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Following up internet-delivered cognitive behaviour therapy (CBT): A longitudinal qualitative investigation of clients' usage of CBT skills

Nora Eilert[1,2] | Ladislav Timulak[1] | Daniel Duffy[1,2] | Caroline Earley[1,2] |
Angel Enrique[1,2] | Polly Kennedy[1] | Clare McCormack[1] | Jorge Palacios[1,2] |
Rebecca Wogan[2] | Derek Richards[1,2]

[1]E-mental Health Group, School of Psychology, University of Dublin, Trinity College Dublin, Dublin, Ireland

[2]Clinical Research & Innovation, SilverCloud Health, Dublin, Ireland

Correspondence
Dr Nora Eilert, E-mental Health Group, School of Psychology, University of Dublin, Trinity College Dublin, Aras an Phiarsaigh, Dublin, Ireland.
Email: neilert@tcd.ie

Abstract

Background: While the acquisition and application of Cognitive Behaviour Therapy (CBT) skills is a core component and likely mechanism of effect maintenance in all CBT-based treatments, the extent of post-therapeutic CBT skills usage among internet-delivered CBT (iCBT) clients remains under-researched.

Method: Nested within a pragmatic randomized controlled trial, 241 participants received an 8-week supported iCBT intervention for anxiety and/or depression and answered open-ended questions about their use and experience of CBT skills at 3-, 6-, 9-, and 12-month follow-up. Recurrent, cross-sectional qualitative analysis following the descriptive and interpretive approach was used to create a taxonomy, through which all qualitative data was coded.

Results: In total, 479 qualitative responses across 181 participants were analysed. Participants reported using a wide range of CBT skills and associated helpful and hindering experiences and impacts. The reasons for discontinued CBT skills usage were diverse, ranging from rare adverse effects to healthy adaptation.

Conclusion: The study shows how clients receiving iCBT in routine care learn CBT skills during treatment and utilize them in productive ways post-treatment. Findings coincide with similar research in face-to-face CBT and may inform future research to drive innovation and iCBT intervention development.

KEYWORDS
cognitive behaviour therapy, digital interventions, follow-up studies, qualitative methods, therapeutic processes, treatment outcomes

1 | INTRODUCTION

Cognitive Behaviour Therapy (CBT) today may be considered an umbrella term for a large variety of evidence-based psychological interventions, principally uniting behavioural and cognitive approaches, and in recent years also acceptance and mindfulness-based approaches under its wings. The common goal across CBTs is a behavioural adaptation, which is achieved through the implementation of specific evidence-based techniques and strategies (sometimes referred to as CBT skills) designed to drive universal change principles like context engagement and attention and cognitive changes (Hayes & Hofmann, 2018; Mennin et al., 2013). CBTs of differing complexity and length have been developed, and research confirms their effectiveness for various psychological issues across a broad range of symptomology (e.g., Forman et al., 2007; D. A. Richards et al., 2016; Wiles et al., 2013).

While sharing a common goal and hypothesizing similar mechanisms of change (Mennin et al., 2013), the particular evidence-based techniques and strategies implemented in CBT now stretch from behavioural techniques like activity scheduling and exposure (Foa & Kozak, 1986; Lewinsohn & Graf, 1973) and cognitive techniques like cognitive restructuring and distancing (Beck & Clark, 1997; Zettle & Hayes, 1988) to also include problem solving, distress tolerance and other practical coping skills (D'Zurilla & Nezu, 2007; Linehan, 2013) as well as relaxation, mindfulness and acceptance-focused techniques (Manzoni et al., 2008; Masedo & Rosa Esteve, 2007). The degree to which these and other CBT techniques or skills are evident in a given treatment may differ depending on its focus, mode of delivery and length; however, irrespective of the specific techniques introduced by the treatment, the independent application of these techniques by clients during treatment as well as after treatment has ended represents a core component of all CBT-based interventions (Hayes & Hofmann, 2018; Hundt et al., 2013).

While much remains unknown about the mechanisms of change that account for the positive effects of CBT, it has been argued that in fact the acquisition, use and practice of evidence-based CBT techniques and strategies (referred to as CBT skills from here on) plays a mediating role in how initial change occurs as well as in how this change is maintained into follow-up (Hollon et al., 2006; Strunk et al., 2013). Available research has predominately investigated the relationship between CBT skills usage and symptom alleviation during treatment, finding various forms of CBT skills usage to be related to depression and anxiety symptom outcomes of varying levels of severity, in adults and adolescents, receiving individual CBT, group-based CBT or internet-delivered CBT (Hawley et al., 2017; Terides et al., 2018; Webb et al., 2016, 2019).

Little is known about how CBT effects are maintained after active treatment ends. Here, some have suggested that the change that occurs during treatment (e.g., reductions in cognitive reactivity and internalizations of therapists; Knox, 2003; Segal et al., 1999) permanently affects clinical outcomes, while others highlight the role of compensatory skills (e.g., CBT skills) to address fluctuations in clinical outcomes (Hollon et al., 2006). CBT skill acquisition and

> **Key Practitioner Message**
> - Routine care clients learn CBT skills during iCBT and utilize them afterwards.
> - A wide range of cognitive and behavioural skills were used after treatment had ended.
> - Skills usage resulted in helpful impacts such as reduced symptoms and coping.
> - Reasons for ceased skills usage spanned from adverse effects to healthy adaptation.

performance during active treatment, as well as ongoing CBT skills practice after it has ended, have been shown to relate to lower relapse rates and better depression outcomes during follow-up (Michalak et al., 2008; Morgan et al., 2014; Powers et al., 2008; Strunk et al., 2013). Similarly, there is some preliminary research suggesting the same might be true for anxiety outcomes (Kim et al., 2008). Furthermore, a number of qualitative studies complement these findings, showing that many CBT completers perceive CBT skills as helpful and continue to apply them after therapy has ended. More importantly though, these studies also highlight perceived barriers to CBT skills usage as well as the fact that CBT skills usage may occur in idiosyncratic and implicit ways as individuals adapt, change and integrate skills into their daily lives (e.g., French et al., 2017; Glasman et al., 2004).

Taken together, the available research is only beginning to paint a full picture of the curative and preventative, clinical and client-defined effects CBT skills may have. Especially, little is known about the degree to which the ever-growing number of clients receiving internet-delivered CBT (iCBT) around the world acquire CBT skills during treatment and practice them after their mostly short-term, minimally supported active treatments have ended (Folker et al., 2018; Titov et al., 2018). While to our knowledge two studies have shown CBT skills usage during iCBT to be related to post-treatment clinical outcomes to date (Forand et al., 2018; Terides et al., 2018), only a limited number of qualitative studies have touched on post-therapeutic CBT skills usage after iCBT (Berg et al., 2020; Halmetoja et al., 2014).

Halmetoja et al. (2014) qualitatively followed-up a cohort of participants who had received iCBT for Social Anxiety Disorder 4 years after treatment had ended and discovered that at least some had continued working with the material covered during their iCBT programme. Some participants had, for example, set themselves exercises based on their treatment or searched for new related content—in other words had used CBT skills. Moreover, the authors found that participants who adopted this active approach in caring for their own mental health also reported better anxiety outcomes throughout follow-up. Similarly, Berg et al. (2020) described distinct differences between those who actively applied therapeutic learning post-treatment and those who were more passive in their approach based on their qualitative interviews with adolescent iCBT completers

6-month post-treatment. Overall, the authors concluded that their participants had gained important knowledge during iCBT but that the degree to which this knowledge was concrete, explicit and actively implemented varied—in a way positioning therapeutic leaning along a continuum that ranges from general knowledge gain to productive use of CBT skills.

Previous quantitative research has highlighted iCBT's potential for long-term clinical effects (Buntrock et al., 2016; Fogliati et al., 2016; Ruwaard et al., 2010); however, regarding post-therapeutic CBT skills usage as a possible mechanism of effect maintenance, both of the aforementioned studies present with a number of limitations. Both utilized rather small and selective samples, in that only 10 to 12 participants were recruited from studies, which themselves had recruited participants via social media and other advertisements rather than from routine care services. In addition, while Berg et al. (2020) followed-up participants soon after iCBT had ended, in Halmetoja et al.'s (2014) case, there were many years between treatment and follow-up, with neither study capturing how CBT skills usage evolves over time. Therefore, exploring CBT skills usage across larger and routinely treated samples will shed further light into the processes and experiences associated with the longitudinal use of CBT skills. This is important so as to establish iCBT's ability to reliably affect mechanisms underpinning psychological symptomatology and thereby produce long-term change (Mogoaşe et al., 2017).

1.1 | Aims and research questions

The aim of this study was to explore and map out the use of CBT skills following completion of iCBT treatment for anxiety and depression, delivered as part of routine mental health care. In this vein, the research questions of interest in this study were: Do clients who received iCBT report using CBT skills at follow-up? Which CBT skills do they use and which do they stop using? What are the experiences associated with CBT skills usage after iCBT and what are the reasons why some may stop using CBT skills?

2 | METHOD

2.1 | Design

A recurrent, cross-sectional qualitative study was conducted, which was nested within the follow-up period of a pragmatic randomized-controlled trial evaluating the effectiveness and cost-effectiveness of iCBT for anxiety and depression (D. Richards et al., 2020). Results from the parent trial showed that those in the iCBT group experienced significantly larger reductions in depression and anxiety symptoms from baseline to 8 weeks than those in the waitlist control group ($d = 0.55$–0.63), with significant further improvements in symptoms observed in the iCBT group from 8 weeks to 12-month follow-up (for details, see D. Richards et al., 2020).

For the current study, a longitudinal qualitative design was chosen to allow for the exploration of the idiosyncratic use and experience of using CBT skills across four follow-up time points, ranging from 3-month follow-up (shortly after the end of treatment) to 12-month follow-up. Post-therapeutic skills usage represents an under-researched and dynamic concept, likely occurring along a continuum between formal and informal, explicit and implicit (French et al., 2017; Glasman et al., 2004), and as such would have only been partially addressed by quantitative measures. A recurrent, cross-sectional frame was selected to suit the study's primary interest of exploring CBT skills usage at follow-up on the level of the entire sample rather than focusing in on intra-individual changes in CBT skills usage only (Grossoehme & Lipstein, 2016).

2.2 | Setting

The current study was conducted within routine care delivered through the Improving Access to Psychological Therapies (IAPT) service in the United Kingdom. This service aims to increase access to evidence-based treatments within a stepped care model of mental healthcare by tailoring the intensity of the intervention offered to a client's symptomology based on an assessment of their needs. Clients presenting with mild to moderate symptoms of depression and anxiety are offered Step 2 low-intensity interventions such as guided self-help, internet-delivered CBT or group well-being psychoeducation. These interventions are usually delivered by Psychological Wellbeing Practitioners, paraprofessionals with graduate degrees in Psychology specially trained in low-intensity CBT interventions, who provide support and monitor progress throughout treatment. Referral occurs through general practitioners, allied health services or self-referral. Ethical approval for the larger trial including this study was obtained from the National Health Service Health Research Authority (REC reference: 17/NW/0311).

2.3 | Participants

Clients were eligible for participation if they were aged over 18 and a Step 2 service user, so had been deemed suitable for low-intensity interventions in terms of their clinical presentation, determined by a score of ≥9 on the PHQ-9 and/or ≥8 on the GAD-7 (see parent trial protocol for details, D. Richards, Duffy, et al., 2018). They were further telephone-screened by clinicians for suitability for iCBT, defined as willingness to engage and access to the internet. They then completed the Mini International Neuropsychiatric Interview 7.0.2 (M.I.N.I.7.0.2) diagnostic interview to establish a primary diagnosis of depression or anxiety. Exclusion criteria were suicidal or self-harm risk (score >2 on the PHQ-9 Item 9 and as expressed during clinical interview), substance misuse, a psychotic illness diagnosis and currently receiving another form of psychological treatment. Clients invited to the trial provided informed consent to participate by way of an electronic signature. See Table A1 for sample characteristics.

2.4 | Treatment

A total of 361 participants were allocated to the depression or anxiety arm and then individually randomized, stratified by primary diagnosis, to iCBT intervention ($n = 241$) or waiting-list control group ($n = 120$) in a 2:1 ratio. The iCBT programmes used were SilverCloud Health's '*Space from Depression*', '*Space from Anxiety*' and '*Space from Depression and Anxiety*', principally composed of CBT content customized for depression, anxiety, and comorbid presentations. The seven-core modules are delivered in an interactive manner (including journal entries and use of tools) and non-linear pattern (i.e., the user can decide the order of modules they want to complete) on a Web 2.0 platform. Within the modules, participants receive CBT-focused psychoeducational content to develop relevant skills such as understanding emotions (self-monitoring and cognitive distancing), flexible thinking (cognitive reframing/restructuring), problem solving, facing fears (graded exposure), mindfulness and identification and scheduling of enjoyable and motivational activities (behavioural activation). Depending on the needs of the user, there are additional modules the supporter can unlock which feature content for specific difficulties (e.g., worry management, sleep hygiene and behavioural experiments). For outlines of the programmes, as well as the unlockable modules, see Table A2. Participants are encouraged to practice these skills through the use of interactive tools such as mood monitoring, worksheets and audio meditation exercises. Supporters monitored participants' progress through the intervention and were advised to provide six online reviews to each participant over the 8-week intervention, spending approximately 15 min per review per user. In practice, this varied somewhat with some participants receiving more than six reviews or being contacted via telephone. Reviews aimed at promoting engagement with the intervention by providing encouragement and feedback on work completed week by week. The effectiveness of these interventions has been demonstrated in the treatment of depression and anxiety (D. Richards et al., 2020), and they adhere to the National Institute for Health and Care Excellence guidelines (National Institute for Health and Care Excellence, 2009, 2016).

2.5 | Measures

2.5.1 | Open-ended questions

In order to explore participants' idiosyncratic use of CBT skills, including their experiences surrounding these skills and reasons why they may have stopped using certain skills, participants were asked to answer two open-ended questions in writing and online at 3-, 6-, 9- and 12-month follow-ups.

> As part of your SilverCloud (iCBT) program you were presented with techniques and strategies (e.g., relaxation, challenging your thoughts etc.) designed to help you cope with your mental health

difficulties better and improve your mental wellbeing. However, different people may have experienced these techniques and strategies differently. Are there any particular techniques or strategies you used recently? And if so, how have you found using them?

> Are there any techniques or strategies you were using but have stopped using recently? If so, can you tell us what kind of techniques or strategies they were and why you stopped using them?

Furthermore, in order to collect contextual information potentially relevant to the acquisition, use and experience of CBT skills, participants were asked if they had received any other mental health treatments since completing their iCBT programme.

> Since you completed your supported intervention, have you sought any other treatment for your mental health difficulties? And if so, can you tell us what kind? (e.g., individual psychotherapy, group psychotherapy, psycho-active medication)

2.5.2 | Clinical measures

Patient Health Questionnaire-9 Item (PHQ-9)
This is a well-validated, self-report instrument used widely for the screening and diagnosis of depressive symptoms experienced over the past 2 weeks (Kroenke et al., 2001). The patient answers nine questions concerning symptom presence based on criteria for a major depressive disorder diagnosis across a 4-point Likert scale ($0 =$ '*not at all*' and $3 =$ '*nearly every day*'). Scores range from 0 to 27, with larger scores indicating greater severity and frequency of symptoms.

Generalized Anxiety Disorder-7 Item (GAD-7)
The GAD-7 is a self-administered questionnaire assessing the frequency of anxiety symptoms over the past 2 weeks (Spitzer et al., 2006). Patients rate the frequency of their anxiety symptoms by answering seven items using a scale of $0 =$ '*not at all*' to $3 =$ '*nearly every day*'. Greater severity or frequency of symptoms is reflected in higher scores.

Mini International Neuropsychiatric Interview 7.0.2 (M.I.N.I.7.0.2)
This is structured clinical interview based on the Diagnostic and Statistical Manual of Mental Disorders (DSM-V) and the International Classification of Diseases (ICD-10). The M.I.N.I.7.0.2 is composed of lettered modules corresponding to diagnostic categories (Sheehan et al., 1997). The parent study included the following modules: Module A (Major Depressive Episode), Module D (Panic Disorder), Module F (Social Anxiety Disorder) and Module N (Generalized Anxiety Disorder), to ascertain current depression and anxiety conditions, including specific anxiety presentations.

2.5.3 | Treatment engagement

The online system recorded anonymized data describing participant's engagement with and usage of the iCBT platform. Engagement metrics tracked included number of logins, time spent on the platform, percentage of the programme viewed and number of reviews received. The intended active treatment period treatment period was 8 weeks, during which supporters were advised to provide six 15-min online reviews to participants. Participants had access to the iCBT platform beyond the 8-week time point though, allowing them to utilize the platform as they wished after their supported intervention had ended. In analysing data stemming directly from the service hosting the parent trial (rather than data collected for research purposes), it emerged that a non-negligible proportion of participants appeared to have still received support past the 8-week time point. For this reason, engagement metrics were measured up to 3 months for the purpose of this study. Out of 241 treatment group participants, 127 still received some support at 8 weeks from baseline. At 3 months from baseline, 54 participants likely still received support, whereas at 6 months from baseline, there were only two participants who may have still received support. For many participants who received support past the 8-week time point, this appeared to be a function of delayed treatment starts; however, some of these participants may also have received larger doses of support.

2.6 | Procedure

Participants randomized to the treatment group were allocated to either 'Space from Depression', 'Space from Anxiety' or 'Space from Depression and Anxiety' based on their primary presentation and the clinical judgement of the clinician performing service intake assessments. Each participant in the intervention arm was allocated a supporter before beginning their respective programme. Case managers provided clinical supervision to supporters, and checklists were employed to ensure fidelity to the treatment principles. These checklists assessed whether reviews sent to participants were congruent with the CBT module the participant was progressing through. A total of 176 checklists were completed, and 96% of reviews were marked as compliant. At 8 weeks, participants completed the outcome measurements online. At 3-, 6-, 9-, and 12-month follow-ups, participants were invited to complete clinical outcome measures and answer the open-ended questions pertaining to their CBT skills usage in writing and online. Open-ended question completion was optional. For further details on measures, materials and procedures, please refer to the parent study (D. Richards, Duffy, et al., 2018; Richards et al., 2020).

2.7 | Data analysis

Qualitative analysis resulting in the development of a CBT skills usage taxonomy, as well as the subsequent coding of all available qualitative data in line with that taxonomy, was informed by Elliott and Timulak's (2005) descriptive–interpretative approach, which has previously successfully been used with qualitative data of a similar nature (Jardine et al., 2020; D. Richards, Dowling, et al., 2018). Qualitative responses were analysed across the three open-ended questions. An initial taxonomy was developed by the first author of this study on the basis of qualitative data collected from 35 participants at 3-month follow-up through the following steps. Following data screening and cleaning, all data were broken down into individual meaning units. Next, an organizing structure for the data, made up of the domains of investigation covered by the open-ended questions, was developed. These domains were (1) CBT skills used across follow-up, (2) CBT skills whose use was discontinued during follow-up, (3) experiences/impacts related to post-therapeutic CBT skills usage and (4) reasons for and experiences associated with discontinued CBT skills usage at follow-up. Subsequently, meaning units (individual responses of participants containing a particular meaning) were categorized (clustered according to similarities) across domains into categories and subcategories (see Section 3). Findings were then abstracted, and the draft taxonomy was audited by the second author, an experienced qualitative researcher.

Following this, approximately 60 randomly selected responses across all time points were analysed, and the taxonomy was refined until no new meanings emerged and saturation was deemed likely. At this point, the analysis and taxonomy were audited a second time by the second author and a detailed guide on its use was compiled. Two independent coders (the sixth and seventh author) were then trained to code all qualitative data across all time points in line with the taxonomy. During coder training, the taxonomy guide was reviewed, 21 responses were co-rated and discrepancies and subtle differences in the understanding of different codes were discussed and resolved.

Interrater-reliability assessments between the first author and the two independent coders were carried out before data coding commenced and repeated at the half-way point to assess for potential coder drift. Percentage agreement, Fleiss' kappa and its bootstrapped confidence interval were calculated in line with and utilizing R code provided by Zapf et al. (2016). The following cut offs for Fleiss' kappa and its confidence interval were implemented: 0.0–0.4 poor to fair agreement, 0.41–0.60 moderate agreement, 0.61–0.8 substantial agreement and 0.81–1 almost perfect agreement (Landis & Koch, 1977). Once all data were coded, specific coding issues coders flagged were solved through consensus between the first author and the two independent coders. Coders were encouraged to report specific responses, whose meaning may not have been sufficiently addressed in the taxonomy yet to the first author. The first author then carried out validity checks across all categories, addressed inconsistencies in coding and further refined the taxonomy in consultation with the second author. At this point, one further sub-category was added and one sub-category was broken further down. Given that all taxonomy refinements occurred at the sub-category level, the likelihood that all main categories were saturated was high.

Data analysis was led by the first author, an early career researcher and counselling psychologist trained in and practicing a number of psychotherapeutic approaches including CBT. The two independent coders were in the process of completing a master's degree in applied psychology and had no allegiance to any psychological approach. Auditing of the analysis was completed by the second author, a senior researcher with extensive experience in qualitative research, who has training in CBT but whose psychotherapeutic orientation lies outside of CBT. Reflexivity was an ongoing process facilitated by frequent discussions between research team members, bearing in mind the limitations of how data was collected (e.g., being collected in writing meant participants could not be asked to clarify their answers) and remaining sensitive to the various possible interpretations of participants' responses. Any differences along demographic, outcome and engagement variables between participants who responded and those who did not respond to open-ended questions were explored using Chi-squared, Mann–Whitney and t tests in SPSS version 26.

3 | RESULTS

Of the 241 participants randomized to the iCBT treatment group, 181 (75%) answered at least one open-ended question at one of the follow-up time points. Of those, 141 (78%) were female, 138 (76%) were in full-time employment and 78 (43%) were taking psychoactive medication at baseline. The median age across this cohort was 29 (IRQ = 18) and 81% (146/181) presented with at least one MINI diagnosis at baseline (depression = 29; anxiety disorder(s) = 48; comorbid depression and anxiety disorder(s) = 69).

Apart from significantly more females than males answering open-ended questions ($\chi^2_{(1)}$ = 13.43; p = .00), tests revealed no other difference along demographic variables between the two cohorts. Treatment engagement was significantly lower among those who did not complete any open-ended questions, presenting with fewer logins (U = 2273; p = .000), having received fewer reviews from their supporters (U = 2396; p = .000), completed a smaller percentage of their iCBT programme (U = 2055; p = .000) and spend overall less time on the iCBT platform (U = 2630; p = .000) than those who did answer open-ended questions (see Table A1 for details). Among open-ended question completers, the median number of log-ins was 17 (IRQ = 15), the median number of reviews was 6 (IRQ = 3), the median percentage of the iCBT programme completed was 64% (IRQ = 41%) and the median time spent on the platform was 4 h and 52 min (IRQ = 4 h and 49 min).

There were 120 participants at 3-month, 121 at 6-month, 113 at 9-month and 125 at 12-month follow-up who answered at least one of the open-ended questions, resulting in a total of 479 qualitative responses across time points. Thirty-eight participants answered at only one time point, 41 answered at two time points, 49 answered at three time points and 53 answered at all four time points. In total, 1104 written text answers across the three open-ended questions and four time points were analysed and coded within four domains

(see page 14). Text answer length ranged from 2 to 1243 characters, with an average length of 104 characters. Interrater-reliability assessments suggested substantial agreement before data coding commenced (71.2% among three raters; Fleiss' K 0.78, 95% CI 0.73, 0.83) and at the half-way point of coding (72.5% among three raters; Fleiss' K 0.78, 95% CI 0.72, 0.84).

3.1 | CBT skills used across follow-up

Of 181 participants who answered at least one open-ended question at one follow-up time point, 161 (90%) reported having used one or multiple CBT skills during follow-up. A wide range of different CBT skills were spontaneously named by participants as having been applied by them recently. Seven cognitively and seven behaviourally focused categories of techniques and strategies were reported across all time points (see Figure 1). The most often cited CBT skill related to *challenging and changing thoughts* (e.g., 'Challenging thoughts. Catching the thought and interrogation why I feel that way and trying to be more rational about it.'), which 89 (49%) out of 181 of participants reported having used at least at one follow-up time point.

Among behavioural skills, *mindfulness and meditation* (e.g., 'I also like using the meditation techniques to bring things back to the breath'), *relaxation and breathing exercises* (e.g., 'I listened to the relaxation videos') and *activation and engaging in activities* to improve one's mental health (e.g., 'I try to plan things into my schedule I know will help also, such as seeing people, making phone calls/facetimes, and exercising') were cited most often, with 50 to 57 out of 181 (28%–31%) reporting having used at least one of these skills throughout follow-up (see Figure 1 for details). The number of people reporting they had not used any CBT skills recently increased from 5% at 3 months (6/120) to just under 14% at 12-month follow-up (17/125). For full descriptions and quotes associated with each reported CBT skill see Table A3.

3.2 | CBT skills whose use was discontinued during follow-up

Responding predominantly to the second open-ended question, 84 out of 181 (46%) reported having stopped using various different CBT skills throughout follow-up. Crucially, for the majority of these participants, this did not mean they ceased using all CBT skills, with 66 of those 84 participants (79%) also reporting using one or more CBT skills at the same time point. Cognitive techniques and strategies were discontinued by 57 (31%) and behavioural ones by 45 (25%) of the 181 participants who answered at least one questions across follow-up. Among the more often discontinued skills were worry management strategies (21/181; 'I stopped using the worry tree'), monitoring and challenging thoughts (19/181; 'I no longer challenge my negative thoughts.') and mindfulness and meditation (19/181; 'I have stopped practicing mindfulness.'). See Figure 2 and Table A3 for a full description of categories and associated quotes.
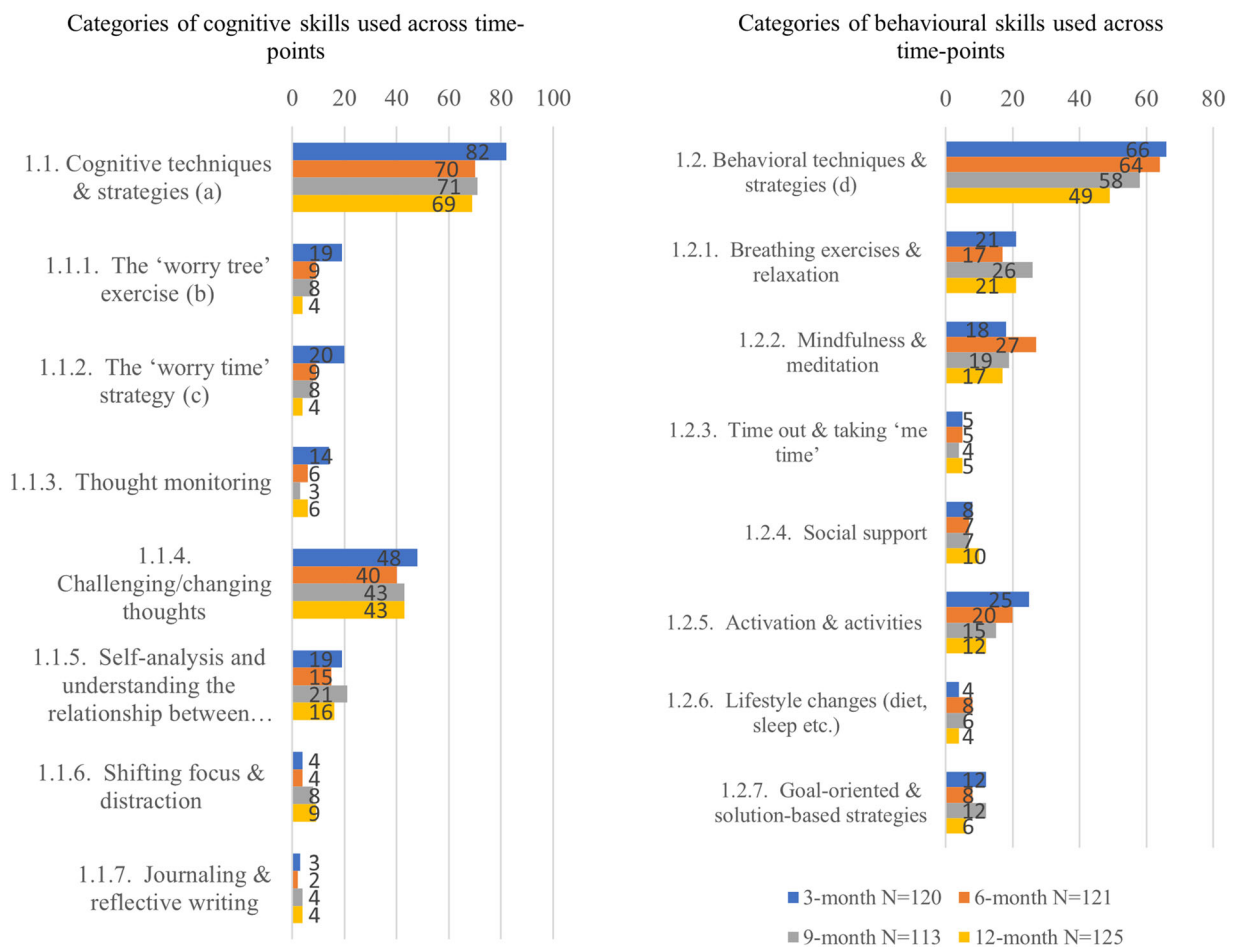
Categories of cognitive skills used across time-points

Categories of behavioural skills used across time-points

FIGURE 1 Spontaneously named CBT skills used across follow-up. Note. This figure demonstrates the frequency of participants' reports of CBT skills used at each of the follow-up time points. As at 3-month follow-up 47 of the 120 participants who responded at this time point were still receiving support, figures at this time point may also reflect some in-treatment skills usage. (a) Techniques and strategies involving thought processes or relying predominantly on 'thinking about' one's self, experience and behaviour. (b) the 'worry tree' exercise, a worksheet involving yes/no questions aimed at distinguishing between worries that can be acted on and those that cannot. (c) the 'worry time' strategy involves participants noting down worries they recognize during the day but delaying engaging in this worry until a designated time each evening. (d) Behavioural techniques and strategies, techniques and strategies that require participants 'doing' something or aim at changing behaviour [Colour figure can be viewed at wileyonlinelibrary.com]

3.3 | Helpful and hindering experiences/impacts related to post-therapeutic CBT skills usage

Participants associated helpful as well as hindering experiences with using CBT skills after their active treatment had ended. Overall, categories of helpful experiences/impacts were more common than hindering experiences/impacts, with 73% (133/181) of participants who answered at least one open-ended question at one follow-up time point reporting a helpful experience/impact whereas only 28% (50/181) of those reporting a hindering experience (see Table 1).

3.3.1 | Helpful experiences/impacts

Qualitative analyses suggested eight different categories of helpful experiences or impacts in relation post-therapeutic CBT skill usage.

Thirty-six participants (20%) out of 181 reported experiencing *fostered insight and flexibility* (e.g., 'as it helps me realize that my thoughts are not set in stone and they can be changed.'). Ten participants (5%) reported increased *self-compassion and self-kindness* (e.g., 'Recognizing this has been useful in enabling me to recognize that I am doing everything that I can') and *self-efficacy and self-confidence* (e.g., 'It is helping to boost my [...] confidence as I feel I am achieving something.'), respectively. Furthermore, *feeling calm and relaxed* (e.g., 'a great way to relax and de stress'), *reduced symptoms and letting go* of worries (e.g., 'has helped reduce my anxiety') and *coping and problem-solving* (e.g., 'This meant I got stuff done and actually didn't worry!') as a result of using CBT skills were reported by 23 (13%), 55 (30%) and 49 (27%) of the 181 participants, respectively. In addition, 45 out of 181 participants made nondescript positive statements about their CBT skills usage across the time points, which were recorded as *nonspecific helpful experiences* (e.g., 'I find it helps lots').
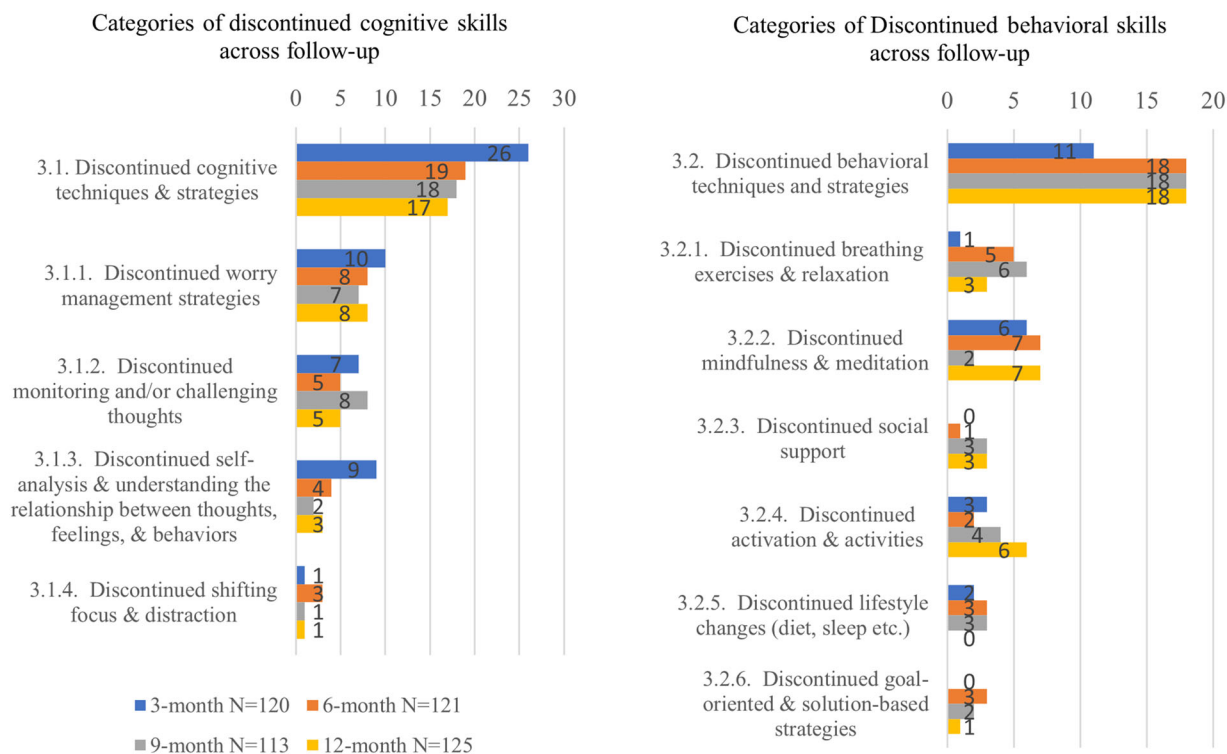
FIGURE 2 CBT skills whose use was discontinued during follow-up. Note. This figure summarizes the frequency of participants' reports of CBT skill use they had ceased at each of the follow-up time points. As at 3-month follow-up 47 of the 120 participants who responded at this time point were still receiving support, figures at this time point may also reflect some in-treatment processes [Colour figure can be viewed at wileyonlinelibrary.com]

Besides these helpful impacts of skills usage, 84 of 181 (46%) participants also described various ways in which they were *proactively engaging in the continued use of CBT skills*, relating to ongoing acquisition of skills, selection and adaptation of skills and their integration with daily living. Especially earlier on into follow-up a limited number of participants (13/181) reported their *skills usage as 'work in progress'* (see Table 1). These participants appeared to be still in the process of acquiring CBT skills (e.g., '… am getting to understand them a little more now […] I am determined to learn […] I have been through the different sections of the program several times to refresh my memory and understand each one […] So I have to re-read the info over and over again to remind myself').

Fifty participants (50/181) commented on how they chose which CBT skill to use at a given time based on specific feelings and symptoms such as anxiety, low mood or anger—engaging in *symptom-driven selection and combination of skills* (e.g., 'I often use [breathing exercises] to control my anxiety and to help calm my mind so I can use [the worry tree system] to work through the things that are worrying me …'). Furthermore, there was evidence that some participants (26/181) developed unique and personalized ways of using CBT skills, engaging *adaptation and idiosyncratic use* of skills, often to increase the usability of particular skills (e.g., '… and even on my bad days I try to think of at least one thing to be positive about. This was my way of adapting the 'challenging my thoughts' and 'reframing a negative situation' to fit in with my every day life').

Finally, a number of participants (30/181) described continuous use of skills, often suggesting that skills had been integrated into daily life. *Continuous skills practice* reaching from frequent use (on a concrete level) to increasingly automatic or implicit skill application (on an abstract level) was reported (e.g., '… after several months of trying this it has become more natural. My thoughts still start of negative but almost immediately and without thinking I try to put a more positive spin on it.').

3.3.2 | Hindering experiences/impacts

Participants reported four categories of experiences or impacts that hindered them in the application or execution of CBT skills. At times participants reported *skills as insufficiently effective* or not doing what they are supposed to do (13/181; e.g., 'I understand the premise and process behind everything on Silvercloud but it hasn't changed my thought process') or even that they experienced them *problematic or upsetting in some way* (4/181; e.g., 'I find it relatively discouraging and damaging to categorize these thoughts as unhelpful in whichever way as to me, the thoughts are my own and thus I feel that my own thoughts are the issue and that I myself am therefore being unhelpful.'). In addition, *difficulties in the execution of skills*, (25/181; e.g., 'It is hard using [challenging/changing thoughts] as I am often anxious or worrying and I am not even aware of it - worrying has become

TABLE 1 Helpful and hindering experiences/impacts related to post-therapeutic CBT skills usage

Categories of experiences/impacts of using CBT skills across time points	3-month N = 120	6-month N = 121	9-month N = 113	12-month N = 125	All follow-ups[a] N = 181
2.1. Helpful experiences/impacts	81	70	60	60	133
2.1.1. Fostered insight and flexibility	13	11	11	11	36
2.1.2. Self-compassion and self-kindness	2	1	4	3	10
2.1.3. Self-efficacy and self-confidence	2	4	4	3	10
2.1.4. Reduced symptoms and letting go	17	14	11	19	49
2.1.5. Coping and problem solving	26	16	18	18	55
2.1.6. Feeling calm and relaxed	8	8	7	5	23
2.1.7. Non-specific helpful experiences	15	17	10	16	45
2.1.8. Proactive and ongoing engagement	36	35	26	26	84
2.18.1. Skills usage as 'work in progress'	7	5	3	4	13
2.1.8.2 symptom-driven selection and combination of skills	15	17	16	14	50
2.1.8.3. Adaptation and idiosyncratic use of skills	7	10	5	6	26
2.1.8.4. Continued skills practice and integration with daily living	15	8	8	9	30
2.2. Hindering experiences/impacts	24	14	12	16	50
2.2.1. CBT skills as insufficiently effective	8	1	0	5	13
2.2.2. Difficulties in skill application	12	8	7	6	25
2.2.3. Situational and daily barriers to skills usage	6	6	6	8	24
2.2.4. CBT skills as upsetting or problematic in some way	2	1	1	1	4

Note. This table summarizes the frequency of reports given by participants of their experiences implementing CBT skills at each of the follow-up time points. As at 3-month follow-up 47 of the 120 participants who responded at this time point were still receiving support, figures at this time point may also reflect some experiences surrounding in-treatment skills usage.
[a]Participants who completed at least one open-ended question at any follow-up time point.

TABLE 2 Reasons and experiences surrounding discontinued CBT skills across time points

Categories of reasons/experiences related to discontinued CBT skills	3-month N = 120	6-month N = 121	9-month N = 113	12-month N = 125	All follow-ups[a] N = 181
4.1. Situational and daily barriers as reasons	9	13	11	13	35
4.2. Difficulties in the execution of skills	13	4	6	7	26
4.3. Experiences of skills as insufficiently effective	8	6	8	6	24
4.4. Experiences of other skills as superior	6	3	6	3	12
4.5. Experiences of skills not being needed anymore	7	13	7	12	32
4.6. Experiences of skills worsening symptoms	2	5	5	5	14
4.7. Intentions for future/resumed skill usage	6	5	1	2	13

Note. This table summarizes the frequency of participants' reports of specific experiences discontinuing use of CBT skills at each of the follow-up time points. As at 3-month follow-up 47 of the 120 participants who responded at this time point were still receiving support, figures at this time point may also reflect some experiences surrounding in-treatment skills usage.
[a]Participants who completed at least one open-ended question at any follow-up time point.

my default. I find it a struggle to catch my thoughts …') and *daily and situational barriers* (24/181; e.g., 'with frequent 300-mile round trips to try to help mum and the on-going chaos of building works at home I have let this lapse (perhaps when I need it most).') were reported as hindering skills usage.

3.4 | Reasons for/experiences associated with discontinued CBT skills usage at follow-up

Participants reported six categories of reasons for why they had stopped using CBT skills during follow-up (see Table 2). Thirty-five of

181 participants reported *situational and daily barriers* as reasons for why they had discontinued CBT skills across follow-up. These barriers often related to the idea of being too 'busy' or feeling overwhelmed by the current situation (e.g., 'Recently I've had a combination of a bereavement, work stress and family issues and I've felt overwhelmed and had little time to think about applying techniques (which I appreciate is a poor excuse)').

Likewise, 26 of 181 participants described *difficulties in executing skills*. Again, these difficulties often related to the symptoms the skills are actually designed to alleviate, like feeling too low to implement techniques to lift one's mood or too anxious to remember to apply strategies to manage anxiety (e.g., 'The real trouble is when I find myself in a depressive state, it can be really difficult to motivate myself to do anything.').

Furthermore, 24 of 181 participants cited *insufficient effectiveness of CBT skills* in the context of ceasing their use, describing them as either not helping or not getting to the core of their problems (e.g., 'I'm less inclined to use as they don't really work for me'). There was also a small proportion of participants (14/181) who reported *CBT skills to have worsened their symptoms*, leading them to discontinue them eventually. These upsetting effects of CBT skills usage often related to increases in such symptoms as anxiety, worry or panic but increases in negative thoughts and self-criticism were also described (e.g., 'I stopped using breathing techniques as they seemed to induce panic').

At the same time, there was also a proportion of participants for who the discontinuation of skills usage appeared to be linked to positive mental health or adaptation. Thirty-two of 181 participants reported that in fact they were not using skills anymore because their symptoms had improved to the point that *skills were not needed anymore* (e.g., 'Have felt much better—and haven't needed to use [*mindfulness*] so much.'). Similarly, 12 participants stated they had discontinued a particular skill to *use another skill they perceived superior* or more effective (e.g., 'The relaxation and breathing exercises didn't do much for me—I prefer something more proactive in helping my thought process.'). Finally, 13 participants also described *intentions or plans for resumed CBT skills practice* (e.g., '… so I've decided to implement them again in order to lift my mood and wellbeing').

3.5 | Further contextual information

In response to the third open-ended question, 25 out of 181 reported having had medical (including medication) treatment and 27 out of 181 participants reported having had other psychological treatments during the follow-up period. Alternative treatments (e.g., hypnotherapy, physiotherapy and animal therapy) were reported by 10 participants and 16 cited unguided self-help and psychoeducation (e.g., self-help books, videos and apps). Twenty-six participants expressed a need for further mental health treatment by stating that they had considered or intended to seek further treatment during follow-up (e.g., 'I have not [sought any more treatment] but may have to go to the Doctor as I'm struggling to cope').

4 | DISCUSSION

The current study set out to explore and map out CBT skills usage following the completion of routinely delivered iCBT for anxiety and depression. Qualitative data on client experiences were collected longitudinally across four follow-up time points from a large sample, representing a major strength of this study. Analyses showed how a wide range of CBT skills are used by individuals after they have finished iCBT treatment. Moreover, they shed light into the experiences and impacts associated with this skills usage, which are often positive and adaptive but at times can be negative and counterproductive too. Furthermore, while participants also reported having stopped using one or multiple CBT skills during follow-up, the reasons for this were diverse, ranging from adverse effects of skills usage to healthy adaptation.

These findings add to the iCBT literature by showing client-defined outcomes beyond the clinical effectiveness reported on by the parent trial (D. Richards et al., 2020) and are testimony to the continued benefits CBT-based intervention can exert even after treatment has ended. As such, the findings extend upon previous research on clients' continuous use of CBT skills after face-to-face CBT (French et al., 2017; Glasman et al., 2004) to include minimally supported iCBT—further establishing iCBT's ability to produce change at a meaningful and sustainable level (Mogoaşe et al., 2017; Strunk et al., 2007). CBT skills spontaneously named by participants in this study (e.g., *challenging thoughts*, *self-analysis*, *relaxation*, *mindfulness*, *social support*, *activation and goal-oriented and solution-based strategies*) reflected the content and focus of the iCBT programme and were largely in line with those reported in face-to-face CBT approaches (e.g., challenging negative thoughts, cycles of thought, practicing relaxation, mindfulness of breath, socializing, scheduling pleasant activities, problem solving and goal setting; French et al., 2017; Morgan et al., 2014; Powers et al., 2008), suggesting similarity between the two modes of delivery of CBT in this respect. Moreover, the helpful impacts reported by participants in association with post-therapeutic skills usage (e.g., *fostered insight*, *self-efficacy*, *coping and problem solving*, *reduced symptoms and letting go* and *proactive and ongoing engagement*) do not only resonate with those reported by participants during iCBT (e.g., insight, self-efficacy, learning coping skills and relief; D. Richards, Dowling, et al., 2018; D. Richards & Timulak, 2012) but also bear resemblance with those reported during psychotherapy in general (e.g., improved symptoms and relief, self-knowledge, understanding and belief, problem solution and using techniques learnt in therapy to manage their everyday thoughts and feelings; McPherson et al., 2020; Timulak, 2007). This may be hinting towards the fact that, independent of whether occurring during treatment or after it has ended, at least some of the important client-defined benefits iCBT participants describe are directly linked to the use of CBT skills (i.e., feelings of relaxation directly link to practice of relaxation exercise during as well as after treatment has ended).

Interestingly, proactive and ongoing engagement in the use, selection and practice of CBT skills emerged as a helpful experience from the analysis. While this category may be understood as 'client

involvement' in the context of previous research on helpful impacts in psychotherapy (Quick et al., 2018; Timulak, 2007), it could also be construed as client agency, which in the psychotherapy context is defined as 'expectations related to the active, purposeful use of psychotherapy to meet needs, solve problems, and make life changes' (Coleman & Neimeyer, 2015, p. 3). Extending this idea to after treatment has ended, it can be argued that by actively practicing and purposefully selecting CBT skills to meet mental health needs and solve problems (e.g., findings described under *symptom-driven selection and combination of skills*, *adaptation and idiosyncratic use of skills* and *continued skills practice & integration with daily living*), participants were in fact demonstrating agency.

Beyond being an outcome of CBT skills usage, acting with agency may have also allowed some clients to overcome hindering, counterproductive experiences such as difficulties in skill application or daily and situational barriers to enable them to select the right skill for their current state of mind or situation or adapt skills to facilitate integration with daily life where possible. Similarly, McPherson et al.'s (2020) meta-synthesis on client experiences of psychological therapy for depression provided some evidence that issues relating to the integration of therapy with daily life and standardized, non-tailored content of treatment were overcome by adaptation of and a flexible attitude towards therapy techniques. A lack of effectiveness and adverse effects of therapy techniques, akin to hindering experiences and reasons for discontinued skills use described by participants within this study, were also reported in this meta-synthesis. While insufficient effectiveness and adverse effects of CBT skills were only reported by a relatively small proportion of the sample in this study, they represent a particularly important area of research into how particular iCBT intervention designs may be able to facilitate effective CBT skills acquisition and usage at follow-up (e.g., CBT skill presentation in the programmes could incorporate a 'trouble-shooting' function through which users can notify their supporters of skill application difficulties or adverse effects to seek concrete help with these issues; assessment of skill acquisition and practice at post-treatment could flag users at risk of relapse to offer them higher intensity support or booster sessions).

Of significance was also the findings that while many participants had stopped using CBT skills at follow-up for some, this was actually due to having improved to the point of not needing skills anymore. Different theories exist that link various skill deficits (e.g., problem solving, social and emotion regulation skills) to the occurrence and maintenance of specific disorders as well as psychopathology generally (Hopko et al., 2001; Lukas et al., 2018; Nezu, 1987). In this vein, participants' reports of not needing skills anymore might in fact represent a bridging of these skills deficits, highlighting how the perceived usefulness of skills usage may actually be dependent on the presence and specific type of skill deficit in each individual in the first place.

4.1 | Limitations

The study has several limitations. First, generalizability of the results from this study is limited by missing data and the nature of the

qualitative methodology employed. The 25% of participants who did not answer any open-ended questions at any follow-up time point potentially represented a distinctly different group of participants, having engaged significantly less with iCBT during the supported intervention phase than their counterparts who did answer open-ended questions. This means that the views of individuals choosing not to engage with iCBT may have been underrepresented in the analysis. In addition, given that participants spontaneously named CBT skills they had used/ceased and associated experiences, rather than ticking these of pre-prepared lists, more participants may have used a certain skill or experienced a certain impact than was detected in the results. Likewise, given that qualitative responses were often rather brief and there was no scope to clarify what participants meant to say, misconstruing meanings was a risk. Nevertheless, this risk was as much as possible addressed through rigorous qualitative analysis and coding procedures (e.g., repeated auditing of qualitative analysis and three-way interrater-reliability assessments).

Also, delineating the relative influences on CBT skills acquisition and usage for individual participants in terms of the treatment they received was not fully possible in this study. First, routine care service data suggested that some clients had still received online reviews past the 3-month follow-up time point; thus, this time point may not have solely reflected post-therapeutic CBT skills usage and thus ought to be interpreted with caution. Second, a small number (15%) of participants reported having had other psychological treatments during the follow-up period. While other treatments as well as any self-help participants may have utilized could have confounded our analyses (i.e., we could not identify which CBT skills participants learned during their active iCBT, were using already pre-treatment, were recommended by other therapists or picked up from other sources), this limitation seemed to apply to only a minority of participants.

In principle, all CBT skills reported by participants in this study aligned with the iCBT intervention they received. Given some differences in the symptom-specific CBT skills covered within the three programmes and the option of unlockable content (see Table A2), which specific CBT skills participants encountered during their treatment varied somewhat between participants. Also, there were a handful of participants (<5%), who mentioned techniques or strategies that were not covered by the iCBT intervention (e.g., one participant cited not using the rubber-band strategy for self-harm urges anymore; another reported using/ceasing the use of a gratitude jar). Specific techniques like these may have been introduced by supporters as per routine treatment protocols, which encourages them to supplement iCBT content where deemed clinically necessary. Also, we did not assess participants use of CBT skills prior to commencing treatment, meaning that we cannot say for certain that participants did not use the skills they reported already ahead of iCBT treatment. Nevertheless, we would expect that participants with significant knowledge of CBT were the exception in the current study, given that the service hosting the study used iCBT as a step two intervention (i.e., a first-line treatment) for mild to moderate symptoms only.

Finally, due to the nature of the collected data (i.e., utilization of open-ended questions rather than pre-prepared checklists) and the cross-sectional qualitative analysis applied, we were unable to further analyse changes over time in CBT skills usage and associated experiences for the purpose of this report. Further research to explore patterns of intra-individual changes in CBT skills usage and associated experiences over time as well as the relationship between CBT skill usage and clinical outcomes across follow-up will be essential in furthering our understanding in this respect.

5 | CONCLUSION

In conclusion, the current study provides evidence that those who receive iCBT in routine care not only learn CBT skills during treatment but utilize them after active treatment had ended. This CBT skill usage appeared linked to helpful impacts, linking in with hypotheses around post-therapeutic skills usage as a mediator of effect maintenance after iCBT. However, given the limitations of the current study, quantitative research, employing longitudinal mediation analysis will be crucial to more fully explore these hypotheses. Here, of particular interest will be distinctions between formal, so concrete CBT skill usage via the iCBT platform, for example, and informal, implicit or adapted CBT skills usage described by some participants in this study. Understanding these intricates of skills usage better in addition to the rich accounts of CBT skills usage provided by participants in this study will provide the best possible steppingstone to drive innovation and development of even better iCBT interventions of the future.

DATA AVAILABILITY STATEMENT
Raw qualitative data are not available due to ethical restrictions associated with this kind of data, for which anonymisation cannot be guaranteed.

ORCID
Nora Eilert https://orcid.org/0000-0003-3184-3599
Ladislav Timulak https://orcid.org/0000-0003-2785-0753
Daniel Duffy https://orcid.org/0000-0001-9722-0437
Polly Kennedy https://orcid.org/0000-0003-3557-0006
Jorge Palacios https://orcid.org/0000-0002-2103-5507

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APPENDIX A

TABLE A1 Sample characteristics by open-ended question completion rate

		No. (%) Completed no open-ended questions (N = 60)	Completed at least one open-ended question (N = 181)	Tests statistic and *p* value
Age	Median, IQR	27.5 (18)	29 (18)	$U = 4743.0$; $p = .14$
Gender	Female	32 (53.3%)	141 (77.9%)	$\chi^2 (1) = 13.43$; $p = .00$
	Male	28 (46.7%)	40 (22.1%)	
Ethnicity	Identified as white British	50 (83.3%)	142 (78.5%)	$\chi^2 (1) = 0.663$; $p = .41$
	Did not identify as white British	10 (16.7%)	39 (21.5%)	
Sexual orientation	Identified as heterosexual	50 (83.3%)	159 (87.8%)	$\chi^2 (1) = 0.797$; $p = .37$
	Did not identify as heterosexual	10 (16.7%)	22 (12.2%)	
Primary presentation	Anxiety	31 (51.7%)	99 (54.7%)	$\chi^2 (1) = 0.166$; $p = .68$
	Depression	29 (48.3%)	13 (45.3%)	
Employment status	In employment	46 (76.7%)	138 (76.2%)	$\chi^2 (1) = 0.004$; $p = .95$
	Not in employment	14 (23.3%)	43 (23.8%)	
Psychoactive medication	Taking	21 (35%)	78 (43.3%)	$\chi^2 (1) = 1.29$; $p = .26$
	Not taking	39 (65%)	102 (56.7%)	
Baseline MINI	No diagnosis	13 (21.7%)	35 (19.3%)	$\chi^2 (3) = 1$; $p = .66$
	Depression	8 (13.3%)	29 (16.0%)	
	Anxiety	20 (33.3%)	48 (26.5%)	
	Depression and anxiety	19 (31.7%)	69 (38.1%)	
Baseline PHQ-9	Mean, SD	14.42 (4.93)	14.40 (4.95)	$t (239) = 0.02$; $p = .97$
Baseline GAD-7	Mean, SD	12.97 (4.63)	12.56 (4.72)	$t (239) = 0.58$; $p = .57$
No. of reviews	Median, IQR	3.0 (4.0)	6.0 (3.0)	$U = 2396.0$; $p = .00$
No. of logins	Median, IQR	7.0 (10.0)	17.0 (15.0)	$U = 2273.0$; $p = .00$
% program viewed at 3-month follow-up	Median, IQR	0.24 (0.36)	0.64 (0.41)	$U = 2055.0$; $p = .00$
Cumulative time spent on iCBT platform by 3-month follow-up (in minutes)	Median, IQR	114 (226)	292 (289)	$U = 2630.0$; $p = .00$

Abbreviations: GAD-7, generalized anxiety disorder-7 item; IQR, interquartile range; MINI, mini international neuropsychiatric interview 7.0.2; PHQ-9, patient health questionnaire-9 item; SD, standard deviation.

TABLE A2 Outline of modules in space from depression and space from anxiety programs

Space from depression		Space from anxiety	
Welcome to SilverCloud	**A technical introduction to the platform with descriptions of essential features**	**Welcome to SilverCloud**	**A technical introduction to the platform with descriptions of essential features.**
Getting started	An outline of CBT basics and thoughts–feelings–behaviours cycles relating to depression. Users become more aware of mood and their situation.	Getting started	An outline of CBT basics and thoughts–feelings–behaviours cycles. Users begin noting their difficulties with anxiety.
Understanding feelings	Encouraging a greater understanding of mood and emotions, how thoughts, physical reactions, and behaviours are connected in influencing how we feel.	Understanding feelings	Encouraging a greater understanding of the connection between thoughts, feelings and behaviours. Exploring aspects of the impact of lifestyle choice and purposeful relaxation on these.
Boosting behaviour	Encouraging the user to plan enjoyable activities that promote a sense of achievement. Identifying tasks to target the physical reactions to distress and noting behaviour traps.	Facing your fears	Defining the users' fears, exploring graded exposure and defining a fear hierarchy. Experimenting with facing fears to reduce anxiety. Encouraging the user to attempt to accept fear and embrace uncertainty.
Spotting thoughts	Further awareness of unhelpful thinking patterns, recognizing distorted thoughts and addressing the outcomes of such negative thought cycles.	Spotting thoughts	Flagging anxious thoughts and noticing their automatic acceptance. Weakening the power of thoughts by practicing balanced acceptance.
Challenging thoughts	Identification of hot thoughts and thinking errors to tackle and dispute negative patterns.	Challenging thoughts	Identification of hot thoughts and thinking errors to tackle and dispute negative patterns.
Bringing it all together	Considering perspective changes and skills acquired. Outlining steps for future progress including normalizing set-backs, maintaining well-being and social support.	Bringing it all together	Considering perspective changes and skills acquired. Outlining steps for future progress including normalizing set-backs and maintaining well-being and social support.
Core beliefs (unlockable content)	Particular targeting of deeply-held core beliefs underlying unhelpful thoughts. Users identify healthy and unhealthy beliefs and learn strategies to generate more balanced core beliefs.	Managing worry (unlockable content)	Improving knowledge of worry and recognizing practical and hypothetical worries. Implementing strategies to manage worries, for example, using the worry tree.
Mini modules (unlockable across programs by supporters)			
Sleep	Education about sleep disturbance and sleep hygiene. Applying techniques of sleep monitoring.		
Relaxation	Psychoeducation regarding the benefits of relaxation as a skill. Relaxation techniques are covered.		
Self-esteem	Psychoeducation around self-esteem, self-talk and self-compassion. Users reflect on how they view and talk to themselves. Activities promote learning to counter negative self-talk and cultivate self-compassion.		
Employment support	Encouraging users experiencing employment related stress to identify the impact on their mental health. Introducing techniques to reduce this impact and the use of tools to cope and proactively manage the situation.		
Behavioural experiments	Guiding users in this CBT technique, which includes devising and conducting tests regarding the automatic negative thinking that maintains their low mood/anxiety. Users reflect and learn from the outcomes.		
Anger	For users experiencing excessive/inappropriate anger. Introducing the thoughts–feelings–behaviours cycle to assist in monitoring their anger and its function and identifying when it is a problem. Highlighting unhelpful thinking styles.		
Grief and loss	Psychoeducation regarding common emotional reactions to loss and the dual-process model of coping with bereavement. Reflecting on the user's unique grief response, encouraging healthy expressions of feelings and restoration of their lives. Planning for triggers or anniversaries, reflecting on life values and developing ways to remember the person they lost.		
Communication and relationships	What healthy communication in relationships looks like. Identifying different communication styles, reflecting on the user's own style, guidance towards improving communication skills, and consideration of other factors that are crucial to effective communication.		

Note. The comorbid *Space from Depression and Anxiety* program is composed of modules from the depression program with an integrated Managing Worry module. Core Beliefs and Facing Your Fears are unlockable modules.

TABLE A3   Complete taxonomy outline with associated quotes

	Description	Example quotes
Domain 1: Spontaneously named CBT skills used at follow-up		
1.1. Cognitive techniques and strategies	Techniques and strategies dealing with thought processes or relying predominantly on 'thinking about' one's self, experience and behaviour were deemed cognitive techniques and strategies in this instance.	
1.1.1. The 'worry tree' exercise	The 'worry tree' exercise is most commonly used as a worksheet, in which one is aided to distinguish between worries one can/cannot do something about through a number of yes/no questions and advised on how to proceed with different kind of worries.	'Learning to step back and look at the situation to work out if it is worth worrying about or if it's just hypothetical' 'The worry tree is my favourite'
1.1.2. The 'worry time' strategy	To use the 'worry time' strategy one notes or writes down worries throughout the day but postpones worrying about them to a set time in the evening.	'I forced myself to stop worry all the time, only think about something at dedicated time.' 'I liked worry time'
1.1.3. Thought monitoring	Thought monitoring encompasses the processes of tracking, writing down and identifying various thoughts. Thought monitoring often occurs in relation to the spotting of cognitive distortions (i.e. thinking traps like catastrophizing, emotional reasoning, black-and-white thinking etc.). In contrast to the process of challenging/changing one's thoughts, during thought monitoring cognitive distortions are only named and not questioned to develop more balanced thinking.	'I've been trying to recognize when I'm catastrophizing' 'Identifying negative or unhelpful thoughts'
1.1.4. Challenging/changing thoughts	This category refers to CBT skill of cognitive restructuring and the process of reframing one's thinking. In contrast to thought monitoring, to recorded in this category the participant needed to demonstrate an active process of changing their thinking to be, for example, more balanced, rational or positive.	'Questioning thoughts. Considering the validity of my thoughts.' 'Reframing negative thoughts, remaining realistic'
1.1.5. Self-analysis and understanding the relationship between thoughts, feelings and behaviours	The crucial aspect of this self-analysis category relates to the participants' attempts to take an analytic and objective stance in understanding their own experience—Be it in relation to recording their moods, exploring triggers or examining the relationship between their thoughts, feelings and behaviours.	'Take a few seconds to figure out what and why I'm thinking the way I am' 'Just noticing the patterns to help break cycles'
1.1.6. Shifting focus and distraction	In contrast to the challenging thought category, responses in this category represent participants' attempts to disengage from dealing with negative thoughts by separating themselves from them (akin to cognitive diffusion) or distracting themselves.	'I also try to use the technique of screwing up a negative thought as if it were a piece of paper and throwing it away.' 'I find it easier to distract myself'
1.1.7. Journaling and reflective writing	Within this category participants' responses suggesting that they wrote thoughts and feelings down in order to process and/or reflect on them are coded. This includes	'I've also been keeping a diary of my emotions' 'I write in a personal diary most days which is an opportunity to put items that bother

(Continues)

TABLE A3 (Continued)

	Description	Example quotes
	such acts as keeping a personal diary/journal and expressive writing practices.	me down on paper, or write something down that I'm grateful for'
1.2. Behavioural techniques and strategies	Techniques and strategies that require participants 'doing' something or aim at changing behaviour are considered behavioural techniques and strategies here.	
1.2.1. Breathing exercises and relaxation	Breathing and relaxation exercises that aim and reducing tension and relaxing the body, but do not specifically address or 'target' thought processes like mindfulness exercises and mediation.	'I have definitely started finding time on an evening to practice relaxation' 'I use relaxation techniques frequently'
1.2.2. Mindfulness and meditation	Beyond mere relaxation, mindfulness and mediation encompasses elements of becoming aware of one's thought processes and 'clearing' one's mind.	'Focusing on breath and staying focused in the present rather than on spiralling thoughts' 'Meditation is the main one I use'
1.2.3. Time-out and taking 'me time'	Taking time-out and/or 'me time' within this category related to either self-regulation in distressing circumstances or self-care practices and involved participants dedicating physical time to either cause.	'Also taking time out for myself, reading for an hour, or just walking away from a situation and taking 10 mins to relax' 'Reserving some "me time"'
1.2.4. Social support	Social support in this instance encompasses participants talking to or spending time with others in order to help them cope better with their mental health problem.	'I have tried talking to my boyfriend more about the issues' 'Taking through my problems with a family member'
1.2.5. Activation and activities	This category refers to participants engaging in activities in order to improve their mental health and mood—Encompassing both activity scheduling and activities that could be classed as exposure.	'I also followed the exercise advice and exercise daily, along with making time every day to engage in an activity that I enjoy' 'Jumping into action before talking myself out of it. I was able to attend social events where I would have cancelled'
1.2.6. Lifestyle changes (diet, sleep etc.)	This category refers to participants making changes in their daily lives with the aim of improving their wellbeing. These changes may relate to either sleep, diet or other daily activities.	'Reading before bed rather than watching tv or being on my phone' 'Have given up alcohol, changed jobs'
1.2.7. Goal-oriented and solution-based strategies	The defining feature of goal-orientated and solution-based strategies within this category is that they serve the achievement of a specific goal, targeting such concepts as motivation, problem-solving and stress.	'Breaking tasks down— Doing them for 5 minutes and then if I do not want to carry on come back to it later.' 'The goal setting tool has, and I think will, continue to help me a lot.'
1.3. No CBT skills used	Participants who stated that they have not used any skills are recorded within this category.	'I have not been using these techniques.' 'Not used any recently'
Domain 2: CBT skills whose use was discontinued during follow-up		
2.1. Discontinued cognitive techniques and strategies	Discontinued techniques and strategies dealing with thought processes or relying predominantly on 'thinking about' one's self, experience and behaviour.	
2.1.1. Discontinued worry management strategies	This category refers to discontinued cognitive techniques and strategies related to worry and how to cope with it (including worry time and worry tree as described above).	'I stopped using the worry tree' 'I was using the decision tree before which was useful.'

TABLE A3 (Continued)

	Description	Example quotes
2.1.2. Discontinued monitoring and/or challenging thoughts	Discontinued tracking, writing down and identifying thoughts as well active attempt at changing thoughts to be more positive, rational or balanced were recorded here.	'I no longer challenge my negative thoughts' 'I have stopped categorising my thoughts'
2.1.3. Discontinued self-analysis and understanding the relationship between thoughts, feelings and behaviours	Participants' discontinued attempts to take an analytic and objective stance in understanding their own experience—Be it in relation to recording their moods, exploring triggers or examining the relationship between their thoughts, feelings and behaviours.	'I stopped using the mood monitoring.' 'The TFB cycle I have not used as much as I should.'
2.1.4. Discontinued shifting focus and distraction	This category reflects participants' discontinued attempts to disengage from dealing with negative thoughts by separating themselves from them (akin to cognitive diffusion) or distracting themselves.	'I used to try and ignore bad thoughts.' 'I would try to "ignore" my thoughts before.'
2.2. Discontinued behavioural techniques and strategies	Discontinued techniques and strategies that require participants 'doing' something or aim at changing behaviour, are considered behavioural techniques and strategies here.	'I stopped calling my friends so much' 'I stopped having meaningful connections with people and sharing my situation'
2.2.1. Discontinued breathing exercises and relaxation	Participants discontinued engagement in exercised aimed are achieving physical relaxation was recorded here.	'I stopped using breathing techniques.'
2.2.2. Discontinued mindfulness and meditation	Participants discontinued engagement in exercises aimed at becoming aware of one's thought processes and 'clearing' one's mind are recorded here.	'Meditation was one I stopped using.'
2.2.3. Discontinued social support	Participants' responses indicating that they stopped utilizing the support from others to aid their mental health.	'I stopped calling my friends so much.' 'I stopped having meaningful connections with people and sharing my situation.'
2.2.4. Discontinued activation and activities	This category reflects discontinued engagement in activities to improve mental health, encompassing stopped activity scheduling as well as exposure related activities.	'I used to use the schedule table to keep me busy and to feel like I achieve things.' 'I was walking every day, clocking my steps.'
2.2.5. Discontinued lifestyle changes (diet, sleep hygiene etc.)	Here participants' responses indicated they stopped implementing changes in their daily lives were recorded.	'I am not putting much effort into having a life outside of work at the moment.' 'I was analysing my day experiences—Sleep hours, activity etc.'
2.2.6. Discontinued goal-oriented and solution-based strategies	This category referred to discontinued strategies aimed at addressing specific problems (i.e., motivation and stress).	'I've stopped planning out every day of my week' 'I've stopped using to do lists.'
2.3. No specific CBT skills discontinued	Within this category participant responses indicating that there are no specific skills they had used but stopped using subsequently are recoded.	'I have not stopped using any techniques.' 'No, I still use them all when I need them.'

Domain 3: Experiences related to post-therapeutic CBT skills usage

3.1. Helpful experiences/impacts of

	Description	Example quotes
3.1.1. Fostered insight and flexibility	Helpful experiences within this category stand for participants being able see different sides to situations, problems, symptoms etc. and/or having developed a different understanding of something through using skills.	'Challenging thoughts [...] helps me realise that my thoughts are not set in stone and they can be changed' 'As it helps me realise that my thoughts are not set in stone and they can be changed.'

(Continues)

TABLE A3 (Continued)

	Description	Example quotes
3.1.2. Self-compassion and self-kindness	Participant statements that suggest that they are looking upon their life circumstances and self with kindness and understanding are recorded in this category.	'Knowing that other people also go through these patterns helped me understand that it wasn't me that was at fault, but more my situation' 'Not beating myself up for not succeeding but saying to myself "well done for trying"'
3.1.3. Self-efficacy and self-confidence	Within this category participants' affirmative statements regarding their life, skills and efforts are recorded.	'It is helping to boost my […] confidence as I feel I am achieving something' 'To give myself confidence … as that is a huge help to me.'
3.1.4. Reduced symptoms and letting go	This category refers to participants' experiences of skills alleviating the core symptoms of their respective mental health problems, for example, enabling them to let go of negative thoughts and worry, manage their anxiety or improve their mood.	'[…] slowly recover the enthusiasm I once had.' 'Has been useful […] to let the worry go a little bit.'
3.1.5. Coping and problem solving	These experiences related to participants finding their skills usage helpful in terms of allowing them to function better in their daily lives and navigate challenges effectively.	'I find that to be useful particularly when dealing with recent stress at work' 'It helped to […] validate real worries and help me find a solution.'
3.1.6. Feeling calm and relaxed	This category stands for participants' experiences of skills as helping them to calm their minds and bodies.	'I find it quickly allows me to stay calm […] often now I find myself able to relax' 'And I found that good for calming myself'
3.1.7. Non-specific helpful experiences	Within the non-specific helpful experiences category, participants' nondescript/generic positive statements about the effects of their skills usage are recorded. This category was used only if the participant's statement could not be categorized reliably in any of the other helpful experience categories; when skills usage was described only as good, helpful or useful but without describing in what way or how that was the case.	'[…] has been life changing!' '[…] with some effect'
3.1.8. Proactive and on-going engagement in selecting, tailoring and practicing CBT skills	Within this category the approach participants took to using skills is described. This approach encompasses participants' proactive, continuing efforts in selecting and combining skills, adapting them in some way to suit their needs and integrating them with their daily lives.	
3.1.8.1. Skills usage as 'work in progress'	Participants responses indicating that they perceive their acquisition of CBT skills to be ongoing at this time.	'Am getting to understand them a little more now […] I am determined to learn […] I have been through the different sections of the programme several times to refresh my memory and understand each one […] so i have to re-read the info over and over again to remind myself' 'I am still learning'
3.1.8.2. Symptom-driven selection and combination of skills	This category refers to participants reporting their skill usage to be triggered by such feelings as anxiety, low mood, stress or anger.	'I often use [*breathing exercises*] to control my anxiety and to help calm my mind so I can use [*the worry tree system*] to work through the things that are worrying me …' '[*Mindfulness*] when my mind is "buzzing" at night.'

TABLE A3 (Continued)

	Description	Example quotes
3.1.8.3. Adaptation and idiosyncratic use of skills	Within this category responses are coded that show evidence that participants adapted skills or developed unique interpretations of skills, usually to increase their usability.	'And even on my bad days I try to think of at least one thing to be positive about which can help improve my mood. This was my way of adapting the "challenging my thoughts" and "reframing a negative situation" to fit in with my everyday life.' 'Usually in my head and I sit and think it out as oppose to writing everything down.'
3.1.8.4. Continued skills practice and integration with daily living	This category encompassed participant responses related to continuous use of skills, often suggesting that skills have been integrated into daily life (i.e. are practiced daily). The whole range of continuous skills practice reaching from frequent use (on a concrete level) to increasingly automatic/implicit skill application (on an abstract level) is covered here.	'I've just been concentrating on the techniques I've learnt and putting them into daily practice and life.' 'I find now that if I think negatively, I automatically challenge the thought and think realistically'
3.2. Hindering experiences/impacts of		
3.2.1.CBT skills as insufficiently effective	This category in essence encompasses participants' experiences of skills not doing what they are supposed to do.	'Most strategies did not work very effectively for me.' 'Some of the time this does not work'
3.2.2. Difficulties in skill application	Other than the previous category, this category refers to participants' perceptions of executing and applying the skills as difficult, hard or challenging. This difficulty may occur independent of the perceived effectiveness of skills and relates to the process of using skills rather than the outcome of skills usage.	'However, I find it hard to control the way I think.' 'This can sometimes be quite difficult.'
3.2.3. Situational and daily barriers to skills usage	Participants citing events in their lives (daily or extraordinary) as influencing them in their experience of skills usage were recorded within this category.	'I've changed jobs (after 7 years) recently which was a major life event for me and this was a hard situation to navigate. I've been worrying and ruminating a lot.' 'I am finding it difficult to set aside that "me time"'
3.2.4.CBT skills as upsetting or problematic in some way	This category refers to participants not just experiencing skills usage as lacking in efficacy but actually describing skills usage as having negative effects in some way.	'I find it relatively discouraging and damaging to categorise these thoughts as unhelpful in whichever way as to me, the thoughts are my own and thus I feel that my own thoughts are the issue and that I myself am therefore being unhelpful.' 'Also introducing worry time became a negative part of my day'
Domain 4: Reasons/experiences surrounding discontinued CBT skills usage		
4.1. Situational and daily barriers as reasons	This category refers to participants stopping to use skills due to or amidst events and stressors in their lives.	'I also do not feel like you have the time at work to keep writing down every time you are worrying about something.' 'Simply because I have not had the time/ have not prioritised myself.'
4.2. Difficulties in the execution of skills	In contrast to 4.1., responses within this category stand for participants struggling with how to actually use particular skills to the point that they stopped using them.	'I began feeling like they did not need to be challenged—I lost my impartiality when reviewing my ways of thinking.' 'The real trouble is when I find myself in a depressive state, it can be really difficult to motivate myself to do anything.'
4.3. Experiences of skills as insufficiently effective	This category relates to participants' experiences of skills as not doing what	'I feel like I need […] fix it long term rather than stopping myself thinking negatively

(Continues)

TABLE A3 (Continued)

	Description	Example quotes
	they are supposed to do and therefore discontinuing their use.	without looking at why I have the negative thought in the first place.' 'Somehow, I stopped, not quite sure why other than I did not find it terribly helpful. It was helpful in the moment but not later on.'
4.4. Experiences of other skills as superior	Participants who refer to other mental health related techniques and strategies in their reasoning as to why they stopped using a particular skill are categories in this category.	'I felt that the strategies I learned overtook the need to continue doing this' 'I find it easier to [*distract myself*] rather than [*meditate*]'
4.5. Experiences of skills not being needed anymore	This category represented responses which suggest that participants stopped using skills because they felt their symptoms had improved to the point that they did not need to use skills anymore to manage them.	'I have not considered using it recently as i am more low than anxious I think' 'Do not need to do that much now as feeling better.'
4.6. Experiences of skills worsening symptoms	Participants who indicated that using skills had made them feel worse in some way are recorded in this category.	'[…] opens up old wounds and makes me very sad and panicked instead of helping me to get through things' 'For me [*breathing techniques*] induce panic'
4.7. Intentions for future/resumed skill usage	When participants indicated that they are intending to use skills in the future, learn new skills or return to the iCBT platform in the near future, then their responses were counted here.	'I see a counsellor once a week to focus on the PTSD and anxiety. I only have one session left which is a little stressful—I may use silver cloud more because of this.' 'I would like to log back into SilverCloud and run through all the techniques again'