Clinical Report

Delivering exposure and ritual prevention for obsessive–compulsive disorder via videoconference: Clinical considerations and recommendations

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ABSTRACT

Exposure and ritual prevention (ERP) has been shown to be effective for treating obsessive–compulsive disorder (OCD), but many people with OCD are not able to access this specialized, evidence-based mental health treatment. Internet-mediated technologies, e.g., videoconferencing, represent a way to increase the availability of evidence-based treatments such as ERP, but given that OCD is a complex disorder requiring a nuanced treatment approach, clinicians attempting to implement ERP remotely should appreciate not only the advantages but also the challenges associated with treating OCD from a distance. Using a case example, we describe this treatment method and discuss relevant clinical considerations.

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1. Introduction

Obsessive compulsive disorder (OCD) is a relatively common and highly debilitating anxiety disorder that affects approximately 1% of individuals in the US in any given year (Kessler et al., 2005). Characterized by distressing, repetitive thoughts and/or impulses (obsessions) and recurrent efforts to neutralize or reduce the obsessional anxiety (compulsions), OCD follows a chronic waxing and waning course that is unlikely to remit without treatment (Franklin & Foa, 2008). Fortunately, with the development of behavior therapy the prognosis of OCD has improved.

Exposure and ritual prevention (ERP), a two-pronged approach that involves exposure to the anxiety provoking content of the obsessions while simultaneously refraining from performing anxiety-reducing compulsions, is currently considered the only empirically supported behavioral intervention for OCD (Abramowitz, 2006). Its efficacy has been established from robust outcome findings across a variety of both randomized and uncontrolled studies (Abramowitz, 1997; Franklin, Abramowitz, Kozak, Levitt, & Foa, 2000). For example, ERP has been shown to be superior to progressive muscle relaxation (Fals-Stewart, Marks, & Schafer, 1993), general anxiety management techniques (Lindsay, Crino, & Andrews, 1997), pill placebo (Foa et al. 2005), and inactive control conditions (McLean et al. 2001; van Balkom et al. 1998). When compared to pharmacological interventions, ERP is superior to medication alone and adding medication to ERP confers no benefit (Foa et al., 2005). However, despite its established efficacy, only a very small percentage of individuals with OCD will receive ERP.

The National Institute of Mental Health (NIMH, 2000) estimates that approximately 3.3 million Americans suffer from OCD. Yet only a fraction of these individuals will receive treatment from a therapist who specializes in ERP for OCD. Among the barriers to successful implementation of ERP are insufficient training at the trainee level (Crits-Christoph, Frank, Chambless, Brody, & Karp, 1995), therapist underutilization of and adverse reactions to the approach (Olatunji, Deacon, & Abramowitz, 2009), inadequate dissemination efforts (Gunter & Whittal, 2010), and a maldistribution of specialist providers that places individuals in rural areas at a disadvantage. For instance, a review of the therapists listed in the International Obsessive Compulsive Foundation directory reveals that 91% of these OCD specialists practice in metropolitan areas (International OCD Foundation. Treatment providers list., 2010). Yet, over 50 million people live in non-metropolitan areas of the United States (US Census Bureau, 2000). Considering that 1% of Americans will have OCD in a given year, over 500,000 individuals with OCD will not have access to a trained therapist *solely* because of where they live. It is important to address the barriers to receiving quality,

evidence-based treatment because OCD is a debilitating disorder with significant public health implications including substantial occupational and social impairments, significant family burdens, as well as increased utilization of medical and mental health services and enormous economic costs (DuPont, Rice, Shiraki, & Rowland, 1995; Horwath & Weissman, 2000).

2. Technology as a means to deliver evidence-based interventions

As the use of and accessibility to technology increases, tele-health applications (e.g., interactions between health care professionals and their patients that occur remotely) are emerging as viable avenues through which to disseminate evidence-based interventions like ERP (American Psychological Association Practice Organization, 2010). Although still not ubiquitous, mental health providers' use of videoconference-mediated interventions has increased noticeably in recent years (DeAngelis, 2012). Videoconferencing interventions have a key advantage over other computerized interventions (e.g., self-help websites) and telephone-based treatments in that they incorporate the face-to-face element of therapy. Videoconferencing is an interactive way of communicating that allows real-time, simultaneous transmission of audio and video content. To date, videoconferencing-based treatments have been applied to social anxiety disorder (Yuen et al., 2010), panic disorder with agoraphobia (Bouchard et al., 2004), posttraumatic stress disorder (Deitsch, Frueh, & Santos, 2000; Germain, Marchand, Bouchard, Drouin & Guay, 2009), obsessive compulsive disorder (Himle et al., 2006) pediatric tic disorders (Himle, Olufs, Himle, Tucker, & Woods, 2010), pediatric depression (Nelson, Barnard, & Cain, 2003), mixed anxiety and depression (Manchanda & McLaren, 1998; Simpson, Deans, & Brebner, 2001), and bulimia nervosa (Mitchell et al., 2004; Mitchell, Myers, Swan-Kremeier, & Wonderlich, 2003). The initial research on the acceptability of these approaches is favorable (Simpson, 2009; Yuen, Goetter, Herbert, & Forman, 2012).

To date, only two published studies have examined video-conference-based treatment for adults with OCD (Himle et al., 2006; Vogel et al. 2012), though others are underway (Goetter, unpublished dissertation). The first, a small pilot study, found that among three participants, treatment was acceptable and resulted in clinically significant gains. A second study piloted the effectiveness of a total of 15 sessions of ERP delivered through a combination of modalities: six sessions via videoconference and nine sessions via cell phone (Vogel et al., 2012). All six participants had 50% or larger reductions in measures of OCD, depression, and general anxiety with gains at follow-up only slightly reduced. Treatment acceptability and therapeutic alliance were also rated highly by all participants. Like many of the existing studies examining the feasibility and effectiveness of videoconference-based treatments, the small sample sizes and lack of control conditions preclude firm conclusions, and replication is warranted. Nonetheless, providers have been encouraged by the preliminary findings supporting the effectiveness and acceptability of these methods.

OCD is widely recognized as an especially difficult disorder to treat, which may pose additional challenges to the remote therapist. OCD is associated with high rates of disability (Huppert, Simpson, Nissenson, Liebowitz, & Foa, 2009; Mancebo et al., 2008; Ruscio, Stein, Chiu, & Kessler, 2010) and is frequently associated with complex, comorbid conditions (Angst et al., 2005; Mancebo, Grant, Pinto, Eisen, & Rasmussen, 2009; Torres et al., 2006). Many individuals will prematurely end treatment (Stanley & Turner, 1995), and among treatment completers, many continue to exhibit residual symptoms (Whittal & McLean, 1999) with as many as 10% showing no improvement (Foa, Steketee, & Ozarow, 1985). In one study of ERP,

between 10% and 18% of individuals sought additional behavioral treatment for OCD following the acute treatment phase of the study (O'Sullivan & Marks, 1991). Taken together, these findings suggest that OCD is a chronic and particularly difficult disorder to treat.

Clinically, the delivery of ERP presents challenges to even the most experienced therapists. First, OCD is a heterogeneous disorder, meaning that the content of obsessions and manifestation of compulsions are unique across individuals. Additionally, in any given individual with OCD, it is not uncommon for him/her to experience obsessions and compulsions that vary in content across time. Second, OCD is a complex disorder typically accompanied by subtle safety and avoidance behaviors. Relatedly, OCD behaviors are often covert in nature, with compulsions frequently taking the form of mental behaviors that are not apparent to the therapist. Moreover, when compulsions take a mental form it can be difficult for the therapist to discriminate between obsessional thoughts and neutralizing (i.e., compulsive) thoughts. Finally, given that therapist-assisted exposure is more effective than patient-directed exposure (Abramowitz, 1996) the ERP therapist is required to take an active and creative approach in treatment to ensure effective exposure exercises. In doing so, it is not uncommon for the therapist to question the safety or ethics of certain exposures (Olatunji et al., 2009). In summary, the ERP therapist must be skilled in actively assessing OCD behaviors, monitoring the conceptualization of the patient's behaviors, and taking a dynamic and participatory role in the treatment. Thus, despite the promising findings from early videoconference-mediated ERP trials, it is not immediately obvious how ERP might be delivered most effectively using a remote method.

Given that remote, Internet-based interventions are becoming increasingly popular, early findings from videoconference-mediated ERP are promising, and delivering ERP (even face-to-face) presents a challenge for many clinicians, it is important to discuss the clinical application of videoconference-mediated ERP for the treatment of OCD. We delivered a pilot test of ERP via videoconference and present a case example with the purpose of (1) demonstrating the effectiveness of this method, (2) illustrating the advantages and disadvantages of remote delivery of ERP, and (3) highlighting relevant considerations for therapists who provide exposure for OCD through videoconference.

3. Case introduction

Mrs. A was a 42-year-old, Caucasian woman who lived with her husband and three children in a small suburban town in North America.[1] She worked full-time as a hospital administrator and spent the majority of her free time with her family. She was referred for treatment for OCD by her primary care physician.

Mrs. A had experienced symptoms of OCD off and on since the age of 18. Her OCD had typically concerned a fear that she would inadvertently cause harm to those around her. At the time she was evaluated, her obsessions concerned harm to various others, and specifically to her children: fears of becoming contaminated and spreading contaminants to her children, fears of becoming contaminated at work and spreading it to pediatric patients as well as coworkers and others who might have contact with children, fears that she would hit children with her car when driving, and a fear that she herself had undiagnosed HIV/AIDS and was inadvertently spreading it to others. Her compulsions included excessive hand washing, elaborate cleaning routines in her home (e.g., bathroom and toilet cleaning, excessive laundry washing, cleaning her children's beds, washing off grocery items), and at work

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[1] Details of this case have been altered to protect the patient's identity.

(e.g., cleaning phones, door knobs, bathroom facilities she had used), as well as constant reassurance seeking from her husband.

She had seen three different therapists over the course of her adulthood beginning at the age of 20 while she was in college, again at the age of 29 after the birth of her first child, and most recently at the age of 39 after experiencing a stressful job transition, although she had never received an exposure-based treatment. She was not currently taking medication, but she had been prescribed Clonazepam (1 mg BID) when she was in her late 30 s over a one-year period. She ultimately discontinued the medication because she could not tolerate its sedating side effects. She denied use of alcohol or illicit drugs.

4. Case formulation

Mrs. A's primary obsessional theme revolved around a fear of causing harm to others that would result in life-threatening illness or injury. When Mrs. A encountered specific external stimuli (e.g., public restrooms, hearing stories about children being killed or contracting a serious illness) and internal, intrusive thoughts (e.g., nagging doubts about whether she inadvertently hurt a child or accidentally put someone in contact with her bodily fluids) her obsessional fears were evoked and accompanied by intense feelings of anxiety. In response to her obsessions, Mrs. A performed a series of compulsions designed to reduce her anxiety and prevent harmful consequences from befalling those around her. These compulsive rituals included (a) cleaning inanimate objects, such as door knobs and frequently touched surfaces in her home (e.g., refrigerator handle, chairs, her children's bed frames) and at work (e.g., telephones, hospital carts, public bathroom surfaces, elevator buttons), (b) saying "excuse me" to children she passed by in case she had "bumped" or "hit" them, (c) excessive hand washing, (d) asking for reassurance from and confessing perceived wrongs to coworkers and her husband, (e) mentally reviewing her driving route or physically driving back to check if she had hit any children, and (f) repeatedly asking her children to wash their hands. For instance if she had to use a public restroom at work (which she usually avoided), Mrs. A would feel compelled to clean the toilet seats, bathroom door locks, sink handles, and door handles to reduce the fear that her bodily fluids made contact with these surfaces. Additionally, she would make sure she had left no water on the floor in the event that someone (particularly a child) would use the restroom after her, slip and fall on the floor, and become seriously injured. Mrs. A also made numerous calls to her husband throughout the day to "run things by him" and obtain reassurance. Mrs. A believed that if she did not perform her compulsions she would be responsible for spreading life-threatening illnesses or causing severe bodily harm to innocent, unexpecting individuals, especially children. As the assessment phase progressed, a second core fear was identified: that Mrs. A was actually a terrible, reckless individual who was deceiving everyone around her into believing she was a kind person. This belief was also associated with excessive and unreasonable amounts of guilt and maintained an exaggerated sense of responsibility.

As her OCD had become more pervasive, Mrs. A also learned numerous avoidance behaviors in an effort to prevent obsessive thoughts and interfering rituals. Mrs. A drove an extra 10 miles each way to and from work to avoid school zones where she might be more likely to hit children with her car. She came to avoid many of her children's school functions for fear of encountering and inadvertently harming other children. Mrs. A would also frequently call in sick to work during her menstrual cycle due to a fear of spreading blood borne illnesses (e.g., HIV/AIDS) to patients and hospital staff.

From a behavioral conceptualization, Mrs. A's direct avoidance and compulsions (both overt and mental) were negatively reinforcing; when she avoided a distressing activity or engaged in a compulsion she temporarily experienced a reduction in the anxiety associated with her obsessions. Thus, both direct avoidance and indirect avoidance (i.e., compulsions) functioned in a similar manner and contributed to the maintenance of OCD.

5. Assessments

5.1. Structured clinical interview for DSM-IV axis I disorders

(SCID; First, Spitzer, Gibbon, & Williams, 1996). The SCID is a widely used structured diagnostic interview that assesses for the presence of Axis I disorders based on DSM-IV criteria. It has excellent interrater reliability with overall kappa of .85 (Ventura, Liberman, Green, Shaner, & Mintz, 1998).

5.2. Yale-brown obsessive compulsive scale

(YBOCS; Goodman et al., 1989). The YBOCS is a primary clinical assessment tool of OCD severity and a well-established outcome measure evidenced by its use in many clinical trials of OCD. The total score is yielded by summing items 1–10, which are rated on a scale of 0–4. Scores can range from 0 to 40, with a score of 16 or greater indicating clinically relevant OCD and a score below 11 indicating mild symptoms. The YBOCS has high internal consistency and strong interrater reliability (Goodman et al., 1989).

5.3. Beck depression inventory–2nd edition

(BDI-II; Beck, Steer, Ball, & Ranieri, 1996). The BDI-II is an extensively used and well-studied assessment tool designed to assess the severity of current depressive symptoms. Twenty-one items are rated on an ordinal scale from 0 to 3, with lower scores indicating fewer symptoms of depression. Scores are summed and can be used to classify individuals on the basis of depression severity. The BDI-II has been shown to have good reliability and strong content, concurrent, and discriminant validity in both clinical and nonclinical samples (Beck, Steer, & Carbin, 1988).

5.4. Obsessive compulsive inventory-revised

(OCI-R; Foa et al., 2002). The OCI-R is an 18-item self-report questionnaire that assesses the distress associated with a variety of OCD symptoms. There are six subscales that assess washing, checking, obsessing, hoarding, neutralizing, and ordering. Individuals rate their distress on a scale of 0–4 with higher scores indicating more intense distress. The OCI-R has demonstrated good test–retest reliability and convergent and discriminant validity in clinical samples (Foa et al., 2002; Huppert et al., 2007). It has also demonstrated sensitivity to treatment effects making it a good, brief measure of OCD symptom severity for research and clinical purposes (Abramowitz, Khandker, Nelson, Deacon, & Rygwall, 2006).

5.5. Quality of life enjoyment and satisfaction questionnaire

(QLESQ; Endicott, Nee, Harrison, & Blumenthal, 1993). The short form of the QLESQ is a 16-item self-report measure assessing life satisfaction in several domains, including physical health, social relations, family life, leisure, economic status, sexual drive/interest, and overall well-being. The QLESQ has been used in many studies of anxiety disorders (see Rapaport, Clary, Fayyad, and Endicott (2005)), including obsessive–compulsive disorder (e.g., Eisen et al. (2006), Huppert et al. (2009)).

5.6. Working alliance inventory

(WAI-S; Horvath & Greenberg, 1989; Tracey & Kokotovic, 1989). The WAI-S is a 12-item patient self-report measure to assess the working relationship and therapeutic bond. This measure is commonly used in CBT treatment outcome studies, including those whereby treatment is delivered remotely. Ratings are given on a 7-point Likert scale, with higher scores reflecting a stronger working alliance. Items are averaged to produce an overall working alliance rating that ranges from 1 to 7. Busseri and Tyler (2003) reported that the WAI-S has good internal reliability for the composite score (alpha=.91) and the subscales (alpha=.73–.86).

6. Baseline assessment

Mrs. A was evaluated by a trained, independent clinician using the SCID-IV and the YBOCS. At the time of her initial assessment, Mrs. A met DSM-IV criteria for OCD. She had a history of a major depressive episode at the age of 25, but did not currently meet criteria for major depressive disorder. Her score on the clinician administered YBOCS was 31, placing her in the severe range of OCD symptom severity. During the baseline assessment, we also collected emergency contact information including the phone number of her primary physician and local hospital. This was done with the intent of ensuring Mrs. A's safety in the event of an emergency requiring local assistance.

7. Videoconference setup and materials

Treatment sessions took place via Skype, a software application developed in 2003 that allows users to place voice calls over the Internet. Skype is a peer-to-peer voice over Internet protocol (VoIP) client, meaning that individuals communicate directly through their computers rather than through a third party host. Skype is a secure application that operates behind a computer's firewall, making it safe from unauthorized access by another party. Skype uses Advanced Encryption Standard (AES), which is also used by the US Government to protect sensitive information ⟨http://www.skype.com⟩.

Prior to beginning treatment, Mrs. A was informed of the nature and security of Skype communication, including the small chance of an outsider hacking into the system and breaching confidentiality. She also met with a member of the staff who had been trained in the use and instruction of Skype. This meeting began on the phone and then transitioned into Skype once she had been assisted in the downloading process. During this live tutorial the staff member helped Mrs. A troubleshoot any technical problems and made sure she had gained basic proficiency in the use of the application.

All sessions took place in Skype with the therapist using a personal desktop computer running Microsoft Windows 7.0 and a Microsoft LifeCam web camera. The therapist conducted treatment from a locked therapy office within the Anxiety Treatment and Research Program at Drexel University in Philadelphia, Pennsylvania utilizing a reliable, wired, high-speed connection that supported speeds up to 1 gigabit per second (Gbps).

8. Treatment

Treatment consisted of 16, 90-minute sessions that were delivered twice per week. The treatment followed a manualized protocol of ERP developed at the University of Pennsylvania's Center for the Treatment and Study of Anxiety (Foa, Ledley, Huppert, & Franklin, 1997). The first two sessions were dedicated to developing therapeutic rapport; a functional analysis of Mrs. A's obsessions, compulsions, and avoidance; presenting psychoeducation about OCD; developing a fear hierarchy; and delivering a rationale for ERP. Specifically, Mrs. A was instructed that (1) the link between obsessions (e.g., harm, contamination) and anxiety would weaken through exposure, and (2) the link between anxiety relief and rituals (e.g., washing, checking, reassurance seeking) would weaken through ritual prevention. Beginning in session 3, each session included an hour of therapist-guided exposure based on the fear hierarchy. The majority of sessions, beginning in session 3, were dedicated to exposure with the supplemental session time spent reviewing homework, planning exposures, and assigning homework for the next session. Mrs. A was given between-session homework assignments that included self-monitoring of her rituals (beginning after session 1) and exposure (beginning after session 3), which was typically modeled after what had been done in session with the therapist's support. Brief telephone check-ins were offered between sessions to troubleshoot problems, provide support, sustain motivation, and encourage adherence to treatment goals.

9. Data collection

In addition to her baseline assessment, Mrs. A was also assessed at mid-treatment (session 8) and post-treatment (after session 16). All assessments were conducted over videoconference or via telephone. At each assessment point she completed the self-report measures described above and underwent an assessment conducted by an independent evaluator using the YBOCS and OCD module of the SCID. Additionally, Mrs. A completed two brief measures in each session: a measure of the frequency and distress associated with her OCD symptoms, and a self-report measure of her experience in the videoconference environment at each session.

10. Treatment outcome

Table 1 illustrates Mrs. A's scores at baseline, mid-treatment, and post-treatment. Mrs. A's scores decreased on clinician-rated and self-report measures of OCD symptom severity and depression. Mrs. A also reported increases in her quality of life. Additionally, measures of the therapeutic alliance were consistently high at all assessment points. Session-by-session data were also collected on Mrs. A's self-reported symptoms of OCD. As can be seen, Mrs. A's obsessions (Fig. 1) and compulsions (Fig. 2) decreased in frequency and severity. Furthermore, the level of interference she experienced secondary to her OCD symptoms decreased over time (Fig. 3). Mrs. A also rated her experience in the videoconference environment as highly comfortable; she indicated high agreement across all sessions that the therapeutic interaction was natural, she felt as if she was in the physical presence of her therapist, and she felt like an active participant in the interaction with her therapist.

Table 1
Mrs. A's questionnaire and clinical outcome scores at pre-treatment, mid-treatment and post-treatment.

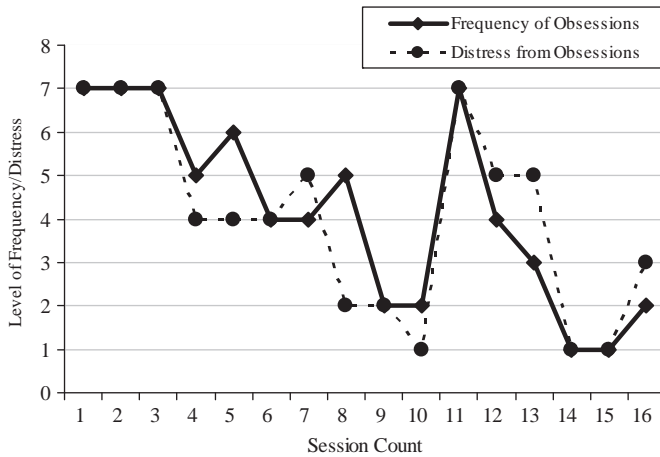| Instrument	Pre-treatment	Mid-treatment	Post-treatment
YBOCS	31	12	13
OCI-R	37	12	5
BDI-II	33	2	2
QLESQ	27	53	70
WAI-S	6	7	7

Fig. 1. Mrs. A's self-reported frequency of obsessions and associated levels of distress (higher numbers indicate greater frequency and more severe distress).
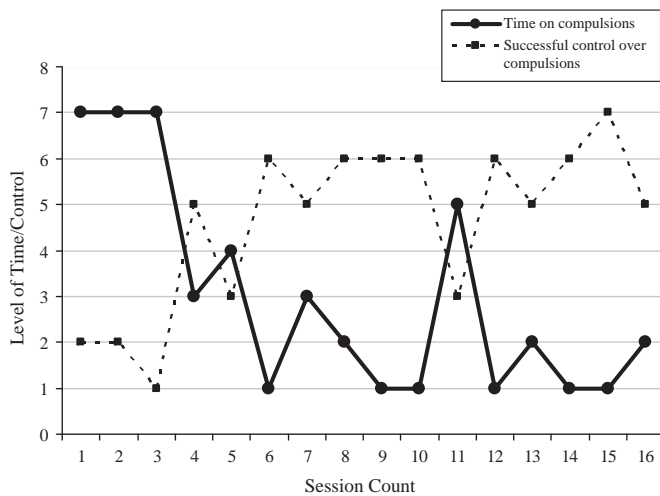

Fig. 2. Mrs. A's self-reported amount of time spent performing compulsions (higher levels indicate more time) and her level of successful control (higher levels indicate greater control) over performing compulsions.
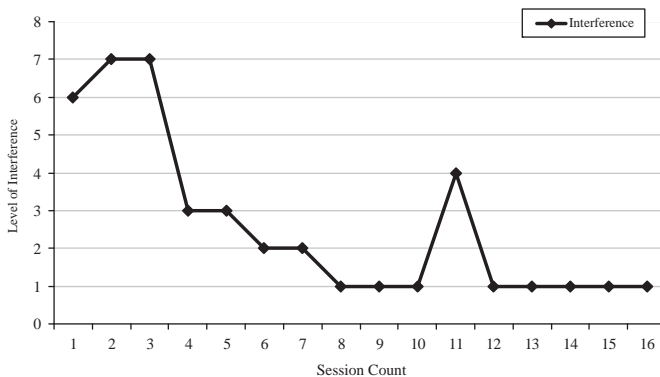

Fig. 3. Mrs. A's self-reported levels of interference related to her obsessive compulsive symptoms.

11. Discussion

The case of Mrs. A illustrates that delivering ERP via video-conference can be a successful means of treating OCD. As can be seen from both clinician evaluation and self-report, she experienced improvements in both OCD symptoms and quality of life.

Clinically, the remote delivery of ERP had several advantages as well as challenges that are worth noting.

12. Advantages of ERP via videoconference

12.1. Convenience

Perhaps one of the most obvious advantages of delivering ERP (and psychotherapy generally) via videoconference is its convenience. Patients do not have to leave their homes, which can reduce travel-related inconveniences and save time and money (e.g., gas, parking, public transportation, childcare). Additionally, if one is ill he/she may be more likely to attend a therapy session when it can be conducted from the comfort of home. In the case of Mrs. A, she was working full time and also was a mother of three school-aged children. Geographically, she was almost an hour drive from the nearest specialized ERP provider. Being able to do therapy in the convenience of her home saved her four hours of travel time each week. For therapists, too, conducting therapy via videoconference is convenient. In this case, the therapist had ready access to the session agenda and notes in a way that did not interrupt the flow of the session the way it might in an in-person interaction. For example, having a session outline on the computer screen next to the videoconference window helped focus the intervention, keep the therapist on track, and prevent omission of important material in a seamless manner.

The convenience afforded by the videoconference modality also increased the flexibility of exposures. Many of Mrs. A's exposures involved various locations in her home and traveling to places frequented by children (e.g., pediatric wards at work, playgrounds, and children's toy stores). Due to the mobility afforded by the treatment, Mrs. A and her therapist were able to do several prolonged exposures in her workplace and around her home using a combination of her laptop and cell phone. Community-based exposures were typically conducted by use of her cell phone to maintain communication with the therapist. In some cases, particularly where WiFi is available, it would be possible for smart phone users to take advantage of app versions of videoconference platforms (i.e., FaceTime), thus maintaining face-to-face contact when conducting outside exposures.

12.2. Access to the patient's personal environment

A key benefit of delivering ERP via videoconference was the direct, easy, and confidential access the therapist was given to Mrs. A's personal home environment. For many patients with OCD, it is common for the feared stimuli to be in the person's home or other personal environments (e.g., work). Mrs. A was worried about spreading illness and contamination to her family and was particularly afraid to enter her children's bedrooms when she came into contact with feared stimuli (e.g., cleaning products, the litter box). One exposure involved her "contaminating" herself and then immediately going into her children's bedrooms to contaminate their bed, clothes, and toys. In an in-person setting, planning a home visit can be burdensome and time intensive. Using videoconferencing enabled us to conduct powerful, in-home exposures across multiple sessions, facilitating habituation and large treatment gains.

12.3. Family involvement

Similarly, in a videoconference environment the therapist can easily involve the patient's family in treatment. This is especially important because the families of those with OCD are often directly impacted by the patient's illness. Patients may have fears

surrounding interactions with specific family members or the family may be—unintentionally and understandably—accommodating and even maintaining a patient's compulsive behaviors or avoidance. Mrs. A's husband was frequently offering her reassurance about the cleanliness of cooking surfaces. Additionally, her children were frequently accommodating her requests that they wash their hands. Involving the families of those affected by OCD is beneficial for both psychoeducational and exposure purposes. Treatment through videoconferencing made it very easy to invite Mrs. A's family into session and directly educate them about the problems associated with accommodating her rituals and avoidance behavior, and to provide them with alternate ways to respond when the Mrs. A asked for reassurance. Having an in-person family session can often take weeks to plan due to the difficulty of synchronizing individuals' schedules. In this case, the therapist and patient were able to have a family session very early in the course of treatment, which turned out to be instrumental in Mrs. A's ritual prevention goals and her subsequent progress.

13. Challenges of ERP via videoconference

Despite the many advantages of remote treatment of OCD via videoconferencing, this modality also presented unique challenges to Mrs. A's therapist.

13.1. The working alliance and therapeutic presence

One aspect of remote treatment that has come under criticism is the assumption that the therapeutic alliance will be weaker than with traditional face-to-face therapy, which will result in poorer outcomes (Bee et al., 2008; Proudfoot, 2004). Although it is possible that using videoconferencing as a means for delivering an intensive exposure-based treatment may negatively impact the therapeutic relationship, this should not be assumed and was not the case with Mrs. A. Nonetheless, exposure therapy, and ERP in particular, is a demanding therapy for both therapists and especially patients. In a remote therapy setting, if the therapist–patient relationship is less salient, it might diminish the therapist's ability to provide the necessary support and persuasion surrounding (and known to facilitate) ERP. This support and persuasion is particularly important in treating OCD because of the high level of treatment refusal and high attrition that is associated with ERP (Fisher & Wells, 2005).

For example, in the first half of treatment Mrs. A's therapist made continual attempts to persuade her to approach a public restroom and contact the toilet seat. Ultimately, the therapist was unable to persuade Mrs. A to complete this exposure and could not physically intervene, therefore limiting the amount of early gains she could have made. Although it is possible Mrs. A would not have completed this exposure in an in-person setting either, the therapist's ability to convince the patient or even physically walk the patient to the bathroom herself may have been more successful in a face-to-face setting and may have increased the likelihood of completing this exposure exercise. Research directly comparing remote and in-person delivery of ERP is necessary to evaluate this possibility.

13.2. Monitoring subtle avoidance behaviors

Therapists and patients may also experience challenges *during* exposure activities. The therapists have a limited scope of vision due to the nature of most currently used web cameras. Therapists are not afforded the same visual acuity that is experienced in a face-to-face interaction. Therapists may not be able to see the entirety of a patient's body, posture, or stance. Similarly, eye movement and nonverbal cues are harder to detect over videoconference. Therefore, when delivering exposure treatment via videoconference, it is more difficult to assess subtle safety behaviors that may occur while the patient performs exposures.

For instance, due to the vantage point of the camera, it was often difficult to see if, during contamination exposures, Mrs. A was using both hands to touch a contaminated object. Later in treatment, the therapist learned that during one of Mrs. A's imaginal exposures, she was holding an object of spiritual significance in an effort to comfort herself during this difficult exposure. Once the therapist realized this was happening she reminded the patient about the importance of allowing herself to feel as anxious as possible and not engaging in such safety behaviors. This issue is likely to be less concerning as the quality and affordability of high-definition and wider-angle web cams become more commonplace, but in the meantime therapist vigilance is advised. Furthermore, the therapist should also consider asking the patient to inform the therapist if others (i.e., family members, friends) are in the room (off camera) serving as safety cues that may undermine the benefit of the exposure.

When conducting ERP it is not uncommon to have patients watch online videos with content related to feared stimuli. For example, Mrs. A was instructed to watch online videos about sick children and news stories about preventable, adverse events occurring in hospitals. At times, Mrs. A's therapist found it difficult to discern whether she was fully focusing on the videos and receiving the maximum benefit of the exposure.

Even though ERP therapists are often successful in persuading patients to perform exposure fully and without safety behaviors, it is expected that abstaining from compulsions (especially more automatic compulsions, e.g., mental rituals) will be especially difficult. In fact, expecting full compliance with ritual prevention goals is typically unrealistic. Due to the nature of videoconferencing, the therapist must anticipate that he or she cannot as easily notice subtle avoidance and safety behaviors, and will have a difficult time physically interfering with rituals. Therapists must be especially vigilant in monitoring such behaviors to ensure maximum therapeutic benefit.

13.3. Technological problems

The technology itself can also interfere with treatment objectives. While platforms such as Skype are user-friendly, inevitable technological difficulties sometimes arise, including poor picture quality, desynchronized audio and video streams, and dropped connections. Nonetheless, ERP therapists should be aware that technological problems can and do occur with any technological interface although, it is likely that these will be reduced as advancements in technology occur. A challenge to using free platforms (e.g., Skype)—and in particular when used in one's residence with variable Internet connection speeds—is that call quality depends on the Internet connection of the individuals using it. In our case, we consistently utilized a reliable, wired, high-speed connection that supports speeds up to 1 gigabit per second (Gbps). However, the quality of Mrs. A's connectivity was more variable. We sometimes found it useful to have Mrs. A physically connect her computers to the router (instead of using a wireless connection) to reduce technological problems. However, we also regularly took advantage of the mobility of her devices (e.g., laptops) to enhance exposures. Thus, technological quality was sometimes sacrificed in the service of exposure goals. In our experience, having a videoconference tutorial and testing the patient's connections *prior to the start of therapy* tends to reduce technological problems. In the event that technological problems begin to interfere with a session and cannot be quickly resolved, switching to telephone can be an available option.

It should be further noted that Skype is not the preeminent videoconference platform and recent critics have questioned its security and compliance with the Health Insurance Portability and Accountability Act (HIPAA) (Watzlaf, Moeini, & Firouzan, 2010). Although this study was designed and implemented before these concerns were widely realized, the limitations of Skype (e.g., that it sells certain user related information, possible breach of security from outside hackers) were discussed with Mrs. A through a comprehensive informed consent process. Ultimately, the use of HIPAA compliant applications and a thorough informed consent process is strongly encouraged.

13.4. Perceived patient commitment

A final potential drawback of remote treatment for OCD concerns the patient's commitment to treatment. When patients meet with their therapists in-person, they must set aside a block of time for the therapy hour and the surrounding commute time. Additionally, the patient goes to visit his/her therapist in a setting that is clearly distinct from his/her personal environment. In a remote setting, the boundary between one's personal life and the therapy appointment is less apparent. One consequence is that personal distractions are more likely to interfere with the therapy session. For instance, Mrs. A occasionally paused sessions while she dealt with her young child's needs. Generally speaking, the convenience of remote therapy may limit the patient's invest-ment in treatment. For example, patients may be less hesitant about skipping or canceling sessions because the perceived commitment is lower. Thus it is important to discuss these issues early on, before the initiation of ERP, in order to establish clear ground rules and appropriate expectations regarding treatment.

14. Clinical recommendations

14.1. Mobile devices

Therapy sessions conducted in a traditional office setting offer limited opportunities for patients to engage in exposure exercises to feared stimuli. However, using videoconferencing to treat OCD provides additional unique opportunities to enhance in-session exposures. Videoconferencing platforms (e.g., Skype) can be easily downloaded onto a wide range of mobile devices, including laptops, tablets, and smartphones. These mobile devices are becoming increasingly popular and are now in widespread use (Zickuhr, 2011). We have often found it useful for patients to utilize these mobile devices during remote exposure exercises in real-life settings in order to stay connected to their therapist. For example, Mrs. A was asked to practice a contamination exposure in a child's clothing store. Using her mobile phone enabled Mrs. A's therapist to monitor the exposure and Mrs. A was able to remain in contact with her therapist for support.

14.2. Modeling

An important component of traditional in-person OCD treat-ment is for the therapist to model exposure exercises while the patient observes. For example, in traditional office settings, the therapist could bring a contaminated object into the therapy room and demonstrate touching the object, or bring the patient into the restroom and demonstrate touching the toilet bowl, while the patient observes in-person. By first observing the therapist engage in these behaviors, patients may be more likely to participate in these exposure activities themselves. Because remote treatment does not allow the therapist and patient to be in the same physical location, this may hamper the therapist's ability to demonstrate such exposures. However, we have found that we can still effectively model exposure to the patient in most cases. For example, the therapist can bring feared objects (e.g., a knife) into his or her office and touch them while the patient observes the exposure through videoconferencing. In the case of vomit phobia, the therapist and patient can each gather the materials to create fake vomit in front of them, and then create the concoction together, step-by-step with the therapist demon-strating. Furthermore, therapists using videoconference with a mobile device (laptop, tablet, smart phone) can bring their device with them into locations or situations feared by the patient, such as a bathroom, and demonstrate the exposure with the patient watching.

14.3. Minimizing distractions

In a traditional office setting, the therapist can observe if the patient is distracted by other events or engaged in other activities, such as checking messages on the cell phone. Remote therapy via videoconferencing may render detection of these other distrac-tions more difficult. Because most web cameras offer a limited view of the patient's environment, the therapist may not notice other events or activities that are occurring. For example, the television may be on in the background, other family members may be present, or the patient may be engaging in other activities on their computer, such as playing a game or checking email. Therapists can reduce the likelihood of these distractions by communicating to the patient clear standards early on for what is acceptable behavior during therapy sessions and what is an acceptable background environment (e.g., not checking email during session). Therapists can also ask patients to point their webcam around the room so that the therapist can verify that there are no other distractions.

14.4. Licensure

Remote treatment also raises interjurisdictional legal issues when treatment is conducted across state lines, such as when the therapist is located and licensed to practice in one state while the patient is physically located in a different state. The rules and regulations regarding licensure and telemental health practice in the US are currently sparse, ambiguous and vary by state (Herbert et al., 2012). In fact, only 22 of 50 states have enacted telehealth laws and only three specifically apply to psychologists (APA Practice Organization, 2010). Relatedly, only eight states' psychol-ogy licensing boards have issued policies about Internet-mediated therapy (APA Practice Organization, 2010; Chamberlin, 2010). Some organizations have attempted to systematically examine the interstate practice of telemental health. For instance, the Association of State and Provincial Psychology Boards (ASPPB) Model Acts for Licensure of Psychologists allow for electronic delivery of psychological services and they have recently created the Interjurisdictional Practice Certificate (IPC) to provide "licen-sure mobility." State licensing boards, however, have not been eager to accept this certification, with only five states currently recognizing the IPC (Harris & Younggren, 2011). In 2011, APA and ASPPB assembled a joint Telepsychology task force, with the aim of developing national guidelines in order to incorporate emer-ging technologies and address current needs.

Meanwhile, most states do not allow psychologists to practice across state lines, and in some cases state boards of psychology refuse to interpret their own licensure guidelines in reference to this matter even when asked (Goetter et al., 2011; Herbert et al., 2012). Although beyond the scope of the current paper, it is our view that overly restrictive guidelines about interstate telemental health treatment—when delivered to patients giving fully

informed consent—are potentially more ethically problematic due to the implications such restrictive guidelines would have on the accessibility of mental health treatment. Nonetheless, pending the development of further guidelines, practitioners wishing to practice telemental health across state lines are encouraged to (1) check with the licensure boards of their own state as well as the licensure boards of their potential patients' states, (2) contact their malpractice carrier to confirm policy coverage for telemental health services provided within and across state lines, (3) be well-informed of state variances in mandated reporting laws and duty to warn standards, and (4) practice telepsychology with the same ethical standards as traditional formats of therapy (DeAngelis, 2012; Goetter et al., 2011; Midkiff & Wyatt, 2008; Yuen et al., 2012).

15. Summary and conclusions

ERP is a highly effective treatment for OCD, but the majority of individuals with OCD do not receive a state-of-the-art, evidence-based treatment. In the case of Mrs. A, a videoconference-based treatment approach was a viable alternative to in-person treatment. In combination with other studies (Himle et al., 2006; Vogel et al., 2012) we can tentatively conclude that videoconferencing is an effective means through which to deliver a complicated and intensive treatment (i.e., ERP) for OCD. More generally, Internet-mediated remote treatment methods increase the accessibility of evidence-based treatment and provide hope to individuals who otherwise would not have access to quality mental health treatment. This is particularly important in the case of OCD—a complex disorder requiring a specialized intervention. Making a highly specialized therapy more available also improves the standard of psychotherapeutic care by removing the constraints associated with the lack of availability of trained clinicians. Importantly, a lack of highly specialized providers often forces individuals to seek out sub-standard therapeutic methods, which only encourages their proliferation.

OCD is a debilitating and economically costly disorder and many individuals face barriers to accessing care for this condition. Remote interventions represent one way through which psychologists can disseminate effective, evidence-based interventions like ERP. Given that remote, technology-based interventions will likely play an important role in the future of the practice of psychology and the evidence-based movement, it is important that mental health providers remain informed of both the effectiveness and clinical application of these methods.

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Contributors

Authors 1, 2, 3, and 4 designed the study and wrote the protocol. Authors 5, 6, and 7 contributed extensively to writing clinical recommendations. Author 8 conducted literature searches and wrote summaries of previous studies. All authors contributed to and have approved the final manuscript.

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