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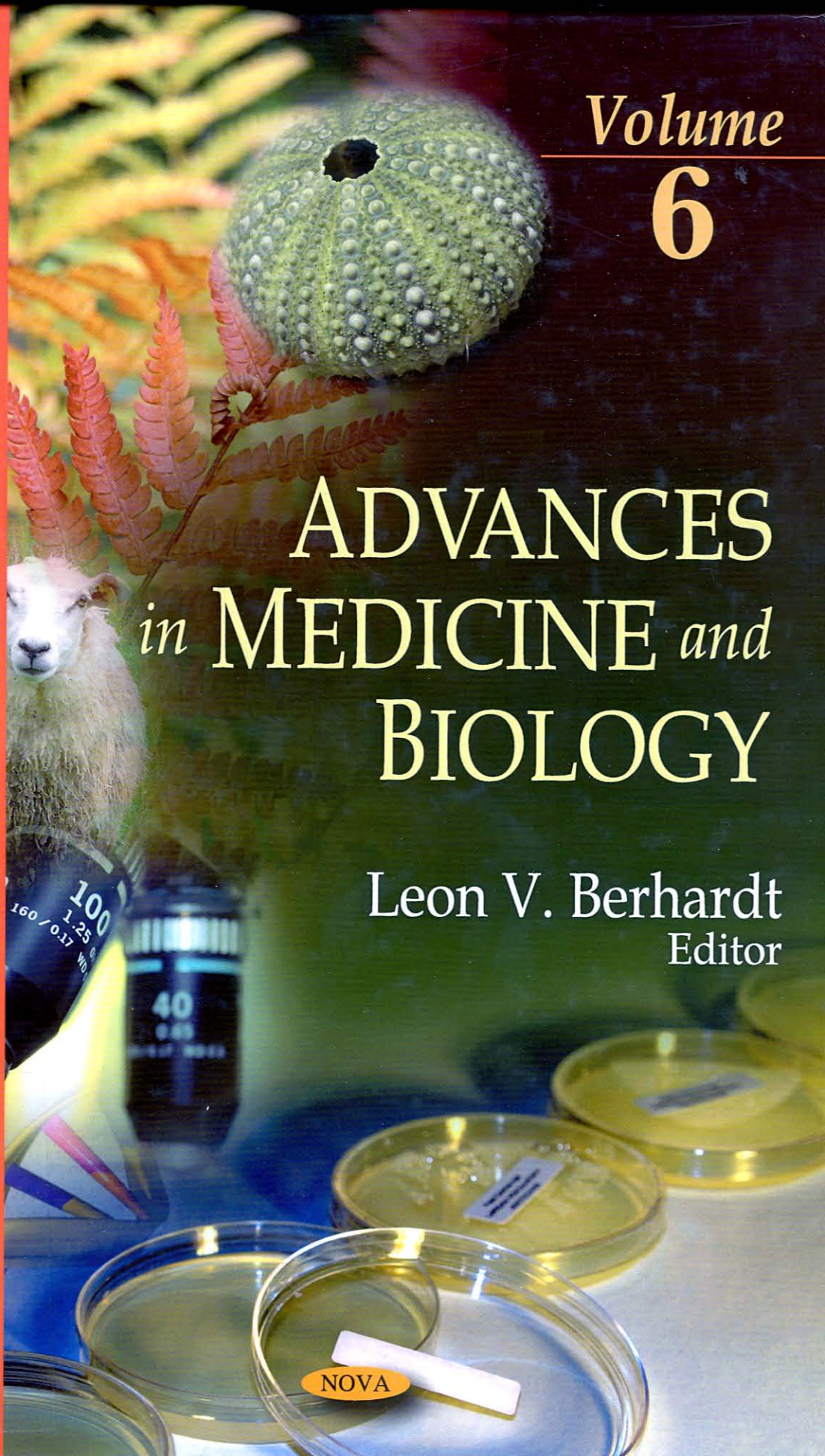

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Chapter 5

THE UTILIZATION OF TECHNOLOGY IN THE TREATMENT OF OBSESSIVE COMPULSIVE DISORDER

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ABSTRACT

Obsessive-compulsive disorder (OCD) is a common psychiatric illness, which frequently causes significant impairment and interference in daily functioning. Fortunately, effective psychological and pharmacological treatments are available to individuals with OCD, namely, cognitive-behavioral therapy (CBT) and serotonin reuptake inhibitors (SRIs); however, individuals with OCD are often reluctant to seek evidence-based care, with a minority of OCD sufferers seeking help from a mental health professional, and when offered treatment, often offered non-evidence based therapies. This may be due to several reasons, including lack of providers in the area, the prohibitive expense of treatment, or reluctance to participate in the difficult treatment, which involves exposure to feared situations. Due to the various barriers to seeking treatment for OCD, computer-based treatments have been considered as an alternative to more traditional psychotherapy. Administering treatment via the Internet is a practical way to improve dissemination of services that might not otherwise be available to OCD sufferers. Several studies have been conducted regarding various computer-based treatment approaches for OCD (e.g., BT STEPS), and although less effective relative to in-person CBT, computer-based treatments have shown efficacy as a treatment for OCD

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symptoms. Although various ethical and legal issues must be considered when disseminating psychological services via the web, computer-based treatments provide a plausible option for those who would otherwise miss out on the benefits of evidence-based care. This chapter reviews research and current practices in treating OCD using computerized methods.

INTRODUCTION

Obsessive-compulsive disorder (OCD) is fourth most common of psychiatric illnesses, with a lifetime prevalence rate between 1% and 3% of the general population (Rasmussen & Eisen, 1994; Torres et al., 2006). Obsessive-compulsive disorder is characterized by symptoms such as recurrent, intrusive thoughts, impulses, or images which cause an increase in anxiety (i.e., obsessions) and repetitive behaviors or mental acts aimed to prevent or reduce distress (i.e., compulsions; American Psychiatric Association, 2000). Obsessive-compulsive disorder often runs a chronic course in the absence of appropriate intervention and frequently causes significant impairment and interference in daily functioning (Piacentini, Bergman, Keller, & McCracken, 2003; Bobes et al., 2001). More specifically, affected individuals may experience disability in various domains of functioning, including social, occupational, and familial realms (Hollander et al., 1996; Koran et al., 1996; Lack et al., 2009; Steketee, 1997). Indeed, the World Health Organization (1999) points to OCD as the 10th leading cause of disability worldwide, affecting individuals in both industrialized and developing countries.

Fortunately, effective psychological and pharmacological treatments are available to individuals with OCD. The standard of care for both children (POTS, 2004) and adults (March et al., 1997) with OCD includes cognitive-behavioral therapy (CBT), either alone or in conjunction with pharmacotherapy with serotonin reuptake inhibitors (SRIs). Cognitive-behavioral therapy for OCD includes two overall components: cognitive therapy and exposure and response prevention (ERP). Cognitive therapy aids the individual with OCD in identifying and challenging the cognitions that maintain his/her OCD behaviors and beliefs. Exposure and response prevention involves gradually exposing the individual with OCD to the stimuli he/she most fears while not permitting the individual to engage in compulsive behavior (Meyer, 1966). In ERP, individuals with OCD habituate to the anxiety caused by refraining from engaging in compulsions and are provided objective data about the unrealistic nature of the feared consequences (Foa & Kozak, 1996). Treatment with ERP alone has proven efficacy in the treatment with OCD, with symptoms reducing an average of 50-60% (Abramowitz, 1998) and response rates of up to 85% in adults and children (Foa et al., 2005; Storch et al., 2007; Storch et al., 2008). Treatment with SRI monotherapy has also shown efficacy, with those SRIs approved by the US Food and Drug Administration having significant effect sizes and symptom reductions between 20% and 40% (Greist et al., 1995). Some evidence suggests that a combination of CBT and an SRI may be most appropriate for severe patients (Hohagen et al., 1998), although practice parameters generally suggest CBT alone for mild to moderate cases.

Unfortunately, many barriers prevent individuals with OCD from seeking and receiving the most effective treatment. Individuals with OCD are often reluctant to seek care, with Leon, Portera, and Weissman (1995) finding that only 20% of OCD sufferers have sought

help from a trained mental health professional. If they do seek help, sufferers often do not receive adequate care. Many clinicians lack training in treating OCD and/or are unlikely to conduct exposures with their clients (Valderhaug et al., 2004). Blanco et al. (2006) found that as few as one tenth of those suffering from OCD receive CBT. And, even if clients receive the most effective treatments for OCD, they may still be resistant to participate in the exposure component of CBT (Leonard et al., 1993), as exposure-based therapy is an inherently difficult treatment. This helps to explain why Purdon, Rowa, and Antony (2004) found that adults with OCD who fear exposure-based treatment are more likely to refuse or drop out of treatment.

Those with OCD may also be reluctant to seek treatment because of problems inherent in seeking care for any psychiatric disorder, including the prohibitive expense of treatment, insurance reimbursement issues, and the lack of providers in the area (Leonard et al., 1993). The symptoms of OCD themselves may also prohibit treatment; individuals with OCD may be unable to attend appointments on time, or their symptoms may be severe enough to render them housebound. Individuals with OCD may also be secretive about their symptoms (Adams et al., 1994) or may lack obsessions and compulsions that can be readily recognized by others as symptoms of OCD (Mayerovitch et al., 2003). And, if they disclose their symptoms to a primary health care provider, providers are often unfamiliar with OCD (Storch, 2005) and may not recognize the symptoms as evidence of a disorder. As such, OCD is often left undiagnosed and, thus, untreated (Dell'Osso et al., 2007).

An Alternative: Computer-based Interventions

Because of the many barriers preventing OCD sufferers from seeking evidence-based care, computer-based interventions have been considered as an alternative to more traditional psychotherapy. As technology advances, research has grown regarding the implementation of technological resources in the treatment of psychiatric disorders (Taylor & Luce, 2003). In a meta-analytic study, Cavanagh and Shapiro (2004) found that computerized treatments for depression and generalized anxiety demonstrated significant symptom reductions in both depressive and anxious symptoms, finding a mean effect size of 1.38. Interventions using computer resources may use a variety of approaches, such as a stand-alone computer module or information accessible via the web. Computer-based approaches to treatment often greatly reduce the need for face-to-face contact with a therapist; this both reduces the cost of treatment and aids in the dissemination of services to those who may lack trained providers in their area. Overall, offering the option of computer-based care may help many sufferers who would not otherwise receive the benefit of services.

Researchers have begun creating computer-based aids to treatment and adapting the standard of care for OCD (i.e., CBT with ERP) to computerized models with varying degrees of therapist involvement. Several studies have been conducted regarding various computer-based treatment approaches for OCD. Available treatment approaches include various degrees of therapist involvement, ranging from completely self-administered computerized treatment, to completely therapist-administered telehealth interventions. These approaches present a novel solution to the need for greater dissemination of psychological services, and

the results of the studies so far show that Internet- and computer-based interventions have a great deal of potential to aid the OCD sufferer.

Computer-based OCD Assessments

Provision of computerized services to individuals suffering from OCD offers clinical applicability in both the assessment and treatment of the disorder. The earliest published reports on computerized assessments of OCD began with Roca-Bennasar et al.'s (1991) *Kraepelin*, a 50-question assessment tool that used programming logic to obtain either a diagnosis of OCD or to suggest other potential disorders to the individual. However, the system was found to lack user-friendliness (Roca-Bennasar et al., 1991), and little data has since been reported.

Rosenfeld et al.'s (1992) computerized OCD assessment system, based on the Yale-Brown Obsessive Compulsive Scale (Y-BOCS; Goodman et al, 1989), was found to be a more user-friendly system. The Y-BOCS is a clinical interview that measures the severity of obsessions and compulsions that have been present in the last week and is considered the gold standard of OCD assessment. Rosenfeld et al.'s (1992) system closely follows the semi-structured clinical interview; the authors made minor revisions to make the language more understandable to the user but were sure to preserve the original meaning of all items. The results of their study suggest that the self-administered Y-BOCS measures OCD severity similarly to the clinician-administered version among OCD patients. Although a non-OCD sample showed greater symptoms on the self-administered measure compared to the clinical interview, only two non-OCD patients scored within the score threshold typically used as inclusion criteria for clinical OCD (i.e., >16; Greist et al., 1990), and both of these patients had been diagnosed with an anxiety disorder other than OCD (Rosenfeld et al., 1992). Overall, users found the program to be acceptable and easy to use (Rosenfeld et al., 1992), and the program has been used in several subsequent studies as a rating of OCD severity (e.g., Herman & Koran, 1998).

Baer et al. (1993) also modified the Y-BOCS to a computerized system that was accessible via the telephone. Using interactive voice response technology, their system used digitized human speech to guide telephone callers through the Y-BOCS. This system also showed high agreement between computer-administered and clinician-administered versions (Baer et al., 1993).

Another interactive voice response system for the assessment of OCD came in the form of BT STEPS, which combined assessment and treatment of symptoms (Baer & Greist, 1997). The assessment portion of BT STEPS had several components. As had been done in previous studies, users completed a computerized Y-BOCS to rate OCD severity, and then they were also asked to identify their major rituals, the cost behind completing them (including time and money expended), and the triggers for these rituals. They were also asked to rate depressive symptoms and overall work and social adjustment. The assessment portion of this program was completed by 84% of those who began it (Marks et al., 1998).

In another novel approach in the assessment of OCD, Herman and Koran (1998) investigated the use of palmtop computers to measure OCD severity in the patient's natural

environment. These handheld devices beeped hourly, and patients were asked to complete a modified Y-BOCS at each time point. However, the authors encountered methodological difficulties in delivering this system, and this system only reflected moderate agreement between clinician- and self-report measures of OCD severity (Herman & Koran, 1998). No further systems have been developed to assess OCD with computerized methods; since the 1990's, published reports of computerized OCD assessments have used the BT STEPS system (e.g., Marks et al., 2000).

COMPUTER-BASED INTERVENTIONS FOR OCD

The first publications that studied the efficacy of computer-based treatment of OCD were by Baer et al. (1987) and Baer et al. (1988), who provided case reports of a computerized intervention for several adults with OCD. Baer and colleagues developed a handheld computer program that was an adjunctive treatment for the individual with OCD to carry while receiving in-person treatment. Called OC-CHECK, this portable device aided the client in tracking his or her OCD symptoms as well as reminding the individual of homework assignments that had been given during treatment sessions. Individuals with long-standing, difficult-to-treat OCD were provided this adjunctive treatment while attending regular behavioral therapy sessions. The case reports indicated that implementing OC-CHECK only worked to reduce symptoms while the device was currently being used. When individuals stopped using the device, OCD severity returned to baseline, and then when the device was re-implemented, the scores subsequently reduced (Baer et al., 1987; 1988). These results indicate that the device was effective at controlling OCD symptoms but could not be expected to bring about lasting change for patients (Baer et al., 1988). However, these studies were an important first step in furthering research on computer-based interventions and adjunctive treatments for OCD.

Further research in treating OCD via computerized methods did not come about until the late 1990's, with the advent of BT STEPS (Baer & Greist, 1997). BT STEPS is a computerized interactive voice response system with nine overall "steps" that educate the patient in OCD, aid the patient in assessing his or her symptoms, and help the patient create and implement a treatment plan using the principles of ERP, the treatment of choice for OCD. Participants also follow along in a workbook that is provided to them as a part of the system. Although Baer and Greist (1997) did not report statistical data regarding the effect sizes of this approach, they report that the system showed comparable results to the efficacy of an SRI (Greist et al., 1995), and that 71% of participants considered their lives to be greatly improved following the use of this program (Baer & Greist, 1997).

Greist et al. (1998) further tested the BT STEPS system in a pilot study of 40 patients with OCD (20 of whom completed both the assessment and treatment phases). Participants in this study completed the self-assessment and self-treatment components of BT STEPS over a period of 12 weeks, followed by an open period of 22 weeks where they were permitted access to the system whenever they wished. At the end of this 22-week period, a majority (61%) of participants rated themselves as "much improved" or "very much improved," and those who had participated in two or more exposures were significantly improved on the Y-

BOCS (mean = 25 vs. 15.2, $p < .001$). Those who had engaged in twenty or more exposures experienced, on average, over a 50% reduction in symptoms, and participants experienced a significant improvement in Work and Social Adjustment Scale (WSA; mean = 11.2 vs. 8.6, $p < .008$; Marks, 1986), indicating that they experienced significant improvement in quality of life following treatment using BT STEPS (Greist et al., 1998).

Bachofen et al. (1999) followed up on this study with a trial that enrolled 21 patients to complete the BT STEPS program who were on a waitlist for clinician-guided behavioral therapy. However, they also included brief contact and feedback with a live therapist through brief telephone calls or written notes. Of those who began the treatment, 76% ($n = 16$) completed the self-assessment portion of the program and 48% ($n = 10$) completed two or more ERP sessions with BT STEPS. Similarly to Greist et al. (1998), they found that those patients who completed two or more self-exposures improved significantly more than those who did not. In fact, although participants overall experienced significant improvements on the Y-BOCS, the Hamilton Rating Scale for Depression (HAM-D), and the WSA, these improvements could solely be attributed to the improvements made by the ten participants who completed two or more exposures (Bachofen et al., 1999). Including therapist contact did not appear to improve the likelihood that participants would engage in exposures; less than 50% chose to engage in a self-exposure over the course of BT STEPS. When they went on to receive clinician-guided behavioral therapy, those who had completed exposures with BT STEPS showed minimal improvements that were not statistically significant; however, those who had not completed self-exposure improved significantly under a clinician's care (Bachofen et al., 1999). Although the sample was too small to run inferential analyses, there is a potential link between motivation and willingness to engage in self-treatment; those who did not complete self-exposures had significantly lower scores in motivation (Bachofen et al., 1999). In 2000, Nakagawa et al. compared the participants in this group to a historical sample of OCD patients receiving ERP, and found that the two groups showed similar improvements on the WSA, with the BT STEPS group improving an average of 5 points and the clinician-guided group improving an average of 7 ($p = .18$).

BT STEPS has been evaluated further in several studies. Marks et al. (2000) combined BT STEPS with brain imaging in a small randomized trial of 13 participants. Patients with OCD either received BT STEPS, therapist-assisted exposure therapy, or a relaxation training (guided by audiotape and manual) control. The fMRI scan involved measuring patient discomfort while asking the patient to imagine an anxiety-producing stimulus (e.g., imagining an object in the wrong place at home), then the reduction in patient discomfort when the anxiety-producing stimulus is removed (e.g., imagining that the object has been moved into the correct position); they also scanned the brain while participants imagined a non-OCD-related anxiety stimulus and a neutral stimulus. In both the BT STEPS and therapist-assisted exposure groups, anxiety produced by the OCD-related stimulus was significantly reduced following treatment, although anxiety related to the other two stimuli did not change significantly. This demonstrates that exposure therapies, both computerized and therapist-administered, reduced the discomfort caused by the OCD trigger. The BT STEPS group also demonstrated significant decreases in scores on both the Y-BOCS (mean decrease=9.1; $p < .001$) and the WSA (mean decrease=9.0; $p = .03$), while the relaxation group made no significant improvement. Also, in this study the therapist-assisted group actually did not fare

as well as the BT STEPS group, with an average decrease in Y-BOCS scores being only 2.7 ($p = .057$) for this group. This trial, however, involved a small sample size, and a larger group was needed to more conclusively demonstrate the efficacy of BT STEPS. Also, the therapist-guided treatment in this study did not include in vivo exposure, but instead involved assigning exposures to the client to complete for homework. This may also explain the relative lack of efficacy of the therapist-guided intervention; ERP traditionally includes in vivo exposure as well as exposures assigned for homework.

Greist et al. (2002) compared BT Steps, therapist-assisted exposure therapy, and a relaxation training control in a large randomized controlled trial with a total of 218 participants enrolled and 176 participants receiving at least partial treatment (with 55 in the BT Steps group, 55 in clinician-assisted exposure therapy, and 66 in the relaxation control). They reported improvements on the Y-BOCS from baseline to study endpoint for both the BT Steps and clinician-assisted exposure therapy groups, which improved significantly more than the relaxation control group [$F(2,174) = 12.45$, $p < .001$]. Clinician-assisted therapy demonstrated greater efficacy than the BT STEPS program (with a mean Y-BOCS decrease of 8.0 vs. 5.6; $p = .035$). The effect sizes in Y-BOCS score reductions for each treatment group were as follows: clinician-assisted therapy = 1.22, BT Steps = 0.84, and the relaxation control = 0.35. Of particular interest, those who received clinician-assisted therapy did not improve significantly more than those participants in the BT Steps group who completed two or more self-exposures ($t = 0.80$, $df = 122$, $p = .42$). Again, however, patients in this study did not receive in vivo exposure, which is traditionally included in ERP; patients were instructed to complete self-exposures as homework. Patients reported the greatest treatment satisfaction for the clinician-assisted therapy, with BT Steps being rated the next most satisfying, followed by the relaxation control. Cognitive-behavioral therapy for OCD traditionally demonstrates greater effect sizes than shown in this study (e.g., Cottraux et al., 1990; Kozak, Liebowitz, & Foa, 2000). However, the efficacy of the BT Steps intervention indicates that it is still a viable option for patients who would not otherwise receive evidence-based care.

While those participants in the BT Steps arm of the Greist et al. (2002) study received an average of only 4 minutes of support from a trained clinician, Kenwright et al. (2005) investigated the addition of scheduled phone calls from a clinician to BT Steps to see if this would improve outcomes and compliance with the program. They recruited a total of 44 participants with primary OCD to receive 17 weeks of BT Steps along with one of two additional supports: nine *scheduled* therapist-initiated phone calls over the 17-week period, or the opportunity to *request* support from a live therapist (i.e., patient-initiated phone calls). Those who received brief phone calls from a therapist made significantly greater improvements on the Y-BOCS than those who were offered the opportunity to request support ($F = 7.0$, $p = .01$) and were more likely to complete at least one self-exposure assignment (95% vs. 57%; $X^2=17.31$, $p = .0001$). And, those who were offered scheduled support had lower drop-out rates ($n = 3$) than those offered support upon request ($n = 13$; 2-tailed Fisher's exact test score = 0.004). Those patients who received scheduled support never saw a live clinician and received only brief telephone contacts with therapist support.

Treatments for OCD also may be augmented using computer-assisted exposure tasks in which a patient completes an exposure in a virtual environment. Clark et al. (1998) devised a computerized exposure task called CAVE (Computer-Aided Vicarious Exposure) in which

the patient directs a digitized person with contamination fears to dirty his/her hands, then scores points for refraining from hand-washing despite the on-screen person's high anxiety. In a pilot study, 13 OCD patients were recruited to complete three 45-minute sessions using this computer task (Clark et al., 1998; Kirkby et al., 2000). Overall, the group experienced significant decreases in depression as measured by the Beck Depression Inventory (mean decrease = 6.3, $p = .05$) and obsessions and compulsions as measured by the Padua Inventory (mean decrease = 14, $p = .01$); however, although scores showed a tendency to decrease, the group did not improve significantly on the Y-BOCS. Of note, 6 of the 13 participants reported mainly "checking" OCD symptoms, while the remaining 7 were "washers." Unsurprisingly, washers improved more than checkers on the from this exposure task on the Padua Inventory. Although this task is not likely to be significantly helpful in reducing OCD severity, the authors concluded that it could be helpful as an adjunctive treatment to reduce costs or provide earlier relief to clients waiting to receive treatment (Clark et al., 1998).

Kim et al. (2008) used a similar approach to create an exposure task for "checking" OCD using virtual reality. In their study, 33 patients with OCD and 30 healthy controls used a joystick and head-mounted display to navigate in an environment where they encountered triggers for "checking" OCD symptoms (e.g., being asked to turn on a light switch). Although this study was only completed with participants at one time-point, the authors found that this task produced significantly more anxiety for patients with OCD as compared to healthy controls, and patients with OCD spent significantly more time checking during this task. Although this was not a treatment study, this task produced significant anxiety for OCD sufferers and therefore may have real world applications in a treatment setting as an exposure tool, reducing the need for therapist contact.

Other technology-based interventions involving remote therapist contact have been considered as a way to disseminate services to those who do not have local access to qualified providers. Telehealth interventions have been widely studied for a range of disorders, and recent published reports have shown that this form of treatment can be effective for those suffering from OCD, delivered both through telephone methods as well as videoconferencing. Lovell et al. (2000) conducted a small pilot study of 4 patients who received a single face-to-face session with a therapist, followed by eight weekly fifteen-minute phone sessions and a final 30-minute session in person with the therapist. Three of the four patients showed clinically significant improvement following this intervention (Lovell et al., 2000). Following this, the research group completed a randomized controlled trial with 72 OCD patients comparing this telehealth approach to traditional ERP (Lovell et al., 2006). At all assessment time-points following treatment (i.e., immediate post-assessment, 1-month follow-up, 3-month follow-up, and 6-month follow-up), the telephone-administered intervention achieved equivalent outcomes to in-person treatment on the Y-BOCS self-report. Of note, therapists spent 40% less time with patients in the telephone-administered group, showing that this telehealth intervention would be significantly less costly for patients as well as reducing therapist burden, possibly allowing qualified providers to see more patients. Similarly, Taylor et al. (2003) administered two open trials of telephone-administered ERP to 33 patients with OCD, 26 of whom completed treatment. The 12 weekly telephone sessions were supplemented with a self-help book given to each participant. The authors found an

effect size of d =1.07 for this treatment, with patients improving on several measures of OCD severity and maintaining these gains at a 12-week follow-up assessment.

Then, Turner et al. (2009) expanded these findings to the population of young people with OCD. Their pilot study recruited ten adolescents aged 13-17 with primary OCD to receive a telephone-administered CBT-based intervention. The patients and their parents received up to 16 phone sessions with a therapist experienced in treating OCD with CBT. OCD severity as measured by the clinician-administered child version of the Y-BOCS (CY-BOCS) significantly decreased, F (1.45, 13.07)=17.56, p<.01, and the effect size for this treatment was a robust d = 2.27. Participants maintained their gains both at 6-month and 12-month follow-up. The authors found that families considered the treatment to be acceptable and, in several dimensions, better than attending a clinic (e.g., convenient due to less travel time; less stressful; more flexible).

The advent of evidence-based telephone-administered intervention is a large step toward greater technology use in psychological treatments for OCD and thereby, improved dissemination of treatment. There are, however, more sophisticated technologies that open the possibility of even greater treatment efficacy. Videoconferencing methods have become available, where patients can connect with therapists through the Internet and also receive face-to-face contact through the use of a webcam. Thus far, only one publication has investigated this approach for OCD patients. Himle et al. (2006) report on three cases of OCD that were successfully treated using videoconferencing methods, with substantial decreases in scores on the Y-BOCS that were maintained at three-month follow-up for the two participants who attended the follow-up assessment. Participants reported high degrees of treatment satisfaction and indicated feelings that the therapist was "present" with them, although communicating remotely through a webcam. This case report indicates a need for a larger trial of videoconferenced methods.

Overall, computer-based treatment approaches, whether they are self-administered treatments, adjunctive treatments, or completely therapist-administered telehealth interventions, have shown promising results in effectively treating symptoms of OCD; and, Turner et al. (2009) showed that telehealth interventions can also be effectively administered to children. These results have important clinical implications, although there are important ethical issues to consider when incorportating computer-based assessments and interventions.

Ethical and Legal Issues

Although the use of technology in treating OCD offers a range of benefits and has demonstrated efficacy, various ethical and legal issues must be considered when disseminating psychological services via the web (Hsiung, 2003). The American Psychological Association (APA) Ethics Code has yet to set clear standards for the provision of services via technological resources, including teleconferencing and Internet-delivered treatments. However, the APA has stated that the ethical boundaries that apply to the provision of services in-person should also apply to treatments delivered using electronic resources (APA, 1997). The use of technology in the treatment of OCD, however, brings unique complications to upholding these ethical standards.

Confidentiality, in particular, is of concern, particularly for interventions delivered via the web. The importance of the confidentiality of mental health records is heavily emphasized in the APA Ethics Code (APA, 2002). Services delivered via online methods create a greater potential for a breach in confidentiality. Knowledgeable persons can hack into programs or computers and thus access confidential information stored within or transmitted via the web, teleconferencing programs (e.g., Skype) are not entirely secure, and clients may not be aware that online methods may pose a greater threat to the confidentiality of their records. Therefore, it is important that clinicians delivering treatments using online resources fully disclose the increased risks to privacy using online methodology and, perhaps, obtain written consent from the patient after discussing the risks.

The BT steps program (Baer & Greist, 1997) addressed issues of confidentiality by linking patient records to a 4-digit code with which they accessed the system. Identifying information about each patient was not stored in the computerized database which communicated with patients via telephone. This system did not present a greater risk to confidentiality than in-person methods. However, other methods may pose an increased risk. Videoconferenced therapy involves transmitting a face-to-face interaction over the web; this form of interaction may involve both spoken names and revealing facial features. Skype accounts of e-therapists may also be hacked, revealing contact information of every patient the therapist treats using Skype. Therapists using online and telehealth interventions should be fully cognizant of the risks to confidentiality inherent in these treatments. Researchers of technology-based interventions should take care to inform participants of the risk of a breach in confidentiality. Institutional review boards may not always be aware of these increased risks, and currently, these risks are not addressed in the APA ethics code and should be considered in future revisions.

Legal issues, particularly issues regarding licensing, are also of concern when delivering treatment via the web and have yet to be properly addressed. Licensed mental health professionals may be limited to providing services in the state in which they are licensed; however, teleconferencing methods may cross state lines. It is unclear in which state the therapist is delivering treatment, and this ambiguity leads to concerns in the limits of the therapist's license and the legality of delivering treatment to a client in another state. Insurance companies do not typically reimburse for e-therapy, leaving individuals to pay out-of-pocket for these services (Kraus, Zack, & Stricker, 2004). However, it may be of more concern that the clinician's malpractice insurance may not cover services delivered to a client outside the state in which he or she is licensed (Kraus et al., 2004). Malpractice insurance companies typically stipulate that the clinician must operate within the bounds of his or her license. Kraus et al. (2004) recommend that the clinician does not deliver therapeutic services to clients outside of the state in which he or she is licensed. However, Hsiung (2003) states that it is reasonable for a clinician to provide online services to a client outside the state, as at the time of service, the clinician will be located in the state in which he or she is licensed.

These recommendations, as well as the lack of clear guidelines in the APA ethics code, leave clinicians to decide the correct course of action when providing treatment using technology-based intervention. Services provided via computer-based methodology are relatively new interventions, and the legal and ethical guidelines for the delivery of services using these methods are yet unclear.

Conclusion

In conclusion, many different computer-based methods for assessing and treating OCD have been shown to be helpful for patients and have a range of benefits including better identification of OCD for a wider population, reduced costs of treatment, reduced time constraints for the therapist (allowing qualified therapists to treat more patients), and greater dissemination of evidence-based treatment to those without local access. Although ethical issues, such as increased risk to privacy, must be considered when using this approach, these risks outweigh the benefits for those who would not otherwise receive care.

Thus far, a modest body of research has examined the benefit of various forms of e-therapy; however, further research is needed to properly guide the application of these forms of treatment. First, although telephone-delivered CBT for OCD has been examined in a randomized controlled trial, videoconferencing methods for OCD have not been examined with methodological rigor, nor have they been compared to in-person CBT. Videoconferencing allows for face-to-face interaction with clients through a web interface and may thus be more similar to in-person CBT than comparable teleconferencing methods, while still providing the benefits of more widespread dissemination of services to patients who would not otherwise receive treatment. Himle et al's (2006) findings warrant further examination of videoconferencing methods for patients with OCD.

Other research should examine predictors of response to computer-based CBT so that clinicians may better identify which patients will respond well to this form of treatment. There are some patients who may not benefit as well from computer-based treatment, but little to no research has been conducted regarding the factors that predict how well OCD patients respond to these computerized therapies. Research on the BT Steps programs indicates that patients who are willing to complete self-exposures on their own are likely to do well in this computer-based treatment. This points to patient motivation as a possible predictive factor but does not conclusively indicate motivation as a predictor of response to this treatment. Further research in this area will help clinicians to identify the patients who might benefit from a computerized intervention, and to separate these patients from those who are in greater need of a higher standard of care.

Also, while Turner et al. (2009) investigated a telehealth intervention for youth with OCD in a small pilot study, this is the only study thus far that has investigated telehealth interventions for pediatric OCD. OCD is a common childhood psychiatric illness, with 2-4% of children and adolescents affected by this disorder (Zohar, 1999). With up to 80% of adult OCD cases having a childhood onset (Pauls, 1995), there is a vast need for dissemination of services to this specific population so as to prevent long-standing disability. Two of the authors (JM and EAS) are currently investigating a telehealth intervention involving videophone-administered cognitive-behavioral therapy in youth with OCD. This study involves sessions with both parent and child, with a therapist delivering 14 CBT sessions via Skype, using the POTS (2004) protocol for treatment delivery. This study is still under way, but preliminary results suggest that treatment delivered via these methods may be efficacious for pediatric OCD patients. Thus far, research in computer-based treatment for OCD has shown promising results and indicates a need for further research, so this treatment can be

improved and properly disseminated to those who may be struggling with this illness without access to local evidence-based care.

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