

Interoceptive Exposure Exercises (Sensation Exercises) Summary of Research

Year of Study	Institution	Citation for the Study
Summary of Results of the Study		

1

1997	UCLA	Craske M et.al. (1997). Interoceptive exposure versus breathing retraining within cognitive-behavioural therapy for panic disorder with agoraphobia. <i>British Journal of Clinical Psychology</i> , 36(1), 85-99.
This study compared two components of a cognitive-behavioural treatment for panic disorder. 38 individuals with panic disorder and agoraphobia were randomly assigned to: (a) cognitive restructuring, <i>interoceptive exposure</i> and in vivo exposure to agoraphobic situations, or (b) cognitive restructuring, <i>breathing retraining</i> and in vivo exposure to agoraphobic situations The treatment that included interoceptive exposure was more effective at post-treatment in terms of panic frequency, overall severity and functioning, and was more effective at six-month follow-up in terms of panic frequency, phobic fears, general anxiety and functioning.		

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1998	University of Maine	Hecker J, Fink C (1998). Cognitive restructuring and interoceptive exposure in the treatment of panic disorder: a crossover study. <i>Behavioural and Cognitive Psychotherapy</i> , 26(1998), 115-131.
In this study, 18 clients with panic disorder were seen for four sessions of interoceptive exposure therapy and four sessions of cognitive therapy in a cross-over design study. Half of the participants received interoceptive exposure therapy followed by cognitive therapy and for half the order was reversed. Participants expected greater benefit from cognitive therapy, but tended to improve to a similar degree with either intervention. The order in which treatments were presented did not influence outcome.		

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2001	University of São Paulo, Brazil	Ito L, et.al. (2001). Self-exposure therapy for panic disorder with agoraphobia: randomised controlled study of external v. interoceptive self-exposure. <i>British Journal of Psychiatry</i> , 178(2001), 331-6.
81 patients with panic disorder with agoraphobia were randomised to a control group or to one of three forms of self-exposure treatment (7 treatment sessions with daily homework): a) <i>in vivo</i> exposure to feared external situations b) interoceptive exposure exercises, or c) combination of both approaches The three self-exposure groups improved significantly and similarly at post-treatment and up to 1-year follow-up.		

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2002	University of Maastricht, The Netherlands	Arntz A (2002). Cognitive therapy versus interoceptive exposure as treatment of panic disorder without agoraphobia. <i>Behaviour Research and Therapy</i> , 40(3), 325-41.
Cognitive therapy and interoceptive exposure as treatments of panic disorder without agoraphobia were compared in a sample of 69 patients, randomly allocated to condition. There were no significant differences between treatments as to reductions in panic frequency, daily anxiety levels and a composite questionnaire score, at post-test after the 12-session treatment, and at both follow-ups (4 weeks, 6 months). In both conditions, high percentages of patients were panic-free at post and follow-up tests (range 75-92%).		

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2004	Ohio State University	Schmidt N, Trakowski J (2004). Interoceptive Assessment and Exposure in Panic Disorder: A Descriptive Study. <i>Cognitive and Behavioral Practice</i> , 11(1), 81-92.
The present study was designed to describe the type, frequency, and typical anxiety extinction for a variety of interoceptive exercises typically used to treat panic disorder. Interoceptive assessment and interoceptive exercise data were compiled for 50 patients with PD completing a CBT protocol consisting of 12 weekly sessions. In addition to the weekly sessions with therapists, patients completed an average of 25 interoceptive exercise homework sessions. Despite the use of a wide variety of interoceptive exercises, 4 exercises (hyperventilation, breathing through a narrow straw, breath holding, and spinning) accounted for the majority of interoceptive exercises, and the majority of interoceptive exercises led to within-session anxiety reduction.		

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2006	Nagoya City University, Japan	Lee K et.al. (2006). Interoceptive hypersensitivity and interoceptive exposure in patients with panic disorder: specificity and effectiveness. <i>BMC Psychiatry</i> , 6(32).
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Factor analyses revealed four factors, which we named "pseudoneurological fears", "gastrointestinal fears", "cardiorespiratory fears" and "fears of dissociative feelings." Among the nine interoceptive exposure tasks, 'hyperventilation', 'shaking head', 'holding breath' and 'chest breathing' were considered to reproduce pseudoneurological symptoms, 'breathing through a straw' was considered to reproduce gastrointestinal symptoms, and 'spinning' was considered to reproduce both pseudoneurological and dissociative symptoms. Among the results: for patients for whom 'hyperventilation', 'holding breath', 'spinning' or 'chest breathing' was effective, a significant reduction in pseudoneurological fears was observed.

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2008	Boston University	Bitran S, Morissette S, Spiegel D, Barlow D (2008) A Pilot Study of Sensation-Focused Intensive Treatment for Panic Disorder With Moderate to Severe Agoraphobia: Preliminary Outcome and Benchmarking Data. <i>Behavior Modification</i> , 32(2008), 196.
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This report presents results of a treatment for panic disorder with moderate to severe agoraphobia called "sensation-focused intensive treatment" (SFIT). SFIT is an 8-day intensive treatment that combines features of cognitive-behavioral treatment for panic disorder, such as interoceptive exposure and cognitive restructuring with ungraded situational exposure. SFIT focuses on feared physical sensations as well as agoraphobic avoidance.

SFIT was found to be effective in decreasing panic symptoms from pre- to post-treatment, with treatment gains maintained at follow-up. There were significant improvements on all measures.

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2017	Kyoto University, Japan University of Bern, Switzerland University of Ioannina, Greece	Pompoli A et.al. (2017). Dismantling cognitive-behaviour therapy for panic disorder: a systematic review and component network meta-analysis. <i>Psychological Medicine</i> , 48(2017), 1945-1953.
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Cognitive-behaviour therapy (CBT) for panic disorder may consist of different combinations of several therapeutic components such as *relaxation*, *breathing retraining*, *cognitive restructuring*, *interoceptive exposure* and/or *in vivo exposure*. It is therefore important both theoretically and clinically to examine whether specific components of CBT or their combinations are superior to others in the treatment of panic disorder.

This meta-analysis included 72 studies with 4,064 participants. Among all of the different components of CBT for panic disorder, interoceptive exposure showed the most significant results.

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2013	Boston University	Boswell J, Farchione T, Barlow D et.al. (2013). Anxiety Sensitivity and Interoceptive Exposure: A Transdiagnostic Construct and Change Strategy. <i>Behavior Therapy</i> 44(2013), 417-431.
This study (a) evaluated levels of anxiety sensitivity (AS) across different anxiety disorders, (b) examined change in AS over the course of transdiagnostic psychological intervention, and (c) described the implementation of interoceptive exposure (IE) to address AS with patients with different anxiety disorders. 54 participants with a range of anxiety disorders received treatment with the <i>Unified Protocol for Transdiagnostic Treatment of Emotional Disorders</i>. Elevated AS was observed at pretreatment across diagnoses and decreases in AS were observed from pre- to post-treatment. Similar changes occurred across the diagnostic categories, notably coinciding with the introduction of IE. Change in AS was correlated with reduced symptom levels at post-treatment and 6-month follow-up. Patients with different anxiety disorders endorsed similar physical symptoms and practiced similar IE exercises with similar effects. Results provide preliminary support for the usefulness of IE as a treatment strategy across the spectrum of anxiety disorders, and additional support for the transdiagnostic relevance of AS.		

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2013	University of Wyoming	Deacon B, et.al. (2013). Maximizing the efficacy of interoceptive exposure by optimizing inhibitory learning: A randomized controlled trial. <i>Behaviour Research and Therapy</i> , 51(2013), 588-596.
120 participants with elevated anxiety sensitivity (AS) were randomly assigned to one of four single-session interventions: (a) low-dose interoceptive exposure (IE) with controlled breathing between trials (b) low-dose IE without controlled breathing or a lengthy between-trial rest period (c) intensive IE, or (d) expressive writing control. Compared to the other conditions, intensive IE produced significantly greater reductions in AS from pretreatment to posttreatment.		

2012	University of Wyoming, University of North Carolina at Chapel Hill, UCLA	Deacon B et.al. (2012). Do Cognitive Reappraisal and Diaphragmatic Breathing Augment Interoceptive Exposure for Anxiety Sensitivity? <i>Journal of Cognitive Psychotherapy</i> , 26(3), 257-269.
Interoceptive exposure (IE) is an effective procedure for reducing anxiety sensitivity (AS) and the symptoms of panic disorder. However, considerable variance exists in how IE is delivered among clinicians, and the extent to which IE is enhanced by the concurrent use of cognitive reappraisal (CR) and diaphragmatic breathing (DB) is unclear. 58 participants with high AS were randomly assigned to one of four single-session interventions: (a) IE only (b) IE + CR (c) IE + CR + DB, or (d) expressive writing (control group) IE was superior to expressive writing in reducing AS and associated anxiety symptoms. The addition of CR and DB did not enhance the benefits of IE at either posttreatment or 1-week follow-up.		