

Journal of Cognitive-Behavioral Psychotherapy and Research

ORIGINAL ARTICLES

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Gülbüz Taşyıldız E, et al.

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Volume: 15 Issue: 3 Year: 2026

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Psychotherapy and
Research

Contents

Original Articles

- Evaluating the Feasibility of an Acceptance and Commitment Therapy Protocol
for Burnout in Health Care Professionals: A Single-Case Study.....127–142
Gürbüz Taşyıldız E, Nalbant A, Uysal Akdemir H, Yavuz KF

- Study Protocol for a Randomized Controlled Trial of the Efficacy of
a Transdiagnostic Cognitive Behavior Therapy Model Delivered in
Group Therapy for Anxiety Disorders143–155
Aydın İ, Uysal B, Türkçapar MH

- “Secondary Gain” Revisited: Preliminary Psychometric Evaluation
of a Reinforcement-Based Dimensional Assessment Framework
for Psychiatric Disorders.....156–171
Bağcaz A, Emekli E, Koçak OM

Review

- Attention-Focused and Attention-Related Interventions in
Metacognitive Therapy172–182
Batmaz S

Case Report

- Progressive Muscle Relaxation Exercise in Eating Disorders:
A Case Report of Bulimia Nervosa183–191
Oğur M, Sertel Berk HÖ, Yücel B

Letter to the Editor

- Statistical Centrality is Not a Clinical Priority: Case Formulation
for Cognitive Behavioral Therapy.....192–194
Güneysu İ

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a Transdiagnostic Cognitive Behavior Therapy Model Delivered in
Group Therapy for Anxiety Disorders143–155
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for Psychiatric Disorders.....156–171
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Letter to the Editor

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for Cognitive Behavioral Therapy.....192–194
Güneysu İ

Dear Readers,

We are pleased to present the third issue of the Journal of Cognitive Behavioral Psychotherapy and Research (JCBPR) for 2026. This issue reflects our continuing commitment to publishing methodologically sound, clinically relevant, and conceptually informative work in cognitive behavioral psychotherapies (CBT), while remaining responsive to the evolving questions and needs of the field.

The six contributions featured in this issue address a diverse range of topics, from case formulation and attention-focused interventions to relaxation techniques and Acceptance and Commitment Therapy (ACT). Together, they illustrate both the breadth of contemporary cognitive behavioral approaches and the continuing interaction between theoretical development, empirical investigation, and clinical practice.

The single-case study examining the feasibility of an ACT protocol for burnout among healthcare professionals provides an example of translating a theoretically grounded intervention into clinical practice. Similarly, the case report describing the use of progressive muscle relaxation in a patient with bulimia nervosa illustrates how behavioral and physiological regulation strategies may be incorporated into the treatment of eating disorders.

This issue also includes a study protocol for a randomized controlled trial evaluating a transdiagnostic CBT model delivered in a group format for anxiety disorders. Protocol publications have an important place in evidence-based research: by making hypotheses, interventions, outcomes, and methodological decisions explicit in advance, they enhance transparency and provide a foundation for subsequent empirical evaluation.

The original article presenting a preliminary psychometric evaluation of a reinforcement-based dimensional assessment framework in psychiatric disorders revisits the concept of “secondary gain” and proposes a novel measurement approach to understanding the role of reinforcement processes in psychological symptoms. The review article on attention-focused and attention-related interventions within metacognitive therapy synthesizes the available literature and provides clinicians and researchers with an organized overview of these techniques. Finally, the letter to the editor draws attention to a fundamental issue in CBT case formulation: statistical centrality does not necessarily correspond to clinical priority. In doing so, it offers a concise contribution to the continuing discussion on how empirical information can best inform individualized case conceptualization.

Taken together, these contributions highlight an important characteristic of CBT: its development depends on a continuous dialogue among theory, empirical evidence, and clinical observation. Case formulation generates testable hypotheses about individual problems; clinical interventions require systematic evaluation; and empirical findings, in turn, refine both our theoretical models and therapeutic practices. JCBPR aims to provide a forum in which these different levels of inquiry can inform one another.

We would also like to draw attention to an important upcoming event for our field. The EABCT Congress will be held in Brussels from September 16 to 19, 2026, with contributions from several members of the Cognitive Behavioral Psychotherapies Association of Türkiye and the JCBPR editorial board. Their participation reflects the journal's continuing engagement with developments in the international CBT community and our commitment to maintaining an active exchange among researchers and clinicians across countries and traditions.

We are grateful to our readers, whose interest gives the journal its purpose; to our reviewers, whose careful and expert evaluations are essential to maintaining scientific quality; and to our editorial board for its continued stewardship of the journal. We hope that the contributions in this issue will stimulate further research, clinical reflection, and discussion.

At a time when both mental health needs and the ways in which psychological knowledge is produced and disseminated are changing rapidly, the need for scientifically grounded, clinically meaningful, and critically evaluated knowledge remains fundamental. JCBPR will continue to contribute to this endeavor by supporting the dialogue between research and clinical practice that lies at the heart of cognitive behavioral psychotherapy.

Bengü Yücens / Executive Editor

Evaluating the Feasibility of an Acceptance and Commitment Therapy Protocol for Burnout in Health Care Professionals: A Single-Case Study

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ABSTRACT

Burnout, characterized by emotional exhaustion, depersonalization, and reduced accomplishment, is prevalent among healthcare workers, who face challenges in seeking treatment due to psychological and practical barriers. Acceptance and Commitment Therapy (ACT) has shown promise in addressing burnout by promoting psychological flexibility and value-driven behaviors. The aim of this study was to evaluate the feasibility, acceptability, and preliminary outcomes of an ACT-based intervention adapted from a self-help program for healthcare workers experiencing burnout, delivered through therapist-guided face-to-face sessions using a single-case experimental design. The study consisted of two separate stages with two participants. An 8-session ACT-based intervention protocol was applied, incorporating the Burnout Assessment Tool (BAT), Acceptance and Action Questionnaire II, Valuing Questionnaire, and personalized daily questions. Following the completion of Stage 1, the study proceeded to Stage 2 with some modifications. Results were evaluated using visual analysis, Tau-U, and the Reliable Change Index (RCI). Results from the Stage 1 indicated a significant decrease only in the BAT score, reflecting reduced burnout. Regarding daily measures, significant increases were observed in contact with values and experiential avoidance scores. In Stage 2, RCI analysis revealed a significant decrease only in the BAT score. However, Tau-U analysis of the daily questions indicated significant decreases in being present, experiential avoidance, and rumination-worry scores, and a significant increase in the valued living 1 score. The findings indicate that the self-help protocol may be feasible and acceptable, but further research is needed to confirm these findings.

Keywords: Acceptance and commitment therapy, burnout, feasibility, healthcare workers, protocol, single-case experimental design.

ÖZ

Sağlık Çalışanlarında Tükenmişliğe Yönelik Kabul ve Kararlılık Terapisi Protokolünün Uygulanabilirliğinin Değerlendirilmesi: Bir Tek Olgulu DeneySEL Çalışma

Tükenmişlik; duygusal yorgunluk, depersonalizasyon ve kişisel başarı hissinde azalma ile karakterize olup özellikle tedavi arayışında psikolojik ve pratik engellerle karşılaşan sağlık çalışanları arasında yaygındır. Kabul ve kararlılık terapisi (ACT), psikolojik esnekliği ve değerler doğrultusunda davranmayı destekleyerek tükenmişliği azaltmada umut verici bir yaklaşım olarak öne çıkmaktadır. Bu çalışmanın amacı, tükenmişlik yaşayan sağlık çalışanları için kendine yardım programından uyarlanan ACT temelli bir müdahalenin uygulanabilirliğini, kabul edilebilirliğini ve ön sonuçlarını değerlendirmektir. Müdahale, tek olgulu deneySEL çalışma (TODÇ) deseni kullanılarak terapist eşliğinde yüz yüze seanslar yoluyla gerçekleştirildi.



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Sekiz seanslık ACT temelli müdahale protokolü uygulanan değerlendirmelerde tükenmişlik ölçme aracı (BAT-TR), kabul ve eylem formu-II (KEF II), değer verme ölçeği (DVÖ) ve kişiselleştirilmiş günlük ölçümler uygulandı. Aşama 1'in tamamlanmasının ardından, bazı değişiklikler yapılarak yeni katılımcıyla Aşama 2'ye geçildi. Müdahale sonuçları görsel analizler, Tau-U ve güvenilir değişim endeksi (GDE) kullanılarak incelendi. Birinci aşamanın GDE analizine göre yalnızca BAT-TR puanında anlamlı bir azalma saptandı ve bu durum tükenmişlik düzeyinde düşüşe işaret etti. Günlük ölçümlerde ise değerlerle temas ve yaşantısal kaçınma puanlarında anlamlı artışlar gözlemlendi. İkinci aşamada da GDE analizine göre yalnızca BAT-TR puanında anlamlı bir azalma bulundu. Bununla birlikte, günlük ölçümlerin Tau-U analizinde anda olma, yaşantısal kaçınma ve ruminasyon-endişe puanlarında anlamlı azalmalar; değer doğrultusunda yaşama 1 puanında ise anlamlı bir artış belirlendi. Bulgular, kendine yardım protokolünün sağlık çalışanlarında tükenmişlik müdahalesi için uygulanabilir ve kabul edilebilir olabileceğine işaret etmektedir; ancak bu bulguların doğrulanması için daha fazla araştırmaya ihtiyaç vardır.

Anahtar Kelimeler: Kabul ve kararlılık terapisi, protokol, sağlık çalışanları, tek olgulu deneysel çalışma, tükenmişlik, uygulanabilirlik.

INTRODUCTION

The concept of burnout, originally identified among volunteer health workers, refers to a condition in which the work environment and interpersonal relationships are negatively affected by emotional exhaustion, depersonalization, and a reduced sense of accomplishment. (Freudenberger, 1975). It is often accompanied by symptoms such as fatigue, hopelessness, and helplessness, particularly among individuals who work directly with people and face intense demands (Freudenberger, 1975; Maslach et al., 2001).

Healthcare workers stand out as one of the groups most at-risk for burnout (Parker et al, 2022). They often underestimate their symptoms and may not seek help, believing that their distress is not severe enough to warrant treatment (Hopcraft, 2023; Wei et al., 2021). Additionally, shame and fear of disclosure associated with seeking mental health treatment may act as psychological barriers (Favre et al., 2023; Medeiros, 2018). Practical barriers, such as lack of time and limited access to mental health services, also contribute to low treatment-seeking rates (Clough et al., 2018; Harris, 2024). Therefore, addressing burnout among healthcare workers is considered highly crucial.

The limited evidence on burnout in the mental health field highlights the need for further research on effective interventions. Existing evidence suggests that third-wave cognitive-behavioral approaches, including meditation and mindfulness practices, may be especially promising in this area (Morse et al., 2012). Acceptance and Commitment Therapy (ACT) is one of these third-wave cognitive-behavioral therapies with growing empirical support (A-Tjak et al., 2015; Gloster et al, 2020). ACT is based on the concept of psychological flexibility, which includes six core processes: contact with

the present moment, acceptance, cognitive defusion, self-as-context, values, and committed action (Hayes et al., 2006).

While research on ACT for burnout is still emerging, evidence supports its efficacy in reducing burnout (Flaxman et al., 2013; McConachie et al., 2014; Moran, 2015; Towey-Swift et al., 2023). A review of the literature suggests that ACT-based self-help interventions are gradually expanding and appear promising as potentially effective approaches for burnout (Eklund & Kiritsis, 2019; Hofer et al., 2018; Eklund et al., 2023; van de Leur et al., 2025). Considering the difficulties healthcare workers face in seeking mental health support, self-help interventions might be helpful.

Although some studies have examined ACT-related processes, such as psychological flexibility and values, in relation to burnout and occupational outcomes (Çelik et al., 2024; Toprak et al., 2020), no study has directly evaluated ACT-based interventions for burnout among healthcare workers in Türkiye. The present study aimed to evaluate the acceptability and preliminary efficacy of an ACT-based burnout protocol developed for healthcare workers in Türkiye. We hypothesized that the protocol would demonstrate acceptable feasibility and preliminary efficacy.

METHODS

Design

This study is used an AB single-case Design. To gather more information and assess individual changes during the intervention, a single-case experimental design (SCED) with daily measurements was used. An eight-session ACT-based online self-help program (MyLife) was developed to address work-related stress and burnout among healthcare workers. As part of the program development process, a face-to-face

therapy protocol was derived from the self-help materials and used in a preliminary feasibility and content-testing phase to evaluate the applicability and clinical utility of the intervention prior to finalizing the online version. This phase was conducted with two healthcare workers presenting with burnout symptoms through therapist-guided sessions. Feedback and clinical observations obtained from this phase were used to refine and finalize the content of the online self-help program. The present study reports this initial feasibility phase and presents the implementation process, acceptability, and observed outcomes of the face-to-face adaptation of the protocol.

Process

The study was conducted with two different participants at separate time points (Stage 1 and Stage 2), and some modifications were made between the stages (details are provided in the relevant sections). Ethics approval was obtained from the Medipol University Ethics Committee (Approval Date: July 10, 2023; Decision No: 92). The study was conducted in accordance with the Declaration of Helsinki, and informed consent was obtained from all participants prior to participation. Participants were recruited through social media. Inclusion criteria were being employed as healthcare worker and having workplace-related burnout symptoms. Exclusion criteria were psychotropic medication use, ongoing psychotherapy, and suicidal ideation or self-harm thoughts.

Before the sessions, an assessment interview was conducted (by E.G.T) to evaluate the client's complaints and burnout symptoms based on the World Health Organization (2019) criteria. Eligible participants completed the pre-test measures following the interview.

Measures

Standardized Measures

The standardized measures were administered to participants via Google Forms after the assessment interview, and the same measures were re-administered after the intervention.

- **Burnout Assessment Tool (BAT):** The scale was developed by Schaufeli, Desart, and De Witte (2020) and adapted into Turkish by Koçak, Gençay, and Schaufeli (2022). It consists of six factors and 33 items rated on a 5-point Likert scale (1=Never, 5=Always), with higher scores indicating higher burnout levels. The Cronbach's alpha coefficient of the Turkish version was 0.95 (Koçak et al., 2022).
- **Acceptance and Action Questionnaire II (AAQ-II):** The scale, developed by Bond et al. (2011) to measure experiential avoidance is a 7-item, 7-point Likert-type scale (1=Never

true, 7=Always true). The Cronbach's alpha value of the scale, as determined by a Turkish validity and reliability study, was found to be 0.84 (Yavuz et al., 2016).

- **Valuing Questionnaire (VQ):** The scale, developed by Smout, Davies, Burns, and Christie (2014), consists of 10 items in two dimensions and uses a 7-point Likert-type scale (0=Not at all true, 6=Completely true). Aydın and Aydın (2017) conducted validity and reliability studies in Turkish, and the Cronbach's alpha value of the scale was found to be 0.78.

Idiographic Measures

In line with the SCED, idiographic daily measures were used based on a behavioral analysis conducted during the assessment interviews with participants. These measures were tailored to assess psychological inflexibility (the core concept of ACT) and burnout-related symptoms, ensuring that the daily questions reflected the individual patterns of functioning and clinically relevant difficulties experienced by the participants.

A 10-point Likert scale was used, with the participants being instructed to rate items from 1 (least appropriate) to 10 (very appropriate). Since environmental factors may also contribute to burnout, open-ended questions were also included to assess external factors. The daily questions were sent to the participant via Google Forms every day at 7:00 PM. If they were not completed, a reminder message was sent at 9:00 PM.

Details regarding the daily questions are provided within the Stage 1 and Stage 2 sections of this study.

Intervention

An ACT-based eight-session protocol titled "MyLife" was applied to the participants. Sessions lasted approximately 45 minutes. The sessions were conducted by a psychotherapist who is pursuing a master's degree in clinical psychology, has received training in ACT, and has completed supervision sessions (by E.G.T). The details of the intervention are provided in Table 1.

Statistical Analysis

The data analyses were conducted using three different approaches. First, the Reliable Change Index (RCI; Jacobson & Truax, 1991) was used to analyze reliable changes between the pre-intervention and post-intervention time points on standardized scales. Second, visual analyses were used to evaluate the data collected with the daily questions (Bulté & Onghena, 2011). Third, in addition to visual analysis, Tau-U analysis was used to interpret the statistical significance of the changes (Vannest et al., 2011).

Table 1. Intervention sessions

Sessions	Intervention
1. Introduction	Detailed problem assessment, psychoeducation, and general recommendations Experiential Exercise 1: Meaningfulness Over Obligations
2. For what?	Clarify and contact with values related to work Experiential Exercise 2: For What? Experiential Exercise 3: Retirement Party
3. My life	Clarification of and contact with values outside related to work Experiential Exercise 4: 80th Birthday
4. Me and my experiences	Contact with the present moment Experiential Exercise 5: Me and My Experiences Experiential Exercise 6: Slowing Down
5. Away and toward	Behavioral excesses and deficits, creative hopelessness, and acceptance Experiential Exercise 7: Awareness of Avoidance Experiential Exercise 8: Acceptance
6. Me and my body	Attending to emotions and the body, noticing the critical mind and the compassionate mind, and acceptance Experiential Exercise 9: Listening to My Body Experiential Exercise 10: Noticing the Critical Mind Experiential Exercise 11: Hearing the Compassionate Mind
7. Me and my mentor	Noticing the inner mentor and thoughts, and defusion Experiential Exercise 12: Noticing the Inner Mentor
8. Integration	Contextual self, and integration of the sessions Experiential Exercise 13: The Circle of My Life

Stage 1

Participant

Participant 1 was a 29-year-old female healthcare worker who had worked in the field for six years. She reported burnout symptoms related to excessive workload and difficult working conditions, including emotional exhaustion, tension, fatigue, sleep problems, and anger regulation difficulties.

Idiographic Measures

Table 2 presents the daily questions for Participant 1.

Table 2. Daily questions of participant 1

• Today, I felt tired and exhausted at work. (Burnout)
• While working at my workplace today, I experienced challenging emotions (e.g., anger, intolerance, unhappiness, etc.). (Negative affect)
• During my work today, I recognized the significance of this job to me. (Contact with values)
• While working today, I was influenced by certain thoughts (e.g. “I am inadequate or incompetent”) and/or challenging emotions (e.g anger, worthlessness, inadequacy, anxiety, sadness, helplessness, etc.), or I made an effort not to experience them. (Experiential avoidance)
• Today, at work, I exhibited a stance closer to the person I aspire to be in my profession. (Valued living 1)
• Today, I took small steps in significant areas of my life outside of work. (Valued living 2)
o Did you experience any positive situations or events at your workplace today? If yes, please describe them briefly.
o Did you experience any negative situations or events at your workplace today? If yes, please describe them briefly.
Daily measurements were collected during the baseline phase (4 days before the intervention), throughout the intervention phase, and during the follow-up phase (7 days after the intervention).

Intervention

Intervention sessions with Participant 1 were conducted twice a week.

Results of Stage1

The results of the RCI analysis of Participant 1’s pre-test and post-test scores (Table 3), the Tau-U analysis of the daily questions (Table 4), and the visual analysis of the statistical analyses for each variable collected daily from Participant 1 are presented below.

According to Table 3, the RCI results indicate both reliable and non-reliable changes across the scales. The participant’s BAT score decreased relative to baseline, with an RCI of 49.69 indicating reliable improvement ($|RCI| > 1.96$). The participant’s AAQ-II score also decreased after the intervention, reflecting increased psychological flexibility; however, the RCI of 1.82 did not exceed the ± 1.96 threshold. The decline in value-consistent behaviors on the VQ-Progress score was not reliable ($RCI = 0.43$, $|RCI| < 1.96$). Although the VQ-Obstruction score decreased, indicating fewer perceived barriers to value-based behaviors, the RCI of 0.73 also fell below the ± 1.96 threshold.

Table 3. RCI results of participant 1

Scale	Pre-test	Post-test	Scale SD	Cronbach's alpha	RCI-value
BAT	121	110	0.70	0.95	49.69
AAQ-II	33	25	7.76	0.84	1.82
VQ-progress	15	14	3.45	0.77	0.43
VQ-obstruction	20	18	3.45	0.76	0.73

BAT: Burnout assessment tool; AAQ-II: Acceptance and Action Questionnaire II; VQ: Valuing Questionnaire; RCI: Reliable Change Index; SD: Standard deviation.

Table 4. Tau-U results of participant 1

	Phase	Tau-U	p-value	Z-score
Burnout	A–B	-0.1481	0.6374	-0.4714
Negative affect	A–B	0.4815	0.1255	15.321
Contact with values	A–B	0.6759	0.0315	21.508
Experiential avoidance	A–B	0.7315	0.0199	23.276
Valued living 1	A–B	0.2407	0.4437	0.7660
Valued living 2	A–B	0.1574	0.6165	0.5009

Phase A: Baseline; Phase B: Intervention.

According to visual analysis, changes were observed between the baseline and intervention phases. However, the Tau-U analysis revealed that only the scores for contact with values and experiential avoidance were statistically significant (Table 4). As expected, the contact with values score showed a significant increase (Fig. 1), and the experiential avoidance score, contrary to expectations, significantly increased (Fig. 2). As shown by the Tau-U results, no significant changes were observed in the scores for burnout (Fig. 3), negative affect (Fig. 4), valued living 1 (Fig. 5), and valued living 2 (Fig. 6).

Discussion of Stage1

The RCIs indicated that Participant 1 showed reduced burnout levels, whereas changes in psychological flexibility and value-consistent behaviors were non-significant. The RCI values may have been influenced by the standard deviations of the scales. The BAT showed a high RCI value, likely due to its low standard deviation, requiring cautious interpretation. The non-significant AAQ-II and VQ results were consistent with the Tau-U findings.

Evidence from daily measures indicated changes in the participant's scores; however, according to the Tau-U results, there were no significant changes in the burnout, negative affect, valued living 1, or valued living 2 scores. Contrary to expectations, the experiential avoidance score significantly increased. Only the contact with values score showed a significant increase as anticipated.

Throughout the intervention sessions, the participant reported

escalating difficulties at her workplace, including conflicts with her supervisors and being blamed for a financial issue. The lack of significant change in her burnout and negative affect scores can be understood in this context.

Although the participant's contact with values scores increased, no significant changes were observed in the Valued Living 1 and Valued Living 2 scores. This may be related to the sessions being scheduled every three days, along with the participant's heavy workload and long commute. These factors may have limited homework completion and engagement in value-consistent actions.

The increase in the participant's experiential avoidance score, contrary to expectations, is thought to be due to a misunderstanding or misinterpretation of the question related to experiential avoidance. Feedback on this matter was received from the participant during a follow-up assessment (see Section 3.6).

Regarding environmental factors, the participant experienced more negative than positive events daily, which may have contributed to the lack of significant changes. Additionally, the baseline phase was relatively short, which may have affected both the significant and non-significant results.

Follow-up Assessment

At the conclusion of the sessions with Participant 1, a follow-up interview was conducted by a different researcher (A.N.) to ensure impartiality. The participant reported that two sessions per week were overwhelming, that work demands made scheduling difficult, and that she struggled to complete home exercises. She also reported that she had interpreted the experiential avoidance question in the opposite way and had responded accordingly. Based on this feedback, a second phase of the study was conducted with another participant to refine and further evaluate the feasibility of the intervention protocol. In this phase, sessions were held weekly, idiographic daily questions were refined through a more detailed behavioral analysis, and the baseline and follow-up periods were extended (see Stage 2).



Figure 1. Contact with values.

Stage 2

Participant

Participant 2 was a 24-year-old female emergency healthcare worker with two months of work experience. She reported burnout symptoms related to challenging working conditions, including mental fatigue, hopelessness, sleep difficulties, work-related preoccupation, and concerns about making mistakes at work.

Idiographic Measures

Table 5 presents the daily questions for Participant 2.

Intervention

Intervention sessions with Participant 2 were conducted once a week.

Results of Stage 2

Table 6 presents the RCI analysis results for the pre-test and post-test scores, and Table 7 contains the results of the Tau-U analysis for Participant 2.

According to Table 6, the RCI results showed both reliable and non-reliable changes across the scales. The participant’s BAT score decreased, with an RCI of 81.32 indicating reliable improvement ($|RCI| > 1.96$). Although the AAQ-II score decreased, reflecting increased psychological flexibility, the

Table 5. Daily questions of participant 2

- Today, I struggled to concentrate on what I did. (**Being present**)
- I experienced challenging emotions today (e.g., feeling stuck, helplessness, hopelessness, or feeling overwhelmed etc).
- (**Negative affect**)
- Today, I recognized the significance of this job to me. (**Contact with values**)
- When I experienced challenging emotions today (such as anger, hopelessness, helplessness, worthlessness, impatience, etc.), I acted like someone I didn’t want to be. (**Experiential avoidance**)
- Today, I kept thinking about the events I experienced or was likely to experience related to my work. (**Rumination-worry**)
- Today, at work, I exhibited a stance closer to the person I aspire to be in my profession. (**Valued living 1**)
- Today, I took small steps in significant areas of my life outside of work. (**Valued living 2**)
- Did any negative event that you experienced today or in recent days affect your day?
- Did any positive event that you experienced today or in recent days affect your day?
- Did you go to work today?

Daily measurements were conducted across the baseline (8 days before the intervention), intervention, and follow-up (7 days after the intervention) phases.

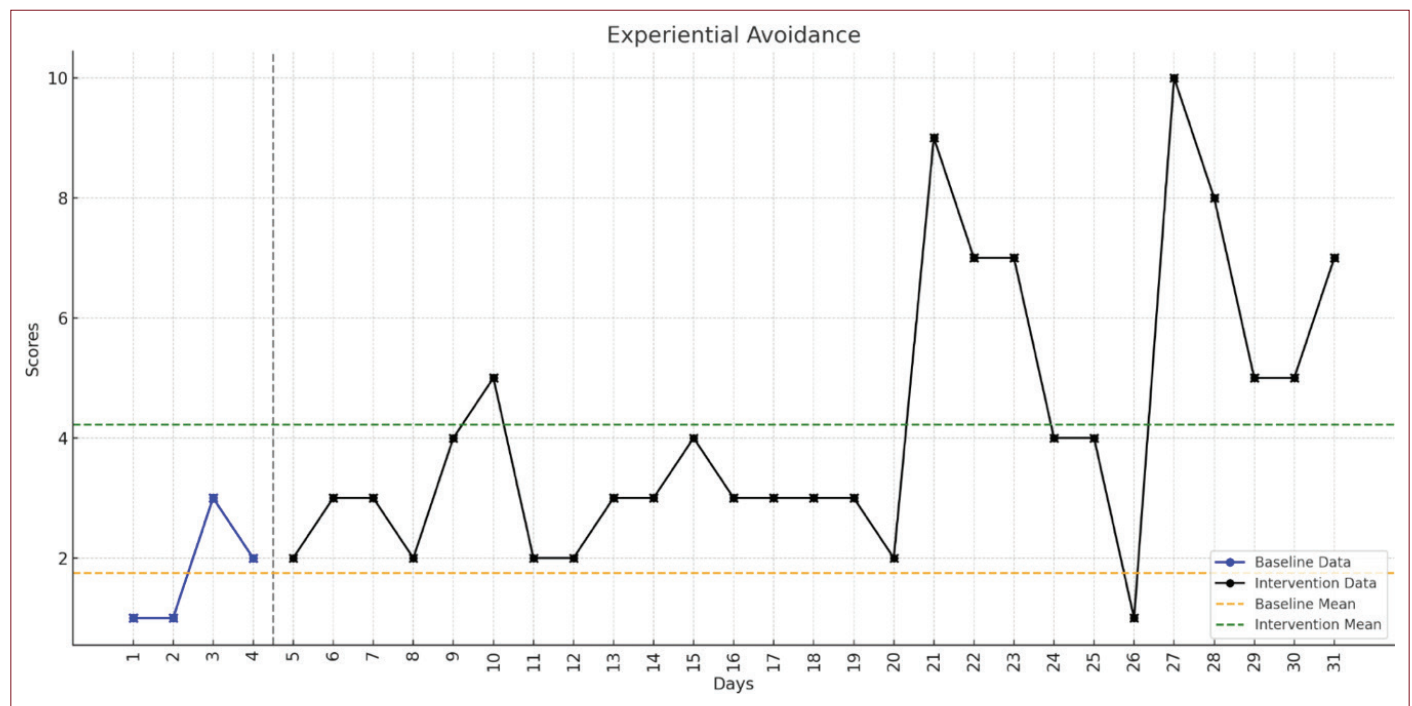


Figure 2. Experiential avoidance.

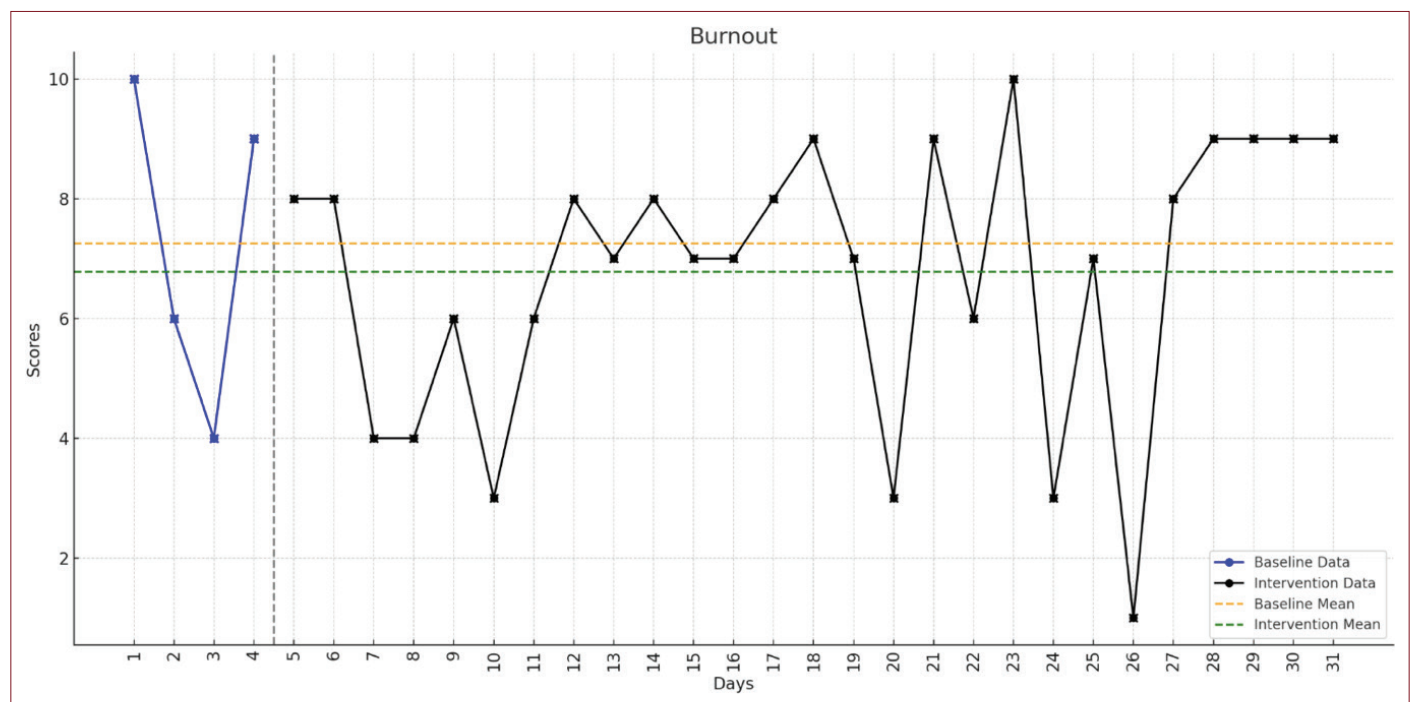


Figure 3. Burnout.

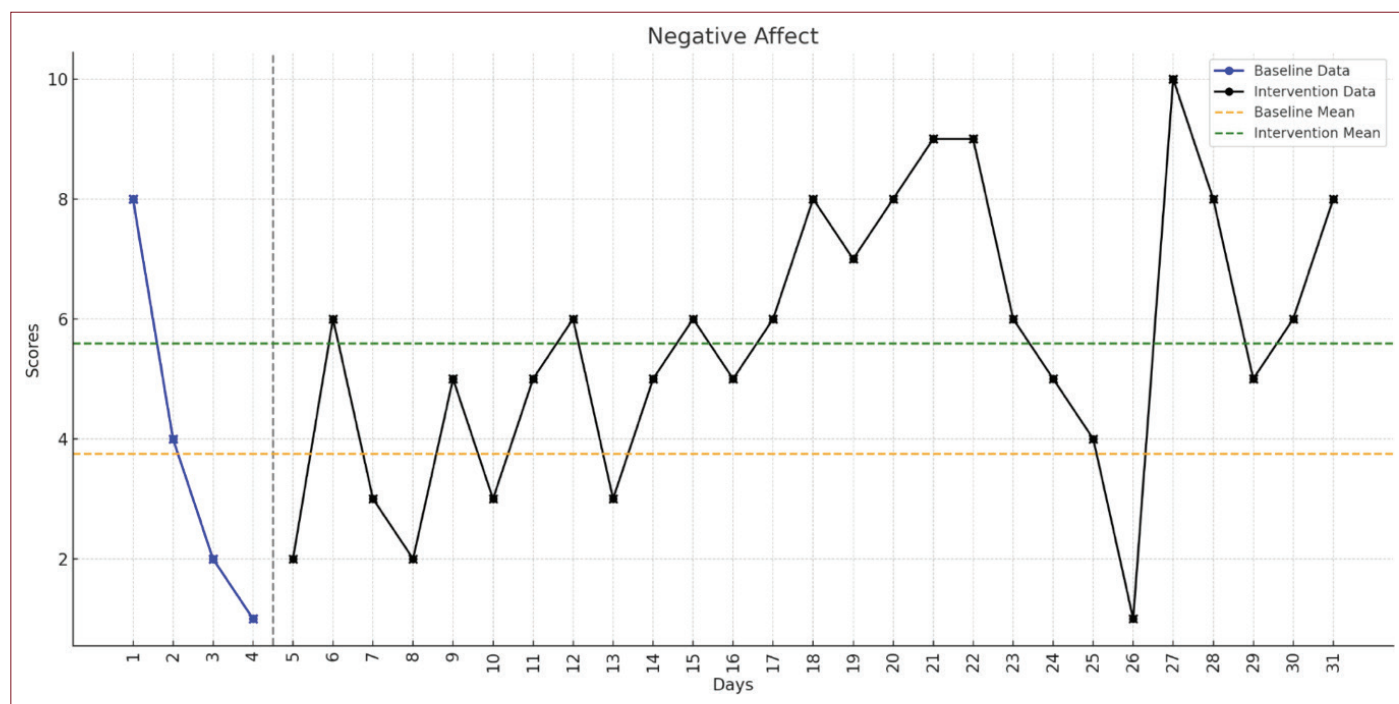


Figure 4. Negative affect.

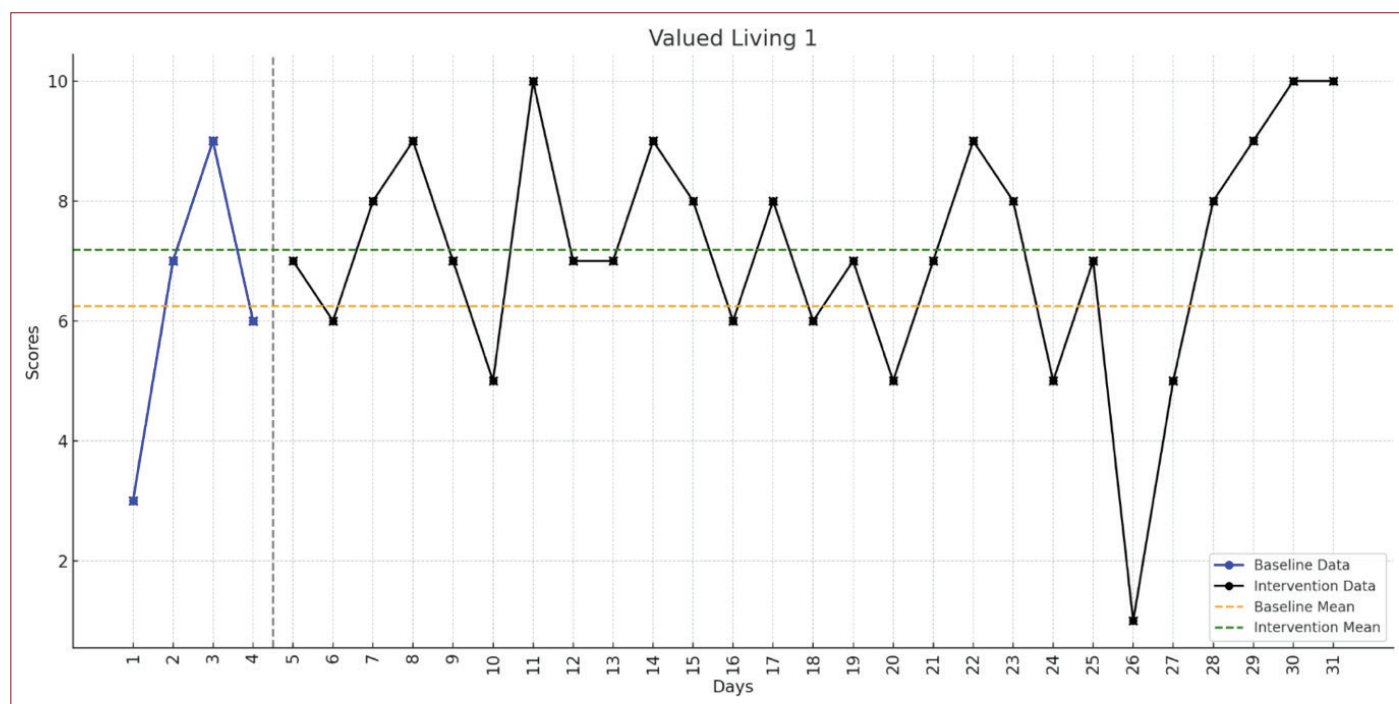


Figure 5. Valued living 1.

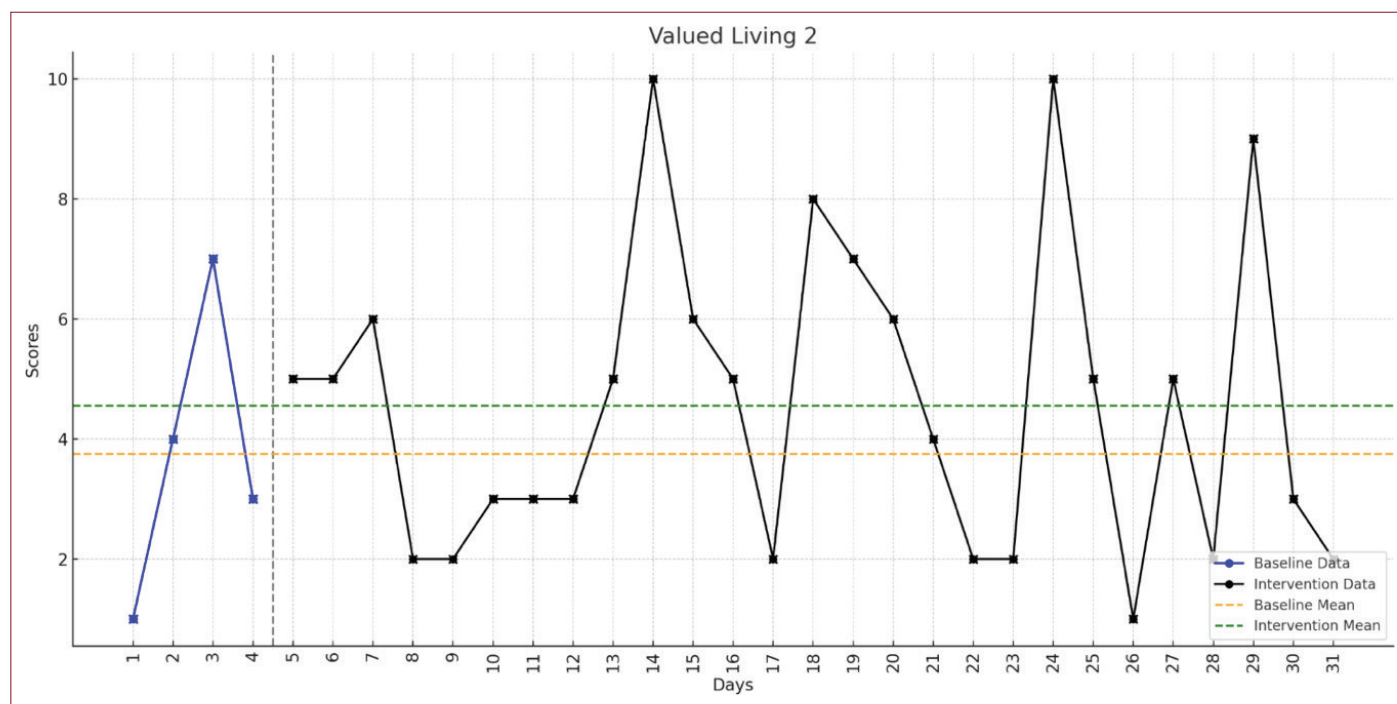


Figure 6. Valued living 2.

Table 6. RCI results of participant 2

Scale	Pre-test	Post-test	Scale SD	Cronbach's alpha	RCI value
BAT	88	70	0.70	0.95	81.32
AAQ-II	24	20	7.76	0.84	0.91
VQ-Progress	21	21	3.45	0.77	0.00
VQ-Obstruction	13	11	3.45	0.76	0.73

BAT: Burnout assessment tool; AAQ-II: Acceptance and Action Questionnaire II; VQ: Valuing Questionnaire; RCI: Reliable Change Index; SD: Standard deviation.

Table 7. Tau-U results of participant 2

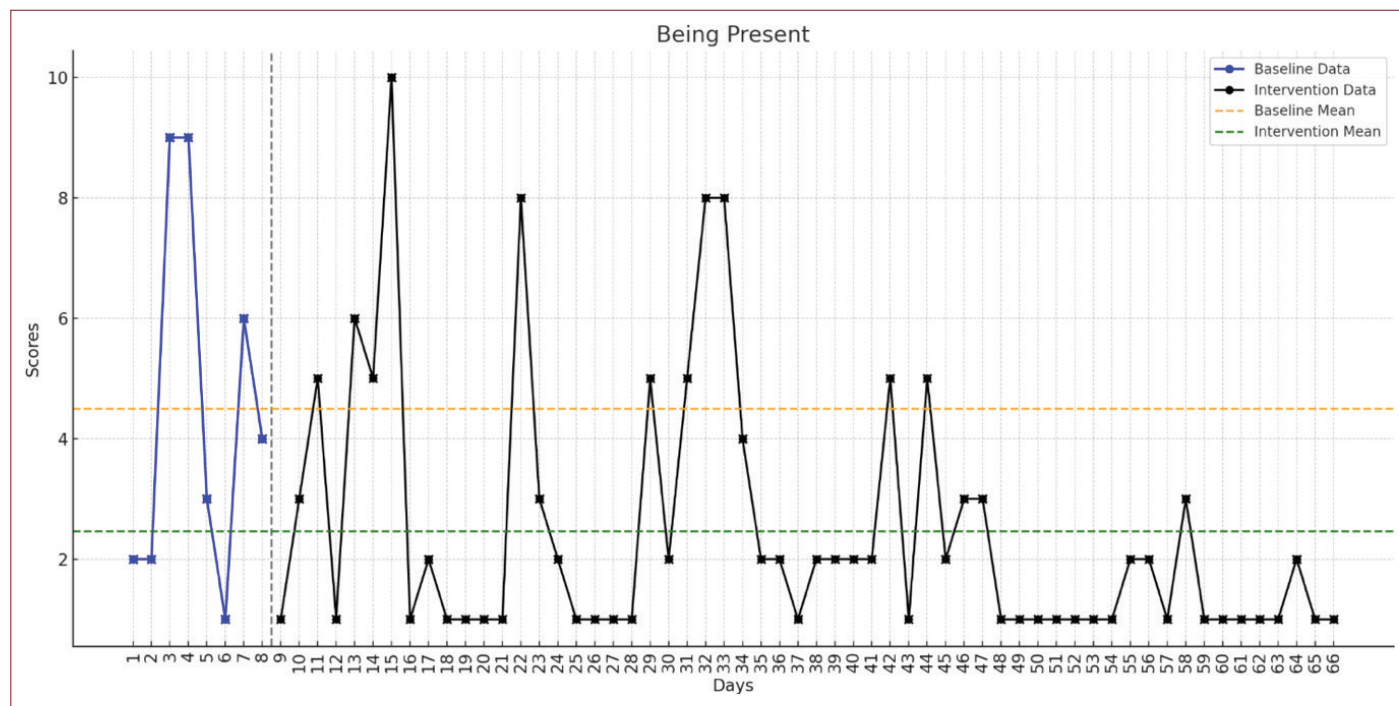
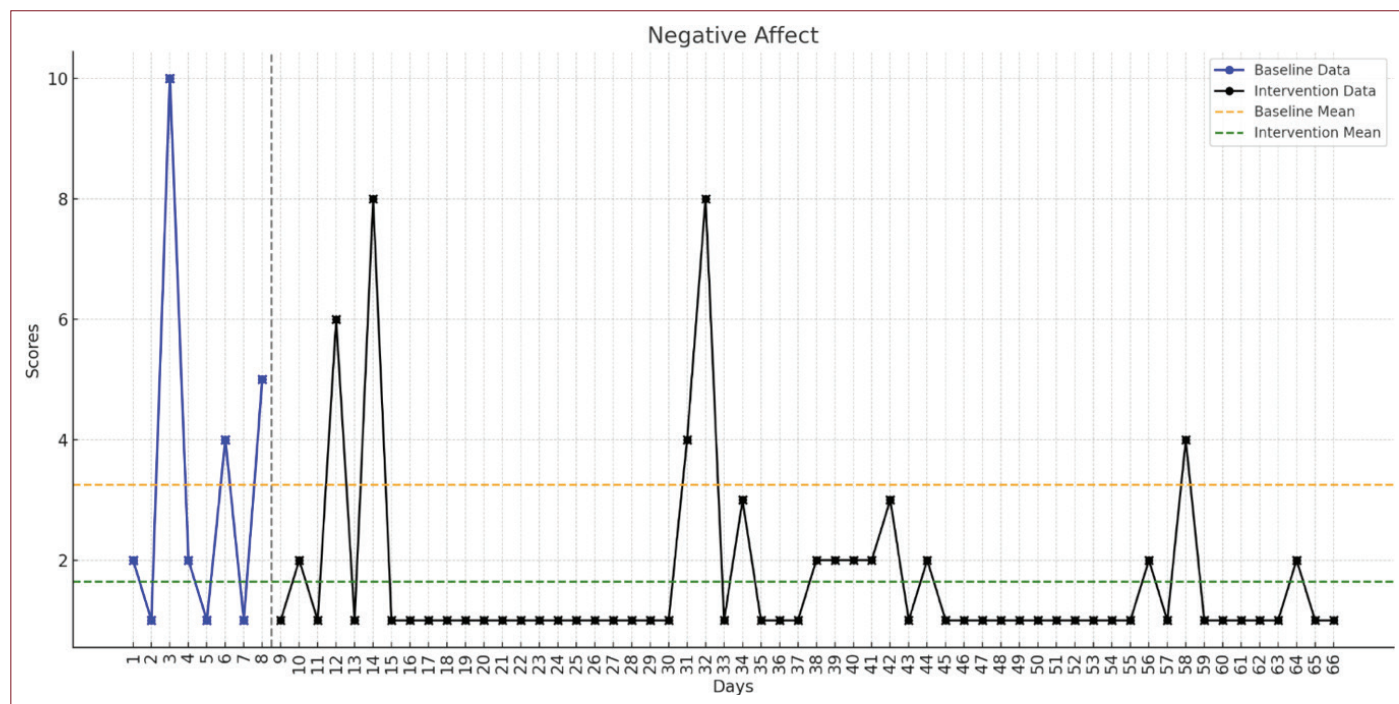
	Phase	Tau-U	p-value	Z-score
Being present	A–B	-0.4677	0.0330	-2.1317
Negative affect	A–B	-0.4030	0.0662	-1.8370
Contact with values	A–B	0.4698	0.0322	2.1415
Experiential avoidance	A–B	-0.5049	0.0301	-2.1691
Rumination- worry	A–B	-0.6789	0.0020	-3.0944
Valued living 1	A–B	0.8815	0.0001	4.0178
Valued living 2	A–B	0.3448	0.1385	1.4813

Phase A: Baseline; Phase B: Intervention.

RCI of 0.91 was not reliable ($|RCI| < 1.96$). The VQ-Progress score remained unchanged between the pre- and post-tests ($RCI = 0.00$). Although the VQ-Obstruction score decreased,

the RCI of 0.73 did not exceed the ± 1.96 threshold ($|RCI| < 1.96$).

The visual and Tau-U analyses revealed several notable findings. The participant's being present scores (Fig. 7) showed a decreasing trend, with a significant reduction observed in the post-intervention phase ($p < 0.05$). Although negative affect scores (Fig. 8) visually appeared to decrease, the Tau-U analysis did not reveal a statistically significant change ($p > 0.05$). In contrast, contact with values scores (Fig. 9) exhibited an increasing trend, which was statistically significant according to the Tau-U analysis ($p < 0.05$). Similarly, experiential avoidance (Fig. 10) and rumination-worry scores (Fig. 11) both showed significant decreases from baseline to the intervention phase ($p < 0.05$). Furthermore, the valued living 1 scores (Fig. 12) increased significantly after the intervention ($p < 0.05$), while valued living 2 (Fig. 13) scores exhibited an increase in the

**Figure 7.** Being present.**Figure 8.** Negative affect.

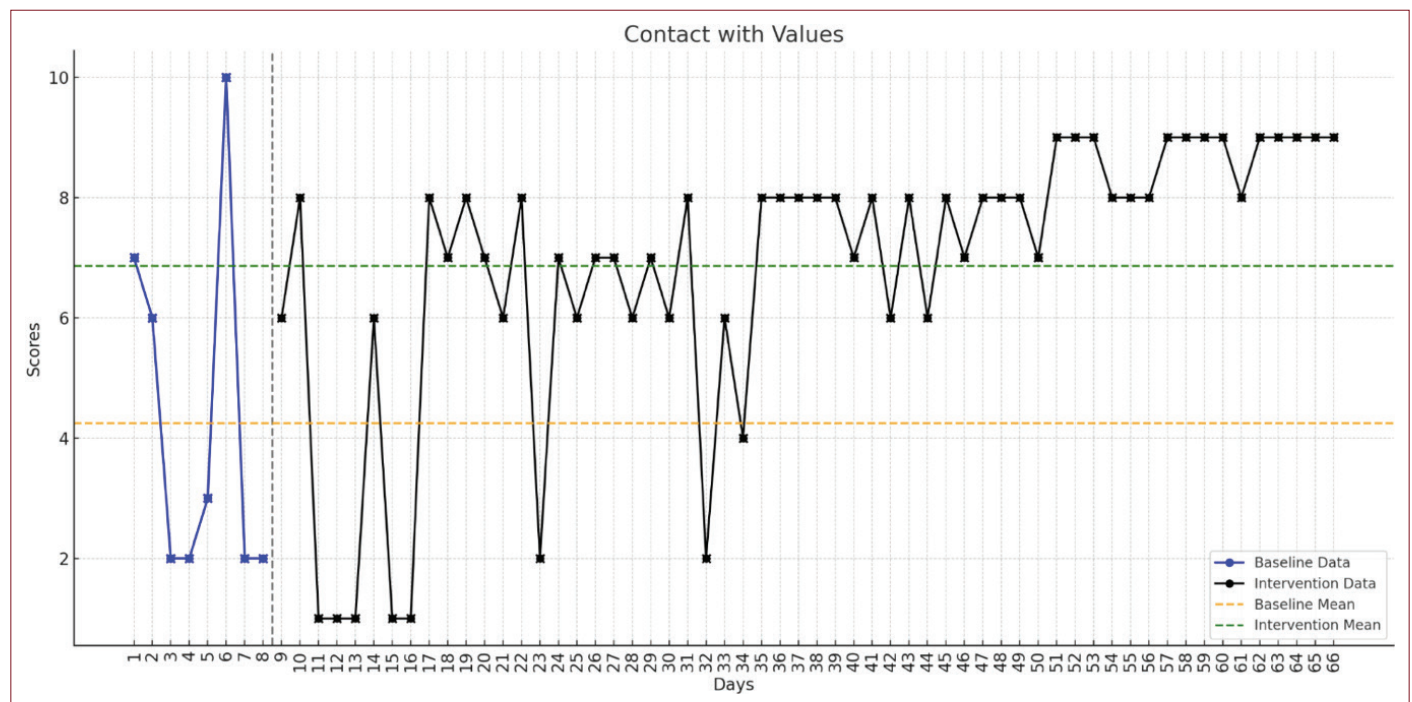


Figure 9. Contact with values.

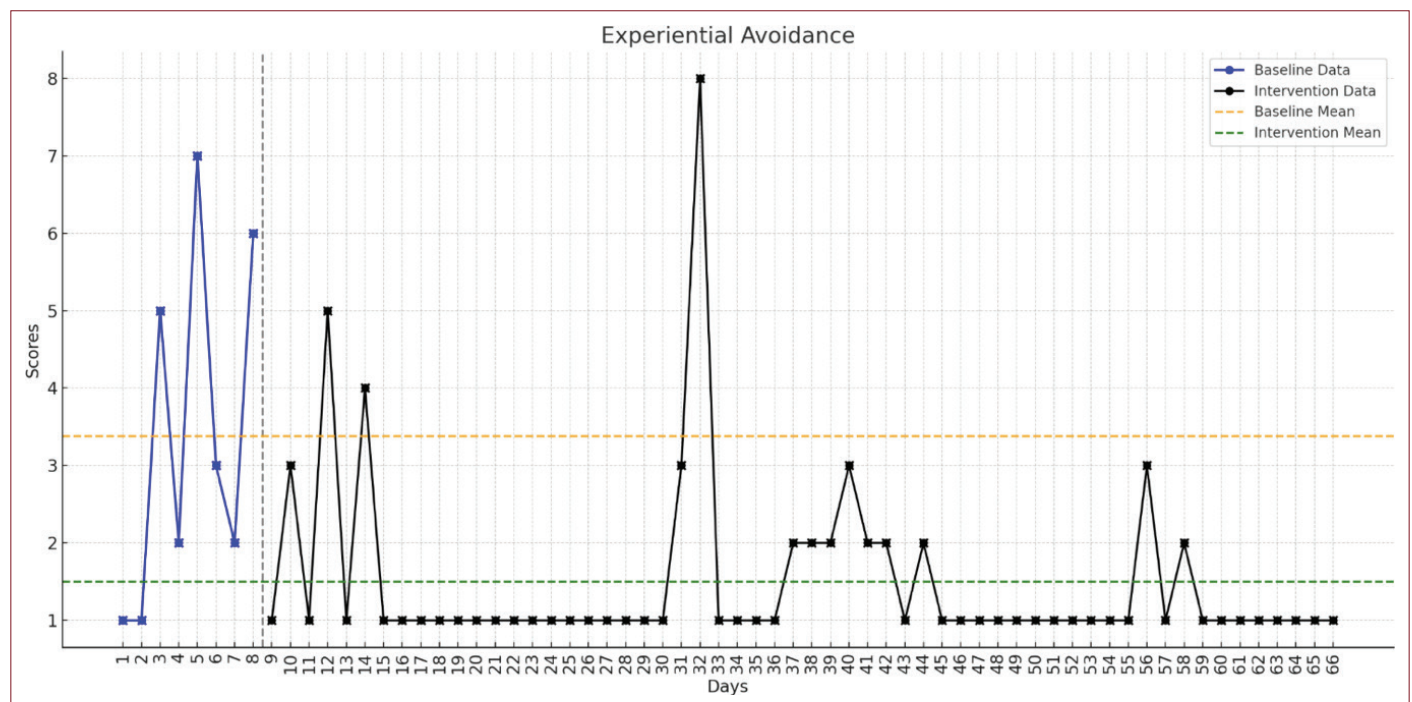


Figure 10. Experiential avoidance.

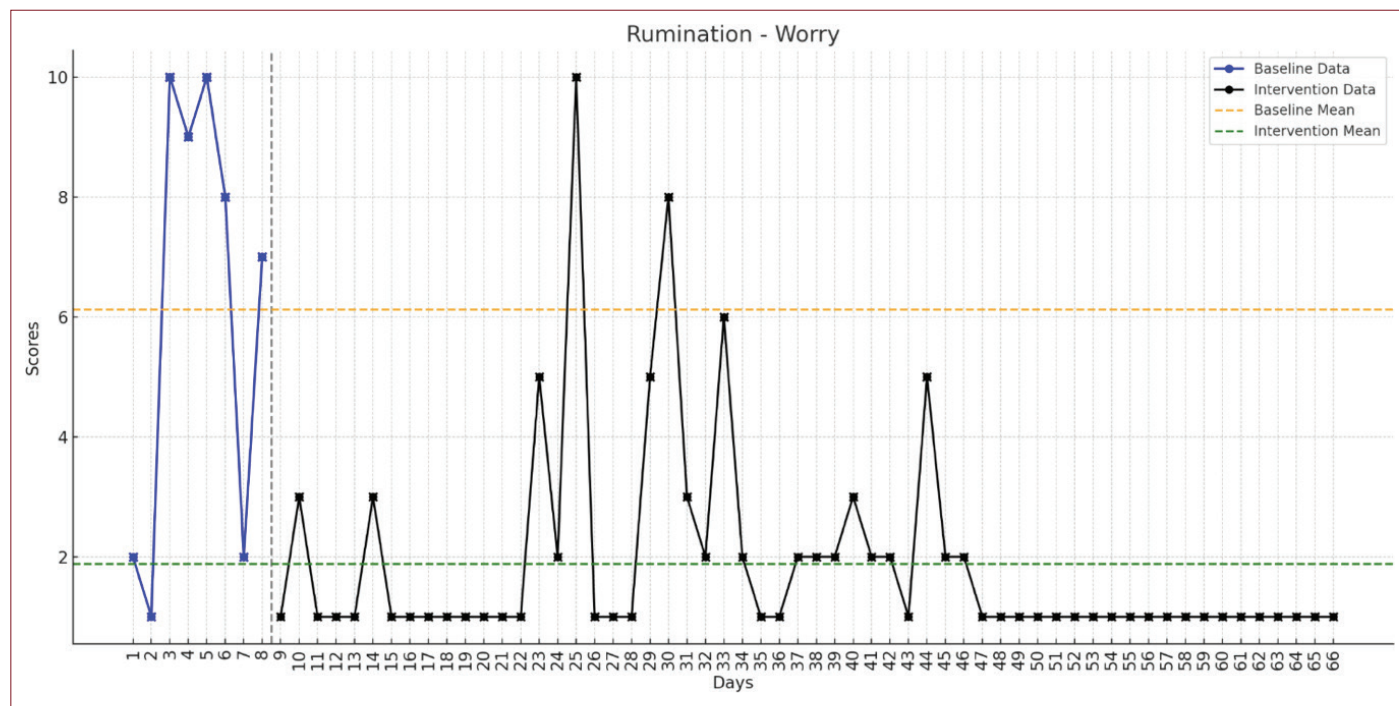


Figure 11. Rumination- worry.

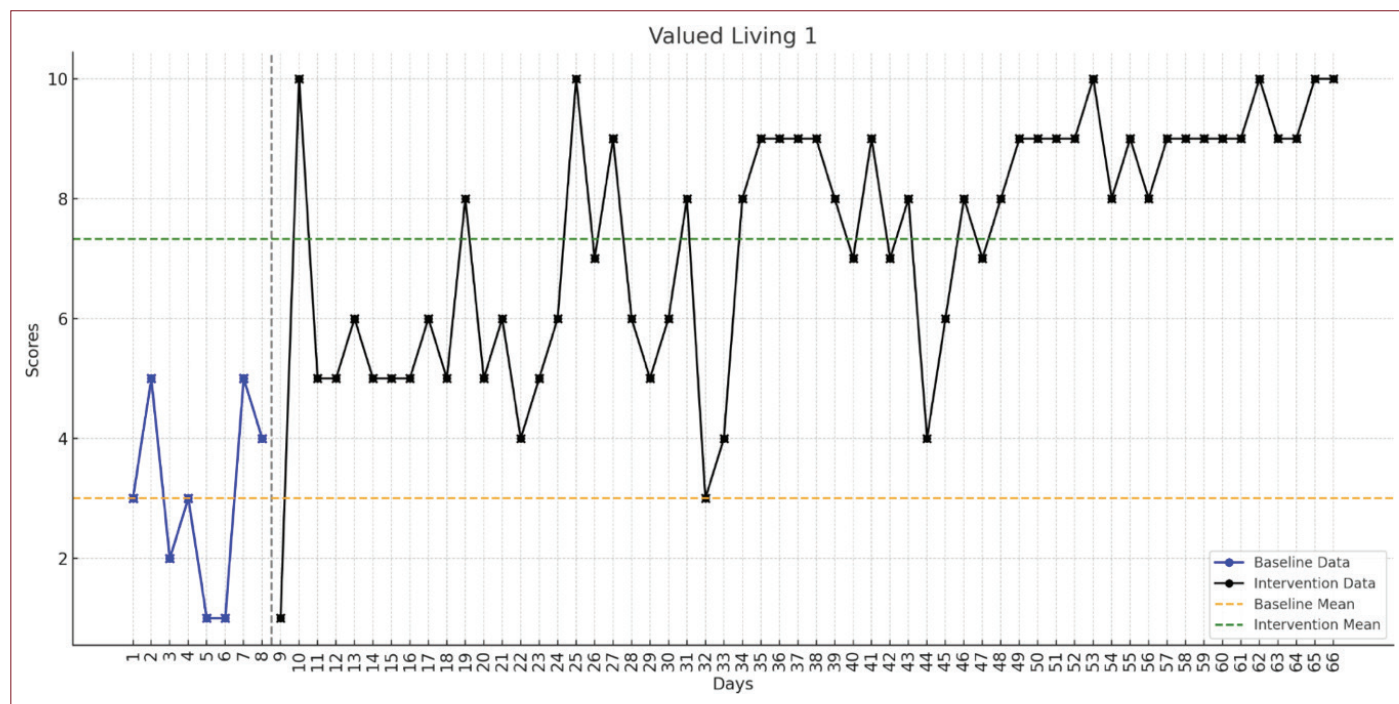


Figure 12. Valued living 1.

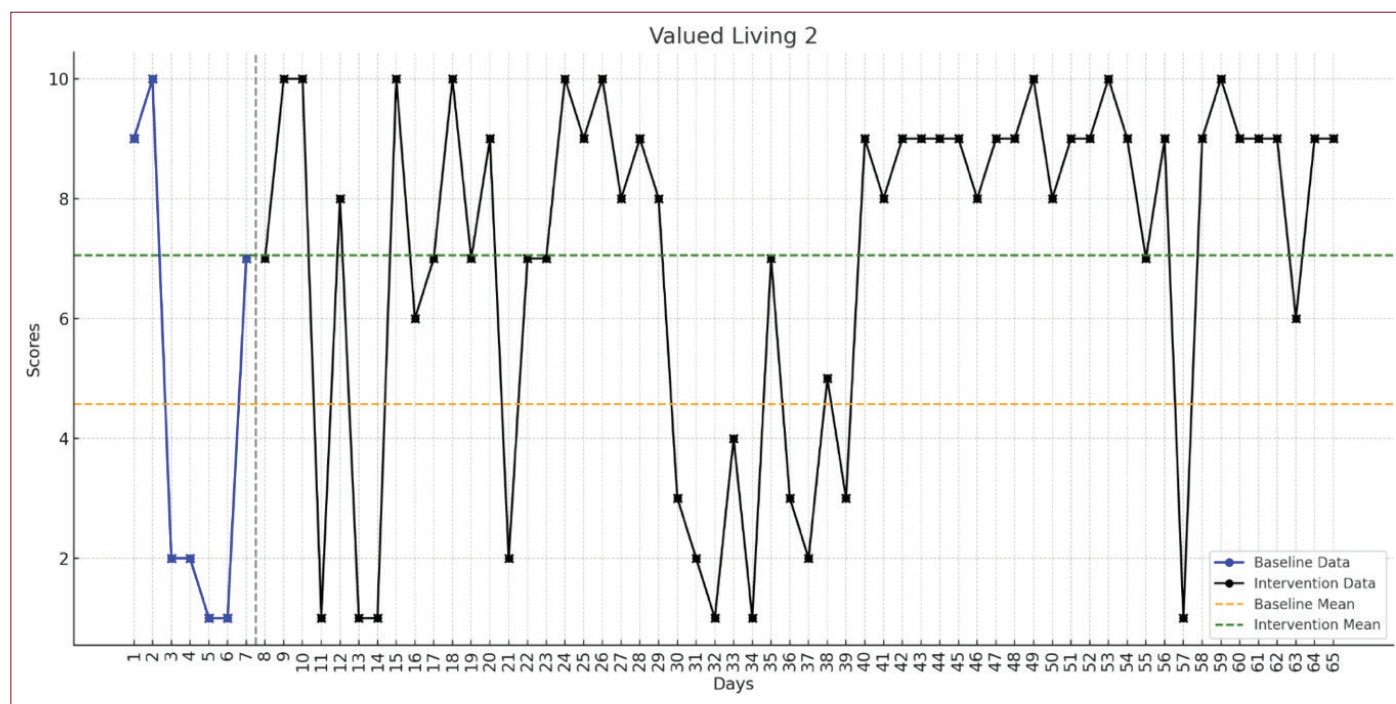


Figure 13. Valued living 2.

intervention phase, though this change was not statistically significant ($p>0.05$).

Discussion of Stage 2

RCI results, similar to those of Participant 1, revealed a significant reduction in burnout levels with a large RCI value for participant 2. However, changes in psychological flexibility, value-consistent behaviors, and perceived barriers to valued living did not reach statistical significance.

In this participant, the visual and Tau-U analyses of the daily questions indicated significant patterns, which appear somewhat inconsistent with the RCI findings. While RCI analyses rely on two time points—pre- and post-intervention—daily analyses capture more dynamic fluctuations. Considering the daily events experienced by the participant in the workplace, it is possible that the RCI results may have overlooked certain changes.

Evidence from daily measures indicated changes in the participant's scores, and the Tau-U results showed that there were significant changes in contact with values, experiential avoidance, rumination-worry, and valued living 1 scores. However, according to the Tau-U results there were no significant changes in negative affect and valued living 2 scores. Contrary to expectations, the being present score significantly decreased.

During the eight-week intervention, the participant continued to face a heavy workload and challenging patient profiles in the emergency department. Additionally, she was preparing for a highly rigorous specialty exam. Therefore, the absence of a significant reduction in negative affect can be understood within this context.

Similarly, the change in the participant's valued living 2 score, reflecting value-driven actions outside of work, was not significant. In line with the ACT model, developing psychological flexibility and engaging in values-driven behaviors is a gradual process. These changes may have been more evident in follow-up assessments; however, the absence of follow-up measurements likely contributed to the non-significant findings.

The participant's being present score showed a significant decrease, contrary to expectations. One possible explanation is that she did not fully understand the question. She also frequently reported distractibility during sessions. Since the question was related to concentration, it may not have measured the intended construct accurately. Furthermore, during the final weeks of the intervention, she received a new assignment at a busier hospital in the city center. Distressed by this news, she frequently expressed concerns during the final sessions. These factors may have contributed to the decrease in the being present score.

CONCLUSION

This report discusses a two-stage study examining the needs, feasibility, and acceptability of a self-help program for healthcare workers experiencing burnout. Stage 1 of the study yielded mostly non-significant results, prompting a follow-up meeting to explore underlying factors and gather participant insights. Based on this feedback, we modified the program and study design, leading to more distinct and significant outcomes in the second stage.

While RCI analyses of the standardized measures indicated significant reductions only in burnout symptoms, a different pattern emerged in the daily measures. Specifically, variables reflecting burnout-related experiences and negative affect did not show consistent change, whereas significant changes were observed in psychological flexibility-related processes, including contact with values, valued living, and experiential avoidance, especially in Stage 2. These findings are also consistent with the results reported by Reeve, Moghaddam, Tickle, and Young (2021). In their study, changes in variables such as emotional exhaustion and work engagement were observed in the standardized measures, whereas significant changes in psychological well-being and behavioral alignment were primarily detected through daily measures.

This pattern may be explained in several ways. Daily measures may have been more closely aligned with the specific ACT processes targeted during the intervention, making them more sensitive to change. Additionally, in ACT, changes in psychological flexibility and value-consistent behavior are expected to emerge before broader reductions in symptoms, as the model focuses on engaging in valued actions rather than directly targeting internal experiences (Hayes et al., 1999). Taken together, these findings suggest that daily measures in SCED research may be better suited to detecting clinically meaningful changes in intervention targets.

Several limitations should be considered when interpreting the findings of the present study. The study included only two female participants, which limits the generalizability of the findings. Additionally, the relatively short baseline and follow-up periods may have limited the evaluation of change and maintenance over time, particularly given the nature of ACT processes.

Burnout remains a relatively underexplored area, particularly in relation to ACT-based interventions. In Türkiye, research in this area is limited, highlighting the need for structured intervention programs. Given the complex nature of burnout, more comprehensive interventions may be needed beyond brief approaches (Awa et al., 2010). Therefore, the present study aimed to address this gap by developing a comprehensive

ACT-based intervention program targeting burnout and conducting a preliminary evaluation of its feasibility and potential effectiveness.

In conclusion, this study provides preliminary evidence supporting the acceptability and feasibility of the MyLife protocol for reducing burnout symptoms. As one of the first studies examining an ACT-based burnout intervention among healthcare workers in Türkiye, it contributes to the emerging literature in this area. However, further research is needed to confirm and extend these findings.

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Study Protocol for a Randomized Controlled Trial of the Efficacy of a Transdiagnostic Cognitive Behavior Therapy Model Delivered in Group Therapy for Anxiety Disorders

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ABSTRACT

Transdiagnostic protocols have been found to be effective in treating anxiety disorders by targeting shared transdiagnostic processes across diagnostic categories. The present study aims to introduce a novel group-based transdiagnostic cognitive behavioral therapy (tCBT) protocol developed for the treatment of anxiety disorders and to describe the design of a randomized controlled trial examining its efficacy. Participants are adults aged 18–65 years with a principal diagnosis of generalized anxiety disorder, social anxiety disorder, panic disorder, or other specified anxiety disorder, assessed via the Structured Clinical Interview for DSM-5 Disorders, Clinician Version (SCID-5-CV). A 2×3 mixed-design randomized controlled trial was employed, comparing tCBT (intervention group) with Rogerian supportive therapy (control group), with assessments at pretest, posttest, and 1-month follow-up. A 1-year follow-up was additionally initiated as an exploratory assessment, with data collection currently ongoing. Distress intolerance, intolerance of uncertainty and dysfunctional metacognitions are included as outcome variables given their roles as transdiagnostic factors across anxiety disorders. The Generalized Anxiety Disorder-7 Scale, Distress Tolerance Scale, Intolerance of Uncertainty Scale-12, Penn State Worry Questionnaire, Metacognitions Questionnaire-30, and Patient Health Questionnaire-9 are administered to assess outcome variables. The tCBT protocol consists of five modules delivered over eight weekly online sessions. This protocol is an adaptation of a group therapy format of the first transdiagnostic individual protocol developed and applied in Türkiye. The findings are expected to pioneer the development of further transdiagnostic protocols in Türkiye and to contribute to the broader transdiagnostic literature.

Keywords: Anxiety disorders, cognitive behavioral therapy, comorbidity, psychotherapy group, randomized controlled trial, transdiagnostic protocols.

ÖZ

Anksiyete Bozukluklarında Grup Terapisi Formatında Uygulanan Tanı Ötesi BDT Modelinin Etkililiğinin İncelenmesi: Randomize Kontrollü Bir Çalışma Protokolü

Tanı ötesi protokollerin, tanı kategorileri arasındaki ortak tanı ötesi süreçleri düzenleyerek anksiyete bozukluklarının tedavisinde etkili olduğu bulunmuştur. Bu çalışma, anksiyete bozukluklarının tedavisi için geliştirilen yeni bir grup temelli tanı ötesi bilişsel davranışçı terapi (tBDT) protokolünü tanıtmayı ve bu protokolün etkililiğini inceleyen randomize kontrollü bir çalışmanın tasarımını sunmayı amaçlamaktadır. Çalışma, DSM-5 bozuklukları için yapılandırılmış klinik görüşme klinisyen versiyonu (SCID-5-CV)'na göre birincil tanı olarak yaygın anksiyete (kaygı) bozukluğu (YAB), sosyal anksiyete (kaygı) bozukluğu (SAB),



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panik bozukluk (PB) veya tanımlanmış diğer bir anksiyete (kaygı) bozukluğu tanı ölçütlerini karşılayan 18-65 yaş arası yetişkinlerle yürütülmektedir. Çalışmada tBDT (müdahale grubu) ile Rogerian destekleyici terapiyi (kontrol grubu) karşılaştıran, ön test, son test, bir aylık izlem ölçümlerini içeren 2x3 karışık desenli randomize kontrollü bir tasarım kullanıldı. Ek olarak, bir yıllık izlem ölçümü keşifsel bir değerlendirme olarak başlatılmış olup veri toplama süreci devam etmektedir. Sıkıntıya dayanıksızlık (SD) ve belirsizliğe tahammülsüzlük (BT), anksiyete bozukluklarında tanı ötesi faktörler olmaları nedeniyle sonuç değişkenleri olarak çalışmaya dahil edildi. Araştırmada, yaygın anksiyete bozukluğu-7 ölçeği (YAB-7), sıkıntıya dayanma ölçeği (SDÖ), belirsizliğe tahammülsüzlük ölçeği-12 (BTÖ-12), Penn State endişe ölçeği (PSEÖ), üstbilis ölçeği-30 (ÜBÖ-30) ve hasta sağlık anketi-9 (HSA-9) kullanılmaktadır. tBDT protokolü beş modülden oluşmaktadır. Müdahale grubunda, tBDT protokolü sekiz hafta süreyle çevrim içi formatında uygulanmaktadır. Bu protokol, Türkiye’de geliştirilen ve uygulanan ilk tanı ötesi bireysel protokolün grup terapisi formatına uyarlanmış halidir. Bu çalışmanın bulgularının Türkiye’deki tanı ötesi protokollerin geliştirilmesine öncülük etmesi ve uluslararası tanı ötesi literatürüne katkı sağlaması beklenmektedir.

Anahtar Kelimeler: Anksiyete bozuklukları, bilişsel davranışçı terapi, eş tanı, grup terapisi, randomize kontrollü çalışma, tanı ötesi protokoller.

INTRODUCTION

The category of anxiety disorders in the Diagnostic and Statistical Manual of Mental Disorders (DSM) has gradually expanded, with a notable increase in the number of subtypes (American Psychiatric Association [APA], 1980, 1994, 2013; Crocq, 2015). These changes have generated significant debate in the literature (Barlow et al., 2004). Central to these debates is the substantial increase in the prevalence of comorbid diagnoses in clinical practice, which has led to questions regarding the effectiveness of existing categorical classifications (Brown et al., 2001; Kessler et al., 2005). In addition, it has been argued that cross-sectional approaches are insufficient for understanding emotional disorders and that dimensional assessments are needed (Brown & Barlow, 2009). Furthermore, subthreshold cases—those who do not fully meet diagnostic criteria yet experience significant clinical distress—are frequently encountered in practice (Helmchen & Linden, 2000). These classification-related issues are also reflected in treatment protocols. Although the efficacy of disorder-specific treatment protocols has been demonstrated in randomized controlled trials (Butler et al., 2006; Hofmann et al., 2012), these protocols have been found to yield inadequate responses in comorbid cases in clinical practice, with significantly diminished effects in such cases (Dalglish et al., 2020). Moreover, the proliferation of disorder-specific protocols has created challenges for their dissemination and complicated clinician training (Barlow et al., 2004).

In light of these concerns, transdiagnostic approaches that prioritize dimensional assessments over categorical classification and aim to understand common processes underlying psychopathologies have represented a significant

shift in the literature (Andrews et al., 2009; Dalglish et al., 2020; Kotov et al., 2017; Krueger et al., 1998). The transdiagnostic approach offers a more flexible and comprehensive framework by addressing the shared emotional, cognitive, and behavioral mechanisms across emotional disorders (Bullis et al., 2019). Among these common factors, DI, IU, and dysfunctional metacognitions—the three constructs examined in the present study—are transdiagnostic processes underlying several psychopathologies, including anxiety disorders (Laposa et al., 2015; Mahoney & McEvoy, 2012; Wells & Cartwright-Hatton, 2004).

Distress intolerance (DI) refers to a diminished perceived capacity to withstand negative emotional states (Simons & Gaher, 2005). DI functions as a common transdiagnostic factor across different anxiety disorders (Laposa et al., 2015; Michel et al., 2016). Enhancing distress tolerance is considered a core intervention component in treatment protocols (Barlow et al., 2018). IU is defined as a dispositional fear of the unknown and a tendency to respond negatively to uncertain situations (Buhr & Dugas, 2009). IU functions as a transdiagnostic factor in anxiety and related disorders (Carleton, 2016; Mahoney & McEvoy, 2012). Transdiagnostic protocols have been found to reduce IU, and these reductions are associated with decreased symptom severity (Boswell et al., 2013; Khakpoor et al., 2019).

While DI refers to the perceived inability to tolerate negative emotional states (Simons & Gaher, 2005) and IU reflects a dispositional tendency to respond negatively to uncertain situations (Buhr & Dugas, 2009), metacognitions refer to beliefs about one’s own thinking processes (Wells & Cartwright-Hatton, 2004). According to the role of metacognitive

processes in the anxiety disorders, the present study examines them as a transdiagnostic factor alongside distress intolerance and intolerance of uncertainty.

Transdiagnostic Protocols

The transdiagnostic approach has led to the development of transdiagnostic treatment protocols that can be applied across mental disorders (Barlow et al., 2011; Norton, 2012). These protocols have been shown to produce similar levels of reduction in anxiety symptom severity compared with disorder-specific protocols, and these effects are maintained at long-term follow-up assessments (Barlow et al., 2017; Bullis et al., 2023; Newby et al., 2015). Furthermore, transdiagnostic protocols have been found to reduce symptom levels in comorbid cases as well (Farchione et al., 2012; Reinholt et al., 2017; Roberge et al., 2022).

Research has demonstrated that transdiagnostic protocols yield positive outcomes not only in the treatment of anxiety disorders and depression (Corpas et al., 2022; Farchione et al., 2012; Ito et al., 2023; Osma et al., 2022; Reinholt et al., 2017; Yan et al., 2022) but also in the treatment of various other mental disorders, including posttraumatic stress disorder (PTSD), obsessive-compulsive disorder, and substance use disorders (Farchione et al., 2012). Within anxiety disorders specifically, these protocols have been shown to be effective in reducing symptom severity across several anxiety disorders, including generalized anxiety disorder (GAD), social anxiety disorder (SAD), panic disorder (PD), agoraphobia, and anxiety disorder not otherwise specified (Farchione et al., 2012; Norton, 2008; Roberge et al., 2022; Talkovsky et al., 2017). Meta-analyses and systematic reviews also support their effectiveness across different anxiety disorders (Ayuso-Bartol et al., 2024; Erarslan Ingeç & Yorulmaz, 2021; Norton & Philipp, 2008; Sakiris & Berle, 2019). Beyond their efficacy in treatment, these protocols have also been shown to have preventive effects on the onset of mental disorders (DeTore et al., 2023; Garcia-Lopez et al., 2024).

Transdiagnostic protocols are delivered in various formats (Ayuso-Bartol et al., 2024; Newby et al., 2015). Studies have found that, in addition to individual therapy sessions (Ito et al., 2023; Farchione et al., 2012), group-based formats are also effective (Corpas et al., 2022; Norton & Philipp, 2008; Osma et al., 2022; Reinholt et al., 2017; Roberge et al., 2022; Talkovsky et al., 2017). Studies examining online applications have reported significant reductions in anxiety and depression symptoms (Garcia-Lopez et al., 2024; Yan et al., 2022). The literature indicates that transdiagnostic protocols are as effective as disorder-specific protocols in terms of clinical efficacy (Barlow et al., 2017) and offer advantages for dissemination in clinical practice and therapist training (McHugh et al., 2009). In

comorbid cases, which have increased with the proliferation of diagnostic subtypes, the efficacy of disorder-specific treatments decreases, and the transdiagnostic protocols offer a more comprehensive approach by targeting common factors among mental disorders (Dalglish et al., 2020). They are also advantageous in reducing the training burden on therapists by offering a single protocol for several emotional disorders (McHugh et al., 2009).

The present study aims to examine the efficacy of a novel group-based transdiagnostic cognitive behavioral therapy (tCBT) protocol for the treatment of anxiety disorders. Unlike established transdiagnostic protocols such as Barlow's Unified Protocol (Barlow et al., 2018) and Norton's transdiagnostic group cognitive behavioral therapy (CBT) model (Norton, 2012), which typically require 12–16 sessions and focus primarily on emotion regulation and cognitive restructuring, tCBT is delivered in a shortened eight-session format and is based on the Tridimensional Model of CBT (Özdel & Türkçapar, 2025), which is a transdiagnostic and transtheoretical framework that integrates techniques from multiple CBT-based approaches. Distinctively, tCBT addresses emotions as signals of personal ideals and values rather than solely as targets for regulation. It was hypothesized that tCBT would result in significant reductions in anxiety, worry, and depression and would produce significant changes in transdiagnostic processes (DI and IU) and dysfunctional metacognitions. It was further hypothesized that DI and IU would function as transdiagnostic factors across anxiety disorders and that anxiety disorders would share common metacognitive characteristics.

METHODS

Study Design

This study is a randomized controlled trial aiming to evaluate the effect of a novel group-based transdiagnostic protocol (tCBT) on anxiety disorders. A 2x3 mixed design was employed, with one transdiagnostic intervention (experimental) group and one Rogerian supportive therapy (control) group, including pretest, posttest, and 1-month follow-up assessments (Büyüköztürk, 2020). The first factor represents the independent groups (experimental and control), and the second factor represents repeated measures of the dependent variables (pretest, posttest, and 1-month follow-up). A 1-year follow-up assessment was additionally initiated as an exploratory assessment following the completion of the study, with data collection currently ongoing, to examine the long-term maintenance of treatment gains. Participants were randomly assigned to the experimental or control group. The independent variable was the treatment condition (tCBT or Rogerian supportive therapy). Anxiety symptom severity (GAD-7) and worry (PSWQ) were designated a priori

as the study's two co-primary outcome variables. Worry was specified as a primary outcome because it plays a central, transdiagnostic role across anxiety disorders (McEvoy et al., 2013) and because dedicated worry measures such as the PSWQ are important for accurately capturing treatment-related change in anxiety disorder research (Hanrahan et al., 2013). Secondary outcome variables were depression (PHQ-9), distress tolerance scale (DTS), intolerance of uncertainty (IUS-12), and dysfunctional metacognitions (MCQ-30). Distress tolerance, intolerance of uncertainty, and metacognitions were additionally conceptualized as transdiagnostic process variables and examined in relation to both treatment outcomes and diagnostic features across anxiety disorders.

Participants

Participants included male and female adults aged 18–65 years. For inclusion, participants were required to meet the criteria for at least one of the following as a principal diagnosis: GAD, SAD, PD, or other specified anxiety disorder. Diagnoses were established through individual semistructured clinical interviews (SCID-5-CV) conducted by trained clinicians independent of the research team prior to the study. When comorbid conditions were present, the principal diagnosis was determined based on the clinical judgment of the interviewing clinician, reflecting the disorder considered most prominent and impairing at the time of assessment. Comorbid conditions were permitted if the principal diagnosis was one of the four target anxiety disorders. Participants were recruited through open advertisement and selected using purposive sampling with criterion-based screening.

The exclusion criteria were as follows:

- Current substance use or a psychiatric history related to substance use
- Comorbid psychotic or bipolar disorder or a psychiatric condition of higher clinical priority than the target anxiety disorders
- Currently receiving psychotherapy
- Currently taking psychiatric medication
- Less than primary school education

Participants currently receiving psychotherapy or taking psychiatric medication were excluded to minimize confounding effects on outcome variables and to ensure the internal validity of the findings.

The first author randomly assigned eligible participants to the intervention or control group via SPSS. The first author generated and implemented the allocation sequence. Allocation concealment was not implemented, as the first

author was responsible for both generating the allocation sequence and assigning participants to conditions. Randomization was conducted at the individual level prior to group formation. To ensure group equivalence, the randomization procedure was repeated until the two groups showed no statistically significant differences in key baseline characteristics, including age, gender, and anxiety severity. Participant blinding was implemented: participants were not informed of their group allocation or the specific therapeutic approach employed in their group. All participants were aware that they were participating in group therapy for anxiety; however, the type of intervention was not disclosed. Therapist blinding was not fully implemented, as the therapists knew their group assignment. However, the control group therapists were instructed to use only Rogerian techniques, which served as a partial safeguard against therapist bias. Assessor blinding was not implemented because data collection was conducted by the first author. An priori power analysis was conducted using G*Power to determine the required sample size. A medium effect size ($f=0.25$) was selected as a conservative estimate, consistent with controlled effect sizes reported in meta-analyses of transdiagnostic CBT interventions (Newby et al., 2015). Based on an alpha level of 0.05, a power of 0.80, two groups, and three measurement points, the analysis indicated a minimum total sample size of 28 participants.

Measures

Structured Clinical Interview for DSM-5 Disorders–Clinician Version (SCID-5-CV)

The SCID-5-CV was administered as a screening interview to determine whether the participants met the inclusion criteria (First et al., 2018). The SCID-5 is a semistructured interview designed to assess DSM-5 (Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition) disorders (APA, 2013). The reliability study of the Turkish version reported an overall agreement of 97.2% and a kappa value of 0.74 (Elbir et al., 2019). In this study, the SCID-5 was administered by trained clinicians to determine whether participants met the criteria for at least one of the following as a principal diagnosis: SAD, GAD, PD, or other specified anxiety disorder and to assess comorbid conditions (if present).

Sociodemographic Information Form

A sociodemographic information form was used to collect data on participants' age, gender, marital status, educational background, family characteristics, current or past psychotherapy history, psychiatric medication use, and alcohol/substance use to describe the characteristics of the study sample.

Primary Outcome Measures

Generalized Anxiety Disorder-7 Scale (GAD-7)

The GAD-7 Scale was developed by Spitzer, Kroenke, Williams, and Löwe (2006). The Turkish adaptation (Konkan et al., 2013) demonstrated high internal consistency (Cronbach's $\alpha=0.85$). The GAD-7 is a 7-item self-report measure using a 4-point Likert scale ranging from 0 (not at all) to 3 (nearly every day). Higher total scores indicate greater anxiety severity. Cutoff scores are 5, 10, and 15 for mild, moderate, and severe anxiety, respectively.

Penn State Worry Questionnaire (PSWQ)

The PSWQ measures pathological worry (Meyer et al., 1990). The Turkish adaptation showed good internal consistency (Cronbach's $\alpha=0.88$; Boysan et al., 2008). The PSWQ is a 16-item self-report measure using a 5-point Likert scale ranging from 1 (not at all typical of me) to 5 (very typical of me). Total scores range from 16 to 80. Higher total scores indicate higher levels of worry.

Secondary Outcome Measures

Distress Tolerance Scale (DTS)

The DTS (Simons & Gaher, 2005) measures the perceived capacity to tolerate emotional distress. Sargin et al. (2012) conducted the validity and reliability study, which demonstrated high internal consistency (Cronbach's $\alpha=0.89$). The DTS consists of 15 items rated on a 5-point Likert scale ranging from 1 (strongly agree) to 5 (strongly disagree). Lower total scores indicate lower distress tolerance.

Intolerance of Uncertainty Scale–Short Form (IUS-12)

The IUS-12 is a 12-item self-report measure (Carleton et al., 2007). The Turkish validity and reliability study by Sarıçam, Erguvan, Akin, and Akça (2014) reported high internal consistency (Cronbach's $\alpha=0.88$). A 5-point Likert scale is used, ranging from 1 (not at all characteristic of me) to 5 (entirely characteristic of me). Higher total scores indicate higher IU.

Metacognitions Questionnaire-30 (MCQ-30)

The MCQ-30 was developed by Wells and Cartwright-Hatton (2004). The Turkish validity and reliability study was conducted by Tosun and Irak (2008), and demonstrated high internal consistency (Cronbach's $\alpha=0.86$). The MCQ-30 is a self-report measure for assessing dysfunctional metacognitions. It consists of 30 items rated on a 4-point Likert scale ranging from 1 (do not agree) to 4 (agree very much). Higher scores indicate more dysfunctional metacognitive activity. Total scores range from 30 to 120.

Patient Health Questionnaire-9 (PHQ-9)

The PHQ-9, originally introduced by Kroenke, Spitzer, and Williams (2001), is used to assess depression severity. A Turkish reliability study (Sarı et al., 2016) demonstrated good internal consistency (Cronbach's $\alpha=0.84$). The PHQ-9 consists of 9 items rated on a 4-point Likert scale ranging from 0 (not at all) to 3 (nearly every day). Higher total scores indicate increased depression severity. The severity categories are as follows: 0–4, minimal; 5–9, mild; 10–14, moderate; 15–19, moderately severe; and 20–27, severe depression.

Procedure

Ethical approval was obtained from the Ethics Committee of Ibn Haldun University (Decision No. 2023/08-10, December 15, 2023). This trial was registered on ClinicalTrials.gov (NCT06422728). The study was conducted in accordance with the ethical principles of the Declaration of Helsinki. Participants were recruited through institutional channels (university email lists and the university psychotherapy center's online platforms), professional networks, and social media announcements. Interested individuals completed an online application form requesting basic information (name, contact details, reason for application, etc.). All applicants received an informed consent form outlining the study's purpose and scope, voluntary participation, right to withdraw, and confidentiality.

Applicants underwent online semistructured diagnostic interviews. Individuals who met the criteria for at least one of the target diagnoses (GAD, SAD, PD, or other specified anxiety disorder) based on the SCID-5-CV clinical assessment were enrolled in the study. Enrolled participants completed an online sociodemographic information form. Prior to the first session, all participants completed the pretest (GAD-7, DTS, IUS-12, PSWQ, MCQ-30, and PHQ-9) online. After the pretest, participants were randomly assigned to the intervention or control group.

After randomization, the intervention group received weekly group therapy using the tCBT protocol over eight weeks. The control group received Rogerian supportive group therapy over the same period. All sessions in both groups were conducted online. The control group received Rogerian supportive group therapy, delivered online in the same group format and over the same number of sessions as the tCBT group. Two clinical psychologists conducted the tCBT and control groups. Both therapists and co-therapists held master's degrees in clinical psychology and had completed foundational CBT training. Prior to the study, all therapists and co-therapists received transdiagnostic CBT training and supervision from a senior CBT supervisor. The control condition was designed to include only nonspecific therapeutic factors—such as the therapeutic relationship, active listening, and empathic responding—while excluding any

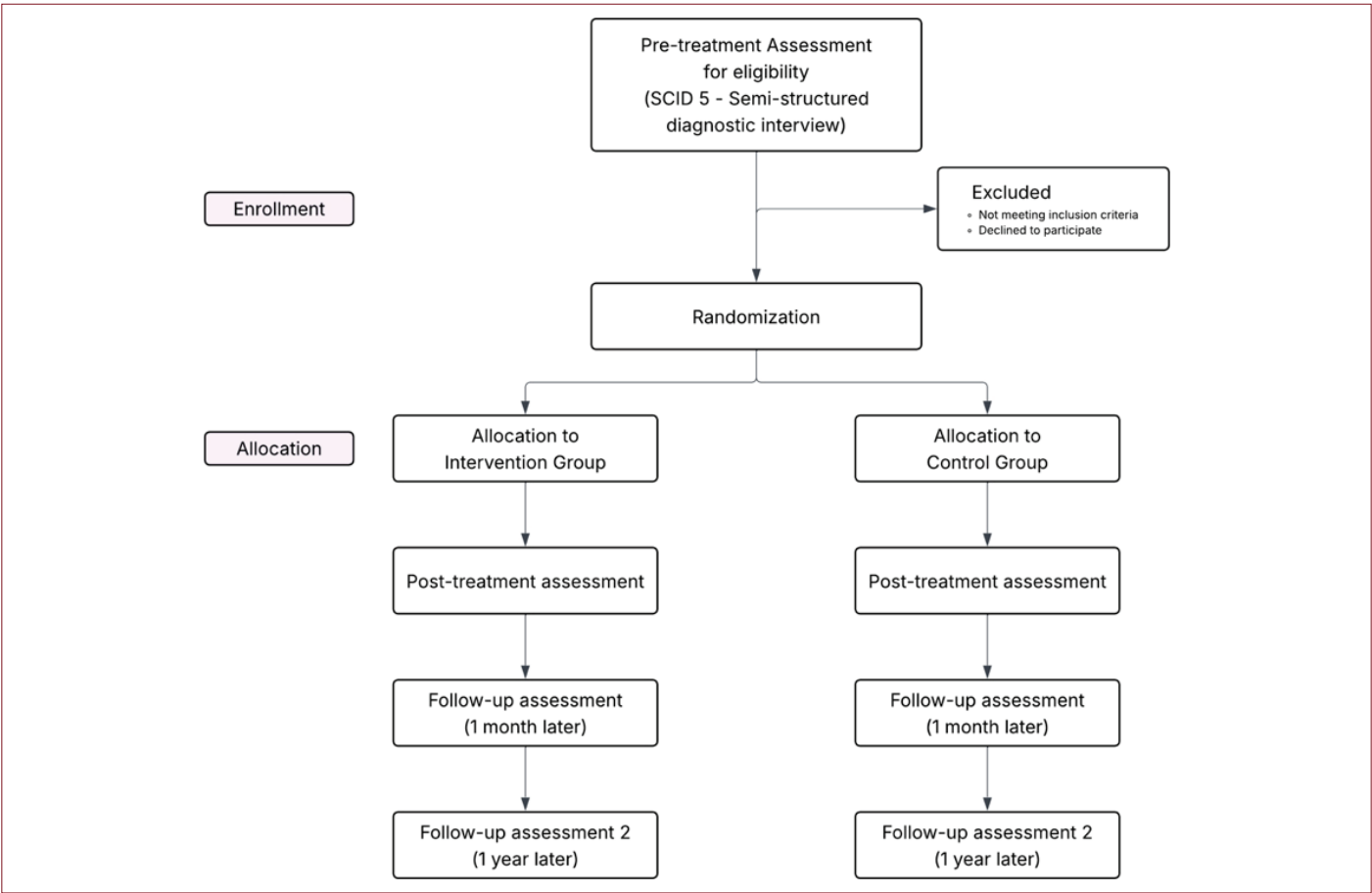


Figure 1. CONSORT flow diagram.

specific CBT techniques, and therapists were required to draw on their general therapeutic competencies accordingly.

Treatment fidelity was monitored through weekly supervision sessions in both groups. All sessions were video-recorded and reviewed by the dissertation advisors on a weekly basis. During these reviews, session content adherence and therapist competence were evaluated, and areas requiring improvement were identified and addressed through supervision. While this process confirmed that sessions were conducted in line with the protocol content, no formal quantitative assessment was conducted. As a preliminary indicator of therapist consistency, exploratory analyses conducted to assess therapist effects revealed no statistically significant differences in outcome variables across therapist-led groups.

At the end of week eight, all participants completed the posttest measures (GAD-7, DTS, IUS-12, PSWQ, MCQ-30, and PHQ-9). One month later, at the beginning of the follow-up session, all participants completed the same measures for the follow-up assessment (Fig. 1). Data collection for the 1-year

Table 1. Assessment schedule across study time points

Measures	Pretest	Posttest	1-month follow-up	1-year follow-up*
GAD-7	✓	✓	✓	✓
PSWQ	✓	✓	✓	✓
DTS	✓	✓	✓	✓
IUS-12	✓	✓	✓	✓
MCQ-30	✓	✓	✓	✓
PHQ-9	✓	✓	✓	✓

1-year follow-up data collection is currently ongoing. GAD-7: Generalized anxiety disorder-7; PSWQ: Penn state worry questionnaire; DTS: Distress tolerance scale; IUS-12: Intolerance of uncertainty scale-12; MCQ-30: Metacognitions questionnaire-30; PHQ-9: Patient health questionnaire-9.

follow-up assessment is currently ongoing. The same self-report measures will be administered at the 1-year follow-up (Table 1). Findings will be reported upon completion of all measurements.

Rogerian Supportive Therapy (Control Group) Guideline

The supportive therapy was conducted in a nondirective, unstructured manner, consistent with Rogerian principles, focusing on the therapeutic relationship and participants' subjective experiences rather than symptom reduction or skill acquisition. Permissible techniques included active listening, summarizing, clarifying, reflecting emotions, asking process-oriented and in-the-moment questions, and addressing relational dynamics within the session.

The therapists and co-therapists were explicitly instructed not to provide advice, psychoeducation, or structured interventions. Cognitive restructuring, behavioral assignments, and any directive CBT techniques were not permitted. When participants asked for guidance—for instance, regarding how to manage anxiety—therapists responded by stating that the focus of the group was on participants finding their own solutions and redirected the focus to the participant's internal processes rather than offering solutions, consistent with the nondirective stance of the approach.

Content and Structure of the Transdiagnostic Protocol

The tCBT protocol was originally developed for use in individual therapy sessions. For the present doctoral research, the protocol was adapted to a group therapy format and is being empirically tested for the first time. The tCBT is based on the Tridimensional Model of CBT proposed by Özdel and Türkçapar (2025), whose core dimensions have received empirical support from Yapan, Türkçapar, and Boysan (2022). Within this framework, three core dimensions involved in the maintenance of psychopathology—the attention/focus domain, the cognitive evaluation/operation domain, and the behavioral domain—constitute the scope of the protocol. Additionally, the tCBT integrates techniques from various CBT approaches, consistent with the tridimensional model. The tCBT consists of five modules. The content of these modules is presented in Table 2.

General Principles of the tCBT

The general principles of the tCBT are as follows:

Therapeutic Alliance: The therapeutic alliance established with clients facilitates a sense of safety and enables the exploration of challenging emotional material. The therapist must respond to the client promptly and personally.

Personalized Examples: All examples and exercises in therapy are drawn directly from the client's experiences, allowing for a more focused, in-depth therapeutic process.

Flexible Structure: The protocol serves as a guide rather than a rigid structure. Depending on individual needs, certain

components (examples, metaphors, explanations) may be emphasized more, while others may be addressed more briefly.

Role of Between-Session Practice: Between-session practice encompasses session content and therapeutic gains. Each practice assignment is reviewed at the beginning of the following session and used to enrich the personal formulation of the client.

Adaptation of the tCBT to a Group Therapy Format

The general principles outlined above also apply to the group therapy format. Within this framework, the therapist addresses each session's agenda through personalized examples from group participants. After the session agenda is presented using one or two participants' examples, time is allocated for each participant to apply what they have learned to their own formulation. The therapist assists the participants while they work on their formulations and answers their questions. At the end of the session, between-session practices (e.g., thought records and behavioral experiments) are explained in detail and then individually reviewed with each participant at the beginning of the following session.

In the present study, participants were divided into smaller subgroups due to group size, with a co-therapist assigned to each subgroup. Co-therapists maintained consistent responsibility for the same participants throughout the group therapy process, assisting them with in-session exercises, sending reminder messages for between-session assignments, and answering their questions. Sessions were conducted via Zoom and lasted approximately 90 minutes. Each group consisted of up to 16 participants. As the intervention was administered online, metaphors and visual content were presented through prepared PowerPoint slides rather than real-time drawing, ensuring efficient use of session time.

Session-by-Session Implementation of the tCBT in Group Therapy Format

In the first session, following introductions, participants are informed about group rules (voluntary participation, confidentiality, responsibilities toward other group members, etc.) and the overall structure of the group process (number and duration of sessions, administration of measures, etc.). Each participant shares their anxiety-related concerns and expresses their expectations for therapy. Finally, the goals for the group therapy process are established.

In the second session, the five-part formulation is introduced using examples from one or two participants. Each component of the formulation (situation/environment/events, thoughts, emotions, bodily sensations, and behaviors) is defined. The treatment rationale is then discussed with reference to the

Table 2. Content of the transdiagnostic protocol (tCBT) modules

Modules	Objectives	Module content
Formulation and Treatment Rationale (1 session)	Mapping the five-part formulation with concrete examples and explaining how CBT works	Five factors affecting our psychology (events/situations/environment, perceptions and thoughts, emotions, bodily sensations, and behaviors) are addressed; the treatment rationale is presented; CBT psychoeducation is provided; the rationale for between-session practices is discussed.
Emotions (1–2 sessions)	Recognizing emotions and understanding that they are signals indicating ideals and values rather than danger signals	The definition and types of emotions (event/situation-based emotions and thought-based emotions) are discussed; the function of emotions is defined; ideals and values signaled by emotions are addressed; the consequences of misreading or accurately reading emotions are discussed.
Thoughts (2–3 sessions)	Noticing automatic thoughts, distinguishing thoughts from reality, and challenging dysfunctional thoughts	The definition of perception and thought is provided; the thought–reality distinction is discussed; the function of thoughts is addressed; strategies for dealing with thoughts that are not serving their function are discussed; the distinction between the observing mind and the talking mind is made; metacognitive techniques for managing worry and ruminative thoughts are addressed; thought content is examined: evidence review and alternative explanations are explored.
Behaviors (1–2 sessions)	Emphasizing behaviors as a controllable domain/factor and encouraging small, manageable steps in line with ideals and values	The definition of behavior is provided; controllable versus uncontrollable domains/factors are addressed; directing behaviors in accordance with ideals and values is discussed; the meaning of life and important life domains (academic and professional domain, romantic relationships domain, physical well-being domain, etc.) are identified; the importance of behavioral engagement in these domains is discussed.
Maintenance of Gains and Relapse Prevention (1 session)	Recognizing gains acquired throughout the process and discussing how to maintain them	Skills learned and practiced during therapy are summarized; gains from the process are reviewed; strategies for maintaining gains moving forward are discussed.

CBT: Cognitive behavioral therapy; tCBT: Transdiagnostic cognitive behavioral therapy.

domains in which psychiatric medication and psychotherapy are effective. CBT psychoeducation is provided, explaining the goals and focus areas of CBT as an evidence-based approach. Finally, the rationale for between-session practices is discussed. At the end of the session, participants are provided with a thought record and asked to complete it during the week.

In the third session, situational formulation examples from one or two participants are reviewed. Using a metaphor, emotions are categorized into two types: (1) event/situation-based emotions and (2) thought-based emotions. The function of emotions is discussed. Participants learn how to identify the ideals and values signaled by their emotions through their own examples. The consequences of misreading versus accurately reading emotions are discussed, emphasizing the importance of using emotions as a “signaling system.” As between-session practice, an expanded thought record that includes a “my ideals and values” section is provided to participants.

In the fourth session, work on thoughts begins using situation-level formulation examples from one or two participants. Following a discussion of the definition and impact of thoughts, the distinction between thoughts and reality is illustrated through metaphors. The function of thoughts is then defined, and strategies for dealing with thoughts that are not serving their function are discussed. For between-session practice, participants are asked to continue completing the thought record and to practice relating to their thoughts “as if they were not facts” based on what they learned in the session.

In the fifth session, work on thoughts continues. The distinction between the observing mind and the thinking mind is introduced through a metaphor. Participants learn metacognitive techniques for managing worry and ruminative thoughts. These techniques are taught in four steps: (1) letting go of the thought, (2) noting thoughts, (3) the three-minute three-question exercise, and (4) scheduling time for thoughts.

For between-session practice, participants are asked to apply these four techniques sequentially (moving to the next step when the previous one is insufficient).

In the sixth session, the content of thoughts is examined using situational formulation examples from one or two participants. Evidence examination and alternative explanations are explored through formulation examples. For between-session practice, participants are asked to apply the evidence examination technique to the thoughts they have recorded. A thought examination form is provided for this purpose.

In the seventh session, behaviors are defined using situational formulations from one or two participants. Factors affecting our psychology are categorized as controllable versus uncontrollable. In this context, the topic of directing behavior in accordance with one's ideals and values is discussed. For between-session practice, participants plan a behavioral experiment by identifying a behavior aligned with their ideals and values based on their own formulations.

In the final (eighth) session, the meaning of life and important life domains (academic and professional, romantic relationships, friendships, etc.) are discussed through the questions, "What kind of person do I want to be?" and "What kind of life do I want to live?" The importance of behavioral engagement in these domains is discussed. Participants compare their former and current patterns ("How did I used to think and behave? How do I think and behave now?") to evaluate gains from the process. Strategies for maintaining these gains are then discussed. Participants are asked to continue completing the thought examination form, carry out the behavioral experiments planned in the session, and practice self-administered sessions until the follow-up session scheduled one month later. This session also serves as a preliminary termination session; however formal closure takes place in the follow-up session.

In the follow-up (ninth) session, the practice assignments planned for the 1-month interval (regular completion of the thought examination form, planned behavioral experiments, and self-administered session practice) are reviewed. A short summary of the protocol is shared. Participants' questions and feedback are addressed. This session serves as the final closure session for the group.

Statistical Analysis

Following the completion of all assessments, data will be analyzed using IBM SPSS 25. Descriptive statistics and frequency analyses will be used for demographic data. Multiple regression analysis will be conducted to examine whether DI, IU, and metacognitive characteristics predict anxiety, worry,

and depression levels. A supplementary power analysis conducted in G*Power indicated that the current sample size provides adequate power for the planned regression analyses ($f^2=0.15$, $\alpha=0.05$, power=0.80, three predictors). To examine the efficacy of tCBT, a 2x3 mixed ANOVA will be conducted with group (tCBT vs. Rogerian supportive therapy) as the between-subjects factor and time (pretreatment, posttreatment, and 1-month follow-up) as the within-subjects factor. Assumptions of normality and sphericity will be tested prior to analyses; the Greenhouse–Geisser correction will be applied if sphericity is violated. Effect sizes will be reported as partial eta-squared (η^2p). Cohen's d will be calculated for pairwise comparisons. Given the use of multiple outcome variables, correction procedures such as the Bonferroni adjustment will be considered during the analysis phase to control for Type I error. To examine the efficacy of tCBT, the primary intention-to-treat analyses will be conducted using linear mixed-effects modeling or a mixed model for repeated measures. In these models, treatment group, time, and the group $\times$ time interaction will be included as fixed effects, with repeated measurements nested within participants. This approach allows all available repeated-measures data to be included without imputing missing values and is appropriate for longitudinal clinical trial data with incomplete observations under the missing-at-random assumption. Last observation carried forward (LOCF) will not be used as the primary method for handling missing outcome data. If applied, LOCF will be used only as a supplementary sensitivity analysis to evaluate the robustness of the findings. Results based on LOCF will be interpreted cautiously and compared with the primary mixed-effects model results. In addition to the intention-to-treat analysis, a per-protocol analysis will be conducted, including only participants who completed all treatment sessions. The 1-year follow-up data will be analyzed and reported separately as part of an unplanned exploratory analysis conducted following the completion of the study.

DISCUSSION

The aim of the present study is to investigate the efficacy of a CBT-based group tCBT, developed as a transdiagnostic protocol, in the treatment of anxiety disorders. First, tCBT is expected to produce significant reductions in the severity of anxiety, worry, and depression. Second, tCBT is also expected to produce significant effects on DI and IU levels, which are considered transdiagnostic factors in the literature (Laposa et al., 2015; Mahoney & McEvoy, 2012). Additionally, DI and IU are hypothesized to function as transdiagnostic factors across anxiety disorders, and common metacognitive characteristics are expected to be observed. In this regard, this study is expected to make a significant contribution to the literature by investigating transdiagnostic processes in anxiety disorders

and examining the potential for treating different anxiety disorders (GAD, SAD, PD, and other specified anxiety disorder) using a transdiagnostic CBT protocol. The tCBT is the first transdiagnostic protocol developed and applied in Türkiye. As such, it is expected to make an important contribution to transdiagnostic research in Türkiye and to pioneer the development of other transdiagnostic protocols.

Many RCTs in the literature use waitlist control groups. However, in the present study, the intervention group receiving tCBT is compared with a control group that receives Rogerian supportive therapy, which is expected to make an important contribution to the literature. The tCBT protocol, which consists of five modules and is deliverable in as few as six to eight sessions, is expected to provide practical advantages for therapists. Furthermore, this study included participants with comorbid diagnoses, allowing for an evaluation of the effects of tCBT in individuals with comorbidity. Several researchers have noted that transdiagnostic protocols offer considerable advantages over disorder-specific protocols, including the treatment of comorbid conditions, ease of therapist training and implementation, and faster group formation by accommodating multiple diagnoses within a single group (Barlow et al., 2017; McHugh et al., 2009).

The group-based and internet-delivered format of tCBT offers significant advantages in terms of treatment accessibility. Owing to the economic burden of individual therapy, many individuals in Türkiye cannot access treatment. Group therapy can facilitate greater accessibility, and the cost-effectiveness of group-based tCBT is expected to be valuable for improving access to mental health services. The internet-based delivery format further expands accessibility by overcoming practical and geographic barriers to face-to-face treatment. Given the limited number of group-based and internet-delivered transdiagnostic protocols, this study is also expected to contribute to the development of such protocols and the investigation of transdiagnostic efficacy across different cultures.

There are some limitations to this study. Because the study was conducted with a Turkish sample, the generalizability of the findings to other cultural contexts may be limited. Additionally, the sample may not be representative of all individuals with anxiety disorders because it consisted of volunteers who self-referred in response to open advertisements, which may introduce self-selection bias. The study relies solely on self-report measures, which may be subject to response biases. Clinician-administered measures, such as the Clinical Global Impression Scale, were not included, which may limit the objectivity of the findings. Additionally, diagnostic change following treatment was not assessed because clinical

interviews were conducted only at baseline. The use of multiple outcome variables increases the risk of Type I error due to multiple comparisons. The online group therapy format may have introduced variability in participant engagement and adherence, which could have influenced outcomes. Therapist effects cannot be ruled out because the same two therapists delivered both the intervention and control conditions. However, exploratory analyses revealed no statistically significant differences in outcome variables across therapist-led groups, providing preliminary evidence of comparable treatment delivery. Future studies should consider assigning different therapists to each condition to more rigorously control for therapist effects. Fidelity monitoring was based on supervisory review, and no formal quantitative assessment was conducted, which represents a limitation. Exploratory analyses revealed no statistically significant differences in outcome variables across therapist-led groups, which may be interpreted as a supporting indicator of treatment fidelity. Future studies should consider quantitative assessment of treatment fidelity.

Furthermore, although the control condition was designed to be distinct from tCBT, the degree to which Rogerian supportive therapy was sufficiently differentiated from the intervention condition in practice warrants consideration. Finally, potential researcher allegiance bias may have influenced the findings, given that the tCBT protocol was developed by one of the study supervisors. In summary, despite these limitations, this study will introduce a novel protocol to the literature, and its findings are expected to contribute to future research on the efficacy of transdiagnostic protocols and transdiagnostic processes.

CONCLUSION

This study introduces a novel group-based tCBT protocol, which is the first such protocol developed in Turkish. This study is expected to make an important contribution to transdiagnostic research in Türkiye and to pioneer the development of other transdiagnostic protocols. The group-based and internet-delivered format of tCBT may help expand treatment accessibility by overcoming practical and economic barriers. Furthermore, the inclusion of participants with comorbid diagnoses allows for an evaluation of the effects of tCBT in individuals with comorbidity. Given the limited number of group-based and internet-delivered transdiagnostic protocols in the literature, the findings of this study are expected to contribute to future research on the efficacy of transdiagnostic protocols and transdiagnostic processes. In the future, conducting similar studies with larger samples will further strengthen the evidence base for transdiagnostic interventions.

Ethics Committee Approval: This study was approved by the Ibn Haldun University ethics committee (Decision No: 2023/08-10; Date: 15.12.2023).

Trial Registration: This trial was registered on ClinicalTrials.gov (NCT06422728).

Informed Consent: Written informed consent was obtained from all participants prior to their inclusion in the study.

Conflict of Interest: The authors declare that there is no conflict of interest.

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“Secondary Gain” Revisited: Preliminary Psychometric Evaluation of a Reinforcement-Based Dimensional Assessment Framework for Psychiatric Disorders

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ABSTRACT

Secondary gain (SG) has traditionally been discussed within psychodynamic and psychosomatic frameworks, particularly in relation to conversion symptoms and somatic presentations. Despite its longstanding clinical relevance, SG has rarely been operationalized systematically, and no dimensional assessment framework currently exists. This study aimed to develop and preliminarily evaluate an exploratory framework for assessing SG-related reinforcement processes across psychiatric disorders and to examine their associations with symptom severity, somatosensory amplification, illness attributions, and perceived interpersonal attributional discrepancies. Altogether, 60 patients diagnosed with somatic symptom disorder (SSD), functional neurological symptom disorder (FND), panic disorder (PD), or major depressive disorder (MDD) were evaluated using an exploratory SG assessment survey developed through literature review and expert clinical consensus. The instrument assessed illness-related reinforcement events, anticipated relief expectations, and perceived attributional incongruence between patients and relatives. Participants also completed the Somatosensory Amplification Scale, Hospital Anxiety and Depression Scale, and Illness Perception Questionnaire. The instrument demonstrated acceptable preliminary internal consistency across the subdomains conceptually derived. The number of illness-related reinforcement events experienced differed across diagnostic groups and was higher in FND and lower in MDD ($\chi^2=8.795$, $p=0.032$). In contrast, the overall SG composite scores showed relatively similar distributions across diagnoses ($\chi^2=2.316$, $p=0.509$). Perceived attributional incongruence was higher in SSD ($\chi^2=15.709$, $p=0.001$) and lower in PD ($\chi^2=16.810$, $p=0.001$). SG-related variables were associated with anxiety symptoms, somatosensory amplification, and psychological illness attributions, providing preliminary evidence for construct coherence. These findings provide preliminary support for operationalizing SG-related reinforcement processes across psychiatric disorders. SG-related processes may reflect broader interpersonal and contextual reinforcement mechanisms rather than representing a diagnosis-specific phenomenon. Larger longitudinal studies are needed to establish the framework’s psychometric validity and transdiagnostic relevance.

Keywords: Depressive disorders, functional neurological disorder, panic disorder, secondary gain, somatic symptom related disorders.



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ÖZ

“İkincil Kazanç” Kavramına Yeniden Bakış: Psikiyatrik Bozukluklarda Pekiştirme Temelli Boyutsal Bir Değerlendirme Çerçevesinin Ön Psikometrik İncelemesi

İkincil kazanç (İK), geleneksel olarak özellikle konversiyon belirtileri ve somatik yakınmalar bağlamında, psikodinamik ve psikosomatik kuramlar çerçevesinde ele alındı. Klinik açıdan önem taşımasına rağmen, İK bugüne kadar sistematik biçimde yapılandırılmış ve ölçülebilir boyutsal bir kavramsal çerçeve içinde ele alınmamıştır. Bu çalışma, psikiyatrik bozukluklarda İK ile ilişkili pekiştirme süreçlerini değerlendirmeye yönelik keşifsel nitelikte bir boyutsal çerçeve geliştirmeyi ve ön değerlendirmesini yapmayı, ayrıca bu süreçlerin semptom şiddeti, somatosensöriyel amplifikasyon, hastalık atıfları ve algılanan kişiler arası atıf uyumsuzluğu ile ilişkilerini incelemeyi amaçlamaktadır. Bedensel belirti bozukluğu (BBB), fonksiyonel nörolojik belirti bozukluğu (FNB), panik bozukluğu (PB) veya majör depresif bozukluk (MDB) tanısı almış toplam 60 hasta, literatür taraması ve uzmanların klinik görüş birliği doğrultusunda geliştirilen keşifsel bir İK değerlendirme anketi ile değerlendirildi. Ölçek; deneyimlenen hastalıkla ilişkili pekiştirme yaşantılarını, hastalıkla ilişkili rahatlatma beklentilerini ve hastalar ile yakınları arasında hastalığa dair atıflar arasında algılanan uyumsuzluğu değerlendirmektedir. Katılımcılar ayrıca somatosensöriyel amplifikasyon ölçeği, hastane anksiyete ve depresyon ölçeği ve hastalık algısı ölçeğini doldurdu. Ölçek, kavramsal olarak türetilmiş alt boyutlar arasında kabul edilebilir düzeyde iç tutarlılık gösterdi. Deneyimlenen hastalık ilişkili pekiştirme yaşantılarının sayısı tanı grupları arasında farklılık gösterdi; bu sayı FNB grubunda daha yüksek, MDB grubunda ise daha düşük bulundu ($\chi^2=8.795$, $p=0.032$). Buna karşın, toplam İK puanları tanılar arasında görece benzer dağılımlar göstermiştir ($\chi^2=2.316$, $p=0.509$). Algılanan atıf uyumsuzluğu BBB grubunda daha yüksek ($\chi^2=15.709$, $p=0.001$), PB grubunda ise daha düşük bulundu ($\chi^2=16.810$, $p=0.001$). İK ile ilişkili değişkenler; anksiyete belirtileri, somatosensöriyel amplifikasyon ve hastalığın psikolojik olduğuna dair atıflarla ilişkili bulundu; bu sonuçlar ölçeğin yapı geçerliliği açısından ön bulgular sağladı. Bulgular, İK ile ilişkili pekiştirme süreçlerinin psikiyatrik bozukluklarda boyutsal bir yapı içinde kavramsallaştırılıp değerlendirilebileceğine ilişkin ön düzeyde kanıt sunmaktadır. İK ile ilişkili süreçler, tanıya özgü olmaktan ziyade, daha geniş kişiler arası ve bağlamsal pekiştirme mekanizmalarını yansıtır olabilir. Bu çerçevenin psikometrik geçerliliğini ve tanılar üstü önemini ortaya koyabilmek için daha geniş örneklemli ve uzunlamasına çalışmalara ihtiyaç vardır.

Anahtar Kelimeler: Bedensel belirti ve ilişkili bozukluklar, depresif bozukluklar, fonksiyonel nörolojik bozukluk, ikincil kazanç, panik bozukluğu.

INTRODUCTION

Secondary gain (SG) has traditionally been discussed within psychodynamic and psychosomatic frameworks, particularly in relation to conversion symptoms and somatic presentations. Originally conceptualized by Freud as the interpersonal or environmental advantages indirectly associated with illness symptoms, SG was later incorporated into broader discussions of illness behavior, chronicity, and symptom maintenance (Fishbain et al., 1995). Over time, the concept expanded beyond its psychoanalytic origins and began to encompass a wider range of contextual processes, including reductions in interpersonal demands, changes in social expectations, increased relational attention, and avoidance of aversive situations associated with illness states. Within psychosomatic medicine and behavioral models, such processes have increasingly been understood as reinforcement-related mechanisms that may contribute to symptom persistence and illness behavior (Van Egmond & Kummeling, 2002; Kwan & Friel, 2002).

Contemporary dimensional and transdiagnostic approaches to psychopathology, including the Research Domain Criteria, Hierarchical Taxonomy of Psychopathology, and network models, emphasize cross-diagnostic mechanisms underlying psychiatric symptoms rather than strictly diagnosis-specific categories (Borsboom, 2017; Insel et al., 2010; Kotov et al., 2017). Despite the growing emphasis on dimensional psychopathology, constructs related to SG and illness-related reinforcement processes have received relatively limited systematic attention within these frameworks. Nevertheless, rather than being restricted to a single diagnostic category, reinforcement-related interpersonal and environmental contingencies may influence symptom expression, illness behavior, chronicity, and treatment engagement across multiple psychiatric disorders.

Although SG has long been considered clinically relevant, the construct remains poorly operationalized in empirical research. Existing approaches largely rely on clinician

judgment, psychodynamic interpretation, or indirect clinical inference rather than structured dimensional assessment. SG has frequently been discussed as a diagnosis-specific phenomenon, particularly in relation to conversion disorder or functional neurological symptom disorder (FND), despite evidence suggesting that illness-related interpersonal and contextual reinforcement processes occur across a broader range of psychiatric conditions (Craig et al., 1994; Kwan & Friel, 2002). Consequently, a systematic dimensional framework capable of evaluating SG-related processes across different psychiatric disorders is currently lacking.

Another important limitation of the literature is that SG has often been conceptualized narrowly as a hidden motivational construct, whereas illness-related reinforcement processes may involve multiple observable psychosocial domains (von dem Knesebeck et al., 2020). Illness may alter interpersonal expectations, reduce responsibilities, increase relational attention and care, modify family dynamics, or facilitate the avoidance of distressing social situations. These changes may occur regardless of the patient pursuing them and may contribute to symptom persistence through both positive and negative reinforcement mechanisms. Accordingly, SG may be better conceptualized as a multidimensional contextual process involving interpersonal, behavioral, and environmental contingencies associated with illness rather than as a unitary psychodynamic phenomenon.

From a cognitive-behavioral perspective, reinforcement processes are considered central to the maintenance of illness behavior and symptom persistence. Symptoms may become inadvertently reinforced when they result in reductions in aversive demands (negative reinforcement) or increases in interpersonal support, care, or environmental accommodations (positive reinforcement). Contemporary cognitive-behavioral models of somatic and functional symptoms also emphasize maladaptive symptom-focused attention, avoidance behaviors, dysfunctional illness beliefs, and interpersonal contingencies that contribute to the persistence of symptom–distress cycles (Orzechowska et al., 2021). Examining SG-related processes within this framework may help clarify how contextual and interpersonal factors interact with symptom expression across psychiatric disorders.

Illness attributions and interpersonal explanatory models may also influence SG-related processes. Patients and their relatives may differ substantially in their interpretation of symptoms, particularly regarding whether symptoms are perceived as primarily physical or psychological in origin. Such attributional incongruence may influence illness behavior, family interactions, treatment engagement, perceived stigmatization, and reinforcement contingencies within

the patient's social environment (Van Egmond et al., 2005). However, few studies have systematically examined the relationship between SG-related processes and attributional discrepancies between patients and their relatives.

Previous studies investigating SG have primarily focused on conversion disorder, somatization, or neurological symptoms. Stressful life events and SG-related factors have been associated with chronicity in somatization disorder (Craig et al., 1994), whereas studies on functional neurological presentations have highlighted the role of illness-related “escape” events and sick-role processes (Kwan & Friel, 2002; Nicholson et al., 2016). However, these studies generally evaluated the limited categories of reinforcement-related events and did not attempt to dimensionally operationalize SG across multiple psychiatric disorders. Furthermore, structured assessment instruments for SG-related processes are currently lacking.

This study was designed as a preliminary attempt to operationalize SG-related reinforcement processes using a structured dimensional framework. Rather than conceptualizing SG as a diagnosis-specific phenomenon, we examined whether illness-related reinforcement experiences, anticipated relief expectations, and perceived attributional incongruence could be systematically assessed across different psychiatric disorders. To achieve this, we developed an exploratory SG assessment survey informed by psychodynamic formulations of SG, literature on illness behavior, interpersonal reinforcement models, and cognitive-behavioral conceptualizations of symptom maintenance.

The study focused on four psychiatric diagnostic groups: somatic symptom disorder (SSD), FND, panic disorder (PD), and major depressive disorder (MDD). These groups were selected to represent varying degrees of focus on bodily symptoms, illness attribution patterns, and interpersonal illness-related dynamics. SSD and FND were included because SG has historically been the most extensively discussed condition. PD was included because of its prominent bodily symptoms and heightened symptom-focused attention, whereas MDD was included as a comparison condition characterized by relatively greater psychological attribution styles and different patterns of interpersonal and somatic symptom expression (Wiener et al., 2012; Raguram et al., 1996; Heredia Montesinos et al., 2012). Additionally, anxiety is associated with heightened symptom monitoring, bodily vigilance, reassurance-seeking, and sensitivity to interpersonal and environmental contingencies, whereas depressive symptoms primarily reflect affective, motivational, and cognitive disturbances (Wiener et al., 2012). Therefore, it may be hypothesized that SG-related reinforcement processes are more strongly associated with anxiety symptoms than with depressive symptom severity.

Although SG has traditionally been conceptualized primarily in relation to diagnostic categories, sex may also influence interpersonal reinforcement processes. Evidence specifically associated with the relationship between sex and SG remains limited. However, previous research suggests that men and women may differ in social support, caregiving expectations, and illness-related interpersonal responses (Göttgens et al., 2023).

This study primarily aimed to develop and evaluate an exploratory dimensional framework for assessing SG-related reinforcement processes across psychiatric disorders. Specifically, we aimed to (1) operationalize illness-related reinforcement experiences using a structured event-based assessment framework; (2) examine the preliminary construct coherence and internal consistency of this framework; (3) investigate associations between SG-related variables and symptom severity, somatosensory amplification, illness attributions, and illness course; and (4) explore the cross-diagnostic distribution of SG-related processes across SSD, FND, PD, and MDD. We also examined whether the theoretically related dimensions of the framework demonstrated coherent associations with one another as an additional indicator of construct validity. Additionally, although evidence specifically related to SG is limited, exploratory gender comparisons were included to examine whether SG-related processes demonstrate differential interpersonal reinforcement patterns between men and women. We hypothesized that SG-related variables would be positively associated with somatosensory amplification, anxiety scores, and illness-related attributional processes, but not with depression scores, and that somatic symptoms and related disorders (SSD and FND) would be associated with higher levels of perceived attributional incongruence and illness-related reinforcement experiences.

METHOD

Study Design and Participants

This cross-sectional exploratory study was conducted at a single psychiatry outpatient clinic at a university hospital between April 2023 and March 2024. This study aimed to preliminarily evaluate a dimensional assessment framework designed to operationalize SG-related reinforcement processes across psychiatric disorders.

Patients aged 18 years or over diagnosed with SSD, FND, PD, or MDD according to the Diagnostic and Statistical Manual of Mental Disorders (DSM)-5 criteria were eligible for inclusion. Participants with comorbid psychotic disorders, intellectual disability, or dementia were excluded from the study. Patients who agreed to participate were referred by the

evaluating psychiatrist to the research team. One participant was excluded because of substantial missing data related to difficulties in cooperation, and another was excluded because the diagnosis of FND could not be reliably confirmed.

All participants provided written informed consent before participation. Diagnostic evaluations were independently conducted by two psychiatrists (EE and AB), and diagnoses were confirmed according to DSM-5 criteria. The final sample consisted of 60 participants: 21 with SSD, 12 with FND, 15 with PD, and 12 with MDD. The Başkent University Institutional Review Board approved the study protocol (project no: KA22/131).

Clinical and Sociodemographic Assessment

Sociodemographic characteristics—including age, sex, educational attainment, psychiatric treatment status, duration of illness, and accompanying medical or psychiatric conditions—were recorded. Clinical severity was assessed using the Clinical Global Impression Scale–Severity form (Busner & Targum, 2007).

Participants completed the following self-report scales to evaluate symptom severity, illness perception, and somatosensory amplification:

Somatosensory Amplification Scale (SAS)

The SAS is a self-report measure that assesses the tendency to perceive normal bodily sensations as intense, disturbing, or pathological (Barsky et al., 1990). A Turkish validity and reliability study was conducted by Güleç et al. (2007).

Hospital Anxiety and Depression Scale (HADS)

The HADS is a 14-item self-report instrument that assesses anxiety and depressive symptom severity (Zigmond & Snaith, 1983). A Turkish validity and reliability study was conducted by Aydemir (1997).

Illness Perception Questionnaire (IPQ)

The IPQ evaluates cognitive and emotional representations of illness, including illness-related attributions, perceived consequences, emotional responses, and perceived causes of illness (Moss-Morris et al., 2002). A Turkish validity and reliability study was conducted by Kocaman et al. (2007).

SG Assessment Framework

Because no standardized dimensional instrument currently exists for assessing SG-related reinforcement processes, an exploratory SG assessment survey was developed by the research team for this study. Candidate items were developed through an iterative process combining literature review and expert clinical consensus. Relevant

Table 1. Conceptual structure and domains of the secondary gain assessment framework

Domain	Operational definition	Theoretical construct	Example item	Derived variables
1. Experienced Illness-Related Reinforcement Events	Assessment of interpersonal and environmental changes experienced following symptom onset and perceived as having a positive, negative, or neutral impact	Illness-related reinforcement experiences and associated contextual modification	“Did you receive increased support from family members?”/“Did you stop attending unwanted social gatherings?”	Experienced reinforcement event count, net impact score, and experienced SG composite score
1a. Financial Reinforcement	Illness-related material or economic benefits associated with the presence of symptoms	Positive reinforcement through financial gain	Financial support, disability compensation, and retirement due to illness	Financial reinforcement subscore
1b. Burden Reduction	Reduction or redistribution of responsibilities following the onset of illness	Negative reinforcement through aversive demand reduction	Sick leave, childcare support, or household responsibilities	Burden reduction subscore
1c. Interpersonal Avoidance/Redirection	Illness-related avoidance of distressing interpersonal situations or redirection of social expectations	Interpersonal avoidance, negative reinforcement, and illness-related contextual restructuring	Avoiding unwanted social interactions, postponing marriage/divorce, and discontinuing conflictual relationships	Interpersonal avoidance/redirection subscore
1d. Relational Reinforcement	Increased interpersonal attention, care, support, or relational closeness associated with illness	Positive interpersonal reinforcement and illness-related relational gain	Increased family attention, reduced family conflict, and increased partner involvement	Relational reinforcement subscore
2. Anticipated Illness-Related Relief Expectations	Assessment of anticipated relief if hypothetical illness-related events occur	Expected reinforcement value and perceived symptom-event linkage	“How relieved would it be if your responsibilities were reduced because of your illness?”	Anticipated secondary gain score and subscores
3. Perceived Attributional Incongruence	Difference between patients’ own illness attributions and their perceptions of relatives’ attributions	Attributional mismatch and interpersonal explanatory incongruence	Difference between “purely physical” and “purely psychological” attribution ratings	Perceived attribution gap

theoretical and empirical literature on SG, illness behavior, interpersonal reinforcement, and symptom maintenance was reviewed to identify relevant domains. Item generation was informed by multiple theoretical perspectives, including psychodynamic formulations of SG, literature on illness behavior, interpersonal reinforcement models, and cognitive-behavioral conceptualizations of symptom maintenance. No existing dimensional instrument assessing SG-related reinforcement processes was available; therefore, items were not adapted from any previously published scale. Instead, item content was generated specifically for the present framework and subsequently refined, modified,

and supplemented on the basis of the research team’s clinical experience. The examples of item lists are provided in Supplementary Material (Supplementary Table). The framework comprised three sections evaluating distinct but theoretically related domains:

1. Experienced illness-related reinforcement events
2. Anticipated illness-related relief expectations
3. Perceived attributional incongruence

Table 1 summarizes the conceptual structure and domains of the SG assessment framework.

Table 2. Definitions and interpretations of derived variables in the secondary gain assessment framework

Variable	Operational definition	Scoring method	Interpretation	Theoretical meaning
Experienced Reinforcement Event Count	Total number of illness-related reinforcement events reported as present	Sum of the endorsed reinforcement-related events	Greater exposure to illness-related interpersonal/ environmental changes	Exposure burden related to illness-associated contextual modification
Net Impact Score	Sum of the event impact ratings ranging from –2 (very negative) to +2 (very positive)	Sum of the impact ratings (–2 to +2)	Overall perceived impact of experienced events	Subjective appraisal of illness-related contextual consequences
Experienced Secondary Gain Composite Score	Sum of the positively rated reinforcement-related events	Sum of the positively rated reinforcement events	Greater perceived illness-related reinforcement burden	Experienced interpersonal and environmental reinforcement associated with illness
Financial Reinforcement Subscore	Composite score derived from financial-related reinforcement items	Sum of the financial reinforcement items	Greater financial gain associated with illness	Positive reinforcement through material or economic benefits
Burden Reduction Subscore	Composite score derived from responsibility-reduction items	Sum of the burden reduction items	Greater reduction in aversive demands or obligations	Negative reinforcement through avoidance of burdens
Interpersonal Avoidance/Redirection Subscore	Composite score derived from avoidance/redirection-related items	Sum of the avoidance/redirection items	Greater illness-related modification of interpersonal expectations or interactions	Interpersonal avoidance and contextual restructuring processes
Relational Reinforcement Subscore	Composite score derived from increased care/support items	Sum of relational reinforcement items	Greater illness-related interpersonal attention or support	Positive interpersonal reinforcement and relational gain
Anticipated Secondary Gain Score	Total anticipated relief score for hypothetical illness-related events	Sum of the anticipated relief ratings	Greater expected contextual or interpersonal illness-associated relief	Anticipated reinforcement value and perceived symptom-event linkage
Perceived Attribution Gap	Absolute difference between patients' illness and perceived relatives' attributions	Absolute difference between self and perceived family attribution ratings	Greater attributional incongruence between patients and their relatives	Interpersonal explanatory mismatch surrounding illness

Experienced Illness-Related Reinforcement Events

The first section evaluated whether the participants had experienced specific interpersonal or environmental changes following symptom onset. Participants were asked whether each event had occurred during the course of their illness and, if present, to rate the overall impact of the event on their lives using a 5-point scale ranging from -2 ("very negative") to +2 ("very positive").

The event list included 36 illness-related life events grouped into four conceptually derived psychosocial domains:

1. Financial reinforcement
2. Burden reduction
3. Interpersonal avoidance/redirection
4. Relational reinforcement

Table 2 presents the definitions and interpretations of the derived variables from the instrument.

Anticipated Illness-Related Relief Expectations

The second section assessed anticipated relief expectations associated with hypothetical illness-related events. Participants rated how relieving each event would be if it occurred during their illness process using a 5-point Likert-type scale ranging from 0 (“not at all”) to 4 (“completely”).

This section evaluated the value of anticipated reinforcement, perceived symptom-event linkage, and expected interpersonal or contextual relief. The four psychosocial domains used in Section 1 were retained for conceptual consistency. The cumulative score derived from this section was referred to as the anticipated SG score (Table 2).

Perceived Attributional Incongruence

The final section assessed the patients’ perceptions of illness-related attributional differences between participants and their relatives. Participants rated the following using a 7-point continuum ranging from “purely physical” to “purely psychological”:

1. Interpretation of their illness
2. Perception of how relatives interpreted the illness

The absolute difference between these two ratings was calculated and termed the perceived attribute gap (Table 2). This variable was conceptualized as a proxy indicator of the perceived attributional incongruence within the interpersonal environment surrounding the experience of illness.

Statistical Analysis

All statistical analyses were conducted using IBM SPSS Statistics Version 23.0. Nonparametric statistical methods were preferred given the modest sample size, subgroup distributions, and non-normal distribution characteristics of several primary outcome variables. Preliminary distributional evaluations revealed deviations from normality for several SG-related variables. Therefore, the Kruskal–Wallis test was used for comparisons across the four diagnostic groups, and the Mann–Whitney U test was used for binary group comparisons. Spearman’s rho correlation analyses were performed to evaluate the associations between the study variables.

Where overall Kruskal–Wallis tests demonstrated significant differences, post hoc pairwise comparisons were examined using the Mann–Whitney U test with Bonferroni-adjusted significance thresholds.

The participants in the secondary analyses were grouped according to the DSM-5 classification structure and illness course characteristics.

For DSM-5 classification analyses, SSD and FND were grouped as somatic symptoms and related disorders (SSRDs), whereas PD and MDD were grouped together as comparison conditions. This grouping was based on the phenomenological emphasis on bodily symptoms and illness-related behaviors in patients with SSD/FND compared with those with PD/MDD. Given the modest sample size, combining PD and MDD improved the statistical power for higher order exploratory comparisons. In addition, the illness course was categorized as episodic or continuous based on clinical history.

Spearman correlation analyses were used to examine associations between SG-related variables and illness duration, symptom severity, somatosensory amplification, anxiety and depressive symptom severity, illness attribution variables, and illness perception domains.

RESULTS

Sample Characteristics and Descriptive Results

Table 3 presents the sociodemographic and clinical characteristics of the final sample. No significant differences in age, illness duration, overall symptom severity, educational attainment, or psychotropic medication use were observed across diagnostic groups.

Table 4 presents the descriptive results. Somatosensory amplification significantly differed across diagnoses ($\chi^2=10.528$, $df=3$, $p=0.015$), with lower somatosensory amplification scores observed in the MDD group.

Preliminary Reliability of the SG Assessment Framework

The SG assessment framework demonstrated acceptable preliminary internal consistency across conceptually derived psychosocial domains. The first section, which assessed experienced illness-related reinforcement events, demonstrated acceptable internal consistency (Cronbach’s $\alpha=0.71$), whereas the second section, which assessed anticipated illness-related relief expectations, demonstrated good internal consistency (Cronbach’s $\alpha=0.83$).

Overall, subdomain reliability analyses for the anticipated reinforcement section demonstrated acceptable psychometric coherence (Table 5). Cronbach’s α coefficients ranged from 0.63 to 0.77 across subdomains. Interpersonal avoidance/redirection demonstrated the highest internal consistency ($\alpha=0.77$), followed by financial reinforcement ($\alpha=0.74$) and relational reinforcement ($\alpha=0.74$). Burden reduction demonstrated relatively lower but still acceptable internal consistency ($\alpha=0.63$). Item-total and inter-item correlation ranges also supported the preliminary construct coherence across subdomains.

Table 3. Comparisons of sociodemographic and clinical variables

	Diagnoses			DSM-5 classification				Course of disease			
	Mean (SD) ^a			Mean (SD) ^b				Mean (SD) ^b			
	SSD (n=21)	FND (n=12)	PD (n=15)	MDD (n=12)	χ ²	SSRD (n=33)	Others (n=27)	U	Episodic (n=27)	Continuous (n=33)	U
Age	44.43 (15.689)	39.75 (17.205)	40.20 (18.222)	35.83 (15.248)	1.977	42.73 (16.150)	38.26 (16.794)	374.000	40.00 (17.438)	41.30 (15.856)	426.500
Duration of disease (years)	4.90 (8.227)	8.67 (11.696)	3.40 (5.539)	2.50 (2.876)	2.640	6.27 (9.628)	3.00 (4.498)	361.500	5.74 (9.028)	4.03 (6.821)	436.500
Severity of disease (CGI-S)	2.24 (0.768)	3.00 (1.537)	2.00 (0.926)	2.42 (0.669)	5.962	2.52 (1.149)	2.19 (0.834)	400.500	2.44 (1.311)	2.30 (0.728)	442.500
	n (%) ^c			χ ²			n (%) ^c			χ ²	
Sex					0.732			0.034			0.636
Women	15 (71.4)	10 (83.3)	12 (80.0)	9 (75.0)		25 (75.8)	21 (77.8)		22 (81.5)	24 (72.7)	
Men	6 (28.6)	2 (16.7)	3 (20.0)	3 (25.0)		8 (24.2)	6 (22.2)		5 (18.5)	9 (27.3)	
Educational attainment					3.205			1.587			0.260
Primary or middle school	2 (9.5)	2 (16.7)	1 (6.7)	2 (16.7)		4 (12.1)	3 (11.1)		3 (11.1)	4 (12.1)	
High school	7 (33.3)	5 (41.7)	4 (26.7)	2 (16.7)		12 (36.4)	6 (22.2)		9 (33.3)	9 (27.3)	
University or higher	12 (57.7)	5 (41.7)	10 (66.7)	8 (66.7)		17 (51.5)	18 (66.7)		15 (55.6)	20 (60.6)	
Psychotropic drug use					2.068			0.825			0.067
None	6 (28.6)	2 (16.7)	3 (20.0)	1 (8.3)		8 (24.2)	4 (14.8)		5 (18.5)	7 (21.2)	
At least one	15 (71.4)	10 (83.3)	12 (80.0)	11 (91.7)		25 (75.8)	23 (85.2)		22 (81.5)	26 (78.8)	

*, P<0.05; **, P<0.01; ***, P<0.001; a: Kruskal–Wallis test; b: Mann–Whitney U test; c: Chi-Square test. SD: Standard deviation; CGI-S: Clinical global impression scale–severity; SSD: Somatic symptom disorder; FND: Functional neurological symptom disorder; PD: Panic disorder; MDD: Major depressive disorder; SSRD: Somatic symptom and related disorders.

*: P<0.05; **: P<0.01; ***: P<0.001; a: Kruskal–Wallis test; b: Mann–Whitney U test; c: Chi-Square test. SD: Standard deviation; CGI-5: Clinical global impression scale–severity; SSD: Somatic symptom disorder; FND: Functional neurological symptom disorder; PD: Panic disorder; MDD: Major depressive disorder; SSRD: Somatic symptom and related disorders.

Owing to the modest sample size relative to the number of items, exploratory factor analysis was not conducted. Accordingly, the findings were interpreted as preliminary psychometric evidence to guide future validation studies.

Construct Validity

Table 6 presents the associations between experienced reinforcement and anticipated relief expectations. The total number of experienced reinforcement events was positively correlated with the anticipated SG scores ($\rho=0.518$, $p<0.001$). Similarly, the cumulative net impact of experienced events was positively associated with anticipated relief expectations ($\rho=0.519$, $p<0.001$). These findings suggest consistency between experienced illness-related reinforcement processes and anticipated contextual relief expectations. However, no significant correlations were identified between illness duration and either experienced reinforcement event counts ($\rho=0.016$, $p=0.906$) or cumulative net impact scores ($\rho=0.134$, $p=0.307$).

As an additional source of construct validity evidence, we examined the associations among the theoretically related dimensions of the SG framework to determine whether they demonstrated coherent patterns consistent with the proposed conceptual model. Participants who reported at least one illness-related reinforcement event demonstrated significantly higher anticipated SG scores than those who did not report any reinforcement-related events ($U=118.500$, $Z=-2.890$, $p=0.004$). Similar differences were observed for anticipated interpersonal avoidance/redirection ($U=179.000$, $Z=-2.004$, $p=0.045$) and anticipated financial reinforcement ($U=165.000$, $Z=-2.421$, $p=0.015$), whereas no significant differences were observed for other subscales ($U=203.000$, $Z=-1.354$, $p=0.176$; $U=193.500$, $Z=-1.460$, $p=0.144$).

Convergent Validity

Several SG-related variables were significantly associated with symptom severity, somatosensory amplification, and illness attribution measures, providing preliminary evidence for convergent validity (Table 7).

The overall experienced SG composite score demonstrated a moderate positive correlation with anxiety symptom severity as measured by the HADS-A ($\rho=0.449$, $p<0.01$). Additionally, SG composite scores were positively associated with psychological illness attributions on the IPQ ($\rho=0.273$, $p<0.05$).

Among the psychosocial subdomains, interpersonal avoidance/redirection scores were positively correlated with illness severity ($\rho=0.267$, $p<0.05$) and somatosensory amplification ($\rho=0.275$, $p<0.05$). Relational reinforcement scores were positively associated with somatosensory

Table 4. Descriptive results and known-groups validity analyses

	Diagnoses				DSM-5 classification Mean (SD) ^b	Course of disease				Sex			
	Mean (SD) ^a					Mean (SD) ^b				Mean (SD) ^b			
	SSD (n=21)	FND (n=12)	PD (n=15)	MDD (n=12)		χ ²	SSRD (n=33)	Others (n=27)	U	Episodic (n=27)	Continuous (n=33)	U	Women (n=46)
SAS score	32.19 (6.013)	32.33 (6.985)	30.47 (6.760)	24.67 (5.532)	10.528*	32.24 (6.275)	27.89 (6.796)	289.000*	31.30 (6.793)	29.45 (6.829)	375.500 (6.574)	31.26 (6.844)	27.07 (6.844)
HADS score	13.05 (5.390)	16.58 (9.317)	14.36 (6.392)	17.58 (5.838)	4.294	14.33 (7.140)	15.85 (6.240)	345.500	15.38 (7.793)	14.70 (5.897)	410.500 (6.478)	15.36 (6.478)	13.86 (7.685)
Experienced reinforcement	5.67 (3.469)	7.75 (3.194)	6.40 (4.171)	3.92 (2.429)	8.795*	6.42 (3.473)	5.30 (3.667)	356.500	7.00 (3.762)	5.03 (3.206)	288.500*	6.11 (3.121)	5.29 (4.874)
Net impact score	2.14 (6.167)	3.58 (7.012)	5.0 (6.403)	5.33 (5.694)	2.175	2.67 (6.416)	5.15 (5.985)	351.000	4.37 (6.588)	3.30 (6.111)	440.000 (6.085)	4.33 (6.085)	2.00 (6.884)
SG composite score	4.48 (3.250)	7.17 (5.132)	6.20 (4.632)	5.17 (4.448)	2.316	5.45 (4.169)	5.74 (4.494)	422.000	6.63 (4.789)	4.73 (3.677)	349.000 (4.235)	5.98 (4.235)	4.29 (4.340)
Interpersonal avoidance/ redirection	1.05 (1.322)	1.58 (2.065)	1.13 (1.727)	0.75 (0.965)	0.816	1.24 (1.621)	0.96 (1.427)	401.000	1.33 (1.861)	0.94 (1.197)	425.500 (1.636)	1.24 (1.636)	0.71 (1.069)
Burden reduction	1.05 (1.465)	1.58 (2.151)	1.73 (1.944)	1.08 (1.165)	1.156	1.24 (1.733)	1.44 (1.649)	402.500	1.67 (2.000)	1.06 (1.345)	388.000 (1.689)	1.35 (1.689)	1.29 (1.729)
Relational reinforcement	1.86 (2.06)	3.17 (2.41)	3.27 (2.60)	2.75 (3.49)	3.763	2.33 (2.245)	3.04 (2.980)	402.500	3.22 (2.470)	2.18 (2.651)	322.500 (2.629)	3.02 (2.629)	1.43 (2.174)
Financial reinforcement	0.52 (1.365)	0.83 (1.115)	0.07 (0.258)	0.58 (1.240)	5.072	0.64 (1.270)	0.30 (0.869)	387.000	0.41 (0.844)	0.55 (1.301)	444.500 (0.974)	0.37 (0.974)	0.86 (1.460)
Anticipated SG score	10.90 (7.273)	23.67 (18.446)	15.80 (17.701)	13.67 (9.967)	3.244	15.55 (13.743)	14.85 (14.557)	412.000	19.30 (18.125)	11.91 (8.308)	382.000 (14.348)	16.33 (14.348)	11.64 (12.592)
Anticipated interpersonal avoidance/redirection	2.24 (3.872)	4.25 (6.196)	1.40 (2.530)	0.50 (1.732)	6.382	2.97 (4.851)	1.00 (2.219)	325.000*	2.67 (4.666)	1.61 (3.335)	387.500 (3.756)	2.02 (3.756)	2.29 (4.827)
Anticipated burden reduction	1.90 (2.448)	3.42 (3.450)	3.93 (6.745)	2.75 (2.864)	1.715	2.45 (2.895)	3.41 (5.322)	444.500	3.70 (5.441)	2.21 (2.595)	411.500 (4.464)	3.37 (4.464)	1.29 (2.400)
Anticipated relational reinforcement	5.71 (5.433)	12.50 (8.230)	8.07 (6.745)	8.75 (7.300)	6.552	8.18 (7.261)	8.37 (6.868)	426.500	10.04 (7.628)	6.82 (6.242)	325.500 (7.152)	9.00 (7.152)	5.86 (6.237)
Anticipated financial reinforcement	1.05 (2.085)	3.50 (4.189)	2.40 (5.865)	1.67 (2.674)	3.537	1.94 (3.191)	2.07 (4.657)	427.500	2.89 (5.124)	1.27 (2.295)	386.000 (4.197)	1.93 (4.197)	2.21 (2.723)
Perceived attribution gap	1.86 (1.195)	0.75 (0.622)	0.42 (0.915)	1.0 (0.953)	16.810**	1.45 (1.148)	0.70 (0.953)	256.500**	0.59 (0.797)	1.55 (1.175)	226.000** (1.092)	1.09 (1.092)	1.21 (1.251)

*, P<0.05; **, P<0.01; ***, P<0.001. a: Kruskal–Wallis test; b: Mann–Whitney U test; SD: Standard deviation; SAS: Somatosensory amplification scale; HADS: Hospital anxiety and depression scale; SG: Secondary gain; SSD: Somatic symptom disorder; FND: Functional neurological symptom disorder; PD: Panic disorder; MDD: Major depressive disorder; SSRD: Somatic symptom and related disorders.

*: $P < 0.05$; **: $P < 0.01$; ***: $P < 0.001$. a: Kruskal–Wallis test; b: Mann–Whitney U test; SD: Standard deviation; SAS: Somatosensory amplification scale; HADS: Hospital anxiety and depression scale; SG: Secondary gain; SSD: Somatic symptom disorder; FND: Functional neurological symptom disorder; PD: Panic disorder; MDD: Major depressive disorder; SSRD: Somatic symptom and related disorders.

Table 5. Preliminary psychometric properties of the secondary gain assessment framework

Subdomain	Number of items	Cronbach's α	Item-total correlation range	Inter-item correlation range	Theoretical domain
Financial reinforcement	6	0.74	0.48–0.62	0.20–0.60	Positive material/environmental reinforcement
Burden reduction	6	0.63	0.26–0.52	0.08–0.56	Reduction of aversive demands and responsibilities
Interpersonal avoidance/redirection	8	0.77	0.42–0.66	0.14–0.60	Illness-related interpersonal avoidance and contextual restructuring
Relational reinforcement	7	0.74	0.28–0.62	0.12–0.59	Increased interpersonal attention, care, and support

Table 6. Intercorrelations among secondary gain framework dimensions (Spearman Correlation Analysis, n=60)

Variable	1	2	3	4	5	6	7	8	9
1. Experienced reinforcement event count	—	0.344**	0.721***	0.282*	0.100	0.310*	0.376**	0.518***	-0.042
2. Net impact score		—	0.833***	0.425**	0.502***	0.698***	0.704***	0.519***	-0.045
3. Experienced SG composite score			—	0.386**	0.383**	0.591***	0.676***	0.659***	-0.081
4. Financial reinforcement				—	0.141	0.327*	0.200	0.354**	0.104
5. Burden reduction					—	0.174	0.007	0.089	-0.087
6. Interpersonal avoidance/redirection						—	0.315*	0.356**	-0.046
7. Relational reinforcement							—	0.592***	-0.113
8. Anticipated SG score								—	-0.100
9. Perceived attribution gap									—

*: $P < 0.05$; **: $P < 0.01$; ***: $P < 0.001$; SG: Secondary gain.

amplification ($\rho = 0.321$, $p < 0.05$) and psychological illness attributions ($\rho = 0.332$, $p < 0.01$).

Anticipated SG scores were positively associated with psychological illness attributions ($\rho = 0.254$, $p < 0.05$). Similarly, the anticipated interpersonal avoidance/redirection and anticipated relationship reinforcement subdomains were positively correlated with somatosensory amplification ($\rho = 0.255$, $p < 0.05$; $\rho = 0.300$, $p < 0.05$).

As both patient and perceived family attributions shifted toward the somatic end of the attribution continuum, the perceived attribution gap scores increased ($\rho = -0.561$, $p < 0.001$; $\rho = -0.377$, $p = 0.003$). Psychological illness attributions were positively associated with emotional representation scores on the IPQ ($\rho = 0.316$, $p = 0.014$).

Divergent Validity

Table 7 presents the correlations among the framework dimensions and external measures. No significant associations

were observed between SG-related variables and depressive symptom severity measured by HADS-D. Likewise, perceived attribution gap scores were not significantly associated with overall anxiety or depressive symptom severity.

Known-Groups Validity

Diagnostic Group Comparisons

The number of experienced illness-related reinforcement events significantly differed across diagnostic groups ($\chi^2 = 8.795$, $df = 3$, $p = 0.032$), with higher event counts observed in FND and lower event counts in MDD. Patients in the PD group tended to attribute their symptoms more strongly to psychological causes, whereas SSD participants demonstrated more somatically oriented illness attributions ($\chi^2 = 14.274$, $p = 0.003$; $\chi^2 = 15.339$, $p = 0.002$, respectively). Perceived attribution gap scores significantly differed across the diagnostic groups ($\chi^2 = 16.810$, $p = 0.001$), with SSD having the highest scores and PD having the lowest scores. In contrast, the overall experienced SG composite scores demonstrated

Table 7. Correlations between secondary gain framework dimensions and external validation measures (Spearman Correlation Analysis, n=60)

	SG composite score	Interpersonal avoidance/redirection	Burden reduction	Relational rei.	Financial rei.	Anticipated SG score	Anticipated interpersonal avoidance/redirection	Anticipated burden reduction	Anticipated relational rei.	Anticipated financial rei.
Duration of illness	0.151	0.237	-0.035	0.010	0.110	0.235	0.129	0.191	0.158	0.119
Severity of symptoms (CGI-S)	0.103	0.267*	-0.023	0.018	-0.084	0.070	0.098	0.070	0.073	0.163
SAS scores	0.247	0.275*	0.018	0.321*	-0.066	0.216	0.255*	0.043	0.300*	0.068
HADS total scores	0.175	0.119	0.089	0.189	0.038	0.087	0.024	0.167	0.066	0.165
HADS-A	0.449**	0.144	0.298*	0.240	0.112	0.155	0.063	0.219	0.098	0.286*
HADS-D	-0.047	0.091	-0.147	0.024	-0.057	-0.018	-0.028	0.018	-0.032	0.007
IPQ perception-consequences	0.037	0.070	0.029	0.047	0.032	-0.068	0.133	0.050	-0.098	0.012
IPQ perception-meaning	-0.085	-0.122	-0.007	-0.078	-0.062	-0.120	-0.091	-0.185	-0.014	-0.069
IPQ perception-emotional expression	0.089	0.001	0.001	0.191	-0.047	-0.036	0.035	0.174	-0.001	0.077
IPQ causes-psychological	0.273*	-0.011	-0.037	0.332**	0.198	0.254*	0.192	0.043	0.294*	0.038
IPQ causes-risk factors	-0.063	-0.186	-0.007	-0.087	0.209	0.131	0.082	0.106	0.017	0.112
IPQ causes-immunity	-0.073	-0.239	-0.174	0.042	0.153	0.061	0.038	-0.181	0.063	0.051
IPQ causes-accident/chance	0.027	-0.094	-0.101	0.114	-0.013	-0.004	0.141	-0.081	0.013	-0.133

*: P<0.05; **: P<0.01; ***: P<0.001; SG: Secondary gain; CGI-S: Clinical global impression-severity; SAS: Somatosensory amplification scale; HADS-A: Hospital anxiety and depression scale-anxiety; HADS-D: Hospital anxiety and depression scale-depression; IPQ: Illness perception questionnaire; Rei: Reinforcement.

relatively similar distributions across the diagnostic groups and did not significantly differ ($\chi^2=2.316$, $p=0.509$). Similarly, the SG psychosocial subdomain scores did not significantly differ across diagnoses (Table 4).

DSM-5 Classification Comparisons

The PD and MDD groups demonstrated more psychologically oriented attributions for themselves and perceived family attributions than the SSRD group ($U=254.000$, $Z=-2.922$, $p=0.003$; $U=244.500$, $Z=-3.127$, $p=0.002$, respectively). The SSRD group demonstrated significantly higher perceived attribute gap scores than the PD and MDD groups ($U=256.500$, $Z=-2.806$, $p=0.005$). The most anticipated SG subdomains demonstrated similar distributions across higher order diagnostic categories (Table 4). However, the anticipated interpersonal avoidance/redirection scores were significantly higher in the SSRD group than in the PD and MDD groups ($U=325.000$, $Z=-2.076$, $p=0.038$).

Illness Course Comparisons

Table 4 presents the illness course comparisons. Participants with continuous illness courses demonstrated significantly higher perceived attribute gap scores than those with episodic illness courses ($U=226.000$, $Z=-3.422$, $p=0.001$).

Sex Comparisons

Women demonstrated significantly higher relational reinforcement scores than men ($U=193.000$, $Z=-2.298$, $p=0.022$). The other variables did not significantly differ between men and women (Table 4).

DISCUSSION

This study aimed to develop and preliminarily evaluate an exploratory dimensional framework for assessing SG-related reinforcement processes across psychiatric disorders. Rather than conceptualizing SG as a diagnosis-specific phenomenon, this study operationalized illness-related reinforcement experiences, anticipated relief expectations, and attributional incongruence using a structured event-based assessment framework. Overall, the findings provide preliminary evidence that SG-related processes may be dimensionally conceptualized and systematically investigated across different psychiatric conditions. However, the results should be interpreted cautiously given the exploratory nature of the instrument and the modest sample size.

One of the principal contributions of the study is the preliminary operationalization of SG-related processes through identifiable interpersonal and environmental events rather than exclusively relying on clinician inference or

psychodynamic interpretation. Historically, SG has often been discussed as an implicit or hidden motivational construct, particularly within psychodynamic and psychosomatic traditions (Fishbain et al., 1995). In contrast, this framework conceptualized SG-related processes as observable contextual and interpersonal reinforcement experiences associated with illness. This broader conceptualization may allow the systematic examination of SG-related mechanisms within dimensional and behavioral models of psychopathology.

The psychometric findings provide preliminary support for the proposed framework's internal coherence. Overall, internal consistency coefficients for the experienced reinforcement and anticipated relief sections were acceptable, and subdomain analyses demonstrated reasonable coherence across conceptually derived psychosocial domains. Although the sample size was insufficient for factor analytic procedures, item-total and inter-item correlation patterns suggested that the instrument captured related but distinguishable reinforcement-related domains, including financial reinforcement, burden reduction, interpersonal avoidance/redirection, and relational reinforcement. These findings should be considered preliminary and hypothesis-generating rather than evidence of formal psychometric validation.

Several associations observed in the study also support the construct coherence of the framework. SG-related composite scores were positively associated with anxiety symptom severity, somatosensory amplification, and psychological illness attributions. This pattern is broadly consistent with cognitive-behavioral models emphasizing symptom monitoring, bodily vigilance, reassurance-seeking, and heightened sensitivity to illness-related contingencies in anxiety disorders (Orzechowska et al., 2021). Such mechanisms may increase the salience of interpersonal and contextual reinforcement processes surrounding the experiences of illness.

In particular, the interpersonal avoidance/redirection and relational reinforcement subdomains demonstrated consistent relationships with somatosensory amplification. These findings are also compatible with illness behavior models that emphasize the role of family responses, interpersonal support, and caregiving contingencies in shaping symptom expression and maintenance (Kwan & Friel, 2002; Van Egmond & Kummeling, 2002).

Consistent with our hypothesis, SG-related variables were not significantly associated with the severity of depressive symptoms. Although depression may influence illness behavior through reduced activity, social withdrawal, or functional impairment, heightened symptom monitoring or increased sensitivity to interpersonal reinforcement processes

do not necessarily characterize depressive symptoms (Raguram et al., 1996). Moreover, reinforcement-related mechanisms inherently involve the anticipation or experience of relief, reward, or motivational need fulfillment. Depression is frequently associated with diminished motivation, reduced reward responsiveness, anhedonia, and goal-directed behavior impairments. Individuals experiencing more severe depressive symptoms may be less likely to engage with or derive subjective reinforcement from interpersonal and contextual contingencies surrounding illness. Therefore, the absence of significant associations may provide preliminary support for the divergent validity of the framework and suggests that SG-related processes is more closely linked to illness-related attention, attributional styles, and interpersonal reinforcement mechanisms than to depressive symptom burden itself.

Importantly, this study distinguished between experienced reinforcement events and anticipated relief expectations. Participants who reported greater exposure to illness-related reinforcement events also reported stronger anticipated relief expectations regarding hypothetical events. This association may reflect the consistency between prior interpersonal or contextual experiences and future illness-related relief expectations. However, these findings should not be interpreted as the evidence of conscious symptom production or intentional pursuit of gain. Rather, they may reflect broader reinforcement-related learning processes through which illness becomes associated with environmental modification, relational responses, or reductions in aversive demands.

These findings are consistent with reinforcement-based models of illness behavior and symptom maintenance from a cognitive-behavioral perspective. Behavioral theories suggest that symptoms persist when they are associated with reductions in distressing responsibilities or increases in interpersonal attention and care (Orzechowska et al., 2021). Within this framework, negative reinforcement (e.g., avoidance of unwanted situations) and positive reinforcement (e.g., increased support or relational attention) may contribute to symptom persistence over time. The present findings support the possibility that SG-related processes involve multiple reinforcement pathways rather than a single unitary mechanism.

Another important contribution of the study concerns attributional incongruence between patients and their relatives. Perceived attribution gap scores substantially differed across the diagnostic groups and illness courses. Higher attributional incongruence was observed in SSD and continuous illness courses, whereas lower incongruence was observed in PD and episodic conditions. Previous studies have shown that patients

with somatic symptom presentations often demonstrate stronger somatic illness beliefs than their relatives or healthcare providers, potentially contributing to explanatory mismatches and treatment disagreements (von dem Knesebeck et al., 2020). Therefore, the elevated attributional incongruence observed in SSD may reflect broader discrepancies in illness representations within the patient's social environment. These findings indicate that discrepancies between the explanatory models of illness of patients and relatives are clinically relevant interpersonal variables associated with symptom presentation and illness chronicity.

Attributional incongruence may influence interpersonal stress, perceived stigmatization, treatment engagement, and family interactions surrounding illness. Perceived stigmatization and relational conflict contribute to psychological distress and may influence illness behavior across psychiatric conditions (Chen et al., 2025; Özdemir & Sağkal, 2021). Although perceived attributional incongruence does not directly measure stigma or family conflict, the observed differences suggest that patient-family attributional discrepancies may represent clinically meaningful interpersonal processes that merit further investigation. Future longitudinal studies may clarify the contribution of attributional incongruence to symptom persistence, treatment adherence, or chronic illness trajectories.

The known-groups analyses also yielded findings relevant to the construct validity of the framework. Participants with FND reported greater exposure to illness-related reinforcement events, whereas those with MDD reported fewer such events. This finding is broadly consistent with previous work highlighting the role of illness-related escape events, sick-role processes, and environmental contingencies in functional neurological presentations (Kwan & Friel, 2002; Nicholson et al., 2016). In contrast, the overall SG composite scores demonstrated relatively similar distributions across the diagnostic categories. This pattern suggests that although the types and frequency of illness-related reinforcement experiences vary across disorders, broader reinforcement-related SG processes may not be restricted to a single diagnostic category.

The present findings should not be interpreted as definitive evidence that SG represents a fully established transdiagnostic construct. The study did not include healthy controls or chronic medical illness groups, and the sample size was insufficient to formally evaluate dimensionality. Instead, the findings provide preliminary support for the possibility that SG-related reinforcement processes may operate across multiple psychiatric conditions and may therefore warrant further investigation within dimensional psychopathology frameworks.

Women demonstrated higher relational reinforcement scores than men. Although this finding should be interpreted cautiously given the limited number of male participants, it may reflect gender-related differences in caregiving expectations, social support processes, and interpersonal responses to illness. One possible explanation is that women may be more likely to experience or perceive illness-related interpersonal support and caregiving responses. Previous literature has suggested that women tend to rely more heavily on interpersonal coping resources and social support networks and may receive different relational responses during periods of illness or stress (Göttgens et al., 2023; Graves et al., 2021). However, given the exploratory nature of the analysis and the limited sample size, this finding should be considered preliminary and should be replicated in larger studies.

This study may also have implications for clinical formulation and treatment planning. Examining interpersonal contingencies, reinforcement patterns, and illness-related environmental modifications within cognitive-behavioral frameworks may help clinicians better understand symptom persistence and treatment resistance. The exploration of illness-related reinforcement processes does not imply that symptoms are fabricated or intentionally produced. Rather, it may help identify contextual factors that inadvertently maintain symptom-focused behaviors or illness-related interpersonal patterns. Similarly, assessing attributional incongruence between patients and relatives may contribute to psychoeducation, family interventions, and therapeutic alliance formation.

Notably, several diagnostic group differences observed on external validation measures were generally consistent with the expected clinical characteristics of the included disorders. For example, participants with MDD demonstrated lower levels of somatosensory amplification, whereas those with PD reported more psychologically oriented illness attributions. These findings broadly align with previous literature describing differences in symptom focus, bodily vigilance, and explanatory models across psychiatric disorders. Although these measures were not the primary focus of the present study, their consistency with expected diagnostic profiles may provide indirect support for the representativeness of the sample and strengthen confidence in the interpretation of the SG-related findings.

Several limitations should be considered when interpreting the study findings. First, the SG assessment framework was developed as an exploratory instrument and has not undergone formal psychometric validation. Owing to the modest sample size, exploratory or confirmatory factor analyses could not be reliably conducted. Second, the

study used a cross-sectional design, preventing conclusions regarding causality or temporal reinforcement processes. Third, subgroup sizes were relatively small, increasing the possibility of type II error and limiting statistical power for between-group comparisons. Fourth, no healthy control group or comparison group for chronic medical illness was included, limiting conclusions regarding broader transdiagnostic relevance. Fifth, reinforcement-related processes were indirectly inferred through self-report rather than longitudinal behavioral observation. The relatively small number of male participants also limited the interpretability of sex-based comparisons. Finally, although psychodynamic formulations informed the conceptual background of SG, psychodynamic variables such as defense mechanisms, unconscious conflict, or personality organization were not formally assessed.

CONCLUSION

This study represents a preliminary attempt to operationalize SG-related reinforcement processes across psychiatric disorders using a dimensional assessment framework. The findings suggest that illness-related reinforcement experiences, anticipated relief expectations, and attributional incongruence can be systematically assessed through structured interpersonal and contextual domains. Although the exposure to illness-related reinforcement events and attributional processes differed across diagnostic categories, the overall SG-related composite scores demonstrated relatively similar cross-diagnostic distributions. These findings indicate that SG-related reinforcement processes are not limited to a single psychiatric disorder and may reflect broader interpersonal and contextual mechanisms relevant across psychiatric conditions. The observed associations between SG-related variables, somatosensory amplification, anxiety symptoms, and illness attributions also provide preliminary support for the construct coherence of the proposed framework. In particular, interpersonal reinforcement and avoidance-related processes may be clinically meaningful contextual factors associated with symptom persistence and illness behavior.

The present findings should be interpreted cautiously given the exploratory nature of the assessment framework and the modest sample size. The current study does not establish SG as a fully validated transdiagnostic construct. Rather, it provides preliminary evidence that systematically investigating SG-related reinforcement processes within dimensional and interpersonal models of psychopathology is feasible. Future studies with larger and more diverse clinical samples, longitudinal designs, and formal psychometric validation procedures are needed to clarify the dimensional structure, clinical significance, and potential transdiagnostic relevance of SG-related reinforcement processes.

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Supplementary Table. Item list and subdomain mapping of the secondary gain assessment framework*

Section	Item content	Psychosocial domain	Theoretical construct
Experienced events	Receiving disability-related financial support	Financial reinforcement	Positive material reinforcement
Experienced events	Receiving financial help from others	Financial reinforcement	Environmental/material gain
Experienced events	Retirement due to illness	Financial reinforcement	Illness-related contextual modification
Experienced events	Reduction in work/school attendance	Burden reduction	Negative reinforcement through demand reduction
Experienced events	Receiving support with childcare	Burden reduction	Redistribution of responsibilities
Experienced events	Receiving support with household duties	Burden reduction	Reduction in aversive obligations
Experienced events	Avoidance of unwanted family/social gatherings	Interpersonal avoidance/redirection	Interpersonal avoidance
Experienced events	Avoiding contact with unwanted individuals	Interpersonal avoidance/redirection	Illness-related contextual restructuring
Experienced events	Postponing relocation, marriage, or separation	Interpersonal avoidance/redirection	Avoidance of stressful interpersonal transitions
Experienced events	Increased care and attention from relatives	Relational reinforcement	Positive interpersonal reinforcement
Experienced events	Increased partner involvement	Relational reinforcement	Relational gain
Experienced events	Reduction in household conflict	Relational reinforcement	Illness-related interpersonal stabilization
Anticipated relief	Receiving financial support would be relieving	Financial reinforcement	Anticipated material reinforcement
Anticipated relief	Reduced responsibilities would be relieving	Burden reduction	Anticipated negative reinforcement
Anticipated relief	Avoiding unwanted social situations would be relieving	Interpersonal avoidance/redirection	Anticipated interpersonal avoidance
Anticipated relief	Receiving increased care/support would be relieving	Relational reinforcement	Anticipated relational reinforcement

*Only representative examples are shown here for conceptual clarity. The complete item list administered during the study is available upon request.

Attention-Focused and Attention-Related Interventions in Metacognitive Therapy

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ABSTRACT

In metacognitive therapy (MCT), attention is targeted not to produce temporary calm or distraction but because the cognitive attentional syndrome (CAS) is maintained by maladaptive attentional habits such as self-focused attention, threat monitoring, checking, and the repeated return to internal cues. This clinically oriented narrative review examines the principal attention-focused and attention-related interventions used in MCT from a strictly metacognitively consistent perspective. It distinguishes between techniques that act directly on attentional deployment, including the attention training technique, situational attentional refocusing, external attention practice, and therapist-guided *in vivo* attentional reallocation, and techniques that modify attention more indirectly by altering metacognitive engagement, including detached mindfulness, worry postponement, rumination postponement, anti-monitoring behavioral experiments, and response delay. A further distinction between core-level techniques and implementation-level variants is introduced to preserve conceptual clarity while retaining clinical flexibility. The review also summarizes the rationale, mechanisms, clinical markers, targets, therapist language, common delivery errors, and evidence base for these procedures. Overall, the literature suggests that attention modification in MCT is clinically meaningful when delivered within a coherent metacognitive formulation and aimed at weakening the CAS rather than managing symptoms moment by moment.

Keywords: Metacognitive therapy, attention training technique, detached mindfulness, cognitive attentional syndrome, threat monitoring.

ÖZ

Metakognitif Terapide Dikkat Odaklı ve Dikkatle İlgili Müdahaleler

Metakognitif terapide (MKT) dikkat, geçici bir rahatlama ya da dikkat dağıtma sağlamak amacıyla değil, bilişsel dikkat sendromunun (BDS) kendine odaklı dikkat, tehdit izleme, kontrol etme ve içsel ipuçlarına yinelenen geri dönüş gibi işlevsel olmayan dikkat alışkanlıklarıyla sürdürülmesi nedeniyle hedef alınır. Klinik odaklı bu anlatsal derleme, MKT’de kullanılan başlıca dikkat odaklı ve dikkatle ilişkili müdahaleleri, üstbilişsel modele sıkı biçimde bağlı bir perspektiften incelemektedir. Bu kapsamda, dikkat yerleşimini doğrudan etkileyen teknikler, dikkat eğitimi tekniği, durumsal dikkati yeniden odaklama, dış odaklı dikkat uygulamaları ve terapist eşliğinde seans içinde dikkat yeniden yönlendirme ile dikkati daha dolaylı biçimde, üstbilişsel katılımı değiştirerek etkileyen teknikler, mesafeli farkındalık, endişelenmeyi erteleme, ruminasyonu erteleme, izlemeyi azaltmaya yönelik davranışsal deneyler ve tepkiyi geciktirme birbirinden ayrılmaktadır. Kavramsal netliği koruyup klinik esnekliği de sürdürebilmek amacıyla, çekirdek düzey tekniklerle uygulama düzeyi varyantlar arasında ek bir ayırım daha önerilmektedir. Derleme ayrıca bu müdahalelerin kuramsal gerekçelerini, etki mekanizmalarını, klinik belirteçlerini, hedef süreçlerini, terapist dilini, sık görülen uygulama hatalarını ve mevcut kanıt temelini özetlemektedir. Genel olarak alanyazın, MKT’de dikkatin değiştirilmesine yönelik müdahalelerin, ancak tutarlı bir üstbilişsel kavramsallaştırma içinde ve belirtileri anlık olarak yönetmekten çok BDS’yi zayıflatmayı hedefleyecek biçimde uygulandığında klinik açıdan anlamlı olduğunu düşündürmektedir.

Anahtar Kelimeler: Bilişsel dikkat sendromu, dikkat eğitimi tekniği, mesafeli farkındalık, metakognitif terapi, tehdit izleme.



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INTRODUCTION

In metacognitive therapy (MCT), attention is not modified because the therapist wants the patient to be calmer, distracted, or temporarily less distressed. This interpretation would be too limited and clinically unstable. Attention is targeted because the cognitive attentional syndrome (CAS) depends on a specific style of allocation: self-absorption, threat monitoring, checking, and repeated return to internal cues. If that style is left intact, symptom relief tends to be unstable because the patient keeps reactivating the same maintenance loop. Wells' treatment model is explicit on this point. The aim is to reduce the CAS and modify the metacognitive control system that governs it (Wells, 2009, 2019). In session, this means helping the patient discover that attention can be deployed more flexibly, that monitoring is not the safeguard it appears to be, and that inner events do not need continuous management.

DISTINGUISHING METACOGNITIVE INTERVENTION TYPES

A practical distinction is useful when considering metacognitive interventions. Some MCT procedures are directly attention-focused: they train the selection, shifting, division, or redirection of attention. Others are attention-related: they reduce maladaptive engagement with thoughts and cues by altering metacognitive responses. These categories work together in a good therapy. An experienced MCT therapist rarely treats attention as a standalone faculty. The target is the patient's whole style of mental responding. However, it still matters to know whether one is training attentional control itself, reducing self-monitoring *in vivo*, or changing the rules that tell the patient to monitor in the first place. This distinction becomes especially important once we move from the attention training technique (ATT) to detached mindfulness (DM), postponement, and anti-monitoring experiments.

Direct Attention-Focused Techniques

A useful distinction begins with the question of what is being changed first. In some MCT procedures, the immediate target is attentional deployment itself: where does attention go, how long does it stay there, and can it be shifted voluntarily? ATT belongs here most clearly. So do situational attentional refocusing (SAR) and other forms of deliberate external reallocation used when the patient would otherwise collapse into self- or threat monitoring. These are direct attention-focused techniques because their first therapeutic move is not to analyze thoughts, dispute content, or process emotion. It alters how attention is being allocated in the moment. This is important in the metacognitive treatment model because the CAS is fed by a characteristic attentional style.

Direct techniques, therefore, work on one of the system's most visible operating components: self-absorption, threat monitoring, attentional fixation, and inflexible return to internal cues. Metacognitive theoretical writing is consistent on this point, and the small ATT and SAR literature in social anxiety also reflects it. These procedures are designed to modify attentional control and situational allocation rather than to restructure propositional content (Wells, 2009; Vogel et al., 2016; Jahn et al., 2023).

In practice, experienced MCT therapists know that these techniques can look deceptively simple from the outside. However, they are not. ATT is not "paying attention to sounds" in any generic sense. SAR is not an ordinary distraction. Their therapeutic value lies in the specific shift they produce: from reflexive, threat-led, self-referential allocation to flexible, top-down attentional control. When performed well, the patient does not merely feel temporarily better. They learn something far more important, i.e., that attention is less captive, less fused with alarm, and more trainable than the CAS led them to believe. Therefore, these procedures are central rather than decorative in MCT. Recent experimental work on ATT has continued to frame the technique in precisely these terms, i.e., as a method for enhancing attentional flexibility and control (Knowles et al., 2016; Haukaas et al., 2018; Jahn et al., 2023).

Attention-Related Metacognitive Interventions

Other interventions influence attention just as powerfully, but they do so by a different route. Their immediate target is not attentional placement itself. It is the patient's mode of engagement with internal events and the metacognitive rules that govern that engagement. DM is the clearest example. Wells' 2005 paper defined DM as a metacognitive state in which thoughts are noticed without extended conceptual processing, suppression, evaluation, or response (Wells, 2005). This definition is important because it prevents the usual drift into broader mindfulness vocabularies that do not belong to the metacognitive model. In MCT, DM is not primarily a relaxation exercise, an acceptance ritual, or a contemplative stance borrowed from elsewhere. It is a strategic change in cognitive handling that prevents trigger thoughts from recruiting further CAS activity. The immediate clinical gain is not "feeling more calm" in the abstract. It is, specifically, less engagement, less elaboration, and, thus, less attentional capture by thought.

The same logic applies to postponement procedures and anti-monitoring experiments. Worry postponement is not direct attentional retraining in the ATT sense. Instead, it weakens the rule that threat-related cognition must be entered immediately. Anti-monitoring experiments do not begin by

teaching attention switching. They begin by testing the belief that continuous checking, self-observation, or surveillance is necessary for safety, certainty, or control. Once those beliefs start to loosen, attention often changes with them. The patient no longer needs to keep returning to the body, the self-image, the thought stream, or the emotional state with the same urgency. These are, hence, best described as attention-related metacognitive interventions (Wells, 2009; Krzikalla et al., 2024; Atmaca et al., 2024). They reduce maladaptive attentional engagement indirectly, i.e., by changing the person's relationship to thinking and to the urge to monitor. That distinction is entirely compatible with the metacognitive model and is clinically useful because it helps the therapist avoid delivering every intervention as if it were just another attention drill.

Core-Level and Implementation-Level Techniques

A second distinction is needed for the intervention section to remain conceptually clean. Not all MCT techniques occupy the same level of theoretical and clinical status. Some are best understood as core-level techniques. These are conceptually central procedures with clear transdiagnostic relevance and a sufficiently distinct therapeutic rationale to justify their use as primary interventions in their own right. In this review, ATT, SAR, external attention practice, DM, worry postponement, rumination postponement, anti-monitoring behavioral experiments, response delay, and therapist-guided *in vivo* attentional reallocation are treated in this way. They each target a meaningful part of the CAS or a major metacognitive rule governing attentional engagement, and they can be formulated as principal intervention choices rather than as mere clinical add-ons (Wells, 2009, 2019).

Alongside these, however, there is a second group of procedures that are clinically useful but better understood as implementation-level techniques. These are narrower delivery variants, contextual adaptations, or between-session extensions of the core procedures rather than fully independent techniques with equivalent theoretical status. Monitoring reduction homework, dropping self-observation, reducing body monitoring, reducing emotional state monitoring, and anti-review work are good examples. They are not unimportant. On the contrary, they are often the place where change becomes portable and durable in everyday life. But conceptually, they usually derive their logic from one or more core-level procedures rather than standing alone as distinct metacognitive methods. Treating them as implementation-level techniques allows the review to preserve both fidelity and clinical richness. In this way, the conceptual architecture remains clear, while practical refinements still have a legitimate place in the treatment model (Wells, 2009).

Why These Distinctions Matter Conceptually and Clinically

These distinctions are important because confusion here quickly leads to technical drift. If ATT, DM, postponement, anti-monitoring work, and a range of narrower practical tactics are all loosely described as “attention strategies,” the model loses precision. One begins to miss the fact that different procedures are correcting different parts of the CAS and that they do so at different levels of intervention. Direct, attention-focused techniques mainly challenge inflexible allocation and the felt inability to redirect attention. Indirect, attention-related techniques mainly challenge the metacognitive imperative to engage, monitor, analyze, or secure certainty (Wells, 2009, 2019; Pukstad et al., 2025). Core-level techniques provide the main therapeutic architecture. Implementation-level techniques sharpen, extend, or operationalize that architecture in specific situations, symptom constellations, or homework contexts. In good therapy, these levels converge on similar outcomes, e.g., less self-focused processing, less threat monitoring, and less perseveration, but they do not get there in the same way. A therapist who ignores these distinctions will often misapply the intervention. A patient who needs to discover that attention can be moved voluntarily may not benefit from a vaguely delivered DM instruction. A patient who is covertly treating ATT as a safety behavior may need belief-focused anti-monitoring work more than repetition of the drill. A patient who understands the rationale in session may still need implementation-level procedures, such as monitoring reduction homework, to prevent the same surveillance habits from reappearing between sessions. This is one of those places where experienced MCT practice becomes recognizably different from generic cognitive behavioral therapy language. The procedure must be matched not only to the active metacognitive problem but also to the level at which that problem is best addressed.

There is also a research reason to keep these distinctions clear. When outcomes are reported for MCT components, the field benefits from knowing whether change followed a direct modification of attentional control, a reduction in self-monitoring during live situations, a shift in metacognitive engagement with thoughts, or the successful application of a narrower implementation-level variant in daily life. The exploratory study of ATT and SAR in social anxiety, for example, is informative precisely because it treats those interventions as identifiable procedures rather than as an undifferentiated package (Vogel et al., 2016). DM studies are more interpretable when they preserve the original construct instead of blending it with broader mindfulness terminology (Wells, 2005; Bolzenkötter et al., 2024; Atmaca et al., 2024). The

same principle applies to implementation-level strategies. They become more meaningful when linked clearly to the core technique they are extending. As the empirical literature grows, conceptual cleanliness will matter more, not less. A review on attention in MCT should, therefore, insist on these distinctions, i.e., some interventions train attention directly, others alter the metacognitive conditions under which attention becomes trapped, and still others represent structured implementations of those core procedures in narrower clinical forms. That is not a minor taxonomic preference. It is part of preserving the logic, fidelity, and technical precision of the model.

These distinctions provide the framework for the intervention section that follows. The techniques reviewed in the next section are organized primarily around their clinical and metacognitive function rather than around disorder categories. The emphasis is on how each procedure modifies attentional deployment, attentional engagement, or the metacognitive rules that keep the CAS active. For that reason, the review begins with the core-level techniques that form the main therapeutic architecture of attention modification in MCT and then situates narrower implementation-level variants in relation to those core procedures. This structure is intended to preserve both conceptual clarity and clinical usefulness while remaining fully consistent with the metacognitive model (Wells, 2009, 2019).

This distinction also helps position MCT more clearly in relation to other cognitive-behavioral traditions. Although attention may be addressed in several therapeutic approaches, attention modification in MCT is not primarily conceptualized as distraction, symptom management, reassurance reduction, or a broad mindfulness exercise. Its rationale is more specific, i.e., to weaken the CAS by altering maladaptive attentional deployment, metacognitive engagement, and the beliefs that make monitoring seem necessary.

The present paper is intended as a clinically oriented narrative and conceptual review rather than a systematic review. The literature discussed was selected to clarify the rationale, technical distinctions, and clinically relevant use of attention-focused and attention-related interventions within the metacognitive model. Accordingly, no formal PRISMA-style search strategy, study-selection flowchart, or structured quality appraisal was undertaken, and the evidence is synthesized selectively in the service of conceptual and clinical clarification.

SPECIFIC METACOGNITIVE ATTENTION MODIFICATION TECHNIQUES

The interventions are summarized across two companion tables to make the distinctions easier to use. Table 1 focuses

on status, definition, rationale, and mechanism of action. Table 2, then, turns to how the techniques are actually recognized and used in clinical work by summarizing their structure or components, the clinical markers that indicate a good fit, and their principal therapeutic targets. Together, the two tables are intended to serve as a compact map of the attention-focused and attention-related intervention repertoire in MCT (Wells, 2009, 2019).

Taken together, Table 1 shows that attention modification in MCT is not a single technique category but a structured set of interventions that differ in terms of immediate target, therapeutic status, and mechanism. This distinction is clinically useful because it helps prevent overly broad descriptions of all attention-related work as if it were functionally identical. It also clarifies that some procedures act directly on attentional deployment, whereas others act more indirectly by changing metacognitive engagement or the rules that sustain monitoring.

Table 2 translates these distinctions into clinical use by showing how the technique structure, best-fit markers, and therapeutic targets align. In this way, the table is intended less as a rigid treatment algorithm than as a formulation aid for identifying the type of attentional-metacognitive problem that is most active in the individual case.

In addition to the information summarized in these tables, a further clinical question remains: when should one intervention be preferred over another? In routine practice, this decision is rarely made on the basis of the diagnosis alone. Instead, it is guided by the immediate configuration of the CAS: (i) what is the patient monitoring? (ii) how is attention being used? (iii) is the main difficulty capture, engagement, urgency, or procedural checking? and (iv) is the intervention likely to work best as a first move or only after other metacognitive groundwork has been laid? The next table summarizes the main clinical decision markers that can help the therapist choose among the ten interventions reviewed here (Wells, 2009, 2019; Pukstad et al., 2025).

As may be inferred from Supplementary Table 1 (available at <https://osf.io/pybcj/>), selection of an intervention in MCT is not based on diagnosis alone. The therapist listens for the active CAS pattern and chooses the intervention that best matches the patient's immediate attentional-metacognitive problem. In practice, the key distinction is often this: does the patient need help moving attention, help dropping engagement, help weakening urgency, or help testing the belief that monitoring is necessary?

Table 1. Attention-focused and attention-related interventions in MCT: status, definition, rationale, and mechanism of action

Intervention	Status	Definition	Rationale	Mechanism of action
Attention training technique	Core-level; attention-focused	A direct attention-focused MCT procedure that trains selective attention, switching, and divided attention under voluntary control.	Used when attention is experienced as dominated by threat, symptoms, self-focus, or intrusive internal material.	Strengthens top-down attentional flexibility and reduces fixation and the perceived uncontrollability of attention.
Situational attentional refocusing	Core-level; attention-focused	In vivo reallocation of attention from self-monitoring or threat monitoring to external, task-relevant cues during live situations.	Used when attention collapses inward under situational load, especially in evaluative or interpersonal contexts.	Weakens self-focused processing and restores situational participation by leaving the observer position.
External attention practice	Core-level; attention-focused	A structured practice of sustained outward allocation of attention while refraining from internal surveillance.	Used when the patient remains covertly absorbed in monitoring the body, self, or emotions during activity.	Reduces the dominance of internal surveillance and increases engagement with the external environment.
Detached mindfulness	Core-level; attention-related	A metacognitive mode in which thoughts and inner events are noticed without extended conceptual processing, suppression, evaluation, or response.	Used when the main difficulty is not where attention goes but rather the tendency to engage with thoughts and feelings once they appear.	Reduces elaborative engagement and prevents trigger cognitions from recruiting further CAS activity.
Worry postponement	Core-level; attention-related	A structured delay of engagement with worry until a predetermined later period.	Used to challenge the belief that worry must be entered immediately.	Weakens the trigger-engagement link and modifies beliefs about urgency and uncontrollability.
Rumination postponement	Core-level; attention-related	A structured delay of engagement with depressive or self-referential analytical thinking.	Used to weaken the belief that low mood or self-relevant pain must be analyzed immediately.	Interrupts the move from an affective trigger to conceptual self-processing.
Anti-monitoring behavioral experiments	Core-level; attention-related	Prediction-based behavioral experiments designed to test beliefs that monitoring is necessary, useful, or protective.	Used when the patient explicitly or implicitly believes that monitoring prevents danger, humiliation, deterioration, or loss of control.	Provides experiential disconfirmation of metacognitive rules sustaining monitoring.
Response delay and reduction of checking urges	Core-level; attention-related	A brief interruption procedure in which checking is delayed rather than enacted immediately.	Used when checking has become rapid, procedural, and almost reflexive.	Creates space between the trigger and the checking response, weakening urgency and procedural momentum.
Therapist-guided <i>in vivo</i> attentional reallocation	Core-level; attention-focused	Real-time therapist coaching of attentional deployment during live CAS activation in a session or task.	Used when patients misjudge where their attention is actually going or when covert monitoring persists despite verbal understanding.	Corrects subtle self-monitoring, sharpens attentional deployment, and prevents hidden drift into CAS-consistent processing.
Monitoring reduction and implementation-level variants	Implementation-level; mixed attention-focused and attention-related	A grouped category of narrower delivery strategies that operationalize the core principles of anti-monitoring, refocusing, disengagement, and between-session consolidation.	Included to capture clinically useful variants that do not require full standalone status as independent techniques.	Applies core MCT principles in focused, situational, or homework-based forms.

Definitions, rationales, and mechanisms are synthesized from the metacognitive treatment model and the technique-specific literature on ATT, detached mindfulness, postponement, anti-monitoring work, and related procedures. Status combines two distinctions introduced in Section 1, i.e., whether the procedure is treated as a core-level or implementation-level intervention and whether it operates primarily as an attention-focused or attention-related technique. These labels are intended to preserve conceptual clarity rather than to imply rigid boundaries. In practice, some procedures may influence both attentional deployment and metacognitive engagement, but they are classified here according to their most immediate therapeutic function within the metacognitive model (Wells, 2005, 2009, 2019; Knowles et al., 2016; Vogel et al., 2016; Haukaas et al., 2018; Krzikalla et al., 2024; Bolzenkötter et al., 2024; Atmaca et al., 2024).

Table 2. Attention-focused and attention-related interventions in MCT: structure, best-fit markers, and clinical targets

Intervention	Technique structure/components	Best-fit clinical markers	Clinical targets
Attention training technique	Selective attention, rapid switching, divided attention, and repeated practice of deliberate attentional allocation.	<i>"My mind gets stuck there"; "I can't pull my attention away";</i> strong attentional capture and shifting difficulty.	Self-focused attention, threat monitoring, attentional fixation, disengagement difficulty, and beliefs about attentional uncontrollability.
Situational attentional refocusing	Identify the trigger situation, specify the attentional error, select an external anchor, practice <i>in vivo</i> , and review attentional placement and functioning.	<i>"As soon as I'm with people, I go inside myself";</i> strong performance monitoring in live situations.	Self-focused attention, performance monitoring, audience scanning, and situational internal checking.
External attention practice	Identify the internal surveillance pattern, choose external anchors, sustain outward allocation, detect covert relapse, and repeat across settings.	<i>"I was there but was really inside my head";</i> covert body/self-monitoring during tasks.	Internal surveillance, body monitoring, self-observation, and emotional state checking during activity.
Detached mindfulness	Identify the trigger cognition, clarify noticing versus engaging, practice non-response, generalize across triggers, and review engagement rather than symptom reduction.	<i>"Once the thought comes, I have to deal with it";</i> repetitive engagement with inner events.	Conceptual elaboration, repetitive engagement, cognitive monitoring, emotional state analysis, and mental checking.
Worry postponement	Identify onset markers, label worry, defer engagement, return to the present task, and review urgency and predicted consequences.	<i>"If I don't think about this now, I'll miss something";</i> immediate future-oriented threat thinking.	Urgency-driven worry engagement, beliefs about immediate responsibility, and the uncontrollability of worry.
Rumination postponement	Detect early rumination markers, label rumination, postpone engagement, return to activity, and review assumptions about usefulness and necessity.	<i>"As soon as I feel low I start working out why";</i> repetitive self-review or post-event rumination.	Depressive dwelling, self-focused review, mood monitoring, and beliefs about the necessity of analysis.
Anti-monitoring behavioral experiments	Identify the exact form of monitoring, the elicit belief, make a prediction, reduce or drop monitoring, and review effects on safety, uncertainty, and distress.	<i>"If I stop checking, I'll miss something serious"; "If I don't monitor, I'll lose control."</i>	Body monitoring, self-monitoring, cognitive monitoring, emotional surveillance, and certainty-driven checking.
Response delay and reduction of checking urges	Identify the checking sequence, detect the earliest actionable point, delay the response, reallocate attention, and review the urge and prediction.	<i>"It happens before I even think";</i> fast pulse checking, mental review, and reassurance-linked scanning.	Checking urges, procedural monitoring habits, certainty-seeking return to threat material, and beliefs that delay is dangerous.
Therapist-guided <i>in vivo</i> attentional reallocation	Elicit the live process, identify covert monitoring, coach the attentional shift in real time, refine the target, and review actual attentional behavior.	The patient reports "using the technique" but still monitors covertly; persistent subtle self-observation in session.	Covert self-monitoring, subtle situational threat monitoring, poor technique implementation, and real-time drift into the CAS.
Monitoring reduction and implementation-level variants	May include monitoring reduction homework, dropping self-observation tasks, reducing body monitoring, reducing emotional state monitoring, and anti-review work.	Patients with recurrent everyday surveillance habits or narrow, context-bound monitoring patterns that need a practical extension of core work.	Routine surveillance habits, between-session reactivation of the CAS, narrow monitoring variants, post-event review, and relapse-style checking.

The descriptions of technique structure/components are intended as concise procedural summaries rather than as full treatment protocols. Best-fit clinical markers refer to the kinds of patient statements, process indicators, and CAS patterns that typically signal a good intervention fit in routine MCT practice. Clinical targets refer to the dominant attentional and metacognitive processes that each procedure is designed to modify. Technique structure/components, best-fit clinical markers, and clinical targets are derived from the metacognitive treatment model and clinical and component studies examining attentional control, SAR, DM, postponement, and related metacognitive procedures (Wells, 2005, 2009; Vogel et al., 2016; Haukaas et al., 2018; Jahn et al., 2023; Krzikalla et al., 2024; Atmaca et al., 2024).

ILLUSTRATIVE THERAPIST LANGUAGE FOR METACOGNITIVE ATTENTION MODIFICATION TECHNIQUES

The next step is to demonstrate how these interventions sound in clinical use. This is important because even technically correct procedures can lose their metacognitive character when poorly translated into therapist language. In MCT, fidelity is preserved not only by the choice of intervention but also by the way the rationale, task, and therapeutic target are communicated in the session. The goal is never simply to calm the patient, distract them, or help them cope in a broad sense. The goal is always to modify attentional deployment, attentional engagement, or the metacognitive rules that keep the CAS active (Wells, 2009, 2019).

Therefore, the table below presents illustrative therapist scripts for the ten interventions retained in the treatment architecture. These scripts are not intended to be full protocols or fixed verbal formulas. They are brief examples of how the therapist can preserve the logic of the metacognitive model while speaking in language that is concrete, clinically usable, and process-focused (Wells, 2005, 2009).

Table 3 illustrates that therapist language is not merely a stylistic matter. The same intervention can preserve or lose its metacognitive character depending on how the rationale and task are framed in the session. In this sense, therapist wording functions as part of the intervention itself rather than as a neutral delivery method.

COMMON THERAPIST ERRORS IN DELIVERING METACOGNITIVE ATTENTION MODIFICATION TECHNIQUES

Although illustrative scripts are useful because they show how MCT interventions sound when they are delivered well, the reverse question is clinically just as important: how do these same interventions drift off the model? In practice, attention-focused work often fails not because the chosen technique is wrong but because the therapist's wording, rationale, or in-session emphasis quietly shifts the intervention away from the metacognitive model and toward reassurance, symptom control, content discussion, or generic coping advice. The next table, hence, summarizes common therapist errors across the ten intervention categories reviewed. Its purpose is not merely corrective. It is to help preserve technical fidelity by showing where even experienced clinicians can begin to drift when working with attention modification in MCT (Wells, 2005, 2009, 2019).

In MCT, therapist error usually appears when the intervention drifts away from the metacognitive rationale and becomes symptom control, reassurance, content debate, or generic

coping advice. In many cases, a useful safeguard is to keep returning to the following four questions: (i) what is the patient monitoring? (ii) what belief authorizes that monitoring? (iii) what aspect of the CAS is active right now? and (iv) which intervention best targets that exact process? (Wells, 2005, 2009, 2019).

Taken together, the scripts in Table 3 and the errors summarized in Supplementary Table 2 (available at <https://osf.io/pybcj/>) make a broader point about attention modification in MCT. Technical success depends not only on which intervention is chosen but also on whether the intervention is delivered in a way that preserves its metacognitive function. The same procedure can either weaken the CAS or be absorbed back into it, depending on how it is framed and practiced, e.g., ATT can become symptom control, DM can become suppression, postponement can become avoidance, and monitoring reduction can become another form of covert checking unless the therapist keeps returning to the above-listed core questions. In that sense, therapist language is not a cosmetic part of treatment delivery. On the contrary, it is one of the places where fidelity to the metacognitive model is either preserved or lost (Wells, 2005, 2009, 2019).

EVIDENCE BASE FOR ATTENTION-FOCUSED INTERVENTIONS IN METACOGNITIVE THERAPY

The available literature suggests that attention-focused and attention-related work in MCT is clinically relevant across multiple disorders and delivery formats, although the strength and specificity of the evidence vary by technique and study type (Knowles et al., 2016; Normann & Morina, 2018; Rochat et al., 2018; Andersson et al., 2025). The most direct support comes from component and experimental studies examining ATT, DM, postponement, and related procedures, whereas the broader clinical literature provides stronger evidence for full MCT treatment packages (Haukaas et al., 2018; Jahn et al., 2023; Bolzenkötter et al., 2024; Atmaca et al., 2024; Krzikalla et al., 2024). For clarity, the evidence discussed below is divided into two broad levels: (i) studies examining specific attention-focused or attention-related components, and (ii) studies evaluating full MCT treatment protocols in which such procedures are embedded within a broader metacognitive intervention package.

The broader MCT outcome literature strengthens this picture at the level of full treatment packages. These comparator studies are useful for positioning MCT within the broader literature on cognitive behavioral therapy, but they should not be interpreted as direct evidence for the isolated causal contribution of any single-component technique discussed in the present review. Randomized and comparative trials across anxiety, depression, obsessive-compulsive disorder, health

Table 3. Illustrative therapist scripts for core-level and implementation-level attention modification techniques in MCT

Intervention	Clinical aim	Illustrative therapist script
Attention training technique	Strengthen flexible top-down attentional control and reduce the sense that attention is trapped by threat or internal events	<i>“For the next few minutes, I do not want you to try to relax or get rid of anything. The task is different. I want you to discover that attention can be placed where you choose, moved when you choose, and broadened when you choose. If your mind pulls back to the symptom, the worry, or the feeling, that is not a problem. Simply bring it back to the sound I ask you to focus on. We are training control, not chasing comfort.”</i>
Situational attentional refocusing	Shift attention in vivo from self-monitoring or threat monitoring to external, task-relevant cues	<i>“As you speak, notice what usually happens: part of your attention goes inward and starts checking how you are coming across. This time, I want you to leave yourself alone. Put your attention on the other person’s words, their meaning, the flow of the conversation, and the next practical thing happening in the room. Your job is not to monitor yourself well. Your job is to participate.”</i>
External attention practice	Reduce internal surveillance and restore engagement with the environment	<i>“Right now, you are still half inside yourself, checking. Let us move fully outward. What do you see in the room? What is the other person actually saying? What details are present outside you that you normally miss when you start supervising your body or your performance? Stay with the environment without first solving the feeling inside.”</i>
Detached mindfulness	Help the patient notice thoughts and internal events without entering into extended processing or control attempts	<i>“Let the thought be there, but do not go in after it. Do not answer it, analyze it, test it, or try to stop it. Notice that it has appeared, and let it remain just as a mental event. We are not trying to make it disappear. We are dropping the habit of engaging with it.”</i>
Worry postponement	Weaken the rule that threat-related thinking must be entered immediately	<i>“When the urge to worry arrives, I want you to respond differently from usual. Instead of starting the process now, note that the worry has shown up and postpone it until the planned time. This is not avoidance. It is a test of the belief that you must engage immediately. We are finding out whether the thought really needs your attention now.”</i>
Rumination postponement	Interrupt immediate self-focused analytical processing and depressive dwelling	<i>“The moment you notice yourself starting to go over why you feel like this, what it means, or what it says about you, pause. You do not need to solve the mood right then. Label it as rumination, leave it for the set period, and return to what you are doing. The question is not whether the topic feels important. The question is whether engaging now helps or traps you.”</i>
Anti-monitoring behavioral experiments	Test beliefs that monitoring is necessary for safety, control, or adequate functioning	<i>“You believe that if you stop checking, something important will be missed. Let us test that directly. For the next few minutes, I want you not to monitor your body / your thoughts / your performance in the usual way, and we will see what actually happens. We are not debating the belief in theory. We are putting it under observation.”</i>
Response delay and reduction of checking urges	Create space between the trigger and the checking response and weaken the urgency of procedural monitoring	<i>“When the urge to check appears, do not satisfy it straight away. Delay it. Stay with the urge without obeying it. Watch what the mind predicts, and notice what happens if you do nothing for a moment. This helps us see that checking is not inevitable and that urgency is not the same as necessity.”</i>
Therapist-guided in vivo attentional reallocation	Correct covert self-monitoring and sharpen real-time attentional deployment during live CAS activation	<i>“You are still checking yourself right now. I can hear it in the way you keep reporting what you think you look like from the outside. Let us reset. Drop the internal commentary. Put your attention back on my words, the actual exchange between us, and what is happening here rather than inside the observer position.”</i>
Monitoring reduction and implementation-level variants	Translate core intervention principles into narrower daily-life variants, homework-based forms, and context-specific anti-monitoring practices	<i>“This week, I want you to spot the small monitoring routines that keep the problem alive: checking your body, reviewing the conversation afterward, measuring your mood, or watching yourself while you speak. The task is not to replace one checking strategy with another. The task is to stand down. Notice the urge, drop the monitoring, and return to the situation rather than supervising it.”</i>

These scripts are illustrative and should be adapted to the patient’s formulation, developmental level, and current CAS pattern. In MCT, therapist language remains process-focused: the target is not thought content, emotional catharsis, or reassurance, but the patient’s style of attentional deployment and the metacognitive beliefs that sustain it. The rationale of the scripts is derived from the metacognitive treatment model and the technique-specific literature on ATT, SAR, DM, postponement, and related interventions (Wells, 2005, 2009, 2019; Vogel et al., 2016; Haukaas et al., 2018; Krzikalla et al., 2024; Bolzenkötter et al., 2024; Atmaca et al., 2024).

anxiety, post-traumatic stress disorder, and related conditions indicate that MCT is effective and often highly competitive with established psychological treatments (Normann & Morina, 2018; Callesen et al., 2020; Wells et al., 2015; Nordahl et al., 2018; Brown et al., 2022; Bailey et al., 2024; Exner et al., 2024). Such studies are highly relevant to the clinical credibility of the metacognitive model as a whole, but they do not by themselves isolate the proportion of the outcome attributable to any one attention-focused or attention-related element. Although these trials do not always experimentally isolate attention-focused components, they are still relevant because attention modification is built into the treatment logic of MCT rather than added as a peripheral tool. By implication, the clinical message here is important: ATT, SAR, DM, postponement, and anti-monitoring work are best understood not as isolated tricks but as parts of a coherent metacognitive system designed to reduce the CAS (Wells, 2009, 2019; Normann & Morina, 2018; Erdoğan-Yıldırım, 2025; Myers & Solem, 2026). These findings support the plausibility and clinical relevance of the component procedures reviewed here, but they should not be interpreted as definitive evidence for the independent causal contribution of each technique within full MCT.

The mechanisms literature is also beginning to converge in a way that is highly consistent with the metacognitive model. Recent work suggests that changes in metacognitive beliefs, CAS activity, and perceived attentional control are associated with symptom improvement, and newer studies in younger samples point in the same direction (Pukstad et al., 2025; Thingbak et al., 2024). This does not yet settle the causal question in a definitive way, but it does support the central MCT claim that attention-focused interventions work most meaningfully when they weaken both maladaptive attentional habits and the beliefs that keep those habits in place. Evidence from group, self-help, home-based, medical, and remote formats further suggests that these procedures are portable, even if the strongest support still comes from full MCT protocols rather than highly dismantled single-technique applications (Wells et al., 2021, 2022, 2023; Dammen et al., 2023; Tunheim et al., 2025).

At the same time, this literature remains heterogeneous and should be interpreted with appropriate caution. It includes analog and clinical samples, component studies and full treatment protocols, varied delivery formats, mixed age groups, and studies conducted across differing clinical contexts. In addition, the strongest support still comes from full MCT treatment packages rather than dismantling designs focused on individual techniques. Therefore, component-level findings are best viewed as promising and theoretically consistent rather than as definitive evidence of independent causal effects.

A broader grouped literature map, including selected studies on efficacy, delivery formats, mechanisms, and technique-focused evidence, is provided in the appendix available at <https://osf.io/pybcj/> for readers seeking a more detailed overview.

CONCLUSION

Ultimately, in MCT, the task of the patient is not to accumulate techniques but to alter their relationship with attention. In clinical practice, the decisive shift often occurs when the patient begins not only to feel less anxious or less preoccupied but also to recognize where attention is going, why it is being deployed there, and which metacognitive rule is driving that pattern in the moment. That is the point at which therapy moves from surface management to genuine change. ATT, SAR, DM, postponement, and anti-monitoring work are not simply useful tools. When delivered well, these interventions reorganize the patient's overall response to internal events. The therapist's role is, therefore, not to soothe, reassure, or help the patient manage symptoms more efficiently but to make the CAS visible and interruptible, i.e., to help the patient step out of monitoring, self-observation, analytical absorption, and threat-led attention and into a more flexible style of self-regulation. Clinical experience repeatedly suggests that meaningful change begins when the patient discovers, in lived practice rather than in theory alone, that constant monitoring is not protection, that the mind does not need to be managed moment by moment, and that attention can be guided by choice rather than by threat. This may represent an important point of clinical change in MCT.

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Progressive Muscle Relaxation Exercise in Eating Disorders: A Case Report of Bulimia Nervosa

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ABSTRACT

Bulimia nervosa (BN) is characterized by adverse biopsychosocial effects, necessitating a multidisciplinary treatment. Among psychological interventions, Cognitive-Behavioral Therapy remains a leading option. However, as motivation and readiness for change influence treatment outcomes, stage-tailored interventions based on the Transtheoretical Model are proposed. Progressive muscle relaxation exercise (PMRE) is offered as a facilitator of stage transition via reduced tension and anxiety, a technique that has been applied to various disorders across different fields. This study aimed to present a case diagnosed with BN, treated with a PMRE protocol based on the tension model of BN, implemented as a standalone module during the waiting-list period for disorder-specific treatment. The PMRE protocol was intended to help identify the relationship between daily stressors, physical tension, and eating disorder (ED) symptoms. Progress was evaluated through pre-post and follow-up measures of ED symptoms, eating habits, body satisfaction, self-esteem, emotion regulation, alexithymia, depression, anxiety, and stage transition, as well as an urge diary, in-session and between-session tension ratings, and in-session feedback. After eight therapy sessions and a three-month follow-up, improvements in ED symptoms and most other measures were observed. Enhanced awareness and management of physical tension induced by daily stressors were also recorded. To our knowledge, no prior studies in Turkey have implemented this technique in the treatment of EDs. PMRE may contribute to improvements in bodily awareness and treatment motivation associated with symptom regulation in BN. However, because of the single-case design and lack of a control condition, the results should be interpreted with caution. Further controlled studies are needed to clarify the specific role of PMRE in the treatment of BN.

Keywords: Case report, bulimia nervosa, eating disorders, cognitive-behavioral therapy, progressive muscle relaxation exercise, tension model.

ÖZ

Yeme Bozukluklarında Aşamalı Kas Gevşeme Egzersizi: Bulimiya Nervosa Olgu Sunumu

Bulimiya nervosa (BN), olumsuz biyopsikososyal etkilerle karakterize olup multidisipliner bir tedavi gerektirmektedir. Psikolojik müdahaleler arasında bilişsel davranışçı terapi önde gelen yaklaşımlardan biri olarak kabul edilmektedir. Bununla birlikte, motivasyon ve değişime hazır oluş tedavi sonuçlarını etkilemesi nedeniyle, Transteorik Model'e dayalı aşamaya özgü müdahaleler önerilmektedir. Aşamalı kas gevşeme egzersizi (AKGE), gerginlik ve anksiyeteyi azaltarak değişim aşamaları arasındaki geçişi kolaylaştıran bir teknik olarak önerilmekte ve farklı alanlarda çeşitli bozukluklarda uygulanmaktadır. Bu çalışma, fiziksel gerginliğin BN semptomlarıyla ilişkili olduğunu varsayan BN gerginlik modeline dayalı olarak, yeme bozukluğuna özgü tedavi programı için bekleme listesi sürecinde bağımsız bir modül olarak uygulanan AKGE protokolü ile izlenen BN tanılı bir olguyu sunmayı amaçlamaktadır. AKGE protokolü, günlük stre-



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sörler, fiziksel gerginlik ve yeme bozukluğu belirtileri arasındaki ilişkinin fark edilmesine yardımcı olmayı amaçlamaktadır. İlerleme, yeme bozukluğu belirtileri, yeme alışkanlıkları, beden memnuniyeti, benlik saygısı, duygu düzenleme, aleksitimi, depresyon, anksiyete ve değişim aşamalarındaki geçişe ilişkin ön test, son test ve takip ölçümleri kullanılarak değerlendirildi. Ayrıca değerlendirme sürecinde dürtü günlüğü, seans sırasında ve seanslar arasında gerginlik derecelendirmesi ile seans içi geri bildirimlerden yararlanıldı. Sekiz terapi seansı ve üç aylık takip görüşmesi sonunda yeme bozukluğu belirtilerinde ve sonuç ölçümlerinin çoğunda iyileşme gözlemlendi. Ayrıca olgunun günlük stresörlerin neden olduğu fiziksel gerginliğe ilişkin farkındalığı ve bu gerginliği yönetme becerisinin arttığı belirlendi. Bildiğimiz kadarıyla, Türkiye’de yeme bozukluğu tedavisinde bu tekniğin uygulandığı bir çalışma bulunmamaktadır. AKGE, bedensel farkındalık ve tedavi motivasyonu yoluyla BN belirtilerinin azaltılmasına katkı sağlayabilecek destekleyici bir teknik olarak değerlendirilebilir. Ancak çalışmanın tek olguya dayanması ve kontrol grubunun bulunmaması nedeniyle bulgular dikkatle yorumlanmalıdır. AKGE’nin yeme bozuklukları tedavisindeki özgül rolünü daha iyi ortaya koymak için kontrollü çalışmalara ihtiyaç vardır.

Anahtar Kelimeler: Aşamalı kas gevşeme egzersizi, bilişsel davranışçı terapi, bulimiya nervosa, gerginlik modeli, yeme bozuklukları.

INTRODUCTION

Eating disorders (ED) are characterized primarily by disturbances in eating behaviors related to excessive concern with weight, body image, and control over these (Fairburn, 2008). In bulimia nervosa (BN), an ED subtype, binge-eating episodes, and compensatory behaviors (e.g., purging or self-starvation) (Amerikan Psikiyatri Birliği [APB], 2013) have adverse biopsychosocial impacts, requiring a multidisciplinary approach (Joy et al., 2003). Although Cognitive-Behavioral Therapy (CBT) is frequently used for ED (Fairburn et al., 1991), as motivation and readiness for change influence treatment outcomes, stage-tailored interventions based on the Transtheoretical Model (TTM) are proposed to improve adherence and treatment outcomes (Ergüney-Okumuş et al., 2016; Dunn et al., 2003). According to the TTM, individuals progress through precontemplation, contemplation, preparation, action, maintenance, and termination stages (Prochaska & DiClemente, 1982). For those with low motivation, interventions such as progressive muscle relaxation exercises (PMRE) have been proposed to facilitate stage transitions by reducing physical tension and anxiety, common barriers to treatment, while improving receptivity and self-efficacy, thereby enhancing motivation (Ergüney-Okumuş et al., 2019). PMRE is a structured relaxation training approach derived from the work of Jacobson (1943) and Wolpe (1968) and implemented in stepwise applied formats such as Linton’s (1982) protocol (as described in Sertel-Berk, 2020). The intervention proceeds through successive stages, including tension-relaxation, relaxation-only practice, breathing-supported relaxation, and cue-controlled relaxation. Through this stepwise process, individuals are expected to increase awareness of bodily tension and develop the ability to regulate tension-related physiological responses before they escalate into maladaptive emotional or eating-related behavioral patterns.

In Türkiye, relaxation exercises have been implemented in the treatment of pain disorders (Salman & Sertel-Berk, 2017; Sertel-Berk, 2002; Uzunkaya & Şen, 2021), obsessive-compulsive disorder (Ergüney-Okumuş et al., 2019), and anxiety disorders (Çenesiz, 2015). With respect to ED, relaxation has been applied to night eating syndrome, with reductions in depression, anxiety, stress, and symptom severity (Allison & Tarves, 2011; Berner & Allison, 2013; De Zwaan et al., 2015; McCuen-Wurst et al., 2018; Pawlow et al., 2003; Vander Wal et al., 2015). It has also been used adjunctively to reduce comorbid anxiety in ED, including binge-eating disorder (Allison & Tarves, 2011), anorexia nervosa, and BN (Breiner, 2003; Bulik et al., 1998; Shapiro et al., 2008). To our knowledge, no study has used relaxation as a standalone intervention in ED, either abroad or in Türkiye.

In contrast, Sertel-Berk (2020, p.134) proposed a tension model for BN, in which physical tension is assumed to precede binge-eating and compensatory behaviors (e.g., purging and excessive exercise). According to this model, PMRE may help manage internal (i.e., negative self-evaluation), external (i.e., interpersonal conflicts), and physiological (i.e., hunger, fatigue, and sleep deprivation) triggers of tension and disrupt the tension-BN symptom cycle (Fig. 1). From a cognitive-behavioral perspective, PMRE can be conceptualized as a self-regulation strategy that targets processes that are central to BN cognitive-behavioral models. Increasing awareness of bodily tension may facilitate the identification of internal and external triggers preceding binge-eating episodes, thereby supporting self-monitoring and early intervention in the binge-purge cycle. In addition, learning to respond to tension with relaxation rather than compensatory behaviors may function as a form

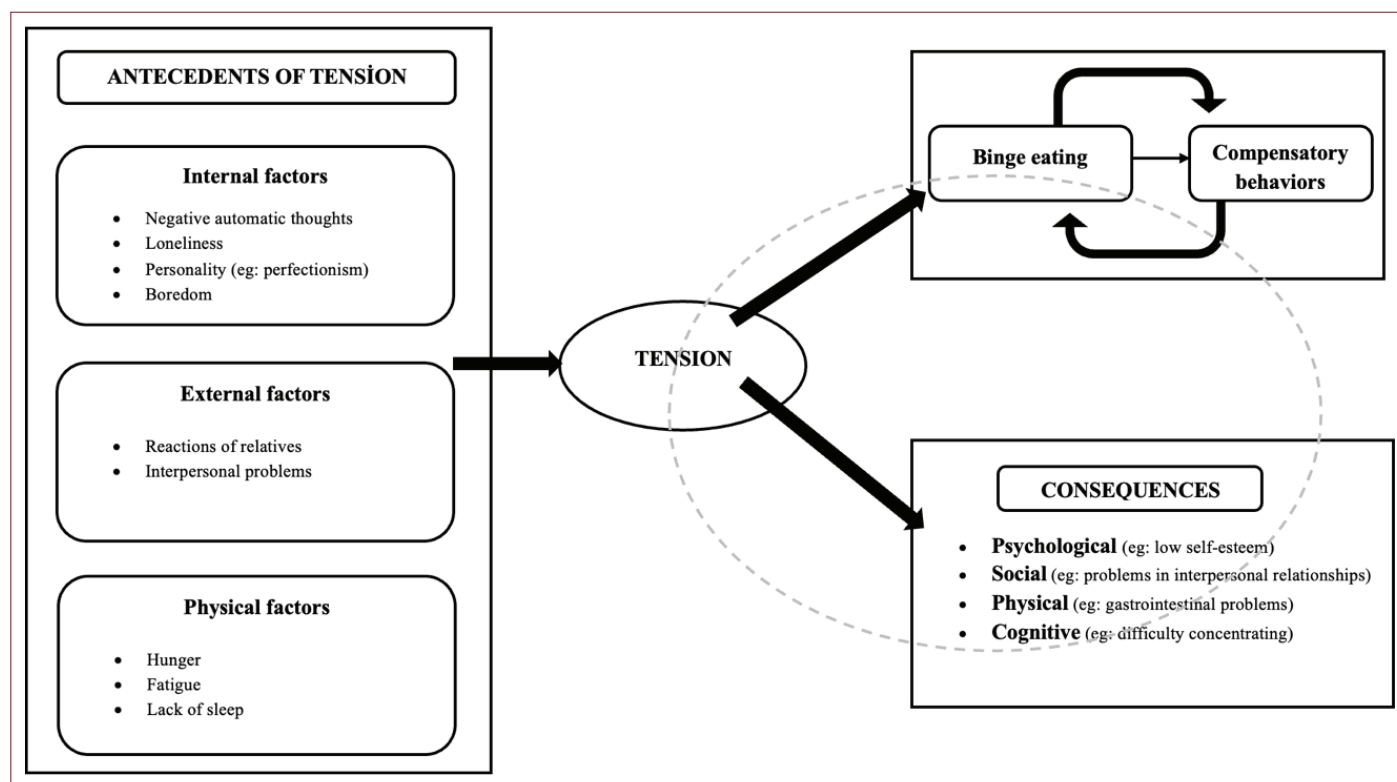


Figure 1. The BN tension model (Sertel-Berk, 2020).

of alternative response training and stimulus control. In this respect, PMRE may be understood as a behavioral technique compatible with cognitive-behavioral approaches that aim to modify antecedents and maintaining mechanisms of ED symptoms. This study aimed to present a BN case in which a structured PMRE protocol based on the tension model of BN was implemented as a primary intervention during the waiting-list period for disorder-specific treatment.

CASE REPORT

The case was a 21-year-old female university student diagnosed with BN and referred from the Eating Disorders Unit of İstanbul University, İstanbul Faculty of Medicine, by the third author, who continued to monitor the clinical process following the referral. At intake, her height was 160 cm and her weight was 50.5 kg, corresponding to a body mass index of 19.53 kg/m². The intervention was conducted under the supervision of the second author. Consent for audio-recording and publication was obtained, and confidentiality ensured.

The patient's disordered eating behavior started approximately seven years ago. At referral, the patient experienced binge-eating episodes and purging three and six times per week, respectively. The patient also reported impaired daily

functioning, including food preoccupation, restlessness, poor concentration, and social withdrawal. Predisposing factors included parental divorce at age 2, maternal depression, age-inappropriate responsibilities, perfectionism, and core beliefs of being unlovable, inadequate, and worthless. Current triggers and maintaining factors included fear of attack-driven vigilance, boredom, prolonged self-starvation, insomnia, fatigue, and reactions from relatives (e.g., her father's criticism). Before PMRE, the patient had been followed in a psychiatry outpatient clinic and was receiving methylphenidate treatment (20 mg/day) for Attention-Deficit/Hyperactivity Disorder (ADHD), which remained stable throughout the intervention period. According to the patient's clinical history, ADHD was diagnosed during childhood, at ages 10 and 12, by child psychiatry services. Eating-related preoccupations, body image concerns, binge-eating episodes, and purging behaviors had been present since the second year of high school. ADHD remained clinically active during the PMRE intervention period, and methylphenidate treatment (20 mg/day) was maintained at a stable dose.

During the PMRE intervention period, the patient was on the waiting list for disorder-specific ED treatment and did not receive any BN-targeting structured psychotherapy or

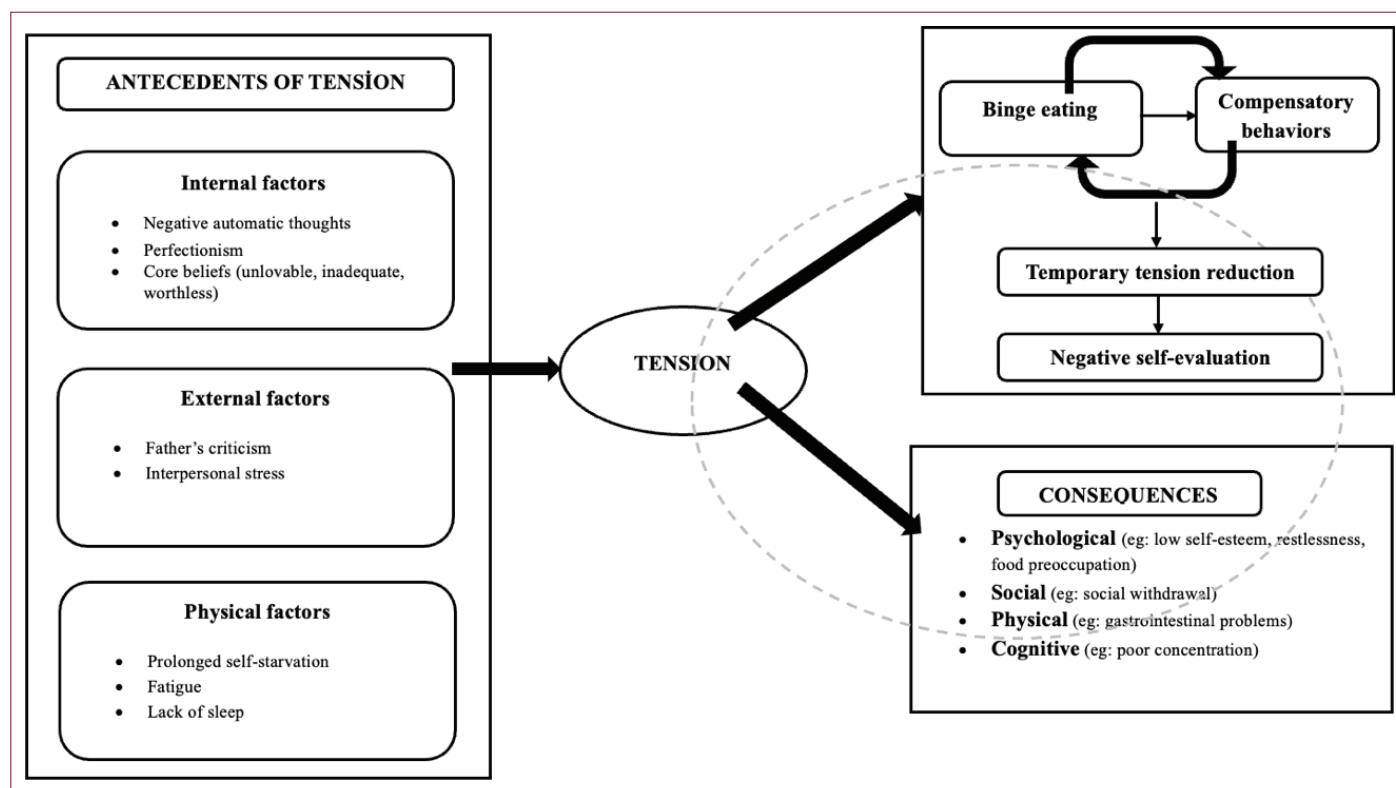


Figure 2. Case-specific formulation of BN symptoms based on the tension model.

nutrition-related intervention targeting BN. However, the patient continued regular monthly psychiatric outpatient follow-up and stable psychopharmacological treatment. After completing the PMRE intervention and the three-month follow-up period, the patient was enrolled in a multidisciplinary treatment program that included nutritional counseling and eating disorder-specific psychotherapy.

Consistent with the tension model of BN (Sertel-Berk, 2020), interpersonal stressors, such as criticism from her father, together with prolonged self-starvation, insomnia, and perfectionistic tendencies, appeared to contribute to increases in bodily tension in the present case. The patient reported that heightened tension typically preceded binge-eating and compensatory behaviors, which temporarily reduced tension but were followed by negative self-evaluation, thereby maintaining the symptom cycle. Based on this case-specific formulation, PMRE was introduced to increase awareness of bodily tension and support the development of alternative coping responses before binge-eating episodes (Fig. 2).

PMRE Protocol

The PMRE intervention was delivered by the first author, a psychologist who had completed formal training in

psychology and had three years of supervised clinical experience in an EDs unit within a CBT-oriented clinical setting, including conducting individual patient interviews. The therapist also received specific supervision in the application of the PMRE protocol. The implementation process was supervised by the developer of the tension model (a psychologist) and additionally monitored by a psychiatrist, ensuring a multidisciplinary clinical framework throughout the intervention period.

Based on Sertel-Berk's (2020) tension model of BN, the protocol comprised four steps of: tension-relaxation, relaxation-only, breathing-relaxation, and cued-relaxation, delivered over eight sessions, including psychological assessment, and a three-month follow-up.

The intervention was delivered individually in a face-to-face format in weekly 50-min sessions across eight intervention sessions, followed by a three-month follow-up assessment, resulting in nine sessions in total. The first session included a psychological assessment and relaxation training preparation. The next two sessions focused on the tension-relaxation step, followed by two sessions involving relaxation-only practice. The urge diary was introduced during the relaxation-only phase

rather than at the beginning of treatment because the development of bodily tension awareness through earlier PMRE stages was considered necessary to facilitate the recognition and monitoring of urge-related antecedents. The two subsequent sessions introduced breathing-based relaxation, and the eighth session focused on cue-controlled relaxation. Between-session practice was assigned on a weekly basis and included daily repetition of the relaxation exercises practiced during sessions, together with pre- and post-exercise tension ratings on a 0–10 scale and completion of an urge diary.

Treatment adherence was monitored through weekly therapist review of between-session practice, including completion of daily relaxation exercises, pre- and post-exercise tension ratings, and entries in the urge diary. Across the tension-relaxation and relaxation-only phases, the patient reported performing the assigned exercises on a daily basis as instructed. During the breathing-based relaxation phase, the patient completed the prescribed brief breathing exercises multiple times per day as planned. Pre- and post-exercise tension ratings were regularly recorded throughout the intervention period. Completion of the urge diary was more variable, with occasional reluctance to record entries, although the patient continued to report awareness of urge-related triggers during session reviews. Overall, adherence to the structured relaxation exercises was high, as evidenced by consistent daily practice across intervention phases and regular monitoring of tension levels.

The duration of home practice varied according to the step of the protocol: approximately 20 min for tension-relaxation exercises, 10 min for relaxation-only exercises, and 3–5 min for breathing-based relaxation. During the cue-controlled relaxation phase, the patient was instructed to take a single breath and deliver a relaxation cue to the whole body whenever encountering the designated cue. Exercises were initially conducted with therapist guidance during sessions; audio recordings were provided to support independent practice of the tension-relaxation step, and later steps were practiced using self-guided verbal cues. The intervention followed a structured protocol originally developed for pain conditions and was implemented according to predefined sequence of steps.

The primary aim of this study was to increase awareness of bodily tension and its relation to daily stressors rather than to achieve mere relaxation or symptom relief. Each session began with a weekly review followed by PMRE practice, emphasizing the recognition of tension and its antecedents.

The session content followed a predefined stepwise protocol structure, and symptom-related observations were recorded separately from the procedural description of the intervention. Progress was evaluated through pre-post and follow-up measures of ED symptoms using the Eating Disorder Examination Questionnaire (EDE-Q; Fairburn & Beglin, 1994), eating habits using the Eating Habits Questionnaire (EHQ; Bozan, 2009), body satisfaction using the Body Parts Satisfaction Scale (BPSS; Gökdoğan, 1988), self-esteem using the Rosenberg Self-Esteem Scale (RSES; Çuhadaroglu, 1986), emotion regulation using the Difficulties in Emotion Regulation Scale (DERS; Rugancı & Gençöz, 2010), alexithymia using the Toronto Alexithymia Scale (TAS-20; Güleç et al., 2009), depression using the Beck Depression Inventory (BDI; Hisli, 1988), anxiety using the Beck Anxiety Inventory (Ulusoy et al., 1998) and the State-Trait Anxiety Inventory (STAI; Öner, 1977), and stage transition using the BN Stages of Change Scale (BN-SOCS; Ergüney-Okumuş et al., 2018) (see Appendix 1), as well as an urge diary (see Appendix 2), in-session and between-session tension ratings (Erdoğan-Demir et al., 2026), and in-session feedback. These instruments were selected to capture changes across core domains relevant to the tension model of BN, including ED symptoms, body-related concerns, emotional awareness, emotion regulation, anxiety, depression, self-esteem, and motivational readiness for change. The primary outcome indicators included changes in binge-eating and purging frequency, ED symptom severity, and stage of change. Secondary outcome indicators included body satisfaction, self-esteem, emotion regulation, alexithymia, depression, anxiety, and self-reported tension awareness.

Session 1

The first session consisted of a psychological assessment exploring the patient's complaints and developmental, family, social, and academic history. PMRE was also introduced, conceptualizing binge-eating as a consequence of accumulated tension. The treatment goal was to recognize bodily tension and the antecedents of binge-urges and to monitor the bodily impact of daily stressors in relation to ED symptoms.

Sessions 2–3

These sessions focused on the first PMRE step (tension-relaxation). The homework involved daily audio-guided practice with tension ratings before and after the exercise (0–10 scale). The patient reported recognizing tension, particularly in her shoulders when urges emerged, and noted that PMRE prevented some binge episodes. The mean tension decreased from 7 to 5 after practice.

Sessions 4–5

After Session 3, the patient reported three binge episodes and daily urges, none between Sessions 4 and 5, and two managed urges. Awareness of bodily tension increased, and insight into the antecedents of binge episodes was gained:

“...When I’m alone, I feel uncomfortable... I get (feel) the urge to have an attack... I generally feel very uncomfortable when I’m alone... and I want to distract myself with food, so I don’t have to think about what to do...”

These sessions introduced the second PMRE step (relaxation-only). The homework included daily relaxation, tension ratings, and an urge diary.

Sessions 6–7

Between these sessions, she reported managed food cravings and no binge episodes. The mean tension decreased from 7 to 6 in week one and from 7 to 5 in week two. She noted that focusing on the urge often reduced it. These sessions introduced breathing and relaxation. The homework involved practicing breathing-relaxation three times daily in standing, sitting, and supine positions while relaxing during exhalation. In Session 7, feedback was requested, as the 8th session would be for termination. The patient expressed confidence in continuing the exercises:

“Actually, I’m a little sad that it’s over, but I’m also a little happy. I know I will continue these practices after it’s over. I’ve become very accustomed to these breathing exercises and know I’ll always use them because I’ve internalized them.”

Session 8

In the final PMRE session, she reported one binge-episode from the previous week. A three-month follow-up was scheduled. The final PMRE step, i.e., placing reminder stickers on frequently used objects and practicing brief breathing-relaxation when noticing them (cued-relaxation) was introduced as homework until follow-up. Treatment adherence remained high, with consistent completion of homework. Bodily awareness increased, and the patient coped more effectively with ED symptoms and interpersonal situations:

“During this process, my perspective completely changed. Instead of being tense, I became more relaxed. I used to react immediately, but now I relax and accept things. Even if I’m not relaxed, it’s easier because I know how to relax.”

Session 9 (Follow-up)

At the three-month follow-up, treatment gains were largely maintained. The frequency and severity of ED symptoms decreased. She reported tolerating negative emotions and using functional coping strategies instead of acting on urges:

Therapist: *“So, did you feel you were able to maintain your gains during this period?”*

Patient: *“Yes, definitely felt that. At least I realized I was able to manage... In the past, when I felt the urge to eat, I would immediately act on it. Now I say, ‘Let’s see what happens,’ and I feel more relaxed about it...”*

DISCUSSION

This study examined the implementation of a PMRE protocol based on the tension model of BN (Sertel-Berk, 2020) in a DSM-5–diagnosed BN case (APB, 2013). To our knowledge, this is the first report describing the use of PMRE as a structured standalone module targeting eating-related tension in an individual with BN during the waiting-list period for disorder-specific treatment. As binge-eating episodes in BN are influenced by multiple internal and external stressors (Stein et al., 2007), PMRE may help individuals recognize stress-related bodily tension before it escalates into binge-eating behavior.

Consistent with these findings, the patient became more aware of how daily stressors affected her body. The patient reported reductions in perceived tension preceding and following ED symptoms. Increased awareness of binge-episode antecedents helped her use alternative coping strategies instead of acting on urges. The patient also reported increased self-efficacy in managing the process after treatment and at follow-up. Pre-post-follow-up and weekly changes were monitored via a multimethod evaluation.

The reported binge-eating and purging at baseline decreased during treatment and fell below the BN threshold at follow-up (APB, 2013). Although this change suggests a clinically meaningful reduction in symptom frequency, conclusions regarding sustained remission should be interpreted cautiously given the single-case design and limited follow-up period. In addition to reductions in binge-eating and purging frequency below diagnostic threshold levels, improvements across several domains—including eating-related symptoms, stage of change, emotion regulation, and self-reported coping with urges—were accompanied by observable functional changes reported by the patient in daily stress management and interpersonal coping. Although the interpretation of questionnaire score changes should remain cautious in a single-case design, the convergence of behavioral indicators, motivational shifts, and patient-reported functional

improvements suggests that the observed changes were clinically meaningful rather than merely numerical. While scores on ED symptoms and eating habits decreased, the BN-SOCS (Ergüney-Okumuş et al., 2018) revealed a stage change from Preparation at pre-treatment to Action at post-treatment which remained at the three-month follow-up. This pattern may suggest the maintenance of treatment-related motivational changes. However, this stage transition should be interpreted cautiously, as motivational changes may also reflect nonspecific factors such as the passage of time during the waiting-list period, expectancy effects related to participation in a structured intervention, and repeated self-monitoring processes rather than the specific effects of PMRE alone. Furthermore, mild depression and anxiety scores at baseline decreased by the treatment end, and emotion regulation improved. These findings align with PMRE studies reporting reduced stress, anxiety, and depressive symptoms (Jacob & Sharma, 2018). However, improvements in these domains may also reflect nonspecific therapeutic factors, such as repeated self-monitoring and regular clinical contact. Notably, trait anxiety scores increased during follow-up despite reductions immediately after treatment. Although this pattern may partly reflect increased emotional awareness accompanying reductions in alexithymia, it may also indicate that PMRE alone was insufficient to produce durable changes in broader emotional processing domains. The parallel decrease in alexithymia and trait anxiety from pre- to post-treatment, followed by a concurrent increase at follow-up, may further suggest that improvements in emotional awareness were not fully stabilized over time and that longer or disorder-specific interventions may be required to support sustained change in these domains. Changes in body-related concerns were more limited. In particular, body satisfaction decreased at follow-up to a level below baseline, suggesting that improvements observed immediately after the intervention were not maintained over time and that PMRE alone may be insufficient to produce durable changes in body image-related domains. Similarly, concerns related to body shape and weight showed minimal improvement across assessment points, further supporting the interpretation that PMRE alone may be insufficient to address core body image-related aspects of BN, which are typically targeted through structured cognitive-behavioral interventions. Taken together, these mixed outcome trajectories suggest that while PMRE may contribute to improvements in tension awareness, coping with urges, and motivational readiness, its effects appear to be more limited in domains related to body image and broader emotional vulnerability, highlighting the importance of integrating relaxation-based approaches with disorder-specific cognitive-behavioral interventions. Although PMRE was implemented as the primary structured intervention targeting eating-

related tension during the waiting-list period for disorder-specific treatment, the patient continued to receive regular psychiatric outpatient follow-up and stable methylphenidate treatment (20 mg/day) for ADHD. In the present protocol, the urge diary was not conceptualized as an independent intervention component but rather as a complementary self-monitoring tool introduced after the development of bodily tension awareness through earlier PMRE stages. Accordingly, the recognition of urge-related antecedents was considered part of the broader self-regulation process targeted by the intervention. Therefore, the observed improvements cannot be attributed solely to PMRE, and pharmacological treatment and repeated self-monitoring may also have contributed to symptom change. Furthermore, after the completion of the PMRE intervention and follow-up period, the patient entered a multidisciplinary treatment program, including nutritional counseling and disorder-specific psychotherapy, which should be considered when interpreting long-term outcomes.

Although the gains were largely maintained, pre-follow-up measures showed a slight reduction in positive changes.

Limitations

Several limitations of this study should be considered when interpreting the findings. First, the results are based on a single-case design and therefore cannot be generalized beyond the present clinical context. Second, the absence of a control condition limits the ability to isolate the specific effects of PMRE. Third, although the urge diary was introduced as part of the broader PMRE self-regulation process, repeated self-monitoring procedures may also have contributed to symptom change. In addition, the patient continued to receive stable methylphenidate treatment during the intervention period, which may have influenced attentional and emotional regulation processes. Furthermore, reliance on self-report measures may have introduced reporting bias. Although multidisciplinary eating disorder treatment was initiated only after the completion of the PMRE intervention and follow-up period, its later implementation should be considered when interpreting long-term clinical implications. Finally, no additional assessment was conducted beyond the three-month follow-up period, despite evidence suggesting that extended follow-up may strengthen treatment effects (Yenice, 2025).

CONCLUSION

Overall, this case study suggests that PMRE may contribute to improvements in bodily awareness and self-regulation processes associated with binge-eating symptoms in BN. However, conclusions regarding its standalone efficacy cannot be drawn from a single-case design, and further research using case series, controlled comparative designs, and randomized controlled trials is needed to clarify its specific role within ED treatment.

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Informed Consent: Written informed consent for audio recording and publication of the case report was obtained from the patient, and confidentiality was maintained.

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Appendix 1. Pre-treatment, post-treatment, and follow-up outcome measures and assessment instruments

Outcome variables	Instruments	Before treatment	After treatment	Follow-up (after 3 months)	Min–Max
BMI ¹		19.53	19.53	19.53	
Weight		50.5	50	50	
Ideal weight		49	50	50	
Vomiting	Frequency (per week)	6	1	0	
Weighing	Frequency (per week)	1–2	1–2	1–2	
Stages of change	BN-SOCS ²	63/3.15	81/4.05	81/4.05	
Self-esteem	RSES ³	2	2	2	
Eating disorder symptoms	EDE-Q ⁴				
	Total	3.5	1.5	2.5	
	Restraint	0.8	0.2	0.4	
	Eating-related concerns	0.8	0	0.4	
	Body-shape concerns	0.5	0.375	0.5	
	Weight concerns	0.4	0.4	0.4	
Body satisfaction	BPSS ⁵	109/4.36	113/4.52	107/4.28	0–125
Eating habits	EHQ ⁶				
	Total	126	113	102	0–165
	Emotional eating	61	61	49	0–65
	External eating	28	24	25	0–50
	Restricted eating	37	28	28	0–50
Emotion regulation	DERS ⁷	122	106	111	0–180
Alexithymia	TAS ⁸	42	31	38	
Depression	BDI ⁹	11	3	2	
Anxiety	BAS ¹⁰	14	9	7	
State & trait anxiety	STAI-S ¹¹	40	32	32	20–80
	STAI-T ¹²	39	32	43	20–80

1: Body Mass Index classification according to WHO criteria (WHO, 2000) [World Health Organization. (2000). Obesity: Preventing and managing the global epidemic (WHO Technical Report Series No. 894). Geneva, Switzerland]. **2:** Bulimia Nervosa Stages of Change Scale (Turkish adaptation: Ergüney-Okumuş et al., 2018). **3:** Rosenberg Self-Esteem Scale (Turkish adaptation: Çuhadaroglu, 1986). **4:** Eating Disorder Examination Questionnaire (Turkish adaptation: Yücel et al., 2011). [Yücel, B., Polat, A., İkiz, T., Düşgor, B. P., Elif Yavuz, A., & Sertel Berk, O. (2011). The Turkish version of the eating disorder examination questionnaire: Reliability and validity in adolescents. *European Eating Disorders Review*, 19(6), 509–511]. **5:** Body Parts Satisfaction Scale (Gökdoğan, 1988). **6:** Eating Habits Questionnaire (Turkish adaptation: Bozan, 2009). **7:** Difficulties in Emotion Regulation Scale (Turkish adaptation: Rugancı & Gençöz, 2010). **8:** Toronto Alexithymia Scale (Turkish adaptation: Güleç et al., 2009). **9:** Beck Depression Inventory (Turkish adaptation: Hisli et al., 1988). **10:** Beck Anxiety Scale (Turkish adaptation: Ulusoy et al., 1988). **11:** Self-Assessment Questionnaire – State anxiety (STAI-S) (Turkish adaptation: Öner, 1977). **12:** Self-Assessment Questionnaire – Trait anxiety (STAI-T) (Turkish adaptation: Öner, 1977).

Interpretation notes:

BMI: <18.5: weak, 18.5–24.9: normal, 25.0–29.9: overweight, 30.0 and above: obese; BN-SOCS: <1.5 = precontemplation, 1.5–2.4 = contemplation, 2.5–3.4 = preparation, 3.5–4.4 = action, ≥4.5 = maintenance; RSES: 0–1 high, 2–4 medium, 5–6 low self-esteem; EDE-Q: High scores indicate increased eating pathology; BPSS: Increase in points indicates an increase in body satisfaction; EHQ: High scores indicate an increase in disturbed eating habits; DERS: High scores indicate increased difficulty in emotion regulation; TAS: Scores of 59 and above are alexithymic; BDI: 10–16 mild, 17–29 mid-level, 30–63 severe depressive symptoms; BAS: 8–15 mild, 16–25 mid-level, 26–63 severe anxiety symptoms; STAI-A/STAI-T: 20–39 low, 40–59 Moderate, 60–80 high anxiety. Generally, a score of ≥40 is considered a clinically significant level of anxiety.

Appendix 2. Urge diary

Date	Time	With whom	Emotions	What you eat	Emotions after eating

Statistical Centrality is Not a Clinical Priority: Case Formulation for Cognitive Behavioral Therapy

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Dear Editor,

A network analysis of psychopathology has become an influential approach for making the relationships among symptoms more visible. Rather than treating psychiatric symptoms as passive indicators of an underlying disorder, this approach conceptualizes them as elements that may influence, activate, and maintain one another over time (Briganti et al., 2024). In this respect, network models offer a productive conceptual framework for cognitive behavioral therapy (CBT) research. CBT also seeks to understand clinical problems through reciprocal patterns among thoughts, emotions, physiological responses, and behaviors, not through isolated symptoms alone. Therefore, network analysis may generate useful hypotheses about comorbidity, symptom spread, and possible maintenance cycles (Jones et al., 2021). However, an important translational gap remains. Although the limits of centrality metrics are well recognized, their proper role in CBT planning is less clearly defined. We argue that network findings should guide formulation questions rather than determine treatment priorities.

Nevertheless, caution is needed while translating centrality and bridge centrality findings into clinical practice. A central symptom may have many or strong connections; however, this does not establish causal priority or identify the best initial treatment target. Cross-sectional and group-level networks do not directly show the direction of change or the likely effect of intervention (Spiller et al., 2020). Although bridge centrality may clarify the patterns of comorbidity, it cannot specify which symptom should be addressed first, for which patient, or through which intervention (Jones et al., 2021). The key risk is a premature movement from a statistically central node to the clinical priority of an individual patient.

CBT therapeutic decision-making relies on a different form of reasoning. Treatment targets are not determined solely by symptom severity or by the position of a symptom within a statistical model. They are identified through case formulation and functional analysis. Clinicians examine thoughts, beliefs, avoidance, safety behaviors, emotional regulation strategies, and cycles of short-term relief and long-term maintenance (Salkovskis et al., 2023; Spencer et al., 2023). This is consistent with process-based approaches, focusing on modifiable mechanisms and their context rather than diagnostic labels or symptom categories (Hofmann & Hayes, 2019; Ong et al., 2022). Avoidance, threat appraisal, rumination, and reinforcement loss processes may operate across diagnoses. Their function and modifiability must still be established for each patient. A central node is clinically useful only when it points to a plausible maintenance process that can be tested.

This distinction has direct clinical relevance. Anhedonia is assumed to be the most central node in the two patients. Withdrawal from rewarding activities reduces not only anticipated effort but also positive reinforcement in the first patient. Therefore, graded behavioral activation may be the initial priority. Anhedonia in the second patient follows threat-driven social avoidance and



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safety behaviors after humiliating experiences. Exposure, behavioral experiments, and work on threat appraisals may take precedence. The maintenance process and treatment sequence differ although the statistical node is the same. A less central node may also deserve earlier attention when it is more modifiable, functionally upstream, safety-relevant, or necessary for treatment engagement.

This caution does not diminish the value of network analysis. Network models can visualize interactions that total scores conceal, generate hypotheses about bridge processes and comorbidity, guide focused assessment, and support repeated monitoring during treatment. Person-specific or collaboratively constructed networks also support shared formulation and make clinical assumptions more explicit (Hall et al., 2024; Seewald et al., 2025). These functions are complementary to formulation. The network organizes observations, and formulation determines their functional meaning and therapeutic relevance.

Accordingly, a central or bridge node should prompt focused clinical questions. When does it increase? Which thoughts accompany it? Which behaviors does it trigger? What short-term reduction does it reduce, and what does it maintain over time? These questions connect statistical structure with the lived context of the patient. Then, behavioral experiments, exposure and new-learning procedures, skill generalization, and systematic monitoring can test network-informed hypotheses within the individual case (Hall et al., 2024; Ong et al., 2022).

This problem of clinical translation may be reduced in future research by moving beyond cross-sectional and group-level networks. Studies should also move beyond symptom-only or diagnosis-bound nodes. Dynamic and temporal models, ecological momentary assessment, idiographic networks, single-case experiments, and therapy-process data can show when and for whom a process becomes influential. They can also test whether change in that process precedes, mediates, or produces clinical improvement (Briganti et al., 2024; Frumkin et al., 2021; Mansueto et al., 2023). Although personalized network-informed treatment strategies are promising, process centrality should not be inferred from connectivity alone. It requires within-person temporal evidence and, ideally, intervention-based confirmation.

In conclusion, network analyses are valuable and hypothesis-generating tools for CBT research and can support focused assessment and treatment monitoring. Network analysis should inform what clinicians assess, monitor, and test. Individualized case formulation should determine what to target, why it matters to the patient, and in what sequence. Statistical centrality can enrich clinical reasoning; however, it should not dictate treatment priority.

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