

**An expert consensus on the most effective components of cognitive behavioural therapy
for adults with depression: a modified Delphi study**

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This study was conducted in collaboration with the Bristol Randomised Trials Collaboration (BRTC), a UKCRC Registered Clinical Trials Unit (CTU) which, as part of the Bristol Trials Centre, is in receipt of National Institute for Health Research CTU support funding. Study data were collected and managed using REDCap (Research Electronic Data Capture, Harris PA et al. *J Biomed Inform.* 2009 Apr;42(2):377-81) hosted at the University of Bristol.

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Abstract

Designing new approaches to delivering cognitive behavioural therapy (CBT) requires an understanding of the key components. This study aimed to establish an expert consensus on the effective components of CBT for depressed adults. An international panel of 120 CBT experts was invited to participate in a modified Delphi study. Thirty-two experts participated in round 1; 21 also provided data in round 2. In round 1, experts rated the effectiveness of 35 content and process components. *A priori* rules identified components carried forward to round 2, in which experts re-rated items and final consensus items were identified. Consensus was achieved for nine content components (ensuring understanding; developing and maintaining a good therapeutic alliance; explaining the rationale for CBT; eliciting feedback; identifying and challenging avoidant behaviour; activity monitoring; undertaking an initial assessment; relapse prevention methods; homework assignments); and three process components (ensuring therapist competence; scheduling sessions flexibly; scheduling sessions for 45-60 mins). Five of the twelve components identified were generic therapeutic competences rather than specific CBT items. There was less agreement about the effectiveness of cognitive components of CBT. This is an important first step in the development of novel approaches to delivering CBT that may increase access to treatment for patients.

Keywords

Cognitive Behavioural Therapy, Component Analysis, Consensus, Delphi study, Depression.

Introduction

Depression is a common mental disorder estimated to affect over 300 million people and is the single largest contributor to disability worldwide (WHO, 2004; WHO, 2017). The burden of untreated depression results in high costs to the individual, health services and society (McCrone, Dhanasiri, Patel, Knapp & Lawton-Smith, 2008; WHO, 2017). Cognitive behavioural therapy (CBT) is an established treatment approach with a strong evidence base (NICE, 2009). However, despite investment in the UK in the Improving Access to Psychological Therapies (IAPT) programme, many people with depression still cannot access individual high intensity CBT due to lack of service provision or difficulty getting to appointments for reasons such as work commitments, caring responsibilities or co-morbid illness (Mind, 2013; Shafran et al., 2009).

Delivering CBT via the internet has the potential to provide a widely accessible and cost-effective solution to improving access to psychological treatment for depression (Andersson et al., 2019). Whilst some investigators have found that computerised CBT is acceptable to both patients and therapists, trial outcomes have been mixed (Gilbody et al., 2015; So et al., 2013;). Some have suggested that effects persist longer-term (Andersson et al, 2017) and that internet delivered CBT produces equivalent outcomes to face-to-face treatment (Carlbring et al, 2017; Karyotaki et al, 2018) although included studies included in these reviews were not designed to examine equivalence. There is some evidence that important therapeutic elements of face-to-face CBT are lost when therapy is delivered purely online (Knowles et al., 2015; Waller & Gilbody, 2009). Therefore, in order to optimise the design of new approaches to delivering CBT, improve the efficiency of treatment and prevention of relapse, it is important to understand the key components ('active ingredients') of therapy.

CBT is characterised by a core set of components, which are given different emphasis depending on the preferred approach of the therapist and the needs of the client (Roth & Pilling, 2007; Shafran et al., 2009). It is likely that some of these components are more important to the success of therapy than others but, at present, we have little evidence to enable us to identify the key components of CBT (Cuijpers, Cristea, Karyotaki, Reijnders & Hollon, 2019a; Cuijpers, Reijnders & Huibers, 2019b).

Different models have been put forward as to how therapies work (Cuijpers et al, 2019b). Many of these support the idea that there are elements that are specific to each type of therapy ('specific effects'). For example, changes in cognition being key in CBT. However, an alternative model is based on the idea of 'non-specific' or 'common' factors such as therapeutic alliance, empathy and expectations. These models and definitions are discussed by Cuijpers et al (2019b) but, as the authors highlight, there is no empirical evidence to quantify the relative contribution of specific versus common factors.

One of the approaches used to try to identify the active ingredients of psychotherapies, such as CBT, are component studies. In these, the aim of the study is to ascertain whether certain components can be removed (dismantling studies) or added to an existing therapy (additive studies) without impacting on comparative clinical effectiveness. A recent review of component studies of psychological treatments for adult depression (Cuijpers et al, 2019a) found that there was insufficient evidence for either specific or common factors of therapy. However, these component studies were hampered by low statistical power and high risk of bias (Cuijpers et al, 2019a).

Others have taken a different approach to understanding more about how CBT works by looking at mechanisms of change and treatment moderators (Kazdin 2007; Kazdin 2009; Kraemer, Wilson, Fairburn & Agras, 2002). However, much of this literature has only examined associations and not formally tested for mediation, and the quality of these studies is often poor (Cuijpers et al. 2019b).

An alternative approach is to ask which components are considered most effective by experienced CBT practitioners and researchers.. Such consensus amongst experts can be ascertained using the Delphi study methodology. This uses an iterative approach to measuring expert consensus based on a series of statements (Diamond et al., 2014; Helmer-Hirschberg, 1967; Hsu & Brian, 2007). Delphi studies have been used to identify what experts consider are the key components of CBT for people with psychosis (Morrison & Barratt, 2010) and to inform the development of a blended CBT intervention for depression in secondary care (van der Vaart et al., 2014) as well as to investigate expert opinion in other areas of mental health (Langlands, Jorm, Kelly & Kitchener, 2008; Rayner, Price, Hotopf & Higginson, 2011; Ross, Kelly & Jorm, 2014). However, this approach has not previously been used to identify the clinically important aspects of CBT for depression.

The present study therefore uses a modified Delphi approach to establish an expert consensus on the effective components of CBT (in terms of both content and delivery of therapy) for adults with depression.

Methods

Modified Delphi approach

The Delphi technique is an approach to establishing expert consensus through an iterative

process of repeated surveys to converge individual opinion into a group consensus (Diamond et al., 2014; Helmer-Hirschberg, 1967; Hsu & Brian, 2007). Study participants anonymously rate items in a survey, are then provided with feedback on the group response and asked to re-rate their initial responses considering this information. This approach allows measurement of the range of opinions as well as the convergence on a consensus opinion among geographically dispersed participants. A modified Delphi approach (Hsu & Brian, 2007), where the first iteration uses closed rather than open questions, was chosen for the present study because information on the components of CBT is readily available. The components listed in this study were derived from the widely recognized University College London (UCL) Competence Framework (Roth & Pilling, 2007) and the Revised Cognitive Therapy Scale (CTS-R) (Blackburn et al., 2001), which is used to rate core CBT competencies. The definition of consensus and the choice to stop data collection after two rounds were defined *a priori* following the quality criteria proposed by Diamond et al (2014).

Ethical approval for the study was provided by the University of Bristol, Faculty of Health Sciences Research Ethics Committee (29/2/2016; reference 31642). HRA approval was also granted (8/3/2016; IRAS reference 198271).

Panel formation

The panel comprised CBT experts identified from the national and international network of the CBT experts amongst the study investigators (CW and RS) and from lists of keynote speakers from international CBT conferences. Experts were defined as individuals involved in the conception, design, conduct, teaching or analysis of CBT interventions and those who have similar expertise in comparable psychological interventions (CBT for other disorder).

We aimed for the recommended minimum sample size of 20 participants (Okoli & Pawlikowska, 2004).

Invitations were sent to a total of 120 English-speaking experts from a range of professional backgrounds. The first batch of 69 invites were sent to experts in CBT for depression in adults, with a further 51 invitations sent to experts with a broader range of expertise in CBT for other disorders (including some with expertise in depression/anxiety). In total, 32 individuals (26.7%) responded to Round 1. Of these, 23 (71.9%) responded to Round 2. Two respondents provided only background information in Round 1 and so were excluded from the analysis, leaving 21 respondents (17.5% of original invited) with data for both Rounds 1 and 2.

Generation of the list of components

As outlined earlier ('modified Delphi approach'), CBT experts within the project team (CW and RS) compiled a 'long list' of 35 CBT components based on the UCL competence framework (Roth & Pilling, 2007) and CTS-R (Blackburn et al., 2001). The components were grouped into 'content components', which are those expected to facilitate behavioural change such as thought restructuring and activity scheduling, and 'process components', which are procedures for the delivery of therapy such as who provides therapy, the number and frequency of sessions, support between sessions, and the mode of delivery. Each component was formulated as a statement: "Please rate how effective you think each of the following components are in bringing about clinically helpful change in patients with depression." Items under each subheading were listed in alphabetical order.

Data collection and analysis

Round 1

Data collection took place via an online survey, with a unique link emailed to each of the invited CBT experts. The survey collected data on the participant's country of residence and their professional background including whether they were involved in CBT teaching, supervision, research and practice. In Round 1, participants were then asked to rate each long-list of 35 components on a 9 point Likert-type scale from 1 ("not at all effective") to 9 ("very effective"). They were also given a free text space to suggest additional components of CBT not included in the long list.

Descriptive statistics were used to summarise the combined ratings in Round 1 and the decision to carry forward statements was made according to a protocol defined *a priori*. Specifically, the number of responses scoring 1-3 and 7-9 were calculated for each item. Any item rated 7-9 by at least 50% of participants and 1-3 by less than 15% of participants was carried forward to the next round ("consensus in"). Any item rated 1-3 by at least 70% of participants and 7-9 by less than 15% of participants was dropped from the next round ("consensus out"). All other items were retained to be re-rated in Round 2.

Responses to the free text question were examined and grouped into similar themes. Suggested additional components were included in Round 2 if they were novel, relevant to CBT, and suggested by 10% or more of participants. We originally specified that at least 20% of participants had to suggest the same new item but, given the small number of participants making each suggestion, we modified this to the lower threshold of 10% in the interests of inclusivity.

Round 2

All participants who completed Round 1 were invited to participate in Round 2. Responses were collected by an online survey containing the items carried forward from Round 1 together with new items generated by the comments. Participants were provided with the median score for each component from Round 1 in addition to their own score and asked to re-rate each item on a 9 point Likert scale as described above. A supplementary question was included in Round 2 asking participants to rate the importance of using written and/or online materials to support each of the components of CBT on the same scale.

The Round 2 responses were summarised using descriptive statistics and grouped into numbers scoring 1-3 and 7-9 for each included item. For Round 2, “consensus in” was defined *a priori* as any item achieving at least 70% score 7-9 and less than 15% scoring 1-3. “Consensus out” was defined as 70% or more scoring 1-3 and less than 15% scoring 7-9. Any items where at least 33% scored 1-3 and at least 33% scored 7-9 underwent further analysis using the UCLA/RAND disagreement index (Fitch et al., 2001) with an index value of <1 defined as “agreement”. All other combinations of scores were rated as “equivocal” and were discarded from the final consensus item list.

Results

Participant characteristics

Background information on survey participants who completed both rounds are presented in Table 1. The majority of the respondents were clinical psychologists ($n=19$, 91%), currently practising as a CBT therapist ($n=13$, 62%) and had both clinical and academic roles ($n=19$, 91%). Fourteen (67%) were principal investigators on CBT trials and 10 (48%) were therapists working on a CBT trial. Whilst just over half of participants were resident in the UK ($n=11$; 52%), other respondents were spread internationally across Australia, Canada,

US, and Sweden.

Insert Table 1 here

There were no appreciable differences in the characteristics of Round 1 and Round 2 respondents (data not shown).

Round 1

The outcomes of each Delphi round are illustrated in Figure 1. Twenty one out of the 35 items reached a consensus in Round 1, and the rest were “equivocal” and carried forward to Round 2. No items were excluded on the basis of being “consensus out”.

Insert Figure 1 here

Three additional items were included in round 2 based on participants’ free text suggestions: “Identifying and challenging avoidant behaviour”, “Exploring positive and negative reinforcers that maintain depressive behaviours” and “Providing at least 16-20 sessions of CBT”. Based on feedback from participants, minor changes in the wording of two statements were made: “Identifying key cognitions and automatic thoughts” became “Identifying *and challenging* key cognitions and *negative* automatic thoughts,” and “Identifying unhelpful thinking styles” became “identifying *and challenging* unhelpful thinking styles”.

Additionally, the statement “Ensuring that the client understands e.g. by eliciting feedback” was expanded into two separate items: “Ensuring that the client understands” and “Eliciting feedback to ensure a shared understanding and adapting therapy based on feedback” based on participant responses.

Round 2

Eleven items achieved consensus in Round 2, comprising nine “content” components and two “process” components. One additional item, “Scheduling each CBT session to last 45-60 minutes” met the inclusion criterion based on a UCLA/RAND Disagreement Index of less than 1. No items were excluded on the basis of consensus. The remaining 27 items were rated as “equivocal” and discarded. The final list of included components is shown in Table 2.

Descriptive statistics for all Round 2 outcomes not achieving consensus are included in the Supplementary Materials (Additional File 1, Table 3).

Insert Table 2 here

Importance of written materials

Participants in Round 2 were asked to rate how important supplementary written and/or online materials were to support relevant CBT components. Three items achieved at least 70% of participants scoring 7-9 in this question: “Methods to prevent relapse”, “Planning and reviewing practice (‘homework’) assignments” and “Psychoeducation about depression” (see Supplementary Material – Additional File 1, Table 4).

Discussion

Key findings

To our knowledge this is the first attempt to elucidate expert opinion on the most effective components of CBT for depression. Consensus was achieved in relation to nine “content” components and three “process” components (relating to the delivery of therapy). Of the nine “content” components, the majority (five items) related to more generic therapeutic

competencies (ensuring understanding; developing and maintaining a good therapeutic alliance; eliciting feedback; undertaking an initial assessment; and methods to prevent relapse) rather than items specific to CBT. Two of the consensus content components were more behavioural (identifying and challenging avoidant behaviour; and activity monitoring), one more cognitive (explaining the model/rationale for CBT) and one item that could be behavioural or cognitive (homework assignments).

There was a wider range of views on the process components, in particular the number, length and frequency of sessions. The mode of delivery diverged opinions with 39% of experts rating “providing CBT face-to-face rather than by telephone” as not very important (1-3) compared with only 16% scoring this component as important (7-9). Expert opinion therefore did not suggest that an important aspect of therapy is lost when CBT is delivered remotely rather than face-to-face.

It was expected that, as some CBT components presumably contribute more to clinical effectiveness than others, experts would not agree on the clinical utility of all components of traditional CBT for depression. However, the extent to which core elements of the Beckian CBT model were not included in the final list of consensus components was surprising. Key Beckian concepts that did not reach consensus included: guided discovery and Socratic questioning; developing a formulation; behavioural experiments and exposure techniques; and the identification and challenging of key cognitions, unhelpful thinking styles, conditional beliefs, and core beliefs. The results of this study suggest that CBT experts find it easier to agree on the generic items that bring about clinically relevant change, rather than the clinically effective components of a specific psychotherapeutic model.

In terms of experts' views on the importance of using supplementary materials (written or online) to support components of CBT, ratings were generally lower and more divergent than for scores on the core components of CBT. Using the same criterion for consensus, experts viewed supplementary materials as important for three components of CBT: psychoeducation, relapse prevention and homework assignments.

Strengths and limitations

In terms of the strengths of the study, the number of rounds and threshold for consensus was pre-specified to be in accordance with proposed quality indicators for Delphi studies (Diamond et al, 2014). We exceeded our target of 20 participants which is the recommended minimum sample size for Delphi studies (Okoli & Pawlikowska, 2004). Diminishing returns are seen with a greater number of participants (Murphy et al, 1998). Our definition of "expert" as a therapist with extensive experience in CBT practice, research, teaching and supervision of other therapists has face validity and included participants from a range of countries. We ensured that a range of opinion was sought by compiling a list of 69 experts in CBT for depression in adults, with a further 51 experts with a broader range of clinical/research backgrounds (including depression and anxiety) invited to take part in the study.

However, we acknowledge the limitations of the Delphi approach. There is no standard definition of "consensus" (Diamond et al, 2014) and our chosen definition of 70% scoring 7-9 was necessarily arbitrary. Whilst lowering this definition would have increased the number of content components that reached consensus, it is debatable whether a lower threshold would have truly represented a consensus.

The Delphi technique aims to recruit a small subset of the population who can provide deep expertise rather than a representative sample, but we acknowledge the low response rate to the invitation, and therefore our findings may not be generalisable to the wider population of CBT experts. A definitive list of experts is not available and therefore this list has to be compiled by the study investigators. It is possible that other investigators may have approached CBT experts not included in our list. Therefore, we acknowledge that the results obtained may have been different had a different group of experts responded. Whilst there were no marked differences in response between study participants who completed Round 1 and Round 2, we are unable to assess for systematic differences between these study participants and the experts who were invited but did not respond. However, there was little evidence that the experts with a wider range of clinical/research backgrounds who responded to the second invitation held different views to those who responded to the first invitation and were regarded as experts in CBT for depression, albeit this is difficult to determine robustly given the small sample size.

It was surprising that experts did not agree on whether many of the components that may be thought of as a key components of Beckian CBT (e.g. behavioural experiments; dealing with cognitions; unhelpful thinking; conditional beliefs; core beliefs; and guided discovery) were effective in bringing about clinically helpful change. It is possible that the way these items were phrased may have influenced participant response. Items relating to cognitions, unhelpful thinking styles, conditional beliefs, and core beliefs were phrased as “identifying and *challenging*” or “identifying and *modifying*”, and might better have been presented as “identifying and *examining the accuracy of...*”. There was some evidence from free text responses that interpretation of statements in the questionnaire may have differed from our intended meaning.

Similarly, it was surprising that there was no item on which all experts agreed. For example, whilst components such as “ensuring that the client understands”, “developing and maintain a good therapeutic alliance”, “explaining the model/rationale for CBT” and “eliciting feedback” reached consensus, such agreement was not unanimous.

Comparison with existing literature

The lack of expert consensus on some key CBT components, such as cognitive restructuring, was surprising. The greater consensus by experts on the importance of generic therapeutic components is more in line with the non-specific or common factors model of how therapy works (Cuijpers et al, 2019b). This aligns with increasing focus on “deliberate practice” whereby therapist performance is improved through effort concentrated on common factors that impact on therapy outcomes (Miller, Hubble & Chow, 2018). Nonetheless, given that there was agreement over some (albeit a smaller number of) specific factors highlights the importance of considering both common and specific components in future research.

There is a growing body of literature to support the idea that much of the clinical improvement in CBT for depression comes from a limited proportion of the intervention. Behavioural techniques appear to be no less effective than a combination of behavioural and cognitive techniques in some head-to-head trials of behavioural activation and CBT (Dimidjian et al, 2006; Jacobson et al, 1996; Richards et al, 2016). In Beckian CBT, it is also emphasised that behavioural interventions also lead to benefit by testing assumptions, and building new evidence, consequently behavioural interventions may also result in cognitive change. Hence, whilst it may be that experts are able to agree on the more generic components of CBT that are clinically effective, the emerging evidence in this field makes

agreement over the active ingredients that are specific to CBT more challenging. In order to achieve greater consensus about the active ingredients of CBT, more empirical evidence is required. The IMPROVE 2 trial (Watkins et al, 2016) that is currently underway is using a factorial approach to online CBT, allowing the effectiveness of both individual components (including activity scheduling, thought challenging, relaxation and self-compassion training) and different combinations of components to be investigated and will add to the evidence in this area.

We found differing expert opinion on the effective frequency and duration of CBT sessions. This reflects a lack of empirical evidence to support a 'minimally effective dose' of CBT (Shafran et al, 2009). Some evidence from evaluations of the NHS England IAPT service indicates that a longer duration of treatment is associated with better response (Gyani, Shafran, Layard & Clark, 2013), but this is in contrast to the suggestion from a regression meta-analysis that duration of therapy does not appear to be important for effectiveness, but rather that a higher frequency of sessions (at least twice a week) may be associated with greater response (Cuijpers, Huiberts, Ebert, Koole & Andersson, 2013).

Conclusion

Using a Delphi approach, an international group of experts reached consensus with regards to the components of CBT for depression that were viewed as effective in bringing about clinically helpful change. These included nine 'content' components and three components related to the delivery of therapy. Of the content components, five were generic therapeutic competences rather than items specific to CBT. There was less agreement amongst the experts in relation to the effectiveness of the cognitive components of CBT. This may reflect a greater emphasis on the behavioural aspects of CBT, such as in UK low intensity IAPT

services, but this requires further investigation and replication in future studies.

Understanding the expert view on the key components of CBT is an important first step in the development of novel approaches to delivering CBT in a way that could increase access to treatment for depressed patients. Future studies using different methodological approaches will enable us to build on these findings and advance our knowledge about the key components of CBT. Network meta-analysis methods have been extended and used successfully to estimate the relative effectiveness and acceptability of different components of interventions and combinations of intervention components in other areas (Chen et al, 2012; Welton, Caldwell, Adamopoulos & Vedhara, 2009). Future studies should explore the use of such methods to synthesise data from existing systematic reviews on CBT for depression in order to shed further light on this important area. In addition, research needs to take advantage of opportunities to embed mechanistic studies within large-scale trials of CBT. Triangulating findings from studies using different methodological approaches will help us understand more about the ‘active ingredients’ of CBT. This will inform the development of novel approaches to delivering CBT (including online interventions) that may increase access to depression treatment for the large number of patients who may benefit.

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Disclosure of interest

CW is President of the British Association for Behavioural and Cognitive Psychotherapies- a charity that advocates the use of CBT. He is also Director of a company (Five Areas Ltd) that markets CBT training and low intensity interventions. The other authors have no competing interests to declare.

Availability of Data and Materials

The anonymised dataset for this study is available from the corresponding author upon reasonable request.

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Additional File

Additional File 1.doc – contains supplementary tables 3 & 4

Table 3 – Items not achieving consensus for inclusion in Round 2

Table 4 – Importance of written and/or online materials to support CBT components

Table 1 – Characteristics of experts who took part in both rounds of the modified Delphi study

Participant characteristic	<i>n</i>	%
Professional Background		
Psychologist	19	90.5
Psychiatrist	1	4.8
Other	1	4.8
Currently practising as a CBT therapist	13	61.9
(Of those practicing as CBT therapist,) Accredited by a professional CBT organisation*	8	66.7
Both clinician and researcher	19	90.5
Clinician only	2	9.5
Additional Roles		
Delivers professional training in CBT	20	95.2
Clinical supervisor of CBT therapists	19	90.5
Author of CBT treatment manual	17	81.0
Principal investigator on a CBT trial	14	66.7
Therapist working on a CBT trial	10	47.6
Country of Residence		
UK	11	52.4
USA	4	19.1
Australia	2	9.5
Canada	2	9.5
Sweden	2	9.5

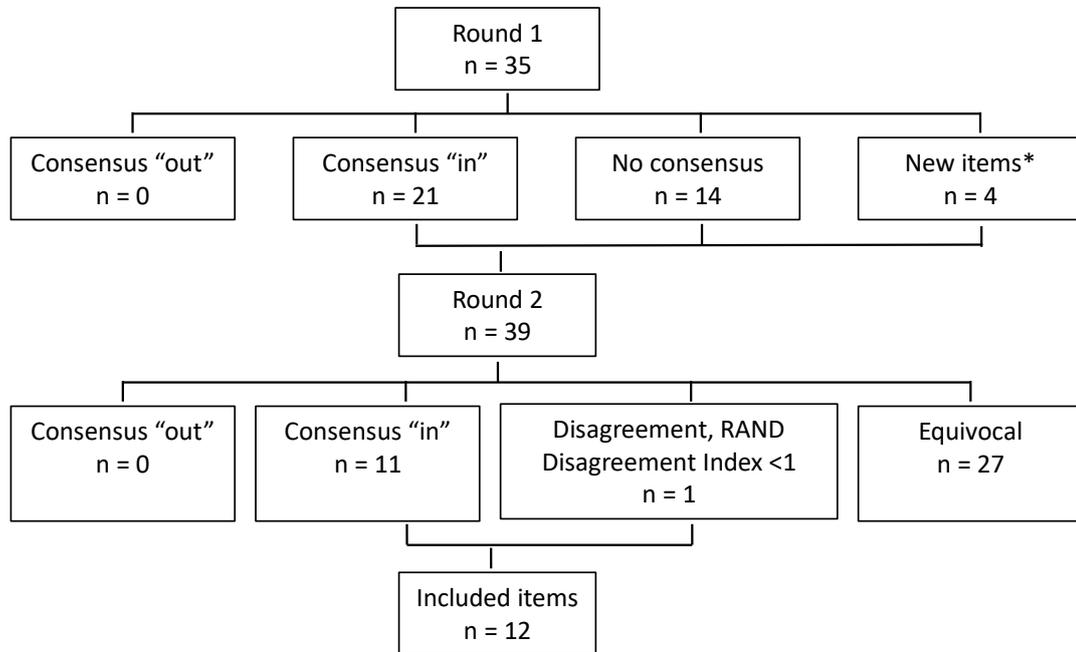
**12 respondents to this question*

Table 2 – Items achieving consensus in Delphi Round 2

	Components achieving consensus	<i>n</i> of respondents	Score 7-9 † <i>n</i> (%)	Score 1-3 † <i>n</i> (%)	Median (IQR)
Content Components	Ensuring that the client understands	21	18 (85.7)	1 (4.8)	8 (8-9)
	Developing and maintaining a good therapeutic alliance and understanding of the client's perspective	21	17 (81.0)	2 (9.5)	8 (7-8)
	Explaining the model/rationale for CBT	21	17 (81.0)	2 (9.5)	7 (7-8)
	Eliciting feedback to ensure a shared understanding and adapting therapy based on feedback	21	17 (81.0)	0 (0)	8 (7-9)
	Identifying and challenging avoidant behaviour	21	17 (81.0)	2 (9.5)	7 (7-8)
	Activity monitoring and scheduling	21	16 (76.2)	1 (4.8)	8 (7-9)
	Undertaking an initial assessment (including translating abstract complaints into concrete and discrete problems)	21	16 (76.2)	2 (9.5)	7 (7-8)
	Methods to prevent relapse	21	15 (71.4)	1 (4.8)	7 (6-8)
	Planning and reviewing practice ('homework') assignments	21	15 (71.4)	2 (9.5)	7 (6-8)
Process Components	Ensuring that the therapist has been shown to be 'competent' in the delivery of CBT	20	17 (85.0)	0 (0)	8 (7-8)
	Scheduling CBT sessions flexibly according to client need	20	14 (70.0)	0 (0)	7 (6-8)
	Scheduling each CBT session to last 45-60 minutes	18	6 (33.3)	6 (33.3)	5.5 (3-7)

† Scoring for each component using Likert scale where 1 = not at all important; 9 = very important

Figure 1 – Flowchart showing the number of components classified in each Delphi round



**Participants' free text suggestions resulted in three new items and one existing statement was expanded into two separate items based on feedback received*

