Intrusive thoughts, obsessions, and appraisals in obsessive–compulsive disorder: A critical review

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Abstract

This article reviews empirical findings on two key premises of the appraisal model of obsessive–compulsive disorder (OCD): (a) non-clinical populations experience intrusive thoughts (ITs) that are similar in form and in content to obsessions; and (b) ITs develop into obsessions because they are appraised according to dysfunctional beliefs. There is support for the universality of ITs. However, the samples used are not representative of the general population. IT measures do not relate systematically or exclusively to OCD symptom measures, and are not specific enough to exclude other types of intrusive thoughts such as negative automatic thoughts or worries, nor are they representative of all types of obsessions. When general distress is controlled, there is so far no evidence that participants with OCD endorse obsessive belief domains more strongly than anxious participants, and inconclusive evidence that OCD and non-clinical samples differ on the belief domains. Some OCD symptom subtypes are associated with belief domains. Currently, there is no coherent model to offer strong predictions about the specificity of the empirically derived belief domains in OCD symptom subtypes. Cognitive therapy based on the appraisal model is an effective treatment for OCD, although it does not add to the treatment efficacy of behaviour therapy. It is unclear how appraisals turn ITs into obsessions. Implications for future research are discussed.

Keywords: Obsessive–compulsive disorder; Obsessions; Intrusive thoughts; Beliefs; Cognitive therapy

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Keywords: Obsessive–compulsive disorder; Obsessions; Intrusive thoughts; Beliefs; Cognitive therapy
Individuals presenting with obsessive–compulsive disorder (OCD) suffer from obsessions (recurrent and persistent thoughts, impulses, or images experienced as intrusive and inappropriate and causing marked anxiety or distress) generally accompanied by compulsions (repetitive behaviours or mental acts done in order to prevent or reduce anxiety or distress caused by obsessions) (American Psychiatric Association [APA], 1994). It has been proposed that non-clinical individuals have thoughts whose content is similar to obsessions (see among others, Freeston & Ladouceur, 1993; Freeston, Rhéaume, & Ladouceur, 1996; Parkinson & Rachman, 1981a, 1981b; Rachman, 1997, 1998; Salkovskis, 1985, 1989, 1999). These thoughts have been variously identified by authors as “cognitive intrusions”, “normal obsessions”, “obsessional thoughts”, and “intrusive thoughts”. Here, we will employ the term “intrusive thoughts” (ITs).

Rachman (1971) proposed a close link between ITs and obsessions on the basis of similar content even though they differ in that obsessions are more frequent and anxiety provoking than ITs. ITs would be experienced by a majority of individuals (Rachman, 1997; Salkovskis, 1999). In particular, one cognitive model of OCD (i.e. the appraisal model) proposes that the interpretation (appraisal) of the presence and content of ITs will determine whether they escalate into obsessions (Freeston, Rhéaume, Ladouceur, et al., 1996; Rachman, 1997, 1998; Salkovskis, 1985, 1989, 1999). The appraisal of intrusive thoughts is in accordance with pre-existing dysfunctional attitudes or beliefs, which are relatively enduring pan-situational assumptions held by an individual (Obsessive Compulsive Cognitions Working Group [OCCWG], 1997). Hence, the crucial difference between people with OCD and non-clinical individuals would be the presence of OCD-related dysfunctional beliefs. In the absence of OCD-related beliefs, ITs are ignored more easily, preventing escalation into obsessions (Salkovskis, 1989).

The appraisal model of OCD then relies on two key premises: (a) ITs are part of normal experience, implying that obsessions may be on a continuum with normality; and (b) the interpretation given to the presence and content of ITs according to dysfunctional beliefs explains why they escalate into obsessions. Purdon and Clark (1993) have identified three conditions necessary to support the initial premise: Firstly, it should be clearly evident that non-clinical samples experience ITs. Secondly, ITs should show a specific link with clinical obsessions. For example, it is expected that correlations between measures of ITs and OCD would be higher than correlations between measures of ITs and measures of general distress (e.g.: depression, anxiety). Thirdly, ITs should be distinguishable from negative automatic thoughts (NATs) believed to be characteristic of anxiety and depression. In addition to these three conditions identified by Purdon and Clark (1993), a fourth and fifth condition for support of the first premise of the appraisal model is that ITs should be representative of obsessions and show a stable factor structure.

Tolin, Worhunsky, and Maltby (2006) have identified three conditions necessary to confirm the second premise: Firstly, clients with OCD should endorse obsessive belief domains more strongly than patients with anxiety disorders.
(the specificity hypothesis). Secondly, OCD symptom subtypes (e.g.: washing, checking, impulsive phobia, precision, rumination) should be associated with at least some form of obsessive belief domains (the generality hypothesis). Thirdly, the different obsessive belief domains should be related to OCD symptom subtypes in a meaningful way (the congruence hypothesis). In addition to these three conditions identified by Tolin et al. (2006), a fourth condition to support the second premise of the appraisal model is that cognitive therapy prove itself an effective treatment for OCD. The aim of this article is to give an up-to-date review of the appraisal model by looking at the empirical findings on its two key premises and the conditions identified to support them.

1. First key premise: occurrence of ITs is a universal phenomenon

1.1. First condition: universality of ITs in non-clinical samples

According to the appraisal model, the majority of the people experience ITs from time to time. We conducted a review of the literature via PsycINFO database, using such search words as intrusive thoughts, intrusions, cognitive intrusions, unwanted thoughts, and normal obsessions. Thirteen studies investigating the occurrence of ITs in non-clinical populations were found (Edwards & Dickerson, 1987; England & Dickerson, 1988; Freeston, Ladouceur, Thibodeau, & Gagnon, 1991; Niler & Beck, 1989; Parkinson & Rachman, 1981a, 1981b; Purdon & Clark, 1993, 1994; Rachman & de Silva, 1978; Salkovskis & Harrison, 1984; Wells & Morrison, 1994; Yao, Cottraux, & Martin, 1999; Yao, Cottraux, Martin, & Bouvard, 1996). At first glance, the scientific literature supports the universality of ITs: 72 to 100% (mean: 93%) of non-clinical individuals have experienced ITs. It has been shown empirically that the content of ITs and obsessions is similar (Bouvard & Cottraux, 1997; Rachman & de Silva, 1978) and that they may appear in a variety of forms, including thoughts, images, and/or impulses (Freeston, Dugas, & Ladouceur, 1996; Freeston, Ladouceur, Letarte, & Rhéaume, 1994; Rachman & Hodgson, 1980). Obsessions seems to be more frequent, anxiety provoking, intense, and difficult to control than ITs (Rachman & de Silva, 1978).

However, despite support for the universality of ITs, studies assessing ITs have limitations that might impact on the estimates of the prevalence of ITs (Clark & O’Connor, 2005; Clark & Purdon, 1995; Clark & Rhyno, 2005). We will focus on the following criteria: the definition of ITs, the methods used to assess them, the reliability of the measures, as well as the internal and external validity of the studies.

Table 1
Labels and definitions of the concept of IT encountered in studies investigating ITs

<table>
<thead>
<tr>
<th>Authors</th>
<th>Concept label</th>
<th>Definition</th>
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<tbody>
<tr>
<td>Edwards and Dickerson (1987)</td>
<td>Intrusive thoughts</td>
<td>Thought, image or impulse that (a) interrupts an ongoing activity, (b) is of internal attribution, and (c) is difficult to control.</td>
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<tr>
<td>England and Dickerson (1988)</td>
<td>Intrusive thoughts</td>
<td>Repetitive, spontaneous thoughts. They may be pleasant or unpleasant images, impulses or ideas.</td>
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<tr>
<td>Freeston et al. (1991)</td>
<td>Cognitive intrusions</td>
<td>Thoughts, images or impulses that occur spontaneously, that are experienced by most people, and that are not a sign of madness.</td>
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<tr>
<td>Parkinson and Rachman (1981a)</td>
<td>Intrusive, unwanted</td>
<td>Repetitive thoughts, images or impulses that are unacceptable and/or unwanted.</td>
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<tr>
<td>Parkinson and Rachman (1981b)</td>
<td>Thoughts</td>
<td>Repetitive thoughts, images or impulses that are unacceptable and/or unwanted, and are attributed to an internal source.</td>
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<tr>
<td>Rachman &amp; de Silva (1978)</td>
<td>Obessions (normal and</td>
<td>Unpleasant, unwanted thoughts and impulses, experienced by many people and not a sign of madness.</td>
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<tr>
<td>Wells and Morrison (1994)</td>
<td>Obsessional thoughts</td>
<td>Spontaneous, quick and sometimes recurrent thought that is unacceptable and/or unwanted.</td>
</tr>
<tr>
<td>Yao et al. (1999)</td>
<td>Intrusive thoughts</td>
<td>Repetitive, unpleasant and involuntary thoughts, images or impulses which can appear brutally in conscience. They are regarded as irrational and unrealistic; they do not correspond to personality and can be difficult to control.</td>
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<tr>
<td>Yao et al. (1996)</td>
<td>Intrusive thoughts</td>
<td>Repetitive, unpleasant and involuntary thoughts, images or impulses which can appear brutally in conscience. They are regarded as irrational and unrealistic; they do not correspond to personality and can be difficult to control.</td>
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</tbody>
</table>
1.1.1. IT definition

There is currently no overall consensus on identifying ITs, which have been defined and conceptualized in varying ways. Table 1 illustrates the various labels and definition of ITs in studies assessing their presence, and Table 2 identifies which components authors have included in the definition of the concept they provided, if any.

Consensus on the definition of ITs, or at the very least agreement on necessary and sufficient operational criteria for its identification, seems essential, since a lack of agreement on the definition of ITs may have important consequences for estimations of the prevalence of ITs. While some authors have indeed proposed necessary and sufficient conditions for identifying ITs (e.g.: Rachman & Hodgson, 1980), others (Warren, Gershuny, & Sher, 2002) stress that a too sharp definition of a concept has the disadvantage of excluding certain important aspects by defining out meaningful sources of variation. For example, a strict criterion of ego-dystonicity (i.e., going against one’s values) would exclude obsessions that are less clearly ego-dystonic (e.g.: contamination, disease, making mistakes, accidents) (Freeston, Ladouceur, Rhéaume, et al., 1994).

Despite these varying definitions, we can identify several dimensions that have commonly been attributed to ITs. Firstly, as originally pointed out by Rachman and Hodgson (1980), they are generally conceptualized as unwanted, although England and Dickerson (1988) appear to take exception to this and view some ITs as agreeable. Secondly, ITs are hardly ever considered a one-time occurrence, but rather refer to thoughts, images, or impulses that have the tendency to repeat themselves. In other words, most authors agree that these thoughts, images, and impulses are repetitive in character. Finally, even though not explicitly stated in most definitions (perhaps since it forms part of the term “intrusive thought” itself) is the intrusive nature of ITs. That is, they are not considered to form part of the regular stream of consciousness, but rather, are generally considered to interrupt ongoing activity. However, despite some overall agreement on the definition of ITs, characteristics of ITs as a phenomenon are not clearly delineated.

1.1.2. Assessment methods

Two main strategies have been used to assess the presence of ITs: (a) participants record in a diary the content of ITs occurring during a period of time; and (b) participants are given a list of ITs and told to indicate which of these

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Table 2
Components of ITs included by authors in their definition of ITs

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ITs they experienced. For both strategies, it is generally requested that the participants assess their ITs according to various parameters (e.g.: anxiety caused, ease of dismissal). The first strategy is more adapted to the idiosyncratic nature of ITs (Clark & Purdon, 1995). However, Freeston et al. (1991) note that different criteria have been advanced to determine the most representative ITs: High frequency (Clark & Nicki, 1989), greater salience (England & Dickerson, 1988), low controllability and low ease of dismissal (Edwards & Dickerson, 1987; Salkovskis & Harrison, 1984) are some of the suggested criteria. Among the advantages of using the second strategy, there is a possibility of comparing the participants on the same ITs (Freeston et al., 1991) and the possibility of identifying recurring themes in each individual.

1.1.3. Reliability

The reliability of measures can be examined by looking at inter-rater agreement (level of agreement among raters in categorizing if the reported thoughts were ITs or another type of thought), internal consistency, and test–retest reliability. In studies where participants are required to record ITs in a diary, only Wells and Morrison (1994) calculated inter-rater agreement, which only showed a moderate level of agreement among raters (Kappa = .63). Also, no mention was made of the qualifications or training of raters. If raters were not experienced clinicians, their ability to determine which of the reported thoughts were ITs might have improved over time, thereby compromising the reliability of the results.

For authors who report the internal consistency of their questionnaire (Edwards & Dickerson, 1987; England & Dickerson, 1988; Freeston et al., 1991; Purdon & Clark, 1993; Salkovskis & Harrison, 1984; Yao et al., 1996), the alpha coefficients vary from .68 to .93, which, according to Freeston et al. (1991), is satisfactory considering the multidimensional nature of ITs’ themes.

Clark (1992) is the only author who calculated test–retest reliability indices. The test–retest reliability of his questionnaire was moderate. This result was however expected, because the participants of this study were given a treatment which probably decreased the scores on some ratings (frequency, sadness, and concern caused by ITs, difficulty of ignoring ITs, guilt, and belief dimensions) (Clark, 1992). However, the test–retest was calculated on the total score. Therefore, there exist no test–retest reliability indices for the frequency of occurrence of ITs in the literature.

1.1.4. Internal validity

The main challenge to internal validity, in research measuring the presence of ITs with questionnaires, is researchers’ and participants’ expectations. Regarding researchers’ expectations, participants were informed in some studies (e.g.: Freeston et al., 1991; Salkovskis & Harrison, 1984) that the presence of ITs is a normal phenomenon, thereby potentially coaching the results anticipated by researchers. Researchers’ expectations can also be revealed in the participants’ consent forms, where the research objectives are generally described. Finally, use of controls for expectations, such as independent and blind inter-rater agreement (where the rater is unaware of researchers’ hypotheses) have not been used in studies where participants had to record their ITs in a diary.

Regarding participants’ expectations, social desirability could prevent participants from reporting highly reprehensible ITs, especially when a list of ITs is not provided to them (Clark & Purdon, 1995). If researchers informed participants that the experience of ITs is an universal phenomenon, participants may, in order to appear normal or to please the researchers, report an experience of ITs when, in fact, it is not experienced. None of the studies investigating the presence of ITs have included measures of social desirability.

1.1.5. External validity

The main concern with external validity is sample representativeness. IT being considered a universal phenomenon, the participants of the studies should ideally form a sample representative of the whole population. The studies investigating the presence of ITs have primarily been conducted on student populations (average age of all samples: 24 years old), mainly consisting of women (percentage of men in all samples: 38%). But student controls score significantly higher on measures of general distress than community controls (e.g. OCCWG, 2003); student years are associated with stress and stress with obsessional symptoms (Warren et al., 2002). The themes found among women are more numerous than among men, as revealed by Purdon and Clark’s (1993) factor analyses. The estimate of the prevalence of ITs could then have been inflated because of the type of population, i.e. mainly female students.
Consequently, there is a need to replicate the studies estimating the presence of ITs using samples that are more representative of the general population (Warren et al., 2002). It would also be interesting, in further research, to study more precisely the influence of moderating variables such as gender, age and schooling on the occurrence and content of ITs (see Purdon & Clark, 1993).

### 1.2. Second condition: specificity of ITs and clinical obsessions

According to the appraisal model, obsessions originate in ITs. ITs should then show a specific link with clinical obsessions. Measures of convergent/divergent validity and concomitant/predictive validity would be good indicators as to the specificity of ITs in clinical obsessions.

#### 1.2.1. Convergent and divergent validity

Regarding convergent/divergent validity, correlations between measures of ITs and measures of OCD are expected to be higher than correlations between measures of ITs and measures of general distress. A first group of studies reported that IT measures were more correlated with neurotism, anxiety or depression measures than with OCD measures (see Clark & Hemsley, 1985; Freeston, Ladouceur, Thibodeau, & Gagnon, 1992). A second group of studies found equal correlations between IT, OCD, and general distress measures (see Clark, 1992; Yao et al., 1996). Also, multiple regression analysis indicated that ITs contributed more strongly to anxiety and depression than to OCD (see Freeston et al., 1992). Hence, convergent and divergent validity of the questionnaires used in these two group of studies is not clearly established.

In a third group of studies (Purdon & Clark, 1993; Yao et al., 1999), the correlations between measures of ITs and measures of OCD were generally higher than the correlations between measures of ITs and measures of anxiety or depression. However, in Purdon and Clark’s (1993) study, the correlations between measures of OCD and measures of ITs were relatively low (.37 – .62) and almost equivalent to the correlations between measures of OCD and measures of depression or anxiety (.38 – .58). A later study of Purdon and Clark (1994) showed good divergent validity of the instrument measuring ITs with a measure of worry. However, the convergent validity of the questionnaire measuring ITs could not be established because no OCD questionnaires were used. Hence, the results concerning the convergent and divergent validity in these three group of studies are inconsistent. Clark and Purdon (1995) consider that IT measures with inadequate divergent validity are not appropriate for research in OCD. Inadequate convergent/divergent validity implies that ITs may not be more related to OCD symptoms than to general distress. This poses a problem for the appraisal model, because if ITs and obsessions are on the same continuum, then there should be a stronger relationship between ITs and OCD than between ITs and general distress. However, OCD is generally considered to be an anxiety disorder and depression is often a comorbid condition. Strong relationships between ITs and anxiety or depression are thus not surprising. Nevertheless, one would expect ITs to be more strongly correlated to OCD than to general distress.

#### 1.2.2. Concomitant and predictive validity

Regarding concomitant/predictive validity, the correlations between different measures of ITs are expected to be high. Only Yao et al. (1996, 1999) presented concomitant validity indices of the questionnaire measuring ITs. In these studies, correlation between ITs and obsessional thoughts most frequently found in OCD proved to be satisfactory ($r = .74$).

Predictive validity of questionnaires measuring ITs could establish which individuals are most likely to develop OCD. This would demonstrate the clinical utility of these questionnaires, so far underdemonstrated since they have rarely been administered to clinical samples (Clark & Purdon, 1995), thereby limiting our understanding of the link between ITs and obsessions (Clark, 1992). Predictive validity has not been considered in any of the studies investigating the presence of ITs.

### 1.3. Third condition: distinction between ITs and other types of thoughts

Cognitive intrusions which are not obsessional occur in other psychopathologies, such as posttraumatic stress disorder, generalized anxiety disorder (GAD), depression, insomnia, and psychosis (see Clark, 2005b). These thoughts cannot be regarded as obsession-related because of their content. For example, GAD thoughts are characterized by
concerns over everyday life themes (work, school performances; APA, 1994), depressive thoughts are characterized by loss or failure themes, and anxiety thoughts are characterized by danger or vulnerability themes (Clark, 1992). The content of ITs is more ego-dystonic, unacceptable, and associated with loss of control (Clark, 1992; Clark & Purdon, 1995). It is also important to differentiate obsessions from mental compulsions which aim to neutralize the anxiety caused by the obsessions. In order to differentiate ITs from other types of thoughts, it is necessary to consider thought process (e.g.: its repetitive and intrusive nature) as well as content (Clark, 1992; Clark & Claybourn, 1997; Clark & Purdon, 1995). However, except in Yao et al. (1996, 1999), the type of content does not feature in the definitions of ITs and authors only make reference to process (see Table 1). By doing so, some intrusive and unpleasant thoughts whose content is not obsessionally in nature may have been inserted into questionnaires measuring ITs. If so, the prevalence estimate of ITs would be inflated. Two kind of intrusive thoughts similar to ITs are particularly relevant: negative automatic thoughts (NATs) and worries (although other types of thoughts have been included in some questionnaires, such as mental tics; see O’Connor, 2005).

1.3.1. NATs
NATs are recurring, involuntary, and intrusive disapproving comments of oneself (e.g.: I am worthless) (Ingram, Atkinson, Slater, Saccuzzo, & Garfin, 1990). According to Clark and his colleagues (Clark, 1992; Clark & Purdon, 1995; Clark & de Silva, 1985; Purdon & Clark, 2001), NATs were inadvertently measured in the majority of studies estimating the presence of ITs (e.g.: loss of a loved one). However, these two concepts can be distinguished theoretically and empirically. Theoretically, NATs have low intrusiveness, are perceived as rational and ego-syntonic (i.e., are in accordance with one’s values); they follow the course of normal thoughts, but access to them is difficult. In contrast, ITs are intrusive, perceived as irrational and ego-dystonic; they interrupt the course of thoughts (i.e., they are intrusive) and one can easily access them (Salkovskis, 1985). Clark and Rhyno (2005) have proposed that NATs are more frequent than ITs. Empirically, ITs have been less tied (and with less specificity) to psychopathology than NATs (Clark, 1992). In comparison to the content of NATs, the content of ITs is more ego-dystonic, unacceptable, and involves a loss of control. As mentioned above, depressive NAT themes relate to loss and failure, anxious NAT themes relate to danger and vulnerability. However, Clark (1992) notes that the number of statements per concept in his study (7 items for depressive NATs, 3 for anxiety NATs and 2 for ITs) is too limited to draw final conclusions.

1.3.2. Worries
Worries can be defined as a “chain of thoughts and images, negatively affect-laden and relatively uncontrollable” (Borkovec, Robinson, Pruizinsky, & DePree, 1983, p. 10). Items linked to worries have also been included in studies measuring the presence of ITs. For example, some questionnaires include statements which have as much, or even more, to do with worries than ITs (e.g.: fear of getting sick, fear of mistakes or errors, fear of sexuality, fear of losing an important object). However, ITs and worries can also be distinguished theoretically and empirically. Turner, Beider, and Stanley (1992) have suggested that worries relate more to everyday life concerns, whereas ITs relate to dirt and contamination themes. According to these authors, worries are also less unacceptable, more stimulus-bound, more resisted, and less intrusive than ITs. They would mainly appear as thoughts, while ITs appear as images, or impulses. Ladouceur and Dugas (1999) add that worries are dynamic scenarios and the person who worries believes that worrying reduces the possibility of these scenarios actualizing. On their side, ITs are often static, and the subject is convinced that their presence increases the possibility that these thoughts come true. Empirically, worries and ITs are distinguishable since worries are more often triggered by a stimulus (Langlois, Freeston, & Ladouceur 2000a), they take more often the form of an internal monologue (Langlois et al., 2000a; Wells & Papageorgiou, 1998), and their content is more acceptable (Langlois et al., 2000a; Langlois, Freeston, & Ladouceur, 2000b) than ITs. Worries, on their side, are less resisted (Langlois et al., 2000a; Wells & Morrison, 1994) and less intrusive (Wells & Morrison, 1994) than ITs. ITs are considered to be less disturbing than worries. Also, the emotional disturbance accompanying a thought differs depending on the nature of the thought. For worries, the emotional disturbance is related to perceived negative outcome for real life problems; for ITs, the emotional disturbance is related to what the thought reveals about one's true nature (Clark & Claybourn, 1997).

Purdon and Clark (1994) established good divergent validity between measures of ITs and worries. However, because most studies do not provide the item set of their questionnaire, it becomes difficult to determine if the questionnaires assessing the presence of ITs were free of items measuring worry and so to establish their content validity. Except in Purdon and Clark (1993), ITs were not expert-rated to validate their similarity to obsessions.
The main consequence of a potential inclusion of NATs and worries in questionnaires measuring ITs is that the prevalence estimate of ITs may be incorrect. Indeed, the ego-syntonic character of NATs and worries could have artificially increased the percentage of individuals reporting ITs.

1.4. Fourth condition: representativeness of ITs

A critical component of studies assessing ITs is for questionnaire items to be representative of the whole concept under investigation (Vallerand, Guay, & Blanchard, 2000). The overrepresentation of some ITs might inflate the prevalence reported in the studies. In this context, we discuss four considerations: the form of ITs, their thematic representativeness, the number of items and the method of selecting items.

1.4.1. Form of ITs

As mentioned previously, ITs generally present themselves in three different forms: thoughts (e.g.: idea, doubt, prohibition), images (mental representation of a situation), or impulses (force or tendency which pushes someone to act). These three forms are not systematically assessed in all studies. For example, ITs appearing as images were not investigated by some researchers (see Niler & Beck, 1989; Rachman & de Silva, 1978; Salkovskis & Harrison, 1984). However, this form of ITs has proven particularly important in distinguishing ITs from worries (Langlois et al., 2000a, 2000b). Any research that does not consider ITs under the form of an image omits a determining characteristic defining ITs.

1.4.2. Thematic representativeness

In studies where a list of ITs is not provided, participants generally have to identify two of their own ITs. This strategy cannot ensure the representativeness of IT themes. It is not established either that individuals are able to distinguish by themselves ITs from other mental phenomena, such as NATs and worries (Clark & Purdon, 1995).

Yao et al. (1996, 1999) listed the main themes examined in studies which had provided a list of ITs to participants. However, in this inventory, all themes specific to obsessions were not represented. Thus, according to Yao et al. (1996, 1999), ITs studied by Rachman and de Silva (1978) and Salkovskis and Harrison (1984) over-represented themes of aggressiveness and sexuality; ITs studied by Purdon and Clark (1993) concerned mostly aggressiveness, sexuality and dirt/contamination/disease; and ITs studied by Yao et al. (1999) related to aggressiveness, sexuality, perfectionism and fear of losing something (object, health). Other themes identified by some authors (Akhtar, Wig, Varma, Pershad, & Verma, 1975; APA, 1994; Rachman, 1998; Yao et al., 1996) were thus neglected, such as religion, enactment of embarrassing acts, need to order things, and hoarding. Moreover, overvalued ideas in subjects suffering from OCD (Kozak & Foa, 1994; Neziroglu, Stevens, McKay, & Yaryura-Tobias, 2001) were not investigated in these studies. Overvalued ideas are distinct from obsessions with poor insight: They are ideas that are not shared by others, but carry a strong personal investment and whose content is strange or bizarre (O’Dwyer & Marks, 2000) (i.e.: If I do not say certain words, God will think me in league with the devil and will punish me; Other people can take possession of my mind).

1.4.3. Number of items

The number of items used to measure ITs is sometimes limited. For example, seven items were used by Freeston et al. (1991), relating to personal health, embarrassing or painful experience, unacceptable sexual behaviour, verbal aggression, fatal disease to friend or family member, friends or family members having an accident, and an open item for an idiosyncratic IT. Of these six statements, only two were exclusively of an obsessional nature (Clark, 1992). Twelve items were used by Yao et al. (1996, 1999), relating to physical problems, dirt, need to know or to remember, being obscene, hurting self, hurting others, losing an object, losing a close other, worry of mistakes, fear of sexuality, imperfection, and an open item for an idiosyncratic IT.

1.4.4. Method of selecting items

The questionnaire items measuring the presence of ITs were mainly conceived after discussions with non-clinical participants. An alternate strategy, which has not been so far adopted, is to choose items from the obsessions of individuals presenting with OCD, in order to identify the authentic content of obsessions and then investigate whether the non-clinical population experiences cognitive intrusions with obsessional content.
1.5. Fifth condition: stability of factor structure

Exploratory factor analyses are reported in five studies measuring the presence of ITs (see Edwards & Dickerson, 1987; England & Dickerson, 1988; Parkinson & Rachman, 1981a; Purdon & Clark, 1993; Yao et al., 1996). Various extraction methods (principal components analysis, principal axis factoring, Rao’s canonical method, maximum likelihood), and rotation methods (Varimax, Oblimin) were used in these studies. In three of these studies (Edwards & Dickerson, 1987; England & Dickerson, 1988; Parkinson & Rachman, 1981a), factor analyses were carried out on parameters relevant to ITs (e.g.: frequency, duration, distress, and acceptability). Factorial structures were not always easy to interpret and did not yield equivalent solutions. For example, the two factors found by Edwards and Dickerson (1987), explaining approximately 70% of the variance, were rather heterogeneous. The first factor was an amalgam of unpleasantness, frequency, duration, and uncontrollability, whereas the second factor included elements of attentional value, intensity, and uncontrollability. The factorial structure found by Parkinson and Rachman (1981a) was similar for all ITs taking the form of thoughts and impulses (5 factors: unpleasantness, controllability, number of intrusions, frequency, and unacceptability), but distinct for ITs taking the form of images (4 factors: unpleasantness/controllability, number of intrusions, unacceptability/discomfort, and control characteristics).

Purdon and Clark (1993) and Yao et al. (1996) carried out factor analyses on the content of ITs. The results of the factor analyses of Purdon and Clark (1993) differed according to the gender of participants. For men, one factor amalgamating sexual and aggressiveness themes explained 32% of the variance. For women, two factors explained 30% of the variance: a first factor regarding sexual and aggressiveness themes, and a second one regarding disease/dirt/contamination themes. In the study conducted by Yao et al. (1996), four factors explained 69% of the variance, namely: (a) fear of loss (health, object, a close one); (b) aggressiveness; (c) fear of sexuality and physical health; and (d) perfectionism. Overall, the results of these studies are inconclusive: The factorial structures are neither equivalent nor stable across studies, and the variation in the percentage of explained variance is considerable (from 30 to 70%).

2. Second key premise: the role of appraisals in the escalation of ITs into obsessions

The OCCWG (1997) originally concluded that six rationally derived belief domains were of central importance in OCD: (a) Inflated responsibility (belief that one has power that is pivotal to bring about or prevent subjectively crucial negative outcomes perceived as essential to prevent and that may have consequences in the real world and/or at a moral level); (b) overimportance of thoughts (belief that the mere presence of a thought indicates that it is important); (c) need to control thoughts (belief that it is important, possible, and desirable to exert complete control over intrusive thoughts, images, and impulses); (d) overestimation of threat (exaggerated belief about the probability or severity of harm); (e) intolerance of uncertainty (belief about the necessity for being certain, that one has poor capacity to cope with unpredictable change, and that it is difficult to function adequately in ambiguous situations); and (f) perfectionism (belief that there is a perfect solution to every problem, that doing something perfectly is possible and necessary, and that even minor mistakes will have serious consequences).

The Obsessive Beliefs Questionnaire (OBQ; OCCWG, 2001, 2003) was developed to assess these six belief domains. However, these theoretically derived belief domains appear to overlap (OCCWG, 2005). High correlations between the OBQ subscales and further analysis on this instrument led the OCCWG to a revision of the OBQ, the OBQ-44, which combines dimensions in three empirically derived belief domains: Responsibility/Threat Estimation, Perfectionism/Certainty, and Importance/Control of Thoughts.

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<td>Resp/Threat</td>
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Note. OCD: obsessive-compulsive disorder; AC: anxious controls (other than OCD); NCC: non-clinical controls; Resp/Threat: Responsibility/Threat Estimation; Per/Cert: Perfectionism/Certainty; Imp/Ctrl Thgts: Importance/Control of Thoughts.

* The AC group was not included in this analysis because of a small sample size.
Perfectionism/Certainty, and Importance/Control of Thoughts. The three tandem factors are intuitively understandable and are more empirically robust than the six rationally derived belief domains (OCCWG, 2005). A confirmatory factor analysis on the OBQ-44 in a French OCD sample replicated the factor structure of the OBQ-44 (Julien et al., submitted for publication). However, the factor structure of the OBQ is not consistent across studies. Some studies revealed a single factor structure (Careau, O’Connor, Turgeon, & Freeston, 2003; Faull, Joseph, Meaden, & Lawrence, 2004). Taylor, McKay, and Abramowitz (2005) found that the beliefs domains in the OBQ are hierarchically structured, with three lower-order factors (the three empirically derived belief domains) loading on one higher-order factor. This higher-order factor explained more variance than did the three lower-order factors (22% vs. 6–7%) in OBQ scores.

2.1. First condition: the specificity hypothesis

According to the specificity hypothesis, it is expected that clients with OCD endorse obsessive belief domains more strongly than patients with anxiety disorders. Table 3 summarizes the studies investigating the status of the specificity hypothesis for the empirically derived belief domains. The studies in Table 3 are limited to the empirically derived belief domains of the OBQ-44, because they have advantages over the rationally derived belief domains of the OBQ (OCCWG, 2005). For findings on the rationally derived belief domains, see OCCWG (2003), Sica et al. (2004), Taylor, Kyrios, Thordarson, Steketee, Frost (2002), and Tolin et al. (2006). It appears from Table 3 that clients with OCD endorse belief domain items more strongly than anxious or non-clinical participants when general distress is not controlled. However, support for the specificity hypothesis is less conclusive when controlling for general distress. So far, participants with OCD do not seem to score significantly higher than anxious participants on the belief domains when anxiety or depression are controlled (Tolin et al., 2006). Significant belief domain differences between OCD and non-clinical participants were found in one study (Julien et al., submitted for publication) when controlling for general distress, but not in another (Tolin et al., 2006) when controlling for anxiety.

Therefore, when general distress is controlled, there is currently no evidence that participants with OCD endorse obsessive belief domains more strongly than anxious participants, and inconclusive evidence that OCD and non-clinical samples differ on the belief domains. These results are problematic for the appraisal model: If OCD and non-clinical participants do not differ in belief domains, then appraisals do not explain why ITs escalate into obsessions; if OCD and other anxious controls do not differ in belief domains, then the model does not explain why OCD individuals develop OCD and not another anxious disorder, and vice versa. Also, a simple cluster analysis has revealed low and high scoring groups on the OBQ-44 total score. It appears that around 55% of the participants with OCD have scores on the OBQ-44 that are similar to those reported by anxious and non-clinical samples (Calamari et al., 2006; Taylor et al., 2006). However, at a recent meeting, the point was raised that clients with OCD need not score high on every OBQ-44 scale, thus clients with a domain specific profile might form a low scoring group on the OBQ-44 total score (P. M. Salkovskis, personal communication, September 23, 2006). But a more complex cluster analysis has revealed that a significant proportion of participants with OCD (26%) did not score high on any of the empirically derived belief domain scales (Calamari et al., 2006; Calamari & Rector, 2006).

2.2. Second condition: the generality hypothesis

According to the generality hypothesis, it is expected that any OCD symptom subtypes are associated with at least one belief domain. OCD is a heterogeneous psychopathology that can be divided into four or five symptom subtypes (Tolin, Woods, & Abramowitz, 2003), commonly: (a) rumination (impaired control over mental activities, i.e. lower ability to remove undesirable thoughts, difficulties in coping with simple decisions and doubts, uncertainty about one’s own responsibility in occasional accidents, ruminative thinking about low-probability dangers, etc.); (b) washing (excessive hand-washing and stereotyped cleaning activities, overconcern with dirt, and worries about unrealistic contaminations, etc.); (c) checking (checking of doors, gas, and water taps, letters, money, numbers, etc., over and over again); (d) impulsive phobia (urges and worries of loss of control of motor behaviour, i.e. urges of violence against animals or things, impulses to kill oneself or others without reason, fear of losing control over antisocial or sexual impulses, etc.); and (e) precision (need to do things in a certain order, to count objects, or to repeat numbers) (van Oppen, Hoekstra, & Emmelkamp, 1995).

Table 4 summarizes the empirical findings obtained by regression analyses and indicates overall that OCD symptom subtypes are associated with belief domains. But results have been equivocal. The links most consistently supported
across studies and shown in Table 4 are between Responsibility/Threat Estimation and rumination symptoms, and between Perfectionism/Certainty and precision symptoms. Calamari et al. (2006) also found a relationship between Perfectionism/Certainty and precision symptoms using cluster analysis. As mentioned, a significant number of clients with OCD score within the range of non-clinical or anxious controls, leading some to conclude that belief domains may not play a role in all OCD symptom subtypes (Calamari et al., 2006; Taylor et al., 2006).

2.3. Third condition: the congruence hypothesis

According to the congruence hypothesis, it is expected that belief domains are related to OCD symptom subtypes in a clinically or theoretically coherent way. All of the links reported between belief domains and symptom subtypes relate to the six theoretically derived belief domains. Rachman and colleagues (Rachman, 1993; Rachman, Thordarson, Shafran, & Woody, 1995) proposed that inflated responsibility is of particular relevance for the checking symptom subtype. The relationship between inflated responsibility and checking symptom subtype has been empirically supported by Tolin, Abramowitz, Brigidi, and Foa (2003). Rachman and Shafran (1998) suggested that inflated responsibility might be more germane for the checking than the washing symptom subtypes. On the basis of correlation and regression analysis, Yao et al. (1999) concluded that the responsibility belief domain was more associated with aggressive obsessional themes, which may be related to the impulsive phobia symptom subtype. According to Sookman and Pinard (2002), the checking symptom subtype may be more intolerant to uncertainty than the washing symptom subtype. Lee and Kwon (2003) argued that overimportance of thoughts and need to control thoughts would be more characteristic of the impulsive phobia and the rumination symptom subtypes than the washing or the checking symptom subtypes.

Currently, there is no coherent model to offer strong predictions about the specificity of the empirically derived belief domains in OCD symptom subtypes. For example, checking and washing symptoms might be distinguished by inflated responsibility (Rachman & Shafran, 1998) or by intolerance to uncertainty (Sookman & Pinard, 2002). It is unclear which of the empirically derived belief domains (Responsibility/Threat Estimation or Perfectionism/Certainty) differentiate between checking and washing symptoms. As mentioned earlier, the most consistent links between belief domains and symptom subtypes are between Responsibility/Threat Estimation and rumination symptom subtype, and between Perfectionism/Certainty and precision symptom subtype. The relationship between Responsibility/Threat Estimation and rumination symptom subtype is coherent, because the rumination symptom subtype is characterized by uncertainty about responsibility towards accidents and thinking about low-probability dangers (Sanavio, 1988). The relationship between Perfectionism/Certainty and precision symptom subtype also makes sense, because clients with precision symptoms feel obliged to do certain things in a certain order to feel right (Frost, Novara, & Rhéaume, 2002).

2.4. Fourth condition: efficacy of cognitive therapy for OCD

If belief domains play an important role in the etiology and maintenance of OCD symptoms, it might be expected that a treatment targeting these belief domains would be effective for OCD. On a cautious note, we should however
keep in mind that the mechanism of change underlying treatment efficacy may not be the theorized ones. Cognitive therapy (CT) based on the appraisal model for OCD typically uses techniques aimed at modifying the belief domains, including behavioural experiments, which have similar features to exposure, but with the purpose of generating alternate appraisals rather than habituation to anxiety. (These cognitive techniques are described in depth in, among others, Clark, 2004; Wilhelm & Steketee, 2006). A manual search of the literature revealed seven papers investigating the efficacy of CT based on the appraisal model (Cottraux et al., 2001; McLean et al., 2001; O’Connor et al., 2005; O’Connor et al., 2006; van Oppen, de Haan, et al., 1995; Whittal, Thordarson, & McLean, 2005; Wilhelm et al., 2005). In these studies, CT has been found to be an effective treatment of OCD. CT was compared to exposure and response prevention (ERP) in most of these studies. It was expected that CT would enhance treatment response (Steketee, Frost, & Wilson, 2002), would provide a greater change than ERP in belief domains (Yaryura-Tobias, 2002), and would reduce treatment refusal and drop-out rate by addressing other symptoms and belief about oneself (Vogel, Stiles, & Götestam, 2004). Generally, CT was as effective as, but not more effective than, ERP in OCD symptom reduction, change in belief domains, treatment refusal, and drop-out rate. In one study (O’Connor et al., 2006), CT produced greater change in obsessional and cognitive measures than medication. CT might compare advantageously to ERP because, as noted by Abramowitz, Taylor, and McKay (2005), it does not include prolonged and repeated exposures to the feared stimuli. Fama and Wilhelm (2005) suggest that it might not be useful to compare CT and ERP, because of the overlap between behavioural experiments and exposure. One possibility would be to compare CT without behavioural experiments to ERP, but then again it would be difficult to control for participants’ treatment adherence, i.e. to make sure that participants in CT trials without behavioural experiment do not expose themselves to feared stimuli or that participants in ERP trials do not use cognitive restructuring during exposure (Fama & Wilhelm, 2005). In fact, when implemented in clinical settings, CT generally involves exposure to the feared stimuli (with the aim of challenging faulty appraisals), and ERP generally involves discussions about belief domains (Abramowitz et al., 2005).

3. Clinical relevance of ITs to obsessional development

Most authors agree that the content of ITs and obsessions is similar. Experienced clinicians have shown difficulty discriminating ITs from obsessions purely on the basis of content (Rachman & de Silva, 1978). However, Warren et al. (2002) point out that in Rachman and de Silva’s study, the accuracy of the raters ranged from 68 to 88%, and that the coefficient kappa ranged from .21 to .70. According to them, it could be argued from these figures that some clinicians can differentiate obsessions from ITs reasonably well on the basis of content, especially since the thoughts reported by clients with OCD were considered as obsessions even though they might also have been ITs (because clients with OCD can have both ITs and obsessions). In spite of this, the consensus in the appraisal model, as mentioned, seems to be that there is no difference between ITs and obsessions except that obsessions develop as a function of appraisal. According to Salkovskis (1999):

The difference between normal intrusive cognitions and obsessional intrusive cognitions lies not in the occurrence or even the (un)controllability of the intrusions themselves, but rather in the interpretation made by obsessional patients of the occurrence and or content of the intrusions. (p. S31)

Nevertheless, factors other than appraisals have been identified as germane to how ITs develop into obsessions, although even then, these other factors are generally considered to be preceded by appraisals. Purdon and Clark (2000) identify four other potential factors: (a) an increase in salience, (b) an increased need to control thoughts due to metacognitive beliefs (and appraisals), (c) distress due to failure to control obsessions and sensitivity to the presence of obsessions, and (d) neutralization. According to Freeston and Ladouceur (1993), ITs and obsessions are basically the same, except for the strategy used in response to the occurrence of these thoughts (e.g. no effortful strategy, escape/avoidance, attentive thinking). Also, low OBQ-44 scores are common among clients with OCD (Calamari et al., 2006; Taylor et al., 2006), which implies that factors other than appraisals play a role in the development of OCD symptoms, or that some people with OCD hold belief domains that are not targeted in the OBQ-44 (Calamari et al., 2006). Appraisals may be more important in non-clinical than in OCD individuals. Indeed, Abramowitz, Khandker, Nelson, Deacon, and Rygwall (2006) found that appraisals had more impact on OCD symptoms for non-clinical participants who had originally less OCD symptoms than for non-clinical participants who originally had more OCD symptoms. Thus, in non-clinical participants, appraisals may play a more important role in distress than in individuals with OCD.
It is also unclear whether appraisals are a cause or a consequence of obsessions. A more experimentally based approach might be to see if manipulation of appraisals influences intensity or type of obsessions and/or see if longitudinal studies support, as expected, a similarity of content between ITs and obsessions for people who develop OCD. The PsycINFO database was searched using words that included experimental study, longitudinal study, and the six rationally derived belief domains. In the case of experimentally based design, experimental studies manipulating appraisals have produced effects on compulsive behaviours. Most of the studies were conducted on non-clinical populations (e.g.: Bouchard, Rhéaume, & Ladouceur, 1999; MacDonald & Davey, 2005), which provides little evidence that appraisals turn ITs into obsessions. Experimental studies on clinical samples (e.g.: Arntz, Voncken, & Goosen, in press; Lopatka & Rachman, 1995) did support a causal role of appraisals. However, experimental studies (with clinical or non-clinical samples) mainly manipulated one theoretical belief domain (inflated responsibility) and lacked control for general distress or other belief domains. It seems important to control for these variables. For example, a manipulation of responsibility may also affect the level of anxiety or other belief domains. In this case, it cannot be concluded that a manipulation of responsibility exclusively affects OCD behaviours if anxiety or other belief domains are not controlled, especially since responsibility seems to be moderated by negative mood (MacDonald & Davey, 2005), mediated by perfectionism (Bouchard et al., 1999), and is linked with overestimation of threat (OCCWG, 2005).

In the case of longitudinal studies, there is little evidence that links the content of ITs to the content of obsessions. Self-themes may determine the importance of the obsessions (Rachman, 1993; Rowa, Purdon, Summerfeldt, & Antony, 2005). In other words, it is not that appraisals make intrusions meaningful rather that self-themes produce meaningful intrusions. However, a prospective study has provided some evidence for a causal role of appraisals in the development of obsessions (Abramowitz et al., 2006). In this study, initial level of appraisals specifically predicted OCD symptoms in participants followed in situations associated with a higher probability of ITs.

Jakes (1996) criticized the suggestion that ITs turn into obsessions as the result of appraisal and neutralization. He argued that the appraisal model minimizes the impact, frequency, and intensity of the obsessions on the subjective response. For example, Jakes notes that someone with infrequent and not very intense impulsive phobia obsessions may very well dismiss the impulses, but would have a normal subjective response of responsibility and guilt (similar to the experience of an individual presenting with impulsive phobia symptoms) should he experience these impulses with the frequency and intensity of a client with OCD. According to Jakes, the processes involved in ITs may be present at a greater degree in obsessions. He also proposes that appraisals and neutralization have no role whatsoever in the process of ITs: they are responses of vulnerable individuals to ITs. He concludes that the appraisals themselves require an explanation.

4. Discussion

The aim of this article was to review two key premises of the appraisal model of OCD, namely that ITs are part of normal experience and that the interpretation given to the presence and content of ITs according to dysfunctional belief domains explains why ITs escalate into obsessions. Clearly, non-clinical populations present ITs similar to some obsessions encountered in OCD. However, ITs may not be that frequent, and the most common ITs seem to occur not more than a few times a year (Purdon & Clark, 1994). In a study reported in Clark and O’Connor (2005), only 11% of cognitive intrusions (ITs and others) of a non-clinical sample included obsessional themes.

Other studies are necessary in order to confirm that ITs are representative of all types of obsessions. If certain types of obsessions do not have an IT equivalent, then processes other than the interpretation given to the content and the occurrence of ITs may distinguish non-clinical and OCD individuals, at least for some types of obsessions. Even if new studies confirm that the great majority of the non-clinical population experiences ITs that are similar to all kinds of obsessions, an additional parameter to consider is the context in which ITs and obsessions occur, and in particular if they occur in the same or different contexts. According to O’Connor, Aardema, and Pélissier (2005), obsessions occur in inappropriate contexts, thus explaining why they are more frequent than ITs. For example, a non-clinical individual could have the thought “There are germs on the door knob” in an appropriate context, after seeing someone sneeze in his hand and then touch the door knob. An individual with OCD could simply have the same thought triggered by an internal narrative remote from the current context. A recent study partly supports this hypothesis: In non-clinical participants, ITs of low and medium scorers on a measure of OCD symptoms occurred more frequently in an appropriate context than in an inappropriate context, whereas ITs of high scorers occurred as often in an appropriate context than in an inappropriate context (O’Connor, Julien, & Aardema, 2006).
Belief domains seem to be related to OCD, but other inference processes not included in the OBQ-44 could play a role in the etiology of OCD (Emmelkamp, 2002). So far, the research on the belief domains relies mostly on retrospective self-report questionnaires, which cannot address the causal direction of the relationship between belief domains and OCD (Clark, 2002). Other assessment strategies (e.g.: semi-structured interview, think-aloud methods, thought listing) might be of interest. There is little congruence between assessment strategies (Clark, 1988), so to rely nearly exclusively on one method (i.e., self-report questionnaires) might give a partial view of belief domains. It would also be interesting to follow intrusions long term, with more longitudinal studies, especially to investigate if the content of ITs is related to the content of obsessions in those who develop OCD. Also, the content of obsessions seems to change over time for many clients with OCD (i.e., clients with OCD concerned with contamination obsessions at one time in their life may at a later time become preoccupied with verification fears; Summerfeldt, Antony, & Swinson, 2005). Longitudinal studies would allow us to examine if the change in content of obsessions is related to a change in belief domains (because of the generality hypothesis) or in self themes, and if so, to ask whether those changes relate to a trigger in the participant’s life.

It is too soon to conclude whether targeting changes in belief domains is significant for treating OCD (Clark, 2002). Rather, ERP may provide optimal conditions to disconfirm belief domains (Steketee et al., 2002). Also, it is not yet clear if changes in belief domains precede or follow changes in OCD symptoms (Steketee et al., 2002), or if these changes in belief domains are an artefact of changes in mood states (Emmelkamp, 2002; Steketee et al., 2002). Given the lack of evidence for the extra benefit of adding CT to ERP in the reduction of OCD symptoms, the fact that belief domains can be modified in the absence of CT, and that CT does not reduce drop-out rates, should CT be dismissed for OCD? According to Clark (2005a), such a conclusion is premature, for four reasons. First, cognitive therapy is approximately as effective as ERP for reducing OCD symptoms. Second, more controlled studies are needed to examine the effect of adding CT to ERP. Third, a combination of CT and ERP might be more effective for specific symptom subtypes, such as ruminating or hoarding. Fourthly, CT might have a positive effect on relapse prevention. Therefore, CT still has a role in the treatment of OCD, especially if it proves to be as effective as ERP, but without requiring the participants to be exposed to the feared stimuli for long periods of time.

An alternative hypothesis to the appraisal model is that ITs and obsessions with similar content are in fact unrelated phenomena. In this case there is no continuum or progression of ITs into obsessions but rather obsessions develop according to processes completely distinct from the processes producing ITs. In this case, the content of obsessions itself could become a target for treating OCD. Whilst Steketee (1999) advises against treating the content of obsessions in therapy, Trinder and Salkovskis (1994) stress the importance of considering the content of certain types of obsessions during therapy, such as over-valued ideas. Thus, targeting obsessions as well as dysfunctional beliefs could improve the effectiveness of OCD treatment (O’Connor, Aardema, Bouthillier, et al., 2005).

The presence of ITs is pivotal to the appraisal model of OCD. In consequence, it seems important in future research to replicate the basic findings of universality of ITs with a more robust methodology to help confirm or alternatively qualify the model. The measure with soundest psychometric properties seems to be the one developed by Purdon and Clark (1993), but their measure is not representative of all obsessions because it omits themes such as the fear of loosing something, the need to put things in a certain order, hoarding, perfectionism, and overvalued ideas. A new questionnaire measuring the presence of obsessional themes in the non-clinical population is desirable. The items of the questionnaire could be based on the obsessions of clients with OCD instead of on the ITs of non-clinical participants. Ideally, this questionnaire would be expert-rated to be representative of all obsessions and its items would not reflect any concept other than obsessions. This could improve convergent/divergent validity of the measure, because so far it is not clear that ITs are more related to OCD symptoms than to depression or anxiety. The factorial structure of such a questionnaire would likely be more satisfactory and stable than the current questionnaires since themes would be more anchored in existing OCD symptom subtypes. It would also be important that this questionnaire be administered to a representative sample of the non-clinical population, and on whom its temporal stability would be evaluated. Comparisons of context of occurrence of ITs and obsessions are of interest. Longitudinal and experimental designs are needed to confirm, clarify or expand our actual knowledge in the OCD field; knowledge that relies mostly on self-report questionnaires. Additional empirical evidence is needed to support the specificity of belief domains in OCD. The effect of mediators such as gender or age merits more attention. Regarding treatment efficacy, a complete dismantling design (comparing CT, ERP, and a combination of CT and ERP) could be informative and permit conclusions on the most effective ingredient of treatment.
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