THE UNIVERSITY *of* EDINBURGH

THE UNIVERSITY *of* EDINBURGH

Clinician attitudes towards, and patient well-being outcomes from, computerised Cognitive Behavioural Therapy: A research portfolio.

Joanne K. Persson

Doctorate in Clinical Psychology

University of Edinburgh, January 2018

D. Clin. Psychol. Declaration of own work

This sheet must be filled in (each box ticked to show that the condition has been met), signed and dated, and included with all assignments – work will not be marked unless this is done

Name: Joanne K. Persson

Assessed work: Thesis

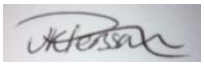
Title of work: Clinician attitudes towards, and patient well-being outcomes from, computerised Cognitive Behavioural Therapy: A research portfolio.

I confirm that all this work is my own except where indicated, and that I have:

- Read and understood the Plagiarism Rules and Regulations
- Composed and undertaken the work myself
- Clearly referenced/listed all sources as appropriate
- Referenced and put in inverted commas any quoted text of more than three words (from books, web, etc)
- Given the sources of all pictures, data etc. that are not my own
- Not made undue use of essay(s) of any other student(s) either past or present (or where used, this has been referenced appropriately)
- Not sought or used the help of any external professional agencies for the work (or where used, this has been referenced appropriately)
- Not submitted the work for any other degree/professional qualification except as specified
- Acknowledged in appropriate places any help that I have received from others (e.g. fellow students, technicians, statisticians, external sources)
- Complied with other plagiarism criteria specified in the Programme Handbook
- I understand that any false claim for this work will be penalised in accordance with the University regulations

Additionally, for SSR and Thesis submissions:

- Received ethical approval from the University of Edinburgh, School of Health
- Received ethical approval from an approved external body and registered this application and confirmation of approval with the University of Edinburgh's School of Health's ethical committee

Signature  **Date** 20/09/18

Acknowledgements

I would like to thank my team of supervisors, Professor Kevin Power, Dr Ethel Quayle and Professor Matthias Schwannauer, for your guidance throughout this journey. I'm especially grateful to Ethel for your continued support and encouragement, without which I would have been lost. My sincere gratitude to all of the people who took part in the study, whose well-being I hope continues to thrive.

A special thank you to Dr Nuno Ferreira for his assistance and patience with my statistics-related questions, and to Mr Christopher Wright and Miss Fabia Cientanni for their help developing my understanding of the complex Mastermind dataset.
I am also deeply grateful to my fellow trainees, who provided moral support and inter-rater quality assessments of my systematic review papers. Cara, Harriet and Mel, I could not have done this without you.

Finally, I want to offer my thanks to my family, for your continued love, support and deep faith in me, which helped me survive the academic deadlines and associated stressors. In particular Mum and Kenny: You made this possible. For your love, patience and support, I am eternally grateful.

This thesis is dedicated to Ben and Zander, who will always be in our hearts.

Table of Contents

Acknowledgements **4**

List of Tables, Figures and Appendices **6**

Thesis Overview **8**

Thesis Abstract **8**

Chapter One: Systematic review **11**

1.1: Abstract *12*

1.2: Introduction *13*

1.3: Method *18*

1.4: Results *25*

1.5: Discussion *44*

1.6: Conclusions *50*

Chapter 2: Empirical project **51**

2.1: Highlights *52*

2.2: Abstract *52*

2.3: Introduction *53*

2.4: Method *63*

2.5: Results *74*

2.6: Discussion *85*

References **92**

Appendices **104**

List of Tables, Figures and Appendices

Tables

Table 1.1	Study and sample characteristics from included studies	27
Table 1.2	Characteristics and main acceptability and future use ratings from included studies	29
Table 1.3	Methodological quality assessment of qualitative studies using Kmet and colleagues' (2004) checklist	32
Table 1.4	Methodological quality assessment of quantitative studies using Kmet and colleagues' (2004) checklist	34
Table 1.5	Characteristics and findings regarding perceived advantages and disadvantages of cCBT from included studies	37
Table 2.1	Frequencies and percentages for three levels of pre- and post-treatment life satisfaction by number of high group identifications	76
Table 2.2	Frequencies and percentages for three levels of pre- and post-treatment mental health satisfaction by number of high group identifications	77
Table 2.3	Medians, ranges, and Wilcoxon signed-rank test results of changes from pre- to post-treatment on life satisfaction, mental health satisfaction, functioning and well-being	78
Table 2.4	HMR analyses exploring predictors of outcome in Life Satisfaction and Mental Health Satisfaction with bootstrapped standard errors	80
Table 2.5	HMR analyses exploring predictors of outcome in Functioning and Well-being domains with bootstrapped standard errors	80
Table 2.6	Moderation analyses exploring predictors of outcome in Functioning with bootstrapped standard errors for baseline distress by social deprivation interaction	82
Table 2.7	Mediation analyses for Life and Mental Health satisfaction outcomes with bootstrapped standard errors for baseline distress by social deprivation	84

Figures

Figure 1.1	Flowchart of literature search process	26
Figure 2.1	Flow of completion and attrition rates from group identification and satisfaction measures	65
Figure 2.2	Mediation model of baseline distress as a predictor of life satisfaction, mediated by number of group identities	84
Figure 2.3	Mediation model of baseline distress as a predictor of mental health satisfaction, mediated by number of group identities	85

Appendices		104
Appendix 1	Search terms for systematic review	104
Appendix 2	Example e-mails requesting additional information from study authors	105
Appendix 3	Quality assessment checklists	106
Appendix 4	Predictors of outcome from cCBT	121
Appendix 5	Ethical and data sharing agreements	124
Appendix 6	Mastermind questionnaires and information	126
Appendix 7	Supplementary analyses	134
Appendix 8	Moderation and mediation analyses	141
Appendix 9	Empirical protocol	149
Appendix 10	Journal guidelines	153

Thesis Overview

This thesis follows the research portfolio format and is carried out in part fulfilment of the academic component of the Doctorate in Clinical Psychology at the University of Edinburgh. An abstract provides an overview of the entire portfolio thesis. Chapter One contains a systematic review of published research exploring staff attitudes towards computerized cognitive behavior therapy (cCBT). Chapter Two is an empirical study examining a range of potential predictor variables on well-being outcomes from cCBT. Chapter one is prepared for Behavioural and Cognitive Psychotherapy, whereas chapter two is prepared for submission to the journal, Behaviour Research and Therapy. Both chapters follow the relevant author guidelines.

Word Count (including tables and figures)

Systematic review = 10,045

Empirical study = 9,905

Total thesis portfolio = 19,950

Thesis Abstract

Background: Evidence suggests that computerised cognitive behavioural therapy (cCBT) is both effective and efficacious in treating depression and anxiety. Numerous barriers to its implementation and uptake have been identified, however, including attitudinal variables and high patient attrition rates. Research examining predictors of response from cCBT have tended to adopt the pathological model of distress, focussing on symptom reduction rather than the promotion of well-being.

Furthermore, exploration of possible predictors has tended to focus on a narrow range of factors (e.g. age, gender), neglecting key psychosocial variables (e.g. social identification, baseline distress) that could be exerting an effect.

Aims: A systematic review examined staff attitudes towards cCBT for depression, anxiety, and comorbid depression and anxiety, focussing on three attitudinal domains: Perceived acceptability of cCBT; staff's self-reported intention to use cCBT in the future, and perceived advantages and disadvantages of cCBT for depression and/or anxiety. An experimental study was subsequently conducted, examining a range of potential predictors on well-being outcomes from a cCBT intervention utilising Beating the Blues.

Method: A systematic search across five databases was conducted, followed by manual searches. Strict search criteria were applied, resulting in the identification of 15 studies. These were subjected to quality assessment, data extraction and synthesis. For the empirical study, data from 1354 participants was collected, with subgroup-analyses conducted on those completing measures of life and mental health satisfaction, functioning and well-being. Key potential predictors of interest were level of group identification, baseline distress, and socioeconomic deprivation.

Results: Findings from the systematic review indicated that staff held relatively positive attitudes towards cCBT, with some ambivalence emerging in relation to perceived advantages and disadvantages of the intervention. The empirical study obtained significant effects of group identification on life and mental health satisfaction. A mediating impact of group identity on baseline distress emerged, whereas a moderating effect of baseline distress on deprivation was obtained for the functioning model.

Discussion: The current findings demonstrated both positive and negative aspects of staff attitudes towards cCBT for depression and/or anxiety, whereas the empirical project established a clear link between social identification, baseline distress, and well-being. Results from both studies are discussed in terms of clinical implications relating to the uptake of cCBT.

Chapter One: Systematic review

Journal choice: Behavioural and Cognitive Psychotherapy

(5000 words, excluding references, tables and figures)

Title: Staff attitudes towards computerised Cognitive Behaviour Therapy: Perceived advantages and disadvantages.

Abbreviated title for running head: Staff attitudes towards cCBT.

Keywords: cCBT, attitudes, staff

1.1: Abstract

Background: Evidence suggests that computerised cognitive behavioural therapy (cCBT) is efficacious in treating depression. Numerous barriers to its uptake and implementation have been identified, however, including attitudinal variables. A systematic review (Kaltenthaler et al., 2008) of patient attitudes towards computer-based CBT programmes indicated such interventions are acceptable to patients. To date, no systematic review has examined staff perspectives on cCBT, despite recognition that such attitudes can constitute barriers or facilitators of access to care. **Aims:** To systematically review and synthesize existing data on staff attitudes towards cCBT. Attitudes were assessed across three domains: Perceived acceptability of cCBT for anxiety, depression, or mixed anxiety and depression; clinicians' intention to use cCBT in the future, and perceived advantages and disadvantages of cCBT. **Method**: A systematic search of five electronic databases (PsycINFO, Medline, Embase, Embase Classic and CINAHL) was conducted. Manual citation searches and searches of reference lists of all identified studies were completed. 1198 possible studies were identified, with 15 meeting full inclusion criteria. Key study information was extracted, synthesised, and subjected to methodological quality assessment. **Results:** Analysis revealed staff perceptions of cCBT as an acceptable treatment for depression and anxiety, with few staff expressing disinclination to use it in the future. Ambivalent attitudes towards advantages and disadvantages of cCBT emerged, with staff holding contradictory perceptions across four themes: patient and staff-related factors, organizational context, and programme practicalities. **Conclusions:** Overall, results indicated ambivalent attitudes towards cCBT from staff. Results are discussed in terms of strengths and limitations of the available evidence, and clinical implications for uptake of cCBT.

1.2: Introduction

Mental health problems are widespread across Europe (Ferrari et al., 2010). Some of the highest prevalence rates occur for anxiety and depressive disorders (Wittchen et al., 2011). Both disorders have been conceptualised as chronic conditions (e.g. Penninx et al., 2011; Richards, 2011) that affect individuals of all ages, including children, adolescents and adults (Avenevoli, Swendsen, He, Burstein, & Merikangas, 2015; Wittchen et al., 2011). Wide-ranging costs are associated with anxiety and depressive disorders on both individual and societal levels, including reduced quality of life (QoL; Zeng, Xu, & Wang, 2013), poor health outcomes (e.g. Cohen, Edmondson, & Kronish, 2015) and economic burden (Greenberg, Fournier, Sisitsky, Pike, & Kessler, 2015).

Guidelines from the National Institute of Health and Care Excellence (NICE) recommend the use of psychological therapies, including cognitive behavioural therapy (CBT; Beck, 1967), for the treatment of depression (NICE 2009) and anxiety (NICE 2011). A large evidence base demonstrates the efficacy of CBT in alleviating patient distress in both adult (e.g. Andersson, Cuijpers, Carlbring, Riper, & Hedman, 2014) and child or youth populations (Öst & Ollendick, 2017), yet access to such treatments remains low (Lawrence et al., 2015). This is despite recent governmental strategies that aim to improve access to psychological therapies (e.g. Scottish Government, 2017).

Numerous barriers to the uptake of traditional psychological interventions have been identified, including stigma around help-seeking behaviour (Ferrari, 2016), limited supply of trained clinicians (Layard, 2006), and difficulty accessing services for individuals from rural locations (Dolja-Gore et al., 2014). Considering the

limited number of patients currently accessing psychological treatment (Lawrence et al., 2015), researchers have argued that existing psychological models require adaption in order to increase access to specialist services (e.g. Newton & Sundin, 2016).

One potential adaptation that may help to address the barriers outlined above is through the use of computerised treatments. Debate has arisen over the definition of computerised approaches (see Barak, Klein, & Proudfoot, 2009), with some articles referring to 'eTherapy' or 'eHealth' in relation to information and communication technologies (such as professionals' utilisation of email or tablets; e.g. Olok et al., 2015), online educational resources (Whittemore et al., 2013), or web-based interventions adopting specific therapeutic models, such as psychodynamic (Zwerenz et al., 2017) or cognitive behavioural approaches (Cientanni et al., 2017).

The current study refers to computerised CBT (cCBT), and adopts the definition proposed by NICE: '*cCBT is a generic term that is used to refer to a number of methods of delivering CBT via an interactive computer interface'* (2006, section 3.1). An additional consideration emphasised by Barak and colleagues (2009) is that cCBT can be employed as a standalone treatment (i.e. completed without assistance from a therapist), or in conjunction with face-to-face therapy from a clinician (see Barak, Klein, & Proudfoot, 2009). A growing literature base indicates that cCBT is efficacious in treating depression (e.g. Andersson, Cuijpers, Carlbring, Riper, & Hedman, 2014), anxiety (for a review, see Olthuis, Watt, Bailey, Hayden, & Stewart, 2016) and mixed anxiety and depression (Titov et al., 2016). Recent evidence suggests that cCBT can be as effective as face-to-face CBT (Andersson et al., 2014; Titov et al., 2015) whilst being less expensive (Gerhards et

al., 2010; but see Kenter et al., 2015), in part due to requiring less clinician time than face-to-face approaches (Titov et al., 2015).

Evidence also indicates that cCBT may help to overcome barriers associated with more traditional approaches, such as stigma related to help-seeking behaviour (Choi, Sharpe, Li & Hunt, 2015) and patients' geographical distance from available services (Farrer, Christensen, Griffiths, & Mackinnon, 2011). Recent literature has emphasised additional benefits of cCBT, such as increased flexibility for both clinicians and patients (e.g. over appointment times; Gellatly et al., 2017) and appealing to patients who might find traditional, face-to-face approaches threatening (e.g. those with social phobias; Wilhelmsen et al., 2014). In combination, these factors indicate that cCBT offers a treatment modality that can increase access to cost-effective psychological therapy (Gerhards et al., 2010), which could help to alleviate the burden placed on a psychology workforce that is already overstretched (Scottish Government, 2011; Wilhelmsen et al., 2014).

Notwithstanding its potential benefits, cCBT appears to be under-utilised by patients and clinicians within routine care for adults (MacLeod, Martinez, & Williams, 2009) and within child and adolescent mental health services (CAMHS; Stallard et al., 2010). Just as with more traditional approaches, a range of criticisms of cCBT or barriers to its implementation have been identified (see Twomey & O'Reilly, 2017), including practical considerations that could limit access (e.g. lack of high speed internet; Andrewes, Kenicer, McClay, & Williams, 2013), and potential attitudinal barriers from patients or healthcare professionals (e.g. Knowles et al., 2014). Indeed, mental health staff have been shown to perceive attitudinal variables as one of the main barriers to the implementation of new psychological

treatments (Cook, Biyanova, & Coyne, 2009). Understanding the attitudes and perspectives of stakeholders involved in the therapeutic process, including patients and staff, could therefore be central to facilitating the uptake of computerised approaches in routine care (Montero-Marin et al., 2016).

To date, two systematic reviews have examined adult patients' attitudes towards cCBT for depression (Bowyer, 2017; Kaltenthaler et al., 2008)[1]. In the work by Kaltenthaler and colleagues, data was synthesized from 12 studies that utilised questionnaires to assess patients' acceptability or satisfaction with cCBT. High ratings of both acceptability and satisfaction emerged from the majority of studies, leading the authors to conclude that patients hold positive perceptions of cCBT. Similarly, in the latter review (including studies published since 2007, in order to provide an update from the earlier analysis), patients reported high levels of self-reported satisfaction.

Although patients' attitudes towards cCBT are increasingly understood (e.g. Alaoui et al., 2015), few studies have explored staff perspectives to such approaches (Newton & Sundin, 2016). This is despite recognition that clinicians' attitudes may constitute a major barrier to the implementation of new psychological approaches (Cook et al., 2009; Vigerland et al., 2014), and that staff perceptions of cCBT are likely to influence patients' uptake of the programmes (Du et al., 2013). Where research into clinician attitudes has been conducted, it has tended to be restricted to a narrow range of topics, such as comparisons of attitudes towards cCBT versus face-to-face therapies (e.g. Stallard et al., 2010), or has focused on generic online therapies, rather than investigating attitudes towards cCBT specifically (e.g.

[1] One additional systematic review on computerized approaches (Knowles et al., 2014) has also been conducted. This review included both CBT and other treatment modalities (e.g. interpersonal therapy), however, and so was excluded from our review.

Schröder et al., 2017). This means that our understanding of clinicians' perspectives on cCBT remains limited. To the best of our knowledge, to date no systematic review has examined the content of staff attitudes towards cCBT.

The main aim of this review was therefore to employ a systematic approach to the search for and analysis of published research, in order to answer the question "What attitudes do staff hold about cCBT for depression and/or anxiety"? We assessed attitudes across three main domains: perceived acceptability or suitability of cCBT for depression and/or anxiety (defined as whether clinicians perceived cCBT to be an appropriate treatment for the condition, and variables relating to this perception e.g. improvement rates); reports of whether staff were likely to use cCBT in the future, and perceived advantages versus disadvantages regarding cCBT for depression and/or anxiety (e.g. Salloum, Crawford, Lewin, & Storch, 2015). This was in order to answer the secondary aim of this review: To determine whether any consistent advantages or disadvantages of computer-assisted approaches could be identified.

Considering the lack of previous research in this area, the review aimed to synthesize findings from both qualitative and quantitative studies, in order to allow for a greater understanding of the available yet limited data. This is in line with recent guidelines from the Joanna Briggs Institute (Pearson et al., 2014), which recommend the inclusion of both qualitative and quantitative data into systematic reviews. While the findings of individual qualitative studies are specific to the context from which they are obtained (e.g. examination of experiences from a specific population) and are therefore not generalisable (Malterud, 2001), systematic

analysis allows us to identify themes from multiple sources (Stuart, Tansey, & Quayle, 2016) which may have wider applicability.

1.3: Method

The reporting of this systematic review followed guidelines from the Centre for Reviews and Dissemination (CRD; 2009) and PRISMA (Moher, Liberati, Tetzlaff, & Altman, 2009) utilizing the PICOS methodology (i.e. consideration of the population, interventions, comparators, outcomes, and design of relevant studies)[2].

1.3.1: Search strategies

Translation of studies in languages other than English was beyond the scope of this review, so searches were restricted to articles published in English. The systematic search was conducted in January, 2017, and consisted of an initial search of the Cochrane and Prospero databases to identify whether any similar systematic reviews had recently been undertaken. This search revealed one article of relevance to this review: a protocol for a review on patient attitudes to cCBT (Bowyer, 2017).

As no further reviews were identified, the following databases were subsequently searched: Embase Classic and Embase (1947 - 2017); PsychINFO (1806 - 2017), Ovid Medline[3] (R; 1946 – 2017), and CINAHL. A keyword search across all fields was undertaken across three main subject domains: cCBT, staff groups, and attitudinal or intervention feasibility ratings (see Appendix 1 for full list of search terms), with duplicate articles removed. Due to the lack of research within

[2] As emphasized in the CRD guidelines, not all systematic review questions will incorporate all five elements from PICOS (see https://www.york.ac.uk/crd/SysRev/!SSL!/WebHelp/SysRev3.htm). As our research questions did not assess intervention effectiveness trials, the comparators element (e.g. control conditions) was not considered.

[3] Including Epub ahead of print

this area (Newton & Sundin, 2016), no timeframe was set for the search, in order to be as inclusive as possible. Searches were re-run in September, 2017, to identify whether any additional articles had been published.

Two manual searches were also undertaken: An examination of the reference lists of each of the articles identified by the database search, and a citation search of each identified article. An additional citation search was also conducted on six, previously identified studies that examined staff attitudes towards computerised psychological therapies (Becker & Jensen-Doss, 2013; Donovan, Poole, Boyes, Redgate, & March, 2015; Du, Quayle, & Macleod, 2013; Perle et al., 2013; Waller & Gilbody, 2009; Whitfield & Williams, 2004). Following SIGN Guideline 50 (2015), hand searches of key journals were not conducted. Any relevant papers that had been omitted from the initial database search but were identified in these latter searches were included in the current systematic review. Any duplicate articles identified by the search strategies were removed, resulting in a total of 1198 potentially relevant studies.

1.3.2: Eligibility Criteria

Population

Included articles were based on studies that examined staff attitudes towards cCBT for depression, anxiety, or comorbid depression and anxiety. The population consisted of medical, mental health, or support staff working with individuals across the lifespan. As the focus of the review was staff attitudes to cCBT within the general population, studies examining attitudes of clinicians working within

specialist services (e.g. learning disabilities, forensic populations) were excluded (e.g. Vereenooghe, Gega, & Langdon, 2017).

Following the database and manual searches, numerous studies were identified that did not report the age-ranges of patients with whom clinicians worked (n = 6). Corresponding authors from each study were therefore contacted via e-mail (see Appendix 2) to ask for this information. Five authors replied, with three supplying the required information. The remaining two authors indicated that they had not assessed this variable in their studies. For those who did not reply (n = 1), or for whom the data was missing (n = 2), a separate section of the review was compiled.

cCBT interventions

As emphasised in the introduction, considerable confusion currently exists regarding precise definition of computerised CBT (Barak et al., 2009). Within the present review, cCBT is defined as any online or computer-assisted program that utilises a CBT intervention. This includes both standalone or embedded cCBT (i.e. combined with face-to-face therapy). Studies examining attitudes towards either type of treatment were therefore included in the current review.

The initial search strategies identified a range of studies examining 'eHealth' (e.g. Olok et al., 2015), defined as 'the cost-effective and secure use of ICT in support of health and health-related fields' (World Health Organisation, 2004). Although some of these studies examined attitudes towards cCBT (e.g. Donovan et al., 2015), others examined alternative eHealth modalities, such as online appointment systems (e.g. Almunawar, Wint, Low, & Anshari, 2012). Similarly, numerous studies examined attitudes to generic web- or internet-based psychological

therapies (e.g. Topooco et al., 2017), including online psychodynamic therapy (Zwerenz et al., 2017). As attitudes towards different types of therapy may vary between clinicians (Leahy, Holland, & McGinn, 2012), only studies examining cCBT were included.

Outcomes

Any outcome measures that assessed attitudinal variables towards cCBT (e.g. satisfaction ratings, reported concerns) were included in the current study.

Study design

Quantitative and qualitative studies were eligible for inclusion in the current review, regardless of the methodology that was employed. In contrast, review articles were excluded (cf. Reardon et al., 2017). Following Cochrane guidelines (Hannes, 2011), editorials and opinion papers were also excluded (e.g. Fox, Acton, Wilding, & Corcoran, 2004).

1.3.3: Study selection

The titles and abstracts of the 1198 identified studies were screened for inclusion eligibility based upon the exclusion and inclusion criteria detailed above. A visual representation of the study selection process is illustrated in Figure 1.1. This resulted in the full text of 89 studies being examined for eligibility, of which 74 were excluded for reasons detailed in Figure 1.1 (e.g. study examining perceptions of generic 'web-based psychotherapy' rather than cCBT). The lead researcher and two

of her supervisors (KP and EQ) discussed the suitability of shortlisted studies, with unanimous agreement between all members of the research team.

1.3.4: Data extraction

A data extraction spreadsheet was specifically designed for this review, piloted on one study (Newton & Sundin, 2016), and modified based on the results of the pilot (separate section added on analysis of advantages and disadvantages of cCBT). Key characteristics and data from each of the identified studies were extracted and summarized in Tables 1.1, 1.2, and 1.5, including: author, publication year, country of study, sample size, study methodology, intervention programme, main findings, and any perceived advantages or disadvantages reported by staff.

1.3.5: Thematic analysis

In order to determine perceived advantages and disadvantages of cCBT across studies, a data-driven thematic analysis approach (Braun & Clark, 2006) was employed. This employed a six phase model for the identification of advantages and disadvantages: 1) immersing self in the data through multiple readings of the articles, whilst searching for meanings, similarities and patterns in the data; 2) generating initial codes based on features of the data; 3) sorting the codes into possible themes; 4) refining and reviewing identified themes, checking for accuracy against the initial codes, and generating a thematic map of the data; 5) define, name and refine the themes and 6) tell the story of the data through producing a report, and select extracts to illustrate the themes. As the current methodology consisted of a secondary analysis of existing data (i.e. themes previously identified by study authors),

wherever possible the original theme names were retained in the current analysis, although this often involved minor rewording of the initial names to facilitate ease of comparison across studies (e.g. 'Not individualised'; Varley, 2011, p. 72 reworded to 'Lack of individualised approach' in the current analysis).

1.3.6: Quality assessment

Guidance on the assessment of quality of studies included in systematic reviews emphasise utilising assessment tools that are multidimensional and are based upon a checklist approach (CRD, 2009; Hannes, 2011). As studies identified through our search strategy employed a range of methodologies, a further consideration was the use of an assessment tool that permitted an evaluation of both qualitative and quantitative designs. Cochrane guidelines (Hannes, 2011) on the assessment of qualitative studies stipulate that quality assessments should include evaluation of: quality of reporting (including data sampling, collection and analysis); methodological vigour, and conceptual depth and breadth. In contrast, assessment of quality in quantitative methodologies should assess: risk of bias, selection of designs appropriate to the research objective, choice of outcome measures, statistical issues, quality of the intervention and generalizability (CRD, 2009). These guidelines also recommend that a distinction should be drawn between the quality of the empirical work and the quality of the reporting, as failing to report specific aspects of design methodology does not equate to relevant methods not being used (see Soares et al., 2004).

Based on these considerations, an assessment tool was selected that assessed each of the above quality criteria, and allowed for complimentary assessment of

multiple study designs (Kmet, Lee, & Cook, 2004). This tool consists of two checklists, one for quantitative and one for qualitative designs, and demonstrated acceptable to high inter-rater reliability scores in the original paper (i.e. 60-100%; Kmet, Lee, & Cook, 2004)[4]. The quantitative checklist consists of 14 items (e.g. 'Design evident and appropriate to answer question'), whereas the qualitative checklist consists of 10 items (e.g. 'Reflexivity of the account'). Items from both checklists are scored on a 3-point scale (where *yes* = 2, *partial* = 1, and *no* = 0), plus a 'Not applicable' option for quantitative items (e.g. random allocation to conditions). Summary scores are calculated by dividing the total score for each study by the total possible score, resulting in maximum summary scores of 1 for both checklists.

Any studies employing a mixed-methods design were evaluated in the current review using both checklists. Clear guidelines for allocating scores for each item are included with the tool (see Appendix 3). In order to address issues of relevance to our research questions, the qualitative checklist was modified (cf. Reardon et al., 2017) to differentiate between studies that used multiple to no verification procedures (e.g. member checks). An item was also added to each checklist to assess the reporting of quality of each study (cf. CRD, 2009; see Appendix 3.2). The quality of each study was assessed by the first author (JP), with four papers (26.7%) randomly selected for quality assessment by an independent reviewer. Cohen's kappa (Cohen, 1960) was calculated to determine inter-rater reliability for this

[4] NB inter-rater agreement scores were lower for the quantitative checklist (40-100%). The checklist items were modified following this analysis, however, but subsequent inter-rater reliabilities were not provided.

process ($_K$ = .80, 95% CI [0.68, 0.93]), which demonstrated a strong level of agreement (McHugh, 2012). Any disagreements were resolved through discussion.

1.4: Results

1.4.1: Characteristics of included studies

In total, 15 studies were included in the review, with 10 providing qualitative data, five providing quantitative data, and two providing both (see Tables 1.1 - 1.2). One study (Kuosmanen, Fleming, & Barry, 2017) adopted a mixed-methods approach, but only the qualitative aspect of the study referred to cCBT. It was therefore classified as providing qualitative data. Studies varied on a range of characteristics, including country of origin, methodological design, staff professional grouping (e.g. Clinical Psychologist, Social Worker), age of population with whom clinicians worked (see Table 1.1). Across the 15 studies, staff attitudes towards a range (*n* = 13) of specific programmes were assessed (e.g. Beating the Blues; BtBs), with one study assessing attitudes towards generic cCBT, and three studies assessing attitudes towards both generic cCBT and specific programmes (see Table 1.1).

Studies employing qualitative methodologies tended to have utilised focus group designs or semi-structured interviews, with a minority employing open-ended questionnaire measures (e.g. Varley, 2011). In contrast, the majority of quantitative studies employed questionnaire designs (e.g. Carper, McHugh, & Barlow, 2013). The amount of data relevant to answering our research questions varied across studies, with assessment of staff attitudes constituting a small proportion of some

Figure 1.1: Flowchart of literature search process

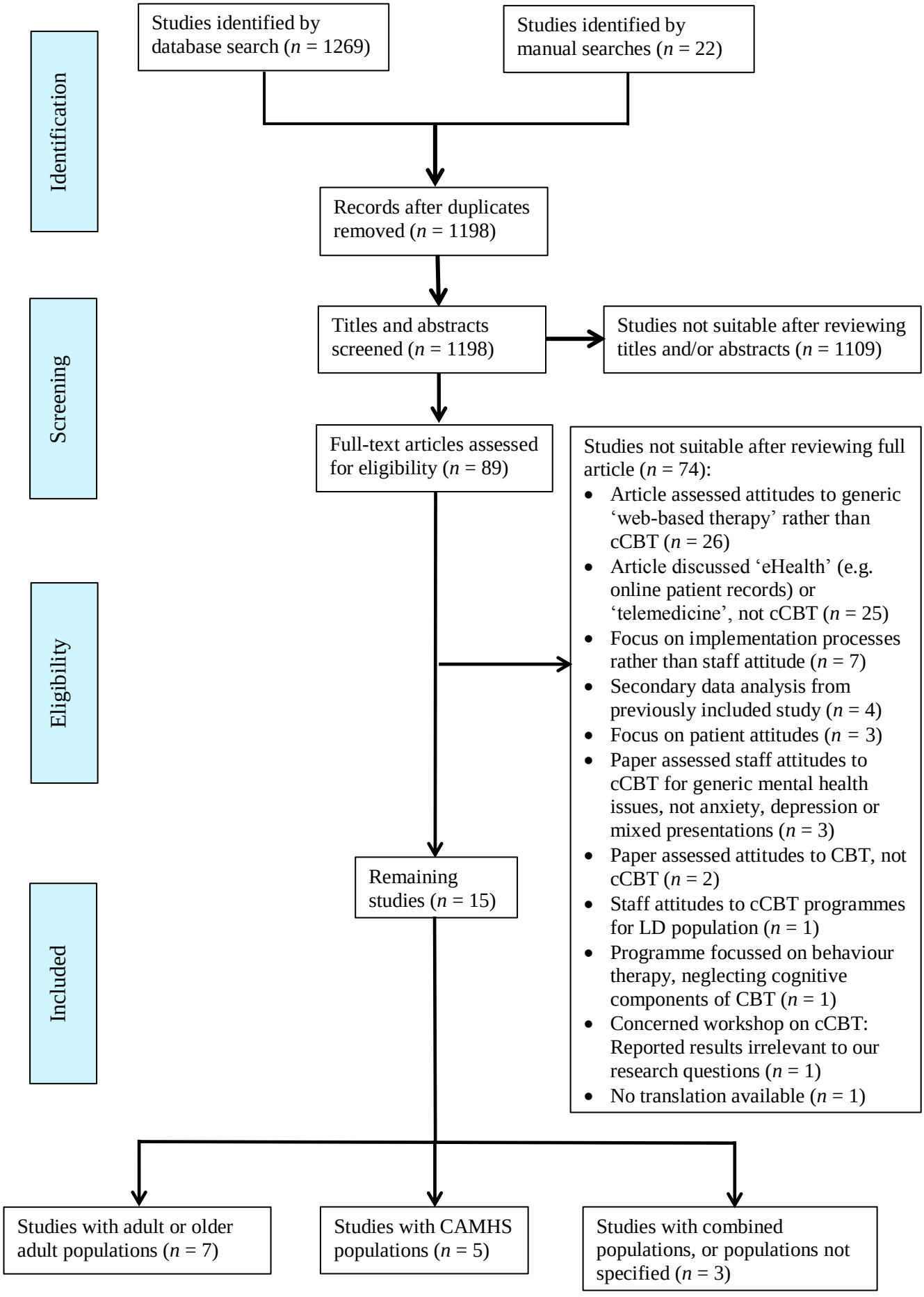


Table 1.1: *Study and sample characteristics from included studies*

Authors and year	Country	cCBT programme	Presenting problems	Staff group	*n* (% female)	Response rate (%)
			Adult populations			
Friesen et al. (2014)	Canada	The Wellbeing course	Anxiety and/or depression	Trainee clinical psychologists	12 (-)	-
Gellatly et al. (2017)	England	OCFighter	OCD	PWPs	20 (90.0)	28.2
MacGregor et al. (2009)	Scotland	Fear Fighter	Anxiety disorders	-	15 (-)	57.7
Newton & Sundin (2016)	England	Generic cCBT Beating the Blues	Depression	BABCP accredited therapists	12 (66.7)	<10.0[a]
Robertson et al. (2006)	Australia	Recovery Road	Depression	Mental health professionals[a]	-	-
Varley (2011)	Scotland	Generic cCBT	Anxiety and/or depression	Mental health professionals: - Psychologists (e.g. clinical, CAAPs). - GPs - Nurses	72 (-)	21.4
Wilhelmsen et al. (2014)	Norway	Moodgym (translated)	Depression	GPs	11 (81.8)	-
			CAMHS populations			
Baror (2010)	USA	Cool Teens CD-Rom	Anxiety	Psychologists: - Clinical - Counselling - 'Other'	43 (-)	-
Brezinka (2010)	Switzerland	Treasure Hunt	Various MHPs, including anxiety and depression	Child psychiatrists Clinical psychologists	124 (-)[b] 42 (-)[c]	31.7 23.9
Fleming & Merry (2013)	New Zealand	Generic cCBT SPARX	Depression	Youth workers	40 (40.0)	-

Kuosmanen et al. (2017)	Ireland	Moodgym SPARX	Anxiety and/or depression	Youthreach staff: - Coordinators - Teachers - Trainees	12 (75.0)	-
Salloum et al. (2015)	USA	Camp-cope-a-lot	Anxiety disorders	Various, including: - Administrators - Project coordinators - Therapists	9 (88.9)	-
			Mixed or does not specify population			
Alberts et al. (2017)	Canada	Wellbeing after cancer	Anxiety and/or depression	Social workers	10 (100)	38.5
Donovan et al. (2015)	Australia	Generic cCBT BRAVE	Various MHPs, including anxiety and depression	Metal health workers, including: - Clinical psychologists - Social workers - Nurses	124 (-)	-
Jones & Ashurst (2013)	UK	Generic cCBT Living Life to the Full Moodgym	Depression	Mental health professionals: - Nurses - Occupational therapists - Clinical psychologist	19 (68.4)	82.6

Note. - = Not assessed or reported in study; PWPs = Psychological Well-being Practitioner; BABCP = British Association for Behavioural and Cognitive Psychotherapists; CAAPs = Clinical Associate in Applied Psychology; GPs = General Practitioners.
[a]Further details not provided; [b]time one, first impression of programme; [c]time two, post-use of programme.

Table 1.2: *Characteristics and main acceptability and future use ratings from included studies*

Authors	Method	Analysis approach	Main findings (and implications)	
			Acceptability or suitability	Will use cCBT in future
			Adult populations	
Friesen et al. (2014)	Interviews	Thematic content	-	-
Gellatly et al. (2017)	Interviews	Thematic analysis	-	[a]
MacGregor et al. (2009)	Questionnaire	Descriptive statistics	1. Staff reported cCBT was suitable: 100% 2. Staff reported patients had improved ≥ "to some extent": 75%	-
Newton & Sundin (2016)	Questionnaire	Thematic analysis	1. Qualitative report that is appropriate for depression[b] 2. Qualitative report that is suitable when used as part of embedded approach[b]	-
Robertson et al. (2006)	Questionnaire	Descriptive statistics	1. Staff reported had helped relationship with patients[c]: 86% 2. Staff reported satisfaction with programme [c]: 100%	-
Varley (2011)	Questionnaire	Descriptive statistics Correlation Framework thematic analysis	1. Staff reported 'approved' or 'really approved' of cCBT: 66.7%	If appropriate, how often will you refer to cCBT: 1. Always: 1.4% 2. Often: 6.9% 3. Fairly often: 37.5% 4. Sometimes: 22.2% 5. Occasionally: 16.7% 6. Rarely: 13.9% 7. Not at all: 1.4%
Wilhelmsen et al. (2014)	Interviews	Thematic analysis	-	-
			CAMHS populations	
Baror (2010)	Questionnaire	Descriptive statistics	1. Staff reported it was 'likely' or 'very likely' that an adolescent would benefit	How likely is it that you would use the Cool Teens CD with no face-to-face

			from using Cool Teens CD: 56.1%	contact and biweekly phone contact only? 1. Less likely: 95.3% 2. More likely: 4.7% How likely is it that you would use the Cool Teens CD if you were also seeing the individual in face-to-face therapy? 1. Less likely: 41.9% 2. More likely: 58.1%
Brezinka (2010)	Questionnaire	Descriptive statistics	1. Staff reported was useful tool: 95.2%	-
Fleming & Merry (2013)	Interviews Focus groups	General inductive approach	1. Qualitative reports that cCBT would be useful[b]	No participants indicated that they would not use it.
Kuosmanen et al. (2017)	Interviews Focus groups	Requirements development approach	-	-
Salloum et al. (2015)	Interviews	Thematic analysis	-	-
Mixed or does not specify population				
Alberts et al. (2017)	Interviews	Thematic content analysis	1. All staff reported cCBT programme was useful or beneficial	-
Donovan et al. (2015)	Questionnaire	Descriptive statistics	-	Would you use a cCBT programme with your clients, if it were available?[c] 1. Definitely yes: 13.7% 2. Most likely: 32.3% 3. Possibly: 42.7% 4. Unsure: 6.5% 5. Definitely not: 4.8%
Jones & Ashurst (2013)	Transcripts	Thematic analysis	-	-

Note. cCBT = computerised cognitive behaviour therapy; CAMHS = Child and Adolescent Mental Health Service; CD = compact disc.
[a]Assessed but not reported in article; [b]Proportion of staff expressing view not provided; [c]Exact wording of question not provided.

studies (e.g. MacGregor, Hayward, Peck, & Wilkes, 2009), versus being the primary focus of others (e.g. Varley, 2011).

1.4.2: Quality of included studies

Quality of included studies was assessed on the basis of each study's ability to answer *our* research questions regarding staff attitudes towards cCBT. It should be noted that this question was often subsidiary to the main research question of the specific study (e.g. patient attitudes towards cCBT; Robertson, Smith, Castle, & Tannenbaum, 2006). This analysis therefore does not assess the generic quality of the studies in question, but rather their quality related to the research questions detailed above.

Tables 1.3 - 1.4 present the results of the methodological quality assessment for each of the 15 included studies. Results demonstrated variability across the study criteria. Maximum possible criterion scores for individual rating items were 2.0, with maximum summary scores of 1.0 for both checklists. Summary scores for each study ranged from 0.55 to 0.86 for the qualitative studies or data (M = 0.76, SD = 0.11), versus 0.29 to 0.88 (M = 0.57, SD = 0.21) for the quantitative studies or data, indicating variability across studies. For the qualitative data, the highest scoring studies (Alberts, Hadjistavropoulos, Titov, & Dear, 2017; Fleming & Merry, 2013; Varley, 2011) tended to have clearly defined research questions or objectives, and to have used multiple verification procedures (with the exception of Varley, 2011) in comparison to the lowest scoring studies (Baror, 2010; Jones & Ashurst, 2013).

Some aspects of methodological quality were adequately addressed, with each study, for example, employing suitable designs to answer their study questions

Table 1.3: *Methodological quality assessment of qualitative studies using Kmet and colleagues' (2004) checklist*

Criteria	Included studies												
	Alberts et al. (2017)	Baror (2010)	Fleming & Merry (2013)	Friesen et al. (2014)	Gellatly et al. (2017)	Jones & Ashurst (2013)	Kuosmanen et al. (2017)	Newton & Sundin (2016)	Salloum et al. (2015)	Varley (2011)	Wilhelmsen et al. (2014)	*M*	(*SD*)
1. Question/objective clearly described?	2	1	1	1	1	1	2	2	2	2	2	1.55	(0.52)
2. Design evident and appropriate to answer study question?	2	2	2	2	2	2	2	2	2	2	2	2.00	(0.00)
3. Context for the study is clear?	2	2	2	1	2	1	1	1	1	2	2	1.55	(0.52)
4. Connection to theoretical framework / wider body of knowledge?	2	1	1	2	1	1	2	1	2	1	2	1.45	(0.52)
5. Sampling strategy described, relevant and justified?	1	2	2	1	1	1	2	1	1	2	1	1.36	(0.50)
6. Data collection methods clearly described and systematic?	2	2	2	2	2	2	1	1	2	2	2	1.82	(0.40)
7. Data analysis clearly described, complete and systematic?	2	0	2	2	2	2	2	2	1	2	2	1.73	(0.65)
8. Use of verification procedure (s) to establish credibility?	2	0	2	2	2	1	1	1	2	0	2	1.36	(0.81)
9. Do the results support the conclusions?	2	1	2	1	2	1	1	1	2	2	2	1.55	(0.52)
10. Reflexivity of the account?	1	0	1	2	2	1	0	2	0	2	1	1.09	(0.83)
11. Write up	1	1	2	2	0	0	2	1	2	2	0	1.18	(0.87)
Summary score	0.86	0.55	0.86	0.82	0.77	0.59	0.73	0.68	0.77	0.86	0.82	0.76	(0.11)

(*M* criterion score = 2.0, *SD* = 0) and utilising systemic and replicable data collect methods (*M* = 1.82, *SD* = 0.40). In contrast, other aspects were less well addressed, with the lowest score emerging for reflexivity of the accounts (*M* = 1.09, *SD* = 0.83) and the quality of reporting (*M* = 1.18, *SD* = 0.87).

For the quantitative studies, the highest scoring studies (Donovan et al., 2015; Varley, 2011) demonstrated recruitment strategies aimed at reducing bias in the sample (e.g. approaching all clinicians within available services (Varley, 2011) and reported relevant and potentially confounding characteristics of their samples (e.g. theoretical orientation; Donovan, 2015), whereas the lowest scoring studies (Baror, 2010; MacGregor et al., 2009) showed a tendency to rely on convenience sampling. As with the qualitative data, reporting of quantitative studies tended to show low quality (see Table 1.4), with over half of the studies failing to report key aspects of methodological design (e.g. age of clients with whom clinicians worked (e.g. MacGregor et al., 2009).

1.4.3: Perceived acceptability or suitability of cCBT

Eight studies (53.3%) reported data on staff perceptions of the acceptability or suitability of cCBT for anxiety, depression, or comorbid presentations (see Table 1.2), with three employing qualitative analyses and five quantitative. As indicated in Table 1.2, data usually consisted of the proportion of staff that perceived cCBT to be beneficial for these conditions (e.g. Brezinka, 2010), or the *extent* to which staff perceived cCBT to be appropriate (Newton & Sundin, 2016) or helpful (Robertson et al., 2006). In all cases, the majority of staff reported positive perceptions of the suitability of cCBT for depression and anxiety, although the proportion of those

Table 1.4: *Methodological quality assessment of quantitative studies using Kmet and colleagues' (2004) checklist*

Criteria		Studies							
		Baror (2010)	Brezinka (2010)	Donovan et al (2015)	MacGregor et al (2009)	Robertson et al (2006)	Varley (2011)	*M*	(*SD*)
1.	Question or objective sufficiently described?	1	1	2	1	1	2	1.33	(0.52)
2.	Design evident and appropriate to answer study question?	2	1	2	1	1	2	1.50	(0.55)
3.	Method of subject selection or source of information/input variables is described and appropriate?	1	2	1	1	1	2	1.33	(0.52)
4.	Subject characteristics or input variables/information sufficiently described?	1	1	2	1	0	2	1.17	(0.75)
5.	If random allocation to treatment group was possible, is it described?	-	-	2	-	-	-	2.00	(0.00)
6.	If interventional and blinding of investigators to intervention was possible, is it reported?	-	-	0	-	-	-	0.00	(0.00)
7.	If interventional and blinding of subjects to intervention was possible, is it reported?	-	-	-	-	-	-	-	-
8.	Outcome and (if applicable) exposure measure(s) well defined and robust to measurement / misclassification bias? Means of assessment reported?	2	1	2	1	0	2	1.33	(0.82)
9.	Sample size appropriate?	1	2	2	1	0	1	1.17	(0.75)
10.	Analysis described and appropriate?	2	1	1	1	1	2	1.33	(0.52)
11.	Some estimate of variance is reported for main results/ outcomes (i.e., those directly addressing the question/ objective upon which the conclusions are based)?	1	1	2	1	0	1	1.00	(0.63)
12.	Controlled for confounding?	0	1	0	0	0	1	0.33	(0.52)
13.	Results reported in sufficient detail?	0	1	1	1	1	2	1.00	(0.63)
14.	Do the results support the conclusions?	1	1	2	2	2	2	1.67	(0.52)
15.	Write up	0	1	1	0	0	2	0.67	(0.82)
Summary score (*SD*)		0.50	0.58	0.71	0.46	0.29	0.88	0.57	(0.21)

expressing positive views varied across studies, ranging from 56.1% (Baror, 2010) to 100% (Alberts, 2017; MacGregor et al., 2009). These results are similar to patients' ratings of the acceptability of cCBT (for reviews, see Bowyer, 2017; Kalthenthaler et al., 2008), which also reported positive perceptions.

1.4.4: Do staff intend to use cCBT in the future?

Few studies (n = 4; 26.7%) examined staff members' intention to use cCBT in the future. One additional study examined this variable, but did not provide relevant findings in their results section (Gellatly et al., 2017). Due to the heterogeneity across studies over assessment of this variable (i.e. use of different questions and a variety of rating scales; see Table 1.2), direct comparison proved somewhat problematic (Field, 2005). Despite this, few clinicians indicated that they would definitely not use cCBT in the future (range 0 – 4.8%; see Table 1.2). A higher proportion of staff indicated their intention to use the intervention equal to or more frequently than 'fairly often' (45.8%; Varley, 2011) and that they would be 'most likely' or would 'definitely' use cCBT (46%; Donovan et al., 2015). With just two studies utilising such scales, however, the generalizability of this finding must be treated with caution.

Of note, the study by Baror (2010) differentiated between using cCBT in conjunction with face-to-face or telephone contact. When this differentiation was made, the vast majority of participants (95.3%) indicated that they would be unlikely to combine cCBT with telephone contact, in comparison to almost 60% who would be more likely to use it in combination with face-to-face contact. As no other study made this differentiation, the reliability of this finding is difficult to comment on.

Overall, consideration of the studies collectively suggests that clinicians were willing to use cCBT, yet some ambivalence was evident.

1.4.5: Does any consistency emerge over staff's perceptions of advantages or disadvantages regarding cCBT?

As indicated in Table 1.5, a range of advantages and disadvantages regarding cCBT were identified by staff from our identified studies. Thematic analysis (Braun & Clarke, 2006) indicated that these fell into four main themes: Patient-related factors, staff-related factors, organisational context, and practicalities regarding the use of cCBT. Varying numbers of subthemes (range = 3 to 9) arose within these four, over-arching categories (see Table 1.5). The lead researcher initially identified each theme and subtheme, with an independent reviewer checking the classifications. Agreement on both classification types was high (100% and 89.1%, respectively). Any disagreements were resolved through discussion.

The total number of advantages versus disadvantages generated within each theme was calculated (i.e. number of times each theme was identified across studies). Interestingly, across the four themes, the highest number of items generated related to patient factors for both advantages (n = 31) and disadvantages (n = 34). In total, 24 (46.2%) subthemes were identified relating to advantages of cCBT (see Table 1.5), in comparison to 28 (53.8%) disadvantages. In line with previous research (e.g. Whitfield & Williams, 2004), this suggests that studies and participants included in the current review demonstrated ambivalent attitudes towards cCBT.

In terms of consistency of responses, the majority of subthemes (n = 33; 63.5%) were identified by more than one study. In terms of the most common perceived

Table 1.5: *Characteristics and findings regarding perceived advantages and disadvantages of cCBT from included studies*

Themes	*n* studies	Studies	Example data extraction
		Advantages	
Patient-related factors	31		
1. Increases access to therapy: a. For patients with specific characteristics (including physical mobility and social anxiety issues, lower symptom severity, etc.)	6	Fleming & Merry (2013) Friesen et al. (2014) Kuosmanen et al. (2017) Jones & Ashurst (2013) Newton & Sundin, (2016) Varley (2011)	*'I do think it's a good service for certain clients.'* (Friesen et al., 2014; p.44). *'I have dealt with a number of students this year who might benefit from this. They wouldn't go to* [mental health service*] but would do something. They are into computers.'* (Fleming & Merry, 2013; p.271)
b. For those with practical difficulties (e.g. rural location, hectic or busy lives)	3	Alberts (2017) Friesen et al. (2014) Varley (2011)	*'Well, definitely the availability of it to anybody, no matter where you live. I know we work with a lot of rural people… they don't want to travel for more therapy or whatever, so something that they can do at home.'* (Alberts, 2017; p.601).
2. Increased flexibility of appointments or access (e.g. time and location)	4	Alberts et al. (2017) Gellatly et al. (2017) Varley (2011) Wilhelmsen et al. (2014)	*'I think that if people were able to access that and work on that much more freely… Especially for people who may be working during the day, or need to be able to access something at a time convenient for them'* (Gellatly et al., 2017; p.5)
3. Offers patients choice over therapy options	4	Fleming & Merry (2013) Gellatly et al. (2017) Kuosmanen et al. (2017) Varley (2011)	*'Gives patients increased choice if offered as one of a range of suitable options'* (Varley, 2011; p.70).
4. Reduces stigma and offers normalisation	4	Alberts et al. (2017) Friesen et al. (2014) Newton & Sundin (2016) Varley (2011)	*'I think the existence of a program for self-help…* [may help the patient] *realize that they are not alone and others have similar problems.'* (Newton & Sundin, 2016; p.6).
5. Empowers patients and/or increases autonomy	4	Fleming & Merry (2013) Salloum et al. (2015)	*'They had a lot of ownership in the program. They were sitting at the computer, they were the ones doing this, it wasn't being done to*

		Varley (2011) Wilhelmsen et al. (2014)	*them, so I think that was very powerful.'* (Salloum et al. 2015; p.36)
6. Gateway to, or prepares individual for, additional support (e.g. face-to-face therapy)	2	Fleming & Merry (2013) Newton & Sundin (2016)	*'And it's good because they get stuff from here and then probably go on to the next level, by meeting each other face to face. This could be like a starting, then you could elaborate.'* (Fleming & Merry, 2013; p.271).
7. Increases patient anonymity/privacy	2	Gellatly et al. (2017) Kuosmanen et al. (2017)	*'I guess with accessing an online programme… there's a slightly more anonymous aspect to it, and I think some people prefer that.'* (Gellatly et al., 2017).
8. Increases motivation and strengthens therapeutic relationship	1	Brezinka (2010)	Summary: p.106
9. Suitable for a wide age-range of children	1	Salloum et al. (2015)	Summary: p.36
Staff-related factors	24		
1. Useful tool to supplement face-to-face therapy	6	Alberts et al. (2017) Brezinka (2010) Kuosmanen et al. (2017) Newton & Sundin, (2016) Varley (2011) Wilhelmsen et al. (2014)	*'So it is, it's nice to have a tool to offer people. That in itself makes you feel better as a caregiver!'* (Wilhelmsen et al., 2014; p.10) *"I think it can be offered as a useful adjunct to therapy (not necessarily as a sole option)"* (Varley, 2011; p.72)
2. Provides psycho-education and socialisation to CBT model	6	Alberts et al. (2017) Brezinka (2010) Kuosmanen et al. (2017) Newton & Sundin, (2016) Varley (2011) Wilhelmsen et al. (2014)	*'BtB could provide psychoeducation while people are on waiting lists – to get the ball rolling.'* (Newton & Sundin, 2016; p.6)
3. Increases staff expertise and confidence with CBT	5	Fleming & Merry (2013) Friesen et al. (2014) Gellatly et al. (2017) Salloum et al. (2015) Wilhelmsen et al. (2014)	*'I have to speak to what a good training experience this was for me because I loved the modules for that reason'* (Friesen et al. 2014, p.45) *"To me it felt very good [to learn ICBT]! Because now I finally felt I had some treatment I could try."* (Wilhelmsen et al. 2014, p.10)

4. Requires less clinician time than tCBT (i.e. time-efficient)	3	Friesen et al. (2014) Salloum et al. (2015) Varley (2011)	*'I like that it's all in one spot. You can have all your materials, your games, everything like an entire office in a computer program so it makes preparation time for a session a lot less.'* (Salloum et al. 2015)
5. Facilitates face-to-face communication	2	Fleming & Merry (2013) Wilhelmsen et al. (2014)	*'Be good for young people who don't have the words for what they are feeling'* (Fleming & Merry, 2013; p.271)
6. Enables monitoring of patients' use	1	Friesen et al. (2014)	*'That's been great because I open up two windows and I go through the module to see what it was that they were seeing that week'* (p.271)
7. Reported benefit of programme including parents as active participants	1	Salloum et al. (2015)	Summary: p.37
8. Useful for relapse prevention	1	Jones & Ashurst (2013)	Summary: p.284
Organisational context	9		
1. Effective, evidence-based treatment	5	Friesen et al. (2014) Robertson et al. (2006) Salloum et al. (2015) Varley et al. (2011) Wilhelmsen et al. (2014)	Summary: (Wilhelmsen, p.11)
2. Earlier access to therapy that could facilitate reduction in waiting lists	2	Friesen et al. (2014) Varley (2011)	*'*[cCBT] *could be offered to people while on a waiting list after assessment'* (Varley, 2011; p. 70).
3. Cost-effective treatment option	1	Varley (2011)	*"It's a cost effective way of offering treatment to patients with mild- moderate mental illness"* (p. 70)
4. Fills a gap in existing services; helps prevent patients from being missed	1	Alberts (2017)	*'So unless somebody contacts me, I don't know that anyone's out there that needs help, but if you have that online program, you would get that contact.'* (p.601)
Programme practicalities	15		
1. Engaging, interactive medium and user-friendly programmes	7	Friesen et al. (2014) Gellatly et al. (2017) Kuosmanen et al. (2017) Fleming & Merry (2013)	*'I think with them having a smart phone in their hand at all times, it would be a shame not to do it that way.'* (Kuosmanen et al., 2017; p.7). *'…particularly appealing to new generation of folks used*

		Wilhelmsen et al. (2014) Salloum et al. (2015) Varley (2011)	*to this type of communication'* (Varley, 2011; p.72)
2. Manualised, structured or organised approach	6	Alberts et al. (2017) Brezinka (2010) Friesen et al. (2014) Gellatly et al. (2017) Wilhelmsen et al. (2014) Salloum et al. (2015)	*'… it is very systemic and built up in a good way with the different modules…'* (Wilhelmsen et al., 2014; p.10) *'I think having a very clear package of information, it* [trial interventions] *clearly defined what to focus on in particular sessions'* (Gellatly et al. 2017, p.7)
3. Practical benefits: a. Email correspondence allows therapists additional reflection time b. Enables patients to revisit completed sessions.	2	Friesen et al. (2014) Gellatly et al. (2017)	*'What I really liked was that I didn't have to respond to him right away and I had a chance to walk away and regroup and then come back fresh and really think about it.*' (Friesen et al., 2014; p. 45).
		Disadvantages	
Patient-related factors	35		
1. Not suitable for all patients (e.g. high complexity, OCD diagnosis, low motivation)	9	Alberts (2017) Fleming & Merry (2013) Friesen et al. (2014) Gellatly et al. (2017) Kuosmanen et al. (2017) Newton & Sundin (2016) Salloum et al. (2015) Varley (2011) Wilhelmsen et al (2014)	*'I think for some people it's really good, but for the other people it's just not. It seems like the more complex problems clients have, you know just the harder it is.'* (Friesen et al., 2014; p.45) *'For the depression clients, who are more severe, I found that they tend to take way longer… there's less motivation… those clients, maybe it would be better for them to see somebody in person because there's a lot of other issues.'* (Friesen et al., 2014, p.44)
2. Lack of or reduced therapeutic relationship, particularly in comparison to face-to-face therapy	7	Baror (2010) Fleming & Merry (2013) Friesen et al (2014) Gellatly et al. (2017) Newton & Sundin (2016)	*'An essential part of CBT of course is the therapeutic relationship… BtB does not provide these features.'* (Newton & Sundin, 2016; p.5)

		Varley (2011) Wilhelmsen et al. (2014)	
3. Lack of individualised approach	5	Gellatly et al. (2017) Kuosmanen et al. (2017) Newton & Sundin (2016) Salloum et al. (2015) Varley (2011)	*'CCBT may not be tailored to the individual'* (Varley, 2011; p. 72)
4. Dependent on patient motivation	4	Alberts (2017) Friesen et al (2014) Varley (2011) Wilhelmsen et al. (2014)	*'People need to be organised and self motivated - unsuitable if chaotic lifestyle*.' (Varley, 2011; p. 72)
5. Possible patient dissatisfaction with treatment modality.	4	Fleming & Merry (2013) Newton & Sundin (2016) Varley (2011) Wilhelmsen et al. (2014)	*'Patients may feel fobbed off by being offered this'* (Varley, 2011; p. 72)
6. Reduced clinical information from patient (e.g. body language)	3	Friesen et al. (2014) Gellatly et al. (2017) Newton & Sundin (2016)	Summary: (Newton & Sundin, 2016; p.5)
7. Use worsens patients' presentation, or reduces willingness to engage in face-to-face contact	2	Fleming & Merry (2013) Jones & Ashurst (2013)	*'I wonder about how many people we might "turn off" to therapy, by, in effect, selling them short… I believe if we disappoint or cause people to become therapy averse, we may well have been better off offering nothing!'* (Jones & Ashurst, 2013)
8. Limited patient awareness of programmes	1	Alberts (2017)	Summary, p.601
Clinician-related factors	12		
1. Assessment and management of risk and deterioration	4	Alberts (2017) Fleming & Merry (2013) Newton & Sundin (2016) Varley (2011)	*'If you had someone who, all of a sudden, was suicidal. I mean, with an online program, how do you put the safety checks in there for those kind of things?'* (Alberts et al., 2017; p.601)
2. Require clinician support (standalone not appropriate)	3	Fleming & Merry (2013) Jones & Ashurst (2013)	*'I was a bit worried in case that wasn't enough support for the person…'* (Gellatly et al., 2017; p.6)

		Kuosmanen et al. (2017)	
3. Potential issues surrounding confidentiality of programmes	1	Kuosmanen et al. (2017)	Summary: p.6
4. Clinician dissatisfaction with their role: technical support rather than therapeutic	1	Gellatly et al. (2017)	*'You felt a bit like you were just technical support, if you see what I mean… I just prefer to be sitting talking to people.'* (p. 8)
5. Fears regarding potential loss of role	1	Fleming & Merry (2013)	*'I hope it doesn't come to a place where it replaces us!'* (p.272)
6. GPs reported insufficient time in consultations to sufficiently utilise	1	Wilhelmsen et al. (2014)	*"You already have so little time in the consultation in general practice… It [guided ICBT] isn't done in 20 minutes"* (p.12)
7. Time-consuming for clinicians: Email contact produced varying and unpredictable time demands, and time delays between email contact extended therapy duration	1	Friesen et al. (2013)	Summary: (Friesen et al., 2013; p.46).
Organisational context	16		
1. Time-consuming from service-development perspective: a. Time required for staff training and familiarisation with programme b. Resolution of technical glitches	6	Fleming & Merry (2013) Friesen et al. (2013) Gellatly et al. (2017) Kuosmanen et al. (2017) Salloum et al. (2015) Wilhelmsen et al. (2014)	*'It takes a little bit to learn and it takes a time investment… I'm far from proficient. I think people need to understand that it takes a little while to get a hold of it'* (Friesen et al., 2013; p.46). Summary: (Salloum et al., 2015; p.37)
2. Less effectiveness than tCBT (e.g. due to lack of therapeutic relationship?)	4	Fleming & Merry (2013) Kuosmanen et al. (2017) Newton & Sundin (2016) Varley (2011)	*"CCBT only addresses symptoms (depression/anxiety) not the underlying cause (emotional neglect/abuse etc)… I would also be concerned that it would not be as effective as other forms of therapy…'* (Varley, 2011; p.72)
3. Expense of package	2	Gellatly et al (2017) Salloum et al. (2015)	*'I think the cost implications of the package [OCFighter] of our service probably would make it unlikely we'd be able to offer it."* (Gellatly et al., 2017; p.6)
4. Organisation of administration	1	Varley (2011)	*'How would system be administered?'* (p.72)
5. Lack of clear ethical and legal guidelines for use	1	Baror (2010)	Summary: p.119
6. Potential liability issues	1	Baror (2010)	Summary: p.119

7. Few computerised treatment modalities available other than CBT	1	Jones & Ashurst (2013)	Summary: p. 284
Programme practicalities	16		
1. Practical barriers limit access (e.g. lack of computer or internet access, low literacy levels)	6	Alberts (2017) Fleming & Merry (2013) Jones & Ashurst (2013) Kuosmanen et al. (2017) Salloum et al. (2015) Varley (2011)	*'A majority of the folks I deal with… don't have access to a computer. That would be one drawback.'* (Alberts et al., 2017; p.601) *'So you really have to be conscious of the fact that they don't understand an awful lot of words,'* (Kuosmanen et al., 2017; p.45)
2. Potential for technical glitches that could reduce engagement	3	Gellatly et al. (2017) Kuosmanen et al. (2017) Varley (2011)	*'I had one guy, he had two laptops and a computer and they didn't work on any of them….* [you'd] *think everything was okay and then they'd DNA.'* (Gellatly et al., 2017; p.7)
3. Specific mechanics of programme reduced patient engagement (e.g. Some modules too long/complex for patients; lost progress due to non-activity time outs)	3	Friesen et al (2014) Gellatly et al. (2017) Wilhelmsen et al. (2014)	Summary: (Friesen et al., 2014; p. 46)
4. No guidelines for who constitutes suitable referrals, and how should suitability be assessed?	2	Jones & Ashurst (2013) Varley (2011)	'… [I'd worry] *that I may refer the wrong type of person"* (Varley, 2011; p.72)
5. Existing programmes are awkward and not user-friendly	1	Jones & Ashurst (2013)	Summary: p. 284
6. Key aspects of CBT missing (e.g. formulation, improving understanding of previous lack of progress)	1	Newton & Sundin (2016)	*'cCBT cannot provide some of the things that CBT centers around…* [for example] *mindfulness for recurrent depression.'* (Newton & Sundin, 2016; p.5)

Note. Some studies provided no (e.g. Brezinka, 2014) or few (e.g. Kuosmanen et al., 2017) direct quotations from their participants, so are under-represented in the above table. Summary = no direct quote provided by authors, so please see relevant page for authors' own summary descriptions.

advantages and disadvantages, only one subtheme emerged in over half of the studies: increasing patient access to psychological therapy, and conversely the limited suitability of cCBT for certain populations or groups (e.g. those with high symptom severity: see Table 1.5).

Equal to or over a third of included studies identified six advantages of cCBT: its usefulness in supplementing face-to-face therapy, including providing psycho-education and socialisation to the CBT model; increasing staff expertise with CBT; providing an effective, evidence-based treatment that is manualised and structured, and utilisation of an engaging medium. Examples of each of these subthemes are provided in Table 1.5. In terms of the disadvantages regarding cCBT, additional subthemes identified by over a third of studies related to: the reduced opportunity for a therapeutic relationship; reduced or no ability to provide an individualised approach, and time-consuming aspects of the programmes (e.g. staff familiarising themselves with relevant content; see Table 1.5).

1.5: Discussion

Depression and anxiety are currently widespread in society, yet the proportion of patients accessing psychological treatments is low (e.g. Lawrence et al., 2015). cCBT has been proposed as one potential method of increasing access to such therapies (Scottish Government, 2017). As service providers facilitate patient access to computerised therapies (Du et al., 2013), the current review aimed to provide an overview of staff attitudes towards cCBT for anxiety, depression, or comorbid anxiety and depression. Attitudes were divided into three domains, of perceived acceptability or suitability of cCBT for these conditions, staff's self-reported

intention to use cCBT in the future, and perceived advantages and disadvantages related to the use of computerised approaches.

Considering the small number of studies examining staff perceptions of cCBT (Newton & Sundin, 2016), our review employed a systematic search strategy that was inclusive in nature (e.g. no time limits placed on search parameters). A total of 15 relevant studies were identified that met all inclusion criteria. These examined attitudes across multiple professional groupings (e.g. GPs, psychologists, nurses) and employed qualitative, quantitative and mixed methodologies. The methodological quality of each study was assessed, with findings interpreted in the context of quality ratings.

In terms of perceived suitability of cCBT for depression and/or anxiety, approximately half of the studies included in this review assessed this variable. In each study, the majority of participants rated cCBT favourably. It is worth noting that two (MacGregor et al., 2009; Robertson et al., 2006) of the studies that demonstrated high ratings of acceptability were associated with low quality assessment scores. This suggests that these results should be interpreted with caution, as relevant rating scales for the measures were not provided. The same pattern was obtained in each of the eight studies, however, suggesting a relatively robust effect. The high acceptability scores also correspond to findings from previous reviews of patient attitudes towards computerised approaches (Bowyer, 2017; Kalthenthaler, 2008), which demonstrated high patient satisfaction levels with computerised therapies. This suggests that both patients and care providers view cCBT as an appropriate treatment option for anxiety and/or depression.

This interpretation is reinforced by our finding regarding clinicians' intentions to use cCBT in the future, where less than 5% of respondents across three studies (Donovan et al., 2015; Fleming & Merry, 2013; Varley, 2011) indicated that they would not use such interventions. This corresponds to findings from the wider literature regarding generic computerised approaches (as opposed to CBT specifically; e.g. Whitfield & Williams, 2004), and cCBT for unspecified mental health difficulties (rather than depression and/or anxiety specifically, e.g. Stallard et al., 2010). Similarly, approximately half of respondents in included studies indicated that they were likely to use cCBT in the future, which again corresponds to figures from the wider literature (Vigerland et al., 2014), and may reflect a willingness from clinicians to adopt novel approaches to therapy.

Finally, our current analysis revealed four main domains of perceived advantages and disadvantages of cCBT: patient-related factors, staff-related factors, organisational context and practical processes. Results also revealed consistent identification of subthemes across studies, as almost two thirds of the perceived advantages and disadvantages of cCBT emerged across five or more studies. This is despite the range of staff groups, specific cCBT programmes, and patient population ages that were included across studies, suggesting a robust finding in terms of consistency of attitudes. In line with previous research (e.g. Whitfield & Williams, 2004), findings indicated that staff held ambivalent attitudes towards cCBT, consisting of positive and negative perceptions, which were often contradictory in nature (e.g. that cCBT saves clinicians' time, yet is a time-consuming process; Friesen et al., 2014).

Interestingly, in line with previous studies (e.g. Stallard et al., 2010) a number of the disadvantages that were identified by staff do not correspond to the existing evidence base. For example, research has indicated that outcome from tCBT is equivalent to cCBT (Titov et al., 2015), and that positive therapeutic relationships emerge in embedded computerised approaches and are related to treatment outcome (Bergman Nordgren, Carlbring, Linna, & Andersson, 2013). Thus, some of the disadvantages that staff perceived regarding cCBT may relate to misperceptions or lack of awareness of the evidence base.

This has important clinical implications due to previous research demonstrating that positive attitudes towards cCBT (specifically, satisfaction with the programme and belief in its efficacy) predicted psychologists' referral rates to BtBs (Persson, Quayle & Power, 2017). Furthermore, as well as assessing attitudes towards cCBT, the study by Donovan and colleagues (2015) exposed participants to a 5-7 minute training video on computerised approaches. Results indicated that even such a short intervention exerted a significant and beneficial impact on staff attitudes towards and knowledge about cCBT (Donovan et al., 2015), although no longitudinal follow-up was conducted.

In combination, these two studies (Donovan et al., 2015; Persson et al., 2017) therefore suggest that improving staff awareness of the evidence base for computerised approaches could potentially facilitate uptake of the programmes. The consistent disadvantages that were identified in this systematic review, particularly those that contrast with existing evidence (e.g. lack of therapeutic relationship), may therefore represent a potential avenue to increase staff engagement with computerised approaches: Potentially, relevant training could be developed centred

around these disadvantages, with an examination of whether this could facilitate clinicians' use of computerised approaches.

1.5.1: Limitations of existing literature

Whilst conducting this review, it became apparent that there were some limitations in the existing literature on staff attitudes towards cCBT. The first concerns definitions of terms. During our search process, over two-thirds of our exclusions were due to studies examining attitudes towards 'eHealth' applications that were not psychological interventions (e.g. Whittemore et al., 2013), or generic computerised therapies other than cCBT (e.g. Carper et al., 2013).

More worryingly, our search initially identified 24 studies that we believed examined attitudes to cCBT and were suitable for inclusion. Closer examination of the materials (e.g. interview schedules employed or questionnaire wordings) indicated that multiple studies (n = 5) examined attitudes to generic eTherapy. In some cases, this was despite the title or key words of the article including computerised or online CBT (e.g. Bengtsson, Nordin & Carlbring, 2015). This is potentially problematic as different intervention models are available in computerised form (e.g. psychodynamic therapy; Zwerenz et al., 2017), and clinicians' own therapeutic orientation has been shown to influence attitudes towards computerised approaches (Vigerland et al., 2014). It is therefore possible that using generic terms could leave studies open to interpretation biases (e.g. sub-samples within the same study considering different therapeutic modalities), which could potentially disguise differences in attitudes. Future studies would benefit from more clarity in regards to definition of key terms (cf. Barak et al., 2009).

Secondly, considerable heterogeneity emerged in terms of the measures used to assess participant attitudes, both relating to the question wording and employed rating scales (e.g. 5-point versus 7-point). This makes comparisons across studies problematic, and occurred despite the existence of standardised instruments assessing clinician attitudes (e.g. the Computer-Assisted Therapy Attitudes Scale; (Becker & Jensen-Doss, 2013). The heterogeneity of measures, particularly rating scales, was pertinent for our analysis of future use of cCBT, and limits the reliability of our findings. Future studies would therefore benefit from the use of standardised measures to facilitate comparisons across studies.

1.5.2: Limitations and strengths of the review

The results of the current review must be interpreted in light of its strengths and limitations. Firstly, the review consisted of a comparatively low number of studies, which employed heterogeneous methodologies and assessment measures to assess variables. As previously discussed, this limited our availability to conduct comparisons across studies. Despite this, across all three attitudinal domains consistent patterns emerged, which may be reflective of robust findings. Furthermore, systematic reviews often exclude unpublished studies ('grey literature'), which can result in response bias that limits the reliability and validity of subsequent conclusions (Blackhall & Ker, 2007). Although a full search of grey literature was beyond the scope of this article, two doctoral theses (Baror, 2010; Varley, 2011) were included, which represents a relative strength of this review.

An additional consideration concerns the use of our quality assessment measure (Kmet et al., 2004). Relevant guidelines (e.g. CRD, 2009; Hannes, 2011)

recommend the inclusion of quality assessments in systematic reviews in order to critically evaluate the available evidence. Guidelines advise against reliance on summary scores, however (CRD, 2009), due to a potential to simplify comparisons, and lack of reliability estimates. In order to account for this potential limitation (Kmet et al., 2004), we provided a full description of the quality assessment across all criteria (Tables 3-4), and completed inter-rater reliability checks with two independent raters. In addition, this measure utilises the recommended checklist design (CRD, 2009), and we incorporated analysis of reporting quality (Soares et al., 2004) into our evaluation. Although use of summary scores are therefore questionable (CRD, 2009), the potential impact of bias was limited through use of the above counter-measures.

1.6: Conclusions

Overall, the results from the current review suggest that staff perceive cCBT to be an acceptable treatment for anxiety and/or depression, with the majority of service providers reporting intention to use this modality in the future. Although perceptions of advantages and disadvantages of cCBT were somewhat ambivalent (e.g. that it could facilitate access to psychological therapies but was inappropriate for certain populations or groups; Varley, 2011), overall, positive attitudes emerged. Furthermore, identification of consistent advantages and disadvantages of cCBT by staff has important clinical implications, as these findings could be used to promote use of cCBT in relevant staff groups. Overall, the current review adds to our understanding of this area by synthesizing existing literature, and revealing similarities to existing data on patient attitudes (cf. Kalthenthaler et al., 2008).

Chapter 2: Empirical project

Journal choice: Behaviour Research and Therapy

Title: Predictors of change in psychological well-being following a computerised cognitive behaviour therapy (cCBT) intervention in Scottish Primary Care: The role of social identity and baseline distress.

Abbreviated title for running head: Social identity and cCBT.

Authors: Joanne K Persson[1,2], Kevin Power[1,3], Christopher Wright[4], Ethel Quayle[2,5,] and Matthias Schwannauer[2,5].

[1] NHS Tayside, Dundee, UK

[2] University of Edinburgh, UK

[3] University of Stirling, UK

[4] NHS24, South Queensferry, UK

[5] NHS Lothian, Edinburgh, UK

Keywords: cCBT, Beating the Blues, outcome, well-being, satisfaction

2.1: Highlights

- Computerised CBT (cCBT) studies have tended to focus on symptom severity outcomes
- The impact of cCBT interventions on the promotion of wellbeing has been neglected
- Current results revealed baseline distress to be the strongest predictor of outcome
- Number of group identifications also predicted life and mental health satisfaction

2.2: Abstract

Computerised Cognitive Behaviour Therapy (cCBT) has been shown to be efficacious and effective in treating depression. Predictors of successful response to treatment are poorly understood, and have tended to endorse a pathological model of distress (i.e. focus on symptom reduction rather than promotion of well-being). This study expanded on previous research by assessing the joint predictive power of social identification and baseline distress on well-being outcomes from cCBT. The sample consisted of 1354 participants referred to the 'Beating the Blues' programme, recruited from routine care in Scotland. Well-being outcomes comprised self-rated life and mental health satisfaction, plus functioning and well-being measures assessed through subdomains from the CORE-OM. Results indicated a significant and positive impact of the intervention for all dependent variables. Higher number of group identifications and baseline life and mental health satisfaction levels emerged as significant predictors of outcome for life and mental health satisfaction,

respectively, with baseline distress significantly predicting life satisfaction. For well-being and functioning outcomes, only baseline level of distress emerged as significant predictor. A mediation effect emerged between number of group identifications and baseline levels of distress for each of the satisfaction models, whereas for the functioning model baseline distress was found to moderate the impact of social deprivation.

2.3: Introduction

Mental health problems are widespread across Europe (Whiteford et al., 2015). Some of the highest prevalence rates occur for depressive disorders (Wittchen et al., 2011), with approximately one in ten people in the UK being affected by the condition (Bhattarai, Charlton, Rudisill, & Gulliford, 2013). Depression has been portrayed as a chronic illness (e.g. Richards, 2011) that affects both individuals and society. Associated costs of depressive disorders include increased mortality risk (Rethorst et al., 2017), reduced life satisfaction (Adams et al., 2016), and well-being (Waddell & Jacobs-Lawson, 2010), and increased economic burden (Greenberg et al., 2015).

Guidelines from the National Institute of Health and Care Excellence (NICE) recommend the use of psychological therapies (PTs), including cognitive behavioural therapy (CBT; Beck, 1967) in the treatment of depression (NICE, 2009). A large evidence base supports the efficacy and effectiveness of CBT in reducing depressive symptomatology (e.g. Hawley et al., 2017), although, as with wider PTs, CBT has been subjected to criticisms. These include the research focus on symptom reduction

(e.g. Beard et al., 2016) rather than the promotion of well-being (Huppert & So, 2013), and limited patient access to such treatments (e.g. Hengartner, Angst, Ajdacic-Gross, Rössler, & Angst, 2016).

In terms of promoting well-being, definitions of well-being have emphasised its multidimensional nature (e.g. La Placa, McNaught, & Knight, 2013; Ryff, 1989). These include, but are not limited to, life satisfaction (individuals' subjective assessment of their current life situation; Anand & Arora, 2009), social relationships with others, and functioning (for a review, see Ryff & Singer, 2008). Although clearly important, the research emphasis on symptom reduction has resulted in the neglect of more positive aspects of patient functioning (Keyes, 2012), which has contributed to a call for a move away from a pathological or 'disease model' of distress (Kinderman, 2014, p.30).

Similarly, in terms of patient uptake of PTs, recent Governmental strategies have aimed to improve access to PTs (Scottish Government, 2017). Despite this, waiting times within the majority of Scottish health boards remain above relevant targets (i.e. 90% of patients seen within 18 weeks; Information Services Division, 2017), possibly due to the limited supply of trained clinicians and sufficiently accessible services (cf. Layard, 2006) available to deliver therapy. This has led to the argument that traditional psychological models (i.e. therapist-led CBT [tCBT]) require adaption in order to increase patient access to them (e.g. Newton & Sundin, 2016). One potential adaptation that may help to facilitate access is through computerised CBT.

Computerised CBT (cCBT), depression, and well-being

Computerised CBT interventions utilise the internet or computers to deliver manualised therapy, either as standalone treatments or with therapist support (i.e. embedded approaches; see Barak, Klein, & Proudfoot, 2009). These embedded interventions have been shown to require less clinician time than face-to-face approaches (e.g. Titov et al., 2015), which could help to facilitate patient access to PT (Hadjistavropoulos et al., 2016). A growing evidence base has demonstrated the efficacy (e.g. Andersson, Cuijpers, Carlbring, Riper, & Hedman, 2014) and effectiveness (i.e. performance in routine clinical settings) of cCBT in reducing depressive symptomatology (e.g. Cientanni et al., 2017). Importantly, a recent meta-analysis demonstrated no difference in outcome for depressive or anxiety disorders when tCBT and cCBT were compared (Andersson et al., 2014).

Despite the growing empirical support for computerised interventions, a recent study (Gilbody et al., 2015) was highly critical of cCBT. This randomised control trial (RCT) compared outcomes from treatment as usual (TAU) from patients' general practitioners (GPs), to TAU plus a cCBT intervention using two specific cCBT programmes: Beating the Blues (BtBs) or MoodGYM. Outcomes consisted of depressive symptomatology, general psychological distress and physical or health-related quality of life (QoL). Results indicated that, at 4 months post treatment allocation, no significant differences emerged between conditions for any of the dependent variables. The study therefore concluded that cCBT may be efficacious in treating depression, but is not effective in real-world scenarios (Gilbody et al., 2015).

Despite numerous strengths of this study (e.g. recruitment from routine clinical care), a number of methodological limitations mean that its conclusions should be

interpreted with caution. Of particular importance, data from patients receiving additional therapeutic input (beyond TAU or cCBT) was retained in the analysis. Within the TAU group, almost a fifth of participants (19%) had engaged with cCBT programmes. Furthermore, across the three conditions almost a quarter of patients (23%) accessed additional mental health services (e.g. psychological or psychiatric services), with the highest proportion within the TAU group. As access to additional treatments was not controlled for (in contrast to other studies within this area, e.g. Twomey et al., 2014), and a significant proportion of participants in the 'control' condition engaged with the intervention under examination. The lack of an effect therefore could be due to confounding effects from additional treatments.

Furthermore, although at 4 months no significant differences were obtained between conditions, at 12 months follow-up, participants in the MoodGYM condition showed lower depressive symptomatology, distress and higher QoL relating to mental health (but not physical health) than those in the TAU condition, with the effect on mental health QoL maintained at 24 months (Gilbody et al., 2015). Participants in the BtBs condition also displayed higher mental health QoL than those in TAU at 12 months, although this effect was not maintained at 24 months. Thus, despite the overlap between additional treatments that were accessed between conditions, this study provides tentative evidence that cCBT may exert an impact on well-being – particularly QoL related to mental health.

To our knowledge, only three additional studies have examined whether cCBT promotes aspects of well-being[5]. Two of these focused on reducing depressive

[5] *NB.* A reference and citation search of the studies examining the impact of cCBT on well-being identified three additional studies (Berger, Krieger, Sude, Meyer, & Maercker, 2017; Klein et al., 2017; Schneider et al., 2012). The first two studies utilised a computerised intervention that included therapeutic modalities other than CBT (e.g. Schema Therapy), whereas the second was published as a

symptomatology (Hoifodt et al., 2013; Twomey et al., 2014), including general psychological distress. Only one study explicitly focussed on well-being promotion (Powell et al., 2013). Each study employed a randomised control trial (RCT) design, comparing outcomes for participants who used an online CBT programme (MoodGYM) to wait-list controls. Participants from two studies (Hoifodt et al., 2013; Twomey et al., 2014) were recruited from routine care and engaged with embedded approaches, whereas those in Powell and colleagues' study were recruited from the general public and participated in a standalone intervention. Multiple dependent variables related to well-being were assessed across studies, with the impact of cCBT on depressive symptomatology also examined in each trial.

Similar patterns were obtained across all studies, with significant interactions emerging between intervention group and time for global life satisfaction (Hoifodt et al., 2014), generic well-being (Powell et al., 2013), and depressive symptoms (Hoifodt et al., 2013; Powell et al., 2013; Twomey et al., 2014). In all cases, those in the intervention group showed significantly higher well-being and lower depressive ratings post-intervention than the control condition. Findings were maintained at follow-up (e.g. 12 weeks post-intervention; Powell et al., 2013), whereas no difference was obtained at baseline. This suggests that cCBT exerted a beneficial impact on generic well-being and life satisfaction.

In contrast, no effect of cCBT on functioning (Hoifodt et al., 2014), or on health-related quality of life (Hoifodt et al., 2014; Powell et al., 2013) was obtained. This latter finding is interesting, considering more recent research (Gilbody et al., 2015) where MoodGYM exerted a significant impact on mental health related QoL at 12

---

technical report that we were unable to access. All three studies were therefore excluded from this review.

and 24 months follow-up, but not on physical QoL. These contradictory findings were only obtained from three studies, however, one of which (Gilbody et al., 2015), as outlined above, was limited by methodological concerns. Furthermore, different measures were employed across studies: Whereas the null findings from two studies (Hoifodt et al., 2014; Powell et al., 2013) employed the EuroQual Group 5-dimension questionnaire (2013) to assess health-related QoL, the later study used the Short-Form Survey (SF-36; Ware & Gandek, 1998), meaning comparisons between studies is problematic (Field, 2005).

In terms of the quality of this research, the studies demonstrated a range of methodological strengths. These ranged from blinding of researchers assessing patient outcomes (Twomey et al., 2014; an important consideration in the reduction of bias; Higgins & Green, 2011) to the inclusion and control of potentially confounding covariates (e.g. previous use of CBT; Powell et al., 2013). Each study added a unique contribution to our understanding of the impact of cCBT on participants' well-being, but they were not without their limitations. One factor of particular concern relates to the high attrition rates that were obtained. Drop-out from the cCBT groups ranged from 23% (Gilbody et al., 2015) to 73.5% (Powell et al., 2013) across studies. These attrition rates are similar to those obtained in the wider literature on cCBT (for a review, see Bowyer, 2017) and some tCBT studies (for a review, see Mohr et al., 2010), but mean the generalizability of the results is questionable. Although the existing evidence suggests that cCBT exerts a beneficial impact on patients' well-being, this is limited to those who engaged with the intervention, who may constitute a specific subgroup. The results therefore cannot be generalized to those who did not engage.

Notwithstanding these caveats, in summary the results from the four studies described above (Gilbody et al., 2015; Hoifodt et al., 2014; Powell et al., 2013; Twomey et al., 2013) provide preliminary evidence that cCBT exerts significant effects on key dimensions of participants' well-being, including global life satisfaction (Hoifodt et al., 2014) and generic well-being (Powell et al., 2013). Importantly, these effects emerged in studies using samples recruited from both clinical settings (Twomey et al., 2014) and the general population (Powell et al., 2013), and for both standalone versus embedded approaches. This suggests that the impact of cCBT on well-being may extend across settings and treatment modalities (cf. Klein et al., 2017). As with the wider cCBT literature, however, the generalizability of the above studies may have been limited by their high attrition rates. Such difficulties with cCBT treatment adherence has contributed to the search for predictors of outcome from cCBT (e.g. Alaoui et al., 2015), in order to facilitate identification of those patients who are most likely to benefit from computerised approaches.

Predictors of outcome from cCBT

To date, eight studies have assessed a limited range of predictors of outcome from cCBT for depression[6], and have tended to focus on predictors relating to two main areas: clinical (e.g. ADM use, number of previous depressive episodes; e.g. Hadjistavropoulos et al., 2016) and demographic factors (e.g. age, socioeconomic status; e.g. Farrer et al., 2014). Results from these studies have often been inconsistent, however, with some contradictory findings. Three studies have

[6] *NB.* An additional study (Warmerdam, Van Straten, Twisk, & Cuijpers, 2013) examined predictors of outcome from cCBT and computerised problem-solving therapy. Results were combined across both treatment groups, however, so findings from this study are omitted from the current analysis.

assessed the impact of ADM use, for example; one demonstrated a positive relationship between treatment response and medication use (Cientanni et al., 2017), whereas two found no significant relationship (Donker et al., 2013; Hadjistavropoulos et al., 2016).

Similarly, inconsistent findings have been obtained for gender, age, and education level (e.g. Høifødt, Mittner, & Waterloo, 2015; Spek et al., 2007; for more details, see Appendix 4, Table A4.1). Although failure to obtain significant effects should be interpreted with caution (cf. Field, 2005), the inconsistent findings reported across a relatively small number of studies suggest that further research examining predictors of outcome is warranted. Furthermore, previous research (e.g. Bower, 2013; Cientanni, 2017) points to the importance of two predictors that have been neglected in the research to date: social identification and baseline psychological distress.

Social identification and psychological distress

Social identification has been defined as the degree to which we feel we belong to certain groups (e.g. friendship or family group) and our perceived similarity to other members of our ingroups (Sani, Herrera, Wakefield, Boroch, & Gulyas, 2012). Research has demonstrated a strong link between well-being and high group identification (for a review, see Jetten, Haslam, Haslam, Dingle, & Jones, 2014), in terms of both the strength of identification with a specific group (e.g. Greenaway, Cruwys, Haslam, & Jetten, 2016), and the number of group identifications that we hold (Cruwys et al., 2013). Indeed, a growing evidence base suggests that higher levels of group identification are predictive of positive response to psychological

interventions for depression, including CBT (Cruwys et al., 2014), and that multiple group identifications have an additive effect (e.g. Sani et al., 2014).

To the best of our knowledge, to date only one study has examined the predictive power of social identification on outcome (generic psychological distress) from cCBT (Cientanni et al., 2017). This study examined a range of predictors (e.g. socioeconomic deprivation, ADM use) of treatment response in a clinical sample using cCBT. In line with expectations, results revealed a significant and positive impact of number of group identifications that patients held on depressive symptomatology. Socioeconomic deprivation also emerged as a significant predictor of outcome, although its impact was mediated by identification. The mediation effect was small to negligible, however, which is likely to relate to the large sample size and therefore power of the study. Of more interest was that social identification was the strongest predictor of outcome (e.g. almost four times larger than the effect of deprivation), adding credence to the argument that social identification warrants further attention in predictors of outcome from cCBT.

Thus, recent research by Cientanni and colleagues (2017) added valuable insight to our understanding of predictors of treatment response from cCBT. As with the wider literature on the impact of PTs on treatment outcome, this study assessed the effect of cCBT in terms of reduction in psychological distress, rather than the promotion of well-being (Huppert & So, 2013). An additional limitation of the study concerns its lack of inclusion of baseline distress as an additional potential predictor of outcome from cCBT. A recent, individual patient data meta-analysis (Bower et al., 2013) assessed the impact of depressive symptom severity on outcome from low-intensity (i.e. self-help) CBT approaches, including bibliotherapy and cCBT. Across

interventions, results revealed a significant and positive relationship between baseline severity and treatment response, although the magnitude of this effect was small.

Interestingly, findings from this meta-analysis (Bower et al., 2013) also revealed a non-significant trend towards a greater impact of initial severity in computerised, as opposed to written, approaches. Two studies from the cCBT predictor literature reinforce this finding (see Appendix 4, Table A4.1), with results indicating that higher levels of baseline severity were significantly associated with treatment response (Hadjistavropoulos et al., 2016; Spek et al., 2007). These findings (e.g. Bower et al., 2013) reinforce the importance of including baseline symptom severity or distress as a predictor of outcome from cCBT. As with the wider cCBT predictor literature, however, contradictory findings have also emerged, with additional studies demonstrating a positive impact of lower baseline symptomatology predicting treatment response (de Graaf et al., 2010; Spek et al., 2008).

The current study

The current study aimed to address a gap in the literature by assessing the impact of a cCBT intervention on aspects of patient's well-being (namely generic well-being, functioning and satisfaction), thereby moving away from the pathological model of distress (Kinderman, 2014) that is prevalent in existing literature. We also expanded on previous research by examining the effect of cCBT on multiple aspects of satisfaction (i.e. life and mental health satisfaction), as the only previous study to examine this dependent variable (Hoifodt et al., 2014) used a uni-dimensional construct of global life satisfaction (Diener, Emmons, Larsen, & Griffin, 1985). This

study aims to further expand on previous research demonstrating a significant relationship between social identification and well-being (Cruwys et al., 2013; Sani, Madhok, Norbury, Dugard, & Wakefield, 2015). Our study therefore adds a unique contribution to the field by being the first to examine the joint predictive power of social identification and baseline distress on outcomes from cCBT. To the best of our knowledge, this is also the first study to explore the impact of cCBT on both global life satisfaction and mental health satisfaction, as previous studies have relied on uni-dimensional constructs of satisfaction (Hoifodt et al., 2014).

Based on earlier findings (Powell et al., 2012), our hypotheses were that completion of a cCBT intervention would have a positive impact on patients' self-rated life and mental health satisfaction, functioning and well-being. In terms of predictors of outcome, our expectation was that social identification with more social groups (cf. Cientanni et al., 2017) and higher levels of baseline distress (cf. Bower et al., 2013; Hadjistavropoulos et al., 2016) would be significantly related to positive treatment response.

2.4: Method

Ethics

Approval for this study was granted by the Caldicott Guardian of each of the respective health boards, and the Department of Clinical and Health Psychology Ethics Research Panel at the University of Edinburgh (see Appendix 5). No incentives were offered for participation in the study.

Participants

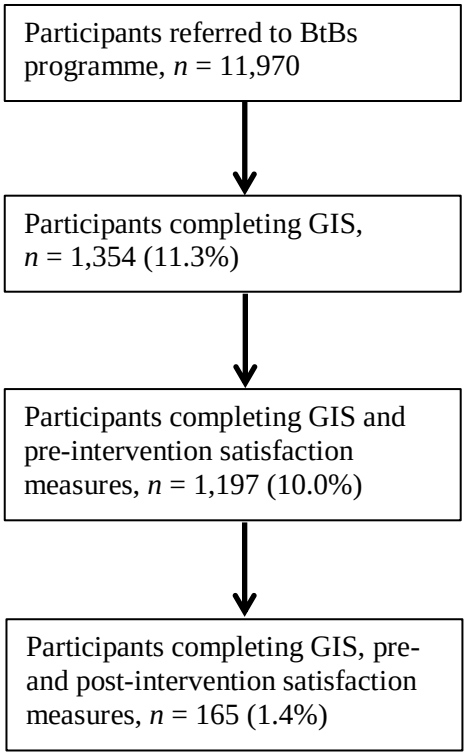
Participants consisted of patients referred to a specific cCBT programme, 'Beating the Blues' (BtBs), by medical or mental health staff. Referral criteria to BtBs and the study included mild-moderate depression (as determined by the referring clinician), no additional comorbid mental health conditions (e.g. psychosis, bipolar disorder) or learning disabilities. In line with previous research (de Graaf et al., 2010), participants with suicidal intention were included in the current analysis, although those who were actively suicidal were excluded from the study.

In total, n = 11,970 patient were referred to BtBs over the inclusion period. Of these, 1354 (11.3%) completed and returned the group identity scale (GIS; Sani, Madhok, Norbury, Dugard, & Wakefield, 2014). Due to additional missing data (i.e. non-completion of questionnaire measures), separate samples were therefore used in the conduction of the hierarchical multiple regression (HMR) for the satisfaction and CORE-OM domain analyses (see Figure 2.1). For the two satisfaction measures, the total sample size of the current study was 165 participants, aged 18-79 years (M = 45.56, SD = 14.94), with 43 male (26.06%) and 96 female participants (58.18%)[7]. For regression analysis with four predictors and an alpha level of .05, post-hoc power analyses using G*power 3 (Faul, Erdfelder, Lang, & Buchner, 2007) indicated that this sample size was sufficient to detect medium-large effect sizes, although small effect sizes would be underpowered. For the CORE-OM domains, the sample size was 281 participants, aged 17-79 years (M = 44.93, SD = 14.94), with 72 male

[7] *Note.* Figures do not add up to 100% as data for some participants was not available: 26 (15.76%) for the satisfaction analyses, and 31 (11.03%) for the CORE-OM analyses.

(25.62%), and 178 female participants (63.35%)[2]. The remaining participants (*n* = 31) did not provide their gender.

Figure 2.1: Flow of completion and attrition rates from group identification and satisfaction measures



Procedure and design

The current study employed a cross-sectional, pre-post design utilising hierarchical multiple regression analyses. Data was collected from four NHS Scotland health boards (Fife, Grampian, Lanarkshire, and Shetland) over a 26-month timespan from September 2014 to November 2016 as part of the Mastermind project (Vis et al., 2015): An international study across nine European countries, investigating barriers and facilitators of implementation of cCBT. Additional data was also collected from routine care within one health board (NHS Tayside) over the

same period. Data collection occurred in two phases. In the first phase, information was gathered by BtBs once participants had registered with the programme. This included basic demographic information (e.g. age, gender) and baseline depressive symptomatology, assessed through the Clinical Outcome in Routine Evaluation Outcome Measure (CORE-OM; Evans et al., 2002). Following completion of the fifth and eighth online module, completion of the CORE-OM measure was repeated.

The second phase of data collection occurred after participants had completed the first online module. The programme coordinator from each healthboard contacted potential participants and sent an electronic invitation to participate in the Mastermind Project, which included a basic description and rationale of the project (see Appendix 6.1). Participants were given the choice to complete either electronic or paper copies of the questionnaires, which assessed additional demographic information (e.g. highest educational qualification, use of anti-depressant medication), the GIS (Sani et al., 2014) and the satisfaction measures (Priebe, Huxley, Knight, & Evans, 1999). Participants who did not respond to the invitation were sent one e-mail reminder. Implied consent was assumed to have been obtained from any participants who returned the completed questionnaires, whereas those who did not respond to the reminder were assumed to have opted-out. Following completion of BtBs' modules, participants were asked to complete the QoL measures for a second time, alongside an additional questionnaire asking them to rate their satisfaction with the programme.

Materials

Intervention

Beating the Blues (BtBs; beatingtheblues.co.uk) is a web-based CBT programme consisting of an introductory video and eight interactive, multimedia modules. It utilises case examples, psycho-education and weekly homework tasks to facilitate patients' understanding of the links between thoughts, feelings and actions. Patients in the current study were able to complete BtBs modules at home, in community locations (e.g. libraries) or clinics.

Group identification

Group identification was assessed using the Group Identification Scale (GIS; Sani et al., 2014). This 4-item measure assesses the degree to which participants have a sense of belonging to each of three groups: their family, community, and a chosen in-group (e.g. workplace group, group of friends, etc). Identification is assessed across two domains: Sense of belonging to the group (e.g. *'I have a sense of belonging to my* [group]') and sense of shared commonality with other group members (e.g. *'I feel similar to the other members of my* [group]'). Possible responses ranged from 1 (*'I strongly disagree*') to 7 (*'I strongly agree*'), and average responses for each group were calculated by taking the mean of the four items.

As participants could show high identification with one group (e.g. friendship group) but low identification with another (e.g. community), use of a mean identification score across the three groups was not appropriate (cf. Sani et al., 2014). Binary variables were created by classifying participants who scored equal to or greater than 5 as identifying with the group, and those scoring less than five as not identifying with the group (cf. Sani et al., 2015). To examine the addictive impact of multiple high group identifications (cf. Cientanni et al., 2017; Sani et al., 2014) on

well-being outcomes, participants' total number of group identifications was counted, with possible scores ranging from 0 (participant did not identify with any of the groups) to 3 (participant identified with three groups). Previous research has indicated good levels of reliability (α = .92; Sani et al., 2014), for the GIS, regardless of selected group (e.g. family, community).

Socioeconomic deprivation measure

The Scottish Index of Multiple Deprivation (SIMD) is used by the Scottish Government to identify areas of relative socioeconomic deprivation across Scotland (Scottish Government, 2016). It assesses deprivation across seven domains: Housing; crime; access to services; skills and training; education; health; employment and income. The SIMD divides Scotland into 6505 geographical datazones, and calculates deprivation ranks ranging from 1 (most deprived) to 6505 (least deprived). The current study collected participants' postal codes from medical records, and categorised postal codes by SIMD decile rank, ranging from 1 (most deprived) to 10 (least deprived).

ADM use

Participants' ADM use was assessed by a single, self-report item, which asked *'At the moment, do you use antidepressant medication? If so, for how long?*'. Possible responses ranged from '*Yes, for more than 2 months*' to '*No, I don't take them*'. For the current study, responses were dichotomised to create a binary variable ranging from 1 (*'uses ADM medication*') to 2 (*'does not use ADM medication*').

Demographic measures

On referral to BtBs, participants' age, gender and employment status were obtained from medical records. The latter variable was entered as '*employed'*, '*unemployed'* or '*unknown'*, with data available for n = 952 cases of those completing the GIS (70.3%). Educational attainment was assessed by asking participants *'What is the highest level of education you have completed*?', with four possible responses: 1 ('*primary*'); 2 ('*secondary*'); 3 (*'higher/and or university*'); 4 ('*other*').

Psychological distress

Participants' baseline levels of psychological distress were assessed using the Clinical Outcomes in Routine Evaluation Outcome Measure (CORE-OM; Evans, John Mellor-Clark, Frank Mar, 2000). It consists of four domains, namely well-being (e.g. '*I have felt overwhelmed by my problems*'; four items), problem severity (e.g. '*I have felt tense, anxious or nervous*'; 12 items), functioning (e.g. reverse scored: '*I have felt able to cope when things go wrong*'; 12 items), and risk (e.g. '*I have thought of hurting myself*'; six items, although for an alternative factor structure see Lyne, Barrett, Evans, & Barkham, 2006). Possible responses to each of the 34 statements range from 0 (*'not at all*') to 4 ('*most or all of the time*'), with eight positively worded items being reverse scored (e.g. '*I have felt OK about myself*'). Mean item scores were calculated for the scale as a whole and each individual subscale, with higher scores indicating higher levels of distress.

Previous research has indicated acceptable-high psychometric properties for each of the subscales of the CORE-OM (e.g. internal reliability scores ranging from .75 to .94) with the exception of the risk subscale (Evans et al., 2002). This domain

demonstrated questionable test-retest reliability (stability of .64). As additional research has indicated that the risk domain constitutes a separate factor (Lyne et al., 2006) from the remaining 28 items (constituting a generic 'psychological distress' factor; Tarescavage & Ben-Porath, 2014), the current study therefore calculated a total-risk mean score for the scale as a measure of baseline psychological distress.

Psychological well-being and functioning

The well-being (four items) and functioning (12 items) subscales from the CORE-OM (Evans et al., 2000) were used to assess participants' psychological well-being both pre- and post-intervention. Scoring patterns are detailed above, with higher scores indicating lower well-being. The well-being domain is not condition specific, and the functioning subscale assesses both social (e.g. '*Talking to people has felt too much for me*') and general everyday functioning (e.g. *'I have achieved the things I wanted to*'). Although the four domain structure of the CORE-OM has been questioned (Lyne et al., 2006), the developers suggest using specific domain scores if these reflect relevant areas of interest (Evans, 2015).

Satisfaction

The Manchester Short Assessment of Quality of Life scale (MANSA; Priebe, Huxley, Knight, & Evans, 1999) is a 25-item measure assessing patients' QoL, which focuses on satisfaction ratings across specific life domains (e.g. work, friendships). The scale provides a satisfaction mean that has demonstrated acceptable levels of reliability (α = .73), high levels of concurrent validity with alternative QoL measures (Priebe et al., 1999), and is suitable for use in adult

populations experiencing mental health difficulties (e.g. Slade, Leese, Cahill, Thornicroft, & Kuipers, 2005). In the current study, participants' life satisfaction (LS) and satisfaction with their mental health (MHS) were assessed by two single items taken from the MANSA. Participants were asked to indicate '*How satisfied are you with your life as a whole today*?' and '*How satisfied are you with your mental health*?', with responses ranging from 1 ('*Couldn't be worse*') to 7 (*'Couldn't be better'*).

Preliminary data analysis

The Statistical Package for Social Science (SPSS) software package version 21 (IBM Corp., 2012) was used for all statistical analyses. Data were initially screened for uni- and multi-variate outliers across all predictor and dependent variables, following relevant guidelines (Tabachnick & Fidell, 1996). Responses with *Z*-scores equal to or greater than ±3.29 (cf. Field, 2005) were classified as univariate outliers, with 17 cases identified (0.06% of cases). Mahanobis distances were employed to check for multivariate outliers (Zijlstra, van der Ark, & Sijtsma, 2010), with no further outliers identified. As no significant differences were obtained including or excluding outliers, results from the full dataset are presented below. Data from participants lost to follow-up were not imputed for the satisfaction measures (cf. Gerhards et al., 2010).

The distribution of each of the variables was subsequently examined. A series of Shapiro-Wilks tests were conducted (cf. Ghasemi & Zahediasl, 2012), which indicated that none of the predictor or dependent variables were normally-distributed (all p values < .001). Non-parametric tests (e.g. Spearman's *rho* correlations) were

therefore employed where appropriate during the analysis, and bootstrapping using bias corrected and accelerated (BCa) confidence intervals of 95% was applied to the data prior to conduction of the multiple regression (cf. Fox, 2002). Following relevant statistical guidelines (e.g. Perneger, 1998), correction for Type 1 error was not applied to the multiple regression analyses (cf. Feise, 2002), due to the resultant increased likelihood of obtaining Type II error (Field, 2005). Indeed, Feise (2002) emphasises the importance of considering the size of emerging effects as one alternative to correcting for Type I error. Effect sizes were therefore calculated for each of our analyses. To check for multicollinearity between predictors, a series of Spearman's *rho* correlations were conducted to identify any inter-correlations between variables (see Appendix 7, Table A7.1). As expected, the correlations revealed a number of significant relationships between variables (e.g. positive correlation between SIMD decile and education; $rho = .13$, $n = 2191$, $p < .001$).

To reduce redundancy between variables and account for the correlation between predictors (cf. Cohen, Cohen, West, & Aiken, 2003), we conducted a series of stepwise multiple regression analyses to determine which of five potential covariates (age, gender, education level, employment status, and ADM use) should be selected for inclusion in our final model (J. Cohen et al., 2003). These variables were included due to contradictory findings from previous studies over the role of these factors in predicting outcomes from cCBT (e.g. employment status; Alaoui et al., 2015; Hadjistavropoulos et al., 2016). Following relevant recommendations (Sink & Stroh, 2006), small, medium and large effect sizes were determined by adjusted R^2 values of .01, .06 and .14, respectively.

Four separate analyses were conducted with each satisfaction measure and the CORE functioning (CORE-f) and well-being subscale (CORE-wb) means as the relevant dependent variables. Baseline LS and MHS ratings and/or CORE Total-risk (CORE-tr) scores were entered as the first step in the hierarchical regression[8], followed by the five potential covariate predictors, with SIMD scores and number of group identifications entered in the final step. For each of the analyses, although the regression models were all significant (all p values < .001), explaining between 12.5% to 28.1% of the variance, following correction for Type 1 error ($p < .006$), the only potential predictor to exert an effect was ADM use for the CORE-wb model. None of the remaining predictors exerted a significant effect in any of the remaining analyses (all p values > .013; see Appendix 7, Table A7.4). ADM use was therefore retained for the CORE-wb regression model, with all additional covariates excluded from the analysis. Analyses were subsequently conducted on these HMR models to test for violation of assumptions. The majority of requirements were met, with the exception of the linearity of the CORE-wb model (for details see Appendix 7.1).

Data analysis

Descriptive analyses were initially conducted to explore the number of participants commencing each BtBs module and completing the group identity, satisfaction and CORE-OM measures. To explore the relationship between group identification and satisfaction, participants' satisfaction ratings were trichotomized (cf. Gelman, 2015), recoding responses into participants demonstrating low (scores from 1: '*Couldn't be worst*' to 3: '*Mostly dissatisfied*'), neutral (4: '*Mixed'*) and high (scores from 5:

[8] For the analyses with CORE domains as the dependent variables, only the CORE Total-Risk score was entered in step one of the MLR. This was due to the baseline domain scores forming part of the Total-risk score, so entering them as separate variables would not have been appropriate (Field, 2005).

'*Mostly satisfied*' to 7: '*Couldn't be better*') satisfaction ratings. Cross-tabular analyses and Pearson's chi-square were subsequently conducted (Cientanni et al., 2017). To examine whether any differences emerged pre-post intervention on each of the four dependent variables, a series of Wilcoxon signed-rank tests (non-parametric equivalent of repeated measures *t*-tests) were conducted to examine change over time from pre- to post-treatment assessment (critical value set at $p <$ .013 for these analyses).

A series of hierarchical multiple regression (HMR) analyses were subsequently conducted to examine predictors of outcome across our satisfaction, well-being and functioning measures. The hypothesised predictor variables selected for inclusion in the HMR were number of high group identifications, socioeconomic deprivation (SIMD measure), baseline measure of psychological distress (CORE-tr), baseline measures of participants' LS and MHS, and ADM use for the CORE-wb model. Finally, moderation analysis was conducted by computing the interaction terms between baseline psychological distress, group identifications and social deprivation. Each interaction term was subsequently entered as an additional predictor in the models.

2.5: Results

Descriptive statistics and cross-tabular analyses

Of the 11,970 participants referred to BtBs, 1354 (32.68) completed the GIS measure (see Figure 2.1). This represents a similar attrition rate from other studies employing cCBT interventions (e.g. Powell et al., 2012). Of these 1354 participants, 492 highly

identified with no groups (36.34%), 415 identified with one group (30.65%), 320 identified with two groups (23.63%), and 127 identified with three groups (9.38%). The full range of SIMD rank deciles (1-10) were represented in the current sample (M = 5.45, SD = 2.76). In terms of pre-treatment satisfaction, the full range of scores was obtained (1-7), for both LS (M = 3.59, SD = 1.26) and MHS (M = 3.09, SD = 1.18). For post-treatment satisfaction, a similar pattern was obtained (range 1-7; M_{LS} = 4.65, SD_{LS} = 1.24; M_{MHS} = 4.38, SD_{MHS} = 1.18). For additional demographic statistics, see Appendix 7, Table A7.5.

To assess whether any differences emerged between participants who did (n = 1354) and did not complete the GIS (n = 10,616) on baseline measures of satisfaction and psychological distress, a series of Mann-Whitney U tests (non-parametric equivalent of independent samples t-tests; Field, 2005) were completed (critical p value < .017). For all measures, results indicated that those completing the GIS showed higher baseline levels of satisfaction and lower levels of distress than those not completing the identification scale (all p values < .005; see Appendix 7, Table A7.5).

To examine pre- and post-intervention satisfaction ratings as a function of group identification and social deprivation, cross-tabular analyses were conducted, followed by Pearson's chi-square utilising Cramer's V (Field, 2005). Results revealed a significant association pre-intervention between number of high identifications and level of both LS (χ^2 (6, n = 1197) = 260.89, p<.0005; see Table 2.1) and MHS (χ^2 (6, n = 1197) = 175.23, p < .0005; see Table 2.2). The same pattern of effects was obtained at post-intervention (both p values < .005, one-tailed),

and represented a medium effect size of both analyses (Cramer's $V > 0.3$; Cohen, 1988). The same analyses were conducted for participants' SIMD scores, but

Table 2.1: *Frequencies and percentages for three levels of pre- and post-treatment life satisfaction by number of high group identifications*

No. group identifications	*n*	Life satisfaction *n* (%)		
		Low	Neutral	High
		Pre-intervention		
0	434	254 (58.53)	150 (34.56)	30 (6.91)
1	365	130 (35.62)	166 (45.48)	69 (18.90)
2	283	54 (19.08)	122 (43.11)	107 (37.81)
3	115	14 (12.17)	30 (26.09)	71 (61.74)
Total:	1197	452 (37.76)	468 (39.10)	277 (23.14)
		Post-intervention		
0	51	11 (21.57)	19 (37.25)	21 (41.18)
1	44	3 (6.82)	16 (36.36)	25 (56.82)
2	46	0 (0.00)	7 (15.22)	39 (84.78)
3	24	0 (0.00)	4 (16.67)	20 (83.33)
Total:	165	14 (8.48)	46 (27.88)	105 (63.63)

Note. Bonferroni correction ($p < .006$).
Pre-intervention; χ^2 (6, n = 1197) = 260.89, $p < .001$, Cramer's $V = .33$. Post-intervention; χ^2 (6, n = 165) = 31.90, $p < .001$, Cramer's $V = .31$.

no significant effects emerged (all p values > .04). Caution should be used when interpreting the results from the LS analysis, as 33% of the expected counts fell below the minimum acceptable value of five (Field, 2005)[9]. Expected counts for the remaining three models fell within acceptable parameters.

Table 2.2: *Frequencies and percentages for three levels of pre- and post-treatment mental health satisfaction by number of high group identifications*

[9] We attempted to rectify this problem by performing a median split on the satisfaction ratings. Unfortunately, 33% of the cells remained below the necessary value, so the original methods was retained in order to maximize efficiency (Gelman, 2015).

No. group identifications	*n*	Mental health satisfaction *n* (%)		
		Low	Neutral	High
		Pre-intervention		
0	435	324 (74.48)	95 (21.84)	16 (3.68)
1	364	210 (57.69)	127 (34.89)	27 (7.42)
2	283	120 (42.40)	122 (43.11)	41 (34.17)
3	115	31 (26.96)	43 (37.39)	41 (35.65)
Total:	1197	685 (57.23)	387 (32.33)	125 (10.44)
		Post-intervention		
0	51	13 (25.49)	19 (37.25)	19 (37.25)
1	44	7 (15.91)	18 (40.91)	19 (43.18)
2	46	4 (8.70)	10 (21.74)	32 (69.57)
3	24	3 (12.5)	3 (12.5)	18 (75.00)
Total:	165	27 (16.36)	50 (30.30)	88 (53.33)

Note. Bonferroni correction ($p < .013$).
Pre-intervention; χ^2 (6, n = 1197) = 175.23, $p < .001$, Cramer's $V = .27$. Post-intervention; χ^2 (6, n = 165) = 18.25, $p < .005$, Cramer's $V = .24$.

Treatment effectiveness

Wilcoxon signed-rank tests were conducted to examine changes in participants' satisfaction, functioning and well-being ratings between pre- and post-treatment (see Table 2.3). For each of the four dependent variables, median scores post-treatment significantly exceeded those at pre-treatment (all p values < .001). To check for the impact of the intervention on depressive symptomatology (assessed through measure of psychological distress), Wilcoxon signed-rank tests were also completed on participants' pre- and post-intervention CORE-tr scores. This analysis also demonstrated a significant effect (see Table 2.3). To check the reliability of these findings, a bootstrap was applied to the data, followed by paired-samples *t*-tests. The same pattern of results was obtained for all variables (all p values < .0001).

Table 2.3: *Medians, ranges, and Wilcoxon signed-rank test results of changes from pre- to post-treatment on life satisfaction, mental health satisfaction, functioning and well-being.*

	Pre-treatment		Post-treatment		*z* (*n*)	*p**	Cohen's *r***
Measures	*Median*	*Range*	*Median*	*Range*			
LS	4.00	6.00	5.00	6.00	-8.05 (*165*)	.000*	-.63
MHS	3.00	6.00	5.00	6.00	-8.20 (*165*)	.000*	-.64
CORE-f	1.67	3.75	0.67	3.50	-11.23 (*281*)	.000*	-.67
CORE-wb	2.25	4.00	1.00	3.75	-12.51 (*281*)	.000*	-.75
CORE-tr	1.99	3.74	1.07	3.36	-13.21 (*281*)	.000*	-.79

Note. LS = life satisfaction; MHS = mental health satisfaction; CORE-wb = CORE-OM well-being domain; CORE-f = CORE-OM functioning domain. For satisfaction measures, higher scores = greater satisfaction, whereas for CORE scores higher scores = greater distress. Bonferroni correction ($p < .01$)

* $p < .001$ (two-tailed).

**Cohen's *r* effect size, small $r = .10$; medium $r = .30$; large $r = .50$ (Cohen, 1988); very large $r = .70$ (Rosenthal, 1996).

Predictors of outcome

A series of HMR analyses were conducted to examine the impact of four hypothesised possible predictors (number of high group identifications, socioeconomic deprivation, baseline psychological distress [CORE-tr score] and baseline LS and MHS) of outcome across our satisfaction, well-being and functioning measures. The additional predictor of ADM use was also entered into the well-being model. Relevant baseline scores and ADM use were entered in step one, followed by SIMD decile in step two and GIS in step three. Change scores were subsequently calculated to determine the impact of each step in the model (i.e. individual predictors). Tolerance statistics were examined to control for multicollinearity, all of which fell within acceptable ranges (> .10; Laerd Statistics, 2015).

Satisfaction ratings

In line with expectations, for life satisfaction Model 1 was statistically significant ($F_{(2, 155)} = 21.49$, $p < .0005$), explaining 20.9% of the variance. Models 2 and 3 were also significant (both p values <.0005), but only the addition of GIS (Model 3) led to a statistically significant increase in R^2 of .026 ($F_{(1, 151)} = 5.18$, $p < .05$), predicting 23.1% of the variance; a large effect (Sink & Stroh, 2006). In terms of individual predictors, baseline level of distress, baseline LS, and GIS all significantly contributed to the model ($p < .05$); see Table 2.4 for regression coefficients and bootstrapped standard errors. In contrast to expectations, social deprivation was not significant (see Table 2.4). Concerning MHS, all three Models were again statistically significant ($F_{(2, 155)} = 10.18$, $p < .0005$; see Table 2.4), with the addition of GIS (Model 3) resulting in a statistically significant increase in R^2 of .034 ($F_{(1, 151)} = 6.11$, $p = .015$; see Table 2.4). For Model 3, the collective set of predictors explained 13.3% of the variance (medium-large effect; Sink & Stroh, 2006). Baseline level of distress and group identification emerged as significant predictors (both p values < .05), whereas SIMD was not significant (see Table 2.4).

Functioning and well-being

In line with expectations, for CORE-f we obtained a significant effect of Model 1 ($F_{(1, 276)} = 97.78$, $p < .0005$), with the collective set of predictors explaining 26.0% of the variance; a large effect (Sink & Stroh, 2006; see Table 2.5). Although Models 2

Table 2.4: *HMR analyses exploring predictors of outcome in Life Satisfaction and Mental Health Satisfaction with bootstrapped standard errors*

	Life satisfaction (LS) (Adj R^2 = .23)				Mental health satisfaction (MHS) (Adj R^2 = .13)			
Measure	*β*	*B*	SE_B	*p*	*β*	*B*	SE_B	*p*
Baseline CORE-tr	-.138	-.216	.130	.045*	-.195	-.348	.178	.026*
Baseline LS	.257	.223	.081	.003**				
Baseline MHS					.065	.073	.124	.278
SIMD	-.075	-.030	.027	.138	-.061	-.027	.034	.215
Total GIS (0-3)	.196	.205	.090	.012*	.211	.251	.107	.011*

Note. *β* = standardised coefficient; *B* = unstandardized, bootstrapped coefficient; SE_B = Bootstrapped standard error; CORE-tr = CORE-OM total-risk mean; SIMD = Scottish Index of Multiple Deprivations; GIS = Group Identity Scale.
**p*<.05 (one-tailed); ***p*<.005 (one-tailed).

Table 2.5: *HMR analyses exploring predictors of outcome in Functioning and Well-Being domains with bootstrapped standard errors*

	CORE-functioning (Adj R^2 = .26)				CORE-well-being (Adj R^2 = .31)			
Measure	*β*	*B*	SE_B	*p*	β	*B*	SE_B	*p*
Baseline CORE-tr	.485	.514	.068	.000**	.518	.627	.083	.000**
ADM use	-	-	-	-	.158	.286	.098	.003*
SIMD	.001	.000	.016	.491	-.088	-.030	.019	.065
Total GIs (0-3)	-.055	-.041	.043	.170	-.085	-.072	.054	.093

Note. *β* = standardised coefficient; *B* = unstandardized, bootstrapped coefficient; SE_B = Bootstrapped standard error; CORE-tr = CORE-OM total-risk mean; ADM-use = anti-depressant medication use; SIMD = Scottish Index of Multiple Deprivations; GIS = Group Identity Scale.
**p* < .005 (one-tailed); ***p* < .001 (one-tailed)

and 3 were also significant (both p values $p < .0005$), inclusion of the additional predictors did not result in a change in R^2 (e.g. Model 3: $\Delta R^2 = .002$, $F_{(1,273)} = .87$, $p = .351$). From the individual predictors, only baseline severity of distress contributed significantly to the model ($p < .0005$). Regression coefficients and bootstrapped standard errors can be found in Table 2.5. Concerning CORE-wb, all three Models were again statistically significant (e.g. Model 1: $F_{(2, 246)} = 54.64$, $p < .0005$), with the predictors explaining 31.2% of the variance. Inclusion of the additional predictors did not result in a change in R^2 (e.g. Model 2: $\Delta R^2 = .009$, $F_{(1,243)} = 3.05$, $p = .081$). For this model, baseline level of distress and ADM use exerted a significant effect (both values $p < .01$; see Table 2.5).

Moderation analysis

A further series of HMR were conducted to assess whether the interaction between psychological distress and group identification or social deprivation had an impact on our outcome variables. Interaction terms between the predictors were computed by finding the product of each pair of variables (i.e. CORE-tr and GIS, CORE-tr and SIMD, GIS and SIMD; Field, 2005), with the resulting term subsequently entered as an additional predictor in the final step of the models. All models retained their statistical significance (all p values < .0005).

A significant moderation effect emerged between baseline distress and social deprivation for the CORE-f domain ($B = -.058$, $SE_B = .021$, $p < .01$, 95% CI [-.10, -.02]; see Table 2.6). Adding the interaction into the model resulted in a statistically significant increase in R^2 of .019 ($F_{(2, 272)} = 7.25$, $p < .01$); a small effect (Sink & Stroh, 2006). In terms of individual predictors, CORE-tr exerted a significant effect

on functioning at each step of the Model (see Table 2.6). Following the inclusion of the interaction in Model 3, SIMD emerged as an additional predictor ($p < .005$; see Table 2.6). No further significant moderation effects were obtained (all p values > .22; see Appendices A8.1 – A8.6).

Table 2.6: *Moderation analyses exploring predictors of outcome in Functioning with bootstrapped standard errors for baseline distress by social deprivation interaction*

	CORE-functioning (CORE-f) (Adj $R^2 = .23$)			
Measure	β	B	SE_B	p
		Step 1		
Baseline CORE-tr	.512	.543	.055	.000***
		Step 2		
Baseline CORE-tr	.485	.514	.067	.000***
Total GIs (0-3)	-.055	-.041	.043	.332
SIMD	.001	.000	.015	.980
		Step 3		
Baseline CORE-tr	.784	.831	.137	.000***
Total GIs (0-3)	-.056	-.041	.042	.327
SIMD	.358	.105	.033	.002**
Interaction, SIMD*CORE-tr	-.478	-.058	.021	.007*

Note. CORE-tr = CORE-OM total minus risk mean score; GIS = Group Identification Scale; SIMD = Scottish Index of Multiple Deprivations; β = standardised coefficient; B = unstandardized, bootstrapped coefficient; SE_B = Bootstrapped standard error; CORE-tr = CORE-OM total-risk mean. *$p < .01$ (two-tailed); **$p < .005$ (two-tailed); ***$p < .001$.

To assess the impact of the moderation on the functioning model, CORE-tr scores were subjected to a 3-way split (cf. Gelman, 2015), based on the mean ± 1 standard deviation ($M = 2.06$, $SD = .70$; cf. Hayes & Rockwood, 2017). HMR analyses were subsequently performed, with GIS entered in step 1 of the Models and SIMD entered in step 2. None of the Models were significant (all p values > .09; see

Appendix A8.7). Examination of individual predictors indicated that SIMD only emerged as a significant predictor of functioning for low CORE-tr scores (B = .039, SE_B = .018, p < .05, 95% CI [.003, .073]). This suggests that level of baseline distress moderated the impact of social deprivation on participants' post-intervention functioning. Bootstrapped analyses indicated a significant positive correlation between SIMD and CORE-f scores for low CORE-tr scores (B = .003, SE_B = .067, r = .237, p < .001, 95% CI [.099, .373], one-tailed), indicating that high post-intervention functioning was associated with high levels of deprivation when baseline distress was low. These results should be interpreted with caution, however, as the models did not retain their significance following the 3-way split of the CORE-tr scores.

Mediation analyses

Finally, mediation analyses were performed using Hayes' PROCESS Macro (2013), with baseline distress entered as the independent variable, GIS as the mediating variable, and the satisfaction, CORE-f and CORE-wb measures entered as dependent variables. Separate analyses were conducted for each outcome domain. The models for both LS ($F_{(2, 157)}$ = 20.74, p < .0001) and MHS ($F_{(2, 157)}$ = 20.74, p < .0001) were significant, with the predictors explaining 20.9% and 15.6% of the variance, respectively; large effects (Sink & Stroh, 2006). As indicated in Table 2.7, results of the mediation analysis demonstrated a significant mediation effect between GIS, CORE-tr and both satisfaction domains.

As none of the 95% confidence intervals cross zero, the total, direct and indirect effects are all significant (Preacher & Hayes, 2008). As the direct and indirect

Table 2.7: *Mediation analyses for Life and Mental Health satisfaction outcomes with bootstrapped standard errors for baseline distress by social deprivation*

	Life Satisfaction				Mental Health Satisfaction			
	Beta	SE	95% CI		Beta	SE	95% CI	
			Lower	Upper			Lower	Upper
Total effect	-.583	.116	-.813	-.354	-.610	.135	-.876	-.344
Direct effect	-.364	.126	-.613	-.116	-.414	.149	-.708	-.121
Indirect effect (GIS)	-.219	.065	-.354	-.101	-.196	.076	-.357	-.060

Note. GIS = Group Identification Scale

effects are both significant (see Table 2.7), this suggests that some of the variation in LS and MHS accounted for by baseline distress was underwritten by membership to multiple groups; a partial mediation (see Figures 2.2 - 2.3). No significant mediation effects emerged for the functioning or well-being domains (see Appendix A8.8).

Figure 2.2: *Mediation model of baseline distress as a predictor of life satisfaction, mediated by number of group identities*

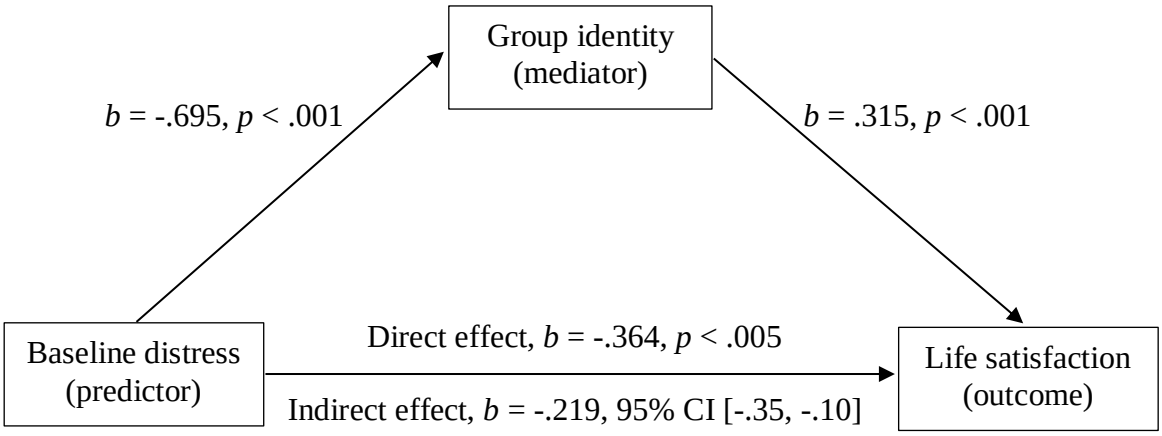
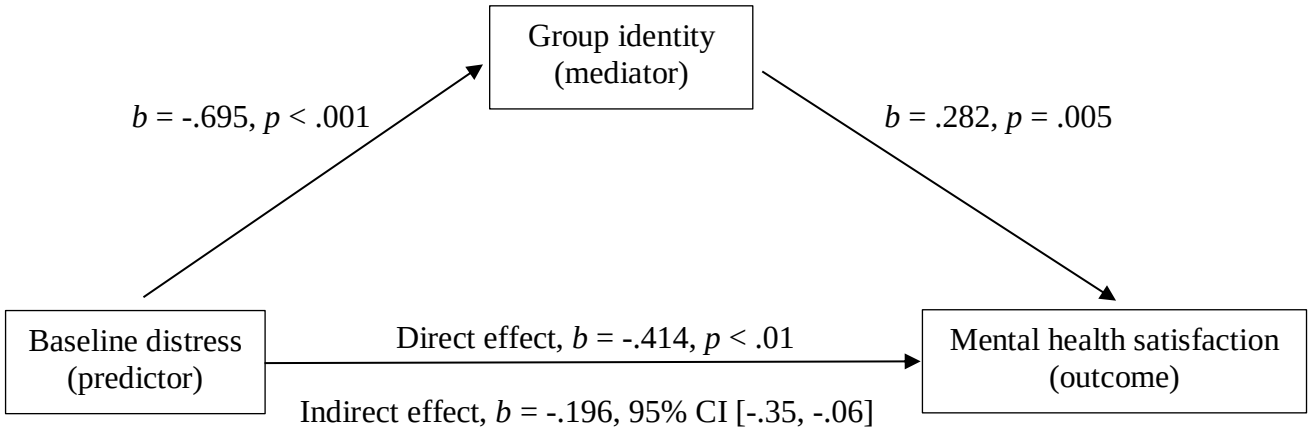


Figure 2.3: *Mediation model of baseline distress as a predictor of mental health satisfaction, mediated by number of group identities*



2.6: Discussion

The current study demonstrates that a cCBT intervention, Beating the Blues, significantly improved well-being (i.e. life and mental health satisfaction, functioning, and generic well-being) and reduced depressive symptoms (generic psychological distress) in a clinical sample. This adds to the growing literature on the effectiveness, as opposed to efficacy, of cCBT in routine clinical settings (e.g. Andersson et al., 2014), and through its focus on the promotion of well-being moves away from the pathological model of distress (Kinderman, 2014). Our finding that the BtBs intervention exerted an impact on mental health satisfaction, in addition to life satisfaction, adds a unique contribution to the field, as only one previous study has explored the impact of cCBT on satisfaction (Hoifoidt et al., 2013). As this study employed a uni-dimensional construct of global life satisfaction, our study is, to the best of our knowledge, the first to indicate that cCBT exerts a significant and positive impact on mental health satisfaction.

In terms of predictors of outcome from cCBT, preliminary analyses revealed that a range of demographic factors (namely age, gender, education level and employment status) were unrelated to treatment response. These findings are consistent with previous studies (e.g. no impact of employment status on cCBT outcome; Farrer et al., 2014; Spek et al., 2008), yet contrast with others (e.g. employment predicts positive response; de Graaf et al., 2010; Hoifodt et al., 2014). Although our study adds to the evidence base suggesting that these variables do not predict treatment response in cCBT, failure to obtain significant results should be interpreted with caution (Field, 2005) and needs further replication before firm conclusions can be drawn.

Of more interest and in line with our expectations, the current study demonstrated that social identification and baseline psychological distress significantly predicted outcome from BtBs. In line with expectations, identification with more groups exerted a positive impact on treatment response for both satisfaction measures, reinforcing previous evidence revealing a positive relationship between group identification and mental health (Cruwys et al., 2014). Although these results indicate that group identification promotes well-being responses from cCBT interventions, in contrast to expectations, this impact did not extend to the functioning or well-being domains of the CORE-OM (Evans et al., 2002), as identification scores were not predictive of outcome for either of these measures.

This finding was initially surprising, considering the evidence for a positive relationship between identification and well-being (Greenaway et al., 2016). A more detailed consideration of the CORE-OM questionnaire and its four subdomains (i.e. functioning, well-being, problem severity and risk; Evans et al., 2002) suggested that

our findings may have been compromised by our measure: Analyses have indicated that the four individual subscales of the original model show considerable overlap, and should not be used independently (Lyne et al., 2006). Our failure to obtain a significant impact of social identification on wellbeing and functioning is therefore likely to have been compromised by the use of the CORE-OM. Further research in this area utilising alternative conceptualisations of functioning and well-being may therefore be warranted.

In terms of baseline distress, this was the only predictor to exert a significant impact on treatment response across all four models (notwithstanding the operational difficulties of the CORE-OM subdomains, as discussed above). In contrast with our hypothesis, however, lower rather than higher levels of distress were predictive of positive treatment response. Although this finding contrasts with an earlier meta-analysis indicating the opposite pattern (Bower et al., 2013), our results are consistent with some existing studies (de Graaf et al., 2010; Spek et al., 2007), suggesting that further research in this area is warranted.

In line with expectations, our analysis obtained a significant moderation of baseline distress on the impact that SIMD scores exerted on functioning. This finding should be interpreted with caution due to the difficulties outlined above concerning CORE-OM subscales, but is consistent with the mediation effect obtained in Cientanni and colleagues' (2017) study between social identification, socioeconomic deprivation and treatment outcome. Our analysis demonstrated that deprivation only exerted an impact on participants' self-reported functioning when baseline distress was low. Under these circumstances, lower levels of functioning

were associated with lower levels of deprivation, which reinforces the importance of including baseline distress as a predictor of outcome in future studies.

Finally, in contrast with our expectation, no moderation emerged between baseline distress and group identification for any of our outcome variables. A significant mediation did emerge between group identity and distress on post-intervention life and mental health satisfaction. This suggests that some of the variation in LS and MHS accounted for by baseline distress was underwritten by membership of multiple groups, and adds to previous arguments (Saeri, Cruwys, Barlow, Stronge, & Sibley, 2017) that the role of group identification in mental health warrants further examination. As a positive relationship emerged between group identity and post-intervention satisfaction, this suggests that identification with multiple groups is a protective factor that mediates the impact of baseline distress on satisfaction outcomes. In terms of clinical implications of this finding, as argued by Cientanni and colleagues (2017), this result supports the inclusion of social prescribing as one potentially effective treatment for depression within primary care (for a review, see Chatterjee, Camic, Lockyer, & Thomson, 2017).

Limitations and further directions

Although our study represents a significant contribution to the field, it should be considered with respect to its limitations, which also suggest directions for future research. Our attrition rates for completion of self-reported questionnaires were high, for example, with just over 10% of the total referrals to BtBs completing our GIS scale. Of these, only 14% completed both pre- and post-intervention satisfaction measures, which is likely to reduce the generalizability of our results, and may be

suggestive of response bias. This suggestion is reinforced by analyses indicating that those who completed the GIS reported significantly higher baseline satisfaction ratings and lower psychological distress than those who did not (see Table A7.5).

Although this is a limitation of the current study, our attrition rates were comparable with other studies of cCBT (e.g. Farrer et al., 2014). Previous research has also indicated that participants with higher levels of depressive symptoms are more likely to dropout from treatment than those with lower rates (Ramos-Grille, Gomà-Freixanet, Valero, Vallès, & Guillamat, 2014). It is therefore unsurprising that those with higher levels of baseline distress were less likely to complete post-intervention assessment measures than those with lower symptom severity. Considering the negative association between baseline distress and satisfaction outcomes, however, further work examining ways of encouraging patients with higher baseline severity to engage with cCBT is warranted (Karyotaki et al., 2015).

A significant limitation of our study concerns additional treatments that patients may have received. Although we controlled for the use of ADM, we did not assess whether participants accessed any additional, psychological or psychiatric input. As suggested by the study by Gilbody and colleagues (2015), this may have confounded our results. Unfortunately, controlling for this variable was not pragmatic considering the scope of the current research (i.e. conduction across five health boards, and multiple recruitment sites). Future research would therefore benefit from inclusion of this variable, where at all possible, so its impact can be explored.

Finally, an additional confounding factor concerns our use of single-item measures to assess LS and MHS, as single-item assessments have been shown to be less reliable and/or valid than multi-item scales (e.g. Diamantopoulos, Sarstedt,

Fuchs, Wilczynski, & Kaiser, 2012). Despite this criticism, however, the inclusion of two separate (i.e. life and mental health) components of satisfaction is a strength of the current study. Furthermore, analyses specifically examining the psychometrics of single-item *satisfaction* measures have indicated high correlations with multi-item scales, and acceptable validity ratings (Cheung & Lucas, 2014), which partially addresses this limitation of the study. Despite this, future research within this area would benefit from the inclusion of longer scales, with due consideration of the impact that this could have on response rates and participant burden (e.g. Galesic & Bosnjak, 2009).

Conclusions

Our current study adds a unique contribution to the examination of predictors of treatment response to cCBT, through its emphasis on promotion of well-being rather than symptom reduction, and the inclusion of GIS and baseline distress as predictors of outcome. As emphasised in previous research (Cientanni et al., 2017; Sani et al., 2015), the significant impact of social identification on the well-being of patients in our current study lends credence to the importance of social prescribing as part of a stepped-care approach to distress. In addition, in a climate of reduced funding and waiting list pressures within the NHS (Information Service Division, 2017), the current study adds existing evidence that cCBT offers an effective, lower-intensity treatment option for patients.

2.7: Acknowledgements

The authors assert that all procedures contributing to this work comply with the ethical standards of the Helsinki Declaration of 1975, and its most recent revision.

The data presented within this study were collected within the framework of the Mastermind Project Consortium, which was cofounded by the European Commission within the ICT Policy Support Programme of the Competitiveness and Innovation Framework Programme (Grant Agreement No. 621000).

Conflict of interests

The authors have no conflicts of interest with respect to this publication, and received no funding for this project

References

Adams, T. R., Rabin, L. A., Da Silva, V. G., Katz, M. J., Fogel, J., & Lipton, R. B. (2016). Social Support Buffers the Impact of Depressive Symptoms on Life Satisfaction in Old Age. *Clinical Gerontologist*, *39*(2), 139–157. http://doi.org/10.1080/07317115.2015.1073823

Alaoui, S. El, Ljótsson, B., Hedman, E., Kaldo, V., Andersson, E., Rück, C., … Lindefors, N. (2015). Predictors of symptomatic change and adherence in internet-based cognitive behaviour therapy for social anxiety disorder in routine psychiatric care. *PLoS ONE*, *10*(4), 1–18. http://doi.org/10.1371/journal.pone.0124258

Alberts, N. M., Hadjistavropoulos, H. D., Titov, N., & Dear, B. F. (2017). Patient and provider perceptions of Internet-delivered cognitive behavior therapy for recent cancer survivors. *Supportive Care in Cancer*, 1–7. http://doi.org/10.1007/s00520-017-3872-8

Almunawar, M., Wint, Z., Low, P., & Anshari, M. (2012). E-Health Initiative and Customer's Expectation: Case Brunei. *CiiT International Journal of Automation and Autonomous System*, 1–8.

Anand, M., & Arora, D. (2009). Burnout, life satisfaction and quality of life among executives of multi national companies. *Journal of the Indian Academy of Applied Psychology*, *35*(1), 159–164. Retrieved from http://ezproxy.net.ucf.edu/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=psyh&AN=2009-01888-020&site=ehost-live%5CnDiptiArora2008@gmail.com %5Cndr.anandmadhu@yahoo.com

Andersson, G., Cuijpers, P., Carlbring, P., Riper, H., & Hedman, E. (2014). Internet-based vs. face-to-face cognitive behaviour therapy for psychiatric and somatic disorders: a systematic review and meta-analysis. *World Psychiatry*, (October), 1–23. http://doi.org/10.1002/wps.20151

Andrewes, H., Kenicer, D., McClay, C. A, & Williams, C. (2013). A national survey of the infrastructure and IT policies required to deliver computerised cognitive behavioural therapy in the English NHS. *BMJ Open*, *3*(2), 7. http://doi.org/10.1136/bmjopen-2012-002277

Avenevoli, S., Swendsen, J., He, J.-P., Burstein, M., & Merikangas, K. (2015). Major Depression in the National Comorbidity Survey–Adolescent Supplement: Prevalence, Correlates, and Treatment. *Journal of the American Academy of Child & Adolescent Psychiatry*, *54*(1), 37–44. Retrieved from http://www.sciencedirect.com/science/article/pii/S0890856714007321

Barak, A., Klein, B., & Proudfoot, J. G. (2009). Defining internet-supported therapeutic interventions. *Annals of Behavioral Medicine*, *38*(1), 4–17. http://doi.org/10.1007/s12160-009-9130-7

Baror, E. (2010). The virtual office: A preliminary investigation of a computer-based teratment for adolescents with anxity disorders and clinicans' attitudes towards the use of technology in psychotherapy. *Unpublished Doctoral Thesis, University of Hartford*.

Beard, C., Stein, A. T., Hearon, B. A., Lee, J., Hsu, K. J., & Björgvinsson, T. (2016). Predictors of Depression Treatment Response in an Intensive CBT Partial Hospital. *Journal of Clinical Psychology*, *72*(4), 297–310. http://doi.org/10.1002/jclp.22269

Beck, A. (1967). *Depression: clinical, experimental and theoretical aspects.* New York: Harper and Row.

Becker, E. M., & Jensen-Doss, A. (2013). Computer-assisted therapies: Examination of

therapist-level barriers to their use. *Behavior Therapy*, *44*(4), 614–624. http://doi.org/10.1016/j.beth.2013.05.002

Bengtsson, J., Nordin, S., & Carlbring, P. (2015). Therapists' Experiences of Conducting Cognitive Behavioural Therapy Online vis-a-vis Face-to-Face. *Cognitive Behavior Therapy*, *44*(6), 470-9. http://DOI:10.1080/16506073.2015.1053408

Berger, T., Krieger, T., Sude, K., Meyer, B., & Maercker, A. (2017). Evaluating an e-mental health program ("deprexis") as adjunctive treatment tool in psychotherapy for depression: Results of a pragmatic randomized controlled trial. *Journal of Affective Disorders*, *227*(November 2017), 455–462. http://doi.org/10.1016/j.jad.2017.11.021

Bergman Nordgren, L., Carlbring, P., Linna, E., & Andersson, G. (2013). Role of the working alliance on treatment outcome in tailored internet-based cognitive behavioural therapy for anxiety disorders: randomized controlled pilot trial. *JMIR Research Protocols*, *2*(1), e4. http://doi.org/10.2196/resprot.2292

Bhattarai, N., Charlton, J., Rudisill, C., & Gulliford, M. C. (2013). Prevalence of depression and utilization of health care in single and multiple morbidity: a population-based cohort study. *Psychological Medicine*, *43*, 1423–1431. http://doi.org/10.1017/S0033291712002498

Bower, P., Kontopantelis, E., Sutton, A., Kendrick, T., Richards, D. A., Gilbody, S., … Liu, E. T.-H. (2013). Influence of initial severity of depression on effectiveness of low intensity interventions: meta-analysis of individual patient data. *BMJ*, *346*(f540). http://doi.org/10.1136/bmj.f540

Bowyer, H. L. (2017). Acceptability of computerised cognitive behavioural therapy for depression: A systematic review update. (Doctoral Thesis). Retrieved from Enlighten (https://theses.gla.ac.uk).

Braun, V. and Clarke, V. (2006) Using thematic analysis in psychology. Qualitative Research in Psychology , 3 (2). pp. 77-101. ISSN 1478-0887 Available from: http://eprints.uwe.ac.uk/11735

Brezinka, V. (2010). Computer games supporting cognitive behaviour therapy in children. *Clinical Child Psychology and Psychiatry*, *19*(1), 100-110.

Carper, M. M., McHugh, R. K., & Barlow, D. H. (2013). The dissemination of computer-based psychological treatment: A preliminary analysis of patient and clinician perceptions. *Administration and Policy in Mental Health and Mental Health Services Research*, *40*(2), 87–95. http://doi.org/10.1007/s10488-011-0377-5

Center for Reviews and Dissemination, (2009). CRD's guidance for undertaking reviews in health care. *York; Centre for Reviews and Dissemination. Accessed: https://www.york.ac.uk/media/crd/Systematic_Reviews.pdf*

Chatterjee, H. J., Camic, P. M., Lockyer, B., & Thomson, L. J. M. (2017). Non-clinical community interventions: a systematised review of social prescribing schemes. *Arts & Health*, *3015*(January 2018), 1–27. http://doi.org/10.1080/17533015.2017.1334002

Cheung, F., & Lucas, R. E. (2014). Assessing the validity of single-item life satisfaction measures: results from three large samples. *Quality of Life Research*, *23*(10), 2809–2818. http://doi.org/10.1007/s11136-014-0726-4

Choi, I., Sharpe, l., Li, S., & Hunt, c. (2015). Acceptability of psychological treatment to Chinese and Caucasian-Australians: Internet treatment reduces barriers but face-to-face care is preferred. *Social Psychiatry and Psychiatric Epidemiology, 50*, 77-87. DOI 10.1007/s00127-014-0921-1

Cientanni, F., Power, K., Sani, F., Wright, C., Baty, F., Hustings, K., … Tanner, G. (2017). Comparing social group identifications and socioeconomic deprivation as predictors of psychological distress: Evidence from a Scottish primary care sample. *British Journal of Social Psychology*, 1–18. http://doi.org/10.1111/bjso.12210

Cohen, B. E., Edmondson, D., & Kronish, I. M. (2015). State of the art review: Depression, stress, anxiety, and cardiovascular disease. *American Journal of Hypertension*, *28*(11), 1295–1302. http://doi.org/10.1093/ajh/hpv047

Cohen, J. (1960). A coefficient of agreement for nominal scales. *Educational and Psychological Measurement, 20*(1), 37-46.

Cohen, J. (1988). *Statistical power and analysis for the behavioral sciences* (2nd Edtion). Hillsdale, N.J.: Lawrence Erlbaum Associates, Inc.

Cohen, J. (1992). Quantitative methods in psychology. *112*(1), 155–159.

Cohen, J., Cohen, P., West, S. G., & Aiken, L. S. (2003). *Applied multiple regression/correlation analysis for the behavioural sciences*. (D. Riegert, Ed.) (Third Edit). New Jersey: Lawrence Erlbaum Associates, Inc.

Cook, J., Biyanova, T., & Coyne, J. (2009). Barriers to Adoption of New Treatments: An Internet Study of Practicing Community Psychotherapists. *Adm Policy Ment Health*, *36*(2), 83–90. http://doi.org/10.1007/s11103-011-9767-z.Plastid

Cruwys, T., Alexander Haslam, S., Dingle, G. A., Jetten, J., Hornsey, M. J., Desdemona Chong, E. M., & Oei, T. P. S. (2014). Feeling connected again: Interventions that increase social identification reduce depression symptoms in community and clinical settings. *Journal of Affective Disorders*, *159*, 139–146. http://doi.org/10.1016/j.jad.2014.02.019

Cruwys, T., Dingle, G. a., Haslam, C., Haslam, S. A., Jetten, J., & Morton, T. a. (2013). Social group memberships protect against future depression, alleviate depression symptoms and prevent depression relapse. *Social Science and Medicine*, *98*, 179–186. http://doi.org/10.1016/j.socscimed.2013.09.013

de Graaf, L. E., Hollon, S. D., & Huibers, M. J. H. (2010). Predicting outcome in computerized cognitive behavioral therapy for depression in primary care: A randomized trial. *Journal of Consulting and Clinical Psychology*, *78*(2), 184–189. http://doi.org/10.1037/a0018324

Diamantopoulos, A., Sarstedt, M., Fuchs, C., Wilczynski, P., & Kaiser, S. (2012). Guidelines for choosing between multi-item and single-item scales for construct measurement: a predictive validity perspective. *Journal of the Academy of Marketing Science*, *40*(3), 434–449. http://doi.org/10.1007/s11747-011-0300-3

Diener, E. ., Emmons, R. A., Larsen, R. J., & Griffin, S. (1985). The Satisfaction With Life Scale. *Journal of Personality*, *49*(1), 71–75. http://doi.org/10.1207/s15327752jpa4901

Dolja-Gore, X., Loxton, D. J., D'Este, C. A., & Byles, J. E. (2014). Mental health service use: Is there a difference between rural and non-rural women in service uptake? *Australian Journal of Rural Health*, *22*(3), 92–100. http://doi.org/10.1111/ajr.12109

Donker, T., Bennett, K., Bennett, A., Mackinnon, A., van Straten, A., Cuijpers, P., … Griffiths, K. M. (2013). Internet-delivered interpersonal psychotherapy versus internet-delivered cognitive behavioral therapy for adults with depressive symptoms: randomized controlled noninferiority trial. *Journal of Medical Internet Research*, *15*(5), e82. http://doi.org/http://dx.doi.org/10.2196/jmir.2307

Donovan, C. L., Poole, C., Boyes, N., Redgate, J., & March, S. (2015). Australian mental

health worker attitudes towards cCBT: What is the role of knowledge? Are there differences? Can we change them? *Internet Interventions*, *2*(4), 372–381. http://doi.org/10.1016/j.invent.2015.09.001

Du, E., Quayle, E., & Macleod, H. (2013). Service providers' perceptions on the uptake of computerised cognitive behavioural therapy (CCBT). *PsychNology Journal*, *11*(3), 213–233.

Evans, John Mellor-Clark, Frank Mar, C. (2000). CORE: Clinical Outcomes in Routine Evaluation. *Journal of Mental Health*, *9*(3), 247–255. http://doi.org/10.1080/jmh.9.3.247.255

Evans, C. (2015). What's in a name (2): domains, scales, scores, factors & dimensions. Retrieved November 20, 2017, from https://www.coresystemtrust.org.uk/whats-in-a-name-2-domains-scales-scores-factors-dimensions/

Farrer, L. M., Christensen, H., Griffiths, K. M., & Mackinnon, A. (2011). Internet-based CBT for depression with and without telephone tracking in a national helpline: Randomised controlled trial. *PLoS ONE*, *6*(11). http://doi.org/10.1371/journal.pone.0028099

Farrer, L. M., Griffiths, K. M., Christensen, H., Mackinnon, A. J., & Batterham, P. J. (2014). Predictors of adherence and outcome in internet-based cognitive behavior therapy delivered in a telephone counseling setting. *Cognitive Therapy and Research*, *38*(3), 358–367. http://doi.org/10.1007/s10608-013-9589-1

Faul, F., Erdfelder, E., Lang, A.-G., & Buchner, A. (2007). G*Power 3: a flexible statistical power analysis program for the social, behavioral, and biomedical sciences. *Behavior Research Methods*, *39*(2), 175–91. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/17695343

Feise, R. J. (2002). Do multiple outcome measures require p-value adjustment? *BMC Medical Research Methodology*, *2*(8).

Ferrari, A. (2016). Using celebrities in abnormal psychology as teaching tools to decrease stigma and increase help seeking. *Teaching of Psychology*, *43*(4), 1–5. http://doi.org/10.1177/0098628316662765

Ferrai, A.J., Somerville, A.J., Baxter, A.J., Norman, R., Patten, S.B., Vos, T., & Whiteford, H.A. (2013). Global variation in the prevalence and incidence of major depressive disorder: a systematic review of the epidemiological literature. *Psychological Medicine, 43*, 471-481. http://doi:10.1017/S0033291712001511

Field, A. (2005). *Discovering statistics using SPSS.* London; Sage Publications

Fleming, T., & Merry, S. (2013). Youth work service providers' attitudes towards computerized CBT for adolescents. *Behavioural and Cognitive Psychotherapy*, *41*(3), 265–79. http://doi.org/10.1017/S1352465812000306

Fox, E., Acton, T., Wilding, B., & Corcoran, J. S. (2004). Service development report: An assistant psychologist's perspective on the use of computerised cognitive behavioural therapy in a GP practice in Barnet. *Quality in Primary Care*, *12*(2), 165–168.

Fox, J. (2002). *An R and S-plus Companion to Applied Regression* (Second Edi). Thousand Oaks: Sage Publications Inc.

Friesen, L.N., Hadjistavropoulos, H., & Pugh, N.E. (2014). A qualitative examination of psychology graduate students' experiences with guided Internet-delivered cognitive behaviour therapy. *Internet Interventions, 1,* 41-48.

Galesic, M., & Bosnjak, M. (2009). Effects of Questionnaire Length on Participation and

Indicators of Response Quality in a Web Survey. *Public Opinion Quarterly*, *73*(2), 349–360.

Gellatly, J., Pedley, R., Molloy, C., Butler, J., Lovell, K., & Bee, P. (2017). Low intensity interventions for Obsessive-Compulsive Disorder (OCD): a qualitative study of mental health practitioner experiences. *BMC Psychiatry*, *17*(1), 77. http://doi.org/10.1186/s12888-017-1238-x

Gelman, A. (2015). Beyond the median split: Splitting a predictor into 3 parts. Retrieved November 26, 2017, from http://andrewgelman.com/2015/11/24/beyond-the-median-split-splitting-a-predictor-into-3-parts/

Gerhards, S. A. H., De Graaf, L. E., Jacobs, L. E., Severens, J. L., Huibers, M. J. H., Arntz, A., … Evers, S. M. A. A. (2010). Economie evaluation of online computerised cognitive-behavioural therapy without support for depression in primary care: Randomised trial. *British Journal of Psychiatry*, *196*(4), 310–318. http://doi.org/10.1192/bjp.bp.109.065748

Ghasemi, A., & Zahediasl, S. (2012). Normality tests for statistical analysis: A guide for non-statisticians. *International Journal of Endocrinology and Metabolism*, *10*(2), 486–489. http://doi.org/10.5812/ijem.3505

Gilbody, S., Littlewood, E., Hewitt, C., Brierley, G., Tharmanathan, P., Araya, R., … White, D. (2015). Computerised cognitive behaviour therapy (cCBT) as treatment for depression in primary care (REEACT trial): large scale pragmatic randomised controlled trial. *Bmj*, h5627. http://doi.org/10.1136/bmj.h5627

Greenaway, K. H., Cruwys, T., Haslam, S. A., & Jetten, J. (2016). Social identities promote well-being because they satisfy global psychological needs. *European Journal of Social Psychology*, *46*(3), 294–307. http://doi.org/10.1002/ejsp.2169

Greenberg, P. E., Fournier, A.-A., Sisitsky, T., Pike, C. T., & Kessler, R. C. (2015). The economic burden of adults with major depressive disorder in the United States (2005 and 2010). *The Journal of Clinical Psychiatry*, *76*(2), 155–62. http://doi.org/10.4088/JCP.14m09298

Hadjistavropoulos, H. D., Pugh, N. E., Hesser, H., & Andersson, G. (2016). Predicting Response to Therapist-Assisted Internet-Delivered Cognitive Behavior Therapy for Depression or Anxiety Within an Open Dissemination Trial. *Behavior Therapy*, *47*(2), 155–165. http://doi.org/10.1016/j.beth.2015.10.006

Hannes, K. (2011). Chapter 4: Critical appraisal of qualitative research. In J. Noyes, A. Booth, K. Hannes, A. Harden, J. Harris, S. Lewin, & C. Lockwood (Eds.), *Supplementary Guidance for Inclusion of Qualitative Research in Cochrane Systematic Reviews of Interventions.* Version 1 (updated August 2011). Cochrane Collaboration Qualitative Methods Group, 2011. Available from URL http://cqrmg.cochrane.org/supplemental-handbook-guidance

Hawley, L. L., Padesky, C. A., Hollon, S. D., Mancuso, E., Laposa, J. M., Brozina, K., & Segal, Z. V. (2017). Cognitive-Behavioral Therapy for Depression Using Mind Over Mood: CBT Skill Use and Differential Symptom Alleviation. *Behavior Therapy*, *48*(1), 29–44. http://doi.org/10.1016/j.beth.2016.09.003

Hayes, A. (2013). Introduction to mediation, moderation, and conditional process analysis. New York, NY: Guilford. http://doi.org/978-1-60918-230-4

Hayes, A. F., & Rockwood, N. J. (2017). Regression-based statistical mediation and moderation analysis in clinical research: Observations, recommendations, and implementation. *Behaviour Research and Therapy*, *98*, 39–57. http://doi.org/10.1016/j.brat.2016.11.001

Hengartner, M. P., Angst, F., Ajdacic-Gross, V., Rössler, W., & Angst, J. (2016). Treated versus non-treated subjects with depression from a 30-year cohort study: prevalence and clinical covariates. *European Archives of Psychiatry and Clinical Neuroscience*, *266*(2), 173–180. http://doi.org/10.1007/s00406-015-0646-5

Hoifodt, R. S., Lillevoll, K. R., Griffiths, K. M., Wilsgaard, T., Eisemann, M., Waterloo, K., & Kolstrup, N. (2013). The clinical effectiveness of web-based cognitive behavioral therapy with face-to-face therapist support for depressed primary care patients: randomized controlled trial. *Journal of Medical Internet Research*, *15*(8), e153. http://doi.org/10.2196/jmir.2714

Høifødt, R. S., Mittner, M., & Waterloo, K. (2015). Predictors of Response to Web-Based Cognitive Behavioral Therapy With High-Intensity Face-to-Face Therapist Guidance for Depression A Bayesian Analysis. *Journal of Medical Internet Research*, *17*(9), 1–27.

Huppert, F. A., & So, T. T. C. (2013). Flourishing Across Europe: Application of a New Conceptual Framework for Defining Well-Being. *Social Indicators Research*, *110*(3), 837–861. http://doi.org/10.1007/s11205-011-9966-7

Information Services Division. (2017). *Psychological Therapies Waiting Times In NHSScotland* (Vol. 10). Retrieved from www.isdscotland.org

Jetten, J., Haslam, C., Haslam, S. A., Dingle, G., & Jones, J. M. (2014). How groups affect our health and well-being: The path from theory to policy. *Social Issues and Policy Review*, *8*(1), 103–130. http://doi.org/10.1111/sipr.12003

Jetten, J., Haslam, S. A., & Barlow, F. K. (2013). Bringing Back the System. *Social Psychological and Personality Science*, *4*(1), 6–13. http://doi.org/10.1177/1948550612439721

Jones, R.B., & Ashurst, E.J. (2013). Online anonymous discussion between service users and health professionals to ascertain stakeholder concerns in using e-health services in mental health. *Health Informatics Journal, 19*(4), 281-299.

Kaltenthaler, E., Sutcliffe, P., Parry, G., Beverley, C., Rees, a., & Ferriter, M. (2008). The acceptability to patients of computerized cognitive behaviour therapy for depression: a systematic review. *Psychological Medicine*, *38*(11), 1521. http://doi.org/10.1017/S0033291707002607

Karyotaki, E., Kleiboer, A., Smit, F., Turner, D. T., Pastor, A. M., Andersson, G., … Cuijpers, P. (2015). Predictors of treatment dropout in self-guided web-based interventions for depression: an "individual patient data" meta-analysis. *Psychological Medicine*, *45*(13), 2717–2726. http://doi.org/10.1017/S0033291715000665

Kenter, R. M. F., van de Ven, P. M., Cuijpers, P., Koole, G., Niamat, S., Gerrits, R. S., … van Straten, A. (2015). Costs and effects of Internet cognitive behavioral treatment blended with face-to-face treatment: Results from a naturalistic study. *Internet Interventions*, *2*(1), 77–83. http://doi.org/10.1016/j.invent.2015.01.001

Kessler, D., Lewis, G., Kaur, S., Wiles, N., King, M., Weich, S., … Peters, T. J. (2009). Therapist-delivered internet psychotherapy for depression in primary care: a randomised controlled trial. *The Lancet*, *374*(9690), 628–634. http://doi.org/10.1016/S0140-6736(09)61257-5

Keyes, C. (2012). *Promoting and Protecting Positive Mental Health: Early and Often Throughout the Lifespan*. *Mental well-being: International contributions to the study of positive mental health*. http://doi.org/10.1007/978-94-007-5195-8

Kinderman, P. (2014). *A prescription for psychiatry: Why we need a whole new approach to mental health and wellbeing.* doi:10.1057/9781137408716. London; Palgrave Macmillan

Klein, J. P., Gamon, C., Späth, C., Berger, T., Meyer, B., Hohagen, F., … Schröder, J. (2017). Does recruitment source moderate treatment effectiveness? A subgroup analysis from the EVIDENT study, a randomised controlled trial of an internet intervention for depressive symptoms. *BMJ Open*, *7*, 1–12. http://doi.org/10.1136/bmjopen-2016-015391

Kmet, L. M., Lee, R. C., & Cook, L. S. (2004). Standard quality assessment criteria for evaluating primary research from a variety of fields. *... Technology Assessment ...*, (February). Retrieved from http://gateway.nlm.nih.gov/MeetingAbstracts/103140675.html%5Cnpapers3://publication/uuid/C9499D35-AE13-428E-960B-68727C1B1833

Knowles, S. E., Toms, G., Sanders, C., Bee, P., Lovell, K., Rennick-Egglestone, S., … Bower, P. (2014). Qualitative meta-synthesis of user experience of computerised therapy for depression and anxiety. *PLoS ONE*, *9*(1). http://doi.org/10.1371/journal.pone.0084323

Kuosmanen, T., Fleming, T. M., & Barry, M. M. (2017). Using Computerized Mental Health Programs in Alternative Education: Understanding the Requirements of Students and Staff. *Health Communication*, 1–9. http://doi.org/10.1080/10410236.2017.1309620

La Placa, V., McNaught, A., & Knight, A. (2013). Discourse on wellbeing in research and practice. *International Journal of Wellbeing*, *3*(1), 116–125. http://doi.org/10.5502/ijw.v3i1.7

Lawrence, D., Johnson, S., Hafekost, J., Boterhoven de Haan, K., Sawyer, M., Ainley, J., & Zubrick, S. R. (2015). *The Mental Health of Children and Adolescents. Report on the second Australian Child and Adolescent Survey of Mental Health and Wellbeing*.

Layard, R. (2006). The case for psychological treatment centres. *BMJ : British Medical Journal*, *332*(7548), 1030–1032. http://doi.org/10.1136/bmj.332.7548.1030

Leahy, R., Holland, S., & McGinn, L. (2012). *Treatment Plans and Interventions for Depression and Anxiety Disorders*. (The Guilford Press, Ed.) (2nd Editio). New York: Robert L. Leahy.

Lyne, K. J., Barrett, P., Evans, C., & Barkham, M. (2006). Dimensions of variation on the CORE-OM. *British Journal of Clinical Psychology*, *45*(2), 185–203. http://doi.org/10.1348/014466505X39106

MacGregor, A. D., Hayward, L., Peck, D. F., & Wilkes, P. (2009). Empirically grounded clinical interventions clients' and referrers' perceptions of computer-guided CBT (FearFighter). *Behavioural and Cognitive Psychotherapy*, *37*(1), 1–9. http://doi.org/10.1017/S135246580800492X

MacLeod, M., Martinez, R., & Williams, C. (2009). Cognitive Behaviour Therapy self-help: who does it help and what are its drawbacks? *Behavioural and Cognitive Psychotherapy*, *37*(December 2008), 61–72. http://doi.org/10.1017/S1352465808005031

Malterud, K. (2001). Qualitative research: standards, challenges, and guidelines, *358*(panel 2), 483–488. http://doi.org/10.1016/S0140-6736(01)05627-6

McHugh, M. L., (2012). Interrater reliability: The kappa statistic. *Biochemia Medica*, *22*(3), 276-282.

Moher, D., Liberati, A., Tetzlaff, J., & Altman, D. (2009). The PRISMA Group. Preferred Reporting Items for Systematic Reviews and Meta-Analyses: The PRISMA Statement. *Ann Intern Med*, *151*(4), 264–9. http://doi.org/10.7326/0003-4819-151-4-200908180-00135

Montero-Marin, J., Prado-Abril, J., Botella, C., Mayoral-Cleries, F., Banos, R., Herrera-Mercadal, P., … Garcia-Campayo, J. (2016). An internet-based intervention for depression in primary care in Spain: A randomized controlled trial. *Journal of Medical Internet Research*, *18*(8). http://doi.org/10.2196/jmir.5695

National Institute for Health and Care Excellence (2009). *Depression: The treatment and management of depression in adults (update)*. *Clinical guidelines CG90*. National Institute for Clinical Excellence: London.

National Institute for Health and Care Excellence (2011). Generalised anxiety disorder and panic disorder in adults: management. *Clinical guidelines CG113*. National Institute for Clinical Excellence: London.

Newton, J., Sundin, E. C. (2016). A questionnaire-based qualitative study of therapist views on computerized CBT. *The Cognitive Behaviour Therapist*, *9*(e15), 1–14.

Olok, G. T., Yagos, W. O., Ovuga, E., Coleman, a, Perera, C., Piette, J., … Grenier, E. (2015). Knowledge and attitudes of doctors towards e-health use in healthcare delivery in government and private hospitals in Norhern Uganda: a cross-sectional study. *BMC Medical Informatics and Decision Making*, *15*(1), 87. http://doi.org/10.1186/s12911-015-0209-8

Olthuis, J. V, Watt, M. C., Bailey, K., Hayden, J. a, & Stewart, S. H. (2016). Therapist-supported Internet cognitive behavioural therapy for anxiety disorders in adults. *The Cochrane Database of Systematic Reviews*, *3*(3), CD011565. http://doi.org/10.1002/14651858.CD011565.pub2

Öst, L.-G., & Ollendick, T. H. (2017). Brief, intensive and concentrated cognitive behavioral treatments for anxiety disorders in children: A systematic review and meta-analysis. *Behaviour Research and Therapy*, *97*. http://doi.org/10.1016/j.brat.2017.07.008

Penninx, B. W. J. H., Nolen, W. a., Lamers, F., Zitman, F. G., Smit, J. H., Spinhoven, P., … Beekman, A. T. F. (2011). Two-year course of depressive and anxiety disorders: Results from the Netherlands Study of Depression and Anxiety (NESDA). *Journal of Affective Disorders*, *133*(1–2), 76–85. http://doi.org/10.1016/j.jad.2011.03.027

Perle, J. G., Langsam, L. C., Randel, A., Lutchman, S., Levine, A. B., Odland, A. P., … Marker, C. D. (2013). Attitudes Toward Psychological Telehealth: Current and Future Clinical Psychologists' Opinions of Internet-Based Interventions. *Journal of Clinical Psychology*, *69*(1), 100–113. http://doi.org/10.1002/jclp.21912

Persson, J., Quayle, E., & Power, K. (In prep). Clinician attitudes towards computerised cognitive behaviour therapy: Barrier or facilitator of uptake?

Powell, J., Hamborg, T., Stallard, N., Burls, A., McSorley, J., Bennett, K., … Christensen, H. (2013). Effectiveness of a web-based cognitive-behavioral tool to improve mental well-being in the general population: randomized controlled trial. *Journal of Medical Internet Research*, *15*(1), e2. http://doi.org/10.2196/jmir.2240 [doi]

Preacher, K. J., & Hayes, A. F. (2008). Asymptotic and resampling strategies for assessing and comparing indirect effects in multiple mediator models. *Behavior Research Methods*, 40(3), 879–891. http://doi.org/10.3758/BRM.40.3.879

Priebe, S., Huxley, P., Knight, S., & Evans, S. (1999). Application and results of the Manchester Short Assessment of Quality of Life (MANSA). *The International Journal of Social Psychiatry*, *45*(1), 7–12. http://doi.org/10.1177/002076409904500102

Ramos-Grille, I., Gomà-Freixanet, M., Valero, S., Vallès, V., & Guillamat, R. (2014). Predictors of treatment dropout in depressed outpatients. *Personality and Individual*

Differences, *60*(2014), S66–S67. http://doi.org/10.1016/j.paid.2013.07.291

Reardon, T., Harvey, K., Baranowska, M., O'Brien, D., Smith, L., & Creswell, C. (2017). What do parents perceive are the barriers and facilitators to accessing psychological treatment for mental health problems in children and adolescents? A systematic review of qualitative and quantitative studies. *European Child & Adolescent Psychiatry*, *26*(6), 623–647. http://doi.org/10.1007/s00787-016-0930-6

Rethorst, C. D., Leonard, D., Barlow, C. E., Willis, B. L., Trivedi, M. H., & DeFina, L. F. (2017). Effects of depression, metabolic syndrome, and cardiorespiratory fitness on mortality: results from the Cooper Center Longitudinal Study. *Psychological Medicine*, *47*(14), 2414–2420. http://doi.org/10.1017/S0033291717000897

Richards, D. (2011). Prevalence and clinical course of depression: A review. *Clinical Psychology Review*, *31*(7), 1117–1125. http://doi.org/10.1016/j.cpr.2011.07.004

Richards, D., & Richardson, T. (2012). Computer-based psychological treatments for depression: A systematic review and meta-analysis. *Clinical Psychology Review*, *32*(4), 329–342. http://doi.org/10.1016/j.cpr.2012.02.004

Robertson, L., Smith, M., Castle, D., & Tannenbaum, D. (2006). Using the Internet to enhance the treatment of depression. *Australasian Psychiatry*, *14*(4), 413–417. http://doi.org/10.1111/j.1440-1665.2006.02315.x

Ryff, C. D., & Singer, B. H. (2008). Know Thyslef and Become What You Are: A Eudaimonic Approach to Psychological Well-Being. *Journal of Happiness Studies*, *9*, 13–39.

Saeri, A. K., Cruwys, T., Barlow, F. K., Stronge, S., & Sibley, C. G. (2017). Social connectedness improves public mental health: Investigating bidirectional relationships in the New Zealand attitudes and values survey. *Australian & New Zealand Journal of Psychiatry*, *0*(0), 486741772399. http://doi.org/10.1177/0004867417723990

Salloum, A., Crawford, E. a, Lewin, A. B., & Storch, E. a. (2015). Consumers' and Providers' Perceptions of Utilizing a Computer-Assisted Cognitive Behavioral Therapy for Childhood Anxiety. *Behavioural and Cognitive Psychotherapy*, *43*(July 2013), 31–41. http://doi.org/10.1017/S1352465813000647

Sani, F., Herrera, M., Wakefield, J. R. H., Boroch, O., & Gulyas, C. (2012). Comparing social contact and group identification as predictors of mental health. *British Journal of Social Psychology*, *51*, 781–790. http://doi.org/10.1111/j.2044-8309.2012.02101.x

Sani, F., Madhok, V., Norbury, M., Dugard, P., & Wakefield, J. R. H. (2014). Greater number of group identifications is associated with healthier behaviour : Evidence from a Scottish community sample. *British Journal of Health Psychology*, 1–16. http://doi.org/10.1111/bjhp.12119

Sani, F., Madhok, V., Norbury, M., Dugard, P., & Wakefield, J. R. H. (2015). Greater number of group identifications is associated with lower odds of being depressed: evidence from a Scottish community sample. *Social Psychiatry and Psychiatric Epidemiology*, *50*(9), 1389–1397. http://doi.org/10.1007/s00127-015-1076-4

Schneider, J., Bennett, A., Bennett, K., Grime, P., Grove, B., Foroushani-Sarrami, P., … Walker, P. (2012). *Computerised Cbt for Common Mental Disorders : Rct of a Workplace Intervention*. Nottingham.

Schröder, J., Berger, T., Meyer, B., Lutz, W., Hautzinger, M., Späth, C., … Moritz, S. (2017). Attitudes Towards Internet Interventions Among Psychotherapists and Individuals with Mild to Moderate Depression Symptoms. *Cognitive Therapy and*

Research, *41*(5), 745–756. http://doi.org/10.1007/s10608-017-9850-0

Scottish Government. (2011). *Applied Psychologists and Psychology in NHS Scotland: Working Group Discussion Paper*. Edinburgh; Health and Scoail Care Integration Directorate

Scottish Government. (2016). *The Scottish Index of Multiple Deprivation (SIMD)*. Retrieved from http://www.isdscotland.org/Products-and-Services/GPD-Support/Deprivation/SIMD/

Scottish Government. (2017). Mental Health Strategy: 2017-2027, 2017–2027. Retrieved from http://www.gov.scot/Resource/0051/00516047.pdf

Scottish Intercollegiate Guidelines Network (2015). *Sign 50: A guideline deveoper's handbook*. Edinburgh; SIGN. Available from URL: http://www.sign.ac.uk

Sink, C., & Stroh, H. (2006). Practical Significance:The Use of Effect Sizes in School Counseling Research. *Professional School Counseling*, *9*(4), 401–411. http://doi.org/10.5330/prsc.9.4.283746k664204023

Slade, M., Leese, M., Cahill, S., Thornicroft, G., & Kuipers, E. (2005). Patient-rated mental health needs and quality of life improvement. *British Journal of Psychiatry*, *187*(SEPT.), 256–261. http://doi.org/10.1192/bjp.187.3.256

Spek, V., Cuijpers, P., Nyklicek, I., Riper, H., Keyzer, J., & Pop, V. (2007). Internet-based cognitive behaviour therapy for symptoms of depression and anxiety: a meta-analysis. *Psychological Medicine*, *37*(November 2006), 319–328. http://doi.org/10.1017/S0033291706008944

Stallard, P., Richardson, T., & Velleman, S. (2010). Clinicians' attitudes towards the use of computerized cognitive behaviour therapy (cCBT) with children and adolescents. *Behavioural and Cognitive Psychotherapy*, *38*(5), 545–560. http://doi.org/10.1017/S1352465810000421

Statistics, L. (2015). Statistical tutorials and software guides. Retrieved November 26, 2017, from https://statistics.laerd.com/

Stuart, S. R., Tansey, L., & Quayle, E. (2016). What we talk about when we talk about recovery : a systematic review and best-fit framework synthesis of qualitative literature What we talk about when we talk about recovery : a systematic review and best-fit framework synthesis of qualitative literature. *Journal of Mental Health*, *0*(0), 000. http://doi.org/10.1080/09638237.2016.1222056

Tabachnick, B. G., & Fidell, L. S. (1996). *Using Multivariate Statistics* (Third Edit). London: Harper Collins.

Tarescavage, A. M., & Ben-Porath, Y. S. (2014). Psychotherapeutic outcomes measures: A critical review for practitioners. *Journal of Clinical Psychology*, *70*(9), 808–830. http://doi.org/10.1002/jclp.22080

Titov, N., Dear, B. F., Ali, S., Zou, J. B., Lorian, C. N., Johnston, L., … Fogliati, V. J. (2015). Clinical and Cost-Effectiveness of Therapist-Guided Internet-Delivered Cognitive Behavior Therapy for Older Adults With Symptoms of Depression: A Randomized Controlled Trial. *Behavior Therapy*, *46*(2), 193–205. http://doi.org/10.1016/j.beth.2014.09.008

Titov, N., Fogliati, V. J., Staples, L. G., Gandy, M., Johnston, L., Wootton, B., … Dear, B. F. (2016). Treating anxiety and depression in older adults: randomised controlled trial comparing guided v. self-guided internet-delivered cognitive-behavioural therapy. *BJPsych Open*, *2*(1), 50–58. http://doi.org/10.1192/bjpo.bp.115.002139

Topooco, N., Riper, H., Araya, R., Berking, M., Brunn, M., Chevreul, K., … Andersson, G. (2017). Attitudes towards digital treatment for depression: A European stakeholder survey. *Internet Interventions*, *8*, 1–9. http://doi.org/10.1016/j.invent.2017.01.001

Twomey, C., & O'Reilly, G. (2017). Effectiveness of a freely available computerised cognitive behavioural therapy programme (MoodGYM) for depression: Meta-analysis. *Australian & New Zealand Journal of Psychiatry*, *51*(3), 260–269. http://doi.org/10.1177/0004867416656258

Twomey, C., O'Reilly, G., Byrne, M., Bury, M., White, A., Kissane, S., … Clancy, N. (2014). A randomized controlled trial of the computerized CBT programme, MoodGYM, for public mental health service users waiting for interventions. *British Journal of Clinical Psychology*, *53*(4), 433–450. http://doi.org/10.1111/bjc.12055

Varley, M. (2011). Clinician's views of cCBT in Adult Mental Health and Factors Related to Referrals. *Unpublished Doctoral Thesis, University of Edinburgh*.

Vereenooghe, L., Gega, L., & Langdon, P. E. (2017). Intellectual disability and computers in therapy: Views of service users and clinical psychologists. *Cyberpsychology*, *11*(1Special Issue). http://doi.org/10.5817/CP2017-1-11

Vigerland, S., Ljótsson, B., Bergdahl Gustafsson, F., Hagert, S., Thulin, U., Andersson, G., & Serlachius, E. (2014). Attitudes towards the use of computerized cognitive behavior therapy (cCBT) with children and adolescents: A survey among Swedish mental health professionals. *Internet Interventions*, *1*, 111–117. http://doi.org/10.1016/j.invent.2014.06.002

Vis, C., Kleiboer, A., Prior, R., Bønes, E., Cavallo, M., Clark, S. A., … Riper, H. (2015). Implementing and up-scaling evidence-based eMental health in Europe: The study protocol for the MasterMind project. *Internet Interventions*, *2*(4), 399–409. http://doi.org/10.1016/j.invent.2015.10.002

Waddell, E. L., & Jacobs-Lawson, J. M. (2010). Predicting Positive Well-Being in Older Men and Women. *The International Journal of Aging and Human Development*, *70*(3), 181–197. http://doi.org/10.2190/AG.70.3.a

Waller, R., & Gilbody, S. (2009). Barriers to the uptake of computerized cognitive behavioural therapy: a systematic review of the quantitative and qualitative evidence. *Psychological Medicine*, *39*(5), 705–712. http://doi.org/10.1017/S0033291708004224

Ware, J. E., & Gandek, B. (1998). Overview of the SF-36 Health Survey and the International Quality of Life Assessment (IQOLA) Project. *Journal of Clinical Epidemiology*, *51*(11), 903–912. http://doi.org/10.1016/S0895-4356(98)00081-X

Warmerdam, L., Van Straten, A., Twisk, J., & Cuijpers, P. (2013). Predicting outcome of Internet-based treatment for depressive symptoms. *Psychotherapy Research*, *23*(5), 559–567. http://doi.org/10.1080/10503307.2013.807377

Whitfield, G., & Williams, C. (2004). If the Evidence Is So Good – Why Doesn'T Anyone Use Them? a National Survey of the Use of Computerized Cognitive Behaviour Therapy. *Behavioural and Cognitive Psychotherapy*, *32*(1), 57–65. http://doi.org/10.1017/S1352465804001031

Whittemore, R., Jaser, S. S., Faulkner, M. S., Murphy, K., Delamater, A., & Grey, M. (2013). Type 1 diabetes ehealth psychoeducation: Youth recruitment, participation, and satisfaction. *Journal of Medical Internet Research*, *15*(1). http://doi.org/10.2196/jmir.2170

Wilhelmsen, M., Høifødt, R. S., Kolstrup, N., Waterloo, K., Eisemann, M., Chenhall, R., &

Risør, M. B. (2014). Norwegian general practitioners' perspectives on implementation of a guided web-based cognitive behavioral therapy for depression: a qualitative study. *Journal of Medical Internet Research*, *16*(9), e208. http://doi.org/10.2196/jmir.3556

Wittchen, H. U., Jacobi, F., Rehm, J., Gustavsson, A., Svensson, M., Jonsson, B., … Steinhausen, H. C. (2011). The size and burden of mental disorders and other disorders of the brain in Europe 2010. *European Neuropsychopharmacology*, *21*(9), 655–679. http://doi.org/10.1016/j.euroneuro.2011.07.018

World Health Organisation. (2004). WHA58.28 eHealth. *eHealth Resolutions to the 58th Meeting of the World Health Assembly*, (4), 121–123.

World Health Organization. (2014). *Social Determinants of Mental Health*. *World Health Organization* (Vol. 978). Geneva. Retrieved from www.who.int/about/licensing/copyright_form/en/index.html

Zeng, Q., Xu, Y., & Wang, W. C. (2013). Quality of life in outpatients with depression in China. *Journal of Affective Disorders*, *150*(2), 513–521. http://doi.org/10.1016/j.jad.2013.04.052

Zijlstra, W. P., van der Ark, L. a., & Sijtsma, K. (2010). Outliers in Questionnaire Data: Can They Be Detected and Should They Be Removed? *Journal of Educational and Behavioral Statistics*, *36*(2), 186–212. http://doi.org/10.3102/1076998610366263

Zwerenz, R., Becker, J., Gerzymisch, K., Siepmann, M., Holme, M., Kiwus, U., … Beutel, M. E. (2017). Evaluation of a transdiagnostic psychodynamic online intervention to support return to work: A randomized controlled trial. *Plos One*, *12*(5), e0176513. http://doi.org/10.1371/journal.pone.0176513

Appendices

Appendix 1: Search terms for systematic review

Cognitive behaviour therapy terms

cCB; iCBT; computer* CBT; internet CBT; web* CBT; online CBT; e-therap*; internet cognit* behavi* therap*; computer cognit* behavi* therap*; web cognit* behavi* therap*; online cognit* behavi* therap*; e-healt*

Perception terms

Attitu*; percept*; accept*; challeng*; barrier*; experienc*; opinion*; perspectiv*; decision making*; views*; feasib*; utilit*

Staff terms

Employee*; patient*; clinician*; physician*; therapist*; psychologist*; psychotherapy; clinical psycholog*; mental health profession*; mental health care personnel; mental health provider*; health care personnel; service provider*; mental health worker*; staff*; staff* or employee* adj5 psycholog*; GP; general practitioner*; nurs*; health profession*; student*.

Mental health terms

Depress*; anxiet*

Appendix 2: Example emails requesting additional information from study authors

Email requesting information regarding age with whom clinicians worked:

Dear Dr …..,

I hope that you may be able to help me with a question regarding your XX paper, entitled ……. I am currently conducting a systematic review looking at clinicians' attitudes to computerised CBT (cCBT), and therefore read your paper with great interest.

I was hoping to be able to have two separate sections in my review, one looking at studies investigating clinicians' attitudes towards cCBT for adults, and the second looking at attitudes towards cCBT for children and adolescents. I was therefore wondering whether you had a record of whether the participants in your study worked with adults or children?

If you assessed such a variable I would be extremely grateful if you were able to share this information with me.

Yours sincerely,

Email requesting interview schedule, to assess whether study assessed attitudes towards cCBT or generic online therapies:

Dear Dr …..,

My name is …… and I am currently conducting a systematic review on studies concerning clinicians' attitudes towards computerised CBT. I therefore read you recent article, entitled ……. with great interest.

One of the difficulties that I have encountered whilst conducting this review is that a number of studies refer to generic online self-help programmes, rather than cCBT specifically. I was therefore hoping that you might be willing to share your semi-structured interview schedule with me, to ensure that I can include your study in the review. This would also enable me to compare the topics addressed by the various studies on this issue.

Yours sincerely,

Appendix 3: Quality assessment checklist (Kmet et al., 2004)

3.1: Manual for Quality Scoring of Quantitative Studies

Definitions and Instructions for Quality Assessment Scoring

How to calculate the summary score

Total sum = (number of "yes" * 2) + (number of "partials" * 1)

Total possible sum = 28 – (number of "N/A" * 2)

Summary score: total sum / total possible sum

Quality assessment

1. Question or objective sufficiently described?

Yes: Is easily identified in the introductory section (or first paragraph of methods section). Specifies (where applicable, depending on study design) all of the following: purpose, subjects/target population, and the specific intervention(s)/association(s)/descriptive parameter(s) under investigation. A study purpose that only becomes apparent after studying other parts of the paper is not considered sufficiently described.

Partial: Vaguely/incompletely reported (e.g. "describe the effect of" or "examine the role of" or "assess opinion on many issues" or "explore the general attitudes"...); or some information has to be gathered from parts of the paper other than the introduction/background/objective section.

No: Question or objective is not reported, or is incomprehensible.

N/A: Should not be checked for this question.

2. Design evident and appropriate to answer study question?

(If the study question is not given, infer from the conclusions).

Yes: Design is easily identified and is appropriate to address the study question/objective.

Partial: Design and /or study question not clearly identified, but gross inappropriateness is not evident; or design is easily identified but only partially addresses the study question.

No: Design used does not answer study question (e.g., a comparison group is required to answer the study question, but none was used); or design cannot be identified.

N/A: Should not be checked for this question.

3. Method of subject selection (and comparison group selection, if applicable) or source of information/input variables (e.g., for decision analysis) is described and appropriate.

Yes: Described and appropriate. Selection strategy designed (i.e., consider sampling frame and strategy) to obtain an unbiased sample of the relevant target population or the entire target population of interest (e.g., consecutive patients for clinical trials, population-based random sample for case-control studies or surveys). Where applicable, inclusion/exclusion criteria are described and defined (e.g., "cancer" -- ICD code or equivalent should be provided). Studies of volunteers: methods and setting of recruitment reported. Surveys: sampling frame/ strategy clearly described and appropriate.

Partial: Selection methods (and inclusion/exclusion criteria, where applicable)

are not completely described, but no obvious inappropriateness. Or selection strategy is not ideal (i.e., likely introduced bias) but did not likely seriously distort the results (e.g., telephone survey sampled from listed phone numbers only; hospital based case-control study identified all cases admitted during the study period, but recruited controls admitted during the day/evening only). Any study describing participants only as "volunteers" or "healthy volunteers". Surveys: target population mentioned but sampling strategy unclear.

No: No information provided. Or obviously inappropriate selection procedures (e.g., inappropriate comparison group if intervention in women is compared to intervention in men). Or presence of selection bias which likely seriously distorted the results (e.g., obvious selection on "exposure" in a case-control study).

N/A: Descriptive case series/reports.

4. Subject (and comparison group, if applicable) characteristics or input variables/information (e.g., for decision analyses) sufficiently described?

Yes: Sufficient relevant baseline/demographic information clearly characterizing the participants is provided (or reference to previously published baseline data is provided). Where applicable, reproducible criteria used to describe/categorize the participants are clearly defined (e.g., ever-smokers, depression scores, systolic blood pressure > 140). If "healthy volunteers" are used, age and sex must be reported (at minimum). Decision analyses: baseline estimates for input variables are clearly specified.

Partial: Poorly defined criteria (e.g. "hypertension", "healthy volunteers", "smoking"). Or incomplete relevant baseline / demographic information (e.g.,

information on likely confounders not reported). Decision analyses: incomplete reporting of baseline estimates for input variables.

No: No baseline / demographic information provided. Decision analyses: baseline estimates of input variables not given.

N/A: Should not be checked for this question.

5. If random allocation to treatment group was possible, is it described?

Yes: True randomization done - requires a description of the method used (e.g., use of random numbers).

Partial: Randomization mentioned, but method is not (i.e. it may have been possible that randomization was not true).

No: Random allocation not mentioned although it would have been feasible and appropriate (and was possibly done).

N/A: Observational analytic studies. Uncontrolled experimental studies. Surveys. Descriptive case series / reports. Decision analyses.

6. If interventional and blinding of investigators to intervention was possible, is it reported?

Yes: Blinding reported.

Partial: Blinding reported but it is not clear who was blinded.

No: Blinding would have been possible (and was possibly done) but is not reported.

N/A: Observational analytic studies. Uncontrolled experimental studies. Surveys. Descriptive case series / reports. Decision analyses.

7. If interventional and blinding of subjects to intervention was possible, is it reported?

Yes: Blinding reported.

Partial: Blinding reported but it is not clear who was blinded.

No: Blinding would have been possible (and was possibly done) but is not reported.

N/A: Observational studies. Uncontrolled experimental studies. Surveys. Descriptive case series / reports.

8. Outcome and (if applicable) exposure measure(s) well defined and robust to measurement / misclassification bias? Means of assessment reported?

Yes: Defined (or reference to complete definitions is provided) and measured according to reproducible, "objective" criteria (e.g., death, test completion – yes/no, clinical scores). Little or minimal potential for measurement/misclassification errors. Surveys: clear description (or reference to clear description) of questionnaire/interview content and response options.

Decision analyses: sources of uncertainty are defined for all input variables.

Partial: Definition of measures leaves room for subjectivity, or not sure (i.e., not reported in detail, but probably acceptable). Or precise definition(s) are missing, but no evidence or problems in the paper that would lead one to assume major problems. Or instrument/mode of assessment(s) not reported. Or misclassification errors may have occurred, but they did not likely seriously distort the results (e.g., slight difficulty with recall of long-ago events; exposure is measured only at baseline

in a long cohort study). Surveys: description of questionnaire/interview content incomplete; response options unclear. Decision analyses: sources of uncertainty are defined only for some input variables.

No: Measures not defined, or are inconsistent throughout the paper. Or measures employ only ill-defined, subjective assessments, e.g. "anxiety" or "pain." Or obvious misclassification errors/measurement bias likely seriously distorted the results (e.g., a prospective cohort relies on self-reported outcomes among the "unexposed" but requires clinical assessment of the "exposed"). Surveys: no description of questionnaire/interview content or response options. Decision analyses: sources of uncertainty are not defined for input variables.

N/A: Descriptive case series / reports.

9. Sample size appropriate?

Yes: Seems reasonable with respect to the outcome under study and the study design. When statistically significant results are achieved for major outcomes, appropriate sample size can usually be assumed, unless large standard errors (SE > 1⁄2 effect size) and/or problems with multiple testing are evident. Decision analyses: size of modeled cohort / number of iterations specified and justified.

Partial: Insufficient data to assess sample size (e.g., sample seems "small" and there is no mention of power/sample size/effect size of interest and/or variance estimates aren't provided). Or some statistically significant results with standard errors > 1⁄2 effect size (i.e. imprecise results). Or some statistically significant results in the absence of variance estimates. Decision analyses: incomplete description or justification of size of modeled cohort / number of iterations.

No: Obviously inadequate (e.g., statistically non-significant results and standard errors > 1⁄2 effect size; or standard deviations > _ of effect size; or statistically non-significant results with no variance estimates and obviously inadequate sample size). Decision analyses: size of modeled cohort / number of iterations not specified.

N/A: Most surveys (except surveys comparing responses between groups or change

over time). Descriptive case series / reports.

10. Analysis described and appropriate?

Yes: Analytic methods are described (e.g. "chi square"/ "t-tests"/"Kaplan-Meier with log rank tests", etc.) and appropriate.

Partial: Analytic methods are not reported and have to be guessed at, but are probably appropriate. Or minor flaws or some tests appropriate, some not (e.g., parametric tests used, but unsure whether appropriate; control group exists but is not used for statistical analysis). Or multiple testing problems not addressed.

No: Analysis methods not described and cannot be determined. Or obviously inappropriate analysis methods (e.g., chi-square tests for continuous data, SE given where normality is highly unlikely, etc.). Or a study with a descriptive goal / objective is over-analyzed.

N/A: Descriptive case series / reports.

11. Some estimate of variance (e.g., confidence intervals, standard errors) is reported for the main results/outcomes (i.e., those directly addressing the study question/objective upon which the conclusions are based)?

Yes: Appropriate variances estimate(s) is/are provided (e.g., range, distribution, confidence intervals, etc.). Decision analyses: sensitivity analysis includes all variables in the model.

Partial: Undefined "+/-" expressions. Or no specific data given, but insufficient power acknowledged as a problem. Or variance estimates not provided for all main results/ outcomes. Or inappropriate variance estimates (e.g., a study examining change over time provides a variance around the parameter of interest at "time 1" or "time 2", but does not provide an estimate of the variance around the difference). Decision analyses: sensitivity analysis is limited, including only some variables in the model.

No: No information regarding uncertainty of the estimates. Decision analyses: No sensitivity analysis.

N/A: Descriptive case series / reports. Descriptive surveys collecting information using open-ended questions.

12. Controlled for confounding?

Yes: Randomized study, with comparability of baseline characteristics reported (or non-comparability controlled for in the analysis). Or appropriate control at the design or analysis stage (e.g., matching, subgroup analysis, multivariate models, etc). Decision analyses: dependencies between variables fully accounted for (e.g., joint variables are considered).

Partial: Incomplete control of confounding. Or control of confounding reportedly done but not completely described. Or randomized study without report of comparability of baseline characteristics. Or confounding not considered, but not

likely to have seriously distorted the results. Decision analyses: incomplete consideration of dependencies between variables.

No: Confounding not considered, and may have seriously distorted the results. Decision analyses: dependencies between variables not considered.

N/A: Cross-sectional surveys of a single group (i.e., surveys examining change over time or surveys comparing different groups should address the potential for confounding). Descriptive studies. Studies explicitly stating the analysis is strictly descriptive/exploratory in nature.

13. Results reported in sufficient detail?

Yes: Results include major outcomes and all mentioned secondary outcomes.

Partial: Quantitative results reported only for some outcomes. Or difficult to assess as study question/objective not fully described (and is not made clear in the methods section), but results seem appropriate.

No: Quantitative results are reported for a subsample only, or "n" changes continually across the denominator (e.g., reported proportions do not account for the entire study sample, but are reported only for those with complete data -- i.e., the category of "unknown" is not used where needed). Or results for some major or mentioned secondary outcomes are only qualitatively reported when quantitative reporting would have been possible (e.g., results include vague comments such as "more likely" without quantitative report of actual numbers).

N/A: Should not be checked for this question.

14. Do the results support the conclusions?

Yes: All the conclusions are supported by the data (even if analysis was inappropriate). Conclusions are based on all results relevant to the study question, negative as well as positive ones (e.g., they aren't based on the sole significant finding while ignoring the negative results). Part of the conclusions may expand beyond the results, if made in addition to rather than instead of those strictly supported by data, and if including indicators of their interpretative nature (e.g., "suggesting," "possibly").

Partial: Some of the major conclusions are supported by the data, some are not. Or speculative interpretations are not indicated as such. Or low (or unreported) response rates call into question the validity of generalizing the results to the target population of interest (i.e., the population defined by the sampling frame/strategy).

No: None or a very small minority of the major conclusions are supported by the data. Or negative findings clearly due to low power are reported as definitive evidence against the alternate hypothesis. Or conclusions are missing. Or extremely low response rates invalidate generalizing the results to the target population of interest (i.e., the population defined by the sampling frame/strategy).

N/A: Should not be checked for this question.

3.2: Manual for Quality Scoring of Qualitative Studies

Definitions and Instructions for Quality Assessment Scoring

How to calculate the summary score

Total sum = (number of "yes" * 2) + (number of "partials" * 1)

Total possible sum = 20

Summary score: total sum / total possible sum

Quality assessment

1. Question / objective clearly described?

Yes: Research question or objective is clear by the end of the research process (if not at the outset).

Partial: Research question or objective is vaguely/incompletely reported.

No: Question or objective is not reported, or is incomprehensible.

2. Design evident and appropriate to answer study question?

(If the study question is not clearly identified, infer appropriateness from results/conclusions.)

Yes: Design is easily identified and is appropriate to address the study question.

Partial: Design is not clearly identified, but gross inappropriateness is not evident; or design is easily identified but a different method would have been more appropriate.

No: Design used is not appropriate to the study question (e.g. a causal hypothesis is tested using qualitative methods); or design cannot be identified.

3. Context for the study is clear?

Yes: The context/setting is adequately described, permitting the reader to relate the findings to other settings.

Partial: The context/setting is partially described.

No: The context/setting is not described.

4. Connection to a theoretical framework / wider body of knowledge?

Yes: The theoretical framework/wider body of knowledge informing the study and the methods used is sufficiently described and justified.

Partial: The theoretical framework/wider body of knowledge is not well described or justified; link to the study methods is not clear.

No: Theoretical framework/wider body of knowledge is not discussed.

5. Sampling strategy described, relevant and justified?

Yes: The sampling strategy is clearly described and justified. The sample includes the full range of relevant, possible cases/settings (i.e., more than simple convenience sampling), permitting conceptual (rather than statistical) generalizations.

Partial: The sampling strategy is not completely described, or is not fully justified. Or the sample does not include the full range of relevant, possible cases/settings (i.e., includes a convenience sample only).

No: Sampling strategy is not described.

6. Data collection methods clearly described and systematic?

Yes: The data collection procedures are systematic, and clearly described, permitting an "audit trail" such that the procedures could be replicated.

Partial: Data collection procedures are not clearly described; difficult to determine if systematic or replicable.

No: Data collection procedures are not described.

7. Data analysis clearly described, complete and systematic?

Yes: Systematic analytic methods are clearly described, permitting an "audit trail" such that the procedures could be replicated. The iteration between the data and the explanations for the data (i.e., the theory) is clear – it is apparent how early, simple classifications evolved into more sophisticated coding structures which then evolved into clearly defined concepts/explanations for the data). Sufficient data is provided to allow the reader to judge whether the interpretation offered is adequately supported by the data.

Partial: Analytic methods are not fully described. Or the iterative link between data and theory is not clear.

No: The analytic methods are not described. Or it is not apparent that a link to theory informs the analysis.

8. Use of verification procedure(s) to establish credibility of the study?

Yes: One or more verification procedures were used to help establish credibility/ trustworthiness of the study (e.g., prolonged engagement in the field, triangulation, peer review or debriefing, negative case analysis, member checks, external audits/inter-rater reliability, "batch" analysis).

No: Verification procedure(s) not evident.

9. Conclusions supported by the results?

Yes: Sufficient original evidence supports the conclusions. A link to theory informs any claims of generalizability.

Partial: The conclusions are only partly supported by the data. Or claims of

generalizability are not supported.

No: The conclusions are not supported by the data. Or conclusions are absent.

10. Reflexivity of the account?

Yes: The researcher explicitly assessed the likely impact of their own personal characteristics (such as age, sex and professional status) and the methods used on the data obtained.

Partial: Possible sources of influence on the data obtained were mentioned, but the likely impact of the influence or influences was not discussed.

No: There is no evidence of reflexivity in the study report.

Modifications:

8. Use of verification procedure(s) to establish credibility of the study?

Yes: Two or more verification procedures were used to help establish credibility/ trustworthiness of the study (e.g., prolonged engagement in the field, triangulation, peer review or debriefing, negative case analysis, member checks, external audits/inter-rater reliability, "batch" analysis).

Partial: One verification procedure used to help establish credibility/trustworthiness of the study

No: Verification procedure(s) not evident.

11. (qualitative) and 15. (quantitative). Write-up

Yes: Provides all required detail to complete quality assessment (e.g. population with whom clinicians worked, power of study).

Partial: Provides most details required to complete quality assessment, but one detail omitted (e.g. population with whom clinicians worked, professional roles of participants), or information provided in wrong section (e.g. method section instead of introduction).

No: Insufficient information provided for quality assessment - further clarification required on multiple points (e.g. population with whom clinicians worked, clinicians' professional groupings, etc).

Appendix 4: Predictors of Outcome from cCBT

Table A4.1: Characteristics and outcomes from studies examining predictors of outcome from cCBT for depression

Authors	Year	*n*	cCBT programme	Outcome measures	Analysis method	Predictors and moderators	Results: significant predictors and moderators of response
Andersson et al.	2004	71	Name not provided	BDI MADRS	Multiple regression	Baseline depression severity (BDI and MADRS) No. previous episodes of depression Baseline QoL (QOLI) Age Gender Education	BDI Fewer previous episodes of depression* MADRS Higher baseline QoL***
Cientanni et al	2017	976	Beating the Blues	CORE-OM	Multi-nominal logistic regression	Social identification (GIS) Socioeconomic deprivation (SIMD) Problem duration (months to years) ADM use Age Gender Education	Social identification*** Socioeconomic deprivation** ADM use* Age***
de Graaf et al.	2010	303	Colour Your Life	BDI-II	Multiple regression and moderation analysis	Baseline depression severity (BDI-II) Baseline generic pathology (SCL-90) Parental psychiatric history Baseline health-related QoL (SF-36) Treatment adherence (5+ sessions) Employment status	Lower baseline depression severity*** Lower baseline pathology** Parental psychiatric history*
Donker et al.	2013	1843	eCouch and MoodGYM	CES-D	ANOVAs	Baseline depression severity (CES-D) History of depression (dichotomous) Disability (no. days out of role)	 Fewer days out of role)***

						Baseline QoL (EUROHIS-QOL)	Higher baseline QoL***
						Medication use (dichotomous)	
						Age	
						Gender	Female gender*
						Education	
Farrer et al.	2014	155	MoodGYM	CES-D	ANOVAs	Baseline depression severity (CES-D)	
						Motivation (NML-P)	Lower motivation*
						Treatment adherence	
						Age	
						Gender	
						Education	
						Employment status	
Hadjistavropoulos et al.	2016	83	Name not provided	PHQ-9	Multiple regression	Baseline depression severity (PHQ-9)	Higher baseline depressive severity[c]
						Psychotropic medication use	
						Treatment adherence	Treatment adherence (no. of modules started)*
					Latent growth curve modelling	Days accessing	
						No. modules started	
						Contact with therapist	More contact with therapist**
						Comfort with written communication	
						Age	
						Gender	
						Education	
						Employment status	
Hoifodt et al.	2015	106	MoodGYM	BDI-II	Bayesian modelling	Baseline depression severity BDI-II and HADS	
						History of depression	More previous depressive episodes[b]
						Treatment adherence	Higher treatment adherence[b]
						Baseline health-related QoL (EQ-5D)	Lower health-related QoL
						Baseline satisfaction with life (SWLS)	Higher life satisfaction[b]

						Treatment motivation	Lower treatment motivation
						Age	
						Gender	
						Employment status (dichotomised)	
Spek et al.	2007	130	Coping with Depression	BDI-II	ANCOVAs	Baseline depression severity (HADS)	Higher baseline depression severity***
						History of depression	
						Personality factors (NEO-FFI)	Lower baseline neuroticism**
						Gender	Female gender*
						Education	Higher education level*

Note. BDI = Beck Depression Inventory; MADRS = Montgomery Åsberg Depression Rating Scale; QoL = Quality of life; CORE-OM; Clinical Outcomes in Routine Evaluation Outcome Measure; GIS = Group Identification Scale; SIMD = Scottish Index of Multiple Deprivations; ADM = Anti-Depressant Medication; BDI-II = Beck Depression Inventory, 2nd Edition; SCL-90 = Symptom Checklist 90; SF-36 = 36-item Short-Form Health Survey: CES-D = Center for Epidemiologic Studies Depression Scale; EUROHIS-QOL; EUROHIS Quality of Life Scale (8 items); NLM-P; Nijmegeg Motivation List for Prevention; PHQ-9; Patient Health Questionnaire; HADS = Hospital Anxiety and Depression Scale; EQ-5D = EuroQol 5-dimension Self-Report Questionnaire; SWLS = Satisfaction with Life Scale; NEO-FFI = NEO Five Factor Inventory.
*$p < .05$; **$p < .01$; ***$p < .001$;
[a]predictor exerting strongest effect; [b]predictor likely to be unrelated to treatment response; [c]p value not reported, but significant negative covariance obtained, $r = -.42$

Appendix 5: Ethical and data-sharing approvals

5.1: University approval

The University of Edinburgh
Medical School Doorway 6, Teviot Place Edinburgh EH8 9AG

Telephone 0131 651 3969
Fax 0131 650 3891
Email submitting.ethics@ed.ac.uk

Joanne Persson

Trainee Clinical Psychologist

Department of Clinical and Health Psychology School of Health in Social Science

University of Edinburgh

21 July 2017

Dear Joanne,

Application for Level 1 Ethical Approval
Reference: CLIN396
Project title: Predictors of outcome in computerised Cognitive Behavioural Therapy (cCBT)
Academic Supervisors: Matthias Schwannauer / Ethel Qualye

Thank you for submitting the above research project for review by the Department of Clinical and Health Psychology Ethics Research Panel. I can confirm that the submission has been independently reviewed and was approved on the 7th July 2017.

Should there be any change to the research protocol it is important that you alert us to this as this may necessitate further review.

Yours sincerely,

Kirsty Gardner

Administrative Secretary, Clinical Psychology

5.2: Approval from Mr Christopher Wright, Service Development Manager, NHS 24, to use anonymised data from Mastermind:

Wright,Chris <chris.wright@nhs24.scot.nhs.uk>

Thu 21/09/2017 14:36
Inbox
To: PERSSON, Joanne (NHS TAYSIDE);
You replied on 10/10/2017 12:38.

Hi Joanne,

I confirm that I have given approval for Joanne Persson to use the Mastermind data for the purpose of her PhD research thesis. With the condition no patient identifiable information is used or published.

Chris Wright
Programme Lead cCBT

Chris Wright

Service Development Manager
Scottish Centre for Telehealth & Telecare,
NHS 24, NHS 24 East Contact Centre
Norseman House, 2 Ferrymuir,
South Queensferry, EH30 9QZ

Tel: +44 (0)7825 386324
chris.wright@nhs24.scot.nhs.uk
www.sctt.scot.nhs.uk

Appendix 6: Mastermind questionnaires and information

6.1: Start of Treatment Questionnaire

Please complete the form below which will allow us to better understand any support requirements you may have when completing your treatment. This questionnaire should take no more than 5 minutes to complete. We are interested in your honest answers and *please answer all of the questions* by either typing "X" or writing a cross into the circles below your answer:

When completed please return this to us by email to the following address: Tay-UHB.beatingtheblues@nhs.net

Or by post to: **Beating the Blues Team, NHS Tayside, Adult Psychological Therapies Service, 7 Dudhope Terrace, Dundee, DD3 6HG.**

1. In general how satisfied are you with your life as a whole?						
Couldn't be worse ○	Displeased ○	Mostly dissatisfied ○	Mixed ○	Mostly Satisfied ○	Pleased ○	Couldn't be better ○
2. How satisfied are you with your mental health?						
Couldn't be worse ○	Displeased ○	Mostly dissatisfied ○	Mixed ○	Mostly Satisfied ○	Pleased ○	Couldn't be better ○

3. What is the highest level of education you received and completed?			
Primary ○	Secondary ○	Higher/and or University ○	Other ○
4. At the moment, do you use antidepressant medication, if so for how long?			
Yes, for less than one month ○	Yes, for less than 2 months ○	Yes, for more than 2 months ○	I don't take them ○

5. I feel a bond with my family.						
I strongly disagree	I disagree	I slightly disagree	I neither agree or disagree	I slightly agree	I agree	I strongly agree

◯	◯	◯	◯	◯	◯	◯
6. I feel similar to the other members of my family.						
I strongly disagree ◯	I disagree ◯	I slightly disagree ◯	I neither agree or disagree ◯	I slightly agree ◯	I agree ◯	I strongly agree ◯
7. I have a sense of belonging to my family.						
I strongly disagree ◯	I disagree ◯	I slightly disagree ◯	I neither agree or disagree ◯	I slightly agree ◯	I agree ◯	I strongly agree ◯
8. I have a lot in common with the members of my family.						
I strongly disagree ◯	I disagree ◯	I slightly disagree ◯	I neither agree or disagree ◯	I slightly agree ◯	I agree ◯	I strongly agree ◯
9. I feel a bond with my local community.						
I strongly disagree ◯	I disagree ◯	I slightly disagree ◯	I neither agree or disagree ◯	I slightly agree ◯	I agree ◯	I strongly agree ◯
10. I feel similar to the other members of my local community.						
I strongly disagree ◯	I disagree ◯	I slightly disagree ◯	I neither agree or disagree ◯	I slightly agree ◯	I agree ◯	I strongly agree ◯
11. I have a sense of belonging to my local community.						
I strongly disagree ◯	I disagree ◯	I slightly disagree ◯	I neither agree or disagree ◯	I slightly agree ◯	I agree ◯	I strongly agree ◯

12. I have a lot in common with the members of my local community.

I strongly disagree	I disagree	I slightly disagree	I neither agree or disagree	I slightly agree	I agree	I strongly agree
○	○	○	○	○	○	○

13. Please choose a SOCIAL GROUP to which you belong, using the list of groups below.

Sport team/class/club	Hobby/interest group	Support group	Voluntary/charity group	Workplace group
○	○	○	○	○

Reading/study group	Group of friends	Religious group/institution	Other
○	○	○	○

14. I feel a bond with my chosen group.

I strongly disagree	I disagree	I slightly disagree	I neither agree or disagree	I slightly agree	I agree	I strongly agree
○	○	○	○	○	○	○

15. I feel similar to the other members of my chosen group.

I strongly disagree	I disagree	I slightly disagree	I neither agree or disagree	I slightly agree	I agree	I strongly agree
○	○	○	○	○	○	○

16. I have sense of belonging to my chosen group.

I strongly disagree	I disagree	I slightly disagree	I neither agree or disagree	I slightly agree	I agree	I strongly agree
○	○	○	○	○	○	○

17. I have a lot in common with the members of my chosen group.

I strongly disagree	I disagree	I slightly disagree	I neither agree or disagree	I slightly agree	I agree	I strongly agree
◯	◯	◯	◯	◯	◯	◯

6.2: Patient – End of Treatment Questionnaire

Please help us improve our treatment by answering some questions about the service you have received this questionnaire should take about 5 minutes to complete. We are interested in your honest opinions, whether they are positive or negative. *Please answer all of the questions.* We also welcome your comments and suggestions. Thank you very much; we really appreciate your help. Please either type "X" or write a cross into the circles below your answer:

18. In general how satisfied are you with your life as a whole?						
Couldn't be worse	Displeased	Mostly dissatisfied	Mixed	Mostly Satisfied	Pleased	Couldn't be better
◯	◯	◯	◯	◯	◯	◯
19. How satisfied are you with your mental health?						
Couldn't be worse	Displeased	Mostly dissatisfied	Mixed	Mostly Satisfied	Pleased	Couldn't be better
◯	◯	◯	◯	◯	◯	◯

20. How would you rate the quality of the treatment you have received?			
Excellent	Good	Fair	Poor
◯	◯	◯	◯
21. Did you get the kind of treatment you wanted?			
No, definitely	No, not really	Yes, generally	Yes, definitely
◯	◯	◯	◯
22. To what extent has the treatment met your needs?			
Almost all of my needs have been met	Most of my needs have been met	Only a few of my needs have been met	None of my needs have been met
◯	◯	◯	◯

23. If a friend were in need of similar help, would you recommend this treatment to him or her?			
No, definitely not ◯	No, I don't think so ◯	Yes, I think so ◯	Yes, definitely ◯

24. How satisfied are you with the amount of help you have received?			
Quite dissatisfied ◯	Indifferent or mildly dissatisfied ◯	Mostly satisfied ◯	Very satisfied ◯
25. Has the treatment you received helped you to deal more effectively with your problems?			
Yes, they helped a great deal ◯	Yes, they helped ◯	No, they really didn't help ◯	No, they seemed to make things worse ◯
26. In an overall general sense, how satisfied are you with the treatment you have received?			
Very satisfied ◯	Mostly satisfied ◯	Indifferent or mildly dissatisfied ◯	Quite dissatisfied ◯
27. If you were to seek help again, would you make use of this treatment again?			
No, definitely not ◯	No, I don't think so ◯	Yes, I think so ◯	Yes, definitely ◯

28. I think that I would like to use and apply the cCBT treatment frequently when needed.				
I strongly disagree ◯	I disagree ◯	I don't disagree nor agree ◯	I agree ◯	I strongly agree ◯
29. I found the cCBT treatment unnecessarily complex.				
I strongly disagree ◯	I disagree ◯	I don't disagree nor agree ◯	I agree ◯	I strongly agree ◯

30. I thought the cCBT treatment was easy to use and apply.				
I strongly disagree ◯	I disagree ◯	I don't disagree nor agree ◯	I agree ◯	I strongly agree ◯

31. I think that I would need the support of a technical person to be able to use and apply the cCBT treatment more often.				
I strongly disagree ◯	I disagree ◯	I don't disagree nor agree ◯	I agree ◯	I strongly agree ◯
32. I found the various functions in the cCBT treatment were well integrated.				
I strongly disagree ◯	I disagree ◯	I don't disagree nor agree ◯	I agree ◯	I strongly agree ◯
33. I thought there was too much inconsistency in the cCBT treatment.				
I strongly disagree ◯	I disagree ◯	I don't disagree nor agree ◯	I agree ◯	I strongly agree ◯
34. I can imagine that most people would learn to use and apply the cCBT treatment very quickly.				
I strongly disagree ◯	I disagree ◯	I don't disagree nor agree ◯	I agree ◯	I strongly agree ◯
35. I found the treatment very cumbersome to use and apply.				
I strongly disagree ◯	I disagree ◯	I don't disagree nor agree ◯	I agree ◯	I strongly agree ◯
36. I felt very confident using and applying the cCBT treatment.				

I strongly disagree	I disagree	I don't disagree nor agree	I agree	I strongly agree
◯	◯	◯	◯	◯

37. I needed to learn a lot of things before I could get going with the cCBT treatment.

I strongly disagree	I disagree	I don't disagree nor agree	I agree	I strongly agree
◯	◯	◯	◯	◯

38. If you didn't complete the 8 sessions of treatment, what were the reasons to end the therapy and not finish all sessions as intended?

I completed all 8 sessions

I had problems with my internet connection and/or my computer was not functioning

I don´t have a computer

I don´t trust the online sessions are secure

I don´t have enough skills to follow the online sessions

I forgot to attend the online sessions

I ran out of time

I was ill

I had to work

My family did not support me

I did not want to share my personal information through internet

For therapeutic reasons

I am not convinced that the therapy solves my problems

The referrer and I came to the conclusion it had no use for me to continue treatment

My mental problems are alleviated

Other

Comments and Suggestions

Thank You for taking the time to complete this form.

Please return this to us by email to the following address:
Tay-UHB.beatingtheblues@nhs.net

Or by post to:
Beating the Blues team, NHS Tayside, 7 Dudhope Terrace, DUNDEE, DD3 6HG

Appendix 7: Supplementary analyses

Table A7.1: Spearman correlations between possible predictor variables

Predictors	1	2	3	4	5	6	7	8	9	10	11	12
1. Baseline LS	-											
2. Baseline MHS	.594**	-										
3. Baseline CORE-tr	-.547**	-.547**	-									
4. Baseline CORE-wb	-.503**	-.508**	.855**	-								
5. Baseline CORE-f	-.477**	-.430**	.787**	.656**	-							
6. Total GIS (0-3)	.437**	.363**	-.427**	-.319**	-.403**	-						
7. SIMD	.030	.026	-.096**	-.067**	-.022	.038	-					
8. ADM use	.092*	.128**	-.119**	-.112**	-.136**	.073	-.015	-				
9. Age	.008	.136**	-.157**	-.157**	-.119**	.016	-.022	-.126**	-			
10. Gender	.035	-.017	.019	.100**	-.012	.068	.056**	-.010	-.082**	-		
11. Education	.074	.046	-.088**	-.068*	-.083**	.023	.126**	002	-.021	.075*	-	
12. Employment	.078*	.068	-.098**	-.079**	-.069**	.056	.034	.055*	-.018	.061**	.045	-

Note. LS = life satisfaction; MHS = mental health satisfaction; CORE-tr = CORE total mean score minus risk; CORE-wb = CORE-OM well-being domain; CORE-f = CORE-OM functioning domain; GIS = group identity scale; SIMD = Scottish index of multiple deprivations; ADM = anti-depressant medication use. Bonferroni correction ($p < .005$).

*$p < .005$ (two-tailed); **$p < .001$ (two-tailed).

Table A7.2: Spearman correlations between predictor and outcome variables

Predictors	1	2	3	4	5	6	7	8	9	10	11
Total GIS (0-3)	-										
SIMD	.038	-									
Baseline LS	.437**	.030	-								
Baseline MHS	.363**	.026	.594**	-							
Baseline CORE-tr	-.427**	-.096**	-.547**	-.547**	-						
Baseline CORE-wb	-.319**	-.067**	-.503**	-.508**	.855**	-					
Baseline CORE-f	-.403**	-.022	-.477**	-.430**	.787**	.656**	-				
Post-treatment LS	.390**	-.062	.463**	.237**	-.386**	-.342**	-314**	-			
Post-treatment MHS	.337**	-.098	.340**	.270**	-.341**	-.286**	-.276**	.742**	-		
Post-treatment CORE-wb	-.352**	-.010	-.320**	-.337**	.523**	.496**	.428**	-.548**	-.530**	-	
Post-treatment CORE-f	-.305**	.103*	-.342**	-.345**	.509**	.464**	.751**	-.436**	-.422**	.729**	-

Note. GIS = group identity scale; SIMD = Scottish index of multiple deprivations; LS = life satisfaction; MHS = mental health satisfaction; CORE-tr = CORE total mean score minus risk; CORE-wb = CORE-OM well-being domain; CORE-f = CORE-OM functioning domain; ADM = anti-depressant medication use. Bonferroni correction ($p < .005$).

*$p < .005$ (one-tailed); **$p < .001$ (one-tailed).

Table A7.3: *HMR analyses exploring predictors of change in Life Satisfaction and Mental Health Satisfaction with bootstrapped standard errors*

	Life satisfaction (LS) (Adj R^2 = .21)				Mental Health satisfaction (MHS) (Adj R^2 = .13)			
Measure	*β*	*B*	SE_B	*p*	*β*	*B*	SE_B	*p*
Baseline CORE Total-risk	-.117	-.175	.141	.214	-.159	-.278	.183	.126
Baseline LS	.274	.238	.092	.012*	-	-	-	-
Baseline MHS	-	-	-	-	.154	.176	.135	.191
Age	.013	.001	.006	.863	.031	.003	.007	.725
Gender	-.012	-.028	.213	.894	.017	.047	.258	.858
Education	.007	.011	.116	.927	.012	.021	.160	.896
Employment	.032	.051	.130	.691	-.066	-.121	.161	.461
ADM use	-.095	-.212	.197	.278	.021	.054	.250	.828
Total GIs (0-3)	.191	.197	.104	.062	.202	.243	.127	.055
SIMD	-.176	-.069	.032	.030*	-.122	-.056	.041	.173

Note. *β* = standardised coefficient; *B* = unstandardized, bootstrapped coefficient; ADM = anti-depressant medication use.

Table A7.4: *HMR analyses exploring predictors of change in CORE-OM Functioning and Well-Being domains with bootstrapped standard errors*

	CORE Functioning (Adj R^2 = .27)				CORE Well-Being (Adj R^2 = .28)			
Measure	*β*	*B*	SE_B	*p*	*β*	*B*	SE_B	*p*
Baseline CORE Total-risk	.463	.480	.349	.000*	.477	.575	.092	.000**
Age	-.072	-.004	.075	.257	-.018	-.001	.003	.759
Gender	-.014	-.023	.003	.816	.040	.078	.108	.467
Education	.024	.025	.095	.675	.023	.027	.066	.683
Employment	-.009	-.010	.059	.880	-.026	-.032	.072	.665
ADM use	.051	.080	.064	.415	.147	.267	.107	.013*
Total GIs (0-3)	-.092	-.067	.097	.166	-.077	-.065	.059	.274
SIMD	-.067	-.020	.048	.263	-.129	-.044	.021	.041*

Note. *β* = standardised coefficient; *B* = unstandardized, bootstrapped coefficient; ADM = anti-depressant medication use.
*$p < .05$ (two-tailed). **$p < .001$

Appendix 7.1: *Assumption checks for HMR*

For each of our HMR models relating to satisfaction, a series of analyses were completed to assess for violation of assumptions. Linearity was established for both models for the collective model and individual continuous predictors through examination of regression plots and plots of studentized residuals against the predicted values. Independence of residuals was obtained as assessed by a Durbin-Watson statistic of 1.77 for life satisfaction (LS), and 2.06 for mental health satisfaction (MHS; Field, 2005). As the data had already been examined for multicollinearity and uni- and multi-variate outliers (see *Preliminary data analysis*), we progressed to examine our data for leverage and influential points. All data fell within acceptable ranges for leverage values (i.e. < .02; Laerd Statistics, 2015) Cook's distances (all < 1.0; Field, 2005). Both models met the assumption of normality, as assessed by Q-Q plots.

The same analyses were completed for our CORE-OM (Evans et al., 2002) dependent variables, with the same patterns obtained for all assessments (e.g. Durbin-Watson statistics of 2.04 and 2.06 for CORE-functioning [CORE-f] and CORE-wellbeing [CORE-wb], respectively). The only exception to this was for the CORE-wb domain, which demonstrated non-linearity.

Table A7.5: Participant characteristics at baseline for those did and did not complete the Group Identity Scale (Sani et al., 2014)

Characteristic	GIS completed (*n* = 1354)		GIS not completed (*n* = 10,616)	
	M (SD)	*n* (%)	*M* (SD)	*n* (%)
Age	39.87 (14.69)	1354 (100)	36.45 (13.19)	10,616 (100)
Gender		1098 (81.09)		5315 (50.07)
Female		350 (31.88)		1890 (35.56)
Male		748 (68.12		3425 (64.44)
Highest education:		1160 (85.67)		1090 (10.27)
Primary		35 (3.02)		5 (0.46)
Second		301 (25.95)		436 (40.00)
Higher/University		591 (50.95)		585 (53.67)
Other		233 (20.09)		64 (5.87)
Employment status:		1184 (87.44)		4296 (40.47)
Employed		283 (23.90)		1035 (24.09)
Unemployed		669 (56.50)		2494 (58.05)
Unknown		232 (19.59)		767 (17.85)
ADM use		1103 (81.46)		3032 (28.56)
Yes		669 (60.65		1322 (43.60)
No		434 (39.35)		710 (23.42)

Table A7.6: Medians, ranges, and Mann-Whitney U test results between participants who did and did not complete the group identity scale on pre-treatment baseline measures

	GIS completed		GIS not completed				
Measure	*Median*	*Range*	*Median*	*Range*	*U* (*n*)	*p*	*r*
LS (*n*)	4.00	6.00	3.00	5.00	143518	.000**	-0.13
	(*1197*)		(*294*)		(*1491*)		
MHS (*n*)	3.00	6.00	3.00	5.00	154857	.002*	-0.08
	(*1197*)		(*292*)		(*1489*)		
CORE-tr (*n*)	2.00	3.74	2.07	3.82	2302584	.000**	-0.05
	(*1173*)		(*4235*)		(*5408*)		

Note. LS = life satisfaction; MHS = mental health satisfaction; CORE-tr = CORE-OM total-risk score; GIS = group identification scale. For satisfaction measures, higher scores = greater satisfaction, whereas for CORE scores higher scores = greater distress. Bonferroni correction ($p < .008$).
*$p < .005$ (two-tailed), **$p < .001$ (two-tailed)

Appendix 8: Moderation and mediation analyses

Table A8.1: Moderation analyses exploring predictors of outcome in Satisfaction domains with bootstrapped standard errors for group identity by baseline distress interaction

	Life satisfaction (LS) (Adj R^2 = .23)				Mental health satisfaction (MHS) (Adj R^2 = .13)			
Measure	*β*	*B*	SE_B	*p*	*β*	*B*	SE_B	*p*
				Step 1				
Baseline CORE-tr	-.183	-.286	.131	.029*	-.266	-.473	.182	.009**
Baseline LS	.364	.300	.079	.000***				
Baseline MHS					.115	.128	.121	.296
				Step 2				
Baseline CORE-tr	-.138	-.216	.130	.101	-.195	-.348	.177	.052
Baseline LS	.257	.223	.084	.007**				
Baseline MHS					.065	.073	.124	.559
Total GIs (0-3)	.196	.205	.091	.025*	.211	.251	.107	.025*
SIMD	-.075	-.030	.028	.284	-.061	-.027	.034	.433
				Step 3				
Baseline CORE-tr	-.228	-.357	.195	.064	-.285	-.507	.251	.044*
Baseline LS	.256	.222	.084	.007**				
Baseline MHS					.060	.067	.125	.587
Total GIs (0-3)	.008	.008	.180	.964	.029	.034	.234	.878
SIMD	-.078	-.031	.028	.264	-.064	-.029	.034	.404
Interaction, GIS*CORE-tr	.184	.114	.094	.218	.179	.126	.126	.310

Note. CORE-tr = CORE-OM total minus risk mean score; GIS = Group Identification Scale; SIMD = Scottish Index of Multiple Deprivations; *β* = standardised coefficient; *B* = unstandardized, bootstrapped coefficient; SE_B = Bootstrapped standard error; CORE-tr = CORE-OM total-risk mean.
*p < .05 (two-tailed); **p < .01 (two-tailed); ***p < .001 (two-tailed)

Table A8.2: Moderation analyses exploring predictors of outcome in Satisfaction domains with bootstrapped standard errors for group identity by social deprivation interaction

	Life satisfaction (LS) (Adj R^2 = .23)				Mental health satisfaction (MHS) (Adj R^2 = .15)			
Measure	β	B	SE_B	p	β	B	SE_B	p
				Step 1				
Baseline CORE-tr	-.183	-.286	.130	.030*	-.266	-.473	.181	.008**
Baseline LS	.346	.300	.070	.000****				
Baseline MHS					.115	.128	.120	.288
				Step 2				
Baseline CORE-tr	-.138	-.216	.129	.094	-.195	-.348	.177	.049*
Baseline LS	.257	.223	.084	.008**				
Baseline MHS					.065	.073	.123	.571
Total GIs (0-3)	.196	.205	.087	.022*	.211	.251	.106	.022*
SIMD	-.075	-.030	.027	.277	-.061	-.027	.034	.421
				Step 3				
Baseline CORE-tr	-.138	-.216	.126	.089	-.200	-.356	.173	.039*
Baseline LS	.243	.211	.085	.013*				
Baseline MHS					.034	.038	.125	.760
Total GIs (0-3)	.361	.379	.177	.032*	.529	.630	.221	.004***
SIMD	.015	.006	.049	.908	.113	.051	.055	.351
Interaction, GIS*SIMD	-.193	-.028	.026	.283	-.377	-.061	.033	.064

Note. CORE-tr = CORE-OM total minus risk mean score; GIS = Group Identification Scale; SIMD = Scottish Index of Multiple Deprivations; β = standardised coefficient; B = unstandardized, bootstrapped coefficient; SE_B = Bootstrapped standard error; CORE-tr = CORE-OM total-risk mean.
*p < .05 (two-tailed); **p < .01 (two-tailed); ***p < .005; ****p < .001 (two-tailed)

Table A8.3: Moderation analyses exploring predictors of outcome in Satisfaction domains with bootstrapped standard errors for social deprivation by baseline distress interaction

	Life satisfaction (LS) (Adj R^2 = .23)				Mental health satisfaction (MHS) (Adj R^2 = .13)			
Measure	*β*	*B*	SE_B	*p*	*β*	*B*	SE_B	*p*
				Step 1				
Baseline CORE-tr	-.183	-.286	.127	.025*	-.266	-.473	.179	.009**
Baseline LS	.346	.300	.077	.000***				
Baseline MHS					.115	.128	.119	.280
				Step 2				
Baseline CORE-tr	-.138	-.216	.130	.101	-.195	-.348	.177	.052
Baseline LS	.257	.223	.084	.007**				
Baseline MHS					.065	.073	.124	.559
Total GIs (0-3)	.196	.205	.091	.025*	.211	.251	.107	.025*
SIMD	-.075	-.030	.028	.284	-.061	-.027	.034	.433
				Step 3				
Baseline CORE-tr	-.100	-.157	.280	.569	-.138	-.245	-.376	.509
Baseline LS	.257	.223	.083	.007**				
Baseline MHS					.068	.075	.122	.534
Total GIs (0-3)	.195	.205	.090	.023*	.210	.250	.107	.020*
SIMD	-.030	-.012	.076	.868	.008	.003	.101	.971
Interaction, SIMD*CORE-tr	-.063	-.010	.046	.821	-.095	-.018	-.057	.763

Note. CORE-tr = CORE-OM total minus risk mean score; GIS = Group Identification Scale; SIMD = Scottish Index of Multiple Deprivations; *β* = standardised coefficient; *B* = unstandardized, bootstrapped coefficient; SE_B = Bootstrapped standard error; CORE-tr = CORE-OM total-risk mean.
*p < .05 (two-tailed); **p < .01 (two-tailed); ***p < .001 (two-tailed)

Table A8.4: Moderation analyses exploring predictors of outcome in Functioning and Well-being domains with bootstrapped standard errors for group identity by baseline distress interaction

	CORE-functioning (CORE-f) (Adj R^2 = .26)				CORE well-being (CORE-wb) (Adj R^2 = .31)			
Measure	*β*	*B*	SE_B	*p*	*β*	*B*	SE_B	*p*
				Step 1				
Baseline CORE-tr	.512	.543	.055	.000**	.534	.646	.069	.000**
				Step 2				
Baseline CORE-tr	.485	.514	.066	.000**	.518	.627	.082	.000**
ADM use					.158	.286	.099	.006*
Total GIs (0-3)	-.055	-.041	.042	.343	-.085	-.072	.054	.185
SIMD	.001	.000	.015	.979	-.088	-.030	.020	.134
				Step 3				
Baseline CORE-tr	.480	.509	.087	.000**	.511	.619	.102	.000**
ADM use					.158	.286	.099	.006*
Total GIs (0-3)	-.067	-.049	.084	.560	-.099	-.085	.093	.367
SIMD	.001	.000	.015	.985	-.088	-.030	.020	.136
Interaction, GIS*CORE-tr	.011	.005	.052	.929	.014	.007	.065	.910

Note. CORE-tr = CORE-OM total minus risk mean score; GIS = Group Identification Scale; SIMD = Scottish Index of Multiple Deprivations; ADM use = anti-depressant medication use; *β* = standardised coefficient; *B* = unstandardized, bootstrapped coefficient; SE_B = Bootstrapped standard error; CORE-tr = CORE-OM total-risk mean.

*p < .01 (two-tailed); **p < .005 (two-tailed)

Table A8.5: Moderation analyses exploring predictors of outcome in Functioning and Well-being domains with bootstrapped standard errors for group identity by social deprivation interaction

	CORE-functioning (CORE-f) (Adj R^2 = .26)				CORE well-being (CORE-wb) (Adj R^2 = .31)			
Measure	*β*	*B*	SE_B	*p*	*β*	*B*	SE_B	*p*
					Step 1			
Baseline CORE-tr	.512	.543	.055	.000*	.534	.646	.069	.000*
					Step 2			
Baseline CORE-tr	.485	.514	.067	.000*	.518	.627	.082	.000*
ADM use					.158	.286	.100	.004*
Total GIs (0-3)	-.055	-.041	.043	.334	-.085	-.072	.053	.175
SIMD	.001	.000	.016	.978	-.088	-.030	.020	.135
					Step 3			
Baseline CORE-tr	.483	.512	.069	.000*	.514	.622	.082	.000*
ADM use					.161	.291	.100	.004*
Total GIs (0-3)	-.095	-.069	.102	.490	-.160	-.136	.121	.262
SIMD	-.017	-.005	.024	.833	-.124	-.042	.027	.118
Interaction, GIS*SIMD	.047	.005	.014	.729	.089	.010	.018	.565

Note. CORE-tr = CORE-OM total minus risk mean score; GIS = Group Identification Scale; SIMD = Scottish Index of Multiple Deprivations; ADM use = anti-depressant medication use; *β* = standardised coefficient; *B* = unstandardized, bootstrapped coefficient; SE_B = Bootstrapped standard error; CORE-tr = CORE-OM total-risk mean.

*$p < .005$ (two-tailed)

Table A8.6: Moderation analyses exploring predictors of outcome in Well-being with bootstrapped standard errors for social deprivation by baseline distress interaction

Measure	CORE-functioning (CORE-f) (Adj R^2 = .23)			
	β	*B*	SE_B	*p*
		Step 1		
Baseline CORE-tr	.534	.646	.070	.000**
		Step 2		
Baseline CORE-tr	.518	.627	.082	.000**
ADM use	.158	.286	.100	.005*
Total GIs (0-3)	-.085	-.072	.053	.175
SIMD	-.088	-.030	.019	.124
		Step 3		
Baseline CORE-tr	.743	.899	.154	.000**
ADM use	.176	.317	100	.002*
Total GIs (0-3)	-.088	-.075	.054	.165
SIMD	.173	.058	.043	.169
Interaction, SIMD*CORE-tr	-.355	-.049	.026	.060

Note. CORE-tr = CORE-OM total minus risk mean score; GIS = Group Identification Scale; SIMD = Scottish Index of Multiple Deprivations; *β* = standardised coefficient; *B* = unstandardized, bootstrapped coefficient; SE_B = Bootstrapped standard error; CORE-tr = CORE-OM total-risk mean.
*$p \leq .005$ (two-tailed); **$p < .001$ (two-tailed).

Table A8.7: HMR analyses exploring predictors of outcome in Functioning with bootstrapped standard errors for low, middle and high levels of baseline distress

		CORE-functioning (CORE-f)			
CORE-tr level	Predictor	*β*	*B*	SE_B	*p*
Low			Step 1		
(Adj R^2 = .033)	Total GIS (0-3)	-.085	-.039	.055	.475
			Step 2		
	Total GIS (0-3)	-.090	-.041	.054	.444
	SIMD	.224	.039	.018	.029*
Middle			Step 1		
(Adj R^2 = .028)	Total GIS (0-3)	-.148	-.098	.061	.117
			Step 2		
	Total GIS (0-3)	-.145	-.096	.060	.117
	SIMD	.162	.041	.026	.112
High			Step 1		
(Adj R^2 = .018)	Total GIS (0-3)	-.085	-.081	.102	.418
			Step 2		
	Total GIS (0-3)	-.067	-.064	.104	.535
	SIMD	-.179	-.056	-.001	.084

Note. GIS = Group Identification Scale; SIMD = Scottish Index of Multiple Deprivations; *β* = standardised coefficient; *B* = unstandardized, bootstrapped coefficient; SE_B = Bootstrapped standard error; CORE-tr = CORE-OM total-risk mean.
*$p < .05$ (two-tailed).

Table A8.8: *Mediation analyses for Functioning and Well-being domains with bootstrapped standard errors*

	Functioning				Well-being			
	Beta	SE	95% CI		Beta	SE	95% CI	
			Lower	Upper			Lower	Upper
Total effect	.552	.055	.445	.660	.651	.062	.530	.773
Direct effect	.521	.063	.398	.645	.611	.071	.471	.750
Indirect effect (GIS)	.031	.031	-.029	.093	.041	.035	-.026	.110

Note. GIS = Group Identification Scale

Appendix 9: Empirical protocol

Research objectives and questions

The current research has two primary and one secondary objectives. The primary objectives are: 1) to explore the relationship between group identification and social deprivation on the magnitude of change in patients' well-being (defined as QoL or life satisfaction and functioning) and 2) To explore the interaction between patients' group identification, well-being scores and level of depressive symptomatology following participation in the BtBs intervention.

Our secondary objective is to explore the impact of seven predictor variables (baseline symptom severity, ADM use, adherence to BtBs, age, gender, education and employment status) on the magnitude of change in patients' well-being following participation in a BtBs intervention.

The hypotheses for this study are:

1. Higher levels of group identification will predict increased participant well-being following the BtBs intervention.
2. Lower levels of socioeconomic deprivation will predict increased well-being following the BtBs intervention.

Due to the lack of existing research in relation to the impact of psychological therapies on QoL and well-being (Kolovos et al., 2016), and the role of group identification and socioeconomic deprivation, we also posed the following research question:

3. Is there an interaction between group identification, socioecomonic deprivation, well-being and depressive symptomatology pre- and post-intervention?

Similarly, due to the contradictory evidence in relation to additional predictors of outcome from cCBT (e.g. baseline severity of depression, adherence to cCBT intervention), our final research question was:

4. What is the relationship between individual differences (age, gender, baseline severity of depression scores, educational attainment, current employment

status, ADM use, and adherence to BtBs programme) and magnitude of change in well-being and depressive symptomatology following participation in the BtBs intervention?

Intended data analysis

Option 1: Hierarchical multiple regression (HMR).

Dependent variables:

- Satisfaction (QoL) measures: ratings from 1 (couldn't be worse) to 7 (couldn't be better) of:
    - Satisfaction with life, and satisfaction with mental health.
- CORE-OM (Evans, John Mellor-Clark, Frank Mar, 2000):
    - Well-being and Functioning subscales.

Step 1: Baseline symptom severity (pre-intervention CORE-OM subscale score and QoL)

Step 2, additional predictors:

- age
- gender
- education level
- current employment status.
- Anti-depressant medication use (ADM).

Step 3, Main predictor variables:

- Group Identity Scale (GIS; Sani et al., 2015) and SIMD scores.

Power analyses

For HMR with nine predictor variables, to achieve power of 0.8 (cf. Cohen & Cohen, 1983) for large (R^2 = .14), medium (R^2 = .06) and small effect sizes (R^2 = .01) would require sample sizes of n = 121, 270, and 1574, respectively.

Option 2: Moderation

Include the CORE-OM total summary score as an additional dependent variable (measuring psychological distress), and examine the interactions between this, the

well-being dependent variables and GIS (hypothesis: those with higher group identification show increased well-being and reduced distress following the intervention than those with lower group identification).

Procedure

A cross-sectional, pre-post design utilising multiple regression analyses will be employed in the curret study. Outcome will be assessed through examining change in patients' level of Quality of Life (QoL) pre- to post-intervention, and changes in participants' functioning and well-being scores pre- to post-intervention. These latter domains will be assessed through relevant subscales from the Clinical Outcomes in Routine Evaluation Outcome Measure (CORE-OM; Evans et al., 2002). QoL will be assessed using two items (e.g. 'How satisfied are you with your life as a whole today?') taken from the Manchester Short Assessment of Quality of Life scale (MANSA; Priebe, Huxley, Knight, & Evans, 1999). Responses range from 1 (*Couldn't be worse*') to 7 (*'Couldn't be better'*). Change in scores over time will be calculated by assessing whether patients achieve clinically significant change (i.e. whether outcome measure scores fall two or more standard deviations below the pre-treatment mean; Jacobson and Truax, 1991), and by assessing the Reliable Change Index (RCI; Jacobson, Follette & Ravenstorf, 1984). Both predictor and outcome variables will be assessed through self-report questionnaires that constitute routinely collected data within routine clinical practice.

This project will be conducted using previously collected data from a larger study, the Mastermind project (an international study across nine European countries and 14 treatment sites) investigating potential facilitators and barriers to the implementation of cCBT. All participants who are offered and accept a referral to a specific cCBT programme, Beating the Blues (BtBs; recommended for treatment of depression by NICE guidelines, 2009) are invited to participate in the study following their completion of the first online BtBs module. Recruitment occurs in four health boards across Scotland (NHS Lanarkshire, Fife, Grampian and Shetland). In addition, data also collected within NHS Tayside as part of routine care will also be included in the current study. Data collected in NHS Tayside employed the same

methodology as the Mastermind Project. Our study will therefore consist of a secondary analysis of the cCBT data that has already been collected within routine care, as a part of a service evaluation. Caldicott approval for the use of this data has been obtained from each of the participating health boards. Although this data includes identifiable information, such data will not be passed to the current research team: we will only have access to anonymised data, for which all identifying information (e.g. patient Chi numbers, postcodes) has been removed.

Data collection for the Mastermind Project occurred in two phases. In the first phase, information was gathered through the BtBs programme. This included basic demographic information (e.g. age, gender) and baseline depressive symptomatology, assessed through the Clinical Outcome in Routine Evaluation Outcome Measure (CORE-OM; Evans et al., 2002). Following completion of the fifth and eighth online module, completion of the CORE-OM measure was repeated. The second phase of data collection occurred after participants had completed the first online module. The programme coordinator from each healthboard contacted potential participants and sent an electronic invitation to participate in the Mastermind Project. This included a basic description and rationale of the project, and provided the opportunity to ask questions. Participants were given the choice to complete either electronic or paper copies of the questionnaires, which assessed additional demographic information (e.g. highest educational qualification, use of anti-depressant medication), an additional predictor of interest in the study (the Group Identity Scale; GIS, Sani et al., 2014) and self-rated Quality of Life (QoL).

Participants who did not respond to the invitation were sent one e-mail reminder. Implied consent was assumed to have been obtained from any participants who returned the completed questionnaires, whereas those who did not respond to the reminder were assumed to have opted-out. BtBs programme coordinators therefore conducted all participant recruitment, with the research team having no direct contact with potential participants. Following completion of BtBs' modules, participants were sent a second copy of the same questionnaires, plus an additional questionnaire asking them to indicate their satisfaction with the programme and likelihood to use it

again. All administered questionnaire are used within routine care within the five healthboards.

Inclusion criteria were that participants were aged 18 years or over with mild, moderate, or severe depression. In line with previous research (e.g. de Graaf et al., 2010; Kessler et al., 2009), participants with suicidal intention would be included in the current analysis. This is in order to recruit a sample that is representative of patients presenting for care. Patients with high levels of suicidality would be monitored closely, however, with the referring agent responsible for supervising their progress. In line with routine practice, exclusion criteria included participants presenting with additional comorbid mental health conditions (e.g. psychosis, bipolar disorder) or a learning disability. Similarly, participants who received additional psychological treatment (e.g. face-to-face therapy) during the course of the study were also excluded.

Appendix 10: Journal guidelines

10.1: BEHAVIOURAL AND COGNITIVE PSYCHOTHERAPY

EDITORIAL OFFICE

Professor Paul M Salkovskis – Editor
Ms Lydia Holt – Editorial Assistant
Department of Psychology, University of Bath
Bath, BA2 7AY, UK
Tel: 01225 38 6930. E-mail: journal.office@babcp.com

EDITORIAL STATEMENT

Behavioural and Cognitive Psychotherapy is an international multidisciplinary journal for the publication of original research, of an experimental or clinical nature, that contributes to the theory, practice and evaluation of behaviour therapy. As such, the scope of the journal is very broad and articles relevant to most areas of human behaviour and human experience, which would be of interest to members of the helping and teaching professions, will be considered for publication. As an applied science, the concepts, methodology and techniques of behavioural psychotherapy continue to change. The journal seeks both to reflect and to influence those changes. While the emphasis is placed on empirical research, articles concerned with important theoretical and methodological issues as well as evaluative reviews of the behavioural literature are also published. In addition, given the emphasis of behaviour therapy on the experimental investigation of the single case, the journal from time to time publishes case studies using single case experimental designs. For the majority of designs this should include a baseline period with repeated measures; in all instances the nature of the quantitative data and the intervention must be clearly specified. Other types of case report can be submitted for the Brief Clinical Reports section.

The following types of articles are suitable for *Behavioural and Cognitive Psychotherapy:*

- Reports of original research employing experimental or correlational methods and using within or between subject designs.
- Review or discussion articles that are based on empirical data and that have important new theoretical, conceptual or applied implications.
- Brief reports and systematic investigations in a single case employing innovative techniques and/or approaches.

Articles should concern original material that is neither published nor under consideration for publication elsewhere. This applies also to articles in languages other than English.

SPECIAL SECTIONS OF THE JOURNAL

Accelerated Publication

The accelerated publication section is intended to accommodate a small number of important papers. Such papers will include major new findings for which rapid dissemination would be of considerable benefit and impact. For example: reports of the results of important new clinical trials; innovative experimental results with major implications for theory or practice; other work of unusually high calibre. If submitting a manuscript to this section you must specify in your cover letter why it should be considered as Accelerated.

Empirically Grounded Clinical Interventions

This section is intended for reviews of the present status of treatment approaches for specific psychological problems. It is intended that such articles will draw upon a combination of treatment trials, experimental evidence and other research, and be firmly founded in phenomenology. It should take account of, but also go beyond, treatment outcome data.

PREPARING YOUR MANUSCRIPT.

Articles must be under 5,000 words at the point of submission, excluding references, tables and figures (except for Brief Clinical Reports, please see separate instructions). Manuscripts describing more than one study may exceed this limit but

please mention this in your cover letter to make it clear to the editorial office.

Authors who want a blind review should indicate this at the point of submission of their article, omitting details of authorship and other identifying information from the main manuscript. Submission for blind review is encouraged.
All submissions should be in digital format and submitted via this portal http://mc.manuscriptcentral.com/babcp

Style

Abbreviations where used must be standard. The Systeme International (SI) should be used for all units: where metric units are used the SI equivalent must also be given. Probability values and power statistics should be given with statistical values and degrees of freedom (e.g. $F(1,34) – 123.07$. $p<.001$), but such information may be included in tables rather than in the main text. Spelling must be consistent within an article, using either British spelling (*The Shorter Oxford English Dictionar*y), or American (*Webster's New World College Dictionary*). However, spelling in the list of references must be literal to each publication. Details of style not specified here may be determined by reference to the *Publication Manual of the American Psychological Association* or the style manual of the British Psychological Society. Manuscripts should be double-spaced throughout allowing wide margins all round. Where unpublished material e.g. behaviour rating scales or therapy manuals, are referred to in an article, copies should be submitted as an additional document (where copyright allows) to facilitate review.

MANUSCRIPTS SHOULD CONFORM TO THE FOLLOWING SCHEME

1.Title page.

The title should phrase concisely the major issues. Author(s) to be given with departmental affiliations and addresses, grouped appropriately. A running head of no more than 40 characters should be indicated, plus 4 keywords.

2. Main text

a. Abstract. The abstract should be structured under the headings: Background,

Aims, Method, Results, Conclusions. It should include up to six key words that could be used to describe the article. This should summarize the article in no more than 250 words.

b. Text. This should begin with an introduction, succinctly introducing the point of the paper to those interested in the general area of the journal. Attention should be paid to the Editorial Statement that is accessed online. References within the text should be given in the form of Jones and Smith (1973) or (Jones and Smith, 1973). When there are three or up to and including five authors the first citation should include all authors; subsequent citations should be given as Williams et al. (1973). Authors with the same surname should be distinguished by their initials. The appropriate positions of tables and figures should be indicated in the text. Footnotes should be avoided where possible.

c. Reference note(s). A list of all cited unpublished or limited circulation material, numbered in order of appearance in the text, giving as much information as possible about extant manuscripts.

d. References. These should follow APA guidelines. All citations in the text should be listed in strict alphabetical order according to surnames. Multiple references to the same author(s) should be listed chronologically, using a, b, etc, for entries within the same year. Formats for journal articles, books and chapters should follow these examples:

Kaltenthaler, E., Parry, G. and Beverley, C. (2004). Computerized cognitive behaviour therapy: a systematic review. *Behavioural and Cognitive Psychotherapy* ,*32,* 31–55. doi:10.1017/S135246580400102X.

Tharp, R.G. and Wetzel, R.J. (1969). *Behaviour Modification in the Natural Environment.* New York: Academic Press.

Roskies, E. and Lazarus, R.S. (1980). Coping theory and the teaching of coping skills. In P.O. Davidson and S.M. Davidson (Eds.), *Behavioural Medicine: changing health lifestyles*. New York: Brunner/Mazel.

e. Footnotes. The first, and preferably only, footnote will appear at the foot of the first page of each article, and subsequently may acknowledge previous unpublished presentation (e.g. dissertation, meeting paper), financial support, scholarly or technical assistance, or a change in affliction. A concluding (or only) paragraph must be the name and full mailing address of the author to whom enquires should be sent.

f. Required Sections

Acknowledgements

You may acknowledge individuals or organizations that provided advice, support (non-financial). Formal financial support and funding should be listed in the following section.

Ethical statements

Where research involves human and/or animal experimentation, the following statements should be included (as applicable): "The authors assert that all procedures contributing to this work comply with the ethical standards of the relevant national and institutional committees on human experimentation and with the Helsinki Declaration of 1975, and its most recent revision." and "The authors assert that all procedures contributing to this work comply with the ethical standards of the relevant national and institutional guides on the care and use of laboratory animals." All manuscripts should also indicate the nature of the ethical governance body, for example by providing ethics committee/audit committee approval reference numbers.

Conflict of interests

Please provide details of all known financial, professional and personal relationships with the potential to bias the work. Where no known conflicts of interest exist, please include the following statement: (Authors names) have no conflict of interest with respect to this publication. Where conflict of interest, ethical statements and acknowledgements would compromise blind review, these may be anonymized from the main manuscript, but should be included in full on the separate title page which is not seen by reviewers. During the review process within the main text it is acceptable to replace identifiable information by using XXXXXX or similar.

Financial support

Please provide details of the sources of financial support for all authors, including grant numbers. For example, "This work was supported by the Medical research Council (grant number XXXXXXX)". Multiple grant numbers should be separated by a comma and space, and where research was funded by more than one agency the different agencies should be separated by a semi-colon, with "and" before the final funder. Grants held by different authors should be identified as belonging to individual authors by the authors' initials. For example, "This work was supported by the Wellcome Trust (A.B., grant numbers XXXX, YYYY), (C.D., grant number ZZZZ); the Natural Environment Research Council (E.F., grant number FFFF); and the National Institutes of Health (A.B., grant number GGGG), (E.F., grant number HHHH)". Where no specific funding has been provided for research, please provide the following statement: "This research received no specific grant from any funding agency, commercial or not-for-profit sectors."

3. Tables and Figures

Manuscripts should not usually include more than five tables and/or figures. They should be supplied as separate files, but have their intended position within the paper clearly indicated in the manuscript. They should be constructed so as to be intelligible without reference to the text.

Tints and shading in figures may be used, but colour should be avoided unless essential. Although colour is possible in the online version, when designing a figure please ensure that any line variation/distinction demonstrated by colour can still be noted when in black and white. Colour figures are free of charge for online published articles but if authors wish figures to be published in colour in the print version the cost is £200. Numbered figure captions should be provided.

All artwork should be submitted as separate TIFF format files.

The minimum resolution for submission of electronic artwork is:

• Halftone Images (Black and White Photographs only): 300 dpi (dots per inch).

• LineTone (Black and White Photographs plus Line Drawings in the same figure): 600 dpi (dots per inch).

• Bitmap (Line Drawings only): 1200 dpi (dots per inch). Please see the following

link for full guidance on
artworkhttp://journals.cambridge.org/action/stream?pageId=7848&level=2&menu=Authors&pageId=3608
Tables should be provided in editable Word format. They should be numbered and given explanatory titles.

SUGGESTED REVIEWERS

During the submission process, you will be asked to indicate your preferred and non-preferred reviewers, and the reasons for your choices.

Preferred reviewers

 Should not have a conflict of interest (such as a recent or current close working relationship, or from the same institution)

 At least half of the list should be international to yourself

 Please consider early career researchers as well as field leaders

 Please suggest both niche experts and those with wider knowledge of the subject

Non-preferred reviewers

 May have personal or subjective bias to your work which disregards the scientific merit

 May have seen or commented on the submitted manuscript, or prior versions.

ETHICAL STANDARDS

Behavioural and Cognitive Psychotherapy is committed to actively investigating any cases of suspected misconduct, even in the event of the manuscript being withdrawn. All manuscripts are screened for plagiarism before being accepted for publication. All editors and reviewers are asked to disclose any conflict of interest when they are assigned a manuscript. If deemed necessary, alternative or additional opinions will be sought in order to maintain the balance of fair and thorough peer review.

The journal is a member of COPE.

Retractions

Behavioural and Cognitive Psychotherapy follows the COPE guidelines on retractions.

TRANSFER OF FILES FOR SUBMISSION TO *THE COGNITIVE BEHAVIOURAL THERAPIST*

Editors for the *Behavioural and Cognitive Psychotherapy* (BCP) can choose to recommend submission of a manuscript not suitable for *BCP* to *the Cognitive Behavioural Therapist* (*tCBT*), thus effectively submitting to both journals sequentially. This allows the automatic transfer of the manuscript files, including, as appropriate, transmission of reviewers' comments (at the discretion of the handling Editor) where this seems likely to facilitate manuscript handling. Selection of a manuscript to be transferred to *tCBT* is at the Editor's discretion, and is then subject to the peer-review process of that journal. No guarantee of suitability for *tCBT* or acceptance is made. Those papers not passed on to *tCBT* by a *BCP* Editor can be submitted by the author via the usual channels. Homepage for *tCBT*: http://journals.cambridge.org/action/displayJournal?jid=CBT

OPEN ACCESS

Upon acceptance of your paper, you may choose to publish your article via Gold Open Access (following payment of an Article Processing Charge). Current APC rates for Behavioural and Cognitive Psychotherapy can be found here: http://journals.cambridge.org/action/stream?pageId=9128&level=2&menu=Authors&pageId=3608

Please note: APC collection is managed by Rightslink, who will contact authors who have elected to publish via Open Access. Green Open Access is also supported by Cambridge Open and full details can be found on the journal copyright form

PROOFS AND COPYRIGHT

Proofs of accepted articles will be sent electronically to authors for the correction of printers' errors; authors' alterations may be charged. Authors submitting a manuscript do so on the understanding that if it is accepted for publication exclusive copyright of the paper shall be assigned to the Association. The publishers will not

put any limitation on the personal freedom of the author to use material contained in the paper in other works.

AUTHOR LANGUAGE SERVICES

Cambridge University Press recommends that authors have their manuscripts checked by an English language native speaker before submission; this will ensure that submissions are judged at peer review exclusively on academic merit. We list a number of third-party services specialising in language editing and / or translation, and suggest that authors contact as appropriate. Use of any of these services is voluntary, and at the author's own expense.

(Revised August 2016)

10.2: BEHAVIOUR RESEARCH AND THERAPY

AUTHOR INFORMATION PACK 1 Dec 2017 www.elsevier.com/locate/brat 1

BEHAVIOUR RESEARCH AND THERAPY

AUTHOR INFORMATION PACK

TABLE OF CONTENTS

• Description
• Audience
• Impact Factor
• Abstracting and Indexing
• Editorial Board
• Guide for Authors

DESCRIPTION

.

An International Multi-Disciplinary Journal

The major focus of Behaviour Research and Therapy is an experimental psychopathology approach to understanding emotional and behavioral disorders and their prevention and treatment, using cognitive, behavioral, and psychophysiological (including neural) methods and models. This includes laboratory-based experimental

studies with healthy, at risk and subclinical individuals that inform clinical application as well as studies with clinically severe samples. The following types of submissions are encouraged: theoretical reviews of mechanisms that contribute to psychopathology and that offer new treatment targets; tests of novel, mechanistically focused psychological interventions, especially ones that include theory-driven or experimentally-derived predictors, moderators and mediators; and innovations in dissemination and implementation of evidence-based practices into clinical practice in psychology and associated fields, especially those that target underlying mechanisms or focus on novel approaches to treatment delivery. In addition to traditional psychological disorders, the scope of the journal includes behavioural medicine (e.g., chronic pain).

The journal will not consider manuscripts dealing primarily with measurement, psychometric analyses, and personality assessment. The Editor and Associate Editors will make an initial determination of whether or not submissions fall within the scope of the journal and/or are of sufficient merit and importance to warrant full review.

AUDIENCE

For clinical psychologists, psychiatrists, psychotherapists, psychoanalysts, social workers, counsellors, medical psychologists, and other mental health workers.

IMPACT FACTOR

2016: 4.064 © Thomson Reuters Journal Citation Reports 2017

AUTHOR INFORMATION PACK

ABSTRACTING AND INDEXING

Google Scholar

BIOSIS

Elsevier BIOBASE

Current Contents/Social & Behavioral Sciences

MEDLINE®

LLBA

EMBASE
PASCAL/CNRS
PsycINFO
Scopus

INTRODUCTION

The major focus of Behaviour Research and Therapy is an experimental psychopathology approach to understanding emotional and behavioral disorders and their prevention and treatment, using cognitive, behavioral, and psychophysiological (including neural) methods and models. This includes laboratory-based experimental studies with healthy, at risk and subclinical individuals that inform clinical application as well as studies with clinically severe samples. The following types of submissions are encouraged: theoretical reviews of mechanisms that contribute to psychopathology and that offer new treatment targets; tests of novel, mechanistically focused psychological interventions, especially ones that include theory-driven or

experimentally-derived predictors, moderators and mediators; and innovations in dissemination and implementation of evidence-based practices into clinical practice in psychology and associated fields, especially those that target underlying mechanisms or focus on novel approaches to treatment delivery. In addition to traditional psychological disorders, the scope of the journal includes behavioural medicine (e.g., chronic pain). The journal will not consider manuscripts dealing primarily with measurement, psychometric analyses, and personality assessment. The Editor and Associate Editors will make an initial determination of whether or not submissions fall within the scope of the journal and/or are of sufficient merit and importance to warrant full review.

Early Career Investigator Award

This award is open to papers where the first author on the accepted papers is within 7 years of their PhD. By endorsing candidature for the annual Early Career Investigator Award, your manuscript will be reviewed by the Associate Editors/Editor-in-Chief for an annual award for the most highly rated paper. The winner will be announced in print, and will have the option of being spotlighted (photo and short bio).

The CONSORT guidelines (http://www.consort-statement.org/?) need to be followed for protocol papers for trials; authors should present a flow diagramme and attach with their cover letter the CONSORT checklist. For meta-analysis, the PRISMA (http://www.prisma-statement.org/?) guidelines should be followed; authors should present a flow diagramme and attach with their cover letter the PRISMA checklist.

For systematic reviews it is recommended that the PRISMA guidelines are followed, although it is not compulsory. Contact details Any questions regarding your submission should be addressed to the Editor in Chief:

Professor Michelle G. Craske
Department of Psychology
310 825-8403

Email: brat@psych.ucla.edu

Submission checklist

You can use this list to carry out a final check of your submission before you send it to the journal for review. Please check the relevant section in this Guide for Authors for more details.

Ensure that the following items are present:

One author has been designated as the corresponding author with contact details:

• E-mail address

• Full postal address

All necessary files have been uploaded:

Manuscript :

• Include keywords

• All figures (include relevant captions)

• All tables (including titles, description, footnotes)

• Ensure all figure and table citations in the text match the files provided

AUTHOR INFORMATION PACK

• Indicate clearly if color should be used for any figures in print

Graphical Abstracts / Highlights files (where applicable)

Supplemental files (where applicable)

Further considerations

• Manuscript has been 'spell checked' and 'grammar checked'

• All references mentioned in the Reference List are cited in the text, and vice versa

• Permission has been obtained for use of copyrighted material from other sources (including the Internet)

• A competing interests statement is provided, even if the authors have no competing interests to declare

• Journal policies detailed in this guide have been reviewed

• Referee suggestions and contact details provided, based on journal requirements

For further information, visit our Support Center.

BEFORE YOU BEGIN

Ethics in publishing

Please see our information pages on Ethics in publishing and Ethical guidelines for journal publication.

Human and animal rights

If the work involves the use of human subjects, the author should ensure that the work described has been carried out in accordance with The Code of Ethics of the World Medical Association (Declaration of Helsinki) for experiments involving humans; Uniform Requirements for manuscripts submitted to Biomedical journals . Authors should include a statement in the manuscript that informed consent was obtained for experimentation with human subjects. The privacy rights of human subjects must always be observed.

All animal experiments should comply with the ARRIVE guidelines and should be carried out in accordance with the U.K. Animals (Scientific Procedures) Act, 1986 and associated guidelines, EU Directive 2010/63/EU for animal experiments , or the National Institutes of Health guide for the care and use of Laboratory animals (NIH Publications No. 8023, revised 1978) and the authors should clearly indicate in the manuscript that such guidelines have been followed.

Conflict of Interest

All authors are requested to disclose any actual or potential conflict of interest including any financial, personal or other relationships with other people or organizations within three years of beginning the submitted work that could inappropriately influence, or be perceived to influence, their work.

See also http://www.elsevier.com/conflictsofinterest . The Conflict of Interest form can be found at: http://ees.elsevier.com/brat/img/COI.pdf . And for further information, please view the following link: http://service.elsevier.com/app/answers/detail/a_id/286/supporthub/publishing .

Submission declaration and verification

Submission of an article implies that the work described has not been published previously (except in the form of an abstract or as part of a published lecture or

academic thesis or as an electronic preprint, see 'Multiple, redundant or concurrent publication ' section of our ethics policy for more information), that it is not under consideration for publication elsewhere, that its publication is approved by all authors and tacitly or explicitly by the responsible authorities where the work was carried out, and that, if accepted, it will not be published elsewhere in the same form, in English or in any other language, including electronically without the written consent of the copyright-holder. To verify originality, your article may be checked by the originality detection service CrossCheck .

Changes to authorship

Authors are expected to consider carefully the list and order of authors before submitting their manuscript and provide the definitive list of authors at the time of the original submission. Any addition, deletion or rearrangement of author names in the authorship list should be made only before the manuscript has been accepted and only if approved by the journal Editor. To request such a change, the Editor must receive the following from the corresponding author : (a) the reason for the change in author list and (b) written confirmation (e-mail, letter) from all authors that they agree with the addition, removal or rearrangement. In the case of addition or removal of authors, this includes confirmation from the author being added or removed.
Only in exceptional circumstances will the Editor consider the addition, deletion or rearrangement of authors after the manuscript has been accepted. While the Editor considers the request, publication of the manuscript will be suspended. If the manuscript has already been published in an online issue, any requests approved by the Editor will result in a corrigendum. Registration of clinical trials
Registration in a public trials registry is a condition for publication of clinical trials in this journal in accordance with International Committee of Medical Journal Editors recommendations. Trials must register at or before the onset of patient enrolment. The clinical trial registration number should be included at the end of the abstract of the article. A clinical trial is defined as any research study that prospectively assigns human participants or groups of humans to one or more health-related interventions to evaluate the effects of health outcomes. Health-related interventions include any intervention used to modify a biomedical or health-related

outcome (for example drugs, surgical procedures, devices, behavioural treatments, dietary interventions, and process-of-care changes). Health outcomes include any biomedical or health-related measures obtained in patients or participants, including pharmacokinetic measures and adverse events. Purely observational studies (those in which the assignment of the medical intervention is not at the discretion of the investigator) will not require registration. As of October 2016, registration in a public trials registry is a condition for publication of clinical trials in this Journal. In the event that patient enrollment began in a trial that was not pre-registered prior to September 2016, authors may still submit their manuscript to this Journal but will be asked to retrospective register (i.e., registration after patient enrolment begins) their study in a public trials registry. This exception to pre-registration will cease in October 2019.

Article transfer service

This journal is part of our Article Transfer Service. This means that if the Editor feels your article is more suitable in one of our other participating journals, then you may be asked to consider transferring the article to one of those. If you agree, your article will be transferred automatically on your behalf with no need to reformat. Please note that your article will be reviewed again by the new journal.

Copyright

Upon acceptance of an article, authors will be asked to complete a 'Journal Publishing Agreement' (see more information on this). An e-mail will be sent to the corresponding author confirming receipt of the manuscript together with a 'Journal Publishing Agreement' form or a link to the online version of this agreement. Subscribers may reproduce tables of contents or prepare lists of articles including abstracts for internal circulation within their institutions. Permission of the Publisher is required for resale or distribution outside the institution and for all other derivative works, including compilations and translations. If excerpts from other copyrighted works are included, the author(s) must obtain written permission from the copyright owners and credit the source(s) in the article. Elsevier has preprinted forms for use by authors in these cases. For open access articles: Upon acceptance of an article,

authors will be asked to complete an 'Exclusive License Agreement' (more information). Permitted third party reuse of open access articles is determined by the author's choice of user license.

Author rights

As an author you (or your employer or institution) have certain rights to reuse your work. More information .

Elsevier supports responsible sharing Find out how you can share your research published in Elsevier journals.

Role of the funding source

You are requested to identify who provided financial support for the conduct of the research and/or preparation of the article and to briefly describe the role of the sponsor(s), if any, in study design; in the collection, analysis and interpretation of data; in the writing of the report; and in the decision to submit the article for publication. If the funding source(s) had no such involvement then this should be stated.

Funding body agreements and policies

Elsevier has established a number of agreements with funding bodies which allow authors to comply with their funder's open access policies. Some funding bodies will reimburse the author for the Open Access Publication Fee. Details of existing agreements are available online.

Open access

This journal offers authors a choice in publishing their research:

Subscription

• Articles are made available to subscribers as well as developing countries and patient groups through our universal access programs .

• No open access publication fee payable by authors.

Open access

• Articles are freely available to both subscribers and the wider public with

permitted reuse.

• An open access publication fee is payable by authors or on their behalf, e.g. by their research funder or institution.

Regardless of how you choose to publish your article, the journal will apply the same peer review criteria and acceptance standards. For open access articles, permitted third party (re)use is defined by the following Creative Commons user licenses :

Creative Commons Attribution (CC BY)

Lets others distribute and copy the article, create extracts, abstracts, and other revised versions, adaptations or derivative works of or from an article (such as a translation), include in a collective work (such as an anthology), text or data mine the article, even for commercial purposes, as long as they credit the author(s), do not represent the author as endorsing their adaptation of the article, and do not modify the article in such a way as to damage the author's honor or reputation.

Creative Commons Attribution-NonCommercial-NoDerivs (CC BY-NC-ND)

For non-commercial purposes, lets others distribute and copy the article, and to include in a collective work (such as an anthology), as long as they credit the author(s) and provided they do not alter or modify the article.

The open access publication fee for this journal is USD 3400 , excluding taxes. Learn more about Elsevier's pricing policy: https://www.elsevier.com/openaccesspricing .

Green open access

Authors can share their research in a variety of different ways and Elsevier has a number of green open access options available. We recommend authors see our green open access page for further information. Authors can also self-archive their manuscripts immediately and enable public access from their institution's repository after an embargo period. This is the version that has been accepted for publication and which typically includes author-incorporated changes suggested during submission, peer review and in editor-author communications. Embargo period: For subscription articles, an appropriate amount of time is needed for journals to deliver

value to subscribing customers before an article becomes freely available to the public. This is the embargo period and it begins from the date the article is formally published online in its final and fully citable form. Find out more .
This journal has an embargo period of 24 months.

Elsevier Publishing Campus
The Elsevier Publishing Campus (www.publishingcampus.com) is an online platform offering free lectures, interactive training and professional advice to support you in publishing your research. The College of Skills training offers modules on how to prepare, write and structure your article and explains how editors will look at your paper when it is submitted for publication. Use these resources, and more, to ensure that your submission will be the best that you can make it.
Language (usage and editing services)
Please write your text in good English (American or British usage is accepted, but not a mixture of
these). Authors who feel their English language manuscript may require editing to eliminate possible
grammatical or spelling errors and to conform to correct scientific English may wish to use the English
Language Editing service available from Elsevier's WebShop.
AUTHOR INFORMATION PACK 1 Dec 2017 www.elsevier.com/locate/brat 9
Submission
Our online submission system guides you stepwise through the process of entering your article details and uploading your files. The system converts your article files to a single PDF file used in the peer-review process. Editable files (e.g., Word, LaTeX) are required to typeset your article for final publication. All correspondence, including notification of the Editor's decision and requests for revision, is sent by e-mail.

Submit your article
Please submit your article via http://ees.elsevier.com/brat/
PREPARATION

Peer review

This journal operates a single blind review process. All contributions will be initially assessed by the editor for suitability for the journal. Papers deemed suitable are then typically sent to a minimum of two independent expert reviewers to assess the scientific quality of the paper. The Editor is responsible for the final decision regarding acceptance or rejection of articles. The Editor's decision is final. More information on types of peer review .

Article structure

Subdivision - unnumbered sections

Divide your article into clearly defined sections. Each subsection is given a brief heading. Each heading should appear on its own separate line. Subsections should be used as much as possible when crossreferencing text: refer to the subsection by heading as opposed to simply 'the text'.

Appendices

If there is more than one appendix, they should be identified as A, B, etc. Formulae and equations in appendices should be given separate numbering: Eq. (A.1), Eq. (A.2), etc.; in a subsequent appendix, Eq. (B.1) and so on. Similarly for tables and figures: Table A.1; Fig. A.1, etc.

Essential title page information

• Title. Concise and informative. Titles are often used in information-retrieval systems. Avoid abbreviations and formulae where possible.

• Author names and affiliations. Please clearly indicate the given name(s) and family name(s) of each author and check that all names are accurately spelled. You can add your name between parentheses in your own script behind the English transliteration. Present the authors' affiliation addresses (where the actual work was done) below the names. Indicate all affiliations with a lowercase superscript letter immediately after the author's name and in front of the appropriate address.

Provide the full postal address of each affiliation, including the country name and, if available, the e-mail address of each author.

• Corresponding author. Clearly indicate who will handle correspondence at all stages of refereeing and publication, also post-publication. This responsibility

includes answering any future queries about Methodology and Materials. Ensure that the e-mail address is given and that contact details are kept up to date by the corresponding author.

• Present/permanent address. If an author has moved since the work described in the article was done, or was visiting at the time, a 'Present address' (or 'Permanent address') may be indicated as a footnote to that author's name. The address at which the author actually did the work must be retained as the main, affiliation address. Superscript Arabic numerals are used for such footnotes.

Abstract

A concise and factual abstract is required with a maximum length of 200 words. The abstract should state briefly the purpose of the research, the principal results and major conclusions. An abstract is often presented separately from the article, so it must be able to stand alone. For this reason, References should be avoided, but if essential, then cite the author(s) and year(s). Also, non-standard or uncommon abbreviations should be avoided, but if essential they must be defined at their first mention in the abstract itself.

Graphical abstract

Although a graphical abstract is optional, its use is encouraged as it draws more attention to the online article. The graphical abstract should summarize the contents of the article in a concise, pictorial form designed to capture the attention of a wide readership. Graphical abstracts should be submitted as a separate file in the online submission system. Image size: Please provide an image with a minimum of 531 × 1328 pixels (h × w) or proportionally more. The image should be readable at a size of 5 × 13 cm using a regular screen resolution of 96 dpi. Preferred file types: TIFF, EPS, PDF or MS Office files. You can view Example Graphical Abstracts on our information site. Authors can make use of Elsevier's Illustration Services to ensure the best presentation of their images and in accordance with all technical requirements.

Highlights

Highlights are mandatory for this journal. They consist of a short collection of bullet points that convey the core findings of the article and should be submitted in a

separate editable file in the online submission system. Please use 'Highlights' in the file name and include 3 to 5 bullet points (maximum 85 characters, including spaces, per bullet point). You can view example Highlights on our information site.

Keywords

Immediately after the abstract, provide a maximum of 6 keywords, to be chosen from the APA list of index descriptors. These keywords will be used for indexing purposes.

Abbreviations

Define abbreviations that are not standard in this field in a footnote to be placed on the first page of the article. Such abbreviations that are unavoidable in the abstract must be defined at their first mention there, as well as in the footnote. Ensure consistency of abbreviations throughout the article.

Acknowledgements

Collate acknowledgements in a separate section at the end of the article before the references and do not, therefore, include them on the title page, as a footnote to the title or otherwise. List here those individuals who provided help during the research (e.g., providing language help, writing assistance or proof reading the article, etc.).

Formatting of funding sources

List funding sources in this standard way to facilitate compliance to funder's requirements: Funding: This work was supported by the National Institutes of Health [grant numbers xxxx, yyyy]; the Bill & Melinda Gates Foundation, Seattle, WA [grant number zzzz]; and the United States Institutes of Peace [grant number aaaa]. It is not necessary to include detailed descriptions on the program or type of grants and awards. When funding is from a block grant or other resources available to a university, college, or other research institution, submit the name of the institute or organization that provided the funding. If no funding has been provided for the research, please include the following sentence: This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

Shorter communications

This option is designed to allow publication of research reports that are not suitable for publication as regular articles. Shorter Communications are appropriate for

articles with a specialized focus or of particular didactic value. Manuscripts should be between 3000-5000 words, and must not exceed the upper word limit. This limit includes the abstract, text, and references, but not the title page tables and figures.

Artwork

Electronic artwork

General points

• Make sure you use uniform lettering and sizing of your original artwork.

• Embed the used fonts if the application provides that option.

• Aim to use the following fonts in your illustrations: Arial, Courier, Times New Roman, Symbol, or use fonts that look similar.

• Number the illustrations according to their sequence in the text.

• Use a logical naming convention for your artwork files.

• Provide captions to illustrations separately.

• Size the illustrations close to the desired dimensions of the published version.

• Submit each illustration as a separate file.

A detailed guide on electronic artwork is available. You are urged to visit this site; some excerpts from the detailed information are given here.

Formats

If your electronic artwork is created in a Microsoft Office application (Word, PowerPoint, Excel) then please supply 'as is' in the native document format. Regardless of the application used other than Microsoft Office, when your electronic artwork is finalized, please 'Save as' or convert the images to one of the following formats (note the resolution requirements for line drawings, halftones, and line/halftone combinations given below):

EPS (or PDF): Vector drawings, embed all used fonts.

TIFF (or JPEG): Color or grayscale photographs (halftones), keep to a minimum of 300 dpi. TIFF (or JPEG): Bitmapped (pure black & white pixels) line drawings, keep to a minimum of 1000 dpi. TIFF (or JPEG): Combinations bitmapped line/half-tone (color or grayscale), keep to a minimum of 500 dpi.

Please do not:

• Supply files that are optimized for screen use (e.g., GIF, BMP, PICT, WPG); these

typically have a low number of pixels and limited set of colors;
• Supply files that are too low in resolution;
• Submit graphics that are disproportionately large for the content.

Tables

Please submit tables as editable text and not as images. Tables can be placed either next to the relevant text in the article, or on separate page(s) at the end. Number tables consecutively in accordance with their appearance in the text and place any table notes below the table body. Be sparing in the use of tables and ensure that the data presented in them do not duplicate results described elsewhere in the article. Please avoid using vertical rules and shading in table cells.

References

Citation in text

Please ensure that every reference cited in the text is also present in the reference list (and vice versa). Any references cited in the abstract must be given in full. Unpublished results and personal communications are not recommended in the reference list, but may be mentioned in the text. If these references are included in the reference list they should follow the standard reference style of the journal and should include a substitution of the publication date with either 'Unpublished results' or 'Personal communication'. Citation of a reference as 'in press' implies that the item has been accepted for publication.

Web references

As a minimum, the full URL should be given and the date when the reference was last accessed. Any further information, if known (DOI, author names, dates, reference to a source publication, etc.), should also be given. Web references can be listed separately (e.g., after the reference list) under a different heading if desired, or can be included in the reference list.

Data references

This journal encourages you to cite underlying or relevant datasets in your manuscript by citing them in your text and including a data reference in your Reference List. Data references should include the following elements: author

name(s), dataset title, data repository, version (where available), year, and global persistent identifier. Add [dataset] immediately before the reference so we can properly identify it as a data reference. The [dataset] identifier will not appear in your published article.

Reference management software

Most Elsevier journals have their reference template available in many of the most popular reference Management software products. These include all products that support Citation Style Language styles , such as Mendeley and Zotero , as well as EndNote . Using the word processor plug-ins from these products, authors only need to select the appropriate journal template when preparing their article, after which citations and bibliographies will be automatically formatted in the journal's style.

If no template is yet available for this journal, please follow the format of the sample references and citations as shown in this Guide.

Users of Mendeley Desktop can easily install the reference style for this journal by clicking the following link:

http://open.mendeley.com/use-citation-style/behaviour-research-and-therapy

When preparing your manuscript, you will then be able to select this style using the Mendeley plugins for Microsoft Word or LibreOffice.

Reference style

Text: Citations in the text should follow the referencing style used by the American Psychological Association. You are referred to the Publication Manual of the American Psychological Association, Sixth Edition, ISBN 978-1-4338-0561-5, copies of which may be ordered online or APA Order Dept., P.O.B. 2710, Hyattsville, MD 20784, USA or APA, 3 Henrietta Street, London, WC3E 8LU, UK.

List: references should be arranged first alphabetically and then further sorted chronologically if necessary. More than one reference from the same author(s) in the same year must be identified by the letters 'a', 'b', 'c', etc., placed after the year of publication.

Examples:

Reference to a journal publication:

Van der Geer, J., Hanraads, J. A. J., & Lupton, R. A. (2010). The art of writing a

scientific article. Journal of Scientific Communications, 163 , 51–59.

Reference to a book:

Strunk, W., Jr., & White, E. B. (2000). The elements of style. (4th ed.). New York: Longman, (Chapter 4).

Reference to a chapter in an edited book:

Mettam, G. R., & Adams, L. B. (2009). How to prepare an electronic version of your article. In B. S. Jones, & R. Z. Smith (Eds.), Introduction to the electronic age (pp. 281–304). New York: E-Publishing Inc.

Reference to a website:

Cancer Research UK. Cancer statistics reports for the UK. (2003). http://www.cancerresearchuk.org/aboutcancer/statistics/cancerstatsreport/ Accessed 13 March 2003.

Reference to a dataset:

[dataset] Oguro, M., Imahiro, S., Saito, S., Nakashizuka, T. (2015). Mortality data for Japanese oak wilt disease and surrounding forest compositions . Mendeley Data, v1. https://doi.org/10.17632/xwj98nb39r.1.

Video

Elsevier accepts video material and animation sequences to support and enhance your scientific research. Authors who have video or animation files that they wish to submit with their article are strongly encouraged to include links to these within the body of the article. This can be done in the same way as a figure or table by referring to the video or animation content and noting in the body text where it should be placed. All submitted files should be properly labeled so that they directly relate to the video file's content. In order to ensure that your video or animation material is directly usable, please provide the files in one of our recommended file formats with a preferred maximum size of 150 MB in total. Any single file should not exceed 50 MB. Video and animation files supplied will be published online in the electronic version of your article in Elsevier Web products, including ScienceDirect . Please supply 'stills' with your files: you can choose any frame from the video or animation or make a separate image. These will be used instead of standard icons and will personalize the link to your video data. For more detailed instructions please

visit our video instruction pages . Note: since video and animation cannot be embedded in the print version of the journal, please provide text for both the electronic and the print version for the portions of the article that refer to this content.

Supplementary material

Supplementary material such as applications, images and sound clips, can be published with your article to enhance it. Submitted supplementary items are published exactly as they are received (Excel or PowerPoint files will appear as such online). Please submit your material together with the article and supply a concise, descriptive caption for each supplementary file. If you wish to make changes to supplementary material during any stage of the process, please make sure to provide an updated file. Do not annotate any corrections on a previous version. Please switch off the 'Track Changes' option in Microsoft Office files as these will appear in the published version.

RESEARCH DATA

This journal encourages and enables you to share data that supports your research publication where appropriate, and enables you to interlink the data with your published articles. Research data refers to the results of observations or experimentation that validate research findings. To facilitate reproducibility and data reuse, this journal also encourages you to share your software, code, models, algorithms, protocols, methods and other useful materials related to the project. Below are a number of ways in which you can associate data with your article or make a statement about the availability of your data when submitting your manuscript. If you are sharing data in one of these ways, you are encouraged to cite the data in your manuscript and reference list. Please refer to the "References" section for more information about data citation. For more information on depositing, sharing and using research data and other relevant research materials, visit the research data page.

Data linking

If you have made your research data available in a data repository, you can link your

article directly to the dataset. Elsevier collaborates with a number of repositories to link articles on ScienceDirect with relevant repositories, giving readers access to underlying data that gives them a better understanding of the research described.
There are different ways to link your datasets to your article. When available, you can directly link your dataset to your article by providing the relevant information in the submission system. For more information, visit the database linking page .
For supported data repositories a repository banner will automatically appear next to your published article on ScienceDirect. In addition, you can link to relevant data or entities through identifiers within the text of your manuscript, using the following format: Database: xxxx (e.g., TAIR: AT1G01020; CCDC: 734053;PDB: 1XFN).
Mendeley Data
This journal supports Mendeley Data, enabling you to deposit any research data (including raw and processed data, video, code, software, algorithms, protocols, and methods) associated with your manuscript in a free-to-use, open access repository. Before submitting your article, you can deposit the relevant datasets to Mendeley Data . Please include the DOI of the deposited dataset(s) in your main manuscript file. The datasets will be listed and directly accessible to readers next to your published article online. For more information, visit the Mendeley Data for journals page .

Data statement
To foster transparency, we encourage you to state the availability of your data in your submission. This may be a requirement of your funding body or institution. If your data is unavailable to access or unsuitable to post, you will have the opportunity to indicate why during the submission process, for example by stating that the research data is confidential. The statement will appear with your published article on ScienceDirect. For more information, visit the Data Statement page .

AudioSlides
The journal encourages authors to create an AudioSlides presentation with their published article. AudioSlides are brief, webinar-style presentations that are shown next to the online article on ScienceDirect. This gives authors the opportunity to

summarize their research in their own words and to help readers understand what the paper is about. More information and examples are available . Authors of this journal will automatically receive an invitation e-mail to create an AudioSlides presentation after acceptance of their paper.

Interactive plots

This journal enables you to show an Interactive Plot with your article by simply submitting a datafile. Full instructions .

AFTER ACCEPTANCE

Online proof correction

Corresponding authors will receive an e-mail with a link to our online proofing system, allowing annotation and correction of proofs online. The environment is similar to MS Word: in addition to editing text, you can also comment on figures/tables and answer questions from the Copy Editor.
Web-based proofing provides a faster and less error-prone process by allowing you to directly type your corrections, eliminating the potential introduction of errors.
If preferred, you can still choose to annotate and upload your edits on the PDF version. All instructions or proofing will be given in the e-mail we send to authors, including alternative methods to the online version and PDF.
We will do everything possible to get your article published quickly and accurately. Please use this proof only for checking the typesetting, editing, completeness and correctness of the text, tables and figures. Significant changes to the article as accepted for publication will only be considered at this stage with permission from the Editor. It is important to ensure that all corrections are sent back to us in one communication. Please check carefully before replying, as inclusion of any subsequent corrections cannot be guaranteed. Proofreading is solely your responsibility.

Offprints

The corresponding author will, at no cost, receive a customized Share Link providing 50 days free access to the final published version of the article on

ScienceDirect . The Share Link can be used for sharing the article via any communication channel, including email and social media. For an extra charge, paper offprints can be ordered via the offprint order form which is sent once the article is accepted for publication. Both corresponding and co-authors may order offprints at any time via Elsevier's Webshop . Corresponding authors who have published their article open access do not receive a Share Link as their final published version of the article is available open access on ScienceDirect and can be shared through the article DOI link.

AUTHOR INQUIRIES

Visit the Elsevier Support Center to find the answers you need. Here you will find everything from Frequently Asked Questions to ways to get in touch.

You can also check the status of your submitted article or find out when your accepted article will be published .