behavioral activation as key transdiagnostic factors (Brown and Barlow, 2009). Therefore, transdiagnostic treatments focus on addressing the common underlying mechanisms of ED rather than the specific symptoms. They entail lower costs because only one protocol is required to address different disorders (McEvoy et al., 2009), and their effect could be greater for targeting the psychopathological factors underlying the different ED (Sauer-Zavala et al., 2017). Several meta-analyses studies have demonstrated their efficacy (e.g., Cuijpers et al., 2023; Schaeuffele et al., 2024).

Internet-delivered interventions are another approach that can help the dissemination, as well as improve the cost-effectiveness balance. Furthermore, online treatments exhibit various advantages such as reaching more people, involving less stigma (Griffiths et al., 2006) and a reduction in waiting time (Spurgeon and Wright, 2010). Meta-analytic studies have shown that there are no differences between online and face-to-face CBT (Hedman-Lagerlöf et al., 2023). Nevertheless, not all patients benefit from this format equally and dropout rates are high, even in guided interventions (e.g., van Ballegooijen et al., 2014).

Blended interventions, a treatment modality that combines face-to-face and online therapy, could be a solution for these problems. Some of the advantages of this format include enhancing the learning process (Cucciare et al., 2008), training the ability to self-manage, and an easier customization and adjustment to each patient (Wentzel et al., 2016). Likewise, the main advantage of blended treatments is that they may save therapist time, so they are more cost-effective than traditional face-to-face interventions (Ly et al., 2015; Mathiasen et al., 2022). This could translate into treating more patients in a shorter period of time and would be especially interesting in public mental health services. In short, blended treatments may have advantages over stand-alone face-to-face therapy and over totally self-applied Internet-based treatments (Erbe et al., 2017). In addition, randomized controlled trials (RCTs) have shown the efficacy of blended treatments for depression (e.g., Kemmeren et al., 2023) and for anxiety (e.g., Romijn et al., 2021), and a recent meta-analysis has found blended interventions to be more effective or non-inferior to treatment-as-usual for depression (Nunes-Zlotkowski et al., 2024).

An additional way to provide EBT at a lower cost is group format. The literature has shown the efficacy of group CBT for different disorders with effect sizes comparable to those of individual therapy (e.g., Burlingame et al., 2013; Jónsson et al., 2011). A number of advantages have been attributed to group therapy, such as support, greater commitment to therapy, or greater motivation and positive expectations towards treatment. Despite the advantages offered by the group format, research on transdiagnostic interventions has primarily focused on individual protocols, with a few exceptions (e.g., Peris-Baquero and Osma, 2023; Reinholt et al., 2017). There are also very few studies that combine the group format with the blended format, and they only apply specific treatments for anxiety or depression. For example, Schuster et al. (2022) combined an Internet-based treatment for depression with weekly group sessions via videoconference, and found significant reductions in depressive symptomatology at post-treatment compared to a wait-list control. Furthermore, this study found high patient satisfaction, as well as relatively high therapeutic alliance and group cohesion, which provides support for the use of the group format in blended interventions.

However, to our knowledge, no studies that combine the blended and group formats for the application of a transdiagnostic intervention for ED have been published, and this strategy could contribute to people with ED receiving EBT in a more cost-effective way.

The main objective of the current study was to analyze the feasibility of a transdiagnostic group treatment protocol in blended format for ED. Specifically, we aimed to investigate the adherence and dropout rates, the uptake, the acceptability, the satisfaction, the usability, and other acceptability measures such as usage of the online platform. Additionally, a secondary objective of this study was to obtain preliminary data about the impact of the intervention in several clinical measures at post-treatment and 3-month follow-up assessments.

2. Methods

2.1. Design

This study used a single-group, open-trial design to gain preliminary data about the feasibility, acceptability, and efficacy of a blended transdiagnostic group, with three measurement points: pre-treatment, post-treatment and 3-month follow-up. Post-module measures were also taken throughout the treatment. Data was collected through the online platform using validated questionnaires.

2.2. Participants, recruitment and eligibility criteria

A total of 34 patients participated in the study. As we described in our protocol (Díaz-García et al., 2021b), there is no golden standard for calculating the sample size and a formal power calculation was not considered appropriate. Nevertheless, following previous recommendations for feasibility and pilot studies (Browne, 1995; Julious, 2005), a minimum of 30 participants was considered enough to reach the aims of feasibility and to provide useful data to optimize a future RCT design.

Participants were adults who attended the Emotional Disorders Clinic of Universitat Jaume I. The selection of participants was based on the following eligibility criteria: a) being 18 years of age or older; b) meeting DSM-5-TR diagnostic criteria for ED: panic disorder (PD), agoraphobia (AG), social anxiety disorder (SAD), generalized anxiety disorder (GAD), major depressive disorder (MDD), persistent depressive disorder (PDD), obsessive-compulsive disorder (OCD), non-specified (NS) anxiety/depressive disorder; c) fluency in Spanish; d) access to the Internet and email address; e) absence of psychotic disorders, bipolar disorder, and alcohol/substance use disorder; g) absence of high risk of suicide; f) no presence of serious medical illness or other conditions that prevent treatment from being carried out; g) not receiving another psychological treatment during the study period; and h) no changes and/or increases in pharmacological treatment during the study period (decreases were accepted).

Recruitment took place between December 2021 and March 2023 at the Emotional Disorders Clinic of Universitat Jaume I. Interested individuals were invited for the diagnostic interview, which was administered by experienced clinicians. DSM-5-TR diagnostic criteria were followed to confirm the diagnosis of ED (APA, 2022). The study flowchart of participants is shown in Fig. 1.

All participants gave their informed consent. The study was registered in Clinicaltrials.gov as NCT04008576 and received ethical approval from the Ethics Committee of Universitat Jaume I with number CD/40/2019.

2.3. Treatment

The intervention consisted of the application of a protocol based on the transdiagnostic approach and adapted from the Unified Protocol (Barlow et al., 2011), that incorporates some strategies derived from Dialectical Behavioral Therapy (Linehan, 1993). It was initially developed and manualized by our research group for face-to-face administration and, afterward, adapted to a multimedia web platform also designed by our research group (https://psicologiaytecnologia.labpsitec.es/).

The treatment has a total of 16 modules and includes four core components: a) present-focused emotional awareness and acceptance (modules 4–5), b) cognitive flexibility (modules 6–7), c) behavioral and cognitive patterns of emotional avoidance (modules 8–9), and d) interoceptive and situational graded exposure (modules 10–11). It also

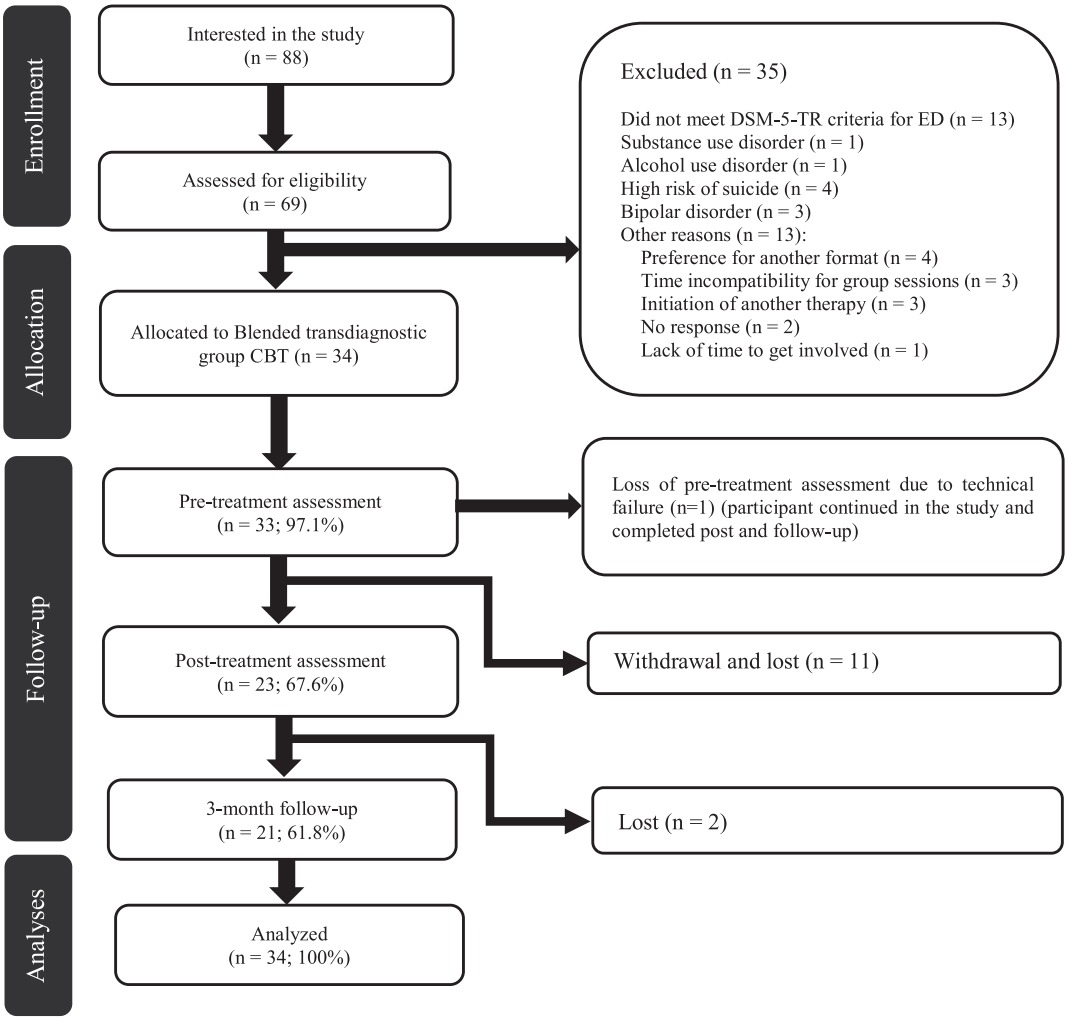

Fig. 1. Flowchart of participants.

contains a component aimed at up regulating positive affect (PA) and increasing the wellbeing (modules 12 to 15). Additionally, the program also includes evidence-based therapeutic components for ED: psychoeducation (modules 1 and 3), motivation for change (module 2), and relapse prevention (module 16).

The intervention took place in a group and blended format and was administered over a period of 24 weeks. The setup of this blended design was based on previous studies (e.g., Ly et al., 2015; Schuster et al., 2019; Vernmark et al., 2018) and adapted to the specific characteristics of our transdiagnostic treatment protocol and also the Spanish public healthcare system, with the aim of facilitating its future implementation in this context. Although the group sessions were initially planned to be face-to-face, as a result of the COVID-19 pandemic, an adaptation was made, and they were finally carried out via videoconference. With this adaptation, the blended format was maintained, given that the key aspect in this regard is not that part of the therapy takes place at the same location (traditional face-to-face therapy), but the combination of synchronous therapy with online therapy (Etzelmueller et al., 2018; Schuster et al., 2022).

Groups had 6 to 10 patients. Specifically, a total of 4 groups were carried out with 9, 7, 8 and 10 participants respectively, who attended a total of 8 sessions of 2 h each one. Group videoconference sessions were held every three weeks and were combined with autonomous work by patients through the online platform where they had access to the contents of the treatment (self-applied Online Transdiagnostic Protocol). The intervention began with a group session and, from then on, the sessions and the self-applied part were alternated. The aim of the sessions was to solve doubts about the modules and homework, to address difficulties and, especially, to present and explain the contents of the following modules. The online part consisted of working in depth on the content of the modules seen in the group sessions during the period between sessions. Further details about the modules worked on in each group session as well as the specific digital contents of each module can be found in the study protocol (Díaz-García et al., 2021b). According to the classification proposed by Nunes-Zlotkowski et al. (2024), our blended design could be considered integrated, alternate, and standardized.

During the treatment administration, two messages of support per week were sent to participants. These were pre-programmed standard messages aimed at increasing adherence to treatment, as they served as reminders of the importance of completing the modules and practicing.

All therapists were trained in the treatment protocol and videoconference therapy, with less experienced therapists initially serving as co-therapists for training purposes.

2.4. Outcomes

2.4.1. Acceptability measures

Expectations and opinion regarding the intervention were assessed through *Expectations and opinion of treatment scales* (Borkovec and Nau, 1972), satisfaction with the group sessions was evaluated using an ad hoc opinion questionnaire on group sessions. In addition, *The System*

Usability Scale (SUS; Bangor et al., 2008; Castilla et al., 2023) was used to assess the usability as well as the acceptance of the online platform.

2.4.2. Clinical outcomes

2.4.2.1. Primary outcomes. The Spanish validation of the *Overall Anxiety Severity and Impairment Scale* (OASIS) (González-Robles et al., 2018) and the *Overall Depression Severity and Impairment Scale* (ODSIS) (Mira et al., 2019) were used to evaluate the symptoms of anxiety and depression, respectively. The total score of the two scales ranges from 0 to 20, as they consist of 5 items that are scored on a 5-point scale (0–4). Both show good-excellent internal consistency (α = 0.86; 0.93, respectively) and validity.

2.4.2.2. Secondary outcomes. The Spanish adaptation of the *Positive and Negative Affect Schedule* (PANAS) (Díaz-García et al., 2020) and the *NEO-Five Factor Inventory* (NEO-FFI) (Aluja et al., 2005) were used to evaluate positive and negative affectivity (NA), and neuroticism and extraversion, respectively. Also, the Spanish validation of *Difficulties in Emotion Regulation Scale* (DERS) (Hervás and Jódar, 2008) was administered to assess the emotional regulation. Furthermore, some measures of functioning were collected using the Spanish version of *Quality-of-Life Index* (QLI) (Mezzich et al., 2000) and *Work and Social Adjustment Scale* (WSAS) (Echezarraga et al., 2018).

More details on outcome measures can be found in our protocol (Díaz-García et al., 2021b).

2.4.3. Other measures

Patients' participation and usage of the online platform were assessed using several measures collected by the system. This data included information on the total number of modules completed, the number of days spent in each module, the number of times participants accessed the platform (i.e., logins), and the number of times each module was reviewed.

2.5. Statistical analysis

Analyses were conducted using IBM SPSS version 29. Descriptive statistics were used to summarize participants' sociodemographic and clinical data at the initial assessment, and participants' uptake (percentage of participants who completed the eligibility assessment and started the intervention, out of the total number of people who initially showed interest). To assess acceptability of the treatment, we calculated means and standard deviations (SD) for the Expectations and Opinion scales, the SUS and other acceptability measures.

To analyze preliminary efficacy in terms of primary and secondary clinical outcomes, a repeated measures ANOVA was conducted using a Linear Mixed Model (LMM) with full information maximum likelihood estimation. This approach, a widely used intention-to-treat (ITT) method, includes all available data without any ad hoc imputations. Post-hoc comparisons using Bonferroni's method were also conducted. Effect sizes were measured using *Cohen d* and interpreted following Cohen's guidelines (Cohen, 1988).

3. Results

3.1. Participants characteristics at pre-treatment

Participants had a mean age of 32.21 years (SD = 11.14) and the majority were female (79.4 %). Most of the sample participants were married or in a relationship (76.5 %), and the vast majority had a high educational level (88.2 %). Most participants did not take psychiatric medication (76.5 %).

Regarding the main diagnosis, the three most common disorders were GAD (35.3 %), MDD (26.5 %) and AG (14.7 %). The remaining participants had PDD (5.9 %), PD (5.9 %), SAD (5.9 %), OCD (2.9 %) and NS anxiety disorder (2.9 %) as their main diagnosis. Almost all participants had at least one comorbid ED (82.4 %). More details can be seen in Table 1.

3.2. Adherence and dropout rates

Of the 88 individuals who expressed an interest in participating in the study, 19 did not further respond to continue with the screening (initial uptake = 78.4 %, 69/88). Of the 69 people assessed, 35 were excluded for not meeting the eligibility criteria (e.g., not meeting criteria for ED or presenting high risk of suicide) or due to other reasons (e.g., preference for another format or time incompatibility for group sessions) (intervention uptake = 38.6 %, 34/88).

A total of 34 participants completed the pre-treatment assessment and started the intervention. However, due to technical issues the pre-treatment assessment of one of the participants was not saved and the data could not be retrieved. Finally, 23 participants finished the intervention (completed all 16 modules) and completed the post-treatment assessment. The remaining 11 participants did not complete the intervention or the post-treatment evaluation. Of these, 6 dropped out of the study, while the remaining 5 completed at least 50 % of the online modules and attended at least 50 % of the group sessions. Among those who completed the intervention, two failed to complete the 3-month follow-up assessment despite being contacted. The flowchart of participants can be seen in Fig. 1, and retention and dropout rates can be found in Table 2.

Table 1
Sociodemographic and clinical data at the initial assessment (n = 34).

Gender, n (%)	
Female	27 (79.4 %)
Male	7 (20.6 %)
Age, mean (SD); range	32.21 (11.14); 20–55
Marital status, n (%)	
Married/In a relationship	26 (76.5 %)
Single	8 (23.5 %)
Educational level, n (%)	
Elementary education	3 (8.8 %)
Middle education	1 (2.9 %)
Higher education	30 (88.2 %)
Psychopharmaceuticals intake, n (%)	
No	26 (76.5 %)
Yes	8 (23.5 %)
Main diagnosis, n (%)	
GAD	12 (35.3 %)
MDD	9 (26.5 %)
AG	5 (14.7 %)
PDD	2 (5.9 %)
PD	2 (5.9 %)
SAD	2 (5.9 %)
OCD	1 (2.9 %)
NS anxiety disorder	1 (2.9 %)
Comorbid ED, n (%)	
Yes	28 (82.4 %)
No	6 (17.6 %)
Number of comorbid ED diagnosis, n (%)	
1	11 (32.4 %)
2	9 (26.5 %)
3	7 (20.6 %)
5	1 (2.9 %)
Anxiety and depression scores, mean (SD)	
OASIS	10.12 (3.42)
ODSIS	8.91 (4.34)

NOTE. GAD = Generalized Anxiety Disorder; MDD = Major Depressive Disorder; AG = Agoraphobia; PDD = Persistent Depressive Disorder; PD = Panic Disorder; SAD = Social Anxiety Disorder; OCD = Obsessive-Compulsive Disorder; NS = non-specified; OASIS = Overall Anxiety Severity and Impairment Scale; ODSIS = Overall Depression Severity and Impairment Scale.

Table 2
Adherence and attrition rates of the intervention

	N	%
Started the intervention/pre-treatment assessment	34	100
Completers (completed all 16 modules)	23	67.6
Non-completers	11	32.4
Completed at least 50 % of the modules and attended at least 50 % of the group sessions	5	14.7
Dropouts (after at least one module completed or one session attended)	6	17.7

Table 3
Online platform usage and sessions' attendance data.

	Mean	SD	Range
Modules completed	12.91	5.26	0–16
Total days spent in modules	73.48	56.06	16–199
Total logins	35.56	28.47	5–169
Total reviews	12.17	15.28	0–43
Number of attended videoconference sessions	5.44	1.99	1–8

3.3. Acceptability measures

3.3.1. Adherence to the web platform and videoconference group sessions

The adherence to the platform was adequate. More specifically, participants completed an average of 12.91 online modules (SD = 5.62; $N = 34$) and up to 70.6 % of participants completed at least up to module 12 (i.e., 75 % of total modules). In addition, participants attended an average of 5.44 (SD = 1.99; N = 34) videoconference group sessions and up to 61.8 % of participants attended at least six sessions (i.e., 75 % of total sessions). The specific attendance rates for each videoconference group session, based on the total of 34 participants enrolled, were as follows: 94.1 % for session 1, 85.3 % for session 2, 79.4 % for session 3, 55.9 % for session 4, 58.8 % for session 5, 58.8 % for session 6, 58.8 % for session 7, and 52.9 % for session 8. Table 4 shows the means, SD and ranges of the modules completed, the total days spent in modules ($n = 23$), the total logins ($n = 34$), the total reviews of the modules (n = 23) and the number of attended sessions.

Table 5 shows the means, SD and ranges of the number of days the participants spent on each module and the number of times each module was reviewed. The module that took the longest time to complete was module 5 (*Practicing acceptance*), followed by module 8 (*Emotional avoidance*). In contrast, the module that took the fewest days to complete was module 16 (*Relapse prevention*), followed by module 15 (*Living and learning*). The data indicated considerable variability among participants in the days required to complete a module. The recommendation was to progress at a rate of approximately one module per week, however the averages indicated shorter durations for many of the modules. This may be explained by the fact that they had the option of downloading materials and exercises from the platform and that the most time-consuming part was the activities and homework assignments. As for the reviews, the data showed a greater homogeneity among the participants. Despite the possibility of reviewing the modules, the reviews were generally not very frequent.

3.3.2. Treatment appropriateness, acceptability, and satisfaction

Before starting the intervention and once the rationale had been explained, the participants had fairly high expectations towards the treatment (i.e., anticipated appropriateness), as shown by the expectations scale. On a scale from 0 to 60, the mean score obtained was 47.39 (SD = 8.14). The treatment was assessed by participants as logical, potentially satisfactory, likely to be recommended, useful for addressing other psychological problems, useful for patients' own problems, and potentially non-invasive. Scores ranged from 2 to 10 in all items, except in the aversiveness one, which varied from 0 to 8 and is the only item in which lower scores indicate better outcomes.

Concerning the participants' opinion after the end of the intervention, the results show high satisfaction with the treatment. They obtained a mean score of 49.39 (SD = 8) out of 60 on the treatment opinion scale, which shows the appropriateness of the treatment. More specifically, participants considered the intervention logical, satisfactory, likely to be recommended to friends with the same problem, useful for other psychological problems, useful for patients' problems, and non-invasive. More details of acceptability can be found in Table 3.

Regarding system usability after the first use of the web platform (post-module 1), participants had a mean score of 84.02 (SD = 12.34) in the SUS. The global score can be expressed as a percentage, with values ranging from 0 to 100, so the results show an excellent usability and acceptability of the platform according to Bangor et al. (2008). Usability was reassessed after having used the online platform to complete the treatment (post-treatment evaluation), and the patients had a mean score of 80.98 (SD = 15.86) in the SUS, so usability remained high.

Opinions on the online modules were good. Participants rated the extent to which each module had been useful for them, on a scale ranging from 0 to 10. The average opinion of each online module can be seen in Fig. 2. All mean scores ranged from 7 to 8.29 out of 10.

Regarding the opinion of the videoconference group sessions, the results show good acceptance. The average score over the eight sessions for question 1 (usefulness for the problem for which they sought help) was 7.82, on a scale of 0 to 10. The mean scores for questions 2 (usefulness for other psychological problems at other times) and 3 (logic of the contents) were 8.15 and 8.67 out of 10, respectively. In question 4 (boredom/difficulty level), a mean score of 2.31 was obtained, being the only item in which low scores are preferred (reverse item). Concerning questions 5 (enjoyment/interest degree), 6 (clarity and understanding of content) and 7 (overall session score), mean scores of 8.03, 8.67 and 8.59 were obtained, respectively. The average scores for each session on each question can be seen in Fig. 3.

3.4. Preliminary effectiveness data

Table 6 includes estimated marginal means at pretreatment (T0), post-treatment (T1) and 3-month follow-up (T2). It also includes the value of the F statistic and the *p*-value for all primary and secondary outcomes, based on the ITT sample.

For all variables, significant differences were observed in the means between the three time points, with *p*-values ranging from <0.001 to 0.035. Therefore, post-hoc comparisons were performed to check between which means significant differences were found ('simple effects'). These comparisons are reported in Table 7.

Significant reductions were found between T0 and T1, as well as between T0 and T2 in anxiety and depression symptoms, NA, neuroticism, emotional regulation difficulties and functional impairment. Moreover, no significant differences were found between T1 and T2 in these variables, suggesting that changes were maintained at follow-up.

Similarly, a significant increase in quality of life was observed between T0 and T1, and between T0 and T2. In this case, no significant differences were observed between T1 and T2, indicating that improvement was maintained. However, regarding PA and extraversion, significant increases were found only between T0 and T1. This suggests that the changes achieved were not maintained at follow-up.

4. Discussion

In this study, our main goal was to investigate the feasibility of a novel form of administering transdiagnostic treatments: combining group and blended formats. Additionally, a secondary objective was to analyze the preliminary efficacy on several clinical measures.

Overall, the feasibility and acceptability results were encouraging, as indicated by the high expectations towards the treatment, the excellent usability of the platform and the large satisfaction with the intervention

Table 4
Days in each module and number of reviews in each module during the pre-post period.

		M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	M12	M13	M14	M15	M16
Days in module	N	33	31	31	31	30	28	28	28	27	27	26	24	24	24	23	23
	Mean (SD)	5.42 (7.44)	4.97 (4.65)	5.77 (9.55)	4.35 (5.78)	7.70 (14.66)	4.64 (5.99)	4.50 (6.56)	7.32 (13.74)	5.33 (10.47)	3.81 (5.86)	5.58 (12.7)	4.58 (7.03)	4.25 (5.45)	5 (7.22)	3.09 (3.74)	1.65 (1.77)
	Range	1–29	1–15	1–49	1–20	1–71	1–23	1–28	1–62	1–46	1–24	1–65	1–33	1–18	1–28	1–13	1–9
Number of reviews	N	33	31	31	31	30	28	28	28	27	27	26	24	24	24	23	23
	Mean (SD)	1.45 (1.92)	1.06 (1.79)	1.03 (1.85)	1.03 (1.91)	0.87 (1.55)	0.89 (1.57)	1 (1.81)	0.75 (1.40)	0.44 (1.22)	0.52 (1.16)	0.35 (0.63)	0.46 (1.02)	0.29 (0.75)	0.21 (0.66)	0.39 (1.31)	0.13 (0.34)
	Range	0–8	0–6	0–6	0–8	0–6	0–5	0–6	0–7	0–6	0–5	0–2	0–4	0–3	0–3	0–5	0–1

NOTE. M = Module.

Table 5
Acceptability measures, mean (SD).

EXPECTATIONS SCALE (*n* = 33)	47.39 (8.14)
Intervention logic	7.85 (1.68)
Treatment satisfaction	8.06 (1.62)
Treatment recommendation	8.21 (1.75)
Usefulness to treat other problems	7.55 (1.66)
Usefulness for patients' problems	7.91 (1.57)
Aversiveness*	2.18 (2.4)
OPINION SCALE (n = 23)	49.39 (8)
Intervention logic	8.43 (1.38)
Treatment satisfaction	8 (1.45)
Treatment recommendation	8.13 (1.77)
Usefulness to treat other problems	8.09 (1.68)
Usefulness for patients' problems	7.96 (1.64)
Aversiveness*	1.22 (1.57)
SUS after first use (n = 33)	84.02 (12.34)
SUS post-treatment (n = 23)	80.98 (15.86)

NOTE. * = inverse item; SUS = System Usability Scale.

Table 6
Clinical outcomes by means of repeated measures ANOVA using LMM (*n* = 33*).

Outcomes	Mean T0	Mean T1	Mean T2	*F*	*p value*
OASIS	10.1	4.16	5.24	34.16	**<0.001**
ODSIS	9.04	3.14	5.06	15.36	**<0.001**
PA_PANAS	22.8	28.26	26.53	5.3	**0.008**
NA_PANAS	30.59	18.95	22.25	34.74	**<0.001**
Neuroticism_NEO-FFI	33.73	28.39	29.14	6.87	**0.002**
Extraversion_NEO-FFI	22.74	25.6	24.86	3.66	**0.035**
DERS	85.07	64.56	68.99	17.42	**<0.001**
QLI	4.83	6.45	5.83	12.15	**<0.001**
WSAS	18.38	13.84	11.55	9.95	**<0.001**

NOTE. Fixed-effects factor: Time (T0 = pretest, T1 = posttest, T2 = follow-up). *F* = *F* statistic for comparing differences in means between the three measurement points. PA_PANAS = Positive Affect subscale of PANAS; NA_PANAS = Negative Affect subscale of PANAS; Neuroticism_NEO-FFI = Neuroticism subscale of NEO-FFI; Extraversion_NEO-FFI = Extraversion subscale of NEO-FFI. *ITT was conducted using LMM, but one participant was excluded from efficacy analyses because she started taking medication during treatment.

shown by participants. Furthermore, preliminary efficacy results were promising, as evidenced by significant reductions in anxiety and depressive symptoms, and changes in other secondary outcomes.

In terms of uptake, 78.4 % of the people who requested information were willing to participate. Nevertheless, only 38.6 % met the inclusion criteria and could start the intervention. Some of the challenges in recruitment were the preference of some people for other treatment formats (especially individual) and the difficulty in establishing a schedule of group sessions that would suit all potential participants. In any case, the initial reach is greater, and the intervention reach is similar to that found in other studies administering transdiagnostic treatments for depression and anxiety (Rahmadiana et al., 2021). Literature on blended group interventions remains scarce and we have not found any studies on the feasibility of transdiagnostic blended and group treatment.

In our study we found that 67.6 % of the participants completed treatment, while 32.4 % did not finish it. The non-completion rate is high, but inferior to that found in other studies on blended interventions (Rasing et al., 2021; Romijn et al., 2021) and comparable to that of other studies of both computerized and face-to-face treatments for depression (De Haan et al., 2013; Kaltenthaler et al., 2008). In fact, in the meta-analysis of Nunes-Zlotkowski et al. (2024) on blended interventions they found an average of 61 % of patients completing treatment. Furthermore, in a previous study using the same transdiagnostic treatment but individually self-administered in a guided online format, 37 % of the participants withdrew from the treatment (Díaz-García et al., 2021a). In the present study, in addition to introducing the blended format, the group format was also incorporated. Although some

Table 7
Post-hoc comparisons using Bonferroni's method.

Variable	Comparison	*D*	*p*	*d*
OASIS	T0 – T1	5.946	**< 0.001**	1.11
	T0 – T2	4.861	**< 0.001**	0.87
	T1 – T2	−1.085	0.600	−0.20
ODSIS	T0 – T1	5.908	**< 0.001**	0.75
	T0 – T2	3.985	**0.003**	0.48
	T1 – T2	−1.923	0.352	−0.24
PA_PANAS	T0 – T1	−5.459	**0.008**	−0.44
	T0 – T2	−3.723	0.127	−0.29
	T1 – T2	1.737	1.000	0.14
NA_PANAS	T0 – T1	11.638	**< 0.001**	1.19
	T0 – T2	8.332	**< 0.001**	0.82
	T1 – T2	−3.306	0.106	−0.34
Neuroticism_NEO-FFI	T0 – T1	5.341	**0.004**	0.47
	T0 – T2	4.589	**0.021**	0.39
	T1 – T2	−0.752	1.000	−0.06
Extraversion_NEO-FFI	T0 – T1	−2.861	**0.037**	−0.40
	T0 – T2	−2.123	0.206	−0.29
	T1 – T2	0.737	1.000	0.10
DERS	T0 – T1	20.507	**< 0.001**	0.83
	T0 – T2	16.084	**< 0.001**	0.63
	T1 – T2	−4.423	0.788	−0.18
QLI	T0 – T1	−1.612	**< 0.001**	−0.70
	T0 – T2	−0.996	**0.017**	−0.42
	T1 – T2	0.616	0.269	0.27
WSAS	T0 – T1	4.541	**0.014**	0.42
	T0 – T2	6.836	**< 0.001**	0.61
	T1 – T2	2.295	0.520	0.21

D = difference between the estimated means. *d* = Effect size in terms of Cohen's *d*, calculated by means of: $= \frac{D}{SE\sqrt{DF}}$. *SE* = Standard Error. *DF* = Degrees of Freedom. Following Cohen's criteria, *d* indices of 0.20, 0.50, and 0.80 (in absolute value) can be interpreted as reflecting low, moderate, and large practical significance.

participants were initially somewhat reluctant to the group format, slightly higher retention rates were still achieved in comparison. An initial impression is that a variable that may be related to dropouts is the length of the treatment, which could be carried out in a shorter period of time if the group sessions were closer together. For example, sessions could be held biweekly, and the length of the treatment would be shortened to a total of 16 weeks. Perhaps another possibility could be to propose that modules related to increasing well-being and PA be optional. Nevertheless, future qualitative research is needed to explore in-depth opinions about the intervention and reasons for dropping out.

Completion of the modules and attendance of the group sessions were generally adequate. Most participants adjusted to the pace and duration of the treatment, although we allowed some flexibility in progressing through the platform. The large variability among participants in the time spent in each module suggests the importance of flexibility, fostering the customization of the treatment, something that has been shown to be very relevant in previous studies (Fernández-Álvarez et al., 2017; Patel et al., 2020). Additionally, the averages obtained indicate that each module could take a certain amount of time to be completed. The results also indicate that participants could benefit more from the possibility of reviewing the modules.

Participants reported a high level of acceptability and satisfaction regarding the intervention, similar to what has been observed in other blended group studies (Schuster et al., 2022). Both the overall satisfaction with the intervention as well as the opinion about the online modules and the videoconference group sessions were highly good. These results are in line with other studies (Etzelmueller et al., 2018; Schuster et al., 2018) which generally conclude that blended interventions are positively valued and well accepted, and that the combination with technology is seen as a facilitator. They are also in line with studies on treatments delivered via videoconference, which show high patient satisfaction (Steel et al., 2011). With respect to usability, patients' means were above desirable (≥70) and around 'excellent' (Bangor et al., 2008). In short, it seems feasible to administer transdiagnostic treatment in a blended and group format, and this is in line with previous literature (Nunes-Zlotkowski et al., 2024; Peris-Baquero and Osma, 2023).

Considering our positive findings regarding the reduction in anxiety and depression symptomatology, this novel form of administering transdiagnostic treatment appears promising for ED. This transdiagnostic protocol has already been shown to be effective in a self-applied format in previous trials (Díaz-García et al., 2021a; González-Robles et al., 2020), but this study suggests that it may continue to maintain its effectiveness when applied in a group and blended format, something that has not been previously explored. These results are in line with meta-analysis studies demonstrating the effectiveness of transdiagnostic interventions for ED in group format (Cuijpers et al., 2023; Schaeuffele et al., 2024). Nonetheless, further research is needed to test the efficacy of such an innovative format in an RCT that compares the effectiveness of this intervention in relation to a standard group transdiagnostic treatment. Regarding secondary outcomes, we found a significant decrease in NA, neuroticism, difficulties in emotion regulation, and social and work impairment. Moreover, we also found a significant improvement in PA, extraversion and quality of life. Differences were generally significant between baseline and post-treatment, and between baseline and follow-up, suggesting the potential effectiveness of the intervention. However, changes in PA and extraversion were only found between baseline and post-treatment, suggesting difficulty in

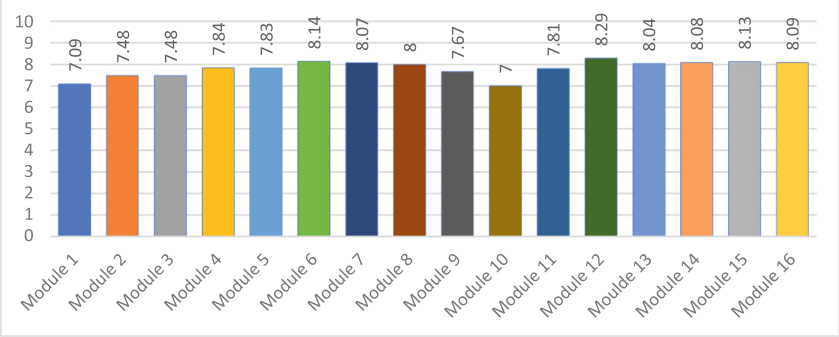

Fig. 2. Web-modules opinion (means)
NOTE. Module 1: Emotional disorders and emotion regulation; Module 2: Motivation for change; Module 3: Understanding the role of emotions; Module 4: Acceptance of emotional experiences; Module 5: Practicing acceptance; Module 6: Learning to be flexible; Module 7: Practicing cognitive flexibility; Module 8: Emotional avoidance; Module 9: Emotion-driven behaviors; Module 10: Accepting and facing physical sensations; Module 11: Facing emotions in the contexts where they occur; Module 12: Learning to move on; Module 13: Learning to enjoy; Module 14: Learning to live; Module 15: Living and learning; Module 16: Relapse prevention.

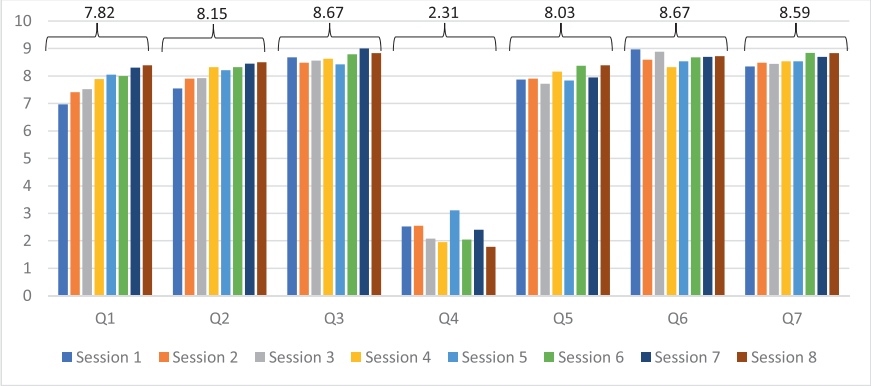

Fig. 3. Mean scores of the post-group session opinion questionnaire items
NOTE. Q = Question; Session 1: M1 (Emotional disorders and emotion regulation), M2 (Motivation for change), M3 (Understanding the role of emotions); Session 2: M4 (Acceptance of emotional experiences), M5 (Practicing acceptance); Session 3: M6 (Learning to be flexible), M7 (Practicing cognitive flexibility); Session 4: M8 (Emotional avoidance), M9 (Emotion-driven behaviors); Session 5: M10 (Accepting and facing physical sensations), M11 (Facing emotions in the contexts where they occur); Session 6: M12 (Learning to move on), M13 (Learning to enjoy); Session 7: M14 (Learning to live), M15 (Living and learning); Session 8: M16 (Relapse prevention).

maintaining changes in these constructs over time. This is consistent with earlier studies (Carl et al., 2013) which indicate that more prospective investigations are required to accurately characterize the functional and temporal link between ED and positive emotional disturbances.

This study presents some limitations. First, most of participants were female, married or in a relationship, and with a high educational level. Literature shows that a higher prevalence of ED in women and high rates of comorbidity are the most common (Farhane-Medina et al., 2022; Kessler et al., 2015), coinciding with what we found in our study, although future research should investigate more diverse groups to improve the generalizability of the results. Additionally, the sample size was small for effectiveness purposes, so robust conclusions cannot be drawn in this regard. It is also worth noting that our study had no control group, so improvements could have been due to other uncontrolled factors and these preliminary results need to be interpreted with caution.

Nevertheless, this study makes substantial contributions by showing that it might be feasible to continue with this research line, showing preliminary evidence regarding the interventions' utility. To the best of our knowledge, this was the first study to investigate the feasibility, acceptability, and preliminary efficacy of a transdiagnostic group treatment applied in blended format in patients with ED. It serves as a stepping stone to future studies with more refined designs, and will allow adaptations to be made (e.g., introduce strategies to improve adherence, adjust the setup of blended model – such as frequency of sessions – or the way of deliver contents) if deemed appropriate, based on what has been learned.

5. Conclusions

A blended, group transdiagnostic protocol seems to be feasible and preliminarily effective in addressing ED. Future research will explore whether it is an effective and more cost-effective way to treat these disorders.

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Declaration of competing interest

None.

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