



**Acceptability of home-based transcranial direct current stimulation (tDCS) in major depression: a qualitative analysis of individual experiences**

Journal:	<i>Mental Health Review Journal</i>
Manuscript ID	MHRJ-07-2022-0050.R1
Manuscript Type:	Research Paper
Keywords:	depression, qualitative analysis, home treatment, thematic analysis, acceptability

SCHOLARONE™  
Manuscripts

## Abstract

**Purpose:** Acceptability impacts patient preference, treatment adherence and outcomes.

However, acceptability is usually assessed by rates of attrition while multifaceted constructs are not reflected or given meaningful interpretation. Transcranial direct current stimulation (tDCS) is a novel non-invasive brain stimulation that is a potential treatment in major depressive disorder (MDD). Most studies have provided tDCS in a research centre. As tDCS is portable, we developed a home-based treatment protocol which was associated with clinical improvements that were maintained in the long term.

**Design/methodology/approach:** We examined acceptability of home-based tDCS treatment in MDD through questionnaires and individual interviews at three timepoints: baseline, at 6-week course of treatment, and at 6-month follow up. 26 participants (19 women) with MDD in a current depressive episode of at least moderate severity were enrolled. tDCS was provided in a bifrontal montage with real-time remote supervision by video conference at each session. A thematic analysis was conducted of the individual interviews.

**Findings:** Thematic analysis revealed four main themes: effectiveness, side effects, time commitment, and support, feeling held and contained. The themes reflected high acceptability of tDCS treatment, while the theme of feeling contained might be specific to this protocol.

**Originality:** Qualitative analysis methods and individual interviews generated novel insights in the acceptability of tDCS as potential treatment in MDD. Feelings of containment might be specific to the present protocol, which consisted of real-time supervision at each session. Meaningful interpretation can provide context to a complex construct which will aid in understanding and clinical applications.

## Keywords:

depression, qualitative analysis, home-based, thematic analysis, acceptability

## Introduction

Acceptability is a multifaceted construct which impacts on personal preference and treatment adherence. The more acceptable a healthcare intervention is, the stronger adherence is, and in turn, the greater the treatment benefit (Sidani *et al.*, 2009). Acceptability has usually been assessed by participant discontinuation, in which lower rates of attrition are considered to reflect greater rates of acceptability (Furukawa *et al.*, 2016; Simmonds-Buckley *et al.*, 2019). However, attrition rates do not reflect the components in this complex construct nor provide the information to understand what makes an intervention acceptable. Understanding acceptability gives the opportunity to learn novel or innovative perspectives from participants, including personal experience, change in condition or meaning (Mannell and Davis, 2019; Midgley *et al.*, 2014). These aspects could support meaningful intervention refinement.

Sekhon *et al.* (2017) proposed a framework of acceptability, which consists of seven constructs: (1) affective attitude, how an individual feels about the intervention; (2) burden, the perceived amount of effort required to take part in the intervention; (3) ethicality, the extent to which an intervention fits with an individual's value system; (4) intervention coherence, the extent to which an individual understands the intervention and how it works; (5) opportunity costs, the extent to which benefits, profits or values must be given up in order to engage in the intervention; (6) perceived effectiveness, the extent to which the intervention is perceived as likely to achieve its purpose; and (7) self-efficacy, individual confidence about how they can perform the behaviour(s) required to take part in the intervention.

Guidance for developing and implementing new healthcare interventions recommend an assessment of acceptability alongside measures of efficacy (Moore *et al.*, 2015; Skivington *et al.*, 2021). To fully incorporate individual perspective and experience into the construct of acceptability, various methods should be considered that include qualitative or mixed methods approaches (Shaw *et al.*, 2014). Repeated assessments, including prospective,

1  
2  
3 concurrent, and retrospective measurements in a temporal position (i.e., what is the  
4 experience up to this point, what is the anticipated experience from this point onwards) can  
5 reveal discrepancies between anticipated and experienced acceptability. Serial  
6  
7 measurements offer the potential for real-time alterations, particularly within a feasibility  
8  
9 study (Sekhon *et al.*, 2017). Measuring acceptability at the feasibility stage enables  
10  
11 intervention refinement before embarking on a full-scale trial and evaluation of efficacy  
12  
13 (Skivington *et al.*, 2021).  
14  
15

16  
17  
18 Transcranial direct current stimulation (tDCS) is a novel non-invasive brain stimulation  
19  
20 therapy and has the potential to be a first line treatment in major depressive disorder (MDD)  
21  
22 (Woodham *et al.*, 2021). Randomised sham-controlled trials demonstrate a fourfold increase  
23  
24 in clinical response rate and threefold increase in remission rate for a course of active tDCS  
25  
26 (Mutz *et al.*, 2018, 2019). Clinical efficacy has been strongest in first episode and recurrent  
27  
28 MDD, while participants with a history of poor clinical response to previous antidepressant  
29  
30 medications show lower rates of response (Li *et al.*, 2019). Active tDCS was found not be  
31  
32 superior to sham in MDD when treated with selective serotonin reuptake inhibitors (SSRIs)  
33  
34 and suggests it is not supported as an additional treatment (Burkhardt *et al.*, 2023)  
35  
36

37 Acceptability has been assessed by attrition rates, which have been in the range of 10-15%,  
38  
39 with no significant differences observed between active and sham tDCS (Brunoni, Moffa, *et al.*,  
40  
41 2016; Moffa *et al.*, 2020). The majority of studies had examined tDCS provided within a  
42  
43 clinical research setting or clinic (Brunoni, Moffa, *et al.*, 2016; Moffa *et al.*, 2020; Mutz *et al.*,  
44  
45 2018, 2019). However, tDCS involves daily sessions for several weeks requiring daily travel  
46  
47 for participants. As tDCS is portable and safe, it could be provided in a community setting in  
48  
49 participants' homes (Woodham *et al.*, 2021). To date, there has not been a qualitative study  
50  
51 of the acceptability of tDCS within MDD.  
52  
53

54  
55 We investigated the acceptability of a home-based tDCS protocol for MDD. We developed  
56  
57 questionnaires and semi-structured interviews based on Sekhon *et al.* (2017) framework  
58  
59 model of acceptability. Assessments were conducted prior to the initiation of treatment,  
60



1  
2  
3 immediately following the end of treatment, and at a long term 6-month follow up. Here we  
4  
5 present our qualitative analysis of individual participant experiences.  
6  
7  
8  
9

## 10 **Methods**

11  
12 Research ethics approval was provided by the London Fulham Research Ethics Committee,  
13  
14 and all participants provided written informed consent (ClinicalTrials.gov ID: NCT03632434).  
15  
16 26 MDD participants (mean age  $40.9 \pm 14.2$  years; 19 women) completed a 6-week trial of  
17  
18 home-based tDCS. MDD participants were in a current depressive episode, without  
19  
20 psychotic features, as defined by Diagnostic Statistical Manual of Mental Disorders, Fifth  
21  
22 Edition (DSM-5) (American Psychiatric Association, 2013), determined by a structured  
23  
24 assessment using Mini-International Neuropsychiatric Interview (MINI; Version 7.0.2)  
25  
26 (Sheehan *et al.*, 1998). Depressive severity was assessed by the 17-item Hamilton  
27  
28 Depression Rating Scale (HAMD) (Hamilton, 1960), with a minimum score of 16, indicating a  
29  
30 moderate to severe severity. Participants were required to be engaging in psychological  
31  
32 therapy, which could include online CBT, or to be taking antidepressant medication.  
33  
34 Exclusion criteria included treatment resistant depression as defined by poor clinical  
35  
36 response to 2 or more antidepressant trials, any concurrent DSM-5 comorbid Axis I or II  
37  
38 disorder within the previous 6 months, including bipolar disorder, obsessive compulsive  
39  
40 disorder, or primary psychotic disorder, having significant risk of suicide or self-harm,  
41  
42 pregnant women or women who were breastfeeding, history of ECT, TMS or VNS, any  
43  
44 exclusion criteria for receiving tDCS, including having a scalp or skin condition (e.g. psoriasis  
45  
46 or eczema), having metallic implants, including intracranial electrodes or a pacemaker.  
47  
48  
49 A total of 21 tDCS sessions were provided in a bifrontal montage, 2mA, anode over the left  
50  
51 dorsolateral prefrontal cortex (DLPFC) and cathode over the right DLPFC. Conductive  
52  
53 rubber electrodes covered by saline-soaked sponges were 35cm<sup>2</sup> in diameter. Each session  
54  
55 was 30 minutes, consisting of 5 sessions per week for 3 weeks and then 2 sessions per  
56  
57  
58  
59  
60

1  
2  
3 week for 3 weeks. The tDCS devices were Flow Neuroscience (23 participants) or  
4 Neuroelectronics Starstim 8 system (3 participants). tDCS was administered in participants'  
5 home and a research team member was present for each in person or by video link.  
6  
7

8  
9  
10 An acceptability questionnaire was devised based on Sekhon *et al.* (2017) framework model  
11 and piloted with healthy controls prior to use in the present study. Responses were acquired  
12 at 3 timepoints: (t1) baseline prior to the start of treatment, (t2) 6-week end of treatment, and  
13 (t3) 6-month follow up. The baseline questionnaire consisted of five questions: (1) general  
14 acceptability: 'How acceptable do you consider the tDCS sessions to be?'; (2) perceived  
15 effectiveness: 'How helpful do you think the tDCS sessions may be for improving your  
16 depressive symptoms?'; (3) side effects: 'How likely do you think that there will be negative  
17 side effects from the tDCS sessions?'; (4) ethicality: 'How ethical do you think the tDCS  
18 sessions are?'; (5) burden: 'How much effort do you think you need to put in for the tDCS  
19 sessions?'. Responses were rated on a 7-point anchored Likert scale, ranging from e.g.  
20 "very acceptable" to "very unacceptable", with the opportunity for open-ended responses.  
21  
22 The end of treatment questionnaire consisted of the same questions written in the past  
23 tense, with the addition of a sixth question: (6) affective attitude: 'Would you recommend the  
24 tDCS sessions to others?', and a further four open ended questions related to the study  
25 design: (7) 'Please explain, in your view, what were the most successful parts of the study?';  
26 (8) 'Please explain in your view what were the least successful parts of the study?'; (9) 'Are  
27 there any ways in which the study can be improved?'; (10) 'Do you have any other  
28 comments?'. These questions sought to encompass acceptability as an overall concept,  
29 helpfulness, side effects, effort and burden, ethicality, self-efficacy, and recommendation  
30 (Sekhon *et al.*, 2017). These terms were up to the participant and their responses were led  
31 by their individual attitude or value system. If any clarification was requested, consideration  
32 for the treatment/safety monitoring only (i.e., not to include additional study questionnaires  
33 and tasks).  
34  
35  
36  
37  
38  
39  
40  
41  
42  
43  
44  
45  
46  
47  
48  
49  
50  
51  
52  
53  
54  
55  
56  
57  
58  
59  
60

1  
2  
3 Participants responded to the questions in writing or in a video or voice recording, conducted  
4 via Microsoft Teams and transcribed verbatim. The questionnaire was completed by 26 MDD  
5 participants at t1, 21 MDD at t2 (plus 2 in pre-Covid conditions), and 15 MDD at t3. Semi-  
6 structured interviewing was offered at t2 and t3, based on Kallio *et al.*, (2016). Participants  
7 was interviewed on the main themes (or categories) from Sekhon *et al.* (2017) acceptability  
8 framework and then were encouraged to speak freely on their experience. Written or Likert  
9 only responses were not included in thematic analysis. 15 agreed to a recorded interview at  
10 t2 and 14 at t3. No data was recorded for declining an interview. The interviewers  
11 (researcher 1 (R1) and R2) were the same researchers present at each trial session and  
12 were supported by expert qualitative researchers (R3 and R4) through training and  
13 supervision meetings.  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25  
26

27 For the individual recorded interviews, thematic analysis was applied to identify common  
28 themes in the data using systematic pattern recognition (Clarke and Braun, 2017; Fereday  
29 and Muir-Cochrane, 2006). Thematic analysis usually involves six stages to ensure rigor and  
30 trustworthiness: (1) data familiarization; reading, transcribing and making notations in the  
31 transcript; (2) initial code generation; using a systematic approach to coding with peer  
32 debriefing and an audit trail of code generation and testing reliability of the coding  
33 framework; (3) identification of initial themes; gathering data into hierarchies of concepts and  
34 themes; (4) thematic map generation; applying the coding to themes; (5) review of themes;  
35 connecting codes and refining themes by consensus; (6) report generation; selection of  
36 extract examples to produce a report and corroborate themes (Braun and Clarke, 2006).  
37  
38  
39  
40  
41  
42  
43  
44  
45  
46  
47  
48

49 Each stage was conducted in order: (1) data familiarization, completed by R1 and supported  
50 by R2, with transcribing. Stage (2) initial code generation; coding was completed by (R1)  
51 using open, axial, and selective coding techniques to generate themes (Williams and Moser,  
52 2019). R1 was provided with coder training and pilot intercoder reliability assessments  
53 (Neuendorf, 2018). Data was evaluated manually on a master file using line-by-line open  
54 coding, where units of text containing salient themes were labelled using descriptive codes.  
55  
56  
57  
58  
59  
60



1  
2  
3 These codes are descriptive words or ideas which participants consistently used to convey  
4 their experiences and opinions. Codes were synthesized into categories based on units'  
5 common properties. In the process of axial coding, the researcher determined the  
6 relationships between the categories through their interpretive lens. In the selective coding of  
7 the data, the categories and their relationships were interpreted to describe newly emerging  
8 themes (Supplemental File 1). In addition to discussions around ensuring accurate context  
9 and meaning, led to 3 refinements of coding and (3) identification of initial themes. These  
10 were tested and reviewed, with supervision from R3 and R4. (4) Thematic map generation  
11 and (5) review of themes was conducted within meetings held with R1, R3, and R4, with 2  
12 iterations of the themes. Consensus was met through discussion and reviewing the  
13 contextual quote or code in the transcripts to ensure meaning is kept, (6) report generation  
14 was completed by R1 and R2. The most poignant or representative quotes were chosen to  
15 reflect the chosen themes, with review by R3 and R4 (Anderson, 2010).  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25  
26  
27  
28  
29  
30  
31  
32  
33

### 34 Findings

35  
36 16 participants (11 women), mean age  $39.75 \pm 14.6$  years (range 19-73 years), provided  
37 individual interviews. Ethnicity was White British (n = 8), mixed race (Black and White, White  
38 and Black British, White and Black African) (n = 3), and Black British Caribbean, Sephardi  
39 Jewish, Chinese, European and White Other (n = 1 for each). Four overarching themes were  
40 identified: (1) effectiveness (2) side effects (3) time commitment (4) support, feeling held and  
41 contained.  
42  
43  
44  
45  
46  
47  
48  
49

50 Clinical ratings and Likert acceptability questionnaire responses have been reported  
51 separately (xxx, 2022). In summary, home-based tDCS with real-time supervision was  
52 associated with significant clinical improvements, high acceptability (endorsed as "very  
53 acceptable" or "quite acceptable") and were maintained long term.  
54  
55  
56  
57  
58  
59  
60



1  
2  
3 92.3% MDD participants (n = 24) completed the 6-week treatment and attrition rate was  
4  
5 7.7%. There was evidence of preliminary efficacy with a significant improvement in  
6  
7 depressive symptoms following treatment (mean HAMD  $5.33 \pm 2.33$ ), which was maintained  
8  
9 at 6 months (mean HAMD  $5.43 \pm 2.73$ ) (xxx, 2022). There was a significant increase in  
10  
11 endorsements from "would recommend" tDCS at the end of treatment to "would strongly  
12  
13 recommend" at follow up. 20.8% participants chose "would very strongly recommend" tDCS  
14  
15 which increased to 55.6% at follow up. Ratings for perceived effectiveness showed  
16  
17 increases from "quite helpful" at baseline to "quite helpful"/"very helpful" at follow up. Side  
18  
19 effects showed a decrease from being "a bit unlikely" at baseline to being "very much  
20  
21 unaffected"/"quite unaffected" at follow up.  
22  
23

24  
25 The results in the present study will be discussed comparatively to quantitative results from  
26  
27 xxx (2022).  
28  
29  
30  
31

### 32 *Overarching theme 1: Effectiveness*

33  
34  
35 The first overarching theme was effectiveness with three subthemes: (i) expectation, (ii)  
36  
37 recovery, enhancement, extent of effectiveness, and (iii) un/certainty and novelty.  
38

#### 39 *Subtheme 1a: Expectation of tDCS as a treatment*

40  
41  
42 Some participants described their expectation of how effective they anticipated the treatment  
43  
44 would be, with wishes for a regeneration, transformation, or a complete removal of their  
45  
46 distress:  
47  
48

49 ' . . .hoping for a new me, a brand new me, a happy you know. Sunny Sunshine,  
50  
51 rainbow roses. Not thinking that I'll still haven't been, this cloud hanging, but the  
52  
53 cloud is obviously reduced but still there. I thought I'd probably completely.

54  
55 Disseminated. Or destroyed but. But I think I just need to know the hard work has  
56  
57 been done'. [Participant A, male, t2]  
58  
59  
60

1  
2  
3 'I mean I, I always goes back to the sort of. Idea that you're, you're looking for 100%  
4 wonder, wonderful results at, this wonder drug or in this. In this case, a device and. I  
5 think we all have that reasonable expectations' [Participant M, male, t3]  
6  
7  
8  
9

10 *Subtheme 1b: Recovery and enhancement: the extent of the effectiveness*  
11

12  
13 Participants reported a clear description of a symptom-by-symptom enhancement that they  
14 notice and how each symptom interacts with one another:  
15

16  
17 'I mean, for me, it's actually everything, um you know, my sleep has improved  
18 completely. You know, I've kind of gone from being up, um, several times a night, not  
19 being able to sleep at all, um to kind of getting restful sleep every single night, so  
20 that's been one of the massive differences. And um worry a lot less. And also, I um. I  
21 don't know, I kind of, I don't wake up feeling hopeless or depressed I kind of wake up  
22 and I can just kind of deal with the day. So yeah, they've, they've been the most  
23 major, major things that I've, I've kind of noticed and everything else then kind of  
24 seem to fit into place.' [Participant J, female, t2]  
25  
26  
27  
28  
29  
30  
31  
32  
33

34 'Yeah, I just did feel the shift in my mood by, at the end of all the sessions. So, I  
35 would. And that's what, you know, there are other things going on as well, but I do  
36 think it had a big part to play in that...I definitely still feel much better. Erm, A bit more  
37 enthusiastic about life. Erm. So yeah, I would say it's still present now.' [Participant B,  
38 female, t3]  
39  
40  
41  
42  
43  
44  
45

46 *Subtheme 1c: Un/certainty and Novelty*  
47

48  
49 Some participants identified uncertainty about the treatment intervention and caution versus  
50 a certainty and novelty to treatment when attributing effectiveness:  
51

52  
53 '. . I'm not sure if it would be like, I would still be feeling bad right now if I wasn't like  
54 doing these things. But like I'd be feeling worse. Literally and so yeah, but I I don't  
55 know. I feel like generally I've been like kind of doing better than I have done before  
56  
57  
58  
59  
60

1  
2  
3 and that like, um and the kind of times I've been feeling low haven't been quite as  
4 bad as they have been before in my life also.' [Participant H, female, t2]  
5  
6

7  
8 'There is a scientific. Erm truth behind it. It's very futuristic, very advanced, very  
9 digital with the control of the app so. That definitely will work' [Participant A, male, t2]  
10  
11  
12  
13

#### 14 15 *Overarching theme 2: Side effects*

16  
17 The second overarching theme was rooted in the experience of side effects, with 2  
18 subthemes: (i) Physical sensation of the treatment, (ii) side effects of treatment.  
19  
20  
21

#### 22 *Subtheme 2a: Physical sensation of the treatment*

23  
24 The sensation was described as a new experience and needing to 'get used to it' as part of a  
25 novel treatment:  
26  
27

28  
29 '... there was a slight discomfort at the beginning of the session. Which is something  
30 I had to get used to. You know, with the...the headgear, heat sensation, stimulation  
31 sensation. But it calmed as I got used to it just because my brain wasn't... something  
32 completely new. Which I have never done before' [Participant A, male, t2]  
33  
34  
35  
36  
37

#### 38 39 *Subtheme 2b: Side effects from the treatment*

40  
41 All participants spoke about side effects, which were associated with an increased degree of  
42 discomfort that required some management:  
43  
44

45  
46 '... I'd say, uh. Bit affected and that was just the redness and dryness of the skin,  
47 but generally it didn't really bother me too much, like enough to stop doing it or  
48 anything". [Participant B, female, t2]  
49  
50  
51  
52

53 The second quote appears to experience both side effects, in addition to physical sensation  
54 as a side effect:  
55  
56  
57  
58  
59  
60

1  
2  
3 . . . You know there is the slight burning sensation that, you know, didn't ever last  
4 through the full session, just a few minutes. Yeah, right at the beginning. I think.  
5  
6  
7 There was a bit redness [after the session], but you know, yeah, it, it was all fine.'  
8  
9 [Participant O, female, t3]  
10

### 11 12 13 14 15 *Overarching theme 3: Time commitment*

16  
17 The third overarching theme was the time commitment, with two subthemes: (i) everyday  
18 commitment, (ii) convenience of having sessions at home, improving acceptability (gaining  
19 time).  
20  
21  
22  
23  
24

#### 25 *Subtheme 3a: An everyday commitment*

26  
27 Participants discussed the increased time commitment of tDCS sessions:  
28  
29

30 'Well, just because even though they [tDCS sessions] were quite straightforward and  
31 relatively easy with what it is, you need to do, uhm, you know, just thinking about  
32 other. Forms of you know. Looking after your mental health. If you're taking pills, you  
33 just have to think about taking a pill or you know if you're doing therapy. Generally  
34 like some sort of talking therapy. Generally that's maybe once a week, so you're  
35 blocking out one time in your diary a week. Scheduled um whereas because this had  
36 to be sort of daily at first and then sort of every other day. So you, you have to think  
37 about that time and commit to that time. And that's not always, um, that can take  
38 effort.' [Participant O, female, t3]  
39  
40  
41  
42  
43  
44  
45  
46  
47  
48  
49

#### 50 *Subtheme 3b: Convenience of having sessions at home, improving acceptability (gaining* 51 *time)*

52  
53 Participants discussed the convenience of home-based sessions and having a dedicated  
54 session that was beneficial, which generated a sense of gaining time and having this time for  
55 themselves:  
56  
57  
58  
59  
60



1  
2  
3 'I didn't have to go anywhere. So there was not much effort involved. And erm. And  
4 because you know, I had to switch off other things. It was actually, I found a very  
5 pleasant, the time for myself. . . It serves two purposes for me. It served two  
6 purposes, one that time. I had to force me to make time for myself to relax, to do to,  
7 dedicated to me, and switch off and also come. You know, I. Maybe that was a  
8 consequence, you know that followed after, which is this kind of like calmness and  
9 small sense of peace within' [Participant K, female, t3]  
10  
11  
12  
13  
14  
15  
16  
17

18  
19 *Overarching theme 4: Support, feeling held and contained*  
20

21 The fourth overarching theme was support, feeling held and contained as each session was  
22 with the same researcher which was viewed as beneficial and rapport-building. There were  
23 two subthemes: (i) Feeling connected by daily visits by the same person, and (ii) Being  
24 observed feels safe versus feels anxiety provoking.  
25  
26  
27  
28  
29

30  
31 *Subtheme 4a: Feeling connected by daily visits by the same person*  
32

33 Participants discussed the importance of having the same researcher at each session which  
34 provided a connection, feeling cared for and contained, in contrast to their negative  
35 experiences of depression:  
36  
37  
38  
39

40 'As you know we met regularly. And because I was meeting with you. Repeatedly, it's  
41 sort of like you build up. A bit a relationship, where you feel comfortable with  
42 someone and a, you know because you have to talk about it. Quite. Sometimes you  
43 know quite disturbing things and. erm You know around depression, and you know  
44 things that have happened to you. So, you do need to feel comfortable with the  
45 person that you're talking to, and I think. I did feel comfortable, and I did feel like you  
46 were very supportive, and I think that having that dedicated person who. Who can  
47 support you through the process is really important. . . it's like really personal and you  
48 know sometimes really hard to talk about stuff like depression. So definitely you  
49  
50  
51  
52  
53  
54  
55  
56  
57  
58  
59  
60

1  
2  
3 know, having somebody you feel comfortable with, made it easier'. [Participant J,  
4  
5 female, t3]  
6  
7

8 'Also the one on one talking. Talking. And in reviewing how I spend. . . , I found that  
9  
10 too really beneficial to me. And it's, it's maybe a little bit of aware of my emotions and  
11  
12 why I was feeling certain, certain way. . . What is really beneficial to Me, I was having  
13  
14 a like a thorough explanation of the process is what we were going to go through on  
15  
16 a day-to-day basis and, and I, you know, having had complete understanding. If there  
17  
18 were any anything that was unsure I felt confident enough to ask further questions.'

19  
20 [Participant E, female, t2]  
21  
22

#### 23 *Subtheme 4b: Being observed feels safe versus feels anxiety provoking*

24  
25  
26 Being observed was a positive experience for many participants, feeling that 'things were  
27  
28 done properly', recognising the importance of human connection, supervision, feeling safe  
29  
30 and less lonely:  
31

32  
33 'I mean, the fact that it's supervised. And as well just makes it safer. Uhm, uh, and it  
34  
35 was part of a wider. Uh. Sort of you're part of a wider network of things. . . I think with  
36  
37 depression and anxiety, a human face. I commu-, interaction with a person makes  
38  
39 you feel more reassured. That things are going. You're doing things properly and.  
40  
41 Sometimes er. Yeah, I that's why I even know that this was all done virtually. I knew  
42  
43 that I was being aided by an actual person rather than a rather than an app'

44  
45 [Participant N, male, t3]  
46  
47

48  
49 For some participants, they acknowledged the necessity of observation, but this was felt as a  
50  
51 negative and somewhat intrusive experience:  
52

53  
54 'I would say probably one of the more uncomfortable things is that whilst you're  
55  
56 participating, you do have someone watching you, erm, that can be just an odd  
57  
58 thought and an odd feeling. I don't want to say that it's unsuccessful because at the  
59  
60

1  
2  
3 same time I recognize that it's a necessity for, for, for what it was, you know'

4  
5 [Participant O, female, t3]  
6  
7  
8  
9

## 10 Discussion

11  
12 Acceptability is a construct which impacts on patient preference, treatment adherence and  
13 outcomes. Typically, acceptability has been assessed by rates of treatment attrition, which  
14 does not reflect the multifaceted complexity of the construct. To the best of our knowledge,  
15 this is the first study to address acceptability of tDCS as a qualitative construct using  
16 Sekhon's (2017) framework within this clinical group. In the present study, acceptability  
17 remained high throughout the treatment protocol and was maintained at the 6-month follow  
18 up. We found that three categories to understand acceptability approached significance or  
19 significantly improved (xxx 2022). These were corroborated as qualitative responses as  
20 themes in the qualitative data.  
21  
22  
23  
24  
25  
26  
27  
28  
29  
30  
31  
32

33 The individual interviews revealed four themes related to effectiveness, side effects, time  
34 commitment, and an experience of support, feeling held, and contained. The findings  
35 presented and discussed were largely aligned with results from xxx (2022).  
36  
37  
38  
39

40 Effectiveness was a main theme from the individual interviews and was demonstrated in  
41 preliminary efficacy in xxx (2022). Many participants described a clear improvement in their  
42 clinical symptoms indicating effectiveness, the subtheme: "expectation" appears to impact on  
43 reported effectiveness. For some participants, there was a held expectation for improvement  
44 in their symptoms and a greater improvement. Conversely, some reported an expectation  
45 after treatment that symptoms would have been more greatly resolved than they had  
46 experienced. Participants were aware of their depressive symptoms and how their  
47 symptoms were changing, though for some, not to the level of improvement they had hoped  
48 for, leading to some disappointment. This may reflect hopelessness-related cognitions that  
49 characterise depression and beliefs that desired outcomes will fail to occur no matter what  
50  
51  
52  
53  
54  
55  
56  
57  
58  
59  
60

1  
2  
3 an individual does (Abramson *et al.*, 1989). However, this was not reflected in xxx (2022),  
4 with no participants expressing thoughts that tDCS would not be helpful at any timepoint.  
5  
6 Therefore, it may be that participants held a higher-than-expected expectation on how  
7  
8 effective tDCS may be for them. Participant expectations of tDCS can directly influence  
9  
10 effectiveness in the same direction (Rabipour *et al.*, 2018). The expectation that the  
11  
12 treatment would fully alleviate depressive symptoms may have contributed to the  
13  
14 improvements that these participants did experience seen from a clinical rating perspective,  
15  
16 in xxx (2022). Intertwined within expectation was the subtheme of un/certainty and novelty,  
17  
18 highlighting the effect of novelty on perceived effectiveness. As some participants were sure  
19  
20 their symptom improvements resulted from the tDCS intervention, describing it as being  
21  
22 novel and seeming to be scientific. On the other hand, some participants were uncertain  
23  
24 about whether the effectiveness was truly a product of the device, in which novelty had the  
25  
26 opposite effect and led them to question its effectiveness. Participant expectation prior to  
27  
28 commencement of a new treatment can impact on clinical outcomes (Patel *et al.*, 2020).  
29  
30  
31 Side effects were a second main theme, in which participants distinguished between the  
32  
33 novel physical sensation associated with tDCS and side effects of the treatment.  
34  
35 Background information was provided to participants prior to enrolment about potential side  
36  
37 effect as part of their informed consent. A distinction between subthemes is new and there is  
38  
39 a role for listening to nuances in participant descriptions. It offers insight into how  
40  
41 participants may experience and distinguish between side effects as an acceptable aspect of  
42  
43 the treatment relative to adverse effects which required attention and amelioration. While  
44  
45 acceptability has usually been measured by tolerability and attrition, examining the impact  
46  
47 and attribution of side effects can clarify reasons for attrition (Brunoni, *et al.*, 2016). Nuances  
48  
49 such as being able to distinguish participant understanding of novel sensations versus side  
50  
51 effect profiles which require intervention may assist in creating comprehensive safety  
52  
53 monitoring screen tools for remote home-based tDCS protocols to prevent and detect  
54  
55 cumulative adverse effects seen in recent remote studies (e.g., Kumpf *et al.*, 2023).  
56  
57  
58  
59  
60



1  
2  
3 Time commitment was the third main theme, related to the acceptability questions of self-  
4 efficacy and burden. xxx (2022) reported there was no consensus in level of effort (or  
5 burden) that participants may or did experience. Most participants anticipated “some or a  
6 little more than usual” effort would be required. Although time commitment is contextualised  
7 around everyday tasks and experienced as an effort; this was not necessary a perceived  
8 negative effort, as some participants appreciated time that they had gained. Responses  
9 were indicative of what weight the participant placed on an “effort comparison”. For example,  
10 some participants felt having sessions with a researcher present was seen as more  
11 “effortful” than taking medication or engaging in therapy, given the sessions were online  
12 (includes technology set up, tDCS treatment then follow up safety questions around adverse  
13 effects). On the other hand, having sessions at home were reported as being easier than  
14 going to see a healthcare professional or waiting for an appointment. Alongside patient  
15 beliefs about a treatment, self-efficacy and ease of administration can reduce the likelihood  
16 of nonadherence to treatment (Bandura, 1978; Horne *et al.*, 2013) and should be considered  
17 for future home-based tDCS protocols. To gain more perspective of the impact of the theme:  
18 time commitment, it may help to have clarity on the “effort comparison”.

19  
20  
21  
22  
23  
24  
25  
26  
27  
28  
29  
30  
31  
32  
33  
34  
35  
36  
37  
38  
39  
40  
41  
42  
43  
44  
45  
46  
47  
48  
49  
50  
51  
52  
53  
54  
55  
56  
57  
58  
59  
60

The fourth theme of support, feeling held, contained, highlighted the importance of the presence of the researcher at each tDCS session. This theme reflects a unique experience of the present study design, which was not described in Sekhon *et al.* (2017) acceptability constructs and thus there is no quantitative data to compare on the Likert scales. When considering complex healthcare interventions, the notion of support, feeling held and/or contained (or not) may have a role in the acceptability of the intervention. Visits were conducted in real-time by videoconference, as it was conducted during Covid-19 lockdowns. This may have been a factor in this theme, with videoconferencing and/or presence of the researcher being reassuring for some participants but more intrusive for some participants. The presence of the researcher seemed to provide a sense of support and containment for most participants, although some participants also felt it to be anxiety provoking. Participants

1  
2  
3 described a perceived feeling of being held and protected by the research team through the  
4 video link. Being in the presence of another person who is discretely available for an  
5 extended period of time offered an aspect of holding and even feelings of wider community  
6 connection (Papoutsi and Fu, 2021). Conversely, some report the “odd” nature of being  
7 observed on a screen, in silence. This also may have been amplified as participants  
8 navigated their way through the experience of Covid-19 lockdown. Albeit the supervision  
9 seemed to have provided more than the intended safety and ensuring that trial parameters  
10 were met. The dichotomy of this theme may be linked to the positive association found  
11 between perceived need and utilisation of available services (Roberts *et al.*, 2018). Further,  
12 online presence offered unique real-time supervision which may have added to the sense of  
13 being held, contained in form of an additional therapeutic environment. The emergence of  
14 this novel theme demonstrates the benefits of gathering qualitative measures of acceptability  
15 and supports the idea of acceptability being a multifaceted complex construct. While  
16 Sekhon’s *et al.* (2017) provided a comprehensive framework, qualitative approaches to  
17 understanding acceptability help identify views seen as a priority for participants, identify  
18 how study parameters impact the experience of acceptability and contribute to large scale  
19 study design.

20  
21  
22  
23  
24  
25  
26  
27  
28  
29  
30  
31  
32  
33  
34  
35  
36  
37  
38  
39  
40  
41  
42  
43  
44  
45  
46  
47  
48  
49  
50  
51  
52  
53  
54  
55  
56  
57  
58  
59  
60  
Ethicality was assessed at each timepoint but did not emerge as a theme in the individual  
interviews. Ethicality ratings remained high throughout the study (xxx, 2022) and together,  
this may suggest that either participant assumption or personal views of ethicality were  
fulfilled; or information that was given represented the treatment well and did not conflict with  
their own internal value system. Therefore, did not have additional comments to provide  
regarding ethicality. Though, again having an agreed consensus of how ethicality is being  
reflected from both researcher and participant would have provided more information and  
understanding. This might be of particular interest within mental health fields (i.e., stigma), in  
addition to global challenges such as equity and sustainability of treatments.

1  
2  
3 Further research could address a systematic review of data between semi-structured  
4 interviews and any data collected through written response to evaluate and address any  
5 systematic differences in how the information was reported to researchers.  
6  
7  
8  
9

10 Limitations to the present study include the lack of a placebo, sham-controlled treatment arm  
11 as all participants had received the active tDCS device. Participants were indicated to use an  
12 understanding of terms such as acceptable or ethical in line with individual understanding  
13 and experience, which did vary across participants. Further exploration around the individual  
14 differences of value systems for example, may be interesting in future research. There was  
15 a potential conflict with having the researcher giving both the treatment sessions and  
16 assessing acceptability. However, the participant-researcher relationship was evident in  
17 multiple sub-themes, highlighting the benefits of participants feeling supported and contained  
18 (Papoutsi and Fu, 2021). As real-time supervision was provided at each tDCS session in the  
19 present protocol, negative experiences of adverse effects might have been attenuated and  
20 the additional support might have contributed to the high response and remission rates (xxx,  
21 2022), and, in turn, increased the perceived effectiveness of the treatment. Interviews from  
22 participants prior to commencing the study and who discontinued treatment would provide  
23 additional perspectives.  
24  
25  
26  
27  
28  
29  
30  
31  
32  
33  
34  
35  
36  
37  
38  
39

40 In summary, this is the first study to address qualitative acceptability of tDCS within MDD.  
41 Four main themes emerged from the individual interviews: effectiveness, side effects, time  
42 commitment, and support, feeling held and contained. The themes of effectiveness, side  
43 effects and effort support proposed components of acceptability (Sekhon *et al.*, 2017). The  
44 theme of support, feeling held, containment seemed specific to the present protocol which  
45 involved remote real-time supervision at each session. The present study has demonstrated  
46 the complexity of acceptability as a construct and the benefits of obtaining qualitative views,  
47 in the emergence of nuance and novel themes. Qualitative approaches can support in  
48 identifying novel aspects to consider in the early stages of research that could lead to  
49  
50  
51  
52  
53  
54  
55  
56  
57  
58  
59  
60

1  
2  
3  
4  
5  
6  
7  
8  
9  
10  
11  
12  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25  
26  
27  
28  
29  
30  
31  
32  
33  
34  
35  
36  
37  
38  
39  
40  
41  
42  
43  
44  
45  
46  
47  
48  
49  
50  
51  
52  
53  
54  
55  
56  
57  
58  
59  
60

intervention refinement. Randomised control trials should include mixed methods to measure acceptability to determine if beliefs and attitudes about treatment affect clinical outcome.

Mental Health Review Journal



## References

- Abramson, L.Y., Metalsky, G.I. and Alloy, L.B. (1989), "Hopelessness depression: A theory-based subtype of depression", *Psychological Review*, American Psychological Association, US, Vol. 96 No. 2, pp. 358–372.
- American Psychiatric Association. (2013), *Diagnostic and Statistical Manual of Mental Disorders*, Fifth Edition., American Psychiatric Association, available at:<https://doi.org/10.1176/appi.books.9780890425596>.
- Anderson, C. (2010). Presenting and evaluating qualitative research. *American Journal of Pharmaceutical Education*, 74(8).
- Aparicio, L. V., Rosa, V., Razza, L. M., Sampaio-Junior, B., Borrione, L., Valiengo, L., ... & Brunoni, A. R. (2019). Transcranial direct current stimulation (tDCS) for preventing major depressive disorder relapse: Results of a 6-month follow-up. *Depression and Anxiety*, 36(3), 262-268.
- Bandura, A. (1978), "Self-efficacy: Toward a unifying theory of behavioral change", *Advances in Behaviour Research and Therapy*, Vol. 1 No. 4, pp. 139–161.
- Bares, M., Brunovsky, M., Stopkova, P., Hejzlar, M., & Novak, T. (2019). Transcranial direct-current stimulation (tDCS) versus venlafaxine ER in the treatment of depression: a randomized, double-blind, single-center study with open-label, follow-up. *Neuropsychiatric Disease and Treatment*, 3003-3014.
- Braun, V. and Clarke, V. (2006), "Using thematic analysis in psychology", *Qualitative Research in Psychology*, Routledge, Vol. 3 No. 2, pp. 77–101.
- Brunoni, A.R., Loo, C.K. and Nitsche, M.A. (2016), "Safety and tolerability", *Transcranial Direct Current Stimulation in Neuropsychiatric Disorders: Clinical Principles and Management*, pp. 343–350.
- Brunoni, A.R., Moffa, A.H., Fregni, F., Palm, U., Padberg, F., Blumberger, D.M., Daskalakis, Z.J., et al. (2016), "Transcranial direct current stimulation for acute major depressive

- 1  
2  
3 episodes: Meta-analysis of individual patient data”, *British Journal of Psychiatry*, Vol.  
4  
5 208 No. 6, pp. 522–531.  
6
- 7 Burkhardt, G., Kumpf, U., Crispin, A., Goerigk, S., Andre, E., Plewnia, C., ... & Padberg, F.  
8  
9 (2023). Transcranial direct current stimulation as an additional treatment to selective  
10 serotonin reuptake inhibitors in adults with major depressive disorder in Germany  
11 (DepressionDC): a triple-blind, randomised, sham-controlled, multicentre trial. *The*  
12 *Lancet*, 402(10401), 545-554.  
13  
14  
15  
16  
17  
18  
19 Clarke, V. and Braun, V. (2017), “Thematic analysis”, *The Journal of Positive Psychology*,  
20  
21 Routledge, Vol. 12 No. 3, pp. 297–298.  
22
- 23 De Smet, S., Nikolin, S., Moffa, A., Suen, P., Vanderhasselt, M. A., Brunoni, A. R., & Razza,  
24  
25 L. B. (2021). Determinants of sham response in tDCS depression trials: A systematic  
26 review and meta-analysis. *Progress in Neuro-Psychopharmacology and Biological*  
27 *Psychiatry*, 109, 110261.  
28  
29  
30  
31
- 32 Fereday, J. and Muir-Cochrane, E. (2006), “Demonstrating rigor using thematic analysis: A  
33  
34 hybrid approach of inductive and deductive coding and theme development”,  
35  
36 *International Journal of Qualitative Methods*, SAGE Publications Inc, Vol. 5 No. 1, pp.  
37  
38 80–92.  
39
- 40 Furukawa, T.A., Salanti, G., Atkinson, L.Z., Leucht, S., Ruhe, H.G., Turner, E.H., Chaimani,  
41  
42 A., et al. (2016), “Comparative efficacy and acceptability of first-generation and second-  
43  
44 generation antidepressants in the acute treatment of major depression: protocol for a  
45  
46 network meta-analysis”, *BMJ Open*, British Medical Journal Publishing Group, Vol. 6 No.  
47  
48 7, p. e010919.  
49
- 50  
51 Hamilton, M. (1960), “A rating scale for depression”, *Journal of Neurology, Neurosurgery &*  
52  
53 *Psychiatry*, Vol. 23 No. 1, pp. 56–62.  
54
- 55 Horne, R., Chapman, S.C.E., Parham, R., Freemantle, N., Forbes, A. and Cooper, V. (2013),  
56  
57 “Understanding patients’ adherence-related beliefs about medicines prescribed for long-  
58  
59  
60

- 1  
2  
3 term conditions: A meta-analytic review of the Necessity-Concerns Framework”, *PLOS*  
4 *ONE*, Public Library of Science, Vol. 8 No. 12, p. e80633.
- 5  
6  
7 Kallio, H., Pietilä, A. M., Johnson, M., & Kangasniemi, M. (2016). Systematic methodological  
8 review: developing a framework for a qualitative semi-structured interview guide. *Journal*  
9 *of Advanced Nursing*, 72(12), 2954-2965.
- 10  
11  
12  
13  
14 Kumpf, U., Palm, U., Eder, J., Ezim, H., Stadler, M., Burkhardt, G., ... & Padberg, F. (2023).  
15 TDCS at home for depressive disorders: an updated systematic review and lessons  
16 learned from a prematurely terminated randomized controlled pilot study. *European*  
17 *Archives of Psychiatry and Clinical Neuroscience*, 1-18.
- 18  
19  
20  
21  
22  
23 Li, M. S., Du, X. D., Chu, H. C., Liao, Y. Y., Pan, W., Li, Z., & Hung, G. C. L. (2019). Delayed  
24 effect of bifrontal transcranial direct current stimulation in patients with treatment-  
25 resistant depression: a pilot study. *BMC Psychiatry*, 19, 1-9.
- 26  
27  
28  
29  
30 Mannell, J., & Davis, K. (2019). Evaluating complex health interventions with randomized  
31 controlled trials: how do we improve the use of qualitative methods?. *Qualitative Health*  
32 *Research*, 29(5), 623-631.
- 33  
34  
35  
36  
37  
38 Midgley, N., Ansaldo, F., & Target, M. (2014). The meaningful assessment of therapy  
39 outcomes: Incorporating a qualitative study into a randomized controlled trial evaluating  
40 the treatment of adolescent depression. *Psychotherapy*, 51(1), 128.
- 41  
42  
43  
44  
45 Moffa, A.H., Martin, D., Alonzo, A., Bennabi, D., Blumberger, D.M., Benseñor, I.M.,  
46 Daskalakis, Z., et al. (2020), “Efficacy and acceptability of transcranial direct current  
47 stimulation (tDCS) for major depressive disorder: An individual patient data meta-  
48 analysis”, *Progress in Neuro-Psychopharmacology and Biological Psychiatry*, Vol. 99, p.  
49 109836.
- 50  
51  
52  
53  
54  
55 Moore, G.F., Audrey, S., Barker, M., Bond, L., Bonell, C., Hardeman, W., Moore, L., et al.  
56 (2015), “Process evaluation of complex interventions: Medical Research Council  
57 guidance”, *BMJ*, British Medical Journal Publishing Group, Vol. 350, p. h1258.
- 58  
59  
60

- 1  
2  
3 Mutz, J., Edgcumbe, D.R., Brunoni, A.R. and Fu, C.H.Y. (2018), "Efficacy and acceptability  
4 of non-invasive brain stimulation for the treatment of adult unipolar and bipolar  
5 depression: A systematic review and meta-analysis of randomised sham-controlled  
6 trials", *Neuroscience & Biobehavioral Reviews*, Vol. 92, pp. 291–303.  
7  
8  
9  
10  
11 Mutz, J., Vipulanathan, V., Carter, B., Hurlemann, R., Fu, C.H.Y. and Young, A.H. (2019),  
12 "Comparative efficacy and acceptability of non-surgical brain stimulation for the acute  
13 treatment of major depressive episodes in adults: Systematic review and network meta-  
14 analysis", *BMJ*, p. 1079.  
15  
16  
17  
18  
19 Neuendorf, K. A. (2018). 18 Content analysis and thematic analysis. *Advanced Research*  
20 *Methods for Applied Psychology: Design, Analysis and Reporting*, 211.  
21  
22  
23  
24  
25 Papoutsis, V. and Fu, C.H.Y. (2021), "Observing infants together: long-term experiences of  
26 observers and families", *Infant Observation*, Routledge, Vol. 24 No. 1, pp. 4–22.  
27  
28  
29 Patel, S., Akhtar, A., Malins, S., Wright, N., Rowley, E., Young, E., ... & Morriss, R. (2020).  
30 The acceptability and usability of digital health interventions for adults with depression,  
31 anxiety, and somatoform disorders: qualitative systematic review and meta-  
32 synthesis. *Journal of Medical Internet Research*, 22(7), e16228  
33  
34  
35  
36  
37  
38 Rabipour, S., Wu, A.D., Davidson, P.S.R. and Iacoboni, M. (2018), "Expectations may  
39 influence the effects of transcranial direct current stimulation", *Neuropsychologia*, Vol.  
40 119, pp. 524–534.  
41  
42  
43  
44  
45 Roberts, T., Miguel Esponda, G., Krupchanka, D., Shidhaye, R., Patel, V., & Rathod, S.  
46 (2018). Factors associated with health service utilisation for common mental disorders:  
47 a systematic review. *BMC Psychiatry*, 18, 1-19.  
48  
49  
50  
51 Sekhon, M., Cartwright, M. and Francis, J.J. (2017), "Acceptability of healthcare  
52 interventions: an overview of reviews and development of a theoretical framework",  
53 *BMC Health Services Research*, Vol. 17 No. 1, p. 88.  
54  
55  
56  
57  
58  
59  
60



- 1  
2  
3 Shaw, R.L., Larkin, M. and Flowers, P. (2014), "Expanding the evidence within evidence-  
4 based healthcare: thinking about the context, acceptability and feasibility of  
5 interventions", *Evidence-Based Medicine*, Vol. 19 No. 6, pp. 201–203.  
6  
7  
8  
9 Sheehan, D.V., Lecrubier, Y., Sheehan, K.H., Amorim, P., Janavs, J., Weiller, E., Hergueta,  
10 T., *et al.* (1998), "The Mini-International Neuropsychiatric Interview (M.I.N.I.): the  
11 development and validation of a structured diagnostic psychiatric interview for DSM-IV  
12 and ICD-10", *The Journal of Clinical Psychiatry*, Vol. 59 Suppl 20, pp. 22-33;quiz 34-57.  
13  
14  
15  
16  
17 Sidani, S., Epstein, D.R., Bootzin, R.R., Moritz, P. and Miranda, J. (2009), "Assessment of  
18 preferences for treatment: validation of a measure", *Research in Nursing & Health*, Vol.  
19 32 No. 4, pp. 419–431.  
20  
21  
22  
23  
24 Simmonds-Buckley, M., Kellett, S. and Waller, G. (2019), "Acceptability and efficacy of group  
25 behavioral activation for depression among adults: A meta-analysis", *Behavior Therapy*,  
26 Vol. 50 No. 5, pp. 864–885.  
27  
28  
29  
30 Skivington, K., Matthews, L., Simpson, S.A., Craig, P., Baird, J., Blazeby, J.M., Boyd, K.A.,  
31 *et al.* (2021), "Framework for the development and evaluation of complex interventions:  
32 gap analysis, workshop and consultation-informed update", *Health Technology*  
33 *Assessment*, Vol. 25 No. 57, pp. 1–132.  
34  
35  
36  
37  
38 Williams, M., & Moser, T. (2019). The art of coding and thematic exploration in qualitative  
39 research. *International Management Review*, 15(1), 45-55.  
40  
41  
42  
43  
44 Woodham, R., Rimmer, R.M., Mutz, J. and Fu, C.H.Y. (2021), "Is tDCS a potential first line  
45 treatment for major depression?", *International Review of Psychiatry*, Taylor & Francis,  
46 Vol. 33 No. 3, pp. 250–265.  
47  
48  
49  
50  
51  
52  
53  
54  
55  
56  
57  
58  
59  
60

**Declaration of Interest**

tDCS devices were provided by Neuroelectronics, Flow Neuroscience, and University of East London. R1 acknowledges support from UEL Excellence PhD studentship. R4 acknowledges support from the Rosetrees Trust (A1950, CF20212104), Baszucki Brain Research Fund, Milken Institute (BD00029), Flow Neuroscience (NCT05202119), NIMH (R0110090221). Funders had no role in the data collection and analysis, interpretation of the data, decision to publish, or preparation of the manuscript. All authors declare that there are no additional conflicts of interest.

Mental Health Review Journal



			reaction requiring intervention	<p>“No physical side effects, ‘a bit of an itch’..”</p> <p>“Tingling, ‘nothing really to comment greatly about’ and didn’t last”</p>
<p>Time Commitment</p> <p>i. Everyday Commitment</p> <p>ii. Convenience of having sessions at home, improving acceptability (gaining time)</p>	<p>Effort, Burden, Cost Opportunities</p>	<p>Time commitment expressed as an additional effort or burden, initially s everyday sessions</p> <p>Completing sessions in privacy of own home feels personal</p> <p>Gaining time for myself out of a busy schedule</p>	<p>Time commitment as Increased time</p> <p>Convenience of at-home session</p> <p>Gaining time being at home</p>	<p>“Initial effort with time commitment and personal effort due to feeling depressed”</p> <p>“you have to think about that time and commit to that time. And that’s not always, um, that can take effort”</p> <p>“The effort is in attending sessions, time commitment: No effort to set up device”</p> <p>“fits into my normal lifestyle”</p> <p>“Didn’t have to rush home from work, to make an appt, it was just easy.”</p> <p>“Served 2 purposes: Forced me to take time for myself followed by sense of calm and peace”</p>
<p>Support, feeling held, contained</p> <p>i. Daily visits, interaction, felt connected, having the same person</p> <p>ii. Being observed, for the most positive, felt safe</p> <p>iii. Being observed, for some anxiety</p>	No category	<p>Researchers presence has had an impact, having 1:1 or someone to speak with, Idea of being connected through the daily visits and intensive support offered by the researchers</p> <p>Being observed, viewed as safe, reassuring, or “odd”, “weird”</p>	<p>Researcher presence As regular visits</p> <p>Rapport building/Same person</p> <p>Observations – Observations as positive, Observations as negative</p>	<p>“Talking with researcher was pretty helpful; helping me evaluate where I stand and deal with emotions rather than ignore them/pretend they’re not there”</p> <p>“because I was meeting with you. Repeatedly, it's sort of like you build up. A bit a relationship, where you feel comfortable with someone and a, you know because you have to talk about it. Quite. Sometimes you know quite disturbing things”</p> <p>“Might be different if having multiple researchers”</p> <p>“[Uncomfortable with] The idea of someone watching you, more comfortable with researcher camera off”</p> <p>“Researcher [was] very calming and good to have someone supporting people who feel this way”</p> <p>“Good having 1:1 but also weird having someone there rather than on your own”</p>



1  
2  
3  
4  
5  
6  
7  
8  
9  
10  
11  
12  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25  
26  
27  
28  
29  
30  
31  
32  
33  
34  
35  
36  
37  
38  
39  
40  
41  
42  
43  
44  
45  
46

				“access to someone to speak with to ensure correct use and to talk with as well.”
--	--	--	--	---

Mental Health Review Journal

1  
2  
3 *Themes and Subthemes*  
4

5 Version 1 Themes and subthemes were developed during a team meeting and coded into the table  
6 below.  
7

8

Themes	Subthemes
<b>Theme 1: Side effects</b>	Subtheme 1.1: Sensation of the treatment
	Subtheme 1.2: Side-effects from the treatment
<b>Theme 2: Effectiveness</b>	Subtheme 2.1: Expectation of tDCS as a treatment
	Subtheme 2.2: Recovery, enhancement; the extent of the effectiveness
<b>Theme 3: Time commitment</b>	Subtheme 2.3: Uncertainty, novelty
	Subtheme 3.1: Everyday commitment
	Subtheme 3.2: Convenience of having sessions at home, improving acceptability (gaining time)
<b>Theme 4: Support, feeling held, contained</b>	Subtheme 4.1: daily visits, interaction, felt connected, having the same person
	Subtheme 4.2: being observed i) for most was positive, felt safe
	Subtheme 4.3: being observed and ii) for some was anxiety.

9  
10  
11  
12  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25  
26  
27  
28  
29  
30  
31  
32  
33  
34  
35  
36  
37  
38  
39  
40  
41  
42  
43  
44  
45  
46  
47  
48  
49

50  
51 After reviewing the themes together with the supervisory team they were edits and refined to the  
52 below table.  
53  
54  
55  
56  
57  
58  
59  
60

Version 2 (final)

Themes	Subthemes
<b>Theme 1: Side Effects</b>	Subtheme 1.1: Physical Sensation of the treatment
	Subtheme 1.2: Side-effects from the treatment
<b>Theme 2: Effectiveness</b>	Subtheme 2.1: Expectation of tDCS as a treatment
	Subtheme 2.2: Recovery & enhancement: the extent of the effectiveness
	Subtheme 2.3: Un/certainty & novelty
<b>Theme 3: Time commitment</b>	Subtheme 3.1: An everyday commitment
	Subtheme 3.2: Convenience of having sessions at home, improving acceptability (gaining time)
<b>Theme 4: Support, feeling held, contained</b>	Subtheme 4.1: Feeling connected by daily visits by the same person
	Subtheme 4.2: Being observed feels safe versus feels anxiety provoking