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Review

The acceptability of cognitive analytic therapy (CAT): Meta-analysis and benchmarking of treatment refusal and treatment dropout rates

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ABSTRACT

Aim: To estimate treatment refusal and treatment dropout rates for cognitive analytic therapy (CAT) and then benchmark these rates against other psychotherapies.
Method: PROSPERO registration CRD4202017081. Systematic searches found CAT treatment studies reporting treatment refusal and dropout rates. Studies were narratively and quantitatively synthesised in a proportional random-effects meta-analysis and moderator analyses were performed. Secondary analyses compared refusal and dropout rates for CAT versus other psychotherapies via direct comparisons in the original studies and via benchmarking these rates against other acceptability meta-analyses for other psychotherapies.
Results: Thirty-four CAT studies were included in the review. The treatment refusal rate was 15.35% ($k = 9$, 95% CIs 8.78–23.21). The treatment dropout rate was 18.69% ($k = 34$, 95% CI's 15.02–22.62). CAT generated significantly lower dropout rates relative to treatment comparators in the original studies (OR = 0.67; 95% CI 0.48–0.93). Country and younger age were significant moderators of dropout rates. CAT had a comparable treatment refusal rate and was towards the lower end of the dropout range when benchmarked against other psychotherapies.
Conclusions: CAT as a brief and integrative psychotherapy for individuals presenting with typically complex psychological disorders appears a relatively acceptable intervention to patients.

Psychotherapy in its various forms has been repeatedly demonstrated to be effective in relieving psychological distress across a range of mental health disorders (see for example, Cuijpers et al., 2020). However, despite efforts to increase access to empirically based psychotherapies, a significant number of patients either then do not attend following initial screening or then go onto dropout once therapy has started, and so do not receive a sufficient 'dose' of treatment to attain a positive outcome (Robinson, Kellett, & Delgadillo, 2020). Patients that complete treatment tend to have better mental health outcomes compared to those that dropout of treatment (Barrett, Chua, Crits-Christoph, Gibbons, & Thompson, 2008; Lopes, Gonçalves, Sinai, & Machado, 2018). Dropout is a problem regardless of the whether the context of the treatment is in a clinical trial or a routine service (Lopes et al., 2018; O'Keeffe, Martin, Target, & Midgley, 2019). During randomised controlled trials (RCTs), dropout introduces bias when completers differ from dropouts in terms of demographic or clinical factors and when there are differential dropout rates in the arms of the trial (Bell, Kenward, Fairclough, & Horton, 2013). In routine services, dropout creates service inefficiency, as it increases the likelihood of patients returning to the service in less than a year, thus creating the 'revolving door' phenomena (Clarkin & Levy, 2004; Piselli, Halgin, & MacEwan, 2011; Swift & Greenberg, 2014). Dropout can also demoralize therapists and patients alike and may deter some patients from seeking further psychological help, even when this is indicated (Swift, Greenberg, Whipple, & Kominiak, 2012).

Attempts to analyse and reduce dropout frequently encounter difficulties, as there is lack of consensus regarding the definition of dropout and associated differences in measurements. The most widely accepted definition of dropout is when a patient that ends therapy unilaterally and prematurely in contention with the therapist's guidance and treatment plan (O'Keeffe et al., 2019; Warnick, Gonzalez, Robin Weersing, Scahill, & Woolston, 2012). Differences between studies also occur in terms of the point in the treatment pathway that dropout is identified and how dropout is operationalised. The point at which dropout occurs

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in the treatment path can be split into either pre-therapy dropout (i.e., treatment refusal) or a during therapy dropout. Treatment refusal is therefore when a patient attends an initial screening, but then fails to attend for any subsequent treatment sessions. For example, poor matching of patient preferences to the type/duration of therapy offered creates subsequent treatment refusal (Sidani, Fox, & Epstein, 2015). During therapy dropout concerns those patients who enter treatment, receive some therapy sessions and then unilaterally dropout. Common reasons for dropout cited by patients are dissatisfaction with the pace of therapeutic change, lack of agreement on the central problem and associated goals, poor alliance, distrust and unrealistic expectations (Barrett et al., 2008; Swift & Greenberg, 2014).

Five methods to operationalize dropout have been used: failure to complete the full course of treatment, attendance at less than a predefined number of sessions (i.e., attending fewer than 4-sessions), failure to attend a planned session without rescheduling, dropout determined by therapist's judgement and ending treatment before the patient is assessed as recovered (Stone & Rutan, 1984; Swift, Callahan, & Levine, 2009; Swift & Greenberg, 2014). Whilst each method has advantages and disadvantages in terms of how dropout is conceptualised, estimates then vary greatly between studies depending on which definition and associated method is used (Swift & Greenberg, 2014). There is also a common issue of under reporting of treatment refusal rates, or studies unhelpfully combining treatment refusal and treatment dropout rates.

Over the last 30 years, reviews have synthesised and estimated overall dropout rates by accepting that definitions differ across studies, with the meta-analysed dropout rate apparently decreasing over-time. Wierzbicki and Pekarik's (1993) early review estimated nearly one-in-two patients' dropout, whereas updated reviews suggest it is closer to one-in-five patients (Swift & Greenberg, 2014). The most recent meta-analysis usefully differentiated and estimated treatment refusal (8%) and treatment dropout rates (22%) during RCTs (Swift, Greenberg, Tompkins, & Parkin, 2017). Moderators of dropout have also been explored to attempt to explore variability in dropout rates. For example, therapist judgement or missed appointment indices generate significantly higher dropout rates than failure to complete or attend enough sessions (Swift & Greenberg, 2014; Wierzbicki & Pekarik, 1993). There are no differences between dropout rates in studies versus services (Dixon & Linardon, 2020). Whilst several reviews have found no difference between dropout rates for differing psychotherapies (Cooper & Conklin, 2015; Swift & Greenberg, 2014), Cuijpers, van Straten, Andersson, and van Oppen (2008) did report higher dropout rates for cognitive behavioural therapy (CBT) compared to other therapies when treating people presenting with depression. In terms of presenting problem, there is also some evidence for higher dropout rates when treating people presenting with personality disorders, eating disorders (Cooper & Conklin, 2015; Swift et al., 2017; Swift & Greenberg, 2014; Wierzbicki & Pekarik, 1993) and depression (Fernandez, Salem, Swift, & Ramtahal, 2015).

Cognitive analytic therapy (CAT) is an integrative and time-limited form of psychotherapy (Ryle & Kerr, 2020) that originated in the United Kingdom (UK) but is now practiced in many countries (Ryle, Kellett, Hepple, & Calvert, 2014). The model is integrative as it practically incorporates elements from personal construct (Kelly, 1955) and object relations theory (Ogden, 1983) and is time-limited as it is delivered in 8, 16 or 24 session formats according to the severity and chronicity of the presenting problem (Ryle & Kerr, 2020). CAT was originally developed to be delivered as a one-to-one psychotherapy for complex and enduring psychological problems, with the model subsequently being developed for group delivery (Calvert, Kellett, & Hagan, 2015), via a consultation method in secondary care (Kellett et al., 2020) and using a psychoeducational approach for mild-to-moderate anxiety in primary care (Meadows & Kellett, 2017). In routine services, patients presenting with complex and enduring psychological disorders are more frequently allocated to CAT and receive the 24-session format intervention (Marriott & Kellett, 2009).

CAT is based on the theoretical cornerstone that mental representations of self and others are developmentally shaped by early interactions/experiences with significant others (Ryle & Kerr, 2003). When these early experiences are negative (e.g., neglectful), then the patient learns and internalises both the active element of the experience (e.g., learns how to be neglecting to self and others and behaves in ways that elicits neglect from others) and also the emotional element of the experience (e.g., how to feel ignored). This is called a *reciprocal role* in CAT (i.e., *neglecting to ignored*), with the upper end, the doing/being aspect of the role (e.g. neglecting) and the lower end, the feeling aspect of the role (e.g. ignored). CAT predicts that the patient will then relate to the therapist during treatment as they did to significant others in their early life and so "enactments" of reciprocal roles will occur (and be analysed for change) within the therapeutic relationship (Ryle & Kerr, 2020). In CAT, the presenting problem or diagnosis are redefined relationally as *'target problems'* (TPs) and associated *'target problem procedures'* (TPPs). TPPs are labelled as either traps (i.e. vicious circles), snags (i.e. self-sabotage) or dilemmas (Ryle & Kerr, 2003). TPPs and reciprocal roles are connected theoretically in the procedural sequence object relations model (PSORM; Ryle, 1991).

CAT involves three interrelated stages of reformulation, recognition, and revision over the treatment contract (Ryle & Kerr, 2020). The first phase (reformulation) involves reformulating the TPs and TPPs via narrative and diagrammatic reformulations. Narrative reformulation letters (typically completed early in the treatment contract following detailed assessment) aim to compassionately connect the past to the present, clarify TPs/TPPs and name potential enactments that might occur in the therapeutic relationship, with diagrammatic reformulation then pictorially summarising the narrative reformulation (Ryle & Kerr, 2020). The second (recognition) phase involves using the diagrammatic reformulation to scaffold enhanced recognition of reciprocal role activation and associated unhelpful procedures. This is completed via 'homework' monitoring, in session completion of recognition sheets and in-session analysis of enactments. The third and final (revision) stage involves use of active change methods which can be drawn from any therapy, when utilized within the patient's zone of proximal development and grounded in the diagrammatic reformulation (Ryle & Kerr, 2020). The approach of CAT is therefore relational, and the purpose is to help patients recognise and then change maladaptive patterns of self-self, self-other and other-self relating. The clinical competencies at each of the three phases have been spelt out in a detailed competency framework (Parry, Bennett, Roth, & Kellett, 2021).

In terms of outcome, a recent meta-analysis of the CAT evidence base (Hallam, Simmonds-Buckley, Kellett, Greenhill, & Jones, 2020) showed large pre–post improvements in global functioning (ES = 0.86), moderate-to-large improvements in interpersonal problems (ES = 0.74), and large reductions in depression (ES = 1.05) in typically complex clinical populations. CAT also had small–moderate, significant post-treatment benefits compared to comparators across nine RCTs (ES = 0.36–0.53) and that at follow-up interpersonal difficulties continued to improve. CAT has been lauded in its literature for its high acceptability with patients compared to other psychotherapies, due to its relational style and the impact of early narrative and diagrammatic reformulation (e.g., Ryle & Kerr, 2003). A cross-study 15% dropout rate (range 0–39%) was reported in the Hallam et al. (2020) outcome meta-analysis. However, this was a simple averaging of dropout rates. Therefore, no proportional meta-analytic methods using information about the estimated precision to weight studies was attempted, nor was the treatment refusal rate for CAT calculated. Using the Barker et al. (2021) methodological guidelines, the advantages of a proportional meta-analysis approach to synthesising the CAT treatment refusal and dropout rates would be (a) in generating single summary estimates of refusal and dropout rates and accurately estimating variance, (b) in providing quantitative descriptions of specific covariates of refusal and dropout and (c) being helpful in the development of new theoretically consistent interventions

to reduce dropout and refusal. The primary aim of this review was therefore to conduct proportional meta-analyses of the treatment refusal and the treatment dropout rates for CAT and explore potential moderating factors. The secondary aim was then to compare the acceptability of CAT versus treatment comparators in the CAT studies containing an active or passive control and then benchmark the acceptability of CAT against other commonly delivered psychotherapies. Both these activities would provide useful empirical context and test also the assumption of the differential acceptability of CAT.

1. Method

1.1. Study identification and eligibility

This meta-analytic review was preregistered on PROSPERO (CRD42020170813) and is reported according to PRISMA guidelines (Moher et al., 2009). A comprehensive literature search was performed to identify eligible studies. First, searches of three electronic databases (Medline, Scopus, and Web of Science) without any date constraints were conducted using search terms related to 'cognitive analytic therapy'. Second, grey literature was sought using the Open Grey database and members of the Association of Cognitive Analytic Therapy (ACAT) were emailed to identify unpublished studies (e.g., service evaluations). In addition, the ACAT website was cross-referenced to identify additional relevant studies. Finally, the reference lists of included studies were examined and forward and chain citation searches were performed. The final searches were performed on 22nd April 2022. Titles and abstracts were screened by two reviewers and potential studies were sourced for a full text review. Included studies were 1) any study design (including RCTs and practice-based designs including case series, cohort studies and service evaluations), 2) one-to-one or group-based CAT, 3) participants with any mental health problem, 4) that reported or provided data to calculate a dropout rate for CAT and treatment comparators, if a comparator treatment was available. Comparators here means the active treatments against which CAT has been compared to in extant studies. Exclusion criteria were 1) single-case experimental designs or qualitative case studies, 2) studies where CAT was not delivered as a standalone intervention (i.e., elements of CAT were implemented as part of a wider multi-disciplinary treatment programme or the CAT consultancy version was being implemented), 3) studies of completer samples only without reporting dropout, 4) data that came from multiple treatments, but delivered by a single therapist, 5) a dropout rate was not reported or able to be calculated or 6) an English language version was not available.

1.2. Outcomes

Outcomes were separated into i) treatment refusal rates (i.e., the proportion of the study sample offered CAT at screening who did not subsequently attend for treatment) and ii) treatment dropout rates (i.e., the proportion of study sample starting treatment who subsequently dropped out, with dropout defined according to the original studies classification). If a definition of dropout was not defined in a study, then a rule of attendance at <50% of sessions was applied. Due to the acknowledged variation in how dropout is defined, treatment discontinuation rates were differentiated either as treatment dropouts (i.e., cases that dropped out anytime during CAT) or study dropouts (i.e., cases that failed to respond at a pre-defined assessment point; Dixon & Linardon, 2020). Preference was given to treatment dropout when studies reported both treatment and study dropout rates. If occurrence of dropout during treatment was not explicitly stated, then dropout rates were classified as study dropouts. Sensitivity analysis was performed for treatment dropout studies only to assess the impact of dropout types on pooled proportions. The difference in dropouts rate between CAT and treatment comparators was examined as a secondary outcome in the subset of those studies that also had a direct treatment comparator.

1.3. Risk of bias

All included studies were rated using the Downs and Black (1998) methodological quality rating tool which is suitable for rating both randomised and non-randomised studies. Individual studies were assessed on five sub-categories: reporting (10 items), external validity (3 items), internal validity (13 items) including confounding and bias (6 and 7 items respectively), and a single item assessing power. Scores therefore could range between of 0–28 and studies classified as excellent (24–28), good (19–23), fair (14–18) or poor (<14). Hooper, Jutai, Strong, and Russell-Minda (2008) provided mean scores for randomised (mean = 14, *SD* = 6.39) and non-randomised studies (mean = 11.7, SD = 4.64) All studies were double-rated by a pool of four raters. Discrepancies were discussed at a consensus meeting to arrive at an agreed rating. Inter-rater reliability was assessed using Cohen's kappa statistic (k), with agreement interpreted as fair (0.21–40), moderate (0.41–0.60), substantial (0.61–0.80) and almost perfect (0.81–1.0) (Cohen, 1960). There was substantial agreement between both pairs of raters ($k = 0.77$ and $k = 0.64$).

1.4. Data extraction

A bespoke data extraction form was piloted to ensure that it was fit for purpose. Study data extracted were 1) methodological features (study design [RCT/uncontrolled practice-based evidence, PBE], presence/type of comparator treatment, country of origin, definition of dropout, study quality), 2) therapy features (treatment setting type [public/practice], therapy format [group/individual/mixed], therapy duration [brief/medium/long/mixed] and mean number of sessions attended), 3) sample characteristics (CAT sample size, sample size of comparator treatment, mean age, percentage of males and diagnosis) and 4) acceptability outcomes (dropout rates, reasons and dropout rates in comparator treatments when applicable).

1.5. Data synthesis and analysis

All analyses were conducted in R Studio (version 1.2.5019) using the *metafor* (Viechtbauer, 2010) and *meta* (Balduzzi, Rücker, & Schwarzer, 2019) packages. The proportion of patients who did not attend for CAT following screening or dropped out of CAT during treatment were calculated for all included studies where possible (i.e., number of dropout cases divided by total sample). Study proportions were synthesised using random-effects single proportion meta-analysis (applying a REML estimator). Due to constraints on variability estimates for proportional data near the extremes (either close to minimum of 0.0 or maximum of 1.0) biasing the inverse variance weightings of studies, individual study proportions were transformed using the Freeman-Tukey (double arcsine) transformation prior to synthesis (Barendregt, Doi, Lee, Norman, & Vos, 2013). Proportions were then back transformed and converted to percentages to help with interpretation of the weighted pooled dropout rate. When studies reported dropout rates for any active treatment comparator, odds ratios (OR) were then computed and synthesised in an inverse variance weighted random-effects meta-analysis to enable a between-groups comparison. Odds of lower rates of dropout during CAT compared to comparators were indicated by ORs less than one (i.e., ORs greater than one represented odds of lower dropout in the comparator groups). In all analyses, between-study heterogeneity was assessed using Q and I^2 statistics, with I^2 values interpreted as >25%, >50% and > 75% indicating low, moderate, and high heterogeneity respectively (Higgins, Thompson, Deeks, & Altman, 2003).

Impact of publication bias is less influential in proportional meta-analyses because estimates do not have accompanying significance values by which likelihood of publication might depend. Assessments of reporting biases were nevertheless examined under the assumption that higher dropout rates might be less likely reported. Three methods of

assessment were employed to provide an overall assessment of potential bias; visual inspection of funnel plot asymmetry supported by two statistical tests (Egger regression and Begg and Mazumdar rank correlation test).

Planned moderator analysis investigated sources of between-study heterogeneity in dropout rates for analyses with at least 10 studies. Quality score, mean age and percentage of males were explored as continuous variables using meta-regression. Study type (PBE/RCT), publication status (published/unpublished), dropout definition (dropped out/did not attend specified number of sessions), country (UK and ROI/Other), format (1:1/group), duration (brief/medium/long/mixed) and presenting problem (common/complex mental health disorders) were investigated as categorical variables via subgroup analysis. The rationale for categorising presenting problems/diagnoses into 'common versus complex' was based on (a) epidemiological evidence, (b) the associated rates of presenting problems treated in routine services and that (c) Hallam et al. (2020) had characterised CAT as an intervention that is more often (but not exclusively) used to help people with typically complex and enduring psychological issues, typically that of personality disorder. Depression, trauma, obsessive-compulsive and anxiety disorders are more common in the population (affecting up to 15%; National Institute for Health and Care Excellence, 2011) and are therefore more frequently seen for briefer interventions in Primary Care mental health services (Robinson et al., 2020). More complex and enduring disorders are typically referred to Secondary or Tertiary Care and include problems such as personality disorders, psychosis and bipolar disorder often receiving lengthier interventions in the context of multi-disciplinary teams (Robinson et al., 2020). Bonferroni corrections were applied to adjust for multiple testing. Sensitivity analysis explored the pooled CAT dropout rate when including studies classified as treatment dropouts only (i.e., with study dropouts removed).

1.6. Benchmarking

Meta-analyses of treatment refusal and dropout rates for other psychotherapies provided comparison benchmarks for the pooled CAT refusal and dropout rates. An electronic search of literature databases for recent *meta-analyses* of *therapy dropout* produced five reviews reporting specific therapy pooled dropout rates for CBT (Fernandez et al., 2015), dialectical behaviour therapy (DBT; Dixon & Linardon, 2020), interpersonal psychotherapy (IPT; Linardon, Fitzsimmons-Craft, Brennan, Barillaro, & Wilfley, 2019), schema therapy (ST; Gülüm, 2018) and acceptance and commitment therapy (ACT; Ong et al., 2019). The most recent overall review of dropout from adult psychotherapy and/or

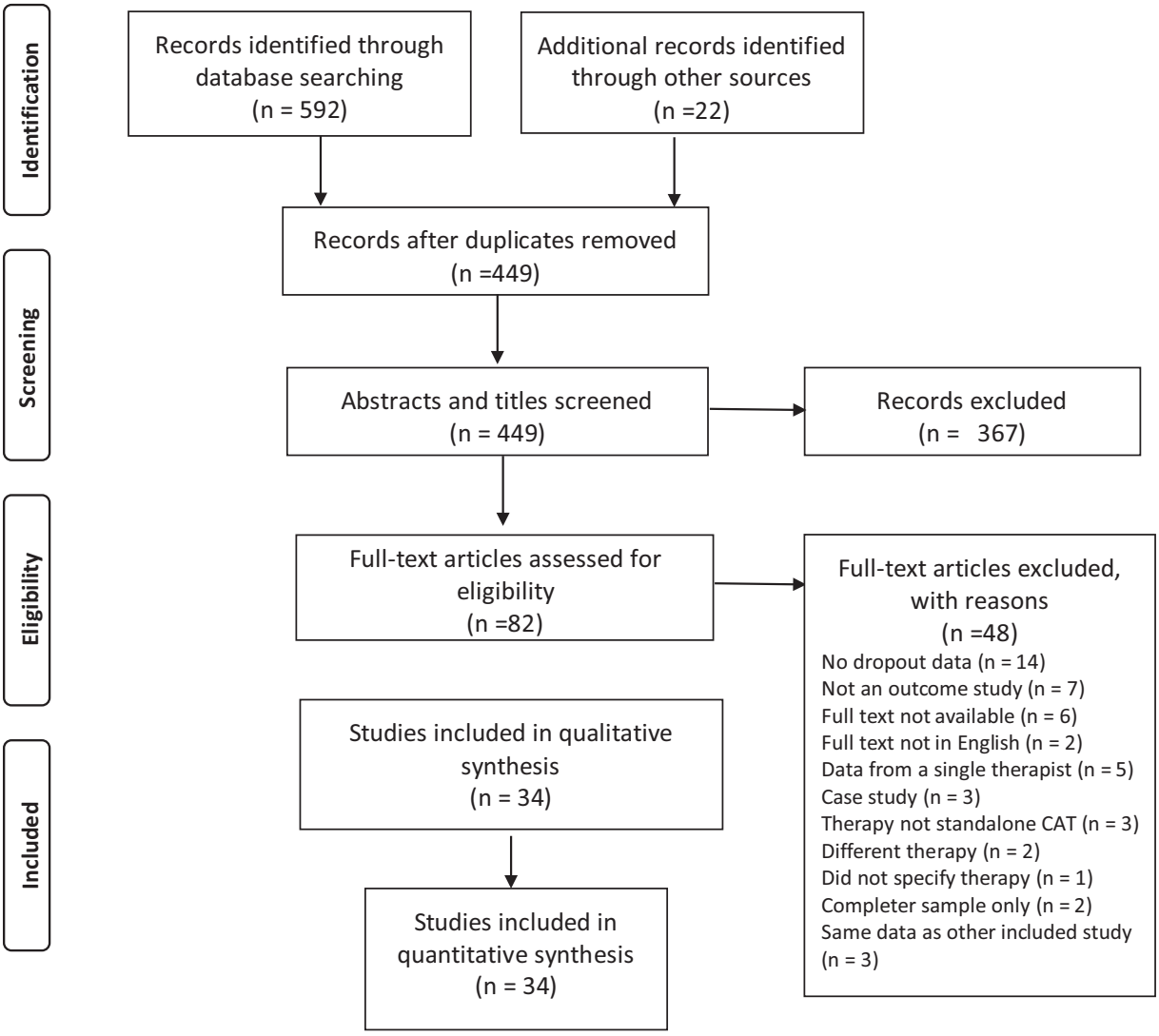

Fig. 1. PRISMA flowchart of study selection.
From: Moher D, Liberati A, Tetzlaff J, Altman DG, The PRISMA Group (2009). Preferred Reporting Items for Systematic Reviews and Meta-Analyses: The PRISMA Statement. PLoS Med 6(7): e1000097. doi:https://doi.org/10.1371/journal.pmed1000097.

pharmacotherapy was also included to provide a general overview (Swift et al., 2017).

2. Results

2.1. Study selection and characteristics

The literature search identified 449 studies after duplicates were removed (see PRISMA flowchart in Fig. 1). After title and abstract screening, 82 studies were sourced for full-text review. Thirty-four studies were eligible for inclusion in the qualitative and quantitative synthesis. See Supplementary Materials for the reasons for exclusion of all full-text articles. Characteristics of included studies are presented in Table 1.

The majority of studies ($k = 25$; 73%) were conducted in the UK and Republic of Ireland, three in Australia (9%), four in mainland Europe (12%; Greece and the Netherlands) with single studies from India (3%) and Iran (3%). Most studies used a PBE design ($k = 21$, 62%), with 13 RCTs (38%). Out of the 21 PBE studies, $k = 13$ used pre-post designs (62%), $k = 4$ were case-series (19%), $k = 2$ were service evaluations (10%), with the remaining two studies using case-control and longitudinal cohort designs, respectively. Of 34 identified studies, 27 were published (79%) and $k = 7$ were unpublished or conference presentations (21%). All studies reported treatment dropout rates, with $k = 9$ of these studies also reporting treatment refusal rates. Four studies (12%) were classified as only reporting on study dropouts (i.e., failed to respond at determined assessment point), with the majority of studies ($k = 30$; 88%) providing specific data on treatment dropouts (i.e., dropped out of intervention). Dropout criteria included attending fewer than a specified number of sessions ($k = 8$; 24%), failure to complete treatment (without a specified completion criteria; $k = 12$; 35%) or dropping out of/discontinuing treatment due to non-attendance ($k = 10$; 29%).

2.1.1. Treatment characteristics

All but four studies were conducted in public health services ($k = 30$; 88%), with $k = 3$ studies based in private clinics (9%). A single study provided data from one public and one private service. Setting included Primary Care, Secondary and Tertiary Care psychological services, hospital outpatient clinics, community mental health centres, early intervention services and a high secure hospital. CAT was mainly delivered one-to-one ($k = 30$; 88%) or to a lesser extent in groups ($k = 4$; 12%). Treatment contracts were either the brief ($\leq$8 sessions; $k = 6$; 18%), medium-term (12–16 sessions; $k = 11$; 32%) or the long versions of the model (20–24-sessions; $k = 7$; 21%). Six studies used mixed CAT durations based on patient presentation (18%) and four studies did not report on treatment duration (12%). Mean number of sessions attended was reported in $k = 12$ studies and produced an average of 11.48 (SD = 5.20) sessions attended.

2.2. Patient characteristics

Average age was reported in 26 studies. Age ranged between 13 and 75 years. The mean age was 33.27 (SD = 8.90). Studies included all female ($k = 3$) and all male ($k = 1$) samples, with males comprising 28% of the overall sample (SD = 20.78). Presenting problems comprised common mental health problems such as depression and/or anxiety disorders ($k = 19$; 56%) or more complex presentations including personality disorders, schizophrenia, bipolar disorder, psychosis, complex trauma, and self-harm ($k = 14$; 41%). One study did not report the presenting problem/s of the sample.

2.2.1. Comparators

Fourteen studies also included a treatment comparator ($k = 13$ RCTs; $k = 1$ PBE). CAT was compared to treatment as usual (TAU) in five of the RCT's. CAT has been compared (in single studies) against the following active controls: guided self-help CBT, interpretive therapy, educational behavioural therapy, diabetes specialist nurse education, befriending, specialist first-episode psychosis treatment and CAT minus narrative reformulation in a dismantling trial. One RCT used a no treatment control condition. A single PBE study compared CAT outcomes to a propensity score matched sample who received CBT. Of the 14 studies with a comparator treatment, $k = 11$ reported dropout rates in both the CAT and comparator samples ($k = 10$ were compared to an active treatment comparator). Two studies did not provide dropout data for the comparator group, while the study comparing full CAT to deconstructed CAT (without narrative reformulation) was not a suitable comparator intervention because both arms in the study received a version of CAT.

2.2.2. Risk of bias assessment

Overall quality rating was fair with a mean quality score of 14.26 (SD = 4.22; range = 6 to 25). Of the 34 studies, $k = 14$ (41%) were rated poor, $k = 14$ (41%) were rated as fair, $k = 5$ (15%) rated good and $k = 1$ rated (3%) excellent. The RCTs generated higher methodological quality ratings (mean = 17.46, SD = 4.35) than the PBE studies (mean = 12.29, SD = 2.69). Both the RCT and PBE means were higher than the published mean scores for randomised and non-randomised studies respectively (Hooper et al., 2008). In general, study quality was highest for the methodological reporting sub-domain items, apart from monitoring adverse events and lost to follow-up descriptions. Studies also scored well for treatment being representative (external validity), as well as minimal bias emerging from inappropriate analyses. The majority of studies had a high risk of bias in terms of the internal validity sub-domains, particularly for lack of blinding of randomisation, intervention allocation and outcome assessment and bias introduced from poor adjustment of confounders in the analysis.

2.3. Meta-analysis of acceptability of CAT

2.3.1. Treatment refusal rate

Nine studies provided data on rates of treatment refusal for CAT representing $N = 932$ participants. The weighted mean treatment refusal rate was 15.35% (95% confidence intervals [CI's] 8.78 to 23.21). There was evidence of significant and large between study heterogeneity ($I^2 = 84.3\%$, 95% CI 71.8 to 91.2; $Q = 50.89$, $p < .001$). Pooled dropout rates removing one study each time ranged between 12.40% and 16.34%. This suggests the treatment refusal estimate was moderately stable. The funnel plot was symmetrical (Fig. 3a) and statistical tests of publication bias were not significant (rank correlation Kendall's Tau = −0.111, $p = .761$; Egger's regression Z = -0.325, $p = .745$). There were insufficient studies of treatment refusal rates for CAT to investigate moderators reliably.

2.3.2. Treatment dropout rate

Thirty-four studies provided treatment dropout rates representing $N = 1868$ participants. The weighted mean dropout rate was 18.69% (Fig. 2; 95% CI's 15.02 to 22.62). There was significant moderate heterogeneity between studies ($I^2 = 71.9\%$, 95% CI 60.4 to 80.0; $Q = 117.29$, $p < .001$). Pooled dropout rates removing one study each time ranged between 17.93% and 19.48%. This suggests a stable dropout estimate. The funnel plot was symmetrical (Fig. 3b) and statistical tests of publication bias were not significant (rank correlation Kendall's Tau = 0.061, $p = .614$; Egger's regression Z = 1.241, $p = .215$).

Sensitivity analysis only including studies reporting on treatment dropouts (cases that dropped out anytime during therapy delivery, rather than failure to attend a pre-defined assessment point) produced a pooled dropout rate of 17.05% ($k = 30$; proportion = 0.17; 95% CI 0.14 to 0.21; $p < .001$). Removal of study dropout studies slightly reduced the between-study heterogeneity to $I^2 = 66.6\%$ (95% CI 43.3 to 83.6; $Q = 92.11$, $p < .001$). Table 2 reports the moderator analyses. There was no effect of publication status, treatment format or gender on the proportion of treatment starters that subsequently dropout of treatment. Study type, dropout definition, presenting problem, treatment duration and

Table 1
Characteristics of included studies.

Study First Author (Year)	Country	Study type (design)	Comparator (dropout cases/ total sample N)	Treatment setting (presenting problem)	Mean age (SD) [range]	Sex (% male)	Treatment duration (format) [mean sessions]	Treatment refusal cases (proportion)	Treatment Sample N	Dropout cases (proportion)	Dropout definition	Risk of bias
[1] Brockman (1987)	UK	RCT	Interpretative therapy (7/29)	Hospital clinic (Dep & Anx disorders)	NR	NR	12 – medium (1:1)	NR	34	4 (0.12)	Did not complete treatment	7 (Poor)
[2] Treasure (1995)	UK	RCT	Educational behaviour therapy (6/16)	Outpatient Eating Disorder clinic (Anorexia Nervosa)	24.7 (5) [18–35]	3%	20 - long (1:1)	NR	14	4 (0.29)	Did not complete treatment	19 (Fair)
[3] Dunn (1997)	UK	PBE (pre-post)	N/A	Hospital clinic (Dep & Anx disorders)	NR [70% <40)	42%	16 - medium (1:1)	58/243 (0.24)	164	29 (0.18)	Did not complete treatment	11 (Poor)
[4] Fosbury (1997)	UK	RCT	Diabetes specialist nurse education (1/17)	Diabetes clinic (poor diabetes control)	30.5 (10.6) [18–55]	33%	16 - medium (1:1)	NR	15	5 (0.33)	Did not complete treatment or declined follow-up retests [study dropouts]	17 (Fair)
[5] Ryle (2000)	UK	PBE (pre-post)	N/A	Hospital clinic (BPD)	34.3 (7.5)	41%	24 - long (1:1)	NR	39	6 (0.15)	Did not complete treatment	11 (Poor)
[6] Birtchnell (2004)	UK	PBE (pre-post)	N/A	Psychotherapy service (NR)	39.0 (10.1) [22–61]	24%	16 - medium (1:1)	NR	49	11 (0.22)	Did not complete treatment	9 (Poor)
[7] Chanen (2008)	Australia	RCT	Good clinical care (11/37)	Early intervention youth clinic (BPD)	16.3 (0.8)	17%	24 - long (1:1) [14.7]	3/44 (0.07)	41	12 (0.29)	Dropped out of intervention	16 (Fair)
[8] Dasoukis et al. (2008)	Greece	PBE (pre-post)	N/A	Community mental health centre (BPD)	NR	NR	NR (1:1)	NR	91	34 (0.37)	Did not attend follow-up [study dropouts]	10 (Poor)
[9] Kosti et al. (2008)	Greece	PBE (pre-post)	N/A	Community mental health centre (OCPD)	NR	NR	NR (1:1)	NR	64	19 (0.30)	Did not attend follow-up [study dropouts]	10 (Poor)
[10] Tzourmanis (2010)	Greece	PBE (pre-post)	N/A	Community mental health centre (panic disorder)	33.4 (8.9)	21%	NR (1:1)	9/128 (0.07)	119	19 (0.16)	Did not complete treatment	6 (Poor)
[11] Gleeson (2012)	Australia	RCT	Specialist first episode psychosis treatment (NR)	Early psychosis prevention & intervention centre (psychosis & BPD)	18.6 (2.8)	25%	16 - medium (1:1) [9.5]	NR	6	3 (0.50)	Treatment starters who had <12 sessions	20 (Good)
[12] Clarke (2013)	UK	RCT	TAU (9/49)	Specialist PD clinic (Personality Disorder)	36.9 (9.3) [19–59]	28%	24 - long (1:1)	NR	50	10 (0.20)	Discontinued treatment	16 (Fair)
[13] Kellett (2013)	UK	PBE (pre-post)	N/A	NHS mental health clinics (BPD)	33.1 (5.23)	18%	24 - long (1:1)	NR	19	2 (0.11)	Did not complete full treatment	15 (Fair)
[14] Boogar (2013)	Iran	RCT	No treatment control (1/12)	Psychiatric centre (OCD)	37.78 (5.38) [31–44]	50%	16 – medium (1:1)	NR	12	3 (0.25)	Dropped out of study [study dropouts]	16 (Fair)
[15] Calvert et al. (2015)	UK	PBE (longitudinal cohort)	N/A	Tertiary psychotherapy service (complex trauma)	34.65 (10.67) [18–64]	0%	24 - long (group)	19/157 (0.12)	138	30 (0.22)	Did not complete treatment	14 (Fair)
[16] Nehmad (unpub, 2015)	UK	PBE (Audit data)	N/A	Secondary Care psychotherapy service (mixed)	NR	NR	16 or 24 – mixed (1:1)	NR	85	7 (0.08)	Dropped out of treatment	12 (Poor)
[17] Evans (2017)	UK	RCT	TAU (4/9)	Specialist psychotherapy service (Bipolar Disorder)	48.33 (9.84)	22%	24 - long (1:1) [22]	NR	9	1 (0.11)	Did not complete full treatment	18 (Fair)
	UK	PBE (pre-post)	N/A			41%		6/17 (0.35)	11	1 (0.09)		

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Table 1 (*continued*)

Study First Author (Year)	Country	Study type (design)	Comparator (dropout cases/ total sample N)	Treatment setting (presenting problem)	Mean age (SD) [range]	Sex (% male)	Treatment duration (format) [mean sessions]	Treatment refusal cases (proportion)	Treatment Sample N	Dropout cases (proportion)	Dropout definition	Risk of bias
[18] Meadows and Kellett (2017)				Primary Care IAPT service – step 2 (Anxiety)	37 (10.7) [24–57]		6 - brief (1:1)				Did not complete treatment	13 (Poor)
[19] Kellett (2018a)	UK	RCT	TAU (4/10)	High secure hospital for offenders (Schizophrenia/serious mental disorder)	38.7 (9.4)	100%	16 - medium (group) [12.5]	0/10 (0.00)	10	1 (0.10)	Dropped out of treatment	19 (Good)
[20] Kellett (2018b)	UK	RCT	CAT-NR (N/A)	Primary care IAPT service (Depression)	41.3 (11.5)	23%	8 - brief (1:1)	NR	95	16 (0.17)	Attended <3 sessions	19 (Good)
[21] Taylor et al. (2020)	UK	PBE (case series)	N/A	NHS Secondary Care mental health services (Psychosis)	26.71 (6.40) [19–34]	57%	5–30 - mixed (1:1) [14.9]	NR	7	3 (0.43)	Did not complete therapy	9 (Poor)
[22] Tyrer (2019)	UK	PBE (case series)	N/A	NHS psychological therapy service (mixed – all had low mood)	41.67 (18.76) [26–73]	17%	16 - medium (1:1)	NR	8	1 (0.13)	Dropped out of therapy	13 (Poor)
[23] Baronian (2020)	UK	PBE (pre-post)	N/A	Pain management service (chronic pain)	48.1 (12.52)	25%	8 - brief (1:1)	NR	53	3 (0.05)	Did not complete treatment	14 (Fair)
[24] Brummer (unpub, 2020)	UK	PBE (pre-post)	N/A	Secondary Care (severe & complex disorders)	38 [22–64]	6%	16 optimal – mixed (group)	NR	35	5 (0.14)	Did not complete group	14 (Fair)
[25] Kellett et al. (2020)	UK	PBE (case series)	N/A	Private sector CAT clinic (mixed anx/dep or PD)	34.7 (7.2)	57%	16 or 24 – mixed (1:1)	NR	10	3 (0.30)	Attended <3 sessions	15 (Fair)
[26] Prabalkumari (unpub, 2020)	India	PBE (pre-post)	N/A	Psychotherapy services - 1 private & 1 public (mixed including PD)	NR	20%	6–24 - mixed (1:1) [12.25]	10/58 (0.17)	48	14 (0.29)	Completed agreed number of contracted sessions	16 (Fair)
[27] Rushbrook (unpub, 2020)	UK	PBE (audit data)	N/A	Intensive psychological therapies service (mixed – majority affective disorders)	38.25 (17.18) [19–67]	NR	NR (1:1)		200	12 (0.06)	Service dropout (unplanned ending)	9 (Poor)
[28] Hamilton (2021)	UK	RCT	TAU (NR)	Outpatient perinatal psychiatry clinics (stress in pregnant women)	30.2 (6.4)	0%	16 – medium (1:1)	NR	20	2 (0.10)	Attended ≤ 12 sessions	13 (Poor)
[29] Taylor et al. (2020)	UK	PBE (pre-post)	N/A	Emergency dept. psychotherapy engagement service (self-harm)	25.03 (9.44) [16–58]	38%	4 - brief (1:1) [3.08]	30/83 (0.36)	53	12 (0.23)	No dropout definition: used attended < half sessions	16 (Fair)
[30] Martin (2021)	Republic of Ireland	PBE (pre-post)	N/A	Primary Care Psychology Services (Dep & Anx/ relationship problems)	[23–66]	32%	12 - medium (group) [10.63]	NR	22	10 (0.45)	Attended <8 sessions	14 (Fair)
[31] Wakefield (2021)	UK	PBE (case-control)	CBT (21/73)	Primary Care IAPT service (Dep & Anx disorders)	42.6 (12.0) [18–75]	37%	8 – brief (1:1) [6.01]	NR	76	11 (0.14)	Did not return after 2nd session (unilateral discontinuation)	14 (Fair)
[32] Hessels (2021)	Netherlands	PBE (cohort study)	N/A	Early intervention outpatient centre (BPD)	17.27 (2.31) [13–21]	0%	NR (1:1) [15.36]	NR	29	1 (0.03)	Treatment dropout	13 (Poor)
[33] Chanen (2022)	Australia	RCT	Befriending (23/ 46)	Early intervention youth clinic (BPD)	19.2 (0.5)	18%		NR	46	14 (0.30)	Attended <+ 8 sessions (due to DNA or	25 (Good)

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Table 1 (*continued*)

Study First Author (Year)	Country	Study type (design)	Comparator (dropout cases/ total sample N)	Treatment setting (presenting problem)	Mean age (SD) [range]	Sex (% male)	Treatment duration (format) [mean sessions]	Treatment refusal cases (proportion)	Treatment Sample N	Dropout cases (proportion)	Dropout definition	Risk of bias
							16 – medium (1:1) [12]				voluntary discontinuation)	
[34] Kellett et al. (2020)	UK	RCT (PRPPT)		Primary Care IAPT service – step 2 (Anxiety)	37.05 (14.11)	20%	6–8 – brief (1:1) [4.9]	24/192 (0.13)	192	53 (0.28)	Dropped out of treatment (unilateral discontinuation)	22 (Good)

Note. Abbreviations: NR: not reported; N/A: not applicable; N: number of patients; PBE: practice-based evidence; RCT: randomised controlled trial; CAT: cognitive analytic therapy; CAT-NR: CAT without narrative reformulation component; BPD; Borderline Personality Disorder; OCPD: Obsessive Compulsive Personality Disorder; PD; Personality Disorder; IAPT: Improving Access to Psychological Therapies; DNA: Did not attend; PRPPT: Partially randomised patient preference trial; Unpub: unpublished (followed by source date in brackets).

study quality explained some variance in dropout rates (R^2 ranging from 2 to 10%). However, these moderating effects were not statistically significant. Country and mean age were the only significant moderators of dropout rates. Significantly lower dropout rates were found for CAT delivered in the UK and Ireland (15%) compared to other countries (27%) and in samples with higher mean ages. However, when adjusting the alpha value for multiple testing using a Bonferroni correction ($p <$ .007), neither of the moderators remained significant.

2.3.3. Direct comparisons of CAT versus active comparator dropout rates

Ten studies provided an active treatment comparator dropout rate, totalling data from $N = 852$ participants (CAT $N = 487$, treatment comparator $N = 365$). The pooled odds ratio (OR) found CAT to have a significantly lower (OR = 0.67; 95% CI 0.48 to 0.93; $p = .016$) dropout rates (21.8%; 95% 16.6 to 27.5) relative to treatment comparators (29.4%; 95% 21.9 to 37.5). On average, the odds of dropout were 33% lower when participants received CAT as opposed to another treatment. Pooled odds-ratios removing one study each time ranged between 0.61 and 0.73. This suggests the dropout comparison was moderately stable and was consistently in favour of CAT. There was minimal between-study heterogeneity although the 95% CI were very wide ($I^2 = 1.2\%$, 95% CI 0.0 to 90.5; $Q = 11.89$, $p = .220$). Funnel plot inspection suggested symmetry (Fig. 3c) and statistical tests were not significant (rank correlation Kendall's Tau = −0.067, $p = .861$; Egger's regression Z = -0.308, $p = .757$).

2.3.4. Benchmarking CAT acceptability versus other psychotherapies

Fig. 4 contains the acceptability benchmarks for the pooled CAT treatment refusal and treatment dropout rates against the treatment refusal and dropout rates for specific psychotherapies recovered from relevant meta-analyses, in addition to the general psychotherapy dropout rate. Two of the meta-analyses reported treatment refusal estimates. Treatment refusal rates for CAT and CBT were similar at approximately 16% and these were higher than the refusal rates (8%) for psychotherapy and/or pharmacotherapy treatment in general. For other psychotherapies, treatment dropout rate estimates ranged from 15.8% for ACT to 28.0% for DBT, with general treatment dropout rate estimated to be 21.9%. The CAT meta-analysed dropout rate was lower than all other therapies except ACT. Inspection of 95% confidence intervals showed the non-overlap between the CAT treatment dropout rate and CBT and DBT dropout rates.

3. Discussion

The primary aim of this review was to examine the acceptability of CAT. This was achieved by meta-analysing both treatment refusal and treatment dropout rates, exploring moderating factors, comparing the dropout rate for CAT with comparator treatments (mainly drawn from RCTs) and to contextualise the main results via benchmarking against meta-analysed dropout rates for other psychotherapies. Given that CAT has previously been advocated as a differentially acceptable treatment, empirically testing this claim was essential in the ongoing progression and consolidation of the CAT evidence-base. For patients offered CAT, the average rate of treatment refusal was 15.4% and an average of 18.7% then subsequently dropout of CAT. The CAT dropout rate appears analogous to the more recently reported rates in general reviews of psychotherapy dropout, with a little over one-in-five patients dropping out once treatment has commenced (Swift & Greenberg, 2014). CAT therefore appears to be an acceptable treatment for the majority of patients, especially considering that CAT is often used to treat more complex and enduring psychological disorders (Marriott & Kellett, 2009). CAT might benefit as a brief therapy in terms of its dropout rates, as longer psychotherapies afford more opportunities to dropout over the lengthier treatment contracts. Being a brief and time-linted therapy however is one of the defining features of the model. It is worth noting that one third of the studies included treatment of individuals with

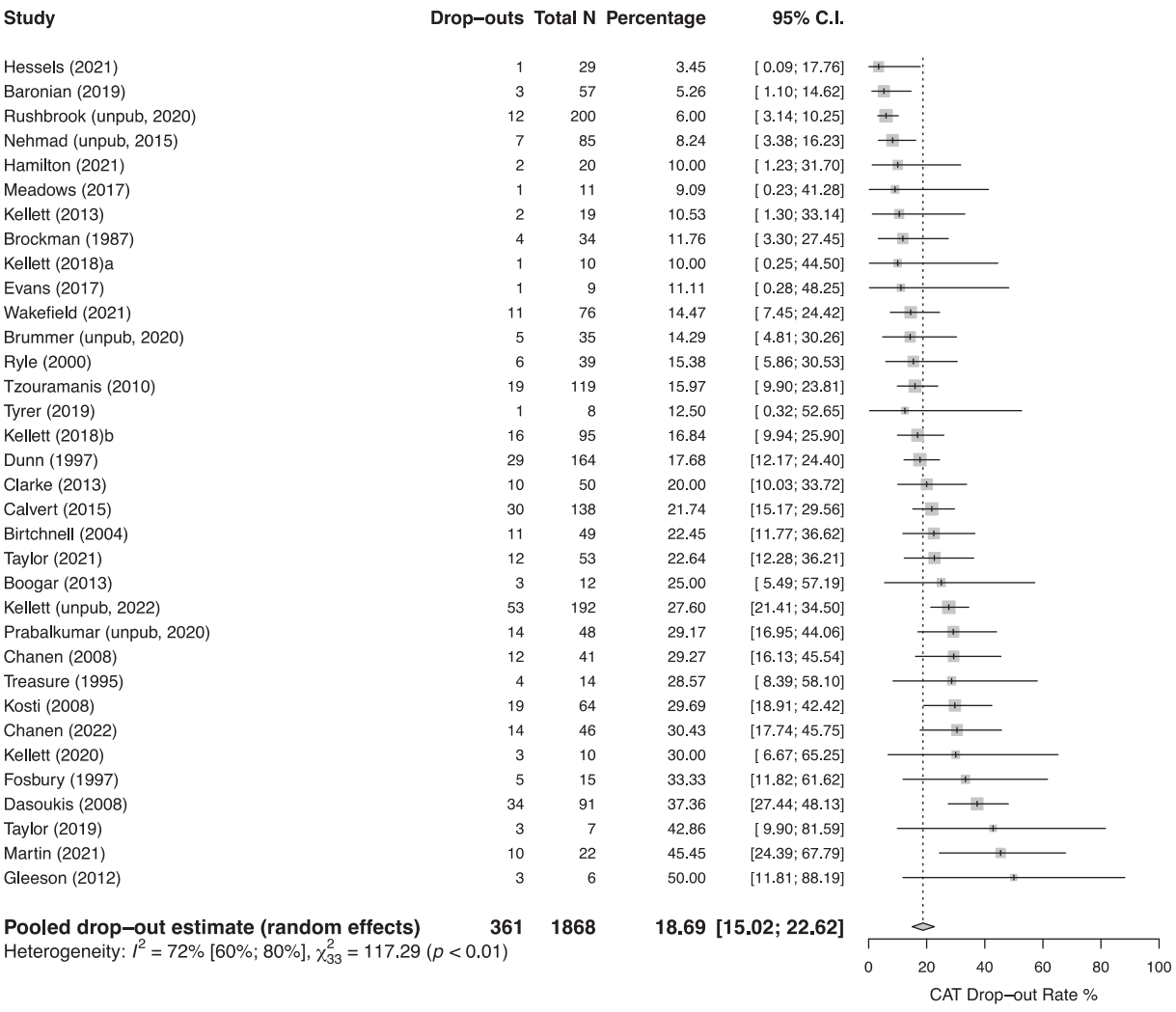

Fig. 2. Forest plot of treatment dropout rates for CAT.

personality disorder diagnoses, a presentation that has previously been associated with higher treatment dropout rates (Cooper & Conklin, 2015; Gülüm, 2018). Country and mean age were the only significant moderators of dropout rates, suggesting fewer people dropout of CAT delivered in the UK and Ireland when compared to other countries and higher rates of dropout from CAT are seen in younger people.

Ten direct comparisons drawn from the original studies illustrated that CAT dropout rates were significantly lower than during other comparator treatments, including TAU, guided self-help CBT, interpretive therapy, and behavioural therapy. The odds ratio suggested a 33% lesser chance of dropout during CAT. This differential effect has previously been attributed to the relational style of CAT and particularly the effect of predicting, in narrative and diagrammatic reformulations, the risks of dropout that may be created by the patient's history (Ryle & Kerr, 2020). For example, naming that a patient with a history of abandonment might struggle to complete therapy and that the therapy would try to spot, discuss, and resolve when dropout might be likely. Confidence in the differential acceptability of CAT is undermined by the comparator treatments being very varied. Benchmarking usefully contextualised the CAT dropout rate, with the rate of CAT treatment dropout towards the lower range of estimated average dropout rates for a wide range of other psychotherapies (16–28%). The upper confidence interval limit of the CAT pooled estimate did not overlap with the lower limit of both the CBT or DBT pooled estimates. DBT is also often delivered for patients with a personality disorder diagnosis in routine services as this is recommended in clinical guidelines (National Institute for Health and Care Excellence, 2015). This suggests that even when allowing for variation around dropout rates, CAT appears to generate a lower rate of dropout and so appears relatively more acceptable. These were not direct comparisons however, so whether these differences can be attributed to therapeutic reasons (features of the models which make dropout more or less likely) or methodological reasons (differences in how review methods and dropout definitions were applied) clearly requires more attention.

To account for some of the inherent issues in the evaluation of dropout rates, the present review distinguished those that dropped out after starting treatment from those that refused treatment following screening. Approximately one-in-six patients offered CAT at screening, did not then attend for any treatment at all. This treatment refusal rate (~15%) for CAT was nearly twice as high as the estimate (~8%) from Swift et al.'s (2017) review of treatment refusal rates and is therefore a concern. Methodological differences may explain this difference, as Swift's review was restricted to RCT's and included both psychotherapy and/or pharmacotherapy treatments. This interpretation is supported by previous findings of lower dropout rates in efficacy studies compared to effectiveness studies (Swift & Greenberg, 2014). In addition, comparisons with the CBT treatment refusal rate (Fernandez et al., 2015) that followed a similar method to this review (any publication related to dropout) found nearly identical rates (CAT = 15.4%, CBT = 15.9%). Participants in RCTs have already agreed to some extent to treatment

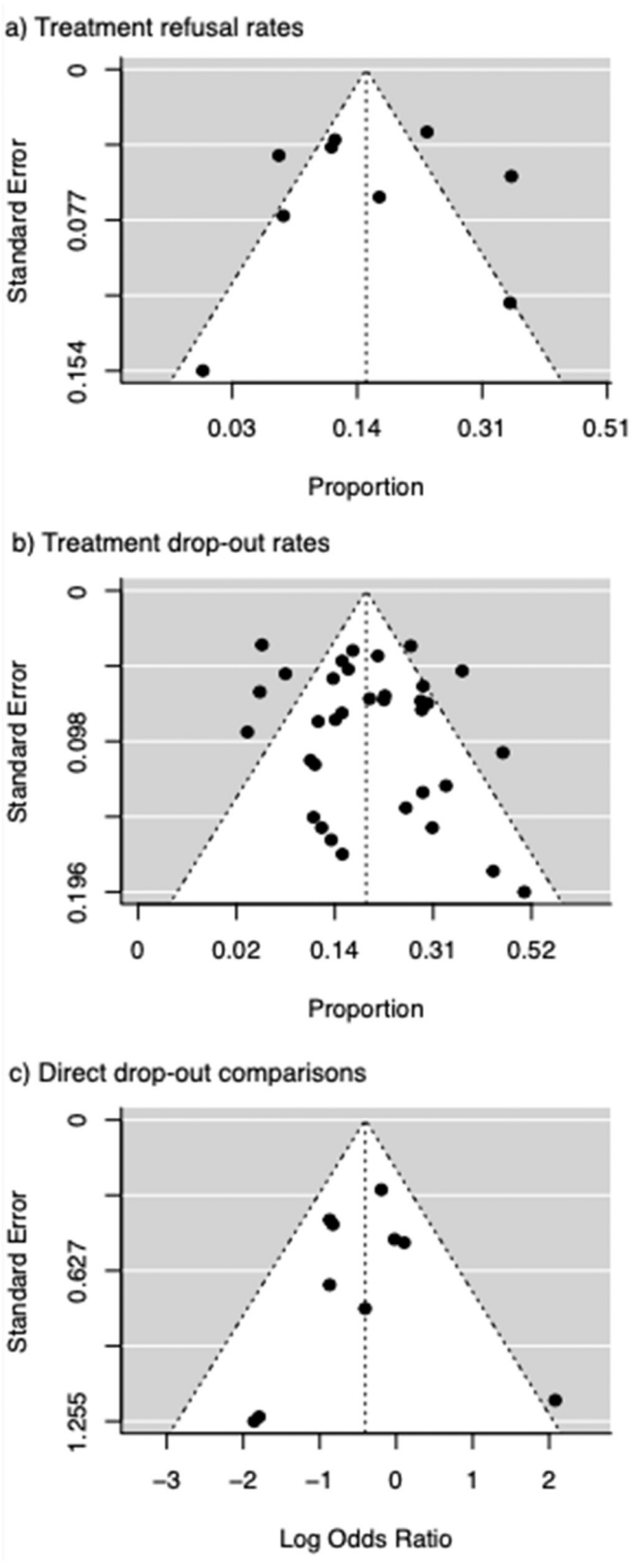

Fig. 3. Funnel plots for the three meta-analytic comparisons a) Treatment refusal, b) Treatment dropout and c) Direct comparisons of CAT versus control dropout rates.

allocation by the nature of providing consent to participate and therefore may represent a self-selecting sample who are primed to attend. It would appear unwise to evaluate treatment refusal rates in practice-based environments against standards achieved in clinical trials, whilst always striving to reduce the gap between screening and start of treatment. There may be more factors at play in routine care settings that can prevent patients taking up an offer of treatment, regardless of what type of therapy is offered. The wait time between offer of treatment and start of treatment may be lengthy at times in highly pressured routine services and this might account for the observed treatment refusal rates.

Moderate heterogeneity between treatment dropout rate studies warranted further investigation. Lower dropout rates for studies in the UK and Ireland and older aged participants were found to be significant. Dropouts tending to be younger is consistent with previous therapy dropout reviews (Swift & Greenberg, 2014), with greater dropout particularly associated with patients younger than 25 years in age (Barrett et al., 2008). Few dropout meta-analyses have previously included country as a moderator and it has not proved significant when it has been (e.g. North America versus elsewhere; Cooper & Conklin, 2015). The country as a significant moderator finding may be an artefact of CAT originating in the UK, with a longer established training and supervision infrastructure (Ryle et al., 2014). Although a quarter of CAT dropout studies were located from countries outside of the UK and Ireland, there were not enough of these to investigate each country as its own subgroup.

Of the other potential moderators, treatment duration, presenting problem, study type, study quality and dropout definition did explain between 2 and 10% of variance in dropout rates, but failed to reach significance. The dropout rate was higher for longer CAT treatment contacts (22%), more complex presenting problems (21%), RCTs (22%), dropout defined as not completing therapy or non-attendance (19–20%) and higher study quality. Whilst we cannot make interpretations about these factors based on the present results, it is important to note the studies used in the subgroup analyses had small sample sizes and so were likely underpowered to detect significant differences (Borenstein, 2009). Moderating effects have been found for similar variables in other dropout reviews with considerably more studies (i.e., between 76 and 115 studies) (Fernandez et al., 2015; Karekla, Konstantinou, Ioannou, Kareklas, & Gloster, 2019).

4. Limitations

Findings need to be considered in the context of several limitations. First, despite efforts to accommodate the wide heterogeneity apparent in dropout definitions, the review was still dependent on using the original study's dropout definition. Therefore, important aspects of dropout (such as cases of pre-therapy dropout and CAT comparator dropouts in RCT studies) were not always reported. Some CAT treatment studies were excluded because they did not provide dropout information at all or only reported on completers. This limited the comparisons possible with regards to direct comparators and in moderator analyses with subgroup allocations (i.e., only possible for the treatment dropout rates).

Within the included studies there was considerable variation in diagnoses (i.e., personality disorders, long term health conditions, psychosis, trauma, self-harm, obsessive-compulsive disorder, schizophrenia, eating disorders, anxiety, and depression) and also in the methods used to reliability ascertain the clinical diagnosis. The wide variety of presenting problems does reflect extant evidence of CAT being in wide use across various patient groups and clinical settings (Dasoukis et al., 2008; Kellett, 2005; Kosti et al., 2008; Taylor et al., 2020), but this may have exerted an influence on the variability of dropout rates (Ong et al., 2019). In addition, the varied diagnoses meant there were insufficiently sized subgroups to explore the influence of diagnosis on dropout in more detail. Overall study quality was poor to fair but given the mainly PBE nature of the CAT evidence base this is not perhaps

Table 2
Moderator analyses for categorical (subgroups) and continuous (meta-regression) moderators of CAT dropout rates.

Categorical variable	Subgroup	*k*	Proportion	95% CI	I^2(%)[a]	P (between subgroups)	R^2 (%)
Study type	PBE	21	0.17	0.13 to 0.22	69*	0.229	3.40
	RCT	13	0.22	0.16 to 0.29			
Publication status	Published	27	0.19	0.12 to 0.27	70*	0.850	0.00
	Unpublished	7	0.18	0.14 to 0.23			
Dropout definition[c]	Did not complete	12	0.20	0.14 to 0.26	65*	0.254	2.09
	< no. of sessions	8	0.17	0.14 to 0.21			
	Stopped attending	10	0.19	0.15 to 0.23			
Country	UK & ROI	25	0.16	0.13 to 0.21	66*	0.041*	16.56
	Other	9	0.25	0.18 to 0.33			
Presenting problem	Common	19	0.17	0.13 to 0.22	70*	0.361	2.37
	Complex	14	0.21	0.15 to 0.28			
Format	1:1	30	0.18	0.14 to 0.22	70*	0.540	0.00
	Group	4	0.22	0.11 to 0.35			
Duration	Brief (≤8 sessions)	6	0.17	0.13 to 0.21	54*	0.220	7.87
	Medium (12–16 sessions)	11	0.19	0.16 to 0.23			
	Long (20–24 sessions)	7	0.22	0.16 to 0.28			
	Mixed	6	0.15	0.10 to 0.22			
Continuous variable		*k*	B-coefficient[b]	95% CI	SE	P	R^2 (%)
Quality	(rating 0–28)	34	0.01	−0.00 to 0.02	0.01	0.081	9.98
% males	(0–100%)	29	0.00	−0.00 to 0.00	0.00	0.559	0.00
Mean age	(16–48 years)	26	−0.01	−0.01 to −0.00	0.00	0.037*	24.59

Note. Abbreviations: *k:* number of comparisons, SMD: standardised mean difference; CI: confidence interval; R^2: percentage of variation explained; SE: standard error; RCT: randomised controlled trial; PBE: practice-based evidence; UK: United Kingdom; ROI: Republic of Ireland.
[a] Pooled within-group estimates of between-study variance/heterogeneity, significance based on *p* value of associated Q statistic.
[b] Positive coefficient indicates dropout rates increase as value of moderator increases.[c]For studies classified as treatment dropouts only ($k = 30$).
* Significant at $p < .05$ threshold.

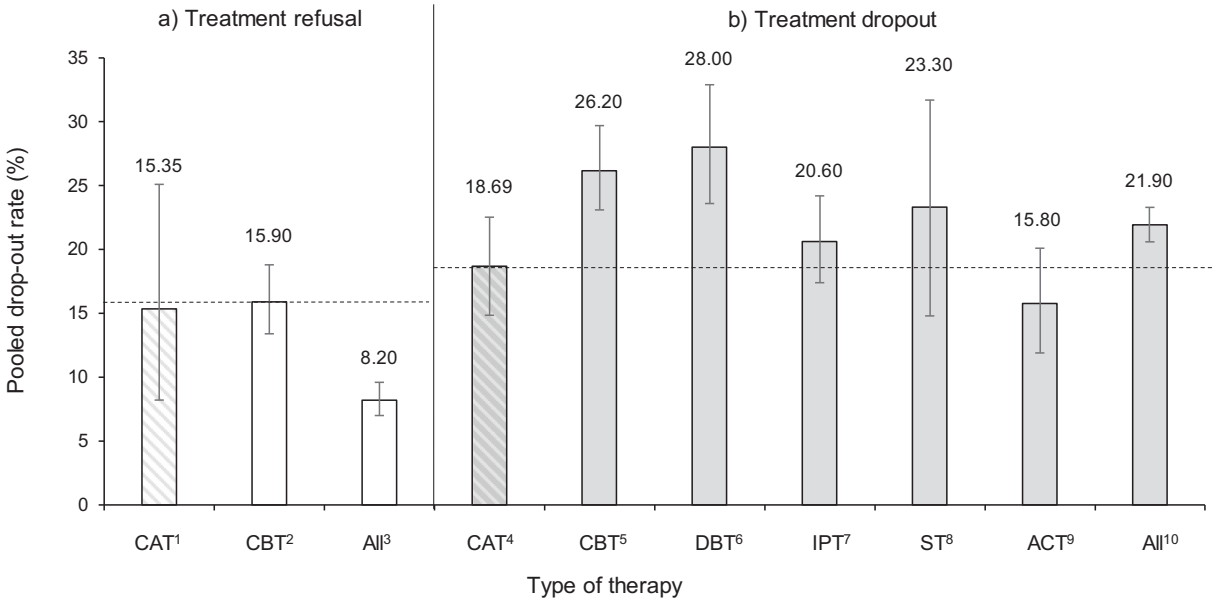

Fig. 4. CAT treatment refusal and treatment dropout rates (indicated by diagonal line patterned bars) Benchmarked Against Meta-Analysed Pooled Dropout Rates for Different Psychotherapies (dashed lines represent pooled rates from the current review; error bars indicate 95% confidence intervals for pooled estimates).
Note.[1]Current study; [2]Cognitive Behavioural Therapy (Fernandez et al., 2015); [3]Psychotherapy and/or pharmacotherapy (Swift et al., 2017); [4]Current study; [5]Cognitive Behavioural Therapy (Fernandez et al., 2015); [6]Dialectical behaviour therapy (Dixon & Linardon, 2020); [7]Interpersonal psychotherapy (Linardon et al., 2019); [8]Schema therapy (Gülüm, 2018); [9]Acceptance and commitment therapy (Ong et al., 2019); [10]Psychotherapy and/or pharmacotherapy (Swift et al., 2017).

surprising. Two-thirds of studies were rooted in practice-based evidence ($k = 21$). While these studies often have high external validity, their internal validity is often suboptimal. Poor methodological quality has been shown to be associated with overly favourable effects (Hempel et al., 2011) and may have resulted in a more optimistic pooled estimate of dropout from CAT (i.e., there was a trend of lower dropout rates associated with poorer quality studies, however the moderator effect was not significant). The relative absence of use of more internally valid outcome methodologies, such as RCT's, is a well acknowledged limitation of the CAT evidence base (Calvert & Kellett, 2014; Hallam et al., 2020).

5. Clinical and research implications

As has been highlighted by previous reviews of psychotherapy dropout, the evidence-base is hampered by the lack of an agreed universal definition. Although the findings of the current meta-analysis continue to advocate for a more standardised approach to operationalising therapy dropout, we acknowledge that this might be an unrealistic scenario to implement across all clinical services and research studies. A

more achievable goal would be for increased, improved, and consistent reporting of dropout data. Standardised guidelines (akin to the PRISMA standards) for reporting of dropout rates in all treatment outcome studies would represent progress. Specifically, to aim to provide in all outcome studies treatment refusal rates, treatment dropout rates, follow-up dropout rates, detailed and replicable definitions of how dropout was defined at each stage and a clear differentiation between study and treatment dropouts regardless of the study focus.

Although CAT appears to be acceptable to a large proportion of patients, it cannot be overlooked that a sixth of patients do not take up the offer of treatment, and a further fifth then do not finish treatment. Given the shadow cast by dropout on outcome, strategies to target and understand these subsets of patients is paramount. As evidenced by this review and that of Swift et al. (2017), differential rates of treatment refusal and treatment dropout are apparent. It follows that the reasons why those who decide not to attend for treatment are likely to differ from those who dropout and testing strategies to reduce both rates need to take this into account. The way CAT is explained at screening needs standardizing, with consistent use of patient psychoeducation on the model and approach, to then hopefully reduce rates of treatment refusal. The efficacy of this could easily be tested in a trial design. The time gap between screening and start of treatment in routine services is unknown, needs to be researched and should also be as short as possible. RCTs do benefit from often brief time lapses between screening and start of treatment. In-treatment dropout is viewed in the CAT model as a 'relational enactment' and therefore therapists should try to be watchful for and analyse any potential discontinuation themes.

6. Conclusion

CAT has been previously promoted as an acceptable treatment (Ryle & Kerr, 2020), even for the more complex presentations routine services often use this integrative model for (Marriott & Kellett, 2009). The objectives of this review have been achieved by providing the first meta-analysed estimates of treatment refusal and treatment dropout rates for CAT, in addition to exploring potential moderators of dropout rates and contextualising the CAT dropout rates against treatment comparators in the original studies and within the wider psychotherapy community of treatments. One-in-six CAT patients do not attend for treatment following screening and this treatment refusal rate appears analogous with CBT. One-in-five dropout of ongoing CAT treatment. But, when CAT was compared to active treatments (mainly but not exclusively RCTs) in the original studies, then patients receiving CAT were 33% less likely to dropout. When benchmarked against the wider psychotherapy acceptability meta-analytic evidence base, CAT had largely comparable dropout rates with other psychotherapies, with some suggestion of slightly lower dropout rates. Clearly, more research is needed and to identify for whom CAT may be most appropriate and acceptable treatment. Supporting patient preferences via psychoeducation to enable informed choices of preferred psychological treatments is needed to be considered in equipoise with the evidence base regarding effectiveness. CAT has emerged here as an acceptable treatment to patients, demonstrating comparable treatment uptake rates and equivalent dropout rates. Research should now focus on testing strategies to improve treatment uptake and treatment retention rates using theory-driven interventions to promote sustained attendance and subsequent completion of therapy.

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Contributors

Authors MSB, E-OO and SK designed the initial review and E-OO wrote the protocol. MSB and E-OO conducted the literature searches and screened titles/abstracts and full-text articles and extracted data. E-OO and CT conducted risk of bias ratings for included studies. MSB conducted the final statistical analyses. All authors contributed to the writing and approved the final manuscript.

Declaration of Competing Interest

All authors declare that they have no conflicts of interest.

Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.cpr.2022.102187.

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[1] References for studies included in the meta-analysis are provided in the supplementary materials.

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