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Applications and efficacy of radically open dialectical behavior therapy (RO DBT): A systematic review of the literature

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Abstract

Radically open dialectical behaviour therapy (RO DBT) is a transdiagnostic treatment, originally developed as a variant of dialectical behaviour therapy (DBT), that emerged as a novel treatment approach for those presenting with excessive or maladaptive overcontrol. Despite RO DBT's growing popularity among clinicians as a treatment for chronic depression, personality disorders and eating disorders, to date, no systematic review has been conducted to summarise the evidence on this therapy. Therefore, the aim of this study was to systematically review the literature to provide a current and comprehensive summary of the available evidence on the clinical applications and efficacy of RO DBT. Articles were included if they were original research studies that described the use of RO DBT in the treatment of any psychological disorder, condition or symptom, published in the English language in a peer-reviewed journal. Four electronic databases were searched, and screening, selection, risk of bias assessment and data extraction were all conducted by two independent reviewers. Fourteen articles were included in this review,

including two qualitative articles, one case study, five case series studies, four quasi-experimental studies, and two articles describing one randomized control trial. Findings indicated there is emerging evidence for the use of RO DBT in both adolescents and adults, for disorders characterized by excessive self-control, such as anorexia nervosa and autism, as well as for treatment-resistant depression. While RO DBT shows promise as a treatment for disorders of overcontrol, further research is needed. This review outlines current gaps and identifies areas for future research.

KEYWORDS

dialectical behavior therapy, disorder, radically open, RO DBT, systematic review, treatment

Radically open dialectical behavior therapy (RO DBT; Lynch et al., 2013; Lynch, 2018) is a transdiagnostic therapy that emerged from the popular third-wave behavior therapy, dialectical behavior therapy (DBT; Linehan, 1993). Originally developed to treat chronic suicidality and borderline personality disorder (BPD), DBT has since been utilized to treat varied disorders characterized by lack of self-control, emotional dysregulation, or impulsivity, such as binge eating disorder (BED), bulimia nervosa (BN), and substance use disorders (Linehan, 2015). However, a growing body of literature has signalled a curvilinear relationship between self-control and psychological wellbeing, whereby excessive self-control can likewise cause distress and dysfunction (Gilbert et al., 2020).

RO DBT emerged as an alternative approach to traditional DBT for those presenting with disorders associated with overcontrol, with the central premise that this excessive self-control can become maladaptive (Lynch et al., 2013; Lynch, 2018). Maladaptive overcontrol has been associated with decreased openness, increased emotional inhibition, hyper-perfectionism, social isolation, and interpersonal dysfunction (Gilbert & Codd, 2022; Lynch et al., 2015). Although many of the core principles of RO DBT are similar to DBT, it also evolved to diverge in its principles, and therapeutic targets and strategies (Lynch et al., 2013).

Informed by empirical research on the increased presence of clinically significant overcontrol, Lynch and colleagues adapted DBT to instead target this construct (Lynch et al., 2013). Whilst the primary focus of DBT was intrapersonal, centered around emotional regulation, and radical acceptance, RO DBT instead focuses on the interpersonal, social signalling and connection, and radical openness (Lynch et al., 2015). This novel adaptation was first formally described whilst evaluating the effectiveness of RO DBT for anorexia nervosa (AN) in adults (Lynch et al., 2013). Since then, RO DBT has been theoretically and clinically useful in targeting a range of disorders and behaviors that present particular challenges to both treatment-seeking individuals and clinicians alike. These severe or enduring conditions include AN, chronic depression, obsessive-compulsive personality disorder (OCPD), and autism spectrum disorder (ASD; Gilbert & Codd, 2022).

RO DBT is based on a neurobiosocial theory of overcontrol, whereby maladaptive overcontrol is hypothesized to develop from a combination of bio-temperamental or genetic factors, environmental influences, and coping through self-control tendencies (Lynch et al., 2015). Individuals with heightened overcontrol tend to experience higher threat sensitivity, and as a consequence often avoid situations which may involve social threats (Lynch et al., 2015). This avoidance often interferes with the formation of relationships, social connectedness, and new

learning (Gilbert & Codd, 2022; Lynch et al., 2015). A primary assumption of RO DBT is that individuals require emotional connection and expression for formation of healthy relationships, and to increase overall psychological wellbeing. In theory and in accordance with a myriad of empirical research, emotional wellbeing involves openness, flexibility and social connectedness (Gilbert & Codd, 2022). Thus, the core mechanism for therapeutic change is reducing the emotional loneliness that typically results from maladaptive social signalling and low openness (Gilbert & Codd, 2022), by targeting deficits in social signalling.

RO DBT treatment is based on the core principle of "radical openness," where individuals are encouraged to become open to self-inquiry, learning from corrective feedback, vulnerability to self and others, leaning into uncomfortable emotions, and practice increased relaxedness, spontaneity, and freedom of expression and behavior (Gilbert et al., 2020; Lynch et al., 2015). It is a manualized treatment program, which typically reflects the structure of standard DBT (30 weeks), involving both group skills classes and individual therapy and an additional option of phone coaching (Lynch, 2018). It aims to address five primary areas for skills development that target maladaptive overcontrol; (1) overly cautious behavior and hyperfocus on detail, (2) behavioral rigidity, (3) emotional inhibition, (4) low social connectedness, and (5) tendency towards social comparison (Gilbert et al., 2020; Lynch et al., 2015).

RO DBT aims to target a spectrum of disorders with genotypic and phenotypic similarities, that is those that are characterized by excessive and maladaptive overcontrol, and thus has the potential for high transdiagnostic utility. In terms of the empirical evidence for the effectiveness of this novel treatment, several seminal studies and key pieces of translational research have highlighted its promise. The effectiveness of RO DBT has been compared to a treatment-as-usual control in a sample of individuals with depression, other comorbid conditions, and who had been nonresponsive to medication (Lynch et al., 2020). This trial highlighted the promising outcomes of RO DBT, given the significantly greater reductions in depressive symptoms posttreatment compared to the control group (Lynch et al., 2020).

Further, an initial uncontrolled study in a sample of adults with AN restrictive subtype was conducted to assess the feasibility and outcomes of an adapted inpatient RO DBT program (Lynch et al., 2013). Outcomes from this feasibility study indicated that RO DBT resulted in reductions in eating disorder (ED) symptomatology, including weight gain and ED quality of life (Lynch et al., 2013). Although, these studies outline the promise of this novel treatment approach, to date there is no systematic summary of all of the available evidence, to draw conclusions about the state of the evidence for RO DBT as a transdiagnostic treatment for maladaptive overcontrol, or for any psychological condition more specifically.

There are numerous recent systematic reviews of the evidence for DBT, including those specific to the evidence for the use of DBT in treating anger and aggressive behavior (Ciesinski et al., 2022), alexthymia (Salles et al., 2023), substance use disorder (Warner & Murphy, 2022), adolescent self-harm and suicidal ideation (Kothgassner et al., 2021), adolescents with BPD (Wong et al., 2019), bipolar disorders (Jones et al., 2023), and EDs in both adults and adolescents (Ben-Porath et al., 2020; Vogel et al., 2021). However, to the authors' knowledge, there are currently no systematic reviews outlining the use of RO DBT in the treatment of any specific symptom profile, condition, or outlining its effectiveness more generally. One narrative review has outlined the theoretical background underpinning the treatment approach, as well as giving a brief review of literature testing the efficacy of RO DBT in clinical populations (Gilbert et al., 2020). However, the aim of the article was to introduce RO DBT as a novel treatment approach, highlight its theoretical foundations, and give the first narrative review of the empirical literature. Thus, no systematic review has been conducted to date examining the existing evidence for the clinical uses of RO DBT. The recent rise in applications of this treatment across several disorders characterized by excessive and maladaptive overcontrol certainty warrants a clear and comprehensive summary of the available empirical evidence.

Given the broad theoretical and clinical applications across a variety of disorders and presentations, it is essential that the literature is systematically reviewed to provide a current and comprehensive update on the treatment applications and efficacy of RO DBT. This review aimed to examine the available literature and draw conclusions about the current state of the evidence for the clinical use of RO DBT, with the hope that this will

provide thorough guidance on the benefits, limitations, and future directions for its use in clinical research and practice.

1 | METHOD

1.1 | Search strategy

Preferred Reporting Items for Systematic Reviews and Meta-analyses (PRISMA) guidelines were followed throughout this review (Page et al., 2021). A systematic review protocol was registered using the International Prospective Register of Systematic Reviews (PROSPERO; CRD42023487592). Four electronic databases (PsycINFO, MedLine, Embase, and Web of Science) were utilized to conduct an extensive search, using keywords "radically open dialectical behavior/behavior therapy," "RO DBT" and "RO-DBT." Limits were imposed restricting the search to the English language, though no limits were imposed based on publication period. The formal search strategy can be accessed alongside the protocol registered on PROSPERO. After initial searches, informal searches were conducted on Google Scholar and by searching the reference lists of included studies and previous narrative reviews, to identify any potentially relevant articles. Unpublished studies were not sought or included. Searches were run again before final analysis on January 22, 2024.

1.2 | Inclusion and exclusion criteria

Inclusion criteria:

1. Original research describing the use of RO DBT in the treatment of any disorder (as diagnosed using recognised diagnostic criteria), psychological condition or symptomatology.
2. All study designs, including but not limited to randomized trials, quasi-experimental designs, observational studies, case studies, etc.
3. Published in the English language.
4. Study published in a peer-review journal.

  Exclusion criteria:

1. Article did not describe original research utilizing RO DBT in the treatment of any disorder or psychological condition.
2. Not published in the English language.
3. Articles that do not contain original research, such as narrative or systematic reviews and meta-analyses.
4. Book chapters, non-peer-reviewed publications, or unpublished doctoral theses.

1.3 | Selection process

Articles were screened and selected independently by both authors at all stages of the review. After articles were identified using the four outlined electronic databases, duplicates were removed automatically using the Covidence systematic review management tool and manually throughout the title and abstract screening stage. Articles were screened by title and abstract for inclusion/exclusion, resulting in an inter-rater agreement (Kappa) between the two reviewers of $\kappa = 0.81$, equating to an overall agreement of 96.8%.

Full texts were retrieved and both reviewers independently screened texts for eligibility.

Consensus was reached between the two authors about the studies eligible for data extraction. The full-text screening inter-rater agreement (Kappa) was $\kappa = 1.00$, equating to an overall agreement of 100%.

1.4 | Risk of bias/quality appraisal

To inform data extraction, synthesis and the overall interpretation of the results, a risk of bias assessment was conducted for each included article. This assessment was conducted independently by both reviewers, using the relevant JBI critical appraisal tool for each study design (Munn et al., 2023). These tools were the checklists for qualitative research (Lockwood et al., 2015), case reports (Moola et al., 2020), case series (Munn et al., 2020), quasi-experimental research (Tufanaru et al., 2020), and randomized controlled trials (Tufanaru et al., 2020). Consensus was reached between authors regarding disagreements in the risk of bias assessment. The inter-rater agreement (Kappa) between the two reviewers was $\kappa = 0.67$, equating to an overall agreement of 87.1%.

1.5 | Data extraction and synthesis

For each article, study design, population/sample, treatment, participant demographics, baseline characteristics, variables measured, treatment effects, and/or outcomes reported will be extracted and reported. In the cases of missing data or information, authors will be contacted to obtain the missing information. At the time of finalising review outcomes, any missing information will be reported as "N/A." Outcomes were included but not limited to changes in diagnostic status, psychological condition, relevant symptomatology, or otherwise as reported. Quantitative data synthesis strategies were not planned or applied, due to the expected heterogeneity in included study populations and designs (Campbell et al., 2020), and preliminary searches which indicated there may not be sufficient studies to conduct meta-analyses. Following Cochrane SWiM guidelines, data extraction was conducted using narrative synthesis methods for synthesis without meta-analysis (Campbell et al., 2020).

2 | RESULTS

2.1 | Results of search strategy

The initial search identified 234 potential studies. After removal of 47 duplicates, this resulted in 187 potential studies, of which 12 were considered to have met inclusion criteria. Four additional studies were identified by cross-checking reference lists for articles of interest and searching Google Scholar, of which two were eligible for inclusion. Altogether, 14 studies were eligible for inclusion (See Figure 1 for the entire selection process).

2.2 | Description of included studies

Fourteen studies were included in this review, where two studies each had two articles published on its findings (See Table 1). Most studies were conducted in the United Kingdom (UK), with the remaining in Ireland, the United States (US), Sweden, and Canada. Included were two qualitative studies (Baudinet et al., 2022; Isaksson, Ghaderi, Wolf-Arehult, et al., 2021), one case study (Little & Codd, 2020), five case series (Baudinet et al., 2020; Baudinet et al., 2021; Chen et al., 2015; Isaksson, Ghaderi, Ramklint, et al., 2021; Johnson et al., 2023) four
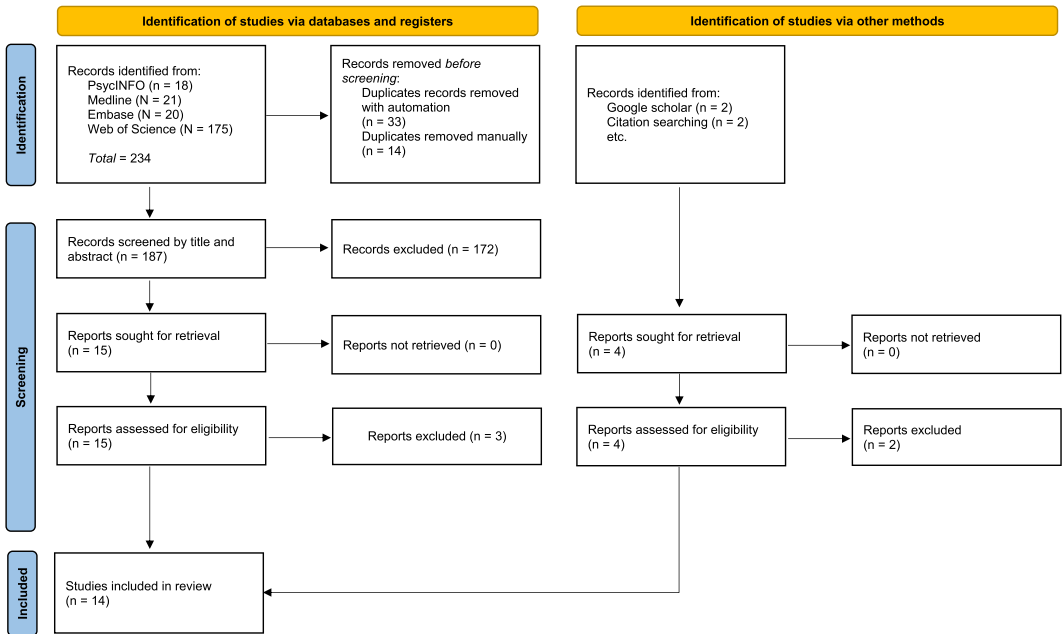
FIGURE 1 The Preferred Reporting Items for Systematic Reviews and Meta-Analyses diagram of study identification, screening and selection (PRISMA; Page et al., 2021).

quasi-experimental studies (Cornwall et al., 2022; Egan et al., 2021; Keogh et al., 2016; Lynch et al., 2013), and two RCT articles (reporting on the same RCT; Gilbert et al., 2023; Lynch et al., 2020).

Five articles described adults with AN (two of which were from the same sample; Chen et al., 2015; Isaksson, Ghaderi, Ramklint, et al., 2021; Isaksson, Ghaderi, Wolf-Arehult, et al., 2021; Little & Codd, 2020; Lynch et al., 2013), two articles described adults with treatment-refractory depression (from the same sample; Gilbert et al., 2023; Lynch et al., 2020), three described adult samples with maladaptive overcontrol (Cornwall et al., 2022; Egan et al., 2021; Keogh et al., 2016), one utilized a sample of college students and their clinicians (Johnson et al., 2023), two had a sample of adolescents with AN (Baudinet et al., 2022) or restrictive EDs (Baudinet et al., 2020), and one study a population of adolescents with overcontrolled personality traits (Baudinet et al., 2021). Included studies utilized variations of RO DBT treatment plans, including standard RO DBT (individual and skills sessions; Baudinet et al., 2022; Chen et al., 2015; Cornwall et al., 2022; Isaksson, Ghaderi, Ramklint, et al., 2021), inpatient treatment with RO DBT skills classes (Baudinet et al., 2020; Egan et al., 2021; Lynch et al., 2013), RO DBT adapted for adolescents (Baudinet et al., 2021), skills only RO DBT (Keogh et al., 2016), and standard RO DBT with adjunct medication (Gilbert et al., 2023; Lynch et al., 2020).

2.3 | Risk of bias/quality appraisal

To evaluate the risk of bias for included studies, the aforementioned JBI Appraisal Checklists were utilized. Both qualitative studies had congruity between their research methodology and their stated philosophical perspective, research question, methods used to collect data, data analysis, and interpretation of their results (Baudinet et al., 2022; Isaksson, Ghaderi, Wolf-Arehult, et al., 2021). Further, both studies located the researcher theoretically, addressed the influence of the researcher on the research, adequately represented the participants' voices,

TABLE 1 Description of included studies.

Study	Country	Design	N	Population/sample	Gender (% female)	Age (SD)	Treatment
Baudinet et al. (2020)	UK	Case series	131	Adolescents with restrictive EDs	94.62%	15.02 (1.52) (range 11–18)	ITP (varied treatment lengths) including: RO DBT group skills class (2.5 h p/w) CBT group therapy (1.5 h p/w) CRT group therapy (45 min p/w) Art therapy (1 h p/w)
Baudinet et al. (2021)	UK	Case series	28	Adolescents with overcontrolled personality traits MDD = 78.6% EDs = 78.6%	92.90%	16.00 (N/A) (range 13–18)	RO-A (20 weekly 1.5 h skills classes and weekly 1 h individual sessions)
Baudinet et al. (2022)	UK	Qualitative	25	Adolescents AN = 52%	86.70%	16.00 (1.30) (range 14–17)	RO DBT (weekly 1.5 h skills class and 1 h individual session, with mean length of treatment = 28.6 weeks)
Chen et al. (2015)	US	Case series 1: DBT Case series 2: DBT +RO skills module	15	Adults with AN	100%	Case series 1: 32.30 (10.25) Case series 2: 27.56 (10.31)	Case series 1: Standard individual DBT (mean months = 10.7 [7.3]) Case series 2: Standard individual DBT + augmented RO skills module (mean months = 8 [3.2])
Egan et al. (2021)	Ireland	Single group (quasi) experimental	14	Adult psychiatric patients with overcontrol	42.90%	44.40 (12.80) (range 18–58)	Group RO (26 [11 weeks of twice weekly] 3 h sessions)
Cornwall et al. (2022)	UK	Single group (quasi) experimental	48	Adults with maladaptive overcontrol ASD = 47.9%	Treatment completers: 61.90% Treatment non-completers: 51.85%	Treatment completers: 40.67 (13.33) (range 20–58) Treatment non-completers: 36.11 (13.05) (range 18–59)	RO DBT (30 weekly 1 h individual session and 2.5 h weekly skills training)

(Continues)

TABLE 1 (Continued)

Study	Country	Design	N	Population/sample	Gender (% female)	Age (SD)	Treatment
Gilbert et al. (2023)	UK	RCT: RO DBT+TAU vs. TAU alone	250	Adults with treatment-refractory depression	65%	47.20 (11.50)	RO DBT (29 weekly 1 h individual sessions and 27 weekly 2.5 h group-based skills classes + antidepressant medication) TAU (psychotherapy + antidepressant medication)
Isaksson, Ghaderi, Ramklint, et al. (2021)	Sweden	Case series	13	Adults with AN	100%	N/A (N/A) (range 18–45)	RO DBT (40 weekly individual and group skills sessions)
Isaksson, Ghaderi, Wolf-Arehult, et al. (2021)[a]	Sweden	Qualitative	11	Adults with AN	100%	25.00 (6.02) (range 18–41)	RO DBT (40 weekly individual and group skills sessions)
Johnson et al. (2023)	US	Case series	11 7	College students RO DBT clinicians	64% N/A	20.90 (1.76) (range 19–25) N/A	RO DBT comprehensive (1.5 h skills class, and 1 h individual therapy) RO DBT skills class (1.5 h weekly) RO DBT individual (1 h weekly)
Keogh et al. (2016)	Ireland	Non-randomised controlled trial: RO+TAU vs. TAU alone	117	Adult psychiatric patients with over-control	RO: 48.30% TAU: 55.80%	RO: 41.76 (13.29) TAU: 41.52 (12.64)	RO group skills (two × 3 h group sessions for 9 weeks) TAU (multi-disciplinary treatment)
Little and Codd (2020)	Canada	Case study	1	Adult with AN	0%	40 (N/A)	RO DBT (30 weekly individual and skills sessions)
Lynch et al. (2013)	UK	Single group (quasi) experimental	47	Adults with AN-R	Treatment completers: 94.10% Treatment non-completers: 100%	Treatment completers: 29.65 (12.33) (range 17–64) Treatment non-completers: 24.77 (7.66) (range 17–43)	Inpatient RO DBT (weekly individual and group skills sessions, with mean length of treatment = 21.7 weeks)

TABLE 1 (Continued)

Study	Country	Design	N	Population/sample	Gender (% female)	Age (SD)	Treatment
Lynch et al. (2020)[b]	UK	RCT: RO DBT+TAU vs. TAU alone	250	Adults with treatment-refractory depression	65%	47.20 (11.50)	RO DBT (29 weekly 1 h individual sessions and 27 weekly 2.5 h group-based skills classes + antidepressant medication) TAU (psychotherapy + antidepressant medication)

Abbreviations: AN, anorexia nervosa; AN-R, anorexia nervosa restrictive subtype; ASD, autism spectrum disorder; CBT, cognitive behavioral therapy; CRT, cognitive remediation treatment; EDs, eating disorders; ITP, intensive treatment program; MDD, major depressive disorder; N/A, not applicable; RCT, randomised control trial; RO-A, radically open dialectical behavior therapy for adolescents; RO DBT, radically open dialectical behavior therapy; US, United States; TAU, treatment-as-usual; UK, United Kingdoms.

[a]Same sample as in Isaksson, Ghaderi, Ramklint, et al. (2021)

[b]Same sample as in Gilbert et al. (2023)

conducted research ethically, and drew conclusions appropriately from the data (Baudinet et al., 2022; Isaksson, Ghaderi, Wolf-Arehult, et al., 2021).

The included case study described the patient's demographic characteristics, history, and clinical condition clearly, as well as described assessment methods, interventions and postintervention clinical condition, and no adverse events identified or described (Little & Codd, 2020). Four of five case series had clear inclusion criteria, measured the condition in a reliable way for all participants, utilized valid methods for identification of the condition for all participants, had consecutive and complete inclusion of and reported the demographics and clinical information for all participants, clearly reported outcomes, and used appropriate statistical analyses (Baudinet et al., 2020; Baudinet et al., 2021; Chen et al., 2015; Isaksson, Ghaderi, Ramklint, et al., 2021). However, one case series did not set clear criteria for participant inclusion, did not measure conditions in a standard manner, utilize valid methods for identification of the condition, nor did it have consecutive and complete inclusion of participants (Johnson et al., 2023). This study was ultimately retained for data extraction given its unique primary aim of assessing clinicians' experiences of RO DBT treatment in a college setting. However, its limitations were considered in the discussion of its outcomes.

Keogh et al. (2016) quasi-experimental study clearly described the relationship between the independent and dependent variables, utilized a control group with participants with similar characteristics and similar care (besides the intervention of interest), completed follow-up, measured outcomes in a reliable manner and used appropriate statistical analyses. The remaining three quasi-experimental studies clearly described the relationship between the independent and dependent variables, measured outcomes reliably and used appropriate data analysis methods, however, were all single-group studies which did not utilize a control group (Cornwall et al., 2022; Egan et al., 2021; Lynch et al., 2013). Only Keogh et al. (2016) and Egan et al. (2021) included follow-up. None of the four quasi-experimental studies conducted multiple measurements of the outcomes both pre- and post-intervention.

The two articles describing the RCT utilized randomisation, concealed allocation to treatment groups, treated groups similarly at baseline, completed follow-up, outcomes were measured and analyzed in a valid and reliable manner, and the trial design was appropriate (Gilbert et al., 2023; Lynch et al., 2020). Although participants were not blind to their treatment assignments, nor were those delivering treatment assignments; this was considered standard practice in this type of trial. However, it was unclear whether outcome assessors were blind to treatment assignment or if groups were treated identically other than the intervention of interest (e.g., treatment length). It was ultimately assessed that there was low risk for bias in each of the 14 studies eligible for inclusion, and thus data was extracted from all eligible studies, with their limitations being considered in interpreting all outcomes.

2.4 | Outcomes

2.4.1 | Eating disorder symptomatology

The outcomes of a single-group experimental study in a sample of adults with AN-R, who took part in an inpatient RO DBT program, indicated posttreatment increases in body mass index (BMI), increases in some indices of wellbeing and quality of life, as well as reductions in ED symptomatology, such as restriction, weight, shape, and eating concerns (Lynch et al., 2013). Outcomes were similar for both treatment completers and noncompleters, and more than half of each of these subgroup samples contained individuals in full remission posttreatment (Lynch et al., 2013). Several case series and case studies indicated similar outcomes, such as posttreatment increases in BMI, perception of social safeness and pleasure, regaining menses, reductions in ED symptomatology and perfectionism, as well as many individuals in full and partial remission, with many of these outcomes maintained at follow-up (Chen et al., 2015; Isaksson, Ghaderi, Ramklint, et al., 2021; Little & Codd, 2020). Qualitative data signalled that adults with AN expressed that RO DBT treatment was comprehensive, had benefits for connecting with others, growing trust, moving towards some valued goals, and overall felt they had done well in treatment (Isaksson, Ghaderi, Wolf-Arehult, et al., 2021).

In adolescents with restrictive EDs, one case series evidenced posttreatment reductions in ED symptomatology, depressive symptoms, cognitive inflexibility, perceived isolation and withdrawal and suppression of emotional expression, as well as increases in pleasure, reward responsiveness and social connectedness (Baudinet et al., 2020). Further, qualitative data have outlined several key themes identified by adolescents with AN posttreatment, including that RO DBT broadened their horizons, and increased connection building and flexibility, although also felt an information overload throughout treatment (Baudinet et al., 2022).

2.4.2 | Depressive symptomatology

One RCT compared outcomes between RO DBT (including adjunct antidepressant medication) and a treatment-as-usual (TAU) control in a sample of adults with treatment-refractory depression (Gilbert et al., 2023; Lynch et al., 2020). Results of this trial indicated that compared to baseline, the RO DBT group had significantly lower depressive symptoms compared to TAU group at 7 months, but not at 12 or 18 months (Lynch et al., 2020). Further, outcomes showed higher psychological flexibility, interpersonal functioning, and emotional coping in the RO DBT group compared to TAU. However, there were low full remission rates and some serious adverse effects reported in both groups, though no reports led to withdrawal from the trial. Outcomes also indicated that the decrease in psychological inflexibility over time mediated the reduction in depressive symptomatology in the RO DBT group, but not in the TAU group (Gilbert et al., 2023).

2.4.3 | Transdiagnostic symptomatology

Several included studies utilized samples of adults with maladaptive overcontrol. One nonrandomized controlled trial, which compared RO group skills to a TAU control group, indicated that the RO group had greater reductions in overall psychopathology, dysfunctional coping, and desire for structure, as well as greater increases in coping skills, social safeness and pleasure, compared to control (Keogh et al., 2016). Two single-group experimental studies indicated similar decreases in global distress, obsessive-compulsive symptoms, anxiety, need for structure, and increases in functioning, wellbeing, perception of recovery, as well as closeness and ability to depend on others when needed (Cornwall et al., 2022; Egan et al., 2021). Some of these outcomes were maintained at follow-up (Egan et al., 2021). A subsample of adults with ASD also displayed greater reductions in global distress and risk and increases in perception of recovery, wellbeing and functioning compared to the non-ASD participants (Cornwall et al., 2022).

Similarly, in adolescents with overcontrolled personality traits, RO DBT resulted in reductions in suppression of emotional expression, cognitive inflexibility, perceived social withdrawal, discomfort and avoidance, depressive symptoms, ED symptomatology, and self-harm behaviors (Baudinet et al., 2021). Further, this case series described posttreatment increases in reward responsiveness, social connectedness and confidence (Baudinet et al., 2021). One study described the perspectives of clinicians who delivered variations of RO DBT on a college campus (Johnson et al., 2023). Clinicians rated comprehensive RO DBT (individual and skills group) as more effective than other variations but rated individual RO DBT as more feasible and suitable as compared to comprehensive RO DBT or group skills RO DBT (Johnson et al., 2023).

3 | DISCUSSION

The current systematic review aimed to examine the applications and efficacy of RO DBT, to draw conclusions about the current state of the evidence for its use in specific disorders and as a transdiagnostic therapy, in the treatment of excessive or maladaptive overcontrol. The review identified 14 studies that met inclusion criteria that were eligible for data extraction and synthesis, including two qualitative studies, one case study, five case series, four quasi-experimental studies, and two studies describing one RCT. Table 2.

TABLE 2 Outcomes of included studies.

Study	Measures/outcome variables	Outcomes	Follow-up
Baudinet et al. (2020)	ASQ, BMI, DAWBA, EDI-III, ERQ, FFOCI-SF, MFQ, MGOAS, SCS-R, SNAPY-Y (NT), TEPS (ANT), TEPS (CON), YSR (W),	Significant post-IPT reductions in: 1) ED symptomatology (7 of 12 EDI-III subscales) 2) Depressive symptoms (MFQ) 3) Suppression of emotional expression (ERQ) 4) Cognitive inflexibility (FFOCI-SF) 5) Perceived isolation and social withdrawal (YSR [W]) Significant post-IPT increases in: 1) Reward responsiveness (TEPS [ANT]) 2) Consumption of pleasure (TEPS [CON]) 3) Social connectedness (SCS-R)	N/A
Baudinet et al. (2021)	ASC-WP, ASQ, ERQ, FFOCI-SF, SNAPY-Y (NT), SCS-R, TEPS (ANT), TEPS (CON), YSR (W),	Significant post-RO-A reductions in: 1) Suppression of emotional expression (ERQ) 2) Cognitive inflexibility (FFOCI-SF) 3) Perceived social withdrawal (YSR [WS]) 4) Discomfort and avoidance (ASQ) 5) Depressive symptoms (MFQ) 6) ED symptomatology (EDE-Q global and subscales) 7) Self-harm behaviors Significant post-RO-A increases in: 8) Reward responsiveness (TEPS [ANT]) 9) Social connectedness (SCS-R) 10) Confidence (ASQ)	N/A
Baudinet et al. (2022)	Semi-structured interviews exploring patient experience of treatment	Four main themes identified (0 to 3 subthemes per theme): 1) Broadening horizons 2) Building connections 3) Flexibility 4) Information overload	N/A
Chen et al. (2015)	DBT: BMI, SCID-I, ED symptomatology DBT+RO skills module: EDE, SCID-I, ED symptomatology	DBT: 1) Significant baseline to posttreatment increase in BMI (no follow-up) DBT+RO skills module: 1) Significant baseline to posttreatment increase in BMI, maintained at 6 months and 12 months	Six-months and 12 months follow-up (see main outcomes)

TABLE 2 (Continued)

Study	Measures/outcome variables	Outcomes	Follow-up
		2) In participants with binge eating and compensatory behaviors, posttreatment reductions in EDE scores maintained at six-months follow-up 3) One participant regained menses posttreatment, and another by 12-month follow-up 4) Some reductions in ED symptomatology	
Egan et al. (2021)	BSI, ERQ, FFOCI-SF, PNS, RAAS, Revised Client Change Interview Schedule	Significant posttreatment reductions in: 1) Obsessive-compulsive symptoms maintained at 6months follow-up 2) Global distress maintained at 6 months follow-up Significant pre- to follow-up reductions in: 1) Expression suppression 2) Need for structure 3) Anxiety Significant pre- to follow-up increases in: 1) Increase in cognitive reappraisal 2) Closeness 3) Depend (comfortable depending on others when needed) Qualitative reports of changes in connections, relationships, rigidity, emotional expression, increased self-confidence, agency and general wellbeing	Six-months follow-up (see main outcomes)
Cornwall et al. (2022)	CORE, QPR	Significant post-RO DBT improvements for both treatment completers and ITT samples in: 1) Global distress, wellbeing, problems, functioning (CORE) 2) Process and recovery (QPR) Participants with ASD showed better post-RO DBT outcomes than non-ASD participants for: 1) Global distress, wellbeing, problems, risk, and functioning (CORE) 2) Perception of recovery (QPR)	N/A
Gilbert et al. (2023)	AAQ-II, HDRS, IIP, SSQ-3(S)	Mediation analyses indicated RO DBT resulted in: 1) Decrease in psychological inflexibility from baseline to 18 months, which in turn was associated with a decrease in depressive symptoms (but not in the TAU group)	Three-month, 7-month, 12-month and 18-month follow-up (see main outcomes)

(Continues)

TABLE 2 (Continued)

Study	Measures/outcome variables	Outcomes	Follow-up
		2) Significant association between RO DBT treatment and increased interpersonal functioning at 3 and 7 months only	
Isaksson, Ghaderi, Ramklint, et al. (2021)	Diagnostic status, BBQ, CIA, EDE-Q, SSPS	Significant post-RO DBT increase in: 1) BMI for 12/13 participants (6/13 maintained at follow-up) Significant post-RO DBT decrease in: 1) Eating disorder symptomatology for 9/13 participants (8/13 maintained at follow-up) 8/13 participants in full remission post-RO DBT treatment 4/13 participants in partial remission 1/13 deteriorated Some decreases in clinical impairment Some increases in quality of life	Six-month follow-up (see main outcomes)
Isaksson, Ghaderi, Wolf-Arehult, et al. (2021)[a]	Semi-structured interviews exploring patient experience of treatment	Five main themes identified (two to four subthemes per theme): 1) Comprehensive treatment 2) The benefits of sharing and connecting with others 3) Growing trust 4) Moving toward valued goals, but some remain 5) Doing well in treatment	N/A
Johnson et al. (2023)	Clinician feedback form; feasibility, perceived effectiveness, overall experience	1) Individual RO DBT rated as more feasible and suitable, compared to RO DBT skills class or comprehensive RO DBT 2) Comprehensive RO DBT rated as more effective, compared to RO DBT skills class or individual RO DBT	N/A
Keogh et al. (2016)	AAQ-II, BSI, DBTWCC, ECQ-2 (EI), EUCS, PNS	Significantly greater reductions in RO group compared to the TAU group for: 1) overall psychopathology 2) dysfunctional coping 3) desire for structure Significantly greater increases in RO group compared to the TAU group for: 1) social safeness and pleasure 2) coping skillsRO group reductions in psychopathology not maintained at follow-up, but increases in coping skills were maintained	Three-month follow-up (see main outcomes)

TABLE 2 (Continued)

Study	Measures/outcome variables	Outcomes	Follow-up
Little and Codd (2020)	Diagnostic status, ASC-WP, SSPS, APS-R	Post-RO DBT in remission from AN Post-RO DBT increases in perception of social safeness and pleasure and decreases in perfectionism	N/A
Lynch et al. (2013)	Diagnostic status, BMI, EDE-Q, EDQ-oL, CORE	Significant post-RO DBT improvements for both treatment completers and ITT samples: 1) RO DBT completers 7 in full remission 11 in partial remission 2) ITT sample 8 in full remission, 16 in partial remission 3) Both groups had significantly increased BMI, significantly lower EDE-Q scores 4) Both groups showed some increases in wellbeing and quality of life on some subscales	N/A
Lynch et al. (2020)[b]	AAQ-II, EAC, HDRS, LIFE-RIFT, PHQ-9, SSQ-3(S)	1) Significantly lower depressive symptoms in RO DBT group compared to TAU group at 7 months, but not at 12 or 18 months (no significant difference at baseline) 2) Significantly higher psychological flexibility and emotional coping in RO DBT group relative to TAU throughout the trial 3) Low full remission rates in both groups (0%–8%) 4) Serious adverse effects reported in both groups, but none led to withdrawal from the trial	Three-month, 7-month, 12-month and 18-month follow-up (see main outcomes)

Abbreviations: AAQ-II, Acceptance and Action Questionnaire II; APS-R, Almost Perfect Scale Revised; ASC-WP, Assessing Styles of Coping Word-Pair checklist; ASQ, Attachment Styles Questionnaire; BBQ, Brunnsviken Brief Quality of life scale; BMI, body mass index; BSI, Brief Symptom Inventory; CIA, Clinical Impairment Assessment; CORE, Clinical Outcomes in Routine Evaluation; DAWBA, Development and Wellbeing Assessment; DBTWCC, Dialectical Behavior Therapy Ways of Coping Checklist; EAC, Emotional Approach Coping scale; ECQ-2 (EI), Emotional Control Questionnaire 2 - Emotional Inhibition subscale; EDE-Q, Eating Disorder Examination Questionnaire; EDI, Eating Disorder Inventory; EDQ-oL, Eating Disorders Quality of Life scale; ERQ, Emotional Regulation Questionnaire; EUCS, Ego Under-Control Scale; FFOCI-SF, Five Factor Obsessive Compulsive Inventory – Short Form; HDRS, Hamilton Depression Rating Scale; IIP, Inventory of Interpersonal Problems; ITT, intention-to-treat; LIFE-RIFT, Longitudinal Interval Follow-up Evaluation – Range of Impaired Functioning Tool; MFQ, Moods and Feelings Questionnaire; MGOAS, Morgan-Russel Global Outcome Assessment Schedule; PHQ-9, Patient Health Questionnaire-9; PNS, Personal Need for Structure Scale; RAAS, Revised Adult Attachment Scale; SCS = SCID-I, Structured Clinical Interviews for DSM-IV Axis I; Social Connectedness Scale; SNAPY-Y (NT), Schedule of nonadaptive and Adaptive Personality for Youth (Negative temperament subscale); SSPS, Social Safeness and Pleasure Scale; SSQ-3 (S), Social Support Questionnaire Satisfaction subscale; TAU, treatment-as-usual; TEPS (ANT), Temporal Experiences of Pleasures (Anticipatory subscale); TEPS (CON), Temporal Experiences of Pleasures (CON).

[a]Same sample as in Isaksson, Ghaderi, Ramklint, et al. (2021).

[b]Same sample as in Gilbert et al. (2023).

The strongest evidence in support of the effectiveness of RO DBT was outcomes from an RCT comparing RO DBT with TAU control in adults with treatment-refractory depression (Gilbert et al., 2023; Lynch et al., 2020). Lynch et al. (2020) described significant and sustained reduced depressive symptoms in the RO DBT group, as well as benefits for interpersonal functioning and higher flexibility in the RO DBT group compared to control. Mediation analyses indicated that this higher psychological flexibility mediated the effects of RO DBT on depressive symptoms. These outcomes are bolstered by the rigid methodology of the RCT and long-term follow-up of positive outcomes. It is clear RO DBT displayed and maintained some specific benefits over control. However, the trial also indicated that full remission rates were similar in both groups, as well as some adverse effects reported in both treatment and control groups. As such, findings suggest that the current benefits of RO DBT over other treatment do not include either posttreatment change in diagnostic status or full remission.

At present, the most varied study designs and the highest number of studies are in support of the clinical use of RO DBT in the treatment of EDs, specifically AN and restrictive eating. Although there were many studies highlighting positive outcomes of treatment, no studies included control or comparison groups. Lynch et al. (2013) single-group experimental study in adults with AN-R demonstrated posttreatment reductions in ED symptoms and increases in BMI and overall wellbeing. Further, outcomes were similar for both those who completed RO DBT treatment and the intent-to-treat group of participants who did not complete treatment. This indicates that there were benefits to partial engagement with treatment even without completion. Although this was the case, without a control or comparison group it is difficult to attribute these benefits specifically to the RO DBT intervention. Further, no follow-up was conducted.

Follow-up was conducted in several other case series and case studies that supported outcomes from Lynch et al. (2013), as well as suggesting several other novel benefits from treatment, such as reductions in perceived isolation and withdrawal and suppression of emotional expression, as well as increases in pleasure, reward responsiveness and social connectedness (Baudinet et al., 2020). However, each of these studies was also uncontrolled (Baudinet et al., 2020; Chen et al., 2015; Isaksson, Ghaderi, Ramklint, et al., 2021; Little & Codd, 2020). Uncontrolled experimental studies and case series do not allow specific association of study outcomes to the intervention.

In support of quantitative treatment outcomes, qualitative studies were conducted in both adult and adolescent populations. Adults with AN expressed several areas of perceived benefits of treatment, including growing trust, moving towards valued goals, and increased connection with others (Isaksson, Ghaderi, Wolf-Arehult, et al., 2021), with adolescents with AN similarly indicating increased connection building (Baudinet et al., 2022). One important difference was in the key theme that emerged indicating adolescents perceived that there was an information overload throughout treatment (Baudinet et al., 2022). This suggests that there is a need for ongoing research on the level and type of adaptation needed for RO DBT to produce optimal outcomes for varied target groups.

Other included studies also provided evidence for the benefits of RO DBT in transdiagnostic samples characterized by maladaptive overcontrol. These studies outlined a myriad of positive outcomes, such as decreases in overall psychopathology, desire for structure, dysfunctional coping, global distress, anxiety, and need for structure, as well as increasing coping, perception of recovery, confidence, social connectedness, and healthy dependency on others (Baudinet et al., 2021; Cornwall et al., 2022; Egan et al., 2021; Keogh et al., 2016). Comparisons between subsets of participants in one study revealed that individuals with ASD had better posttreatment outcomes compared to non-ASD (Cornwall et al., 2022). Further, these studies utilized validated psychometric assessment tools. The use of standardized measurement tools across several studies supports the methodological rigor of this research and allows for comparison of outcomes across studies. However, as mentioned previously, this evidence has come from single-group experimental and uncontrolled study designs. Overall, the results of this review suggest that there is, at present, some emerging evidence that supports the promising effects of RO DBT in populations characterized by maladaptive overcontrol, including general psychiatric populations, individuals with AN, ASD and treatment-resistant depression.

Although RO DBT was initially created as a manualized treatment program and intended to reflect the standard structure of DBT (Lynch, 2018), it is important to acknowledge the variations in its application since its original development. Though most included studies indeed utilised a standard RO DBT treatment (consisting of both individual therapy and group skills; Baudinet et al., 2022; Chen et al., 2015; Cornwall et al., 2022; Isaksson, Ghaderi, Ramklint, et al., 2021), other studies also utilized adjunct medication (Gilbert et al., 2023; Lynch et al., 2020), utilized inpatient treatment with an RO skills group (Baudinet et al., 2020; Egan et al., 2021), implemented a standalone RO skills groups (Keogh et al., 2016), or adapted RO DBT for specific use in an adolescent population (Baudinet et al., 2021). Thus, it is also critical to acknowledge that variations in its application may impact the efficacy of RO DBT and treatment outcomes in various populations. For example, only one included study utilized an RO skills group as a standalone treatment (Keogh et al., 2016). Although this study reported promising outcomes from the RO treatment compared to TAU in an adult psychiatric population, it is yet to be seen how the lack of an individual therapy component may impact treatment in other samples (e.g., an adolescent AN sample).

Although the quality assessment conducted indicated that the included papers showed minimal risk of bias, and often used rigorous methodology, some of the aforementioned inherent limitations of the study designs included warrant suggestions for future research. Future clinical researchers are encouraged to consider conducting further RCT's or at minimum controlled studies to investigate the effectiveness of RO DBT in disorders other than treatment-refractory depression (e.g., AN). At present, few studies offer robust evidence for the benefit of RO DBT above and beyond TAU or other interventions for individuals with AN or restrictive eating, psychiatric adults or adolescents with overcontrol or ASD. Where there are restraints to time and resources, creating small group or case study comparisons with matched baseline characteristics and length of treatment can address this gap in the literature.

Further, less than half of the included studies conducted follow-up of treatment outcomes. It is essential that postintervention outcomes continue to be monitored to give a realistic understanding of outcome maintenance and long-term benefits of treatment. Finally, it is important to acknowledge the potential for allegiance effects that may occur due to the fact that a significant proportion of studies (particularly those of higher methodological quality) were conducted by the same research group (Lynch and colleagues). This signals the future need for a wider evaluation of the application of RO DBT from other independent research groups.

The present review also has limitations to be acknowledged. Due to the emerging state of evidence and the fact that RO DBT remains a somewhat novel treatment approach, the criteria for inclusion were intentionally set to be wide-reaching, so as to provide the most comprehensive analysis of the available empirical studies. The inclusion criteria indicated an interest in the use of RO DBT for any disorder, condition or symptomatology, as well as assessing all study and research designs, ranging from RCTs to case reports. As such, the studies identified were heterogeneous in design, outcomes and population of interest. This heterogeneity precluded the possibility of conducting a meta-analysis to synthesize the data or make generalized conclusions about the overall efficacy of RO DBT. However, the narrative synthesis conducted allowed for more nuanced conclusions to be drawn about the use and efficacy of this treatment in different populations and across symptom profiles, thus increasing the clinical implications and applications of the conclusions of this review. Finally, unpublished data, gray literature and research studies not published in English were not considered for inclusion, and as such our criteria potentially limited evidence from non-English speaking cultures or limited other additional supporting research. Although this was the case, it was considered necessary to ensure high-quality evidence was included, and additionally to decrease any further heterogeneity of outcomes (e.g., that caused by inclusion of diverse populations and study designs).

Altogether, we aimed to provide a current and comprehensive review of the current state of evidence supporting the use and efficacy of RO DBT as a treatment option for individuals with maladaptive overcontrol. The findings of this review indicate that there is emerging evidence in support of the use of RO DBT in both adolescents and adults, for a variety of disorders characterized by excessive self-control, such as AN and ASD, as well as for those whose illness is longstanding or treatment-resistant (e.g., treatment-resistant depression). It is also clear that there is a need for more clinical research to be conducted that includes control or comparison groups to provide

increased empirical support for the benefits of RO DBT above TAU control groups or similar interventions. It is hoped that this review has provided thorough guidance on both the benefits and limitations of RO DBT, as well as promising directions for future theoretical and clinical research.

AUTHOR CONTRIBUTIONS

Amaani H. Hatoum and Amy L. Burton were involved in all stages of the design, review, including search, screening, quality analysis and data extraction. Amaani H. Hatoum prepared the systematic review protocol and first draft of the manuscript, and subsequent versions were refined in collaboration with Amy L. Burton. Both authors approved the final manuscript.

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CONFLICT OF INTEREST STATEMENT

The authors declare no conflicts of interest. There are no relevant financial or nonfinancial competing interests to report or benefits that have arisen from this research.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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