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Service support, work engagement and psychological wellbeing: validating an index of resource and infrastructure support for the delivery of CBT

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Abstract
Background: Effective dissemination of cognitive behavioural therapy (CBT) has been assisted by clearly defined competencies, skills and activities, and validated scales used to measure therapist competence and adherence. However, there is no validated measure of the resource and infrastructure support therapists require to enable them to deliver CBT in line with best practice.
Aims: This study aimed to validate an index of resource infrastructure and support for the delivery of CBT.
Method: This study took an existing questionnaire developed by Groom and Delgadillo (2012) and aimed to establish its psychometric properties through expert review and a pilot study.
Results: This resulted in a shorter questionnaire with good content validity, internal consistency ($\alpha = 0.80$) and temporal stability ($r = 0.74$, $p < .00$). The index consists of six components, and construct validity was demonstrated through positive association with measures of work engagement ($r = 0.31$, $p < .00$) and practitioner wellbeing ($r = 0.47$, $p < .00$).
Conclusions: The questionnaire provides a valid and reliable index of service support for delivering CBT, and is positively related to engagement and wellbeing among CBT practitioners.

Keywords: cognitive behavioural therapy; infrastructure; practitioner wellbeing; resource; scale validation; work engagement

Introduction

Evidence-based CBT

Cognitive behavioural therapy (CBT) is an evidence-based psychological therapy (EBPT) and a first-line treatment for anxiety and/or depression (National Institute for Health and Care Excellence, 2011). It has become more widely available in England since the roll-out of the Improving Access to Psychological Therapies (IAPT) initiative, and is endorsed throughout the UK.

The effectiveness of CBT is evidenced in randomised controlled trials (RCTs) (National Institute for Health and Care Excellence, 2004, 2005a, 2005b, 2009, 2011); the 'gold-standard' of research evidence informing the development of clinical guidelines. In RCTs, contextual factors hypothesised to influence outcome (for example therapist training or supervision) are tightly controlled or monitored to assure that clinical outcomes can be attributed to the therapeutic intervention.

Concrete specification of the competencies described in large-scale RCTs and underpinning clinical guidelines has been provided in the CBT competence framework (Roth and Pilling, 2008). The framework details the competencies, skills and activities required for effective CBT and enables commissioners and clinicians to specify and monitor the service delivered (Groom and

Delgadillo, 2012). Roth and Pilling, (2008) make the point that CBT competencies specified in the framework are not separable from the resources and infrastructure supporting delivery.

Pragmatic trials of real-world CBT

It is arguable that EBPTs are those which approximate the interventions delivered in RCTs (Groom and Delgadillo, 2012). However, real-world clinical practice is not subject to the same control or monitoring processes (Cook *et al.*, 2017). Pragmatic trials have explored the efficacy of CBT as delivered in routine services (e.g. Barkham *et al.*, 2021; Bisson *et al.*, submitted for publication), generally identifying lower efficacy of CBT than research trials. One plausible hypothesis for this reduced efficacy of CBT in the real world is reduced availability of resoures and infrastructure support for CBT. It is notable, for example, that pragmatic trials have offered additional training and supervision to participating therapists in order to demonstrate acceptable fidelity to the evidence-basd model (Barkham *et al.*, 2021; Bisson *et al.*, submitted for publication; Ehlers *et al.*, 2013).

The Job-Demands-Resources (JDR) model

Job resources are any workplace characteristics which (1) support staff in achieving their goals, (2) reduce the demands and costs associated with the work or (3) stimulate employee growth and development (Demerouti *et al.*, 2001). The Job-Demands-Resources (JDR) model provides a framework for understanding the link between job resources and a range of personal and organisational outcomes (Demerouti *et al.*, 2001). The authors theorise that an abundance of job resources stimulates engagement with work. Work engagement is predicted exclusively by job resources and can be defined as 'a positive, fulfilling, work-related state of mind characterized by vigor, dedication, and absorption' (Schaufeli *et al.*, 2002; p. 74). It is proposed to mediate a relationship between job resources and positive organisational outcomes (Schaufeli & Bakker, 2004a).

The model has been tested across several population samples, and a robust association ($r = 0.25$–0.40) established between job resources and work engagement (Schaufeli and Bakker, 2004a; Schaufeli and Taris, 2014). Engagement is predictive of employee outcomes such as (1) how employees feel about their workplace (Meyer and Allen, 1991), (2) whether they intend to leave, and (3) burnout (Boyd *et al.*, 2011; Hakanen *et al.*, 2008; Maslach, 1998; Schaufeli and Bakker, 2004a). Staff who are supported with more resources perform better at work and experience greater wellbeing (Nielsen *et al.*, 2017).

In the NHS, insufficient job resources are often cited as a key challenge (Quirk *et al.*, 2018) and are negatively related to all aspects of workplace wellbeing (Teoh *et al.*, 2020). Job resources are even more important when job demands are high (Bakker *et al.*, 2007).

Resources and infrastructure support for CBT

Associations between job demands and workplace wellbeing are of notable significance in IAPT services, where staff are subject to large caseloads and clinical complexity (Scott, 2018) and very high rates of burnout have been identified (Westwood *et al.*, 2017; NHS England, 2015). The IAPT initiative tripled the proportion of the English population accessing psychological therapies in under 10 years (Layard and Clark, 2015). The availability of resources and infrastructure can be difficult to ensure during rapid roll-out of large-scale service change, and the service delivered may not reflect the original intentions of service designers (Black *et al.*, 2018). For example, resource limitations have prompted some restrictions on delivery, such as limiting the course of therapy to an arbitrary number of sessions (Clark, 2018). Initial analyses

of IAPT outcome data indicate that organisational factors account for some variability in clinical outcomes between services (Clark, 2018).

The availability of resources and infrastructure supporting CBT practitioners may facilitate or inhibit the delivery of an evidence-based intervention. Key resources supporting CBT practitioners are exemplified within key RCTs and model-specific treatment protocols. For example, the treatment of social phobia requires access to recording equipment (Clark *et al.*, 2005) and the treatment of PTSD may require access to the internet (Murray *et al.*, 2015). Other protocols require some flexibility in service provision, in order to facilitate increased frequency or duration of sessions (Beck *et al.*, 1979) or work outside the clinic (Ehlers and Clark, 2000). Therapists delivering CBT in high-quality RCTs will receive dedicated training as well as regular, high-quality, model-specific clinical supervision (Roth *et al.*, 2010).

In conclusion, although CBT has become more widely available across the UK, it is not clear whether resources supporting the delivery of CBT in line with the evidence base have been widely incorporated into service delivery models. A means to measure and evaluate service infrastructure and resources for CBT is required to explore their availability and relationship with organisational outcomes.

Measuring service support for CBT

Groom and Delgadillo (2012) reviewed key guidelines supporting practice in IAPT services including (1) exemplar RCTs (Roth *et al.*, 2010), (2) the IAPT competency framework (Department of Health, 2007; Roth and Pilling, 2008) and (3) the BABCP standards of conduct, performance and ethics (British Association for Behavioural and Cognitive Psychotherapies, 2010) and idenified resouces or supports which were (1) reccomended within the IAPT competency framework, (2) available to therapists within exemplar RCTs or (3) required in order to adhere to the BABCP standards of conduct, performance or ethics.

As a result of this process, Groom and Delgadillo (2012) developed a detailed and concrete description of key support factors which facilitate the competent delivery of CBT. Twenty-three support factors were identified, which were grouped thematically under seven standards and adapted into a questionnaire. This questionnaire has been piloted in one service (Groom and Delgadillo, 2012) and used to benchmark support for the delivery of CBT in another (Hadden *et al.*, 2018).

Aims

This study aims to establish the psychometric properties of the questionnaire developed by Groom and Delgadillo (2012) to determine whether this is a reliable and valid measure of service support for CBT. In the absence of a 'gold-standard' measure to establish criterion validity, the study aims to establish construct validity through correlation with measures of engagement and wellbeing among practitioners in line with the JDR model (Demerouti *et al.*, 2001; Schaufeli and Bakker, 2004a).

Hypotheses

This study is split into two stages: (1) an evaluation of content validity and (2) psychometric evaluation. In Stage 1 it is hypothesised that:

- Consensus feedback from the expert panel may result in adaptations to improve the content relevance and representativeness of the questionnaire.
- The content validity of the questionnaire will be evidenced by content validity index (CVI) and content validity ratio (CVR) scores above established thresholds (Davis, 1992; Wilson *et al.*, 2012).

In Stage 2 it is hypothesised that:

- Principal component analysis (PCA) will identify one or more components with an eigenvalue of above 1.
- A PCA will reduce the number of items required within the measure.
- The questionnaire will demonstrate internal consistency, as measured by Cronbach's alpha.
- The questionnaire will demonstrate good temporal stability as indicated by a positive correlation between administration at time 1 and time 2 (7–14 days later).
- The questionnaire will demonstrate construct validity through positive correlations with the following scales:
  a. The Utrecht Work Engagement Scale.
  b. The Psychological Practitioner Workplace Wellbeing Scale.

Method

The study was conducted in two stages. In Stage 1 content validity was explored through consultation with an expert panel ($n = 5$) and feedback from BABCP-accredited practitioners ($n = 20$). In Stage 2, the questionnaire was distributed more widely for psychometric evaluation ($n = 188$).

Stage 1: Expert panel
Sample
An initial expert panel of five BABCP-accredited practitioners involved in teaching and training CBT were consulted ($N = 5$) and a further 15 BABCP-accredited practitioners reviewed the questionnaire online using the content validity survey.

Measures
Respondents were asked to rate each item according to relevance (1, not relevant; 2, somewhat relevant; 3, quite relevant; 4, very relevant) and necessity (1, not essential; 2, useful but not essential; 3, essential) in measuring service resource and infrastructure support for CBT. These ratings were used to calculate the Item and Scale Level Content Validity Indices (I-CVI/S-CVI) and CVR using approaches described in the literature (Rodrigues *et al.*, 2017; Zamanzadeh *et al.*, 2015):

- I-CVI = the number of 'very relevant' ratings divided by the number of experts.
- S-CVI = the mean average of I-CVI scores.
- CVR = (Ne – $n/2$)/$N/2$).

Procedure
The expert panel were introduced to the questionnaire and its domain of measurement, and were asked to rate each item according to its relevance and essentiality to the construct in question (service infrastructure and resource support for the delivery of CBT). The panel members were invited to comment on individual items within the questionnaire and discuss any aspects of the construct that were not captured by existing items (DeVellis, 2016). Following the consultation, adaptations were made to the questionnaire (see Results section) and it was distributed to a further 15 BABCP-accredited practitioners for online review of item relevance and essentiality to the construct.

Stage 2: Psychometric evaluation

Sample

Health professionals delivering CBT were invited to participate online. Participants were excluded if they did not work as part of an organisation.

Sample size

For correlational analyses, a sample size of 84 is required to detect a small–moderate effect (0.3), and a sample size of 191 is required to detect a small effect (0.2; Cohen, 1988). These estimations were calculated using GPower (Faul *et al.*, 2007). The suitability of PCA is dependent on the strength of the relationships between items and whether factors are well determined (Tabachnick *et al.*, 2007). In line with previous research, this study aimed to recruit 230 participants, at a participant to item ratio of 10:1.

Recruitment

The study was advertised online on Facebook groups for clinical psychologists and CBT therapists; by email to staff and current and past students from CBT and Clinical Psychology Training Programmes at Cardiff University and other academic programmes; to CBT therapists whose details are public on the BABCP Register; and to CBT therapists delivering face-to-face CBT as part of a research trial (RAPID trial: Nollett *et al.*, 2018). Qualified and trainee therapists were invited to participate. Trainee therapists were NHS staff; they make a significant contribution to service structure across a range of settings and their recent knowledge of treatment protocols and guidelines make them well placed to identify gaps in service support.

Measures

a. Demographic and Training Questionnaire. Participants were asked about their age, gender, profession, service context, training and occupation.

b. CBT infrastructure and support questionnaire (Groom and Delgadillo, 2012). The original questionnaire contained 23 items measuring resource and infrastructure support for CBT, organised under seven standards.

c. Utrecht Work Engagement Scale (UWES; Schaufeli and Bakker, 2004b). The UWES is a 17-item measure of work engagement (Schaufeli *et al.*, 2002) which measures three dimensions of engagement: dedication, vigour and absorption. The internal consistency of subscales (over 0.8) and the composite scores is good (over 0.9) (Schaufeli, 2012). The UWES demonstrates discriminant validity through a negative relationship with burnout (Schaufeli and Bakker, 2004b; Schaufeli *et al.*, 2002). The authors endorse a three-factor structure (Schaufeli, 2012), yet high inter-correlations between factors have prompted others to use the total score as a composite measure of engagement (Christian and Slaughter, 2007).

d. Pd. sychological Practitioner Workplace Wellbeing Measure (PPWWM) (Summers et al., 2019). The PPWWM is a 26-item measure of the wellbeing of psychological practitioners specifically. It has demonstrated good construct validity through a positive relationship with the Satisfaction with Life Scale and negative relationship with the General Health Questionnaire. It has also demonstrated high internal consistency ($\alpha = .92$) and high temporal stability ($r = .94$) (Summers *et al.*, 2019).

Incentives

Participants were offered the chance to win £100 of vouchers for taking part.

Data collection and storage

Data were collected using Qualtrics, secure online survey software. Participants provided their email addresses for the purpose of follow-up contact and generated their own ID code. Identifiable information was held separately from the data and deleted after the study was completed. Questionnaire items were mostly administered in a 'forced-response' setting to minimise missing data.

Data analysis strategy

The analysis was conducted in two stages. In Stage 1, amendments were made to the questionnaire following expert review. Content validity scores were then calculated based on ratings provided by the expert panel and BABCP-accredited practitioners ($N = 20$). In Stage 2, the psychometric properties of the measure were established through analysis of questionnaire data provided by practitioners delivering CBT ($N = 188$). This stage consisted of an analysis of demographic variables and item analysis before a PCA was conducted in order to establish the underlying structure of the questionnaire. As a result of the PCA, items were removed from the questionnaire. Measures of reliability and validity were taken for the revised questionnaire.

PCA and exploratory factor analytic (EFA) procedures are commonly used in the initial stages of questionnaire validation (Tabachnick *et al.*, 2007). PCA differs from EFA in that it does not assume that underlying factors cause the scores on individual items, and was deemed appropriate to validate an index.

A PCA with orthogonal rotation (Varimax) was conducted to determine the component structure of the measure. Pearson correlations are frequently used within PCAs and factor analyses of ordinal or Likert-scale data (LaVeist *et al.*, 2009; Summers *et al.*, 2019) although some argue that PCAs on ordinal data (or in data which are skewed or have strong kurtosis) should be conducted using polychoric correlations (Baglin, 2014; Basto and Pereira, 2012). For the purposes of this study, PCAs were conducted based on both Pearson and polychoric correlations, derived using a combination of SPSS and FACTOR programmes: SPSS (IBM Corporation, 2015) and FACTOR (Lorenzo-Seva and Ferrando, 2006). Both analyses were conducted to establish confidence in the resulting component structure.

Results

Stage 1: Expert review

Amendments

Following consultation with a panel of experts, minor amendments were made to the questionnaire, including adding 'don't know' options to four items (1a, 4b, 5d, 5e). The wording of item 2b was clarified to indicate that 'bi-weekly' means 'twice-weekly'. Two additional questions were added under standard 2:

> 2c. Does your service allow for an extended number of sessions if required, in line with NICE guidance?
> 2d. Does your service allow for you to see a client in 6–8 months time for a 'booster' session, in line with NICE guidance?

These amendments were made prior to online distribution.

Table 1. Participant demographic characteristics

Variable		*N*	Percentage
Gender (*N* = 188)	Male	48	25.5
	Female	140	74.5
Age (*N* = 188)	Mean 38.79 (*SD* 10.91)		
Location (*N* = 188)	Wales	98	51.6
	England	84	44.7
	Scotland	6	3.2
Profession	Clinical psychologist	40	21.3
	Counselling psychologist	2	1.1
	High intensity therapist/CBT therapist	55	29.3
	Nurse	23	12.2
	Occupational therapist	4	2.1
	Psychological wellbeing practitioner	3	1.6
	Trainee clinical psychologist	50	26.6
	Medical doctor	2	1.1
	Social worker	1	0.5
	Trainee high intensity therapist	2	1.1
	Other	5	2.7
Training programme	DClinPsy	50	26.6
	CBT certificate	10	5.3
	CBT diploma/HI training	13	6.9
	Other	5	2.7
	Not applicable	110	58.5
BABCP-accredited practitioners	Yes	65	34.6
	No	123	65.4
CBT PG training	Yes	102	54.3
	No	86	45.7
Service type	Third sector, education or private	6	3.2
	Older adult mental health	9	4.8
	Learning disability	3	1.6
	CAMHS or children's services	22	11.7
	Adult mental health – primary care	53	28.2
	Adult mental health – specialist services	55	29.3
	Adult mental health – community mental health team	29	15.4
	Missing data	11	5.9

Stage 2: Psychometric evaluation

In total, 325 individuals accessed the survey and consented to participate. An initial screening question re-directed 58 participants from the questionnaire, because they indicated they did not work as part of an organisation. Participants who failed to complete the main support questionnaire were removed from analysis (*N* = 78). One hundred and eighty-eight participants were included in the final sample. Using GPower (Faul *et al.*, 2007) it is calculated that the sample achieved a power of 0.79 to detect a correlation of 0.2, with the alpha value set at 0.05.

Participant characteristics

Demographic information is contained in Table 1.

Demographic variables

In order to determine whether participant characteristics might contribute to variation in the questionnaire's scores, Kendall's tau-b (τ_b), eta and one-way ANOVA analyses were carried out. A τ_b test indicated that there was no significant association between participant age and scale score ($\tau_b = 0.054$, $p = .28$). Eta analyses and one-way ANOVAs indicated that there was no significant association between any nominal characteristic (e.g. gender, service type,

Table 2. Item analysis

	'Don't know' responses (N=188)	Mean (N = 129)	SD (N = 129)	Corrected item-total correlation	Cronbach's alpha if item deleted
1a	12 (6.4)	1.62	0.64	0.35	0.80
1b	n/a	1.53	0.64	0.32	0.80
1c	n/a	1.56	0.67	0.16	0.80
2a	n/a	1.65	0.58	0.28	0.80
2b	n/a	1.31	0.81	0.33	0.80
2c	n/a	1.74	0.55	0.25	0.80
2d	n/a	1.02	0.87	0.22	0.80
3a	n/a	0.84	0.90	0.44	0.79
4a	n/a	0.95	0.92	0.51	0.79
4b	9 (4.8)	1.58	0.73	0.50	0.79
4c	n/a	1.41	0.78	0.59	0.78
4d	n/a	0.95	0.79	0.44	0.79
5a	n/a	1.66	0.55	0.54	0.79
5b	n/a	1.71	0.60	0.39	0.79
5c	n/a	1.72	0.52	0.35	0.80
5d	14 (7.4)	1.21	0.96	0.25	0.80
5e	44 (23.4)	0.74	0.95	0.11	0.81
6a	n/a	1.22	0.82	0.39	0.79
6b	n/a	1.39	0.82	0.30	0.80
6c	n/a	0.90	0.85	0.31	0.80
6d	n/a	1.47	0.71	0.38	0.79
7a	n/a	1.75	0.48	0.24	0.80
7b	n/a	1.59	0.63	0.20	0.80
7c	n/a	1.64	0.57	0.28	0.80
7d	n/a	1.46	0.68	0.40	0.79

country, profession, enrolment on training programme, BABCP accreditation) and questionnaire score. The only item to approach a standard threshold ($\alpha = 0.05$) for statistical significance in a one-way ANOVA was BABCP accreditation status. However, a Bonferroni correction was made to account for multiple comparisons ($\alpha = 0.05 \div 8 = 0.006$) and as a result BABCP accreditation status (accredited or not accredited) was not found to account for variation in questionnaire scores. A table of these scores is available on request.

Item analysis

Overall scale scores ranged from 6 to 40 (range 34). The median, mode and mean scores were as follows: 29, 33 and 29, with a standard deviation of 6.38.

Table 2 provides further information about individual items. The item-total correlations (correlations between each item and the total score excluding that item) were low to moderate, ranging from .107 (5e) to .594 (4c). Two items scored below 0.2 (5e and 1c), five under 0.3 (2a, 2c, 6b, 7b, 7c) and three items scored above 0.5 (4c, 5a 4a). Item mean and standard deviation (*SD*) scores were evaluated. All item responses ranged from 0 to 2. Floor and ceiling effects may be indicated by scores below 1 or above 2 with small *SD*s. Only four items had means under 1 (3a, 4a, 5e, 6c) with the lowest at 0.744 (5e) and a minimum *SD* of 0.84.

A review of the Pearson inter-item correlation matrix indicated that four items (1c, 2d, 5d, 6c) did not correlate with any other item ($R < 0.3$) although one of these (6c) had an item-total correlation of above 0.3. A further review of a polychoric correlation matrix confirmed low inter-item correlations among these items, except for 1c. Polychoric correlations are described further in the next section. Three items were removed from further analysis (2d, 5d, 5e) due to low inter-item and item-total correlations.

Table 3. Table of total variance

Component	Initial eigenvalues			Extraction sums of squared loadings			Rotation sums of squared loadings		
	Total	% Variance	% Cumulative	Total	% Variance	% Cumulative	Total	% Variance	% Cumulative
1	4.38	19.89	19.89	4.38	19.89	19.89	2.51	11.40	11.40
2	2.00	9.11	28.99	2.00	9.11	28.99	2.26	10.27	21.67
3	1.80	8.17	37.16	1.80	8.17	37.16	2.06	9.35	31.02
4	1.63	7.39	44.55	1.63	7.39	44.55	1.91	8.67	39.68
5	1.39	6.33	50.88	1.39	6.33	50.88	1.87	8.50	48.19
6	1.25	5.69	56.57	1.25	5.69	56.57	1.85	8.39	56.57

Principal components analysis

A PCA with orthogonal rotation (Varimax) was conducted using both Pearson and polychoric correlations. Initial assessment of the polychoric correlation matrix indicated that these data did not meet the assumption of sampling adequacy required for further interpretation. Results based on Pearson correlations are therefore reported here, and the polychoric results are available on request.

A PCA relies on assumptions of sampling adequacy and the suitability of the data for reduction. The Kaiser–Meyer–Olkin (KMO) statistic indicated satisfactory sampling (0.724) (Kaiser and Rice, 1974). All individual items had a KMO score of above .602, surpassing the minimum threshold of 0.5 (Kaiser and Rice, 1974). Bartlett's test of sphericity ($p = 0.00$) indicated that the data were suitable for data reduction, and the determinant indicated (0.003) that the data were not affected by multicollinearity.

The PCA was conducted on 22 items. 'Don't know' responses comprised 0.53% of the recorded values (21 responses across two items: 1a and 4b). These responses were subject to a pairwise deletion process to minimise the impact on statistical power (Van Ginkel *et al.*, 2014).

The rotation method was selected following preliminary analyses using orthogonal (Varimax) and oblique (Direct Oblim) methods (Field, 2018). Inspection of the component correlation matrix following oblique rotation demonstrated negligible correlations between components, indicating that an orthogonal rotation method would be suitable (Pedhazur and Schmelkin, 1991).

A PCA using varimax rotation generated six components explaining 58.32% of the variance (Table 3). The scree plot (Cattell, 1966) and Kaiser's criterion (Kaiser, 1970) can be consulted when choosing the number of factors to extract. However, a review of scree plots is reliable only for samples above 200 (Stevens, 2002) therefore in this study the Kaiser criterion was applied. The residuals matrix indicated that the rotated matrix was an adequate fit, with 32% of non-redundant residuals greater than 0.05.

Factor structure and loadings

The rotated factor matrix can be seen in Table 4. Field (2018) recommends that items with loadings of below 0.4 should not be interpreted (Field, 2018). Only two items scored below 0.4 (6c and 6d). Item 6d only scored on one component and as a result, was not retained in the component structure. Item 6c loaded on two factors, and therefore only the loading above 0.4, in component 6, was interpreted. The resulting scale therefore consists of six components, and 21 items.

The components were summarised thematically in the following categories:

(1) Access to physical resources;
(2) Suitability of the clinical environment;
(3) Clinical supervision;

Table 4. Rotated factor matrix

Items	Components					
	1	2	3	4	5	6
3a. In practice, do you have access to video **recording** and video **play back** for use in your clinic room (or other suitable, accessible and appropriate clinical environment)? (Note: if you are using your personal equipment, answer NO and explain this in notes)	.84					
4a. In practice, do you have access to video/audio play back equipment for use as part of supervision and/or clinical self- reflection? (Note: if you are using your personal equipment, answer YES and explain this in notes)	.80					
4b. Are protocols and permissions in place to enable the recording of clinical sessions?	.66					
4c. Do you have access to a suitable environment for listening/watching recordings of clinical sessions?	.56					
1c. In practice, can you access the internet to use resources such as YouTube and other publicly available material as and when required by the treatment protocol?	.43					
7b. *Safety*: Is the clinic room that you use set out in such a way that reasonably ensures the safety of therapist and client? (e.g. consider emergency exit, availability of panic alarms, any safeguards or procedures to deal with violent incidents, etc.)		.77				
7d. Is the clinic room that you use 'fit for purpose' as described above? (e.g. consider fittings, furniture, equipment, etc.)		.75				
7c. *Accessibility*: Does the clinic room that you use allow for safe and appropriate treatment?		.74				
7a. *Confidentiality*: Does the clinic room that you use allow communication to remain confidential?		.58				
5a. Is the *type* of supervision you receive adequate for you to deliver treatment which closely approximates that of the RCTs in the NICE guidance?			.83			
5b. Is the *quantity* (e.g. frequency, duration, enough time to discuss your own cases if supervision is in a group) of your supervision sufficient for you to deliver treatment which closely approximates that of the RCTs in the NICE guidance?			.75			
5c. Are the *knowledge, skills and experience* of the supervisor well matched to the type of treatment protocols you use?			.73			
2a. In practice, are you able to offer extended sessions of up to 90 minutes when appropriate?				.70		
2b. In practice, are you able to offer bi-weekly appointments when appropriate?				.68		
4d. Is your allocated admin time sufficient to review audio or video material for the purpose of reflection and/or preparation for supervision? (Note: 'admin time' refers to non face-to-face therapy activity, for example designated time to review notes, write reports, prepare for sessions, etc.)				.58		
2c. Does your service allow for an extended number of sessions if required, in line with NICE guidance?				.56		
6b. Is the PDP monitored and supported in line with trust wide standards? (e.g. one appraisal per year and 6 monthly reviews)					.84	
6a. Do you have a Professional Development Plan (PDP) in place which sufficiently identifies CBT specific training priorities for yourself and places these in the context of CBT training needs for the service?					.82	
6c. Does the service have a clear policy specifying an allocation of time and resource to spend on CPD activity per week or per month?				.31	.49	
1b. In practice, are you able to treat clients outside of the clinic as and when required by the treatment protocol?						.82
1a. Are protocols and permissions in place to enable you to assess and treat patients outside of the clinic? (e.g. lone working policy, risk management protocol).						.82
6d. Bearing in mind practical and realistic limitations on training budgets, have you received adequate training to deliver treatment which closely approximates that of the RCTs in the NICE guidance?						.37

(4) Time to offer flexible sessions and prepare;
(5) Protocols for working outside the clinic;
(6) Professional development.

Table 5. Cronbach's alpha for each component

Component	Cronbach's alpha
Access to physical resources	0.736
Suitability of the clinical environment	0.712
Clinical supervision	0.732
Time to offer flexible sessions and prepare	0.588
Protocols for working outside the clinic	0.623
Professional development	0.630

Reliability and validity

Content validity ratings

A further 15 BABCP-accredited practitioners completed content validity ratings. CVI and CVR scores range between 1 and –1, with higher scores indicating greater agreement between raters as to the essentiality (CVR) or relevance (CVI) of an item. The critical values table of Wilson *et al.* (2012) was consulted in order to determine whether agreement on the essentiality of an item (CVR value) was great enough to exceed chance (Lawshe, 1975). For CVI scores, Davis (1992) recommends that agreement should surpass 0.8. Further to this, items scoring between 0.7 and 0.79 were considered to require revision, and items below 0.7 were considered for elimination (Zamanzadeh *et al.*, 2015).

According to these standards, agreement among raters as to how essential eight items were to the construct did not exceed chance (2d, 3a, 4a, 4c, 5d, 5e, 6b, 6c). All items met Davis's (1992) criteria for relevance, except for 5e, which had a borderline value. The full scale CVI was 0.92, indicating a high level of agreement that items were relevant for measuring resource and infrastructure support for the delivery of CBT. A full table of values is available on request.

Internal consistency

The scale demonstrated good overall internal consistency with Cronbach's alpha score of 0.801 across 21 items. Table 5 summarises Cronbach's alpha for each component.

Temporal stability

A Spearman's rho correlation indicated that the measure had adequate temporal stability when participants were re-contacted 7–14 days later ($r_{96} = .735$, $p < .00$). A paired samples *t*-test confirmed that there was no significant difference between the initial scores and those collected 7–14 days later ($t_{95} = 1.12$, $p = .27$).

Construct validity

On average, the sample ($N = 181$) scored 3.9 (*SD* 0.59) on the UWES out of a possible score of 6, and 98.26 (*SD* 13.49) on the PPWWM ($N = 176$) out of a possible score of 130. These mean scores are slightly higher than the mean values reported within normative datasets (UWES mean 3.82; *SD* 1.09) and published papers (PPWWM mean 93.47; *SD* 17.67) (Schaufeli and Bakker, 2004b; Summers *et al.*, 2019).

Spearman's rho correlations indicated a significant positive relationship between total support questionnaire scores and engagement (UWES) ($r_{161} = .307$, $p < .00$) and between total support questionnaire scores and practitioner wellbeing (PPWWM) ($r_{156} = .472$, $p < .00$). There was a moderate positive correlation between scores on the UWES and the PPWWM ($r_{176} = .459$, $p < .00$).

Discussion

This study aimed to determine the psychometric properties of a measure of service infrastructure and resource support for CBT. The properties of this measure were explored through consulting experts in the field and piloting the measure with CBT practitioners. This resulted in a shortened scale with good content validity. The measure demonstrated construct validity through positive correlations with a measure of engagement and psychological practitioner wellbeing. It also demonstrated good internal consistency and adequate temporal stability. The questionnaire provides a basis from which service infrastructure and support for CBT can be evaluated, audited and compared.

Strengths and limitations

This study took an existing measure and subjected it to rigorous evaluation resulting in a short, clear measure of resource and infrastructure support for the delivery of CBT. The 21-item measure consists of six thematically distinct components identified through PCA. An expert panel were consulted to ensure that the domain of measurement was fully represented by the items. The measure was piloted with CBT practitioners from a wide range of professional backgrounds working in diverse settings and in the absence of a 'gold-standard' the study capitalised on a model developed within the field of organisational psychology.

The study recruited 188 participants, short of the recruitment target of 230. According to the KMO (Kaiser and Rice, 1974) measure of sampling adequacy, this sample was sufficient and is consistent with most EFA or PCA studies, which are conducted with participant-to-item ratios of 10:1 or lower (Costello and Osborne, 2005). A larger sample would, however, strengthen confidence in component loadings.

Over half the sample worked in Wales where there are fewer BABCP-accredited practitioners (British Association for Behavioural and Cognitive Psychotherapies, n.d.). and analysis of demographic characteristics indicated that BABCP accreditation status among participants was the only demographic factor to significantly influence scale scores (when $\alpha < 0.05$). However, to compensate for multiple comparisons, the Bonferroni correction was applied and as a result, these differences were considered insignificant.

A quarter of participants were trainees whose perceptions of the resources and supports available to them may be influenced by the extra support afforded by their training programmes and/or limited availability of resources for temporary members of staff. However, trainee participants worked across diverse geographical locations in a range of services and arguably their presence in the study is reflective of service structure.

Job-Demands-Resources model

Findings are consistent with the JDR model (Schaufeli and Bakker, 2004a) and extend the application of the model to CBT practitioners. Resource and infrastructure support for CBT was found to predict work engagement among CBT therapists. Previous studies testing the JDR model have looked at the association between latent, unobservable job resources, such as job control or supervisor support with work engagement (Bakker *et al.*, 2007). The current study demonstrates that physical resources and infrastructure which facilitate the delivery of CBT are also associated with engagement.

The relationship between job resources and workplace wellbeing has been demonstrated consistently across different professions and workplaces (Nielsen *et al.*, 2017) including NHS doctors (Teoh *et al.*, 2020) and mental health professionals (Scanlan and Still, 2019). This study is the first to specifically describe a relationship between job resources and the wellbeing of psychological practitioners. According to the JDR model, high job demands predict poor

health and wellbeing through increasing the likelihood of burnout (Schaufeli and Bakker, 2004a). Job resources may therefore minimise the impact of job demands on health and wellbeing of psychological practitioners, through buffering against burnout (Bakker *et al*., 2007). In contrast, the likelihood of burnout is increased when job demands are high and resources are low (Schaufeli *et al*., 2009).

Work engagement, psychological wellbeing and organisational outcomes

The United Kingdom's four nations have adopted different organisational frameworks for the delivery of psychological therapies. The IAPT initiative in England is notable for adopting a centralised approach to the provision of psychological therapies and routine publication of clinical outcome data (Clark, 2018). Early investigations into the health and wellbeing of staff in IAPT services are consistent with the JDR model: practitioners are subject to high job demands, including organisational targets, large caseloads, and complex client presentations (Scott, 2018), and can experience high levels of burnout and emotional exhaustion (Steel *et al*., 2015; Westwood *et al*., 2017). Practitioners cite organisational support as a key factor in their experience of stress and burnout including quality and frequency of supervision, time for reflection and learning/training (Scott, 2018).

The JDR model proposes that job resources stimulate positive organisational outcomes through boosting engagement. Employees who are more engaged perform better at work and are less likely to consider leaving (Schaufeli and Bakker, 2004a). This is significant for IAPT services, which have reported high rates of turnover (Scott, 2018; NHS England, 2015). In healthcare settings, organisational performance is reflected in the quality and safety of patient care. Associations between work engagement and organisational performance have been demonstrated in NHS settings: The King's Fund found that work engagement is associated with greater patient satisfaction, improved patient safety and reduced mortality (West and Dawson, 2002).

In summary, these findings confirm the construct validity of the questionnaire and confirm that resource infrastructure and support for CBT increases work engagement and psychological wellbeing among CBT practitioners. According to the JDR model, job resources may boost organisational outcomes and protect against staff burnout. This study suggests that job resources should be a core concern in services in which demands on staff are often high and primary outcomes are those of patient safety and quality of care.

Implications for practice and further research

This study has evidenced the validity and reliability of an index for measuring service support for CBT. Future studies may wish to replicate and extend this validation process with larger samples of CBT practitioners working across the UK. The results are consistent with the JDR model and indicate that resources and infrastructure supporting CBT therapists boost engagement with work and work-related wellbeing. This is especially important as services have moved online due to the pandemic. Future research could test the JDR model further by assessing whether job resources are predictive of wider organisational outcomes, such as turnover intention and performance at work, and whether service support for CBT predicts therapist competence and improved patient outcomes.

Author Contributions. Ffion Evans: Conceptualization (equal), Data curation (equal), Formal analysis (equal), Investigation (equal), Methodology (equal), Project administration (equal), Writing – original draft (equal), Writing – review & editing

(equal); **Helen Penny:** Writing – review & editing (equal); **Louise Waddington:** Conceptualization (equal), Supervision (equal), Writing – review & editing (equal).

Conflicts of interest. Louise Waddington is a Trustee on the Board of the BABCP.

Ethics statements. The ethical principles of psychologists and Code of Conduct as set out by the BABCP and British Psychological Society (2018) were followed. Ethical approval was sought from the Cardiff University School of Psychology Ethics Committee (EC.19.09.10.5689A) to recruit therapists via the BABCP register, Facebook and Universities. NHS ethical approval was obtained to contact therapists on the RAPID trial (IRAS reference: 216979).

Data availability statement. Data are available on request from the authors.

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