



Review article

The inference-based approach to obsessive-compulsive disorder: A comprehensive review of its etiological model, treatment efficacy, and model of change



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ABSTRACT

Background: The inference-based approach (IBA) postulates that individuals with obsessive-compulsive disorder (OCD) confuse a possibility with reality (inferential confusion) according to specific inductive reasoning devices and act as if this possibility were true. A new treatment modality, the inference-based therapy (IBT), was developed. The aim of this study was to critically review empirical evidence regarding the etiological model, treatment efficacy, and model of change of IBA.

Methods: A search of the literature was conducted using PsycINFO and Medline.

Results: Thirty-four articles were included in the review. The review reveals that intrusive thoughts of non-clinical and OCD individuals may occur in different contexts. There is support for a specific inductive reasoning style in OCD. Inferential confusion is associated with OCD symptoms. There is good evidence that IBT is an efficacious treatment for OCD, including two randomized controlled trials showing that IBT was as efficacious as cognitive-behavior therapy. There is some but limited evidence that the process of change during treatment is coherent with IBA's assumptions.

Limitations: Key premises were investigated in only a few studies. Some of these studies were conducted in non-clinical samples or did not include an anxious control group.

Conclusions: IBA's etiological model, treatment modality, and model of change make a significant contribution to OCD.

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1. Introduction

Obsessive-compulsive disorder (OCD) is characterized by the occurrence of obsessions that are generally accompanied by compulsions. The life-time prevalence of OCD is estimated to be around 1.6% (Kessler et al., 2005). OCD is a heterogeneous psychopathology that can be divided into several symptom subtypes (Tolin et al., 2003), commonly: contamination, checking, impulsive phobia, precision, and rumination. Studies have shown that almost everybody experiences intrusive thoughts that are similar in content to obsessions (for a review, see Julien et al. (2007)). Based on this finding, one cognitive model, the appraisal model, posits that a key feature in the development of OCD is not the occurrence of intrusive thoughts *per se* (since they are experienced by almost everyone) but rather the appraisal of intrusive thoughts as significant and meaningful on the basis of dysfunctional beliefs (e.g., inflated responsibility) (Obsessive Compulsive Cognitions Working Group, 1997; Rachman, 1998; Salkovskis, 1985). According to this model, appraisals explain why intrusive thoughts escalate into obsessions. Cognitive-behavior therapy (CBT) based on the appraisal model challenges the dysfunctional beliefs related to OCD using cognitive techniques and typically includes the well-established exposure and response prevention technique (ERP), in which clients are gradually exposed to the feared stimuli (e.g., touching a doorknob) while compulsions (e.g., washing hands) are prevented and until anxiety decreases (e.g., Steketee (1999)). However, between 25% and 73% of individuals with OCD do not report high levels of dysfunctional appraisals (Calamari et al., 2006; Polman et al., 2011; Taylor et al., 2006), suggesting that the appraisal of intrusive thoughts may not be the only process involved in development of OCD.

Another cognitive model that has attempted to account for the development of OCD is the inference-based approach (IBA). IBA proposes features that are currently neglected by other OCD models, notably regarding the origin of obsessions, the theory of change, and treatment targets. According to IBA, OCD is a disorder of the imagination that is characterized by pathological doubt. In this model, obsessions are not normal intrusions but rather occur in inappropriate contexts. IBA considers that appraisals may be involved in maintaining obsessions but that obsessional doubt is created through a reasoning process termed inferential confusion (Aardema et al., 2005b), where an internal narrative leads an individual to distrust the senses and invest in a remote possibility rather than reality (O'Connor et al., 2005b). The narrative is hypothesized to be coherent with vulnerable self-themes, which could explain the selective nature of OCD (that is, why individuals develop obsessions around specific themes). A new treatment modality based on the model, called inference-based therapy (IBT), has been developed (O'Connor et al., 2005b; O'Connor and Aardema, 2012). IBT addresses directly the content of the obsessions rather than appraisals, using intervention techniques based on the imagination and on contrasting reasoning processes in normal and pathological doubts. IBA also proposes a new model of change that

involves trusting the senses and investing into reality (O'Connor and Aardema, 2012). The model has been subjected to empirical testing, but the results of the empirical studies have not been synthesized in English in a comprehensive review that would inform therapists and researchers about empirical evidence supporting or refuting the model. The objective of this article is thus to critically review empirical evidence on IBA. More specifically, the article aims at answering the following questions: What is the empirical evidence for IBA's etiological model of OCD? What is the empirical evidence for the efficacy of IBT? What is the empirical evidence for IBA's model of change?

In the next section, IBA is described in greater details. Then, the methodology used to select empirical studies is presented. Afterwards, results of the empirical studies are reported and critically reviewed. Finally, implications for the model are discussed.

2. Presentation of the inference-based approach

2.1. Etiological model of OCD

OCD is characterized by pathological doubts (Janet, 1903). However, individuals with OCD can have both normal and pathological doubts. According to IBA, normal doubts are triggered by direct information available through the senses and common sense (i.e., what would appear reasonable to most people) in the here and now (e.g., I see dark clouds and wonder whether it will rain or not). The model postulates that individuals with OCD use a different reasoning style in OCD situations: individuals with OCD are hypothesized to go beyond information available with the senses in the here and now and to make an inference about a possible state of affairs ("Perhaps the door is not locked properly") based on an internal narrative (O'Connor et al., 2005b). In other words, IBA proposes that obsessions do not result from dysfunctional appraisals of normal intrusive thoughts but rather from an internal narrative remote from the here and now. The narrative is hypothesized to be a product of the imagination, based upon personal experience, hearsay, abstract facts and ideas, possibilities, and general rules which, in terms of formal reasoning perspective, are hypothesized to involve inductive reasoning devices specific to OCD and OCD-like disorders (O'Connor et al., 2013) (see Table 1). These reasoning devices are assumed to give credibility to the narrative. An example of an OCD narrative is the following: "Germs exist and can get transmitted (abstract fact). Physicians wash their hands after touching patients (general rules). I have caught viruses in the past after being in the presence of someone who was infected (personal experience). I heard recently that viruses transmitted by direct contact could mutate into a form transmitted through the air (hearsay)". These associations are thought to lead to a **primary inference**, that is, the first thought taking the form of an **obsessional doubt** (the obsession) going beyond reality: "Maybe there are germs on my hand". A series of **secondary inferences** are assumed to follow from the primary inference, which

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