

Efficacy of Virtual Reality Exposure Therapy for Driving Phobia: A Multiple Baseline Across-Subjects Design

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A multiple baseline across-subjects design was used to examine the efficacy of virtual reality exposure therapy (VRET) to treat driving phobia. The treatment consisted of 8 weekly graded VRET sessions. Using self-monitoring and interview measures, treatment efficacy was examined across 5 participants. Three participants had reductions in driving phobia symptoms, while there was little change in the remaining individuals. VRET did not result in an increase of actual driving frequency for any of the participants. Some gains were lost at the 1- and 3-month follow-up, particularly for the participants who showed weaker treatment responses. Four individuals completed the 1-year follow-up and their symptoms remained largely unchanged. Given the modest treatment outcome and lack of generalization to actual driving behavior, VRET may be most useful as a supplement or preparatory intervention for in vivo exposure, rather than a stand-alone intervention.

Several studies have shown that virtual reality exposure therapy (VRET) is a promising medium for administering exposure therapy for specific phobias. VRET provides controlled environments for people to be exposed to and interact with realistic computer-generated feared stimuli until the fear diminishes. A number of case studies have used VRET to treat a range of phobias including acrophobia (e.g., Rothbaum et al., 1995), flying phobia (e.g., North, North, & Coble, 1997), spider phobia (Carlin, Hoffman, & Weghorst, 1997), and claustrophobia (e.g., Botella et al., 2000). Controlled studies have shown that VRET resulted in better outcomes than wait-list comparison groups for acrophobia (Rothbaum et al., 1995) and agoraphobia (North, North, & Coble, 1996). VRET is equally effective as standard in vivo exposure in the treatment of flying phobia (Rothbaum, Hodges, Smith, Lee, & Price, 2000). Other

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recent comparative trials to treat flying phobia (Mühlberger, Herrmann, Wiedemann, Ellgring, & Pauli, 2001) and acrophobia (e.g., Emmelkamp, Bruynzeel, Drost, & van der Mast, 2001) have also found favorable results.

Although driving phobia is a relatively common and chronic condition, there has been relatively little treatment research on this disorder (e.g., Kuch, Swinson, & Kirby, 1985). However, the positive findings of VRET for other specific phobias suggest that it might be suitable for driving phobia. This treatment medium may also have specific advantages in treating this type of phobia over other exposure-based therapies. In contrast to in vivo exposure (e.g., driving on public roads), VRET provides greater standardization and control of the exposure. It may be particularly effective for repeated exposure to driving situations that are time-limited, difficult to control, and unpredictable (e.g., merging onto a freeway, driving in a rainstorm at night). Given that the treatment occurs within the clinician's office, it may also reduce safety risks and embarrassment that may be associated with in vivo driving. Furthermore, some individuals may experience such intense fear of driving that they feel unable, or refuse in vivo exposure therapy. Clients may find VRET to be a less threatening treatment than in vivo exposure, yet more realistic than imaginal exposure.

A pilot study (Wald & Taylor, 2001) used a single case (AB) design to treat an adult female with a long-standing driving phobia with VRET. The design included a 7-day baseline phase followed by 3 treatment sessions using a standardized treatment protocol. Phobic-related symptoms decreased from the pretreatment assessment, and gains were maintained at 1- and 7-month follow-up assessments. The purpose of the current study was to conduct another study on the efficacy of VRET to treat driving phobia using a multiple baseline across-subjects design. It was hypothesized that VRET would reduce driving anxiety and avoidance symptoms between pre- and posttreatment assessments. It was also expected that the participants would no longer meet *DSM-IV* criteria (American Psychiatric Association, 2000) for specific phobia, situational type (driving), following treatment. Maintenance of treatment effects was expected at 1-month, 3-month, and 1-year follow-up assessments.

Method

Participants

Inclusion criteria were as follows: (a) adults (over 18 years old) with current diagnosis of specific phobia (driving) as the primary disorder (most severe) using *DSM-IV* criteria; (b) possession of a valid driver's license and access to a motor vehicle; (c) fluency in written and spoken English; and (d) signed, informed consent. Exclusion criteria included: (a) a history of neurological, vestibular, or visual disorders; (b) high simulator sickness susceptibility as determined by the Motion History Questionnaire (Kennedy, Fowlkes, Berbaum, & Lilienthal, 1992); (c) receiving concurrent psychological treatment; and (d) taking psychotropic medication.

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