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One-session computer-based exposure treatment for spider-fearful individuals – Efficacy of a minimal self-help intervention in a randomised controlled trial

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ABSTRACT

Computer-based self-help treatments have been proposed to provide greater access to treatment while requiring minimum input from a therapist. The authors employed a randomised controlled trial to investigate the efficacy of one-session computer-based exposure (CBE) as a self-help treatment for spider-fearful individuals. Spider-fearful participants in a CBE group underwent one 27-min session of standardised exposure to nine fear-eliciting spider pictures. Treatment outcome was compared to spider-fearful control participants exposed to nine neutral pictures. Fear reduction was quantified on a subjective level by the Fear of Spiders Questionnaire (FSQ) and complemented with a behavioural approach test (BAT). Results demonstrate that compared to control participants, CBE participants showed greater fear reduction from pre- to posttreatment on both the subjective level (FSQ) and the behavioural level (BAT). Moreover, in contrast to the control group, the obtained subjective fear reduction effect remained stable in the CBE group at 1-month follow-up. These findings highlight the role of computer-based self-help as a minimal but effective intervention to reduce fear of spiders.

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Specific phobias are among the most common anxiety disorders, with an estimated lifetime prevalence of 12.5% (Kessler et al., 2005; Michael, Zetsche, & Margraf, 2007). Among the specific phobias, fear of animals – a category that includes fear of spiders – is one of the most common phobic disorders in the population with a lifetime prevalence of 5% (Becker et al., 2000). The treatment of choice for fear of animals, including spiders, is in vivo exposure to a live specimen of the animal until the fear reaction is reduced (e.g., Choy, Fyer, & Lipsitz, 2007). However, in vivo exposure is associated with high dropout rates and low treatment acceptance. Reasons for therapy reluctance include fear of confronting the phobic object, the labour-intensive nature of treatment, duration, cost, and fear of stigmatisation (e.g., Goldberg & Huxley, 1992; Greist, 1989; Wells, Robins, Bushnell, Jarosz, & Oakley-Browne, 1994). Other barriers to treatment include long waiting periods, distance from clinics, and the fact that the demand for treatment exceeds the supply of trained therapists (Marks, Kenwright, McDonough, Whittaker, & Mataix-Cols, 2004; Richards, Lovell, & McEvoy, 2003). Thus, even though fear of animals appears to be highly common in the general

population only a relatively low percentage of sufferers seek or receive treatment.

To bridge this gap, self-exposure treatments have been found to be an effective intervention for reducing anxiety and avoidance behaviour in specific phobia (Ghosh & Marks, 1987; Ghosh, Marks, & Carr, 1984; Mathews, Teasdale, Munby, Johnston, & Shaw, 1977; Öst, Stridh, & Wolf, 1998), with drop-out rates comparable to those of a therapist-directed therapy or any other treatment (Ghosh, Marks, & Carr, 1988; Proudfoot et al., 2004). An investigation of potential users of self-help therapies by Graham, Franses, Kenwright, and Marks (2001) showed that 91% of all those interviewed reported that they would require self-help to be a computer-based therapy. Reasons given were faster access to information and therapeutical advice as well as less fear of stigmatisation. Patients of all ages who completed a computer-based therapy reported total satisfaction (Proudfoot et al., 2003; Wright & Wright, 1997). However, when it comes to spider phobia it should be noted that self-help treatment has been found to be significantly less effective than the therapist-directed one-session treatment (OST) developed by Öst and colleagues, in which a therapist and client collaboratively work through the steps of the client's fear hierarchy during a single therapy session of up to 3 h (Öst, 1989, 1996). Across four studies on spider phobia Öst et al. (1998) found clinically significant improvement in 89% of the

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individually treated clients compared to 31% in a self-help manual-based treatment at posttreatment.

Computerised self-help exposure treatments that specifically focus on spider phobia include virtual reality exposure (VRE) and computer-aided vicarious exposure (CAVE). In VRE, the patient interacts with a virtual representation of the spider while wearing headphones and a head-tracking device. Although VRE therapy has proven to be successful in small samples of adults with spider phobia (Carlin, Hofmann, & Weghorst, 1997; Garcia-Palacios, Hoffmann, Carlin, Furness, & Botella, 2002), it is still too expensive and the equipment difficult to set up for it to be a widely used treatment method for animal phobias.

CAVE uses less advanced technology than VRE. The patient learns to direct a virtual figure with spider phobia through an interactive computer setting in order to model self-exposure situations (such as approaching and remaining in feared situations normally avoided). Employing three 45-min sessions of interactive vicarious exposure techniques over a period of 6 weeks, CAVE has successfully reduced spider phobia in adults (Gilroy, Kirkby, Daniels, Menzies, & Montgomery, 2000, 2003; Heading et al., 2001; Smith, Kirkby, Montgomery, & Daniels, 1997) and children (Dewis et al., 2001). While Gilroy et al. (2000) found superior treatment effects for the computer and the live-exposure treatment compared to a relaxation placebo control condition, Smith et al. (1997) found, contrary to their expectations, no difference between two active treatment conditions, one with and one without feedback in the form of a fear thermometer, and the control condition. Moreover, a therapist was required to be present the entire time as an uninvolved observer and the subjective ratings were not completed with a behavioural outcome measure. Finally, despite its promising treatment design, CAVE has not been made available for a wider population with fear of spiders.

The latest generation of computerised cognitive behavioural therapies (CCBT), such as the program Fear Fighter (Shaw, Marks, & Toole, 1999), has been developed for patients with agoraphobia, panic, and other phobias and aims at changing negative automatic thoughts, dysfunctional underlying beliefs, and behavioural patterns. However, accessibility to the web-based program is password protected and participants who had dropped out reported that the program was time consuming and required a lot of work commitment (e.g., Schneider, Mataix-Cols, Marks, & Bachofen, 2005).

More recently computerised self-help approaches using the Internet have been developed to provide greater access to treatment while requiring minimal input from a therapist (for an overview see Reger & Grahm, 2009). The efficacy of Internet therapy has been reported for panic disorder (Carlbring et al., 2005; Carlbring, Westling, Ljungstrand, Ekselius, & Andersson, 2001; Klein, Richards, & Austin, 2006), social phobia (Andersson et al., 2006), fear related to a traumatic event (Hirai & Clum, 2005), posttraumatic stress (Knaevelsrud & Maercker, 2007; Lange, van de Ven, & Shrieken, 2003), and obsessive compulsive disorder (Lack & Storch, 2008).

In a benchmark study on spider phobia, Andersson et al. (2009) compared the results of a guided Internet-delivered self-help treatment to the 3 h therapist-directed one-session treatment (OST) as a control condition. The duration of the Internet-delivered self-help treatment was 4 weeks with an average total work time of 12 h. It consisted of five weekly text modules presented on a Web page. A video illustrated the exposure principles and the participants were instructed to expose themselves with the help of a friend. Additionally, email contact with a therapist with an average support per client of 25 min was provided. Mean improvements on a behavioural approach test (BAT) and the self-report Spider Phobia Questionnaire (SPQ) suggest that the Internet-

delivered self-help treatment was more effective than the live-exposure control condition (e.g., Andersson et al., 2009). Effect sizes from pre- to posttreatment for the SPQ were large for the Internet-delivered treatment ($d = 1.84$) and the live-exposure treatment ($d = 2.58$). However, the Internet treatment still required therapist involvement and remained time consuming and labour intense. Thus more research data about the effectiveness of a minimal-input computer-based self-help intervention without therapist involvement is desirable.

The aim of the present study was to provide more insight into the effectiveness of a computer-based one-session treatment in reducing fear and avoidance behaviour in spider-fearful individuals. In a randomised controlled study, the efficacy of an individual computer-based exposure (CBE) treatment was tested. Dependent variables were the FSQ on a subjective level and a BAT on an observable, behavioural level. Fear of spiders is known to be effectively reduced in a single exposure session (for an overview see Ziomke & Thompson, 2008). Therefore we assumed we would find superior outcome results for spider-fearful participants in a CBE group with exposure to spider pictures compared to spider-fearful participants in a control group with exposure to neutral pictures.

1. Method

1.1. Participants

Two hundred and twenty participants were recruited after screening in classes at several departments of the University of Basel using the German-language Spider Anxiety Screening (SAS, Rinck et al., 2002). The SAS is a four-item questionnaire designed for efficient screenings of spider-fearful individuals in large samples. Each item is rated on a 7-point continuum in relation to how much the item disturbs the individual from 0 (*not at all*) to 6 (*very much*) resulting in a score range of 0–24 and a cut-off score of >14 for being spider fearful.

After the SAS screening 41 female participants were invited to complete the German version of the FSQ (Szymanski & O'Donohue, 1995). Only female participants were included in the study to prevent unexpected variation bias. The FSQ is a valid questionnaire to discriminate between phobics and nonphobics. It consists of 18 items about fear and avoidance regarding spiders. The FSQ is rated on a 0–6 scale (0, *does not apply to me*; 6, *very much applies to me*). Excellent internal consistency has been reported with a Cronbach's alpha of 0.96 (Rinck et al., 2002).

Finally 36 female participants aged between 18 and 34 years ($M = 23.17$ years; $SD = 4.21$) who fulfilled the inclusion criteria of being highly spider fearful with SAS scores higher than 14 (e.g., Rinck & Becker, 2007; Rinck, Reinecke, Ellwart, Heuer, & Becker, 2005) and a minimum cut-off FSQ score of 24 (of a maximum of 108, e.g., Rinck & Becker, 2007) were available for randomisation. The criterion of significant impairment of everyday life for a clinical diagnosis of spider phobia was not required in this study because the hypothesis tested here refers to fear rather than impairment. Moreover, according to Rinck et al. (2002) there is a comparable level of anxiety, physiological arousal, and avoidance behaviour between spider-fearful individuals and clinically diagnosed spider-phobic individuals. Lack of high levels of trait anxiety and depressive symptoms for all participants was assessed with the German version of the State-Trait Anxiety Inventory (STAI-trait; $M = 37.27$, $SD = 6.96$; STAI-T; Laux, Glanzmann, Schaffner, & Spielberger, 1981) and the Beck Depression Inventory ($M = 5.08$, $SD = 3.42$; BDI; Hautzinger, Bailer, Worall, & Keller, 1994). The follow-up analyses were performed on 17 participants in the CBE group and 15 control participants with a total of $N = 32$ participants

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