Available online at www.sciencedirect.com
ScienceDirect
Behavior Therapy 44 (2013) 51–61
Behavior Therapy
www.elsevier.com/locate/bt

Treatment of Social Anxiety Disorder Using Online Virtual Environments in Second Life

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Over 80% of people with social anxiety disorder (SAD) do not receive any type of treatment, despite the existence of effective evidence-based treatments. Barriers to treatment include lack of trained therapists (particularly in non-metropolitan areas), logistical difficulties (e.g., cost, time, transportation), concerns regarding social stigma, and fear of negative evaluation from health care providers. Interventions conducted through electronic communication media, such as the Internet, have the potential to reach individuals who otherwise would not have access to evidence-based treatments. Second Life is an online virtual world that holds great promise in the widespread delivery of evidence-based treatments. We assessed the feasibility, acceptability, and initial efficacy of an acceptance-based behavior therapy in Second Life to treat adults with generalized SAD. Participants (n=14) received 12 sessions of weekly therapy and were assessed at pretreatment, midtreatment, posttreatment, and follow-up. Participants and therapists rated the treatment program as acceptable and feasible, despite frequently encountered technical difficulties. Analyses showed significant pretreatment to follow-up improvements in social anxiety symptoms, depression, disability, and quality of life, with effect sizes comparable to previously published results of studies delivering in-person cognitive behavior therapy for SAD. Implications and future directions are discussed.

Keywords: social anxiety; virtual reality; Second Life; telehealth; telepsychology

Social Anxiety Disorder (SAD) is the third most common psychiatric disorder in the U.S. (Kessler, Berglund, Demler, Jin, & Walters, 2005). Given its chronicity, early onset, and unremitting course, SAD is associated with extensive economic and personal costs (Grant et al., 2005).

Cognitive behavioral therapy (CBT) encompasses a family of evidence-based interventions that target changes in both the content and context of behaviors, thoughts, and feelings. Research has demonstrated the effectiveness of several CBT protocols for SAD, including cognitive behavioral group therapy (CBGT; Heimberg & Becker, 2002; Heimberg et al., 1998; Herbert et al., 2008; Liebowitz et al., 1999), cognitive therapy (Clark et al., 2003; Mörtberg, Clark, & Bejerot, 2011), and acceptance-based behavior therapy (ABBT; Dalrymple & Herbert, 2007). Systematic exposure is a key component of most CBT programs

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0005-7894/44/51-61/$1.00/0

for SAD (Rodebaugh, Holaway, & Heimberg, 2004), and the majority of the research does not support the idea that cognitive restructuring adds incremental effects to exposure-based treatments (Fedoroff & Taylor, 2001; Feske & Chambless, 1995; Gould, Buckminster, Pollack, Otto, & Yap, 1997).

ABBT for SAD combines exposure with psychological acceptance principles for coping with anxiety. Acceptance-based approaches do not attempt to modify cognitions directly, but instead foster mindful acceptance of thoughts and feelings while pursuing specific behavioral goals. Research indicates that acceptance-based CBT is at least as effective as other CBT programs for anxiety and depression (Forman, Herbert, Moitra, Yeomans, & Geller, 2007; Hayes, 2008; Hayes, Bissett et al., 1999; Herbert & Forman, in press; Lappalainen et al., 2007). A pilot study found that ABBT for SAD led to large improvements of comparable magnitude to those reported by other CBT programs for SAD (Dalrymple & Herbert, 2007).

Despite advances in interventions for SAD, over 80% of individuals with the disorder receive no treatment (Grant et al., 2005). By comparison, 50% of individuals with generalized anxiety disorder and 40% of those with major depressive disorder do not receive treatment (Grant et al., 2005). The most commonly reported reasons for not seeking treatment for SAD are financial barriers, uncertainty about where to seek help, and fear of negative evaluation (Olfson et al., 2000). An insidious "catch-22" of SAD is that the very symptoms of the disorder (fear and avoidance of social interactions) leave many sufferers unwilling to seek treatment, which requires social interaction. Even among those who do receive treatment, only a minority receives an evidence-based treatment such as CBT (Goisman, Warshaw, & Keller, 1999; Wang, Berglund, & Kessler, 2000). In addition, there is a geographical maldistribution of mental health providers; over three-quarters of the counties in the U.S. have a notable shortage of mental health professionals, with more than half of their needs going unmet (Thomas, Ellis, Konrad, Holzer, & Morrissey, 2009). The lack of available therapists with specialized CBT training is a major barrier for disseminating effective treatments to patients.

New and innovative methods (e.g., Internet-based therapies) are needed to improve dissemination of specialized psychological services and are an appealing option for individuals who are unwilling or unable to receive in-person treatment by a trained CBT therapist. More than three-quarters of Americans now have Internet access in their homes (Horrigan, 2008), and an increasing number (63% in 2009; Horrigan, 2009) are adopting high-speed Internet connections. Several research studies support the efficacy of Internet-based self-help CBT for SAD (Andersson, 2009; Berger, Hohl, & Caspar, 2009; Carlbring et al., 2007; Titov, Andrews, & Schwencke, 2008; Titov, Andrews, Schwencke, Drobny, & Einstein, 2008), with significant improvements maintained at follow-up (Carlbring, Nordgren, Furmark, & Andersson, 2009; Hedman et al., 2011; Titov, Andrews, Johnston, Schwencke, & Choi, 2009). However, the self-help format may be a challenge for patients who find difficulty motivating themselves to engage in anxiety-provoking situations without the presence of a therapist who provides support and fosters accountability (Carlbring et al., 2007).

Another innovative treatment modality for anxiety disorders is Virtual Reality Therapy (VRT), which can be conducted either in person or via the Internet. VRT allows therapists to choose the scenarios and adjust intensity of anxiety-provoking stimuli to tailor exposure exercises to individual patients' needs, and to provide an intermediate step when patients are unwilling to undergo the exposure in real life (Klinger et al., 2005). Several meta-analyses of studies using VRT to treat anxiety disorders found large reductions in anxiety symptoms following treatment (Parsons & Rizzo, 2008), with effect sizes comparable to in-person treatment (Powers & Emmelkamp, 2008). With respect to SAD in particular, Klinger and colleagues reported significant improvements for participants with SAD who received 12 weeks of exposure in a virtual reality environment, with results comparable to participants who engaged in real-life in vivo exposure exercises.

Second Life is an online virtual environment created by the company Linden Research, Inc., and released to the public in 2003. Users create avatars and maneuver them around the virtual environment to participate in activities and interact with other avatars. Conversations occur through typed messages, or through vocal conversations among users wearing voice-over-IP (VoIP) headsets. Second Life technology provides an online virtual environment that therapists and patients can potentially utilize to meet remotely for therapy sessions. Furthermore, the virtual environment, including the presence of avatars and virtual locations, provides a highly flexible array of visual stimuli for potential in-session exposure exercises.

The current study assessed the feasibility, acceptability, and initial efficacy of a cognitive behavioral therapy for SAD using Second Life to treat adults with generalized SAD. A particular concern was how the remote nature of the treatment might affect treatment adherence and level of engagement during exposure exercises. ABBT for SAD was chosen as the treatment protocol because of its components that emphasize acceptance of internal experiences,