

Ellen I. Koch and Michelle A. Fernando

Description of the Disorder

Diagnostic Criteria

Specific phobias are characterized by immediate, intense, and irrational fear when confronted with a particular object or situation [*Diagnostic and Statistical Manual-5 (DSM-5)* American Psychiatric Association (APA), 2013]. When confronting the feared stimulus, the individual experiences an automatic physiological reaction that may include increased heart rate, sweating, and fainting in some cases (Fyer, 1998). As a result of this aversive reaction, an individual with specific phobia actively avoids situations that may involve the feared stimulus (*DSM-5*, APA, 2013). Avoidance behaviors can vary in severity and intrusiveness, ranging from taking a different work commute to refusing lifesaving medical treatment, e.g., claustrophobia leading to an inability to have a CT scan. Such behaviors are usually linked to escape from the stimulus, but if contact is unpreventable, avoidance behaviors such as diverting eye contact (Tolin, Lohr, Lee, & Sawchuk, 1999), distraction (Craske, Street, Jayaraman, & Barlow, 1991), or safety signals

(Telch, 1994) may also serve to decrease fear. Generally, an individual with specific phobia experiences intense fear when confronting a specific object or situation and often exhibits avoidance behaviors to prevent or cope with this fear.

Types

Individuals with specific phobias vary on the type of object or situation they fear. The *DSM-5* includes five different subtypes of specific phobia: animal, natural environment, situational, blood-injury-injection (BII), and other. Animal phobias involve fear of a living organism, such as dogs, spiders, or snakes. Individuals with natural environment phobias fear situations that commonly occur in the environment, such as inclement weather, heights, or water. Similarly, a situational phobia involves specific situations that evoke fear, such as flying, riding in elevators, or being in a large crowd. It is particularly important to differentiate situational phobias from agoraphobia. For example, if the fear is based on a concern regarding the plane crashing, that may suggest a specific phobia; whereas, if the fear is related to being trapped and not able to receive help, agoraphobia should be considered. The BII type involves aspects of medicine and bodily harm, including fear of seeing blood or open wounds, getting blood drawn, receiving an immunization, or going to the dentist. The “other”

E.I. Koch (✉) • M.A. Fernando
Department of Psychology, Eastern Michigan
University, Ypsilanti, MI, USA
e-mail: ellen.koch@emich.edu; mferman3@emich.edu

subtype of specific phobias includes miscellaneous fears that do not fit into the categories described above, such as vomiting, loud noises, and costumed characters (*DSM-5*, APA, 2013). Under the diagnostic criteria, all potentially feared objects and situations fall under these five categories.

Onset

Specific phobias generally start in childhood and dissipate for some (Merckelbach, De Jong, Muris, & Van Den Hout, 1996). In general, the mean age of onset is 9.7 years old (Stinson et al., 2007), but this varies depending on the type of phobia. A study of adult females in Germany found an average age of onset of 6 years for animal and natural environment phobias (except for heights and water, which were 9 years), 7 years for BII, 9 years for physical phobias (i.e., doctors, vomiting, and infections), and 13 years for situational phobias (Becker et al., 2007). Another study found that BII phobias typically begin around 5.5 years old (Bienvenu & Eaton, 1998). Some phobias such as claustrophobia (Merckelbach et al., 1996) and driving have a later age of onset (Antony, Brown, & Barlow, 1997).

The manifestation of phobia symptoms differs among subtypes. Along with having a later onset, flying phobias can include panic attacks (Lipsitz, Barlow, Mannuzza, Hofmann, & Fyer, 2002). Heights and BII phobias involve more of an internal (i.e., bodily sensation) focus (Antony et al., 1997), while natural environment and situational phobias involve a focus on external danger (Lipsitz et al., 2002). Despite the differences in how phobias manifest, the cause is not different by phobia type (Lipsitz et al., 2002). Therefore, different types of specific phobias vary greatly in terms of symptomology, but not etiology.

Some evidence has suggested that specific phobias are somewhat heritable. Bolton et al. (2006) found that fears and phobias (both symptoms and full diagnosis) are more attributable to genetics than environment for younger children. Van Houtem et al. (2013) also indicated fears and

specific phobia are moderately heritable with higher rates for animal and BII phobias. Therefore, individuals with family members diagnosed with specific phobia may be at a higher risk for developing specific phobia in the future.

Among adolescents in the United States, most individuals with specific phobia have more than one type, which in turn is associated with earlier onset and increased severity, impairment, and comorbidity (Burstein et al., 2012). Risk factors for developing specific phobia include being female, young, and having a low income; however, the risk is lower for Hispanic and Asian individuals (Stinson et al., 2007). The onset of specific phobia may lead to a range of other disorders, such as panic disorder, generalized anxiety disorder, and obsessive-compulsive disorder, as well as other anxiety, mood, pain, and eating disorders (Lieb et al., 2016). Therefore, it is important to assess for risk factors and comorbidities when diagnosing specific phobias.

Prevalence

There is a high prevalence of specific phobias from childhood to older adulthood. Paulus, Backes, Sander, Weber, and von Gontard (2014) found that 10% of preschoolers had specific phobia, including 7% of boys and 13% of girls. When based on parent interviews, 18% of children met diagnostic criteria for a phobia; when based on child interviews, this amount grew to 20% (Muris & Merckelbach, 2000). In adolescents, 20% of the sample experienced specific phobias, including 23% of females and 17% of males (Kessler, Petukhova, Sampson, Zaslavsky, & Wittchen, 2012). Among adults, approximately 12–18% of females and 6–10% of males meet diagnostic criteria for a specific phobia (Kessler et al., 2012; Stinson et al., 2007). Kessler et al. (2012) found a lifetime prevalence of 16% and a decreasing 12-month prevalence over time including 16% for adolescents, 10% for adults, and 5% for the elderly. Phobia rates may decrease steadily with age; in a 9-year follow-up study, specific phobia diagnoses decreased from 10% at age 70 to 4% at age 79 (Sigström, Skoog, Karlsson, Nilsson, &

Östling, 2016). Overall, the lifetime morbidity risk for specific phobia is 18.4%, which is the second most prevalent disorder (behind depression) and the most prevalent anxiety disorder (Kessler et al., 2012).

As reported, specific phobias are prevalent disorders; however, rates differ by location and country. In terms of international adult samples, rates range from 2 to 3% in China and Japan (Kawakami et al., 2005; Shen et al., 2005), 4–5% in South Korea (Cho et al., 2007; Park et al., 2013), 7–8% in New Zealand and Europe (Alonso et al., 2004; Wells et al., 2006), and 13% in Germany (Becker et al., 2007). In a sample of elderly individuals from Turkey, 11.5% had current and lifetime specific phobia, with the highest rates in the youngest elderly age group (Kirmiziloglu, Dogan, Kugu, & Akyuz, 2009). In Spain, an adult primary care sample had 12-month and lifetime prevalence rates of 7% (8% for females and 5% for males; Serrano-Blanco et al., 2010).

The prevalence rates for types of specific phobias within international samples range from 2 to 8% for animal phobias, 0.4–13% for situational phobias, 0.5–4% for BII phobias, 1–2% for natural environment phobias (excluding heights), and 2–5% for height phobias (Becker et al., 2007; Bienvenu & Eaton, 1998; Depla, ten Have, van Balkom, & de Graaf, 2008; Fredrikson, Annas, Fischer, & Wik, 1996; Park et al., 2013; Stinson et al., 2007). Fredrikson et al. (1996) indicated that flying phobia increased and fear of injections decreased as a function of age in females only. Because specific phobia varies by location, it may be useful to look at area-specific base rates to guide diagnosis.

Specific phobias can last over 20 years, probably because few people (8–13%) seek treatment (Iza et al., 2013; Mackenzie, Reynolds, Cairney, Streiner, & Sareen, 2012; Stinson et al., 2007). Individuals take approximately 13 years to seek treatment, which represents the slowest and lowest percentage of treatment seeking among the anxiety disorders (Iza et al., 2013). For a Mexican adolescent population, only 6.5% of individuals with a phobia sought treatment (Benjet, Borges, Stein, Méndez, & Medina-Mora, 2012). Of those

that do seek treatment, only 30% do so because of their fears (Zimmerman & Mattia, 2000). Individuals with more education, who are older, and sought treatment in the past are more likely to seek treatment for specific phobia (Iza et al., 2013). Despite specific phobias being extremely common, few people actually seek treatment for their fear.

Given the high prevalence and comorbidity rates of specific phobia, early identification and treatment is essential within a primary care setting. Appropriate screening is particularly important given that many individuals will not initiate treatment for specific phobias.

Screening Options in Integrated Care

A recent veteran study examining rates of anxiety diagnoses indicated that a significant number of specific phobia (45%) and anxiety not otherwise specified (NOS; 67%) diagnoses were made in a primary care setting compared to specialty mental health services. Additionally, individuals diagnosed in a primary care setting with anxiety NOS were less likely to receive treatment compared to those with a diagnosis in specialty mental health care (Barrera et al., 2014). Due to the high rates of disorders (particularly specific phobia) and the low level of treatment seeking, empirically validated assessments and interventions within primary care settings are essential (Chavira, Stein, Bailey, & Stein, 2004). Quality screening and brief interventions could potentially assist many patients presenting to primary care.

Although brief screening measures for multiple types of specific phobia are not currently available, clinicians are encouraged to ask patients if they have any items, objects, or situations that they fear or avoid, particularly if the fear is negatively impacting their lives. For example, if a patient is refusing medical tests or procedures, it will be important to determine if this is based on fear. A comprehensive list of possible fears is available with the Fear Survey Schedule-III (Wolpe & Lang, 1977) if screening

for a wide range of fears is desired. If these broad screening approaches produce positive results, the clinician can conduct a more thorough assessment of the specific phobia(s).

Additional Assessment for Positive Screening

If a broad screening approach suggests the individual may have a specific phobia, a diagnostic interview can be completed, or the individual can be asked to complete a self-report questionnaire specifically designed for the type of phobia (see Table 38.1). One primary example is the widely used Spider Phobia Questionnaire (Klorman,

Weerts, Hastings, Melamed, & Lang, 1974) and a more recently developed abbreviated version of the Spider Phobia Questionnaire with strong psychometric properties (Olatunji et al., 2009).

Typically, along with self-report scales, screening for specific phobia utilizes a behavioral approach test (BAT) if possible. A BAT involves the individual approaching the feared item or situation as much as they possibly can and providing a Subjective Units of Distress Scale (SUDS) rating for fear on a 0–100 scale where 0 is the *least anxiety ever experienced in the presence of the item/situation* and 100 is the *worst anxiety ever experienced with the item/situation*. The distance from the object and fear rating during approach are recorded along with any overt physiological responses from the individual.

Given that a specific phobia may not significantly interfere with functioning for a particular individual, it is important to assess both the negative impact the specific phobia is having for the person and the motivation and willingness to overcome the fear. If avoiding the feared item/situation is problematic (e.g., impacting ability to complete one's job, receiving medical care like an injection or MRI, etc.) or unavoidable confrontations are extremely distressing, the individual would be a good candidate for treatment. Treatment entails confronting the feared object/situation so it will be important to determine if the individual is motivated to overcome the fear even though it will be difficult and distressing. Additionally, given that some levels of stepped care will involve significant patient initiation, assessing treatment acceptability for the individual will be important to determine if any barriers exist.

Table 38.1 Commonly used specific phobia measures

Measure	Phobia type	Number of items	Citation
Spider Phobia Questionnaire (SPQ)	Spiders	31	Klorman et al. (1974)
Fear of Spiders Questionnaire (FSQ)	Spiders	18	Szymanski and O'Donohue (1995)
Abbreviated Spider Questionnaire (SPQ-15)	Spiders	15	Olatunji et al. (2012)
Medical Fear Survey (MFS-short version)	BII	25	Olatunji et al. (2012)
Mutilation Questionnaire (MQ)	BII	30	Kleinknecht and Thorndike (1990)
Emetophobia Questionnaire (EmetQ-13)	Vomiting	13	Boschen, Veale, Ellison, and Reddell (2013)
Claustrophobia Questionnaire (CLQ)	Enclosed spaces	26	Radomsky, Rachman, Thordarson, McIsaac, and Teachman (2001)
Acrophobia Questionnaire (AQ)	Heights	40	Cohen (1977)
Driving Cognitions Questionnaire (DCQ)	Driving	20	Ehlers et al. (2007)

Evidence-Based Care and Brief Psychotherapeutic Approaches

Specific phobias are highly treatable conditions that respond well to short-term and often exposure-based behavioral interventions (Choy, Fyer, & Lipsitz, 2007). In situations where it is difficult to conduct in vivo exposure (e.g., flying), virtual reality treatments are an effective

alternative (Grös & Antony, 2006). Cognitive-based interventions are usually less effective for the treatment of specific phobias, although some evidence has been found for dental phobia and claustrophobia (Choy et al., 2007). A particularly good website reviewing treatment options for specific phobias is maintained by the Society of Clinical Psychology: <http://www.div12.org/psychological-treatments/treatments/exposure-therapies-for-specific-phobias/>. Because direct confrontation of the fear is difficult, the ability of the individual to do so on their own with guidance will help determine which level of stepped care is most appropriate.

Psychoeducation

Psychoeducation is important for any treatment program, not only to provide information for the patient and potentially correct misinformation but also to increase motivation for treatment. Psychoeducation for specific phobia should include discussing signs and symptoms of specific phobias, the protective function of fear and the fight-flight response, that this is a common and treatable condition, etiology, safety behaviors that may perpetuate or worsen fear, the negative reinforcement of escape behaviors and long-term impact of avoidance, treatment options, and the rationale for treatment.

Self-Help/e-Health/Bibliotherapy

A main resource for self-help/bibliotherapy is *The Anxiety and Phobia Workbook (6th edition)* by Bourne (2015). This book is designed to be utilized by the patient without the need for professional involvement (unless problems arise). Additional self-help books are available and could be reviewed for relevant content to recommend to patients.

One computer-assisted exposure (CAE) program, FearFighter (<http://fearfighter.cbtprogram.com/>), is available online with packages starting at approximately \$125 addressing phobias and panic. The program has been empirically

validated (Marks, Kenwright, McDonough, Whittaker, & Mataix-Cols, 2004). A novel CAE treatment option involves a video game and is currently being investigated in a randomized controlled trial for spiders (Miloff et al., 2016). These computer-based programs can be done independently without the clinician.

Although virtual reality equipment has historically been expensive, new equipment is now readily available for under \$150 that utilizes a smartphone. However, the quality of the applications available for these systems has not been empirically validated. Therefore, the applications will require careful review by the clinician to determine if the program is appropriate for the patient and sufficiently generates anxiety facilitating effective exposure. In general, such programs and books should be carefully reviewed by the clinician before recommending any self-help treatment to a patient.

Guided Self-Help/Group

Animal

Since many integrated care sessions last from 20 to 30 min, treatment of animal phobias may need to be abbreviated or adapted to fit this time frame. In one study, researchers greatly reduced clinician time by switching to an Internet-aided treatment program. In this 4-week spider phobia program, patients used computer-based modules for psychoeducation and to watch a video modelling spider exposure. After watching the video, patients were instructed to safely conduct their own exposure therapy at home, paying special attention to avoidance and cognitions. Once the initial exposure was completed, the patient was then instructed on how to expand what was learned during exposure to other life situations. Because the majority of this program was self-administered from the patient's home, patients contacted the therapist for a total of 25 min over a 4-week span, not including initial and follow-up assessments. This therapy was shown to be comparably effective to one-session exposure treatment (OST), with no significant differences in the BAT posttreatment, and at 1-year follow-up

(Andersson et al., 2009). Similar results have been shown for an analogous snake phobia treatment (Andersson et al., 2013). In an integrated care setting, computer-aided exposure therapy can be supplemented with 20–30 min in-person therapy sessions to review progress or go over homework. When longer exposure sessions are not practical, computer-assisted and self-administered exposure therapy may be useful in time-limited, integrated care settings.

Situational

Although some situational phobias may be amenable to in vivo exposure in an integrated care setting, alternative methods may be used when this is not possible. For example, it is often not practical to purchase a plane ticket and ride through an entire flight with a patient, as is performed in in vivo flying exposure (Öst, Brandberg, & Alm, 1997). In these cases, the clinician may rely on virtual reality exposure (VRE) and CAE. In VRE, the patient wears an immersive head-mounted display that depicts takeoff, turbulence, and landing. VRE has been shown to decrease fear of flying both in multiple baseline studies (Botella-Arbona, Osma, Garcia-Palacios, Quero, & Banõs, 2004) and when compared to standard in vivo exposure (Rothbaum et al., 2006). It has also been effective for other types of situational phobias, such as claustrophobia (Malbos, Mestre, Note, & Gellato, 2008). CAE can also be used to treat flying phobia. In CAE, the patient uses a personal computer to view pictures of anxiety-provoking flying situations, such as packing for the flight, traveling to the airport, boarding the plane, flying, and hearing news about an airplane accident, and incorporates the use of sound similar to VRE (Tortella-Feliu et al., 2011). CAE has similar efficacy to VRE and cognitive therapy and can be used by the patient with minimal clinician interaction (Bornas, Tortella-Feliu, & Llabrés, 2006; Tortella-Feliu et al., 2011). When in vivo exposure is not available, the use of VRE or CAE may be a more practical exposure method.

Phobias in General

A particularly good treatment manual for phobias is *Mastering Your Fears and Phobias Workbook (2nd edition)* by Antony, Craske, and Barlow (2006). The workbook is designed to be completed by the patient with guidance from the clinician (an accompanying therapist guide is available). The clinician could be available for coaching by phone, email, face-to-face, chat, etc.; however, the patient would be primarily responsible for implementing the intervention.

Group treatment options would involve less clinician time; however, it may be difficult to gather a group of sufficient size to address one specific phobia. An option would be to have a general facing your fears group that can be attended by patients regardless of the content of their specific fear(s). The group should include homework assignments that allow the patient to engage in exposure for their fear between sessions and receive feedback on their progress during the group.

Brief Treatment

Blood-Injury-Injection (BII)

Given that individuals with BII phobia typically experience vasovagal syncope, a main component of treatment is teaching the individual to counteract the fainting response well before the process begins. Specifically, the clinician helps the patient identify the early warning signs that they are beginning to feel faint or identify the high-risk situations where fainting is most likely. The patient then engages in major muscle group contractions in order to stabilize their blood pressure and prevent fainting (see Öst & Sterner, 1987 for a complete description). It can be particularly helpful to measure blood pressure so that the patient can observe the change that applied tension produces during the initial training phase.

The applied tension technique can be effectively utilized in one session (Hellström, Fellenius, & Öst, 1996; Öst, Hellström, & Kåver, 1992).

A recent study found that rhythmic tension (brief 5 s of tension followed by 5 s of rest and repeating the process) was more effective at raising diastolic blood pressure than the constant tension approach (approximately 15 s followed by 20–30 s of release) as utilized in previous research (Bodycoat, Grauaug, Olson, & Page, 2017). However, because this study did not involve individuals with BII, it is difficult to confidently infer the effect remains for those with this type of specific phobia. Once the patient is reliably using the applied tension technique, the psychologist can implement the remaining treatment.

Situational

Cognitive therapy may also be a useful treatment, as individuals with situational phobia tend to misinterpret physical and cognitive symptoms (Craske & Sipsas, 1992). Although participants with claustrophobia showed slightly less reduction and fear after cognitive therapy, this therapy was comparably effective to OST and five session exposure techniques (Öst, Alm, Brandberg, & Breitholtz, 2001). Cognitive therapy for situational phobia should involve addressing irrational thoughts regarding the feared situation and teaching coping skills to cope with anxiety (Kraaij, Garnefski, & Van Gerwen, 2003). When exposure is not achievable, cognitive therapy may offer a good alternative for situational phobias.

Phobias in General

Other portions of interventions that could be completed by non-psychologists include problem-solving and relaxation to address general symptoms of anxiety. In terms of relaxation, *The Relaxation and Stress Reduction Workbook (6th edition)* by Davis, Eschelman, and McKay (2008) offers chapters on several relaxation strategies. This provides an opportunity to select relaxation procedures that may best fit the patient. Additionally, the relaxation chapter for *The Anxiety and Phobia Workbook (6th edition)* by Bourne (2015) is comprehensive and provides a variety of options for guided procedures.

Longer Treatment

Blood-Injury-Injection (BII)

Treatment for BII also involves exposure procedures to facilitate facing the fear. Once the patient is using the applied tension technique effectively, the clinician can begin to have the patient confront their fear hierarchy starting with items that produce moderate anxiety and eventually moving to tasks higher on the established hierarchy. The hierarchy is created by both the clinician and patient and ideally should have about 10–12 items that range from mildly, moderately, to severely anxiety producing. The clinician then systematically works with the patient to face hierarchy items both in session and outside of session. The additional work outside of session is important for generalization; however, it is expected that the patient will be able to confront items higher on the fear list with the clinician present than when working on their own. To increase generalization, the clinician should assign home confrontations that are realistic and not overwhelming for the patient, using tasks that are at least one step down on the fear hierarchy from what was achieved in session.

Given that a variety of stimuli (e.g., needles, blood draw stations, etc.) related to BII phobias are available in integrated care settings, this type of phobia can be successfully treated on site. Additionally, the integrated care setting would have access to blood pressure monitors that would allow the patient to have concrete evidence that they are utilizing the applied tension technique correctly (i.e., increase diastolic blood pressure to prevent fainting). Finally, as patients with BII phobias may also fear injury or illness, being present within the integrated care setting may allow for the patient to confront these fears simultaneously. Most integrated care settings already contain the equipment and setting needed for in vivo BII exposure therapy.

Animal

While there are a variety of treatment options available for animal phobia, the most effective

includes an exposure component. Generally, exposure therapy is the treatment of choice for specific phobias, preferably in longer or more frequent sessions as opposed to abbreviated, infrequent sessions (Grös & Antony, 2006). For animal phobia, one-session exposure (OST) is a commonly used and well-established treatment method (Davis, Ollendick, & Öst, 2012; Öst, 1989). In this treatment, the patient gradually confronts the feared animal in vivo, beginning with approaching the animal and ending with directly handling the animal. Each step is first modeled by the clinician and then performed by the patient. The patient is encouraged to approach or stay with the animal until anxiety decreases, which prevents avoidance and promotes extinction of the feared response. Treatment is finished when the patient can complete the approach tasks with a greatly reduced anxiety level, usually about 50% of their original anxiety rating (Öst, 1989). The entire treatment is completed within one extended session, with a mean treatment time of 2.1 h (Davis et al., 2012). This therapy is most commonly clinician-administered on an individual basis, but it has also been shown to be effective in group settings (Öst, 1996; Öst, Ferebee, & Furmark, 1997) and to a lesser extent in self-administered manualized forms (Hellström & Öst, 1995). OST is the treatment of choice for animal phobias.

Although OST is a relatively short and successful treatment, it may not be practical in some integrated treatment settings. First, storage and care of live animals may not be possible in a healthcare setting that depends on cleanliness and sterility. Second, OST requires a prolonged session to achieve the desired behavior extinction; this time may not be practical in a clinic that usually sees patients in 20–30 min sessions. Therefore, OST may be difficult to implement in some integrated care settings.

It may be possible to adapt exposure treatment to better accommodate the unique features of integrated care. For example, virtual reality exposure (VRE) and augmented reality exposure (ARE) programs may be a good alternative option when the use of live animals is not possible. In VRE, exposure takes place within a com-

pletely computer-simulated setting in which the patient can interact with the feared animal. The patient accesses this virtual setting by viewing a computer monitor or wearing a virtual reality headset. To make interaction with the animal more realistic, tactile stimulation may be used when the patient is “handling” the virtual object (Carlin, Hoffman, & Weghorst, 1997; Hoffman, Garcia-Palacios, Carlin, Furness, & Botella-Arbona, 2003). Although VRE programs are still developing for a variety of specific phobia types, this treatment modality is an effective option when live exposure is not possible (Garcia-Palacios, Hoffman, Carlin, Furness, & Botella, 2002).

Similarly, ARE entails the use of virtual technology to project the feared stimulus onto the patient’s immediate environment. When using ARE, the patient sees his or her actual environment (i.e., the office desk or floor) with the animal projected onto it. Because the patient maintains a sense of presence in the real world, ARE may seem more realistic and evoke an anxiety reaction more similar to in vivo exposure (Baus & Bouchard, 2014). Although this technology is still being developed, ARE is another potential treatment option (Botella et al., 2016).

Therefore, VRE and ARE may be good treatment options in settings that are not amenable to live exposure. For approximately \$700, Virtually Better, Inc. (<http://www.virtuallybetter.com/>) offers empirically validated programs developed by psychologists and includes a package that covers the following fears: heights, elevators, spiders, storms, hurricanes, tornadoes, flying, and public speaking. Other companies include Virtual Reality Medical Center (fear of flying system that includes airplane seats and subwoofer: <http://www.vrphobia.com/>), VirtualRet (fears of flying, heights, blood-injury-injection, and public speaking along with agoraphobia: <http://www.virtualret.com/en/>), CleVR (fears of flying, heights, and social situations: <http://clevr.net/en/>), and Psious (online options for fears of flying, needles, heights, driving, animals, enclosed spaces, and public speaking as well as agoraphobia and generalized anxiety disorder: <https://psious.com/>). These virtual reality options

provide greater flexibility for implementing exposure treatment.

Although OST is the most commonly used treatment for animal phobia, numerous technological advancements allow exposure to be adapted for use within an integrated care setting. In settings where one cannot access live animals for exposure, VRE or ARE may be helpful in navigating these obstacles. Similarly, in settings that rely on abbreviated treatment sessions, it may be helpful to use Internet-based treatment that encourages the patient to continue treatment at home. Regardless, there are a variety of exposure modalities that can be used to effectively treat animal phobia.

Situational

Similar to animal phobia, exposure therapy is most commonly used to treat situational phobia. OST has been shown to effectively decrease phobia of flying (Öst et al., 1997) and claustrophobia (Öst et al., 2001) at posttreatment and at 1-year follow-up. Unlike animal phobia, successive approach to the feared object is sometimes not possible; in these cases, the individual is either immersed fully in the situation or not. For claustrophobia, the clinician can successively increase the amount of time the patient stays in the enclosed space and alter whether the door is open, closed, or locked (Davis et al., 2012). For flying phobia, the clinician can have the patient successively confront the feared flying-related situations, such as going to the airport, checking into the flight, and ending with completing an entire flight (Öst et al., 1997). In either sense, the clinician and patient work together to create a hierarchy of situations related to the phobia and successively introduce feared situations starting from the least to most fearful-evoking.

For some situational phobias, in vivo OST can be performed conveniently within the integrated care setting. For claustrophobia exposure, the clinician can use a small windowless closet, elevator, or any confined space available within the clinic. However, it is important to note that, while OST can be completed within a single session, these sessions are quite long (typically 1–2 h) and require a large amount of clinician time (Davis

et al., 2012). Although an integrated care setting may be amenable to situational phobia exposure, the time required for exposure may not fit into a brief therapy session.

When these exposure techniques are not practical in a fast-paced, integrated care setting, cognitive therapy can be used to target maladaptive thoughts and teach coping skills to help the patient cope with anxiety when they are in the feared situation. Such techniques may be especially useful for flying phobias, where the treatment goal may be just to “get through” an upcoming flight. In general, situational phobias offer some flexibility for treatment within the integrated care setting.

Natural

Natural environment phobias typically include fears of storms, heights, and water. In children, natural environment phobias are more difficult to treat than animal phobias (Ollendick, Raishevich, Davis, Sirbu, & Öst, 2010). Although case studies are available for natural environment phobias, only two studies have involved treating water phobia in children, and several studies have provided treatment for heights among adults. In relation to the fear of water, Menzies and Clarke (1993) found 20 min of in vivo exposure was superior to combining in vivo and vicarious exposure (modeling of non-fearful performance) in children aged 3–8. Additionally, Ultee, Griffioen, and Schellekens (1982) indicated eight sessions of in vivo treatment was superior to four sessions each of gradual imaginal desensitization and exposure in vivo for children 5–10 years old.

In terms of fear of heights with adults, one study found guided mastery to be more effective than desensitization alone (Williams, Turner, & Peer, 1985), and another study found 6-min trials involving exposure and opposite action to be significantly better at posttest and follow-up compared to exposure alone (Wolitzky & Telch, 2009). The remaining studies addressing height phobia for adults include the use of VRE as the primary exposure component (de Quervain et al., 2011; Glantz, Durlach, Barnett, & Aviles, 1996; Gregg & Tarrier, 2007; Huang, Himle, & Alessi, 2000; Krijn, Emmelkamp, Ólafsson, Schuemie,

& Van Der Mast, 2007; Ressler, Rothbaum, Tannenbaum, & Anderson, 2004; Smits et al., 2013).

Two VRE studies with height phobia found d-cycloserine added to two sessions produced significantly better results by enhancing extinction learning between session particularly when paired with successful fear reduction (Ressler et al., 2004; Smits et al., 2013). Additionally, one study found cortisol paired with three sessions of VRE was significantly better than VRE with placebo at both posttest and follow-up (de Quervain et al., 2011). One VRE study did not find any benefit to adding coping statements to the treatment (Krijn et al., 2007). Despite the fact that several studies have utilized VRE procedures, Gregg and Tarrrier (2007) indicated that virtual reality exposure is not supported over traditional exposure treatment for height phobia.

In terms of addressing height phobia within an integrated care setting, a stairwell, elevator, or parking structure could be utilized to complete the BAT and facilitate the patient facing their fear. Similarly to approaches for other types of specific phobia, the clinician and the patient can work collaboratively to create an exposure hierarchy that includes situations that produce at least moderate anxiety with some feasible options for the integrated care setting. As it is not necessary to complete each item on the hierarchy within session, the patient should feel free to list some situations that cannot be completed within the integrated care setting. The clinician and patient begin to systematically confront the feared situations from moderately to severely anxiety provoking in session. Additionally, the clinician assigns homework for between session progress to promote generalization and additional fear reduction.

Other

Little empirical research is available for the “other” type of phobias; however, a recent study utilized cognitive behavioral treatment for fear of vomiting, and 58% of participants showed sig-

nificant improvement (Riddle-Walker et al., 2016). Another researcher recently found a group intervention effective for fear of vomiting (Ahlen, Edberg, Di Schiena, & Bergstrom, 2015). Despite the lack of research focused on “other” phobias, the intervention should still utilize exposure-based procedures if possible. Similarly to how exposure-based procedures are utilized in integrated care settings described for the other phobia subtypes, these various phobias also respond to creating a hierarchy, accessing appropriate stimuli to facilitate fear confrontation, and systemic exposure to the feared stimulus until anxiety reduces both within and outside of the integrated care setting.

Other Treatment Options

In addition to the exposure-based treatment procedures described above, in situations where direct confrontation of feared stimuli is either very difficult or not possible, systematic desensitization or imaginal exposure procedures may be utilized. Cognitive therapy options can also be beneficial, and research supports the use of these interventions particularly with height phobia (Steinman & Teachman, 2014). However, the use of in vivo exposure procedures is still preferred for all specific phobias (Baldwin et al., 2014). Ideally these would be administered with direct confrontation in vivo, but in situations where that is not possible, VRE is a good alternative option for many specific phobias.

What Does Not Work

There is little published research on the treatment of specific phobias with non-psychotherapeutic methods, such as with pharmaceuticals. In one study, exposure therapy treatment had twice the effect size of benzodiazepine treatment alone, and combined treatment of exposure therapy and benzodiazepine did not increase treatment effects compared to exposure alone (Marks

et al., 1993). There is some evidence to support the use of d-cycloserine to enhance the effects of exposure therapy, but this evidence is inconsistent (Guastella, Dadds, Lovibond, Mitchell, & Richardson, 2007; Smits et al., 2013). Therefore, there is little evidence to support the use of pharmacological treatment as the sole or primary treatment for specific phobia.

In both self-exposure and guided-exposure, it is necessary to remain in the situation until anxiety reduces (ideally at least by half), so it is important to have a sufficient block of time for this to occur. If the session is nearing the end, it is necessary to either finish the current step with reduced anxiety or move back a step or two on the hierarchy in order to “master” that step and finish at reduced anxiety. Additionally, it is unlikely that the patient will be able to conduct the same level of exposure at home as in the office. Therefore, homework assignments should entail something that will be challenging for the patient, but they are likely to experience success. Specifically, they will need to be able to tolerate the heightened anxiety and remain in the situation until their anxiety reduces. Leaving the exposure situation with heightened anxiety is likely to cause exacerbation of the fear or treatment dropout.

When to Refer to Specialty Mental Health

Although many clinicians could successfully treat specific phobias within an integrated care setting, given that many people do not seek treatment for specific phobia and the high prevalence rate of comorbidity for those with specific phobias may warrant referral to specialty mental health care. If a patient has high comorbidity, impairment, and distress, referral to specialty mental health care may be in the best interest of the patient. Patients with significant anxiety, mood, eating, or pain disorders in conjunction with specific phobia may benefit from a thorough

mental health evaluation and course of treatment to fully address the various presenting issues and their severity.

Role of Primary Medical Provider in Treatment

Given the high prevalence but low rate of treatment seeking for specific phobia, the primary medical provider can assist the integrated care clinician by conducting effective screening of patients and routinely asking about specific phobias. Additionally, the medical provider can assist with evaluating the severity of comorbid conditions and determining if, in conjunction with the clinician, the patient may benefit from a combination of medication and psychological treatment to effectively address multiple presenting concerns. This may be particularly relevant if the patient is experiencing significant impairment or distress from their symptoms.

Assessing Impact on Care and Quality Improvement

Given the high prevalence rate of specific phobias, it will be important to monitor treatment and determine the extent that reducing the phobia and other comorbid conditions would successfully contribute to the patient’s medical care. It is expected that successful treatment will result in less utilization of the medical system and significant cost savings. Additionally, determining the improvement in quality of life following treatment could indicate the overall impact of treatment for the individual. Clinicians working in integrated care settings can monitor the impact of psychological interventions on overall health particularly related to efficacy and efficiency. This process could facilitate improvements in our treatment techniques particularly within the integrated care setting to the benefit of patients and medical care providers.

References

- Ahlen, J., Edberg, E., Di Schiena, M., & Bergstrom, J. (2015). Cognitive behavioural group therapy for emetophobia: An open study in a psychiatric setting. *Clinical Psychologist*, *19*(2), 96–104. <https://doi.org/10.1111/cp.12040>
- Alonso, J., Angermeyer, M. C., Bernert, S., Bruffaerts, R., Brugha, T. S., Bryson, H., ... Vollebergh, W. A. (2004). Prevalence of mental disorders in Europe: Results from the European Study of the Epidemiology of Mental Disorders (ESEMeD) project. *Acta Psychiatrica Scandinavica Supplementum*, *109*(420), 21–27. <https://doi.org/10.1111/j.1600-0047.2004.00327.x>
- American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). Washington, DC: Author.
- Andersson, G., Waara, J., Jonsson, U., Malmaeus, F., Carlbring, P., & Öst, L.-G. (2013). Internet-based exposure treatment versus one-session exposure treatment of snake phobia: A randomized controlled trial. *Cognitive Behaviour Therapy*, *42*(4), 284–291. <https://doi.org/10.1080/16506073.2013.844202>
- Andersson, G., Waara, J., Jonsson, U., Malmaeus, F., Carlbring, P., & Öst, L.-G. (2009). Internet-based self-help versus one-session exposure in the treatment of spider phobia: A randomized controlled trial. *Cognitive Behaviour Therapy*, *38*, 114–120. <https://doi.org/10.1080/16506070902931326>
- Antony, M. M., Brown, T. A., & Barlow, D. H. (1997). Heterogeneity among specific phobia types in *DSM-IV*. *Behaviour Research and Therapy*, *35*(12), 1089–1100. [https://doi.org/10.1016/S0005-7967\(97\)00075-2](https://doi.org/10.1016/S0005-7967(97)00075-2)
- Antony, M. M., Craske, M. G., & Barlow, D. H. (2006). *Mastering your fears and phobias workbook* (2nd ed.). New York, NY: Oxford University Press.
- Baldwin, D. S., Anderson, I. M., Nutt, D. J., Allgulander, C., Bandelow, B., den Boer, J. A., ... Wittchen, H.-U. (2014). Evidence-based pharmacological treatment of anxiety disorders, post-traumatic stress disorder and obsessive-compulsive disorder: A revision of the 2005 guidelines from the British Association for Psychopharmacology. *Journal of Psychopharmacology*, *28*, 403–439. <https://doi.org/10.1177/0269881114525674>
- Barrera, T. L., Mott, J. M., Hundt, N. E., Mignogna, J., Yu, H. J., Stanley, M. A., & Cully, J. A. (2014). Diagnostic specificity and mental health service utilization among veterans with newly diagnosed anxiety disorders. *General Hospital Psychiatry*, *36*(2), 192–198. <https://doi.org/10.1016/j.genhosppsych.2013.10.013>
- Baus, O., & Bouchard, S. (2014, March). Moving from virtual reality exposure-based therapy to augmented reality exposure-based therapy: A review. *Frontiers in Human Neuroscience*, *8*, 112. <https://doi.org/10.3389/fnhum.2014.00112>
- Becker, E. S., Rinck, M., Türke, V., Kause, P., Goodwin, R., Neumer, S., & Margraf, J. (2007). Epidemiology of specific phobia subtypes: Findings from the Dresden Mental Health Study. *European Psychiatry*, *22*(2), 69–74. <https://doi.org/10.1016/j.eurpsy.2006.09.006>
- Benjet, C., Borges, G., Stein, D. J., Méndez, E., & Medina-Mora, M. E. (2012). Epidemiology of fears and specific phobia in adolescence: Results from the Mexican adolescent mental health survey. *Journal of Clinical Psychiatry*, *73*(2), 152–158. <https://doi.org/10.4088/JCP.11m07442>
- Bienvenu, O. J., & Eaton, W. W. (1998). The epidemiology of blood-injection-injury phobia. *Psychological Medicine*, *28*(5), 1129–1136.
- Bodycoat, N., Grauaug, L., Olson, A., & Page, A. C. (2017). Constant versus rhythmic muscle tension in applied tension. *Behaviour Change*, *17*(2), 97–102.
- Bolton, D., Eley, T. C., O'Connor, T. G., Perrin, S., Rabe-Hesketh, S., Rijdsdijk, F., & Smith, P. (2006). Prevalence and genetic and environmental influences on anxiety disorders in 6-year-old twins. *Psychological Medicine*, *36*(3), 335–344. <https://doi.org/10.1017/S0033291705006537>
- Bornas, X., Tortella-Feliu, M., & Llabrés, J. (2006). Do all treatments work for flight phobia? Computer-assisted exposure versus a brief multicomponent nonexposure treatment. *Psychotherapy Research*, *16*(1), 41–50. <https://doi.org/10.1080/10503300500091058>
- Boschen, M. J., Veale, D., Ellision, N., & Reddell, T. (2013). The Emetophobia Questionnaire (EmetQ-13): Psychometric validation of a measure of specific phobia of vomiting (emetophobia). *Journal of Anxiety Disorders*, *27*(7), 670–677. <https://doi.org/10.1016/j.janxdis.2013.08.004>
- Botella, C., Pérez-Ara, M. Á., Bretón-López, J., Quero, S., García-Palacios, A., & Baños, R. M. (2016). *In vivo* versus augmented reality exposure in the treatment of small animal phobia: A randomized controlled trial. *PLoS One*, *11*(2), 1–23. <https://doi.org/10.1371/journal.pone.0148237>
- Botella-Arbona, C., Oasma, J., Garcia-Palacios, A., Quero, S., & Baños, R. M. (2004). Treatment of flying phobia using virtual reality: Data from a 1-year follow-up using a multiple baseline design. *Clinical Psychology and Psychotherapy*, *11*(5), 311–323. <https://doi.org/10.1002/cpp.404>
- Bourne, E. J. (2015). *The anxiety and phobia workbook* (6th ed.). Oakland, CA: New Harbinger Publications.
- Burstein, M., Georgiades, K., He, J. P., Schmitz, A., Feig, E., Khazanov, G. K., & Merikangas, K. (2012). Specific phobia among U.S. adolescents: Phenomenology and typology. *Depression and Anxiety*, *29*(12), 1072–1082. <https://doi.org/10.1002/da.22008>
- Carlin, A. A., Hoffman, H. G., & Weghorst, S. (1997). Virtual reality and tactile augmentation in the treatment of spider phobia: A case report. *Behaviour Research and Therapy*, *35*(2), 153–158.
- Chavira, D. A., Stein, M. B., Bailey, K., & Stein, M. T. (2004). Child anxiety in primary care: Prevalent but untreated. *Depression and Anxiety*, *20*(4), 155–164. <https://doi.org/10.1002/da.20039>

- Cho, M. J., Kim, J.-K., Jeon, H. J., Suh, T., Chung, I.-W., Hong, J. P., ... Hahm, B.-J. (2007). Lifetime and 12-month prevalence of *DSM-IV* psychiatric disorders among Korean adults. *Journal of Nervous and Mental Disease*, *195*, 203–210. <https://doi.org/10.1097/01.nmd.0000243826.40732.45>
- Choy, Y., Fyer, A. J., & Lipsitz, J. D. (2007). Treatment of specific phobia in adults. *Clinical Psychology Review*, *27*, 266–286. <https://doi.org/10.1016/j.cpr.2006.10.002>
- Cohen, D. C. (1977). Comparison of self-report and overt-behavioral procedures for assessing acrophobia. *Behavior Therapy*, *8*, 17–23.
- Craske, M. G., & Sipsas, A. (1992). Animal phobias versus claustrophobias: Exteroceptive versus interoceptive cues. *Behaviour Research and Therapy*, *30*(6), 569–581. [https://doi.org/10.1016/0005-7967\(92\)90002-X](https://doi.org/10.1016/0005-7967(92)90002-X)
- Craske, M. G., Street, L. L., Jayaraman, J., & Barlow, D. H. (1991). Attention versus distraction during *in vivo* exposure: Snake and spider phobias. *Journal of Anxiety Disorders*, *5*(3), 199–211. [https://doi.org/10.1016/0887-6185\(91\)90001-A](https://doi.org/10.1016/0887-6185(91)90001-A)
- Davis, M., Eschelman, E. R., & McKay, M. (2008). *The relaxation and stress reduction workbook* (6th ed.). Oakland, CA: New Harbinger Publications.
- Davis, T. E., Ollendick, T. H., & Öst, L.-G. (2012). *Intensive one-session treatment of specific phobias*. New York, NY: Springer. <http://doi.org/> <https://doi.org/10.1007/978-1-4614-3253-1>
- de Quervain, D. J.-F., Bentz, D., Michael, T., Bolt, O. C., Wiederhold, B. K., Margraf, J., & Wilhelm, F. H. (2011). Glucocorticoids enhance extinction-based psychotherapy. *PNAS*, *108*(16), 6621–6625. <https://doi.org/10.1073/pnas.1018214108>
- Depla, M. F. I. A., ten Have, M. L., van Balkom, A. J. L. M., & de Graaf, R. (2008). Specific fears and phobias in the general population: Results from the Netherlands Mental Health Survey And Incidence Study (NEMESIS). *Social Psychiatry and Psychiatric Epidemiology*, *43*(3), 200–208. <https://doi.org/10.1007/s00127-007-0291-z>
- Ehlers, A., Taylor, J. E., Ehrling, T., Hofmann, S. G., Deane, F. P., Roth, W. T., & Podd, J. V. (2007). The driving cognitions questionnaire: Development and preliminary psychometric properties. *Journal of Anxiety Disorders*, *21*, 493–509. <https://doi.org/10.1016/j.janxdis.2006.08.002>
- Fredrikson, M., Annas, P., Fischer, H., & Wik, G. (1996). Gender and age differences in the prevalence of specific fears and phobias. *Behaviour Research and Therapy*, *34*(1), 33–39.
- Fyer, A. J. (1998). Current approaches to etiology and pathophysiology of specific phobia. *Biological Psychiatry*, *44*(12), 1295–1304. [https://doi.org/10.1016/S0006-3223\(98\)00274-1](https://doi.org/10.1016/S0006-3223(98)00274-1)
- Garcia-Palacios, A., Hoffman, H., Carlin, A., Furness, T. A., & Botella, C. (2002). Virtual reality in the treatment of spider phobia: A controlled study. *Behaviour Research and Therapy*, *40*(9), 983–993. [https://doi.org/10.1016/S0005-7967\(01\)00068-7](https://doi.org/10.1016/S0005-7967(01)00068-7)
- Glantz, K., Durlach, N. I., Barnett, R. C., & Aviles, W. A. (1996). Virtual reality for psychotherapy: From the physical to the social environment. *Psychotherapy*, *33*(3), 464–473.
- Gregg, L., & Tarrier, N. (2007). Virtual reality in mental health: A review of the literature. *Social Psychiatry and Psychiatric Epidemiology*, *42*(5), 343–354. <https://doi.org/10.1007/s00127-007-0173-4>
- Grös, D. F., & Antony, M. M. (2006). The assessment and treatment of specific phobias: A review. *Current Psychiatry Reports*, *8*(4), 298–303. <https://doi.org/10.1007/s11920-006-0066-3>
- Guastella, A. J., Dadds, M. R., Lovibond, P. F., Mitchell, P., & Richardson, R. (2007). A randomized controlled trial of the effect of d-cycloserine on exposure therapy for spider fear. *Journal of Psychiatric Research*, *41*(6), 466–471. <https://doi.org/10.1016/j.jpsychires.2006.05.006>
- Hellström, K., Fellenius, J., & Öst, L. G. (1996). One versus five sessions of applied tension in the treatment of blood phobia. *Behaviour Research and Therapy*, *34*(2), 101–112. [https://doi.org/10.1016/0005-7967\(95\)00060-7](https://doi.org/10.1016/0005-7967(95)00060-7)
- Hellström, K., & Öst, L. G. (1995). One-session therapist directed exposure vs two forms of manual directed self-exposure in the treatment of spider phobia. *Behaviour Research and Therapy*, *33*(8), 959–965. [https://doi.org/10.1016/0005-7967\(95\)00028-V](https://doi.org/10.1016/0005-7967(95)00028-V)
- Hoffman, H. G., Garcia-Palacios, A., Carlin, A., Furness, T. A., III, & Botella-Arbona, C. (2003). Interfaces that heal: Coupling real and virtual objects to treat spider phobia. *International Journal of Human Computer Interaction*, *16*(2), 283–300. <https://doi.org/10.1207/S15327590IJHC1602>
- Huang, M. P., Himle, J., & Alessi, N. E. (2000). Vivid visualization in the experience of phobia in virtual environments: Preliminary results. *Cyberpsychology & Behavior*, *3*(3), 315–320. <https://doi.org/10.1089/10949310050078742>
- Iza, M., Olfson, M., Vermes, D., Hoffer, M., Wang, S., & Blanco, C. (2013). Probability and predictors of first treatment contact for anxiety disorders in the United States: Analysis of data from the National Epidemiologic Survey on Alcohol And Related Conditions (NESARC). *The Journal of Clinical Psychiatry*, *74*(11), 1093–1100. <https://doi.org/10.4088/JCP.13m08361>
- Kawakami, N., Takeshima, T., Ono, Y., Uda, H., Hata, Y., Nakane, Y., ... Kikkawa, T. (2005). Twelve-month prevalence, severity, and treatment of common mental disorders in communities in Japan: Preliminary finding from the World Mental Health Japan Survey 2002-2003. *Psychiatry and Clinical Neurosciences*, *59*(4), 441–452. <https://doi.org/10.1111/j.1440-1819.2005.01397.x>
- Kessler, R. C., Petukhova, M., Sampson, N. A., Zaslavsky, A. M., & Wittchen, H.-U. (2012). Twelve-month and lifetime prevalence and lifetime morbid risk of anxiety and mood disorders in the United States. *International Journal of Methods in Psychiatric Research*, *21*(3), 169–184. <https://doi.org/10.1002/mp>

- Kirmizioglu, Y., Dogan, O., Kugu, N., & Akyuz, G. (2009). Prevalence of anxiety disorders among elderly people. *International Journal of Geriatric Psychiatry*, *24*, 1026–1033. <https://doi.org/10.1002/gps>
- Kleinknecht, R. A., & Thorndike, R. M. (1990). The mutilation questionnaire as a predictor of blood/injury fear and fainting. *Behaviour Research and Therapy*, *28*(5), 429–437.
- Klorman, R., Weerts, T., Hastings, J., Melamed, B., & Lang, P. (1974). Psychometric description of questionnaires. *Behavior Therapy*, *5*, 401–409.
- Kraaij, V., Garnefski, N., & Van Gerwen, L. (2003). Cognitive coping and anxiety symptoms among people who seek help for fear of flying. *Aviation Space and Environmental Medicine*, *74*(3), 273–277.
- Krijn, M., Emmelkamp, P. M. G., Ólafsson, R. P., Schuemie, M. J., & Van Der Mast, C. A. P. G. (2007). Do self-statements enhance the effectiveness of virtual reality exposure therapy? A comparative evaluation in acrophobia. *Cyberpsychology & Behavior*, *10*(3), 362–370. <https://doi.org/10.1089/cpb.2006.9943>
- Lieb, R., Miché, M., Gloster, A. T., Beesdo-Baum, K., Meyer, A. H., & Wittchen, H. U. (2016). Impact of specific phobia on the risk of onset of mental disorders: A 10-year prospective-longitudinal community study of adolescents and young adults. *Depression and Anxiety*, *33*(7), 667–675. <https://doi.org/10.1002/da.22487>
- Lipsitz, J. D., Barlow, D. H., Mannuzza, S., Hofmann, S. G., & Fyer, A. J. (2002). Clinical features of four DSM-IV-specific phobia subtypes. *The Journal of Nervous and Mental Disease*, *190*(7), 471–478. <https://doi.org/10.1097/01.NMD.0000022449.79274.48>
- Mackenzie, C. S., Reynolds, K., Cairney, J., Streiner, D. L., & Sareen, J. (2012). Disorder-specific mental health service use for mood and anxiety disorders: Associations with age, sex, and psychiatric comorbidity. *Depression and Anxiety*, *29*, 234–242. <https://doi.org/10.1002/da.20911>
- Malbos, E., Mestre, D. R., Note, I. D., & Gellato, C. (2008). Virtual reality and claustrophobia: Multiple components therapy involving game editor virtual environments exposure. *Cyberpsychology & Behavior*, *11*(6), 695–697. <https://doi.org/10.1089/cpb.2007.0246>
- Marks, I. M., Kenwright, M., McDonough, M., Whittaker, M., & Mataix-Cols, D. (2004). Saving clinicians' time by delegating routine aspects of therapy to a computer: A randomized controlled trial in phobia/panic disorder. *Psychological Medicine*, *34*(1), 9. <https://doi.org/10.1017/S0033291703000878X>
- Marks, I. M., Swinson, R. P., Basoglu, M., Kuch, K., Noshirvani, H., O'Sullivan, G., ... Wickwire, K. (1993). Alprazolam and exposure alone and combined in panic disorder with agoraphobia: A controlled study in London and Toronto. *British Journal of Psychiatry*, *162*(1), 776–787.
- Menzies, R. G., & Clarke, J. C. (1993). A comparison of *in vivo* and vicarious exposure in the treatment of childhood water phobia. *Behaviour Research and Therapy*, *31*(1), 9–15. [https://doi.org/10.1016/0005-7967\(93\)90037-U](https://doi.org/10.1016/0005-7967(93)90037-U)
- Merckelbach, H., De Jong, P. J., Muris, P., & Van Den Hout, M. A. (1996). The etiology of specific phobias: A review. *Clinical Psychology Review*, *16*(4), 337–361. [https://doi.org/10.1016/0272-7358\(96\)00014-1](https://doi.org/10.1016/0272-7358(96)00014-1)
- Miloff, A., Lindner, P., Hamilton, W., Reuterskiöld, L., Andersson, G., & Carlbring, P. (2016). Single-session gamified virtual reality exposure therapy for spider phobia vs. traditional exposure therapy: Study protocol for a randomized controlled non-inferiority trial. *Trials*, *17*(1), 60. <https://doi.org/10.1186/s13063-016-1171-1>
- Muris, P., & Merckelbach, H. (2000). How serious are common childhood fears? II. The parent's point of view. *Behaviour Research and Therapy*, *38*(8), 813–818. [https://doi.org/10.1016/S0005-7967\(99\)00119-9](https://doi.org/10.1016/S0005-7967(99)00119-9)
- Olatunji, B. O., Ebesutani, C., Sawchuk, C. N., Mckay, D., Lohr, J. M., & Kleinknecht, R. A. (2012). Development and initial validation of the medical fear survey – short version. *Assessment*, *19*(3), 318–336. <https://doi.org/10.1177/1073191111415368>
- Olatunji, B. O., Woods, C. M., de Jong, P. J., Teachman, B. A., Sawchuk, C. N., & David, B. (2009). Development and initial validation of an Abbreviated Spider Phobia Questionnaire using item response theory. *Behavior Therapy*, *40*(2), 114–130. <https://doi.org/10.1016/j.beth.2008.04.002>
- Ollendick, T. H., Raishevich, N., Davis, T. E., III, Sirbu, C., & Öst, L. G. (2010). Specific phobia in youth: Phenomenology and psychological characteristics. *Behavior Therapy*, *41*(1), 133–141. <https://doi.org/10.1016/j.beth.2009.02.002>
- Öst, L. G. (1996). One-session group treatment of spider phobia. *Behaviour Research and Therapy*, *34*(9), 707–715. [https://doi.org/10.1016/0005-7967\(96\)00022-8](https://doi.org/10.1016/0005-7967(96)00022-8)
- Öst, L.-G. (1989). One-session treatment for specific phobias. *Behaviour Research and Therapy*, *27*, 1–7.
- Öst, L. G., Alm, T., Brandberg, M., & Breitholtz, E. (2001). One vs five sessions of exposure and five sessions of cognitive therapy in the treatment of claustrophobia. *Behaviour Research and Therapy*, *39*(2), 167–183. [https://doi.org/10.1016/S0005-7967\(99\)00176-X](https://doi.org/10.1016/S0005-7967(99)00176-X)
- Öst, L. G., Brandberg, M., & Alm, T. (1997). One versus five sessions of exposure in the treatment of flying phobia. *Behaviour Research and Therapy*, *35*(11), 987–996. [https://doi.org/10.1016/S0005-7967\(97\)00077-6](https://doi.org/10.1016/S0005-7967(97)00077-6)
- Öst, L. G., Ferebee, I., & Furmark, T. (1997). One-session group therapy of spider phobia: Direct versus indirect treatments. *Behaviour Research and Therapy*, *35*(8), 721–732. [https://doi.org/10.1016/S0005-7967\(97\)00028-4](https://doi.org/10.1016/S0005-7967(97)00028-4)
- Öst, L. G., Hellström, K., & Kåver, A. (1992). One versus five sessions of exposure in the treatment of injection phobia. *Behavior Therapy*, *23*, 263–282.
- Öst, L. G., & Sterner, U. (1987). A specific behavioral method for treatment of blood phobia. *Behaviour Research and Therapy*, *25*(1), 25–29. [https://doi.org/10.1016/0005-7967\(87\)90111-2](https://doi.org/10.1016/0005-7967(87)90111-2)

- Park, S., Sohn, J. H., Hong, J. P., Chang, S. M., Lee, Y. M., Jeon, H. J., ... Cho, M. J. (2013). Prevalence, correlates, and comorbidities of four *DSM-IV* specific phobia subtypes: Results from the Korean Epidemiological Catchment Area Study. *Psychiatry Research*, 209(3), 596–603. <https://doi.org/10.1016/j.psychres.2012.12.025>
- Paulus, F. W., Backes, A., Sander, C. S., Weber, M., & von Gontard, A. (2014). Anxiety disorders and behavioral inhibition in preschool children: A population-based study. *Child Psychiatry and Human Development*, 150–157. <https://doi.org/10.1007/s10578-014-0460-8>
- Radomsky, A. S., Rachman, S., Thordarson, D. S., McIsaac, H. K., & Teachman, B. A. (2001). The claustrophobia questionnaire. *Journal of Anxiety Disorders*, 15, 287–297.
- Ressler, K. J., Rothbaum, B. O., Tannenbaum, L., & Anderson, P. (2004). Cognitive enhancers as adjuncts to psychotherapy. *Archives of General Psychiatry*, 61, 1136–1144. <https://doi.org/10.1001/archpsyc.61.11.1136>
- Riddle-Walker, L., Veale, D., Chapman, C., Ogle, F., Rosko, D., Najmi, S., ... Hicks, T. (2016). Cognitive behaviour therapy for specific phobia of vomiting (Emetophobia): A pilot randomized controlled trial. *Journal of Anxiety Disorders*, 43, 14–22. <https://doi.org/10.1016/j.janxdis.2016.07.005>
- Rothbaum, B. O., Anderson, P., Zimand, E., Hodges, L., Lang, D., & Wilson, J. (2006). Virtual reality exposure therapy and standard (*in vivo*) exposure therapy in the treatment of fear of flying. *Behavior Therapy*, 37(1), 80–90. <https://doi.org/10.1016/j.beth.2005.04.004>
- Serrano-Blanco, A., Palao, D. J., Luciano, J. V., Pinto-Meza, A., Luján, L., Fernández, A., ... Haro, J. M. (2010). Prevalence of mental disorders in primary care: Results from the diagnosis and treatment of mental disorders in primary care study (DASMAP). *Social Psychiatry and Psychiatric Epidemiology*, 45(2), 201–210. <https://doi.org/10.1007/s00127-009-0056-y>
- Shen, Y.-C., Zhang, M.-Y., Huang, Y.-Q., He, Y.-L., Liu, Z.-R., Cheng, H., ... Kessler, R. C. (2005). Twelve-month prevalence, severity, and unmet need for treatment of mental disorders in metropolitan China. *Psychological Medicine*, 36(2), 257. <https://doi.org/10.1017/S0033291705006367>
- Sigström, R., Skoog, I., Karlsson, B., Nilsson, J., & Östling, S. (2016). Nine-year follow-up of specific phobia in a population sample of older people. *Depression and Anxiety*, 33(4), 339–346. <https://doi.org/10.1002/da.22459>
- Smits, J. A. J., Rosenfield, D., Otto, M. W., Powers, M. B., Hofmann, S. G., Telch, M. J., ... Tart, C. D. (2013). D-cycloserine enhancement of fear extinction is specific to successful exposure sessions: Evidence from the treatment of height phobia. *Biological Psychiatry*, 73(11), 1054–1058. <https://doi.org/10.1016/j.biopsych.2012.12.009>
- Steinman, S. A., & Teachman, B. A. (2014). Reaching new heights: Comparing interpretation bias modification to exposure therapy for extreme height fear. *Journal of Consulting and Clinical Psychology*, 82(3), 404–417. <https://doi.org/10.1037/a0036023>
- Stinson, F. S., Dawson, D. A., Patricia Chou, S., Smith, S., Goldstein, R. B., June Ruan, W., & Grant, B. F. (2007, March). The epidemiology of *DSM-IV* specific phobia in the USA: Results from the National Epidemiologic Survey on alcohol and related conditions. *Psychological Medicine*, 37, 1047–1059. <https://doi.org/10.1017/S0033291707000086>
- Szymanski, J., & O'Donohue, W. (1995). Fear of Spiders Questionnaire. *Journal of Behavior Therapy and Experimental Psychiatry*, 26(1), 31–34.
- Telch, J. (1994). Proximity to safety and its effects. *Behaviour*, 32(7), 747–751.
- Tolin, D. F., Lohr, J. M., Lee, T. C., & Sawchuk, C. N. (1999). Visual avoidance in specific phobia. *Behaviour Research and Therapy*, 37(1), 63–70. [https://doi.org/10.1016/S0005-7967\(98\)00111-9](https://doi.org/10.1016/S0005-7967(98)00111-9)
- Tortella-Feliu, M., Botella, C., Llabres, J., Breton-Lopez, J. M., del Amo, A. R., Banos, R. M., & Gelabert, J. M. (2011). Virtual reality versus computer-aided exposure treatments for fear of flying. *Behavior Modification*, 35(1), 3–30. <https://doi.org/10.1177/0145445510390801>
- Ultee, C. A., Griffioen, D., & Schellekens, J. (1982). The reduction of anxiety in children: A comparison of the effects of “systematic desensitization *in vitro*” and “systematic desensitization *in vivo*”. *Behaviour Research and Therapy*, 20, 61–67.
- Van Houtem, C. M. H. H., Laine, M. L., Boomsma, D. I., Ligthart, L., van Wijk, A. J., & De Jongh, A. (2013). A review and meta-analysis of the heritability of specific phobia subtypes and corresponding fears. *Journal of Anxiety Disorders*, 27(4), 379–388. <https://doi.org/10.1016/j.janxdis.2013.04.007>
- Wells, J. E., Oakley Browne, M. A., Scott, K. M., McGee, M. A., Baxter, J., & Kokaua, J. (2006). Prevalence, interference with life and severity of 12 month *DSM-IV* disorders in Te Rau Hinengaro: The New Zealand Mental Health Survey. *Australian and New Zealand Journal of Psychiatry*, 40(10), 845–854. <https://doi.org/10.1111/j.1440-1614.2006.01903.x>
- Williams, S. L., Turner, S. M., & Peer, D. F. (1985). Guided mastery and performance desensitization treatments for severe acrophobia. *Journal of Consulting and Clinical Psychology*, 53(2), 237–247. <https://doi.org/10.1037/0022-006X.53.2.237>
- Wolitzky, K. B., & Telch, M. J. (2009). Augmenting *in vivo* exposure with fear antagonistic actions: A preliminary test. *Behavior Therapy*, 40(1), 57–71. <https://doi.org/10.1016/j.beth.2007.12.006>
- Wolpe, J., & Lang, P. J. (1977). *Manual for the fear survey schedule*. San Diego, CA: EdITS.
- Zimmerman, M., & Mattia, J. I. (2000). Principal and additional *DSM-IV* disorders for which outpatients seek treatment. *Psychiatric Services*, 51(10), 1299–1304. <https://doi.org/10.1176/appi.ps.51.10.1299>