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# Brief Scheduled Phone Support From a Clinician to Enhance Computer-Aided Self-Help for Obsessive-Compulsive Disorder: Randomized Controlled Trial



Mark Kenwright,\* Isaac Marks,\* Candida Graham,  
Abigail Franes, and David Mataix-Cols\*

*Institute of Psychiatry, Kings College London and South London  
and Maudsley Mental Health Trust*

Treatment-resistant obsessive-compulsive disorder (OCD) patients from around the United Kingdom who employed computer-guided self-help by using *BTSteps* over 17 weeks were randomized to have brief live phone support from a clinician either (1) in nine *Scheduled* clinician-initiated calls or (2) only in calls *Requested* by the patient ( $n = 22$  per condition). Call content and mean duration were similar across conditions. *Scheduled* support patients dropped out significantly less often, did more homework of self-exposure and self-imposed ritual prevention (95% vs. 57%), and showed more improvement in OCD symptoms and disability. Mean total support time per patient over 17 weeks was 76 minutes for *Scheduled* and 16 minutes for *Requested* patients. Giving brief support proactively by phone enhanced OCD patients' completion of and improvement with computer-aided self-help. © 2005 Wiley Periodicals, Inc. *J Clin Psychol* 61: 1499–1508, 2005.

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Healthcare Technology Systems (HTS) operated *BTSteps* for all 44 patients, access to which for 34 was by the South London and Maudsley Mental Health Trust, and for 10 by the West London Mental Health Trust. Dr Sabine Landau of the Institute of Psychiatry kindly gave statistical advice. Joyce Hirsch of HTS gave helpful information on human support in the past *BTSteps* randomized controlled trial, and John Greist made valuable comments on the manuscript. Professor Marks has intellectual property rights in *BTSteps*.

Correspondence concerning this article should be addressed to: Professor Isaac M. Marks, M.D., 43 Dulwich Common, London, SE217EU, UK; e-mail: I.Marks@iop.kcl.ac.uk.

\*Also affiliated to Imperial College London and West London Mental Health Trust.

Behavioral exposure therapy with ritual prevention (ERP) is effective for obsessive-compulsive disorder (OCD) (reviewed by van Balkom et al., 1994), but demand for it exceeds the supply of trained ERP therapists. A computer-guided self-help system can increase access to ERP. OCD patients improved by using the system called *BTSteps* (BT: behavior therapy) in naturalistic trials (Greist et al., 1998; Bachofen et al., 1999) and reduced their rituals to almost the same extent as did their counterparts who were randomized to clinician-guided ERP in a controlled trial (Greist et al., 2002).

Once the *BTSteps* system became available by phone for patients living anywhere in the United Kingdom, an important question arose: Should a clinician give brief help-line support for *BTSteps* users proactively in scheduled calls or only when requested by the patient? The absence of and need for research into the support of users of computer-aided self-help systems were highlighted by the National Institute of Clinical Excellence for England and Wales (NICE, 2002). To be meaningful such research requires support so that each computer-aided system can be examined individually for a particular disorder: This study tested *BTSteps* for OCD.

## Method

### *Mode of Operation of BTSteps*

Patients anywhere in the United Kingdom were referred by general practitioners, psychiatrists, or themselves to a *BTSteps* clinic situated originally in the Maudsley Hospital in southeast London, and later in west London (Marks et al., 2003). On receipt of a referral letter, clinic staff (nurse-therapist or psychiatrist) screened referrals in a 45-minute structured interview (Gega, Kenwright, Mataix-Cols, Cameron, & Marks, 2004) by phone (or face to face in three cases). If suitable (criteria given later), patients were told the rationale for exposure therapy and instructed in the use of *BTSteps*. The clinic administrator gave or sent them a user's manual, a personal identification number to phone *BTSteps*'s interactive voice response (IVR) computer system, and the clinic's live phone number in case of problems. On their first IVR call, patients chose their own four-digit password. The computer faxed a progress report to the clinic weekly and whenever a user reached a new step. Patients also received an automated letter of praise and encouragement by mail whenever they began a new step in *BTSteps*. At intervals *BTSteps* guided patients to make self-ratings during their IVR calls and faxed their scores to the clinic.

### *Description of BTSteps*

The *BTSteps* system uses a manual and a computer-driven IVR system, which the patient phones to guide individually tailored self-help for OCD (detailed in Greist et al., 1998, and Marks et al., 1998). *BTSteps* guides traditional ERP in nine steps. In brief, steps 1–3 concern education and self-assessment. Steps 4–9 guide daily self-exposure to triggers of rituals, obsessions, and discomfort, followed by self-imposed ritual prevention for at least 1 hour until discomfort and the urge to perform rituals decrease: These steps include planning self-exposure homework, carrying out and reporting that homework, and preventing relapse. The IVR system and associated manual help users to identify triggers for rituals and obsessions and to set ERP homework tasks that last at least 1 hour a day until discomfort falls for each trigger in turn. Patients went through *BTSteps* at their own pace and could phone the IVR system toll-free from home at any time of any day after working through and while looking at the relevant step in their user's manual.

### Design

The relevant ethical committees approved the study. After the screening interview, suitable patients gave written informed consent and were randomized to receive 17 weeks unlimited access to *BTSteps* plus brief live help-line support during office hours in either (1) nine therapist-initiated phone calls at set appointments over the 17 weeks (*Scheduled* support) or (2) patient-initiated calls when help was wanted (*Requested* support).

Inclusion criteria were the following: primary OCD (*Diagnostic and Statistical Manual of Mental Disorders*, fourth edition [DSM-IV] criteria) for at least 2 years; no schizophrenia, bipolar disorder, or other psychosis, primary major depression, suicidal plans, or alcohol or substance abuse. If they were already prescribed a serotonin reuptake inhibitor (SRI), the participants could remain on a stable dosage during the study.

A table of random numbers to allocate patient trial numbers was used for randomization to each condition. The numbers were put into sealed opaque envelopes (one number per envelope) and mixed. One at a time was drawn as needed for opening when a patient entered the trial.

### Assessments and Measures

The dropout rates before completing self-assessment and before starting ERP were major outcome measures for the entire sample, along with reliable and valid measures used in previous OCD trials, which the patient rated at pre- and posttreatment: (1) the Yale-Brown Obsessive Compulsive Scale (YBOCS) (10 items; Goodman et al., 1989), (2) Work/Social Adjustment Scale (WSAS) (five items; Mataix-Cols et al., 2005; Mundt, Marks, Greist & Shear, 2002), (3) combined discomfort ratings for the first two individualized treatment targets (i.e., triggers, each on a 0–8 scale; Marks, 1986; Marks et al., 1998). Patients also rated (4) the Hamilton Depression Scale (HAM-D) (Hamilton, 1960) at pretreatment only, and (5) satisfaction (five items; specially devised) at posttreatment. Assessor ratings were not used as self-ratings correlated highly with assessor ratings in the study by Greist and associates (2002).

Patients' pretreatment self-ratings were made during *BTSteps*'s step 2 assessment call. Every patient who gave these ratings, including all who discontinued before call 7, was phoned (by a research assistant from the Maudsley Hospital or by a therapist [MK] from the west London clinic) at posttreatment at week 17 and self-rated again in that live phone call.

### The Two Phone-Support Conditions

MK offered phone support to every patient according to his or her randomized condition.

*Scheduled Help-Line Support* ( $n = 22$ ). MK scheduled nine brief phone calls to the patient during office hours at weeks 1, 2, 4, 6, 8, 10, 12, 14, and 17. At each call he briefly reviewed patients' progress, praised them for completing ERP tasks, and helped them work through exposure issues and *BTSteps*. He also helped them to potentiate ERP by encouraging them to face feared consequences without avoidance, distraction, or reassurance. He ended most calls by agreeing with the patient on how to increase progress, for instance, agreeing to reach a further step in *BTSteps* or to set a further ERP target before the next live support call. In the last call the therapist emphasized *BTSteps*'s guidance to prevent relapse by anticipating problems and rehearsing how to deal with them.

*Requested Help-Line Support* ( $n = 22$ ). These patients were advised to phone the clinic (an answer phone was left on outside office hours) for help if they had problems working through *BTSteps*. MK phoned them back as a priority during office hours and addressed the patient's immediate problem and ERP issues in a manner similar to that used in *Scheduled* calls.

### Statistical Analyses

Fisher's exact or chi-square tests were used to compare the number of patients in each group who dropped out of *BTSteps* early. Paired sample *t* tests were used to examine the improvement within each group. A mixed-model analysis of variance (ANOVA) with a between-groups factor (*Scheduled* vs. *Requested*) and a within-subjects factor of two occasions (pre- and posttreatment) was also conducted to examine any interaction effects. Multiple regression analyses were used to explore potential predictors of outcome. In a secondary analysis, patients from both groups were pooled to compare those who performed more than one ERP session and those who did not.

## Results

### Patient Flow and Features

Patient flow appears in Figure 1. The 48 patients referred by a general practitioner (85%) or psychiatrist (14%) were screened by the clinic's nurse-therapist (91%) or psychiatrist (9%). Of the 48 patients, 4 were unsuitable, 3 wanted some face-to-face sessions (the computer system per se was not a deterrent), and 1 did not have OCD.

The 44 suitable patients (21 men, 23 women) were enrolled for *BTSteps*, 34 by the Maudsley Hospital and 10 by the west London clinic. Mean OCD duration was 16 years ( $SD = 13$ ), mean age was 40, and 45% were unemployed. The patients had moderately severe OCD (mean YBOCS score = 26 [ $SD = 6.2$ ; range = 12–36] and depression (mean HAMD score = 20 [ $SD = 9.3$ ]). *Scheduled* and *Requested* patients had similar types of ritual and many had more than one type: 16 (45%) cleaning, 12 (34%) checking, 14 (39%) repeating/ordering, 2 (5%) hoarding, 11 (31%) mental rituals, and 12 (33%) sexual, violent, or blasphemous obsessions; 28 (64%) patients had had past ERP with a behavior therapist; and 22 (50%; similar numbers per condition) were on a stable adequate or greater dose of an SRI and had been so for more than 3 months before screening.

### Compliance

Of the 44 randomized patients, 8 (2 *Scheduled*, 6 *Requested*) dropped out before they completed self-assessment.

*Scheduled Patients.* All of the 20 who completed step 2 (self-assessment) to give pretreatment ratings reached at least step 5 (setting first ERP task); 19 (95%) reached at least step 7 (continuing treatment) of *BTSteps* after doing at least two ERP homework sessions; and 11 (55%) called *BTSteps* in each of its nine steps to complete self-help. Mean per-patient total time spent calling *BTSteps*'s IVR system was 232 minutes ( $SD = 162$ ).

*Requested Patients.* Of the 16 who completed call 2 and so gave ratings, 13 (81%) reached at least step 5, 9 (57%) went on to make at least call 7, and 8 (50%) called

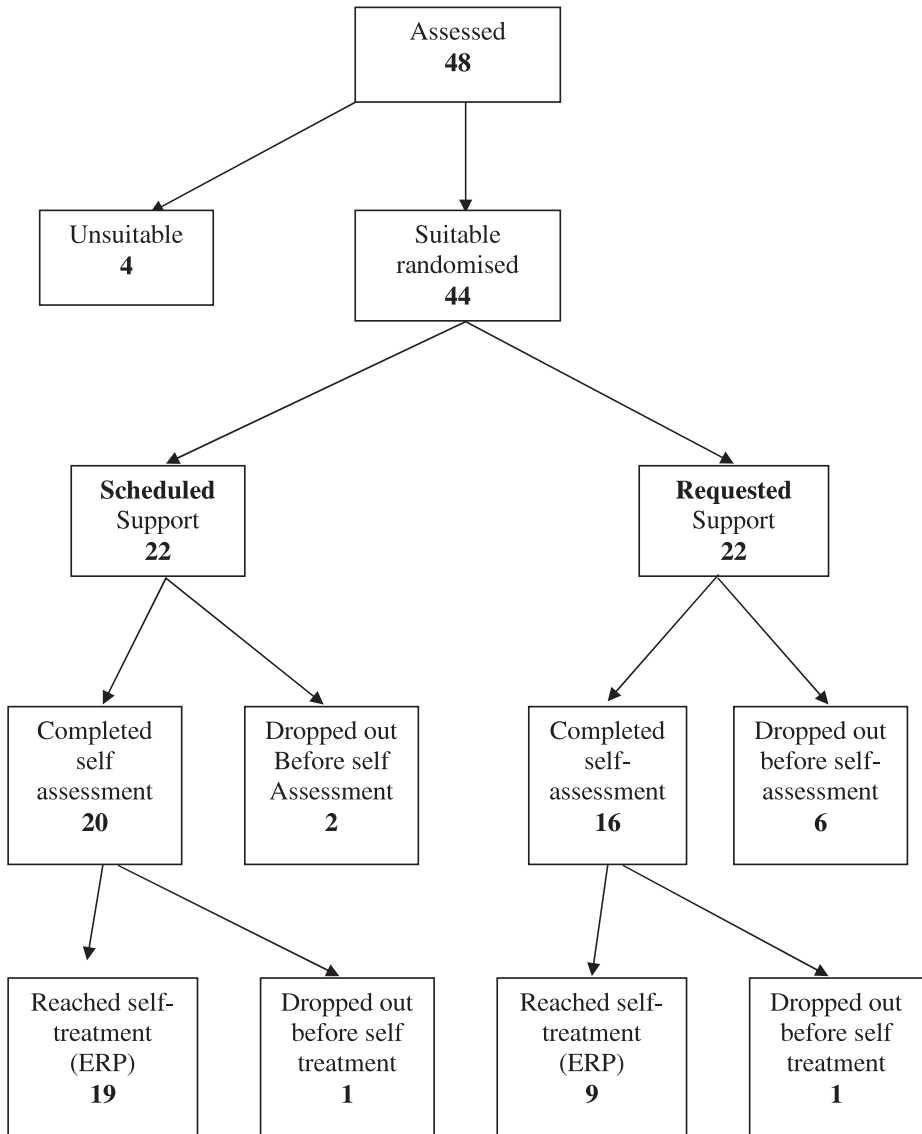


Figure 1. Consort diagram of patient flow through randomized controlled trial.

*BTSteps* in each of its nine steps. Mean total per-patient time spent calling *BTSteps*'s IVR system was 178 minutes ( $SD = 149$ ).

Dropouts (combining the self-assessment and self-exposure phases) were significantly fewer among *Scheduled* ( $n = 3$ ) than *Requested* ( $n = 13$ ) patients (2-tailed Fisher's exact test score = 0.004). Significantly more *Scheduled* than *Requested* patients reported at least one ERP homework session (95% vs. 57%;  $\chi^2 = 17.31$ ,  $p = .0001$ ).

#### *Pre- and Posttreatment Outcome on Self-Ratings*

Eight patients (2 *Scheduled*, 6 *Requested*) did not complete call 2's pretreatment self-ratings. The 36/44 (82%) patients who gave pretreatment self-ratings comprised 20/22

(91%) *Scheduled* patients and 16/22 (73%) *Requested* patients. Of these 36 patients who gave pretreatment ratings, including the 8 who did not start ERP at call 5, all (100%) also gave posttreatment ratings in the live phone interview at week 17 except 2 *Requested* patients who could not be reached by phone; their most recent IVR self-ratings (repeated automatically every 4 weeks) were used. Table 1 shows the mean outcomes for all (100%) of the patients who had pretreatment ratings, whether or not they reached ERP.

*Yale-Brown Obsessive Compulsive Scale.* *Scheduled* patients improved significantly on YBOCS Total ( $t = 4.8$ , 95%  $CI = 4.6-11.6$ ,  $p < .001$ ), YBOCS Obsessions ( $t = 4.8$ , 95%  $CI = 2.2-5.6$ ,  $p < .001$ ), and YBOCS Compulsions ( $t = 4.4$ , 95%  $CI = 2.2-6.1$ ,  $p = .04$ ) scores. *Requested* patients improved significantly only on YBOCS Compulsions ( $t = 2.0$ , 95%  $CI = .00-2.9$ ,  $p = .04$ ) score.

Mixed-model ANOVA revealed that improvement was significantly greater in *Scheduled* than *Requested* patients on the YBOCS Total ( $F = 7.0$ ,  $p = .01$ ), and YBOCS Compulsions ( $F = 11.6$ ,  $p = .001$ ), but not on the YBOCS Obsessions ( $F = 2.2$ ,  $p = .14$ ) score.

*Treated Target Triggers* discomfort during patients' first two ERP homework tasks: The *Scheduled* and *Requested* patients who devised and rated treatment targets improved significantly (Table 1) and similarly ( $F = .917$ ,  $p = .346$ ).

*Work and Social Adjustment.* Improvement was significantly greater in *Scheduled* than in *Requested* patients on the WSAS Total ( $F = 3.2$ ,  $df = 1$ ,  $p = .05$ ) score.

#### Patients Who Completed ERP

*Scheduled* versus *Requested* patients who reported completing at least two ERP sessions (step 7) improved similarly on all measures (YBOCS score Total:  $F = .26$ ,  $p = .50$ ; Treated Triggers:  $F = 1.2$ ,  $p = .67$ , WSAS:  $F = .27$ ,  $p = .60$ ).

Table 1  
Means, Standard Deviations (SD), and Statistical Tests at Pre- and Posttreatment with BTSteps

Measure	Support Calls <sup>a</sup>	Pre- BTSteps Mean (SD)	Post- BTSteps Mean (SD)	Pre-Posttest Difference Mean (95% Confidence Interval)	Effect Size <sup>b</sup>	<i>p</i> Value
YBOCS <sup>c</sup> total	Scheduled	26.5 (5.1)	20.2 (9.2)	6.3 (4.6 to 11.6)	1.2	.001
	Requested	24.5 (5.9)	22.4 (6.8)	2.1 (-1.8 to 2.4)	0.3	.36
YBOCS compulsions	Scheduled	12.7 (2.6)	9.6 (4.9)	3.1 (2.2 to 6.1)	1.1	.04
	Requested	13.2 (2.9)	11.4 (4.3)	1.8 (.00 to 2.9)	0.6	.04
YBOCS obsessions	Scheduled	13.8 (3.0)	10.6 (4.5)	3.2 (2.2 to 5.6)	1.0	.001
	Requested	11.3 (5.3)	11.0 (4.1)	0.3 (-2.3 to .60)	0.0	.55
Target triggers: discomfort	Scheduled	13.6 (1.7)	7.7 (4.0)	5.9 (5.0 to 8.7)	3.4	.001
	Requested	13.9 (2.1)	9.2 (3.9)	4.7 (1.3 to 5.5)	2.2	.001
Work/social adjustment	Scheduled	25.6 (8.1)	23.4 (10.6)	2.2 (3.9 to 1.9)	0.2	.06
	Requested	20.3 (9.9)	21.1 (9.7)	-0.8 (-2.2 to 1.2)	0.0	.47

<sup>a</sup>Scheduled group  $n = 20$ ; Requested group  $n = 16$ .

<sup>b</sup>Formula: (pretreatment mean - posttreatment mean)/pretreatment SD; 0.8 upward is usually regarded as clinically significant.

<sup>c</sup>YBOCS = Yale-Brown Obsessive Compulsive Scale.

### All Patients Pooled

*Scheduled* and *Requested* patients pooled improved significantly on YBOCS Total ( $t = 3.9$ , 95%  $CI = 2.2-6.8$ ,  $p = .01$ ), YBOCS Compulsions ( $t = 4.6$ , 95%  $CI = 1.6-4.2$ ,  $p < .001$ ), YBOCS Obsessions ( $t = 3.9$ , 95%  $CI = .44-3.0$ ,  $p = .009$ ), Triggers ( $t = 7.7$ , 95%  $CI = 4.1-6.9$ ,  $p = .001$ ), and WSAS ( $t = 3.2$ , 95%  $CI = 1.5-6.6$ ,  $p = .002$ ) scores.

### Therapist-Support Phone Time

*Scheduled Patients.* Mean per-patient duration of support calls was 13 minutes (excluding screening time) (range 5–35 minutes). Mean total support time per patient was 76 mins ( $SD = 78$ ) over a mean of 7.5 calls ( $SD = 3.7$ ).

*Requested Patients.* Mean per-patient duration of support calls was 11 minutes (range 3–25 minutes). Mean total support time per patient was 16 minutes ( $SD = 36$ ) over a mean of 1.5 calls ( $SD = 2.8$ ). The calls were to the eight patients who phoned for advice; only two called more than twice.

### Predictors of Outcome

In a repeated-measures analysis, *patients who performed two or more ERP sessions* reached step 7c on *BTSteps* (*Scheduled* and *Requested* patients pooled,  $n = 28$ ), improved significantly more on YBOCS Total ( $F = 3.13$ ,  $df = 1$ ,  $p = .05$ ) and WSAS total ( $F = 8.2$ ,  $df = 1$ ,  $p < .00$ ) than patients who did not ( $n = 16$ ).

*Feeling comfortable in using BTSteps*, and *preference for BTSteps* over a clinician (self-rated on 0–8 scale) associated significantly with better outcome on the YBOCS ( $t = 2.863$ ,  $p = .010$ , and  $t = 3.334$ ,  $p = .003$ , respectively).

Outcome did not associate significantly with age, gender, duration of OCD, past behavior therapy, or being on SRI medication. Numbers were too small to test association between symptom type and compliance or improvement.

## Discussion

During computer-aided self-help for OCD, brief therapist live support on a help-line reduced the dropout rate and enhanced compliance and improvement with ERP significantly more when help-line calls were scheduled than when patients were left to initiate help-line calls. More than twice as many patients (19 vs. 9) performed more than one ERP homework session when the support calls were scheduled rather than just sought by the patient. Patients in both groups who performed repeated ERP homework improved significantly more than those who did not, confirming findings in past *BTSteps* trials (Bachofen et al., 1999; Greist et al., 1998, 2002) that performing more ERP homework enhances gains.

It is not known whether the therapist's brief scheduled phone support prompting patients to do daily ERP homework and encouraging them to complete the next step in *BTSteps* before the next support call actually increased compliance. Perhaps just having a regular schedule to report progress to someone may have motivated patients to do more ERP homework, and perhaps this person did not have to be a CBT therapist. Having deadlines can improve delivery.

Compared to that in three past *BTSteps* trials (Bachofen et al., 1999; Greist et al., 1998, 2002), YBOCS Total improvement in the present study was similar with *Scheduled*

Table 2

*Pre- to Post-BTSteps Improvement on YBOCS Total in Past and Present Studies (Completers of Self-Assessment and Self-Treatment Modules)*

Study	Pretreatment Mean	Pretreatment SD	Posttreatment Mean	Posttreatment SD	Effect size
Greist et al. (1998) ( $n = 39$ )	28.6	7.3	20.5	7.9	1.1
Bachofen et al. (1999) ( $n = 19$ )	25	6.2	20	7.5	0.8
Greist et al. (2002) ( $n = 55$ )	24.6	4.3	19	7.2	1.3
Scheduled:					
Kenwright et al. (current study) ( $n = 20$ )	26.5	5.1	20.2	9.2	1.2
Requested:					
Kenwright et al. (current study) ( $n = 16$ )	24.5	5.9	22.4	6.8	0.3

support but less with *Requested* support (Table 2). The human support to the *Scheduled* group resembled that given to past *BTSteps* patients more than to present *Requested* patients, who seldom sought support. The small differences in even brief personal contact might have affected the outcome and so warrant clarification.

Participants in our study never saw staff in person (except for three who were screened face to face rather than by phone). In contrast, in Greist and coworkers' (2002) randomized controlled trial (RCT) patients visited a clinic five times from screening to the end of *BTSteps* at week 10 in order to make self-ratings with a coordinator nearby, a requirement that might have motivated them to work harder; they could also voicemail a therapist for clinical advice but did so rarely, just as the present *Requested* patients seldom sought live phone support. In two open *BTSteps* studies (Bachofen et al., 1999; Greist et al., 1998; Nakagawa et al., 2000) a coordinator phoned patients who had not called the computer by a given date, and in the second study a clinician also wrote praise for progress on the computer-generated fax reports of patient status before posting them on to patients.

In the present RCT, treatment-resistant OCD patients from all over the United Kingdom improved with computer-aided self-help accessed by phone from home especially if brief live help-line support was scheduled rather than merely made available to patients who sought it. A mere 1.25 hours of scheduled live help-line contact (over nine calls in 17 weeks) sufficed to catalyze compliance with and gains from computer-aided self-help—fewer dropouts, more self-exposure homework, and more improvement—significantly. It is unclear why patients took up the offer of live help-line support so seldom if it was not scheduled (total of 16 minutes over a mean of 1.5 calls); when they did phone their *Requested* support calls were almost as long as the *Scheduled* group's support calls (total means of 11 vs. 13 minutes). The rarity of unscheduled calls is unlikely to reflect frustration from long delays in response time—only eight patients actually sought support and they were answered as a high priority during office hours. *Scheduled* support calls too had been during office hours.

Every patient who gave pretreatment ratings also gave posttreatment ratings, resulting in a complete intent-to-treat data set, though pre- and posttreatment ratings were given in different ways. At pretreatment, patients self-rated by pressing a number on their telephone keypad to answer *BTSteps*'s questions. At posttreatment, patients self-rated by answering the same questions read out in a live phone interview, sometimes weeks after the end of treatment for those who were hard to trace. Past research found that computer- and live-interview ratings tended to be similar (Erdman et al., 1992).

After screening for suitability in a live phone or face-to-face interview, patients can be offered a first step of computer-aided self-help, especially if they are motivated and want a more convenient, accessible alternative to seeing a clinician face to face. Many patients did not choose *BTSteps* in preference to a clinician but tried it because of past failures or local lack of availability of behavior therapy. *BTSteps* allowed a part-time therapist to screen, monitor, and supervise the treatment of 44 patients, freeing more than 85% of the per-patient time usually needed to guide ERP. By monitoring progress through asking patients to repeat ratings, which were fed back to the clinician, the system greatly reduced supervision time.

Present patients were referred from all over the United Kingdom and 64% had failed with past behavior therapy. Their condition was moderately severe, with Hamilton Depression scores at pretreatment ( $M = 20$ ,  $SD = 9$ ) being about *twice* as high as those of patients in the Greist and associates (1998) open study ( $M = 11$ ,  $SD = 5$ ) and in the Greist and coworkers (2002) randomized controlled trial ( $M = 10$ ,  $SD = 8$ ), but similar to those in the Bachofen and colleagues (1999) study ( $M = 22$ ,  $SD = 8$ ). Therapists in the Bachofen and coworkers (1999) study often called patients who had stopped using the system and encouraged them to comply with ERP tasks, yet the effect sizes in that study were slightly smaller than in the other studies (Table 2).

To further ease OCD sufferers' access to computer-aided self-help at home, the *BTSteps* system, including its user's manual, will henceforth be made accessible on the Internet under the name of *OCFighter* (<http://www.ccbt.co.uk>), with scheduled live help-line access during office hours.

In conclusion, OCD patients who did not attend a clinic complied significantly more with, and improved significantly more after performing, computer-guided self-help at home if they had brief live help-line support in scheduled calls than if they were left to initiate live help-line calls. The approach enabled patients in remote areas to access effective help by phone, help that they would probably have otherwise forgone.

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