



## Provoking symptoms to relieve symptoms: A randomized controlled dismantling study of exposure therapy in irritable bowel syndrome



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### ABSTRACT

An internet-delivered cognitive behavioral treatment (ICBT) based on systematic exposure exercises has previously shown beneficial effects for patients with irritable bowel syndrome (IBS). Exposure exercises may be perceived as difficult for patients to perform because of the elicited short-term distress and clinicians may be reluctant to use these interventions. The aim of this study was to compare ICBT with the same protocol without systematic exposure (ICBT-WE) to assess if exposure had any incremental value. This randomized controlled dismantling study included 309 participants diagnosed with IBS. The treatment interventions lasted for 10 weeks and included online therapist contact. ICBT-WE comprised mindfulness, work with life values, acceptance, and encouraged reduced avoidance behaviors, while ICBT also included systematic exposure to IBS symptoms and related situations. Severity of IBS symptoms was measured with the Gastrointestinal Symptom Rating Scale – IBS version (GSRS-IBS). The between-group Cohen's *d* on GSRS-IBS was 0.47 (95% CI: 0.23–0.70) at post-treatment and 0.48 (95% CI: 0.20–0.76) at 6-month follow-up, favoring ICBT. We conclude that the systematic exposure included in the ICBT protocol has incremental effects over the other components in the protocol. This study provides evidence for the utility of exposure exercises in psychological treatments for IBS.

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### Introduction

Irritable bowel syndrome (IBS) is a functional gastrointestinal disorder with a prevalence of about 11% (Lovell & Ford, 2012) that is associated with diminished work capacity, increased healthcare

used, reduced quality of life, and low responsiveness to pharmacological treatments (Camilleri & Chang, 2008; Drossman et al., 1993; Halder et al., 2004; Talley, Gabriel, Harmsen, Zinsmeister, & Evans, 1995). Several types of psychological treatments have been evaluated for IBS, including for example cognitive behavior therapy (CBT),

**Abbreviations:** ACT, Acceptance and Commitment Therapy; AUDIT, Alcohol Use Disorders Identification Test; CBT, Cognitive behavior therapy; CSFBD, Cognitive scale for functional bowel disorders; GSA, Gastrointestinal symptom-specific anxiety; GSRS-IBS, Gastrointestinal Symptom Rating Scale – IBS version; HADS, Hospital Anxiety and Depression Scale; IBS, Irritable bowel syndrome; IBS-QOL, Irritable Bowel Syndrome Quality of Life Instrument; ICBT, Internet-based cognitive behavior therapy; ICBT-WE, Internet-based cognitive behavior therapy without exposure; MADRS-S, The Montgomery–Åsberg Depression Rating Scale – Self report; VSI, Visceral Sensitivity Index; WAI, Working Alliance Inventory.

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psychodynamic therapy, hypnotherapy, and mindfulness (Ford, Talley, Schoenfeld, Quigley, & Moayyedi, 2009; Gaylord et al., 2011; Lackner, Mesmer, Morley, Dowzer, & Hamilton, 2004). However, treatment effects are inconsistent across studies of the same treatment type and no single psychological treatment has emerged as the most effective treatment approach for IBS (Ljótsson et al., 2013).

One reason for the inconsistent effects between studies of psychological treatments for IBS may be that most treatments do not target gastrointestinal symptom-specific anxiety (GSA; Labus et al., 2004). GSA is an IBS-specific phenomenon that has been proposed to play a causal role in the maintenance of IBS symptoms and IBS-related disability and refers to heightened anxiety towards IBS symptoms and IBS-associated situation (such as not being near a toilet) and behavioral attempts to avoid these stimuli (Labus et al., 2004). GSA has been shown to negatively impact symptom severity and quality of life in IBS (e.g., Craske et al., 2011; Labus, Mayer, Chang, Bolus, & Naliboff, 2007; Labus et al., 2004; Reme, Darnley, Kennedy, & Chalder, 2010). Recently, several studies have been published where the treatments under investigation have included interventions that explicitly target GSA (Craske et al., 2011; Gaylord et al., 2011; Hunt, Moshier, & Milonova, 2009; Ljótsson, Andersson, et al., 2011; Ljótsson, Andréewitch, et al., 2010; Ljótsson, Falk, et al., 2010; Ljótsson, Hedman, Andersson, et al., 2011). These studies have generally produced large treatment effects on IBS symptoms and quality of life and individual studies have demonstrated long-term societal cost-savings (Andersson et al., 2011; Ljótsson, Andersson, et al., 2011), maintenance of improvements over 12–18 months (Ljótsson, Andersson, et al., 2011; Ljótsson, Hedman, Lindfors, et al., 2011), and superiority over active treatment controls (Craske et al., 2011; Ljótsson, Hedman, Andersson, et al., 2011). Furthermore, process studies have indicated that symptom improvements were mediated through decrease in GSA in several of these studies (Garland et al., 2011; Hunt et al., 2009; Ljótsson et al., 2013; Wolitzky-Taylor, Craske, Labus, Mayer, & Naliboff, 2012). With the exception of the study by Gaylord et al. (2011), which studied mindfulness for IBS, these studies (Craske et al., 2011; Hunt et al., 2009; Ljótsson, Andersson, et al., 2011; Ljótsson, Andréewitch, et al., 2010; Ljótsson, Falk, et al., 2010; Ljótsson, Hedman, Andersson, et al., 2011) have investigated cognitive behavioral treatments that have included exposure to target GSA. Exposure therapy involves systematic and repeated contact with a stimuli that evokes conditioned aversive responses (e.g., fear) while abstaining from behaviors that are consistent with the emotional response (e.g., avoidance and safety behaviors) and/or engaging in behaviors that are inconsistent with the emotional response (e.g., approach; Barlow, Allen, & Choate, 2004; White & Barlow, 2002). Repeated exposure is proposed to lead to long-term extinction, or inhibition, of the emotional response to the aversive stimuli (Craske et al., 2008). Exposure therapy is often used in CBT for anxiety disorders to decrease fear and avoidance of bodily (Forsyth & Fusé, 2008) and situational (Hazlett-Stevens & Craske, 2008) stimuli. However, as noted above, most CBT protocols for IBS do not target IBS-related fear or avoidance and, consequently, do not include exposure as means of reducing GSA. An explanation for the lack of treatments using exposure to target GSA may be that exposure to IBS symptoms and IBS-related aversive situations by definition means short-term increase in symptom experience. This may make both patients and clinicians reluctant to try exposure-based interventions. Indeed, surveys have shown that some mental health practitioners and patients perceive exposure in psychological treatments as an ineffective and unethical intervention (Olatunji, Deacon, & Abramowitz, 2009). Thus, showing that exposure has a unique value in treating IBS may have important clinical implications for how IBS is conceptualized and managed, both within medical and psychological care.

Several of the studies of the effect of exposure for IBS have been conducted by our group, using the internet to deliver the treatment (Ljótsson, Andersson, et al., 2011; Ljótsson, Falk, et al., 2010; Ljótsson, Hedman, Andersson, et al., 2011). Internet-based CBT (ICBT) is a treatment format that been found produce treatment effects that are comparable to those of face-to-face CBT for both somatic and psychiatric diagnoses (Hedman, Ljótsson, & Lindfors, 2012). We have previously shown that the ICBT protocol is superior to a stress management treatment (Ljótsson, Hedman, Andersson, et al., 2011), which indicates that the treatment has specific effects that cannot be attributed to expectation of improvement or therapeutic attention. However, the ICBT protocol that we have employed has also included principles adapted from acceptance and commitment therapy (ACT; Hayes, Strosahl, & Wilson, 1999), for example mindfulness training and emphasis on living a valued life together with IBS symptoms rather than letting the symptoms control your life (“values-based behavior change”) This means that a number of interventions besides the exposure exercises could have accounted for the superior improvement compared to stress management. Work with life values and mindfulness has been found to reduce emotional reactivity and avoidance impulses (Levin, Hildebrandt, Lillis, & Hayes, 2012) and mindfulness has been successfully evaluated as a stand-alone intervention for IBS (Gaylord et al., 2011). In a recently developed ACT protocol for IBS (Ferreira, Eugenicos, Morris, & Gillanders, 2011), the disability associated with IBS is explained as a process of experiential avoidance (i.e., a model conceptually similar to GSA), but there is much less focus on systematic exposure with the purpose of extinction and more focus on reducing avoidance in order to live a full life (i.e., values-based behavior change). A pilot study indicated that the ACT treatment led to improvement in IBS symptoms and quality of life for patients who completed the treatment (Ferreira, 2011). Although the ACT-inspired components in the treatment developed by our group are not as comprehensive as in the full ACT treatment developed by Ferreira et al. (2011), their work, studies on mindfulness for IBS, and the studies of values work in general, suggest that other treatment components than exposure could have accounted for the improvements we have observed in our studies. Furthermore, in CBT for depression, it has been observed that patients’ acceptance of a treatment rationale for behavior change has an independent positive effect on outcome (Addis & Jacobson, 2000). Thus, if education about the maintaining and exacerbating effects of avoidance and control behaviors on IBS symptoms is cogent and compelling, it may be enough to elicit behavior change and consequently decrease symptoms.

In order to evaluate the incremental effect of exposure, we employed a randomized controlled dismantling design in which the full ICBT treatment package was compared to a treatment that included all treatment interventions except for systematic exposure to IBS symptoms and IBS-related situations (“ICBT without exposure”; ICBT-WE). Thus, we controlled for both important non-specific (e.g., maturation, positive expectations, and therapist contact) and specific technical components (e.g., psychoeducation, mindfulness training, and values-based behavior change procedures) of the treatment. We postulated that ICBT would lead to a more pronounced long-term extinction effect through repeated exposure to conditioned stimuli in IBS, and hence larger improvements in symptoms, quality of life, and GSA than ICBT-WE. We also explored if there were incremental effects of exposure on depression and anxiety and if participation in the study was associated with any adverse events.

## Methods

This study is reported in accordance with the CONSORT statement for non-pharmacological trials (Boutron, Moher, Altman,

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