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Emotional Regulation as a Transdiagnostic Process in Anxiety Disorders: A Systematic Review

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Abstract

The objective of the present study was to conduct a systematic review to analyze the relationship between emotional regulation, conceptualized as a transdiagnostic construct, and the group of disorders that the DSM-5 categorizes as anxiety disorders. To this end, a comprehensive bibliographic search was conducted across the PsycINFO, Scopus, Psicodoc, and MedLine databases. A total of 570 articles were extracted, of which 41 were selected for review. The findings indicated a statistically significant relationship between the various anxiety disorders evaluated in the studies and emotional regulation. In this regard, the analysis of the extant literature revealed that the results of studies examining the relationship between emotional regulation and anxiety symptoms supported our two main hypotheses. Firstly, the implementation of adaptive emotional regulation strategies or functional emotional regulation would correlate positively with the reduction of anxiety symptoms in subjects who meet the diagnostic criteria for an anxiety disorder. Secondly, the implementation of maladaptive regulation strategies or dysfunctional emotional regulation would be associated with the symptoms of the different anxiety disorders. Furthermore, a third hypothesis was proposed, which suggests that comorbidity between different anxiety disorders is associated with dysfunctional emotional regulation. This hypothesis was supported by the only study found that analyzed this fact. Consequently, while it is acknowledged that not all studies included in the review statistically analyzed the relationship between emotional regulation and the symptoms of the various anxiety disorders evaluated, it can be concluded that, despite the existence of possible modulating variables, emotional regulation may function as a transdiagnostic process underlying anxiety disorders. This is evidenced in its relationship with the anxiety symptoms experienced by subjects who meet the diagnostic criteria for some type of anxiety disorder according to the DSM-5. Additionally, although our main transdiagnostic hypotheses were confirmed, the differential impact of various forms of emotional regulation on the different anxiety disorders assessed or included in the analyzed articles suggests that further research is needed in this field of study.

Keywords: transdiagnostic, emotional regulation, emotional avoidance, anxiety disorders, anxiety.

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Novelty and Significance

What is already known about the topic?

- Studies have shown that the use of adaptive emotional regulation strategies or functional emotional regulation correlate positively with a reduction in anxiety symptoms.
- The utilization of maladaptive emotional regulation strategies or dysfunctional emotional regulation, is associated with symptoms of various anxiety disorders.
- Comorbidity between different anxiety disorders is associated with dysfunctional emotional regulation.

What this paper adds?

- It is necessary to examine the impact of emotional regulation on comorbidity among diverse anxiety disorders.
- Transdiagnostic studies are needed that incorporate recently added disorders within the DSM-5 anxiety disorders category.
- Further studies are needed to evaluate the impact of different forms of emotional regulation on various anxiety disorders.

According to Sandín, Chorot, & Valiente (2012), from a psychopathological perspective, transdiagnostic is defined as the understanding of mental disorders on the basis of a range of cognitive and behavioral etiopathogenic processes that cause and/or maintain most mental disorders or consistent groups of mental disorders. This orientation is based on a dimensional conception of psychopathology, which seeks to integrate it with the categorical orientation rather than reject it.

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The term transdiagnostic was initially introduced by Fairburn, Cooper, & Shafran (2003) in the context of eating disorders. The authors of this study posited that patients with eating disorders exhibited distinctive clinical features and shared psychopathological processes. They further theorized that a transdiagnostic time course from anorexia nervosa to bulimia nervosa tended to occur. In consideration of the findings, Fairburn et alii (2003) determined that shared mechanisms underlie the perpetuation of anorexia nervosa, bulimia nervosa, and atypical eating disorders. This observation led to the formulation of the inaugural formal transdiagnostic theory in the domain of clinical psychology. In light of the aforementioned research, a novel transdiagnostic paradigm has emerged, encompassing a range of psychological phenomena, including negative affect and anxiety sensitivity (Qanbari-Alaee *et alii*, 2022), perfectionism (Başaran, 2022), intolerance to uncertainty (Hunt, Exline, Fletcher, & Teng, 2022) and emotional regulation (Abasi *et alii*, 2023). In recent years, this transdiagnostic approach has emerged as a major scientific endeavor, gaining increasing relevance and impact in the field of psychology.

Gross (1999), conceptualizes emotion regulation as those processes by which people influence their own emotions, emphasizing how they experience and express them in a given context. Such processes of emotion regulation, like emotions themselves, do not invariably yield adaptive outcomes; indeed, they can also result in ineffective, maladaptive, and counterproductive outcomes. Consequently, since the study of emotion regulation entered the domain of psychopathology, there has been a tendency to conceptualize emotion regulation strategies such as either adaptive (acceptance, reappraisal, and problem-solving) or maladaptive (suppression, avoidance, rumination, and preoccupation) (Kring & Sloan, 2009). In this traditional framework, emotional regulation strategies are categorized based on their inherent tendency to reduce or increase emotional distress. However, according to Hervás & Vázquez (2006), this dichotomy between different types of strategies does not address the question of when emotional regulation becomes dysfunctional. They argue that dysfunctional emotional regulation may occur in the presence of a deficit in emotional regulation or when the strategies employed are ineffective for achieving satisfactory emotional regulation, suggesting that the context and the individual's regulatory capacity are more determinant than the strategy itself. Consequently, the findings of recent research have indicated the presence of dysfunctional emotional regulation, or a certain type of maladaptive emotional regulation, in the etiology or maintenance of depressive disorders (Visted, Vøllestad, Nielsen, & Schanche, 2018), borderline personality disorder (Bud, Nechita, & Szentagotai-Tatar, 2023), and binge-eating disorder (Dingemans, Danner, & Parks, 2017), among other conditions. This finding underscores the involvement of this process in a broad spectrum of psychopathological problems and its role as a transdiagnostic variable.

According to Campbell-Sills & Barlow (2007) and Werner & Gross (2010), emotional avoidance strategies are a type of emotional regulation strategy. Emotional avoidance strategies encompass a variety of cognitive and attentional processes that function as a means of avoiding or buffering emotional experiences. In the context of anxiety disorders, the implementation of such strategies in situations that elicit fear may impede the acquisition of knowledge regarding the genuine peril posed by the stimulus. This may also result in the reinforcement of threat-related beliefs and the diminution of self-efficacy in managing distress. Since the seminal White Bear experiments (Wegner, 1987), a mounting body of research has substantiated the correlation between the employment of emotional avoidance strategies and the manifestation of diverse emotional disorders. Accordingly, contemporary research has determined that the utilization of emotional avoidance strategies functions as a risk factor for the emergence of anxiety symptoms (Bock *et alii*, 2024) or for the exacerbation of depressive symptoms (Buhk, Schadegg, Dixon, & Tull, 2020).

The involvement of emotional regulation and, more specifically, emotional regulation strategies as a transdiagnostic process in the context of anxiety disorders is reflected in the hierarchical transdiagnostic model of emotional disorders (Sandín, Chorot, & Valiente, 2024) (see Figure 1). This review adopts the definition of emotional regulation proposed by this model, which describes it as the set of cognitive and behavioral strategies that a person uses to modify the onset, experience, intensity, and expression of emotions, especially in the face of negative emotional distress. Thus, emotional regulation would be understood as the coping responses that the individual uses to address the distress or fear generated by the experience of negative emotional symptoms. In this model, the distinction between adaptive and maladaptive emotional regulation strategies is based not only on the type of strategy used, but also on its functionality, thus addressing the concerns raised previously by Hervás & Vázquez (2006), as it posits that maladaptive emotional regulation strategies become truly dysfunctional when they negatively affect psychological well-being, and adaptive strategies become functional when they have a positive influence. Likewise, the hierarchical model allows for a coherent integration of the different existing instruments for assessing emotional regulation, clarifying that the impact of an emotional regulation strategy depends on the context in which it is applied and its effect on people's psychological well-being, and not only on the type of strategy implemented.

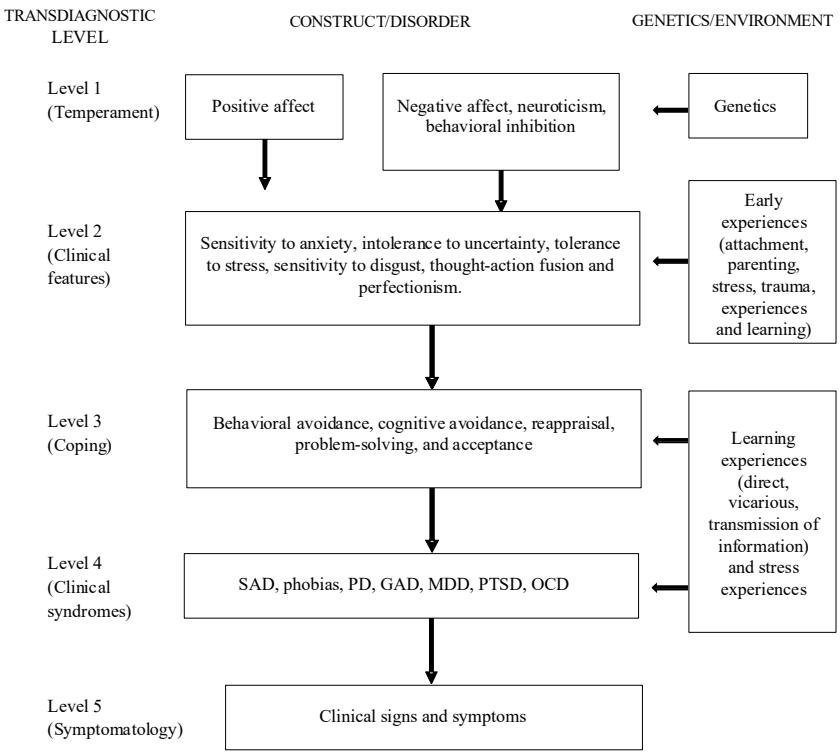

Figure 1. Hierarchical transdiagnostic model of emotional disorders. *Notes*: SAD= Separation Anxiety Disorder; PD= Panic Disorder; GAD= Generalized Anxiety Disorder; MDD= Major Depressive Disorder; PTSD= Post-Traumatic Stress Disorder; OCD= Obsessive-Compulsive Disorder.

Research has indicated that individuals who meet the diagnostic criteria for anxiety disorders often find it difficult to implement antecedent-oriented regulation strategies. Furthermore, they frequently experience difficulties modifying and adjusting their anxiety responses after the initial trigger. As the existing literature on this topic clearly demonstrates, studies have consistently highlighted the fundamental role of emotion regulation in such disorders. A key example is the work of Conroy *et alii* (2020), which concluded that individuals with generalized anxiety disorder exhibited, in most cases, limited to moderate flexibility in their use of emotion regulation strategies. Conversely, those with high flexibility demonstrated a better quality of life and less emotional distress. A notable study in this area is that of Blalock, Kashdan, & Farmer (2016), which found that participants with social anxiety disorder reported greater use of the emotion suppression strategy and less use of the cognitive reappraisal strategy compared to participants without the disorder.

The objective of this research was to conduct a systematic review of the association between emotional regulation, conceptualized as a transdiagnostic process, and anxiety disorders, classified according to DSM-5 (APA, 2014). Therefore, the initial hypothesis is that, according to the extant scientific literature, the implementation of adaptive emotional regulation strategies or functional emotional regulation will correlate positively with the reduction of anxiety symptoms in subjects who meet the diagnostic criteria for an anxiety disorder according to DSM-5. Conversely, the implementation of maladaptive regulation strategies or dysfunctional emotional regulation is anticipated to be associated with the symptoms of diverse anxiety disorders. Furthermore, a third hypothesis was proposed, which suggests that comorbidity between different anxiety disorders is associated with dysfunctional emotional regulation.

Method

Search Data and Analysis

This study includes systematic databases of high-quality academic journals, including PsycINFO, Scopus, Psicodoc and MedLine. The following keywords were utilized in the search: “transdiagnostic”, “emotional regulation”, “emotional avoidance”, “anxiety disorders”, and “anxiety”. The complete search string, including Boolean operators, was as follows: transdiagnostic AND (emotional regulation OR emotional avoidance) AND (anxiety disorders OR anxiety). The literature review was conducted from September to October of 2024, covering the period from 2014 to 2024.

The filters applied to search each database were different. In the PsycINFO database, doctoral theses and articles not published in Spanish or English were excluded. Only articles that used human subjects as their sample and were published in peer-reviewed journals were included. These articles had to be classified under one of the following categories in the search engine’s methodology section of PsycINFO: empirical study, quantitative study, clinical trial, interview, longitudinal study, follow-up study, treatment outcome, prospective study, retrospective study, or experimental replication. In the advanced search section of the Scopus database, which includes the applied filters, the following search string was used: (TITLE-ABS-KEY (transdiagnostic) AND TITLE-ABS-KEY (emotional regulation) OR TITLE-ABS-KEY (emotional avoidance) AND TITLE-ABS-KEY (anxiety disorders) OR TITLE-ABS-KEY (anxiety) AND PUBYEAR >2013 AND PUBYEAR <2025 AND (LIMIT-TO (SRCTYPE , “j”)) AND (LIMIT-TO (DOCTYPE, “ar”)) AND (LIMIT-TO (EXACTKEYWORD, “Human”)). The following search filters were applied to the MedLine database: articles categorized as academic

publications and as journal articles. Finally, for the search in the Psicodoc database, the "Journal" filter was applied in the "Publication Type" section. In the Scopus, Medline, and Psicodoc databases, fewer search filters were used than in the PsycINFO database to ensure the most thorough review possible.

Selection criteria

This review adhered to the methodological positions described in the PRISMA 2020 checklist for the publication of systematic reviews (Page *et alii*, 2021), following the four stages below for the study selection process: Identification, Screening (selection and eligibility), and Inclusion.

The articles selected for this review were required to meet the following inclusion criteria: 1) articles published in the last 10 years; 2) the sample of subjects (all or part of the sample) must meet the diagnostic criteria for an anxiety disorder according to the DSM-5; and 3) considering emotional regulation as a transdiagnostic process that influences anxiety symptoms. Conversely, case studies, articles focused on assessment instruments, systematic reviews, meta-analyses, book chapters, doctoral theses, duplicate articles, articles lacking full-text access, articles not published in English or Spanish, and non-experimental works such as descriptions of protocols, reflection articles, popularization articles, or theoretical articles were excluded from the present review. Two independent reviewers conducted the study selection process in accordance with the predefined inclusion and exclusion criteria. Initially, a screening of titles and abstracts from all identified registries was performed. Subsequently, potentially eligible articles were evaluated by reading the full text. Any discrepancies between the reviewers were resolved through discussion and consensus. When no agreement was reached, a third reviewer intervened to make the final decision. The subsequent flowchart (see Figure 2) provides a synopsis of the procedure undertaken for the selection of articles.

Study Quality and Risk of Bias

The quality of the studies included in the review was assessed using the criteria for health and health psychology studies proposed by Bowling (2009) and Perestelo Pérez (2013). These criteria are as follow: a) the title is concise and relevant to the contents,

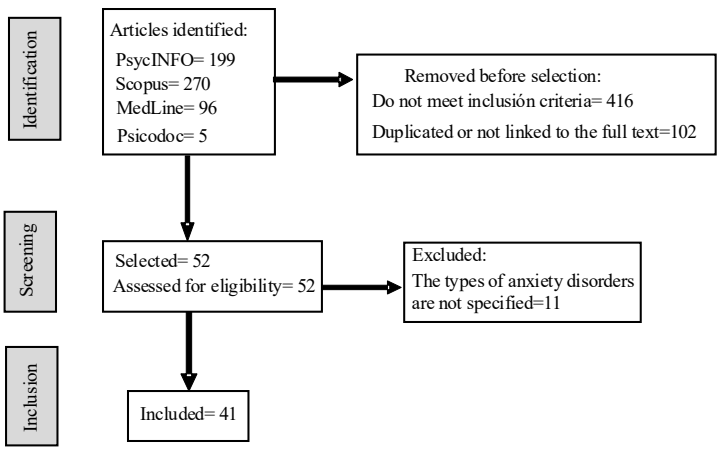

Figure 2. Articles selection flowchart.

b) the theoretical foundation is congruent with the research hypothesis, c) the hypotheses have been articulated with a high degree of clarity, d) the design is adequately described, and the methodology is appropriate, e) the variables are explicitly delineated, f) the instruments are validated and psychometrically reliable, g) selection and description of the sample and inclusion/exclusion criteria, h) the studies have ethical considerations, i) appropriate statistical analysis, j) The results were presented in a clear and accurate manner, k) the potential limitations of the study are presented and discussed and, l) the practical implications of the results are discussed.

Regarding the risk of bias in the analyzed studies, this may be attributable to the design used (e.g. cross-sectional design), the inherent limitations of longitudinal assessment, and the reliance on self-reported data. However, the findings continue to make a significant contribution to our understanding of the influence of emotional regulation, viewed as a transdiagnostic process, on different anxiety disorders.

Results

The search yielded a total of 570 articles, of which 416 were eliminated due to noncompliance with the inclusion criteria, and 102 were excluded on the basis that they were duplicates or lacked the full text. After a thorough evaluation of the remaining 52 articles for potential inclusion in the review, 11 were ultimately excluded due to their failure to specify the types of anxiety disorders assessed. The final review incorporated a total of 41 articles, (which can be found in References identified with *). Table 1 shows an overview of the studies analyzed and, additionally, Tables 2 and 3 show the results of the quality assessment of each article.

In general, while it is acknowledged that not all studies included in the review statistically analyzed the relationship between emotional regulation and the symptoms of the various anxiety disorders evaluated, it can be concluded that, despite the existence of possible modulating variables, emotional regulation may function as a transdiagnostic process underlying anxiety disorders. This is evidenced in its relationship with the anxiety symptoms experienced by subjects who meet the diagnostic criteria for some type of anxiety disorder according to the DSM-5. Consequently, the results obtained lend support to our two main hypotheses. Only one study out of the 41 analyzed (Tonarely, Kennedy, Halliday, Sherman, & Ehrenreich-May, 2021), reported that a significant improvement in anxiety symptoms in young people was not accompanied by a significant improvement in emotional regulation. On the other hand, the fact that only one study was found that examined the association between emotional dysregulation and comorbidity between different anxiety disorders (Gökdağ, Arkar, & Pirildar, 2023), is insufficient to draw solid conclusions regarding the third hypothesis proposed at the beginning, even though this study found that the subjects with comorbid diagnoses scored significantly higher than those with a single diagnosis in terms of emotional dysregulation.

Regarding the operationalization of the emotion regulation variable, 18 of the studies analyzed it as a difficulty in regulating emotions or as emotional dysregulation, while 21 studies operationalized it as the implementation of different emotional regulation strategies. Conversely, the works of Ellard *et alii* (2017) and Weiss *et alii* (2018), operationalized emotional regulation as both the difficulty in emotion regulation and the implementation of emotional regulation strategies. In the context of emotion regulation strategies, the maladaptive strategy of expressive suppression emerged most frequently (nine instances), followed by reappraisal as an adaptive strategy (eight instances), rumination (four instances), emotional avoidance (three instances), negative metacognition (two instances), and acceptance, worry, catastrophizing, focusing, withdrawal, perspective taking, aggression, and avoidance of emotional contrast, among others (one instance each).

Table 1. Overview of the studies reviewed.

Study	Sample	Design Instruments	Disorders Therapy	Results
Abasi *et alii* (2018) Iran	*N*= 346 (53% women) *M*age= 36	Discriminant factor study. SIAS, GAD-7, DERS, RRS.	GAD, SAD.	Clinical groups (GAD and SAD) exhibited significantly higher use of maladaptive emotional regulation strategies in comparison to the control group (p <.05).
Anderson *et alii* (2021) USA	*N*= 1138 (60.6% women) *M*age= 31.1	Exploratory structural equation model. ADIS-5, DERS, TMMS, ERQ, MEAQ.	PD, GAD, SAD, SP, AP.	Correlation between self-reported emotion regulation dimensions and the severity and symptom expression of the assessed emotional disorders. However, when neuroticism was entered as a covariate, it was discovered that the sole dimensions of emotion regulation that maintained a significant correlation with generalized anxiety and social anxiety were negative thinking and emotional suppression (p <.05).
Corpas *et alii* (2022) Spain	*N*= 105 (68.6% female) *M*age= 39.6	Controlled trial pre-post- measures + Control group. SCID-5, GAD-7, PHQ-PD, ERQ-CR, ERQ-ES, RRS.	PD, GAD. UP (short group) /v/ TAU.	Brief transdiagnostic group therapy exhibited a higher degree of efficacy in reducing the full spectrum of clinical symptoms associated with anxiety disorders when compared with medication (p <.05). Cognitive reappraisal and emotional suppression have been identified as emotional regulation strategies that function as predictors of therapeutic change (p <.001).
Daros & Ruocco (2021) Canada	*N*= 99 (100% female) Age= 18-55	Controlled trial single-group pre- and post- measures. DASS-42, DERS, WBSI, RSS, MEAQ, CERQ.	PD, GAD, SoP, SP, A.	Trait emotional dysregulation was associated with an increased tendency to employ suboptimal emotional regulation strategies. Conversely, the findings indicated a positive correlation between self-reported components of emotional regulation 1 and 4 (maladaptive) and symptoms of anxiety disorders, depression, and BPD (rs >0.27). In contrast, self-reported components 3 (adaptive) demonstrated a negative association with these symptoms (r= - 0.31).
Ellard *et alii* (2017) USA	*N*= 29 (58% women) *M*age= 43.75	Controlled trial pre- and post-measures + Control group. HAM-A, ASQ-17, ASI, DERS, RRQ.	PD, GAD, SoP. UP-TAU /v/ TAU.	Patients in the UP/TAU group exhibited significantly greater reductions in anxiety symptoms over time compared to the TAU group (p <.05). Conversely, baseline levels of emotional regulation ability in the UP/TAU group predicted the magnitude of change in anxiety symptoms (p <.05).
Espinosa *et alii* (2024) Spain	*N*= 58 (81% women) Age= 12-18	Controlled trial pre- post-measures + Control group. RCADS-30, EASI-A.	PD, GAD, SoP, SP, AP, SA. AMtE /v/ UP-A.	The application of generalized estimating equation modeling revealed that both interventions administered (AMtE and UP-A), with the exception of symptoms related to separation anxiety, led to a substantial reduction in other anxiety symptoms experienced by the participants (p <.05). A significant reduction in self-reported transdiagnostic variables, including emotional avoidance strategies (p <.01).
Fernandes *et alii* (2023) UK	*N*= 41 (27% girls) Age = 8-11	Controlled trial single-group pre- post-measures. SCARED, CERQ.	PD, GAD, SoP, SA, school phobia. SSL.	Substantial decrease in the utilization of maladaptive emotional regulation strategies among the participants following the intervention. Furthermore, the findings of the study indicated that executive functions and emotional regulation strategies were able to predict the outcomes of the participants regarding anxiety problems (p <.05) and conduct problems (p <.05) subsequent to the intervention.
Feurer *et alii* (2021) USA	*N*= 140 (66% women) *M*age= 27.03	Controlled trial pre- post- measures + Control group. SCID-5, DASS-21, HAM-A, ERQ, RRS.	PD, GAD, SAD, SP, AP. CBT vs. therapeutic drugs	Regarding the relationship between improved emotional regulation and reduced anxiety symptoms, it was found that, using symptom change as a control variable, the main effects of time were maintained for both reappraisal and emotional suppression (p <.001). Conversely, the interaction between group and time showed significance for reappraisal, with a higher value in the CBT group (p <.001).
Gökdağ *et alii* (2023) Turkey	*N*= 237 (69% women) *M*age= 33.56	Ex post facto study + Control group. BAI, DERS.	PD, GAD.	In the relationship between emotion dysregulation and anxiety disorders, it was observed that the clinical group demonstrated higher scores than the control group on the emotion dysregulation variable (p <.001). In the second comparison, the comorbid diagnoses group demonstrated a statistically significant higher score than the single diagnosis group on the emotion dysregulation scale (p <.05).
Grill *et alii* (2017) Argentina	*N*= 23 (87% women) *M*age= 40.9	Quasi-experimental design single-group pre- post- measures. ADIS-4, MDQ, SA-45, HADS, DERS.	PA, GAD, SAD, AP, UD. UP (group).	Substantial decrease in anxiety symptoms following treatment (p <.01), concomitant with a reduction in difficulties in emotional regulation (p <.05).

Table 1 (cont.). Overview of the studies reviewed.

Henry *et alii* (2015) Australia	*N*= 86 (81% women) *M*age= 15.25	Controlled trial pre- post- measures + Control group. RCMAS-2, DERS.	PD, GAD, SAD.	Regarding emotional dysregulation, it was found that participants in the clinical group scored significantly higher on the DERS than the non-clinical group (p <.001).
Hosogoshi *et alii* (2020) Japan	*N*= 17 (59% women) *M*age= 35.18	Controlled trial single-group pre- post-measures. SIGH-A, ERQ.	PD, SAD, UD. UP.	Only lower expressive suppression of emotions prior to treatment predicted a greater magnitude of improvement in anxiety symptoms of the disorders (p <.05).
Ito *et alii* (2016) Japan	*N*= 17 (59% women) *M*age= 35.18	Controlled trial single-group pre- post-measures. MINI, SIGH-A, OASIS, STAI, CGI-S, CGI-I, ERQ.	PD, SAD, UD. UP.	Significant decrease in anxiety symptom severity was observed following the intervention (p <.05), which was accompanied by a substantial improvement in emotional regulation (p <.05).
Kananian *et alii* (2017) Germany	*N*= 7 men *M*age= 25.6	Controlled trial single-group pre- post-measures. GHQ-28, ASQ-20, ERS.	PD, GAD. CBT-CA.	Marked reduction in anxiety symptoms (p <.05), accompanied by a significant enhancement in emotional regulation (p <.05).
Keil *et alii* (2017) Germany	*N*= 108 children and their parents (59% girls) Age= 10-13	Cross-sectional controlled trial two control groups. SASC-RD, CBCL, BSI, FSSCR, FEEL-E, FEEL-KJ.	GAD, SAD, SP, SA.	Children with anxiety disorders showed a reduced tendency to employ adaptive emotional regulation strategies, and an elevated frequency of maladaptive strategies compared to their peers without such diagnoses (p <.05). A significant correlation between children's social anxiety and the emotional regulation strategies employed (aggression, withdrawal, and self-evaluation), as well as the reappraisal strategy by parents (p <.05). The remaining children's anxiety symptoms showed a significant correlation with children's reappraisal strategies, aggression, and rumination, as well as with parent's cheerfulness (p <.05).
Kennedy *et alii* (2022) USA	*N*= 298 (48.7% girls) *M*age= 12	Controlled trial single-group pre- post-measures. ADIS-5, RCADS-C, RCADS-P, CASI, ERQ-CA, CEMS.	PD, GAD, SAD, SP, SA, AP, sickness anxiety, UD. UP.	In the post-treatment phase, the emotionally deregulated profile and the avoidant profile showed significant higher total anxiety scores in comparison to the regulated expressive and tolerant profile (p <.05).
Khakpoor *et alii* (2019) Iran	*N*= 23 (78% women) *M*age= 25.47	Controlled trial pre- post- measures + Control group. ADIS-4, BAI, DERS	PD, GAD, SAD. UP /v/ Control.	The change in emotion regulation difficulty accounted for 53.3% of the variance in the change in anxiety scores (p <.001). The remaining variance in the model was attributed to intolerance of uncertainty and experiential avoidance.
Kivity *et alii* (2019) Israel	*N*= 13 Age= 20-65	Controlled trial single-group pre- post-measures. HAM-A, DASS-21, BSQ and DERS.	PD, GAD, SAD, UD. UP.	Substantial reduction in anxiety levels was observed (p <.01). Decrease in emotional dysregulation. Lower emotional dysregulation was associated with reduced distress, and vice versa (p <.01).
Klein *et alii* (2023) Australia	*N*= 241 (65% females) Age= ≥18	Controlled trial single-group pre- post-measures. GAD-7, DERS.	GAD. LF.	Significant decrease in generalized anxiety after the program's implementation, accompanied by a reduction in emotional regulation difficulties (p <.001).
Mahmoodi *et alii* (2020) Iran	*N*= 64 (53% women) *M*age= 26.55	Controlled trial pre- and post- measures + Control group. SCID-4, DASS-21, BAI, SPIN, ASI, ERQ	PD, GAD, SAD. UP /v/ CBT-P.	Significant post-treatment differences in favor of the UP group compared to the waiting list in symptoms of the various anxiety disorders assessed. An enhancement in emotional regulation (p <.05). UP showed marked superiority over CBT-P in enhancing emotional regulation (p <.01).
Mares *et alii* (2024) Australia	*N*= 1024 (66% females; 1% non-binary) *M*age= 24.9	Cross-sectional controlled trial one mixed group (community-clinical). DASS-21, GAD-7, DER.	PD, GAD, SAD, SA, SP, AP, UD.	Significant positive correlation between anxiety symptoms associated with disorders and challenges in emotional regulation (p <.001). Difficulty in emotional regulation significantly mediated the relationship between adverse childhood experiences and anxiety symptoms.

International Journal of Psychology & Psychological Therapy, 26, 2

https://www.ijpsy.com

Table 1 (cont.). Overview of the studies reviewed.

Muñoz Navarro *et alii* (2021) Spain	*N*= 1753 (76.8% women) *M*age= 40.4	Cross-sectional online survey one mixed group (community-clinical). PHQ-PD, GAD-7, CERQ-S.	PD, PA, GAD.	Catastrophizing and rumination showed a positive predictive value for GAD, PA, and PD (p <.001). Significant relationship between perspective taking and GAD (p <.01). Positive refocusing showed a negative predictive value for GAD, PA, and PD. Positive reappraisal showed a negative predictive value for GAD alone (p <.001).
Muñoz Navarro *et alii* (2022) Spain	*N*= 1061 (81% women) *M*age= 43.6	Controlled trial pre- post-measures + Control group. GAD-7, RRS, ERQ.	GAD. CBT-T-TAU /v/ TAU.	Significantly stronger effect size in CBT-T/TAU group for all variables (emotional symptoms and emotional regulation strategies) (p <.001). Mediation analysis revealed that the direct effects of the mediators on anxiety were significant for negative metacognition, rumination, and worry (p <.001), with no significant effects for reappraisal or suppression.
Nazari *et alii* (2020) Iran	*N*= 70 (61% women) *M*age= 35.3	Controlled trial pre- post-measures + Control group. SCID-4, HADS, DERS.	GAD, SAD. UP /v/ TAU.	UP group showed notably diminished scores for anxiety symptoms in comparison to the TAU group, concomitant with a significantly lower score for challenges in emotion regulation (p <.001).
Neacsiu *et alii* (2014) USA	*N*= 44 (66% women) *M*age= 35.5	Controlled trial pre- post-measures + Control group. SCID-I, DERS, PHQ-9, OASIS.	PD, GAD, SAD, SP, AP. DBT-ST /v/ ASG.	Upon examining the emotional dysregulation levels of participants across DBT-ST and ASG conditions, a significant decrease in emotional dysregulation among participants in both conditions. A more pronounced improvement reported among participants in the DBT-ST condition, and faster improvement of anxiety symptoms (p <.05).
Neacsiu *et alii* (2015) USA	*N*= 127 (63% women) *M*age= 35.59	Simple correlational study. SCID-I, BAI, DERS.	PD, GAD, SAD, SP, AP.	Positive and significant correlation between scores on all subscales of the DERS (emotional dysregulation) and scores on the BAI (anxiety symptoms) (p <.05).
Newman *et alii* (2023) USA	*N*= 1409 (73% females, 0.8% non-binary) *M*age= 18.7	Cross-sectional online group trial control. GAD-Q-IV, SPDQ, CAQ-GE.	GAD, SAD.	A significant discrepancy in the levels of emotional contrast avoidance (ECA) reported by participants with GAD and SA compared to those without any disorder (p <.001).
Paulus *et alii* (2016a) USA	*N*= 274 (87% women) *M*age= 39.3	Simple correlational study. MINI, IDAS, DERS.	PD, GAD, SoP, A.	Significant positive correlation between anxiety symptoms (IDAS) and emotional dysregulation (DERS) (p <.05).
Paulus *et alii* (2016b) USA	*N*= 97 (64% women) age = 12-17	Simple correlational study. C-DISC, MASC, YSR, DERS.	PD, GAD, SAD, SA, AP.	A positive and significant association between emotional dysregulation (DERS) and anxiety symptoms, as measured by the MASC and YSR instruments (p <.01).
Peris Baquero *et alii* (2023) Spain	*N*= 140 (77% women) *M*age= 42.12	Controlled trial pre- post-measures + Control group. ADIS-4, BAI, DERS.	PD, GAD, AP, UD. Group UP /v/ Individual TAU.	Lower levels of anxiety when the difficulties in emotional regulation were low (p <.05). A marked decline in anxiety levels in conjunction with a concurrent decrease in difficulties in emotional regulation, indicative of a synergistic relationship between treatment and its impact on emotional regulation (p <.05).
Ramdhonee-Dowlot *et alii* (2021) Mauritius	*N*= 100 (76% girls) age= 9-14	Controlled trial pre- post-measures + Control group. RCADS-47, CERQ-K	PD, GAD, SAD, SA. SSL /v/ WL.	Intervention group showed significantly lower scores on all anxiety disorders (p <.001), reduced use of all maladaptive emotional regulation strategies, and increased use of all adaptive ones (p <.001), with the exception of the adaptive strategy of putting into perspective.
Sandín *et alii* (2021) Spain	*N*= 144 (62% girls) *average age*= 14.6	Cross-sectional online controlled trial, one mixed group (community-clinical). RCADS-30, MINI-Kid, CERE.	PD, GAD, SAD, SA. iUP-A.	Concerns regarding coronavirus, negative emotional states, propensity for intolerance of uncertainty, acceptance/tolerance, rumination, and suppression collectively accounted for distinctive variations in the severity of anxiety symptoms. Only acceptance/tolerance (p <.001), rumination (p <.01), and emotional suppression (p <.01) emerged as significant predictors of anxiety symptom within the proposed multiple linear regression model.
Sandín *et alii* (2020) Spain	*N*= 12 (66% girls) *M*age= 15.58	Uncontrolled open-label trial pre- post- measures. MINI, EAN, RCADS-30, SASC-R, PDSS-SR, EASI-A.	GAD, SoP, PD, SA iUP-A	Subsequent to the intervention a decline in anxiety symptoms observed among all adolescents (p <.01), and a decrease in the transdiagnostic measure of emotional avoidance (p <.05).

Table 1(cont.). Overview of the studies reviewed.

Sherman & Ehrenreich-May (2020) USA	*N*= 8 children and their parents (62.5% girls) *M*age= 14.94	Controlled trial single-group pre- post- measures. ADIS-5, CGI-S, CGI-I, RCADS, RCADS-P, EASI-A.	GAD, SoP, SP, AP UP-A	At the group level, following treatment (UP-A), a significant improvement in anxiety symptoms was identified (RCADS) (p <.05), accompanied by an improvement in emotional avoidance (EASI-A) (p <.05).
Tobon *et alii* (2020) Canada	*N*= 75 (73% women) *M*age= 19.35	Controlled trial pre- post-measures + Control group. MINI, GAD-7, DERS.	PD, GAD, SAD DBT-MET /v/ DBT	Substantial reduction in anxiety symptoms, and a significant decrease in emotional dysregulation in post-treatment (p <.05). Participants in the MET/DBT-ST condition showed a more pronounced decline in psychological distress over time when compared to those in the DBT-ST condition (p <.001). Decrease in anxiety symptoms and emotional dysregulation did not differ significantly between the two groups.
Tonarely *et alii* (2021) USA	*N*= 91 children and their parents (53.8% girls) Age children= 6.92-17.8	Controlled trial pre- post measures parallel groups. ADIS-5, MINI-Kid, RCADS-P, DASS-42, ERQ.	GAD, SAD, SP, SA. UP-C, UP-A.	A substantial decline in anxiety symptoms among parents following intervention (p <.001), an enhancement in their cognitive strategy of emotional regulation through reappraisal (p <.01). The significant reduction in anxiety levels among young individuals following treatment did not concomitantly manifest as a substantial advancement in their emotional regulation.
Tull *et alii* (2018) USA	*N*= 41 (34% women) *M*age= 31.51	Correlational study. DIAMOND, DAS-21, DERS-16.	PD, GAD, SAD.	Positive and significant correlation between scores on the DERS-16 (emotional dysregulation) and those on the DASS-21 (anxiety) (p <.01).
Weiss *et alii* (2018) Canada	*N*= 68 children and their parents (13% girls) *M*age= 9.75	Controlled trial pre- post-measures + Control group. ADIS-P, CGI-S, CGI-I, James, Dylan, CEMS, ERC, ERSSQ-P.	PD, GAD, SAD, SA, SP, AP. SAS-OR /v/ WL.	The treatment group (SAS-OR) showed statistically significant improvements in regulation (p <.05), accompanied by improvements in psychopathological aspects (anxiety disorders) (p <.05), in comparison to the control group.
Wirtz *et alii* (2014) Germany	*N*= 175 (57.7% women) *M*age= 46.7	Controlled trial single-group pre-post- measures. SCID, DASS-2, ERSQ.	PD, GAD, SoP, AP. Group Psychotherapy	The successful application of emotional regulation skills (ERSQ) demonstrated a negative and statistically significant association with the severity of anxiety symptoms (DASS-21) following treatment (p <.05).
Zemestani et alii (2024) Iran	*N*= 60 (56.7% women) *M*age= 16.60	Controlled trial pre- post-measures + Control group ADIS-5, YAM-5, ERQ-CA.	PD, GAD, SAD, SA, SP, AP, SM. UP-A /v/ WL	Changes in anxiety symptoms over time significant (p <.001) and positive for UP-A group compared to control group. The UP-A group showed improvements in emotional regulation strategies, specifically reevaluation and suppression, compared to the control group (p <.001).
Zemestani *et alii* (2017) Iran	*N*= 43 (67.4% women) Age= 18-33	Controlled trial pre- post-measures + Control group. BAI, ERQ.	PD, GAD, SAD UP /v/ WL	Following the treatment a marked enhancement in anxiety symptoms in the UP group in comparison to the WL (p <.001), and a more pronounced effect on the enhancement of emotional regulation strategies (p <.001).

Notes: ADIS-P= Structured Interview for Anxiety Disorders (parent version); ADIS-4= DSM-4 Structured Interview for Anxiety Disorders, ADIS-5= DSM-5 Structured Interview for Anxiety Disorders; AmtE= Learn to Manage your Emotions (self-applied transdiagnostic programme via internet); AP= Agoraphobia; ASI= Anxiety Sensitivity Index; ASG= Activity based Support Group; ASQ-17= Anxiety Symptom Questionnaire; ASQ-20= Affective Style Questionnaire; BAI= Beck Anxiety Inventory; BSI= Brief Symptom Inventory; BSQ= Body Sensations Questionnaire; CAQ-GE= Contrasts Avoidance Questionnaire (General Emotion); CASI= Children's Anxiety Sensitivity Index; CBCL= Child Behavior Checklist German version; CBT= Cognitive Behavioral Therapy; CBT-CA= Cognitive Behavioral Therapy (Culturally Adapted); CBT-P= Cognitive Behavioral Therapy for Perfectionism; CBT-T= Transdiagnostic Cognitive Behavioral Therapy; C-DISC=Diagnostic Interview for Children (software); CEMS= Children's Emotion Management Scale; CERE= Questionnaire of Emotional Regulation Strategies; CERQ=Cognitive Emotional Regulation Questionnaire; CERQ-K=Cognitive Emotional Regulation Questionnaire for Children; CERQ-S= Cognitive Emotional Regulation Questionnaire (abbreviated); CGI-I= Clinical Global Impression Scale (improvement); CGI-S= Clinical Global Impression Scale (severity); DASS-21= Depression, Anxiety and Stress Scale (abbreviated); DASS-42= Depression, Anxiety and Stress Scale; DBT= Dialectical Behavioral Therapy; DBT-ST= Dialectical Behavioral Therapy (skills training); DERS= Difficulties in Emotional Regulation Scale; DERS-16= Difficulties in Emotional Regulation Scale (abbreviated); DIAMOND= Diagnostic Interview for Anxiety, Mood, OCD and Related Neuropsychiatric Disorders; Dylan= Dylan Is Being Mocked; EAN= Anxiety Scale for Children; EASI-A= Emotional Avoidance Strategies Inventory for Adolescents; ERC = Emotional Regulation Checklist; ERQ= Emotion Regulation Questionnaire; ERQ-CA= Emotion Regulation Questionnaire for Children and Adolescents; ERQ-CR= Emotion Regulation Questionnaire (Cognitive Re-evaluation); ERQ-ES= Emotion Regulation Questionnaire (Expressive Suppression); ERS= Emotional Regulation Scale; ERSQ= Emotion Regulation Skills Questionnaire; ERSSQ-P= Emotion Regulation and Social Skills Questionnaire (parent version); FEEL-E= German Questionnaire for the Evaluation of Emotional Regulation (adult version); FEEL-KJ= German Questionnaire for the Evaluation of Emotional Regulation (child and adolescent version); FSSCR= German Fear Questionnaire (children's version); GAD-7= Generalized anxiety disorder; GAD-Q-IV= DSM-4 Generalized Anxiety Disorder Questionnaire; GHQ-28= General Health Questionnaire; HADS= Hospital Anxiety and Depression Scale; HAM-A= Hamilton Anxiety Scale; IDAS= Inventory of Depression and Anxiety Symptoms; iUP-A= Unified Protocol for the Transdiagnostic Treatment of Emotional Disorders in Adolescents (online version); James= James and the Maths Test; LF= Life Flex Intervention; MASC= Multidimensional Anxiety Scale for Children; MEAQ= Multidimensional Avoidance Experience Questionnaire; MET= Motivational Enhancement Therapy; MDQ= Mood Disorders Questionnaire; MINI= International Neuropsychiatric Interview; MINI-Kid= International Neuropsychiatric Interview for Children; OASIS= Overall Anxiety Severity and Impairment Scale; PA= Panic Attack; PD= Panic Disorder; PDSS-SR= Self-reported Panic Disorder Severity Scale (Spanish version); PHQ-PD= Patient Health Questionnaire (Panic Disorder); PHQ-9= Patient Health Questionnaire; RCADS-30= Children's Depression and Anxiety Scale (abbreviated); RCADS-47= Children's Depression and Anxiety Scale; RCADS-C= Children's Depression and Anxiety Scale (children's version); RCADS-P= Children's Depression and Anxiety Scale (parent version); RCMAS-2= Children's Manifest Anxiety Scale (revised); RRQ= Reflection-Rumia Questionnaire; RRS= Ruminant Response Scale; SA= Separation Anxiety; SA-45= Psychopathological Symptom Assessment Questionnaire; SAD= Social Anxiety Disorder; SAS-OR= Society of Secret Agents (regulatory operation) Super Skills for Life Intervention; SASC-R= Social Anxiety Scale for Children Revised; SASC-RD= German Social Anxiety Scale Revised (Children version); SCARED= Scale for Children with Anxiety and Related Emotional Disorders; SCID-4= Structured Clinical Interview for DSM-4 Disorders; SCID-5= Structured Clinical Interview for DSM-5 Disorders; SCID-I= Structured Clinical Interview for DSM-4 Axis I Disorders; SIAS= Social Interaction Anxiety Scale; SIGH-A= Structured Interview for the Hamilton Anxiety Rating Scale; SM= selective mutism; SoP= Social Phobia; SP= Specific Phobia; SPDQ= Social Phobia Disorder Questionnaire; SPIN= Social Phobia Inventory; SSL= Super Skills for Life Intervention; STAI= State-Trait Anxiety Inventory; TAU= Treatment as usual; TMMS= Trait Meta-Mood Scale; UD= other unspecified disorder; UP= Unified Protocol for the Transdiagnostic Treatment of Emotional Disorders; UP-A= UP Adolescents; UP-C=UP Children; WBSI= White Bear Suppression Inventory; WL= waiting list; YAM-5= Youth Anxiety Measure (DSM-5); YSR= Youth Self-Report of Anxiety Problems.

International Journal of Psychology & Psychological Therapy, 26, 2 https://www.ijpsy.com

Table 2. Evaluation of studies against the criteria for health studies.

Criteria	YES	NO
1. Title is concise and relevant to the contents.	41	-
2. Theoretical foundation is congruent with the research hypothesis.	41	-
3. Hypotheses have been articulated with a high degree of clarity.	33	8
4. Design is adequately described, and the methodology is appropriate.	41	-
5. Variables are explicitly delineated.	41	-
6. Instruments are validated and psychometrically reliable.	38	3
7. Selection and description of the sample and inclusion/exclusion criteria.	36	5
8. Studies have ethical considerations.	36	5
9. Appropriate statistical analysis.	40	1
10. Results presented in a clear and accurate manner.	41	-
11. Potential limitations presented and discussed.	41	-
12. Practical implications of results discussed.	41	-

Table 3. Evaluation of the quality of studies.

Study	Evaluation criteria											
	1	2	3	4	5	6	7	8	9	10	11	12
Abasi *et alii* (2018)	X	X	-	X	X	X	X	-	X	X	X	X
Anderson et alii (2021)	X	X	X	X	X	X	X	X	X	X	X	X
Corpas *et alii* (2022)	X	X	X	X	X	X	X	X	X	X	X	X
Daros & Ruocco (2021)	X	X	X	X	X	X	X	X	-	X	X	X
Ellard *et alii* (2017)	X	X	X	X	X	X	X	X	X	X	X	X
Espinosa *et alii* (2024)	X	X	X	X	X	X	X	X	X	X	X	X
Fernandes *et alii* (2023)	X	X	X	X	X	X	-	X	X	X	X	X
Feurer *et alii* (2021)	X	X	X	X	X	X	X	X	X	X	X	X
Gökdağ *et alii* (2023)	X	X	X	X	X	X	X	X	X	X	X	X
Grill *et alii* (2017)	X	X	-	X	X	X	X	X	X	X	X	X
Henry *et alii* (2015)	X	X	-	X	X	X	X	X	X	X	X	X
Hosogoshi *et alii* (2020)	X	X	-	X	X	X	-	X	X	X	X	X
Ito *et alii* (2016)	X	X	-	X	X	X	X	X	X	X	X	X
Kananian *et alii* (2017)	X	X	X	X	X	X	X	-	X	X	X	X
Keil *et alii* (2017)	X	X	X	X	X	X	X	X	X	X	X	X
Kennedy *et alii* (2022)	X	X	-	X	X	X	X	X	X	X	X	X
Khakpoor *et alii* (2019)	X	X	X	X	X	X	X	X	X	X	X	X
Kivity *et alii* (2019)	X	X	X	X	X	X	X	X	X	X	X	X
Klein *et alii* (2023)	X	X	-	X	X	-	X	X	X	X	X	X
Mahmoodi *et alii* (2020)	X	X	X	X	X	X	X	X	X	X	X	X
Mares *et alii* (2024)	X	X	X	X	X	X	X	X	X	X	X	X
Muñoz-Navarro *et alii* (2021)	X	X	X	X	X	-	-	X	X	X	X	X
Muñoz-Navarro *et alii* (2022)	X	X	-	X	X	X	-	X	X	X	X	X
Nazari *et alii* 2020)	X	X	X	X	X	X	X	X	X	X	X	X
Neacsiu *et alii* (2014)	X	X	X	X	X	X	X	-	X	X	X	X
Neacsiu *et alii* (2015)	X	X	X	X	X	X	X	X	X	X	X	X
Newman *et alii* (2023)	X	X	X	X	X	X	X	X	X	X	X	X
Paulus *et alii* (2016a)	X	X	X	X	X	X	X	X	X	X	X	X
Paulus *et alii* (2016b)	X	X	X	X	X	X	X	X	X	X	X	X
Peris-Baquero *et alii* (2023)	X	X	X	X	X	X	-	-	X	X	X	X
Ramdhonee-Dowlot *et alii* (2021)	X	X	X	X	X	X	X	X	X	X	X	X
Sandín *et alii* (2021)	X	X	X	X	X	X	X	X	X	X	X	X
Sandín *et alii* (2020)	X	X	X	X	X	X	X	X	X	X	X	X
Sherman & Ehrenreich-May (2020)	X	X	X	X	X	X	X	-	X	X	X	X
Tobon *et alii* (2020)	X	X	X	X	X	X	X	X	X	X	X	X
Tonarely *et alii* (2021)	X	X	X	X	X	X	X	X	X	X	X	X
Tull *et alii* (2018)	X	X	X	X	X	X	X	X	X	X	X	X
Weiss *et alii* (2018)	X	X	X	X	X	-	X	X	X	X	X	X
Wirtz *et alii* (2014)	X	X	X	X	X	X	X	X	X	X	X	X
Zemestani *et alii* (2024)	X	X	X	X	X	X	X	X	X	X	X	X
Zemestani *et alii* (2017)	X	X	X	X	X	X	X	X	X	X	X	X

The results of this review reveal significant heterogeneity in the clinical composition of the samples, although they share the common objective of identifying the emotional regulation mechanisms underlying anxiety disorders. Despite the transdiagnostic nature of the articles analyzed, their results vary depending on the type of anxiety disorder being evaluated. Thus, to facilitate an organized synthesis of the findings, the included studies were classified according to the types of anxiety disorder they covered (Table 4),

Table 4. Classification of studies by type of anxiety disorder included.

Anxiety disorders included	Studies
Generalized Anxiety Disorder	Klein *et alii* (2023) Muñoz-Navarro *et alii* (2022)
Generalized Anxiety Disorder Social Anxiety	Abasi *et alii* (2018) Nazari *et alii* 2020) Newman *et alii* (2023)
Generalized Anxiety Disorder Panic Disorder	Corpas *et alii* (2022) Gökdağ *et alii* (2023) Kananian *et alii* (2017) Muñoz-Navarro *et alii* (2021)
Panic Disorder, Social Anxiety, and other Unspecified Disorder	Hosogoshi *et alii* (2020) Ito *et alii* (2016)
Generalized Anxiety Disorder Social Anxiety Panic disorder	Ellard *et alii* (2017) Henry *et alii* (2015) Khakpoor *et alii* (2019) Kivity *et alii* (2019); Mahmoodi *et alii* (2020) Tobon *et alii* (2020) Tull *et alii* (2018) Zemestani *et alii* (2017)
Samples of adults. More than three types of anxiety disorders included.	Anderson *et alii* (2021) Daros & Ruocco (2021) Feurer *et alii* (2021) Grill *et alii* (2017) Mares *et alii* (2024) Neacsiu *et alii* (2014) Neacsiu *et alii* (2015); Paulus *et alii* (2016a) Peris-Baquero *et alii* (2023); Wirtz *et alii* (2014)
Samples of children and adolescents. More than three types of anxiety disorders included.	Espinosa *et alii* (2024) Fernandes *et alii* (2023); Keil *et alii* (2017 Kennedy *et alii* (2022) Paulus *et alii* (2016b) Ramdhonee-Dowlot *et alii* (2021) Sandín et alii (2021) Sandín *et alii* (2020 Sherman & Ehrenreich-May (2020) Tonarely *et alii* (2021) Weiss et *et alii* (2018) Zemestani *et alii* (2024)

thereby allowing us to discern whether difficulties in emotional regulation act uniformly or in a disorder-specific manner depending on the type of anxiety disorder.

First, in one of the two studies that assessed/included only participants who met the diagnostic criteria for generalized anxiety disorder (Muñoz Navarro *et alii*, 2022), the importance of rumination was highlighted as the quintessential maladaptive emotional regulation strategy, serving as the central mechanism explaining the persistence of this disorder over time. On the other hand, in one of the studies that assessed/included only subjects with generalized anxiety disorder or social anxiety disorder (Newman *et alii*, 2023), it was observed that these subjects maintained significantly higher levels of emotional contrast avoidance (ECA) than subjects without any type of anxiety disorder, with ECA being considered a maladaptive emotional regulation strategy. Regarding studies that assessed/included subjects with generalized anxiety disorder or panic disorder, Corpas *et alii* (2022) found that cognitive reappraisal and emotional suppression strategies served as predictors of therapeutic change, while, according to Muñoz-Navarro *et alii* (2021), the maladaptive emotional regulation strategies of catastrophizing and rumination positively predicted symptoms of generalized anxiety and panic, whereas the adaptive strategy of positive refocusing negatively predicted symptoms of these two disorders. With regard to the two studies that assessed/included participants who met the diagnostic criteria for panic disorder, social anxiety disorder, or another unspecified anxiety disorder, Hosogoshi *et alii* (2020) found that only a lower level of emotional

suppression prior to treatment predicted a greater degree of improvement in anxiety symptoms. Regarding studies that assessed/included subjects with generalized anxiety disorder, social anxiety, or panic disorder, a notable finding was reported by Khakpoor *et alii* (2019), according to which changes in emotional regulation difficulty accounted for 53.3% of the variance in changes in anxiety scores, with the remaining variance explained by intolerance of uncertainty and experiential avoidance.

The remaining studies were classified into two categories: studies with samples of adults that assessed/included more than three types of anxiety disorders, and studies with samples of children and adolescents that assessed/included more than three types of anxiety disorders.

Regarding the first category, differential results were found in the studies conducted by Anderson *et alii* (2021), Feurer *et alii* (2021), and Mares *et alii* (2024). Thus, Anderson *et alii* (2021) found a statistically significant correlation between self-reported emotional regulation dimensions and the severity of symptoms of all assessed disorders; however, upon introducing neuroticism as a covariate, the only dimensions that maintained a significant correlation with generalized anxiety and social anxiety were negative thinking and emotional suppression. On the other hand, in the study by Feurer *et alii* (2021), it was found that, using symptomatic change as a control variable when analyzing the relationship between improved emotional regulation and reduced anxiety symptoms, the main effects of time were maintained for both the reappraisal strategy and the emotional suppression strategy. In contrast, the interaction between the group (psychotropic medications vs. CBT) and time, proved significant for reappraisal, with a higher value in the CBT group. Finally, in the study conducted by Mares *et alii* (2024), it was observed that difficulty in emotional regulation significantly mediated the relationship between adverse childhood experiences and anxiety symptoms in the disorders evaluated.

Finally, differential results were found in most studies involving child and adolescent samples that assessed/included more than three types of anxiety disorders. Thus, Espinosa *et alii* (2024), Sandín *et alii* (2020), and Sherman & Ehrenreich-May (2020) found that the reduction in anxiety symptoms in the disorders included was accompanied by an improvement in emotional avoidance strategies. On the other hand, according to Fernandes *et alii* (2023), in addition to emotional regulation strategies, executive functions were also able to predict participants' anxiety problems. In the study conducted by Keil *et alii* (2017), a statistically significant relationship was found between the social anxiety of the children evaluated and the reappraisal strategy implemented by their parents, and between the anxiety symptoms of the other children and their parent´s cheerfulness. In a study by Kennedy *et alii* (2022), it was observed that, following treatment, the emotionally dysregulated and avoidant profiles exhibited significantly higher total anxiety scores than the expressive and tolerant regulated profiles. The study by Ramdhonee-Dowlot *et alii* (2021) found that improvement in all assessed anxiety disorders was accompanied by improvement in all emotional regulation strategies except the adaptive strategy of perspective-taking. Sandín *et alii* (2021) found that only acceptance/tolerance, rumination, and emotional suppression significantly predicted anxiety symptoms in the evaluated disorders. Tonarely *et alii* (2021) observed a decrease in anxiety symptoms among the parents of teenagers, accompanied by an improvement in their reappraisal strategy. However, the reduction in anxiety levels among adolescents did not substantially improve their emotional regulation. Finally, the study by Zemestani *et alii* (2024) observed that the intervention group showed improvements in anxiety symptoms over time compared to the control group. These improvements were accompanied by specific enhancements in reappraisal and emotional suppression strategies.

DISCUSSION

The objective of this review was to conduct an updated analysis of the extant scientific literature on the role of emotional regulation as a transdiagnostic process underlying the various disorders categorized as anxiety disorders by the DSM-5. The findings indicated a correlation between fluctuations in anxiety symptoms and emotional regulation. This association was substantiated by studies examining the relationship between emotional regulation and anxiety symptoms. These studies demonstrated that fluctuations in anxiety symptoms were influenced by alterations in emotional dysregulation or the adoption of adaptive or maladaptive emotional regulation strategies.

In this regard, the existing literature suggests that emotion regulation significantly contributes to anxiety symptoms. However, other transdiagnostic processes have also been identified as contributing to symptoms of different anxiety disorders, as observed in studies by Anderson *et alii* (2021), Fernandes *et alii* (2023), and Khakpoor *et alii* (2019). These results are consistent with previous research demonstrating a statistically significant relationship between the transdiagnostic process of perfectionism and generalized anxiety disorder (Handley, Egan, Kane, & Rees, 2014) or social anxiety disorder (Shikatani, Antony, Cassin, & Kuo, 2016), among others. Similarly, Gallagher *et alii* (2020) identified a significant relationship between the transdiagnostic process of hope and self-reported anxiety among participants with a history of various anxiety disorders, including panic disorder with or without agoraphobia, generalized anxiety disorder, and social anxiety disorder.

Conversely, the dearth of studies examining the impact of emotional regulation on comorbidity between different anxiety disorders underscores the need for further research in this area. This is due to the fact that the majority of transdiagnostic studies that have investigated the comorbidity of anxiety disorders have been conducted by examining the coexistence of these disorders with other emotional conditions, such as depressive disorders (Norton, Provencher, Kilby, & Roberge, 2021) or obsessive-compulsive disorder (Besharat, Atari, & Mirjalili, 2019). In addition, more transdiagnostic studies are needed, such as the one conducted by Zemestani *et alii* (2024), which incorporate disorders recently included in the DSM-5 anxiety disorder category, such as selective mutism. This would facilitate the examination of whether emotional regulation remains a significant transdiagnostic process, despite the changes that have occurred in this diagnostic category.

Furthermore, despite the transdiagnostic nature of the reviewed studies, their results demonstrate that various forms of emotional regulation -whether functional or dysfunctional- have a differential impact on different anxiety disorders. These findings are consistent with previous studies, such as that by Aldao, Nolen-Hoeksema, & Schweizer (2010), which found that generalized anxiety disorder was most strongly associated with the maladaptive emotional regulation strategy of rumination, among anxiety disorders. They also align with the findings of Hofmann & Asnaani (2010), who found that social anxiety disorder was more strongly associated with the maladaptive strategy of expressive suppression than with the other analyzed forms of emotional regulation. This suggests the need for further research on this topic in order to obtain new statistically significant findings.

In summary, although not all the studies reviewed analyzed the relationship between emotional regulation and the symptoms of the different anxiety disorders evaluated, it can be concluded that, despite the existence of potential modulating variables, the results found have provided evidence about the relationship between emotional regulation, seen as a transdiagnostic process, and anxiety disorders. However, a paucity of studies

analyzing the effect of emotional regulation on comorbidity among different anxiety disorders was noted.

The most frequent limitations of the reviewed studies were the utilization of self-reports to assess emotional regulation and anxiety symptoms, the employment of outdated assessment instruments, the characteristics of the samples, the failure to assess all possible emotional regulation strategies, the limitations inherent in the type of design used by the studies, and the difficulty in generalizing the obtained results. Furthermore, the extant studies have been unable to demonstrate with any degree of certainty whether changes in emotional regulation precede changes in anxiety symptoms or vice versa.

Finally, the employment of a systematic and structured search methodology, in conjunction with a review of recently published studies, constitutes a significant strength of this study. However, it should be noted that the present review is limited by its reliance on a restricted number of databases.

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