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Obsessive Intrusive Thoughts in the General Population

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Abstract

Intrusive thoughts feature as a key factor in our current understanding of Obsessive-Compulsive Disorder (OCD). Cognitive theories of OCD assume that the interpretation of normal intrusive thoughts leads to the development and maintenance of the disorder. Research that supports the role of beliefs and appraisals in maintaining distress in OCD is based on the supposition that clinical obsessions are comparable to normal intrusive thoughts. This paper reviews research investigating the occurrence of intrusive thoughts in a non-clinical population, in order to assess if these thoughts are comparable to obsessions. The prevalence of intrusive thoughts with obsessive content is assessed, as well as other aspects of these thoughts, such as triggers, appraisals and response strategies. Through critique of literature in this field, this paper goes on to discuss the implications for future research.

Keywords: Obsessive-Compulsive Disorder; intrusive thoughts; obsessions; continuum.

1. Introduction

Intrusive thoughts are central in the current understanding of Obsessive Compulsive Disorder (OCD). DSM IV criteria (American Psychological Association [APA], 1994) specify recurrent and persistent thoughts (verbal, impulses or images), experienced as intrusive and inappropriate causing marked anxiety and distress. Cognitive models argue that intrusive thoughts contribute to the development and maintenance of OCD; these theories dominate our understanding of the disorder, as well as the recommended treatment (National Institute for Health and Clinical Excellence [NICE], 2005). Pioneering research by Rachman and de Silva (1978) can be cited as an instigating factor in the development of cognitive models of OCD. This questionnaire study investigated the presence of "intrusive, unacceptable thoughts and impulses, their frequency and dismissibility" (p.233), in a sample of non-clinical individuals and found that 80% described experiencing intrusive thoughts similar in content and form to clinical obsessions. Comparisons with reports from a limited sample of OCD patients highlighted differences in frequency, duration and intensity of intrusive thoughts. In addition, clinical participants appraised their thoughts as less acceptable, less able to resist and less dismissible than nonclinical participants. The authors concluded that intrusive thoughts that resemble clinical obsessions are a common experience for nonclinical individuals. Clark and Rhyno (2005) described a severity continuum, whereby obsessions represent the extreme variant of intrusive thoughts, distinguished by a number of dimensions, for example, frequency, distress, and perceived thought control. Such a continuum hypothesis forms the basis for cognitive models of OCD.

Cognitive theories of OCD converge on the proposition that the individual's understanding of 'normal' intrusive thoughts is central in the development and maintenance of OCD, although they differ on the specific interpretation of intrusive thoughts. Rachman (1997, 1998) argued for the a central role of beliefs that fuse the intrusive thought to the event or action; whereas, Salkovskis' (1985, 1999) theory placed emphasis on the belief that one is responsible for harm coming to oneself or others. A meta-cognitive understanding of OCD (Wells & Matthews, 1994; Wells, 1997) emphasises the role of beliefs about the significance of intrusive thoughts, including control of cognition and thought-fusion beliefs (as described by Rachman). Within each theory, negative appraisals of intrusive thoughts increase the salience of the thought, and subsequent attention to and accessibility of the thought and related stimuli. In addition, behavioural responses, such as neutralization and compulsions, are seen as attempts to reduce the perceived threat, responsibility or the occurrence of the thought. However, these responses maintain the disorder by preventing disconfirmation of beliefs about intrusive thoughts.

Previous research supports the role of interpretations of intrusive thoughts in OCD. Correlational studies with non-clinical populations have demonstrated a positive relationship between OCD symptoms or obsessionality and responsibility appraisals (Rheaume, Freeston, Dugas, Letarte, & Ladouceur, 1995; Pleva & Wade, 2006); thought fusion beliefs (Rachman, Thordarson, Shafran & Woody, 1995; Amir, Freshman, Ramsey, Neary, & Brigidi, 2001); and meta-cognitive beliefs (Emmelkamp & Aardema, 1999; Wells & Papageorgiou, 1998). OCD patients have reported higher levels of each proposed belief compared to non-clinical controls (responsibility, Salkovskis et al., 2000;

thought-action fusion, Shafran, Thordarson, & Rachman, 1996; meta-cognitive beliefs, Janeck, Calamari, Riemann, & Heffelfinger, 2003). Experimental manipulations of thought-action fusion and responsibility beliefs demonstrate increased obsessive-compulsive symptoms and behaviour (Rassin, Merckelbach, Muris & Spaan, 1999; Lopatka & Rachman, 1995; Ladouceur, Rhéaume & Aubelt, 1997; Moulding, Kyrios, & Doron, 2007). However, this research is limited insofar as it assumes the accuracy of the theoretical proposition that 'normal' intrusive thoughts are the "raw material for full obsessions" (p.797, Rachman, 1997).

In a critique of the appraisal model of OCD (e.g. Salkovksis, 1985, 1999), Julien, O'Connor, Aardema (2007) challenge the assumption that the interpretation of 'normal' intrusive thoughts cause their development into obsessions. Julien et al. critique previous findings on the universality of intrusive thoughts for inconsistent definitions intrusive thoughts, inconsistent methods, and generalization from student populations. The authors concluded that the research lacks the necessary consistency to provide strong support for the appraisal model of OCD, and recommend further improved research to test the model using a consistent and robust methodology. Julien et al. critiqued the methodology of research on intrusive thoughts; however, the paper lacks a detailed consideration and comparison of the findings. The current paper aims to fill this gap by providing an up-to-date narrative review of research investigating intrusive thoughts in non-clinical populations, in order to assess the accuracy of the basic premise of cognitive models of OCD: that intrusive thoughts and clinical obsessions lie on a continuum. Additional research since 2007 (eight papers) are considered within this review alongside previous work. Research findings on the prevalence of intrusive thoughts in nonclinical samples

are considered to assess the assumption that they are a common nonclinical experience. A discussion of the nature of intrusive thoughts in nonclinical samples, including, themes, triggers, appraisals, and responses, assesses their similarity with their proposed clinical counter-parts. The paper concludes with a discussion of the differences between 'normal' intrusive thoughts and clinical obsessions currently indicated by the research reviewed.

Differences in the definition of the term 'intrusive thoughts' throughout the literature are discussed within this review; however, for the purposes of the review 'intrusive thoughts' refers to cognitions that are spontaneous, disruptive, difficult to control and unwanted (Rachman, 1981) and may include verbal thoughts, images, or impulses. A review of the literature was conducted on 26/11/2010 via web of science and PsycINFO databases; search words such as intrusive thoughts, non-clinical obsessions, and intrusions, cognitive were used. The search was limited to journal articles written in English, published from 1978 onwards. A manual search of the references of each paper concluded the search of the literature. Of the resultant articles, empirical papers were included if they investigated intrusive thoughts within a non-clinical sample in the theoretical context of OCD. This resulted in a total of 35 research papers.

2. Intrusive Thoughts in Non-Clinical Samples

2.2 Prevalence of non-clinical intrusive thoughts

Since 1978, a number of questionnaire studies have aimed to replicate the findings of Rachman and de Silva (1978) and demonstrate that intrusive thoughts are a common nonclinical experience. A similar methodology has required nonclinical participants to endorse intrusive thoughts from a list. Salkovskis and Harrison (1984) used the questionnaire from Rachman and de Silva to confirm that 88% of a sample of

nonclinical individuals endorsed at least one intrusive thought. Purdon and Clark (1993) and Belloch, Morillo, Lucero, Cabedo, and Carrió (2004) similarly reported that 99% of nonclinical samples reported ever experiencing at least one specific obsession-like intrusive thought listed in the Obsessive Intrusions Inventory (OII/ROII), which defines intrusive thoughts as egodystonic (in conflict with person's self-image). These items were drawn from the clinical literature and from intrusive thoughts reported by a nonclinical pilot sample (Purdon & Clark, 1993). However, it is worth noting that in the development of the final OII 16 items were excluded because less than 25% of a nonclinical sample endorsed these thoughts. Therefore the questionnaire was biased toward thoughts already commonly reported by nonclinical individuals, which suggests that the 99% reported in these two studies may be an overestimate.

In another item endorsement study by Langlois, Freeston, and Ladouceur (2000a), all participants indicated either a frequent or best representative intrusive thought. Two clinicians rated how typical of an obsession each thought was: 74% of intrusive thoughts reported by this non-clinical sample were rated as clearly recognisable as an obsessive intrusive thought (items related to aggression, checking and sexuality). More recently Rassin, Cougle, and Muris (2007) investigated the classification of intrusive thoughts as 'obsession like'. Nonclinical participants endorsed fewer clinical obsessions (12.2% from a list reported by OCD patients) than nonclinical obsessions (29.1% from a list taken from Rachman & de Silva, 1978); endorsement of clinical obsessions was positively associated with obsessionality (Padua Inventory). The data from this study reflects the variation in endorsement of intrusive thoughts, but does not report statistics on how many participants overall reported their occurrence (i.e. prevalence). The findings provide

support for the occurrence of obsessions in nonclinical populations, but suggest the both those of clinical origin are less commonly experienced.

In the recent development of The Obsessional Intrusive Thoughts Inventory, García-Soriano, Belloch, Morillo and Clark (2011) presented nonclinical and clinical (OCD) participants with a list of forty-eight intrusive thoughts, which aimed to be more representative of clinical obsessions, therefore, nonclinical intrusions were not included, and expanded on the clinical intrusions used in the ROII. Participants were asked to indicate how frequently they experience each thought. The endorsement of these items by the nonclinical sample indicates that nonclinical individuals do experience obsessive intrusive thoughts similar to clinical individuals. A comparison of the two groups indicated differences in frequency of intrusive thoughts, thus supporting the hypothesis that obsessive intrusive thoughts are experience more frequently in the clinical population. The authors concluded that intrusive thoughts are comparable between nonclinical and clinical populations, and that the difference lies in the frequency of those experiences, thus supporting the continuum model of intrusive thoughts.

The method of endorsement of thoughts from a list of items employed within the studies already discussed fails to take account of individual differences in the content of intrusive thoughts; however, idiosyncratic thoughts have also been considered. Freeston, Ladouceur, Thibodeau, and Gagnon (1991) included space for idiosyncratic thoughts on the Cognitive Intrusions Questionnaire (CIQ) and the Intrusive Thoughts Questionnaire (ITQ); similar to rates reported in studies using the OII (Purdon & Clark, 1993; Belloch et al., 2004), 99% of participants in this study experienced at least one intrusive thought in the past month. In studies of self-reported intrusive thoughts over a two-week period,

high prevalence rates have been reported: 83.5% (England & Dickerson, 1988) and 93% (Wells & Morrison, 1994) of nonclinical participants reported at least one intrusive thought. However, other studies that have screened thoughts reported by nonclinical participants have reported much lower rates: Clark and Purdon (2009) considered only 41% of idiosyncratic intrusive thoughts reported retrospectively from a two-week period to be obsessional in nature (rated by two researchers); Trinder and Salkovksis (1994) screened in only 56% of respondents to a study on thought suppression, based on criteria of experiencing negative intrusive thoughts in the previous month. There are marked differences in the figures obtained using item endorsement on a questionnaire compared to idiosyncratic intrusive thoughts, but also within each method.

The wide range in possible prevalence rates of intrusive thoughts in nonclinical participants (41% to 100% in the research discussed) could be a product of differences in methodology, including differences in the definition of intrusive thoughts as well as the criteria for ‘obsessive’. Definitions have been broad, such as “unpleasant, unwanted thoughts” (p.550, Salkovskis & Harrison, 1984) and specific, such as “repetitive, upsetting and unwanted thoughts, images or impulses that suddenly appear in consciousness and are considered irrational, unrealistic, foreign to one’s character, and difficult to control” (p.715, Purdon & Clark, 1993). In addition, the different measures that list intrusive thoughts include different themes, for example, the CIQ (Freeston et al., 1991; used by Langlois et al., 2000a) assesses cognitions around personal health, an embarrassing or painful experience, personally unacceptable sexual behavior, verbal aggression, friend or family suffering from a fatal disease, and friend or family having an accident. In contrast, the OII (Purdon & Clark, 1993; used by Belloch et al., 2004) covers

thoughts of sex, aggression, dirt and contamination. This may be considered an issue related to definition, but an issue that would certainly effect the reliability between reported prevalence rates.

A further limitation in the current literature relates to the differences in methodology of measurement, specifically the use of retrospective measures and real-time measures. With the exception of Wells and Morrison (1994), the studies reviewed in this section employed retrospective methods for the assessment of intrusive thoughts, including the use of questionnaire measures (e.g. OII/ROII) and interview methods (e.g. Clark & Purdon, 2009). Retrospective reports are reliant upon the participant recalling and forming a judgment on past experiences, which may present some difficulty when considering which thoughts could be classified as ‘intrusive’. Real-time measurement of intrusive thoughts may overcome the difficulties associated with accurate recall; however, laboratory experiments of specific intrusive thoughts could serve to prime the experience and therefore result in an over-estimation of prevalence. Wells and Morrison’s method of measuring intrusive thoughts over recording intrusive thoughts in a diary over a limited time period may offer a means of naturalistic measurement; however, this method also presents with limitations, such as under-reporting due to forgetting.

In addition to the limitations of retrospective and real-time measurement, the time frame of assessment has presents a challenge to the reported prevalence rates. The time-frame of assessment has varied between studies: participants have been asked about intrusive thoughts that have ever occurred (e.g. Salkovskis & Harrison, 1984; Purdon & Clark, 1993; Rassin, Cougle, & Muris, 2007), occurred within the last month (e.g. Freeston et al., 1991) and within a two week period (e.g. England & Dickerson, 1988).

Different time frames mean that the research findings represent relative frequency of intrusive thoughts, as well as an estimate of prevalence. Frequency is a potential key difference between clinical and nonclinical intrusive thoughts (Clark & Rhyno, 2005): In a direct comparison of nonclinical and OCD patients using the OII, Morillo, Belloch, and García-Soriano (2007) reported significantly more intrusive thoughts experienced by the OCD group; further analysis confirmed that this was due to re-experiencing rather than greater variety of intrusions. These findings highlight the importance of distinguishing between the experience of intrusive thoughts and the regularity of that experience.

The inconsistencies in methodology make it difficult to draw specific conclusions on the prevalence of obsessive intrusive thoughts in the general population; tighter constraints in terms of definition of intrusive thoughts, timeframe of assessment, and themes assessed are necessary. A consensus on a definition of intrusive thoughts is required in order to establish how prevalent such thoughts are in the general population. Consideration of the nature of intrusive thoughts and the similarities and differences with obsessions will be essential in the development of such a specific definition, as well as in the assessment of the proposed continuum between the two. Previous research on intrusive thoughts in nonclinical samples has drawn comparisons with clinical obsessions on specific features, including themes in content, triggers, appraisals and response strategies. The current paper will now turn to a broad consideration of this research in order to assess the comparability of intrusive thoughts and obsessions; the literature is discussed in terms of themes, triggers, appraisals, and response strategies. Some studies are detailed in more than one area.

2.2 Themes

In an experimental study of thought suppression in OCD, Rutledge (1998) initially asked participants to report their most frequently occurring personal unwanted and repetitive intrusive thought, prior to engaging in any suppression or otherwise. Two independent raters subsequently rated the content of each unpleasant intrusive thought according to the following themes: current/past romantic relationship (23.9%), death of or injury to self or other (20.2%); academic performance (17.4%) and money (10.1%). This study is discussed and placed within the context of OCD; however, the themes of the reported intrusive thoughts are not commonly considered as obsessional. This could be a result of the broad definition of intrusive thoughts employed, which did not specify an obsessive component. Although this study was conducted within an experimental setting, the data collected on themes of intrusive thoughts is based upon reports that are retrospective. Further studies have utilised retrospective reporting through questionnaire measures of intrusive thoughts, and classified the content of each item according to themes.

Purdon and Clark (1993, 1994, 2001) used the OII to limit their research to intrusive thoughts with obsessional content (Purdon & Clark, 1993); intrusive thoughts in this measure cover themes of sex, aggression, accidents, dirt, disease and contamination. Purdon and Clark (1994) reported items often selected as most upsetting included: running car off the road (6%); leaving heat or stove on thereby causing an accident (10%); having sex with an unacceptable person (11%); engaging in activity contrary to one’s sexual preference (8%). Purdon and Clark (2001) made use of the most upsetting intrusive thought reported in the OII within a thought suppression experiment. The content of the intrusive thoughts most often selected as most upsetting were consistent

with those reported by Purdon and Clark (1994), with the addition of thoughts of self-harm. Clark, Purdon, and Byers (2000) reported the most upsetting sexual and non-sexual intrusive thoughts in a student sample using the OII. Non-sexual items most often selected as most upsetting included: 'leaving the house without doing something important to prevent burglary or accident' (accident); 'when using a sharp object that I will slit my wrist or throat or otherwise harm myself' (harm); 'saying something rude or insulting to others' (aggression). The most upsetting sexual items included 'being sexually victimised'; 'having sex in public'; 'engaging in a sexual act with someone who is unacceptable to me because they have authority over me'. The findings from these three studies suggest that the most upsetting intrusive thoughts for non-clinical individuals relate to harm, accident or sex, but not disease and contamination. However, Belloch et al. (2004) reported that items from the OII most often selected as most upsetting included contamination ('I am going to catch a sexually-transmitted disease from touching a toilet seat or tap'), as well as accidents (leaving door unlocked), harm (jumping from a high place) and sex (having sex with an unacceptable person). Belloch et al. also reported the frequency of intrusive thoughts: The ten items reported to occur most frequently related to themes of accident, harm, sex and aggression; the top three items related to uncertainty and checking and ordering. The least frequently occurring items related to aggression (to self and others) and bizarre contamination.

The content of thoughts commonly reported by nonclinical samples across studies fall broadly into themes of unacceptable sex, accidents, harm to self and aggression toward others. Thoughts of dirt, disease and contamination, appear to be less commonly reported by nonclinical participants. This result may be a consequence of the age of

participants within studies, and their stage of life. Many of the nonclinical samples in the studies reviewed were selected from undergraduate student populations, for example, the studies by Purdon and Clark recruited undergraduates with a mean age of 18 years (1993, 1994) and 19.59 years (2001). The results from these studies suggest that thoughts about contamination are not frequently reported by nonclinical individuals. However, this may be an artefact of the age of the sample, as thoughts of contamination and dirt may be less significant to a younger sample. In support of this, Belloch et al (2004) reported contamination thoughts as one of the most often selected as most upsetting by their community sample with a broader range of age (19 to 62 years; mean = 27 years). However, the same study reported that thoughts of bizarre contamination were not frequently reported by this nonclinical sample. Therefore, there is some discrepancy between thoughts that occur frequently and those that are considered upsetting. Perhaps there is something unique about contamination thoughts, possibly that they are not prevalent in the general population, but that when they occur they do cause distress, which may indicate a possible difference between the content of clinical and nonclinical intrusive thoughts. The findings from Purdon and Clark (1993) and Belloch et al. (2004): that thoughts of disease and contamination were least often endorsed by a nonclinical sample support the idea that these thoughts may be unique. Further support is provided by the work recently conducted by García-Soriano, Belloch, Morillo and Clark (2011), who compared intrusive thoughts reported by a nonclinical community sample (with a broad age range of 16-60 years, mean = 29.47) and a clinical sample (age range of 18-54 years, mean = 35.83years). Participants from both groups were asked to select their most disturbing intrusive thought from a list of forty-eight items within the following subscales

that describe the themes: aggressive; sexual/relationship/immoral; symmetry and order; doubts, mistakes and checking; contamination; superstition/magical. In a direct comparison of the selected thoughts, no differences were observed between the proportion of participants who selected their most upsetting thoughts from aggressive, sexual or order subscales. However, the clinical group were found to have reported a greater proportion of their most upsetting thought from the contamination and superstition subscales. In addition, the nonclinical group reported a greater proportion from the doubt subscale. This most recent study overcomes the age issue that limited previous findings, and supports the conclusion that there may be something uniquely upsetting about contamination thoughts, which may constitute a difference between nonclinical and clinical intrusive thoughts in terms of content.

The potential difference in the content of clinical and nonclinical intrusive thoughts indicated by the literature reviewed in this section requires further consideration to clarify whether this constitutes a qualitative difference that distinguishes two thought types, or whether the more bizarre thoughts endorsed by clinical samples could be considered a more severe version of the nonclinical thoughts. The severity of the thought content could play a crucial role in distinguishing clinical and nonclinical intrusive thoughts and may impact upon subsequent distress and reactions in relation to the experience of such thoughts. Rassin et al. (2007) found that although similar in theme (aggression, harm, sex, illness, death and religion), fewer clinical intrusive thoughts (12.2%) compared to non-clinical thoughts (29.1%) were endorsed by non-clinical individuals. Belloch et al. (2004) found that the least endorsed items on the OII by a nonclinical sample related to ‘severe’ aggression and bizarre contamination. Obsessions

may remain similar in theme to their nonclinical counter-parts, but be more severe or bizarre. Further consideration of this specific difference is necessary in future research, which is discussed in more detail in the future directions section below.

A further potential difference between intrusive thoughts in clinical and nonclinical populations indicated here is the variance in thoughts experienced. The studies discussed in this section have reported a wide range in the endorsement of most upsetting intrusive thoughts (Purdon & Clark, 2001; Belloch et al., 2004), for example, Purdon and Clark (1994) reported that 45 out of 52 items on the OII were endorsed by their nonclinical sample. Consistent with these findings, Clark and Claybourn (1997) reported a mean score on the OII of 47.86, and a standard deviation of 35.82, reflecting the variation in responses. These findings suggest considerable individual differences in the content of intrusive thoughts and emotional reactions to them. Previous research suggests a link between the variance in intrusive thoughts experienced by the individual and anxiety (Niler & Beck, 1989). Future research should clarify the between- and within-participant variations in intrusive thoughts and the relationship with psychopathology.

2.3 Triggers

Lee and Kwon (2003) proposed two types of obsessional intrusive thoughts, differentiated by their trigger. Autogenous intrusive thoughts are ‘out of the blue’, with a symbolic or less than logical connection with stimuli, e.g. sexual, aggressive and immoral thoughts; reactive intrusive thoughts are more logically linked to stimuli, e.g. thoughts about contamination, accidents and symmetry. Lee and Kwon argue that the trigger determines consequent appraisals and control strategies used. Autogenous thoughts are

appraised in terms of control and importance, and subsequently avoidance and thought control are employed. Reactive intrusive thoughts are appraised in terms of responsibility and subsequently control behaviours or compulsions are employed. Responses on the OII from nonclinical individuals and OCD patients supported this distinction (Lee & Kwon, 2003; Lee, Kwon, Kwon, & Telch, 2005).

Julien, O'Connor, and Aardema (2009) reported findings from a comparison of reports from nonclinical and clinical individuals that suggest that autogenous intrusive thoughts are more common in OCD. Participants reported the frequency of intrusive thoughts from a list, which originated from clinical populations. For the three intrusive thoughts rated as most disturbing, participants then rated the link between the thought and the context as either directly linked, indirectly linked or no link. Non-clinical individuals were more likely to report that their most disturbing intrusion was directly linked to the context of its occurrence (approximately half, with one third indirectly linked), whereas clinical individuals were more likely to report an indirect link (approximately half, with one third directly linked). The authors concluded that this difference in trigger presents a challenge for the continuum hypothesis, as it suggests that nonclinical and clinical intrusive thoughts differ. However, the validity of this conclusion is uncertain, as significance analysis was not possible.

The results from Lee and Kwon (2003) and Julien et al. (2009) demonstrated that nonclinical individuals experience both hypothesised types of intrusive thoughts. However, the proportions reported by Julien et al. differ from previous findings: Parkinson and Rachman (1981) reported that 69% nonclinical intrusive thoughts had identifiable triggers; Rachman and de Silva (1978) reported that 55% of clinical

obsessions had identifiable triggers. It may be that a greater proportion of intrusive thoughts without an identifiable trigger or logical connection to the context contributes to the development of OCD. In support of this idea, Parkinson and Rachman (1981) found that the less frequent 'spontaneous' intrusive thoughts were reported to be more tormenting, discomforting and anxiety-provoking. Further research is needed to clarify the difference in reported triggers of non-clinical intrusive thoughts and clinical obsessions, and whether this is a distinguishing difference, which may consequently impact appraisal and response.

2.4 Appraisal

Appraisal is the way in which meaning is attached to intrusive thoughts (OCCWG, 1997), which may be influenced by a general enduring belief style about mental events (e.g. metacognitive beliefs). Cognitive models emphasise the role of the appraisal of intrusive thoughts in the development and maintenance of OCD; analogue studies with nonclinical samples have assessed the link between appraisals and other factors implicated in the development of OCD, such as frequency of intrusive thoughts and emotion.

Questionnaire studies have correlated appraisals of perceived dismissibility and control of intrusive thoughts with increased frequency and emotion. Dismissibility has been positively correlated with distress and frequency of intrusive thoughts (Salkovskis & Harrison, 1984), anxiety and guilt (Niler & Beck, 1989). Perceived control has been positively correlated with frequency of intrusive thoughts (Purdon & Clark, 1994), perceived consequences of the thought (Clark, Purdon, & Wang, 2003), unpleasantness of the thought (Belloch et al., 2004), and obsessionality (Clark et al., 2003). Appraisals of intrusive thoughts in terms of control over cognition has also been linked to the beliefs

implicated in the development of OCD, such as thought-action fusion and responsibility. Clark et al. (2000) found that thought-action fusion positively correlated with perceived control of both sexual and non-sexual intrusive thoughts. Purdon and Clark (1994) reported that uncontrollability and frequency were associated with responsibility appraisals; furthermore, in the development of the CIQ, Freeston Ladouceur, Thibodeau, and Gagnon (1992) reported that the evaluation of intrusive thoughts (interpreted the responsibility appraisal), predicted dysphoria, and uniquely predicted compulsive activity.

Appraisals of intrusive thoughts in terms of their egodystonic nature have also been considered characteristic of obsessive thoughts, and key in causing distress; these appraisals have been linked to frequency of intrusive thoughts and distress in nonclinical samples. In a questionnaire study, Clark and Claybourn (1997) found that the belief that the thought may mean something about one's personality best predicted frequency of intrusive thoughts; Langlois et al. (2000b) correlated egodystonic appraisals with stronger emotions about intrusive thoughts. Egodystonia has been linked to the interpretation of intrusive thoughts: Teachman, Woody, and Magee (2006) reported that interpretations of intrusive thoughts were negatively affected by an experimental manipulation to appraise the thought as meaning something about one's values. Corcoran and Woody (2008) reported that imagining an intrusive thought as the participant's own or that of their friend did not alter appraisals of the personal meaning of the thought; however, increased frequency of the same intrusive thought increased the strength of those appraisals. Therefore an intricate link between appraisals of intrusive thoughts, frequency and distress has been implicated by studies with nonclinical samples.

The research findings demonstrate that nonclinical individuals can interpret their intrusive thoughts in terms of the beliefs and appraisals implicated by theories of OCD. Consistent links between appraisals and frequency of intrusive thoughts support the hypothesised quantitative differences and the continuum between clinical and nonclinical intrusive thoughts. However, there has been variation in the appraisals linked to frequency of intrusive thoughts: the following appraisals have all predicted frequency of intrusive thoughts: dismissibility (Salkovskis & Harrison, 1984), guilt (Niler & Beck, 1989), uncontrollability, and belief that the thought could come true/responsibility (Purdon & Clark, 1994; Belloch et al., 2004), perceived consequences (Clark et al., 2003), worry the thought may mean something about one's personality (Clark & Claybourn, 1997). Studies comparing nonclinical groups with OCD patients shed some light on the potential key appraisals. Morillo, Belloch, and García-Soriano (2007) reported quantitative differences in responsibility (worry the thought will come true) and control (importance of control and uncontrollabililty), such that OCD patients made greater appraisals of their intrusive thoughts than nonclinical individuals. The OCCWG (2001, 2005) developed the Obsessive Beliefs Questionnaire and Interpretation of Intrusions Inventory with both nonclinical and clinical samples. Higher scores in the OCD group demonstrated quantitative differences in general assumptions (overestimation of threat, tolerance of uncertainty, importance of thoughts, control of thoughts, responsibility and perfectionism) and specific appraisals relating to the importance of thoughts, control of thoughts and responsibility. Consistent differences in appraisals of responsibility, uncontrollability and importance of intrusive thoughts suggest that these may be a key difference between nonclinical intrusive thoughts and obsessions. Future

research should aim to replicate these findings and explicitly link different appraisals with frequency of intrusive thoughts and symptoms. The effects of different appraisals on measures of frequency, distress and symptoms should be considered to assess which is important in the development of OCD. Alternatively, as suggested by the metacognitive theory, the division of these appraisals may turn out to be arbitrary, and rather the important factor may be underlying beliefs about mental processes.

Appraisals have also been linked to the response strategies that nonclinical individuals engage in following an intrusive thought, such as thought suppression, which are hypothesised to have a maintaining role in OCD (e.g. Salkovskis, 1999). Therefore, consideration of response strategies is important in the comparison of nonclinical intrusive thoughts with clinical obsessions. Research findings linking suppression and responsibility in particular have been mixed. Purdon and Clark (2001) found that suppression of obsessional intrusive thoughts increased subsequent discomfort, but did not effect frequency of intrusive thoughts nor appraisals of pleasantness and responsibility. Marcks and Woods (2007) manipulated thought suppression and responsibility appraisals, which increased intrusive thought frequency over a 5-minute period; in addition, positive correlations between suppression and responsibility appraisal contradicted the findings of Purdon and Clark. Suppression was also related to a stronger urge to neutralise, increased anxiety and guilt, and perceived likelihood of the thought coming true. Further consideration of response strategies to intrusive thoughts in nonclinical individuals is important in consideration the similarities between intrusive thoughts and clinical obsessions.

2.5 Response strategies

Response strategies used by nonclinical individuals have been compared to OCD populations. Previous research has demonstrated that the most commonly selected response by nonclinical individuals is a reasoning strategy, to reason with the self and prove that the thought is irrational (22%, Purdon & Clark, 1994; Clark et al., 2000). Furthermore, no differences in response strategy have been found between high and low obsessors (Purdon & Clark, 1994), which suggests that similar strategies may be used by clinical and nonclinical populations.

Previous research has investigated the factors that determine the selection of response strategy. Clark et al. (2000) demonstrated that non-sexual intrusive thoughts prompted the use of cognitive and behavioural distraction, reassurance seeking and thought stopping more than sexual intrusive thoughts; the authors concluded response strategy may be selected on the basis of the content of the intrusion. Langlois et al. (2000b) demonstrated that appraisal also determines response strategy: escape/avoidance strategies were accounted for by appraisals of egodystonia, whereas, problem-focussed strategies (including neutralisation and reassurance seeking) were accounted for by appraisals of the reality of the intrusive thought. Clark and Purdon (2009) similarly linked appraisals to response strategy: common reasons for dismissal of intrusive thoughts were that they were ‘immoral/unethical’ and ‘inconsistent with ideal self’.

Freeston et al.’s (1991) findings also support the use of escape/avoidance strategies by nonclinical individuals. In this questionnaire study, participants reported their use of response strategies from three categories: avoidance/escape (40% of participants), thinking attentively (36%), and doing nothing (24%). Freeston et al. (1991)

correlated these clusters with aspects of intrusive thoughts: In comparison to the do nothing strategies, participants who engaged in avoidance reported increased mood difficulties (sadness, worry and guilt), and disapproval of the thought; those who engaged in attentive thinking strategies reported more frequent and more varied forms of intrusive thoughts. The authors concluded that appraisal of intrusive thoughts determines a response style of avoidance or confrontation.

Effortful strategies also include thought suppression, which has been linked to the maintenance of OCD (e.g. Salkovskis, 1999). In a detailed analysis of control strategies used with intrusive thoughts, Clark and Purdon (2009) found that suppression was correlated with obsessional symptoms; the authors concluded that processes similar to those in clinical obsessions exist in nonclinical intrusive thoughts. However, experimental studies of thought suppression have demonstrated mixed results. Rutledge (1998) asked participants to report the frequency of personal intrusive thoughts before, during and after the instruction to suppress those thoughts. Gender differences were observed: obsessionality was positively correlated with an enhancement effect (immediate increase in thought frequency) of thought suppression on intrusive thought frequency for females; however, obsessionality was negatively correlated with an enhancement effect of thought suppression for males. Rebound effects (post-suppression increase in thought frequency) were not related to obsessionality. The authors suggested that the use of more ruminative strategies by females, compared to distraction strategies used by males, accounts for gender differences. In a similar experimental manipulation, Trinder and Salkovksis (1994) reported that thought suppression increased the frequency of personal negative intrusive thoughts and discomfort over a four day period compared

to ‘think through’, or ‘mentioning’; however, the longitudinal design precludes the analysis of enhancement and rebound effects. The research on thought suppression effects is currently inconclusive; inconsistencies may be due to gender differences, as highlighted by Rutledge (1998), or individual differences. In response thought suppression instructions, participants may engage in any number of strategies, therefore future research could clarify individual differences in strategies used to suppress intrusive thoughts.

Another effortful response strategy related to OCD is neutralising. Salkovskis et al. (1997) compared the effects of neutralising to distraction in response to nonclinical participants’ most common unpleasant intrusive thought; findings provided support for the maintaining role of neutralising in OCD, as participants in the neutralising condition reported higher levels of discomfort.

Effortful strategies linked to OCD appear to be commonly used by nonclinical individuals. These response strategies have been linked to appraisals of intrusive thoughts, mood and frequency of intrusive thoughts, as well as obsessionality, which supports the comparison of intrusive thoughts with clinical obsessions. In specific comparisons of nonclinical and OCD groups quantitative differences have been observed in reported response strategies: Morillo, Belloch, and García-Soriano (2007) reported that similar strategies were endorsed on the OII, but that OCD patients were more likely to engage in specific strategies of overt neutralizing, reasoning with self, seeking reassurance, suppression, saying a prayer, and reassuring myself. Furthermore, differences have been observed between clinical and nonclinical samples in the effects of specific response strategies. Janeck and Calamari (1999) confirmed that suppression of

intrusive thoughts resulted in a higher frequency of intrusive thoughts and greater associated distress in a clinical group compared to a nonclinical group. Consistently, Najmi, Riemann, and Wegner (2009) reported greater distress following thought suppression in an OCD group compared to a nonclinical group; in addition, OCD patients reported significantly more intrusive thoughts overall compared to the non-clinical group.

Previous research on response strategies provides further support for the continuum hypothesis of intrusive thoughts, as similar strategies are engaged in by nonclinical individuals as individuals with OCD, but with quantitative differences. The differential effects of response strategies for nonclinical and clinical samples support the maintaining role of such strategies in cognitive theories of OCD. Future research is required to determine if there are strategies that nonclinical individuals use, which are not related to obsessionality. This may help to clarify possible differences between the response of non-clinical individuals and OCD patients to intrusive thoughts.

3. Conclusions

Intrusive thoughts are hypothesised to be similar to clinical obsessions, with the defining difference being degree not kind (Clark & Rhyno, 2005); the literature reviewed supports this hypothesis. Clinical obsessions are experienced in greater frequencies (re-experienced) to their non-clinical counter-parts, which supports a continuum of quantitative difference. However, additional differences in content, appraisals and response were highlighted. Clinical obsessions are more violent/aggressive and bizarre compared to non-clinical intrusive thoughts and may be experienced as more spontaneous (occurring in isolation of explicit triggers). Clinical individuals are more likely to appraise intrusive thoughts in terms of responsibility and control, which has been linked

to distress and frequency of intrusive thoughts. Although similar effortful response strategies were reported by clinical and nonclinical individuals (e.g. avoidance), clinical individuals are more likely to engage in them and to be distressed as a consequence. Observed differences in frequency suggest that clinical individuals re-experience their intrusive thoughts in greater frequency than nonclinical samples, which is associated with increased distress, negative appraisals, and effortful responses.

The differences between intrusive thoughts and clinical obsessions observed in previous research has led some authors to speculate that they may be distinct phenomenon, and that support for the continuum hypothesis is wavering. Belloch et al. (2004) suggested that intrusive thoughts and clinical obsessions are different cognitive experiences, based on their finding that violent, aggressive and bizarre contamination intrusive thoughts were not selected by nonclinical individuals. Belloch et al. recognised that the thoughts were similar in theme, and difficult to differentiate, and subsequently concluded that the differences between intrusive thoughts and clinical obsessions are “mystical” (p.2803). Julien et al. (2009) similarly asserted that intrusive thoughts are distinct from clinical obsessions, on the basis of the finding that a greater proportion of intrusive thoughts experienced by clinical individuals do not have a direct link to the context in which they occur. Freeston et al. (1991) suggested that response strategy may define types of intrusive thoughts and that thoughts that prompt avoidance are akin to obsessions. The imposition of this criterion could alter the prevalence of intrusive thoughts observed in nonclinical samples (40% using avoidance in Freeston et al., 1991) and challenge the assumption that they are a common experience in nonclinical samples. Future research should aim to clarify whether trigger, content or response to intrusive

thoughts does in fact distinguish types and whether these differ for clinical and nonclinical experiences. In addition, further investigation will be required to clarify the role of what comes before and after the thought in defining that thought as intrusive or obsessive.

The observed differences in content and trigger offer a challenge to a continuum hypothesis based only on frequency. However, these differences could be considered as another continuous aspect of the experience of intrusive thoughts. The theme of intrusive thoughts is similar between clinical and nonclinical individuals, suggesting that the difference in content is one of degree. In addition, the experience of intrusive thoughts without a direct link to context is still common in nonclinical individuals (one third of thoughts were reported to have an indirect link; Julien et al, 2009), albeit less common than in nonclinical individuals. Therefore the observed differences between intrusive thoughts and clinical obsessions in previous literature may suggest that a more complex continuum of experience exists, and necessitate a revision of this hypothesis.

An important task for future research is to elucidate the defining differences between nonclinical and clinical obsessive intrusive thoughts, and be open to the possibility that it may not be one specific factor, but rather a combination. Morillo, Belloch, and García-Soriano (2007) concluded that the defining difference between clinical and nonclinical intrusive thoughts is re-experiencing of thoughts, which consequently determines the subjective experience of the thought and interference in daily living. Alternatively, obsessions may differ on a number of dimensions to intrusive thoughts, and it is the combination of these that contributes to the development of OCD. In addition, the direction of cause and effect is currently unclear; differences between

intrusive thoughts and clinical obsessions may be products of OCD rather than contributing to the development of the disorder. Abramowitz, Khandker, Nelson, Deacon, and Rygwall (2006) conducted a prospective study of expectant parents, who were assessed prenatal and postpartum, as this is thought to be a time of increased OCD symptoms. In this study, Abramowitz et al. confirmed that dysfunctional beliefs (Obsessive Beliefs Questionnaire) held at the prenatal stage predicted severity of OCD symptoms, (Yale-Brown Obsessive Compulsive Scale) at postpartum stage. Thus, parents with beliefs that intrusive thoughts are significant and threatening were more likely to have severe obsessive compulsive symptoms, to a mild clinical level. The authors concluded that dysfunctional beliefs about 'normal' intrusive thoughts are risk factors for the development of OCD. In a similar prospective study of a student sample, Myers, Fisher, and Wells (2009) demonstrated that megacognitive beliefs predicted obsessive-compulsive symptoms at three-month follow-up. Further longitudinal studies could clarify the key factors in the development of intrusive thoughts into clinical obsessions.

Addressing the limitations of the reviewed research will help to further our understanding of intrusive thoughts. The body of research may be biased toward the assumption that intrusive thoughts do occur in nonclinical populations: questionnaires assessing appraisals, etc., which assume the presence of intrusive thoughts, could be leading for participants; other studies have only included participants who report frequent or distressing intrusive thoughts. Although such specificity increases the comparability of intrusive thoughts with obsessions, it limits our understanding of the prevalence and nature of intrusive thoughts in the nonclinical population. Future qualitative research may provide more information on the experience of intrusive thoughts in nonclinical

individuals. Such research may also clarify and refine a consistent definition of intrusive thoughts, which is lacking in previous research.

It is essential for future research that a clear consensus on the definition of intrusive thoughts is reached, which distinguishes them from other negative cognitions. A detailed consideration of the definition of intrusive thoughts, and comparison to other unwanted cognitions, has already been made within the literature (Berry, Andrade, May and Kavanagh, under review; Clark & Rhyno, 2005). Intrusive thoughts have been described as similar to rumination and worry as unwanted forms of cognition that disrupt ongoing activity and cause distress; but are distinguished from these long elaborative cognitive processes, as brief cognitive experiences. Comparisons have also been drawn between intrusive thoughts and negative automatic thoughts; Clark and Rhyno (2005) have considered both to be spontaneous, but negative automatic thoughts are distinguished as "longer, more elaborative chains of evaluative thought" (p.18). Berry, Andrade, May and Kavanagh (under review) consider a possible overlap between the two cognitions, suggesting that some initial negative automatic thoughts may be intrusive thoughts, which then lead to subsequent elaboration. Thus there is potential for intrusive thoughts to be confused with other forms of cognition, and future research requires consideration of specific distinguishing features of intrusive thoughts and appropriately targeted assessment.

Intrusive thoughts are not unique to OCD, and have been implicated within other clinical disorders, such as Generalised Anxiety Disorder (GAD), Depression and Post-Traumatic Stress Disorder (PTSD; Brewin, 1998; Green, 2003; Watkins, 2004). Berry, Andrade, May and Kavanagh (under review) propose the Transdiagnostic Model

of intrusive thoughts, which argues that similar cognitive processes are involved across disorders. According to this model, the experience of an intrusive thought is interpreted as meaningful, thus capturing attentional processes, and leading to subsequent elaboration. Cognitive processes involving attention and accessibility increase the likelihood of the intrusive thought being re-experienced, and with increased automaticity. The research on intrusive thoughts across disorders, and the Transdiagnostic Model proposed by Berry et al. highlights the importance of specificity when studying obsessive intrusive thoughts. An important question for future research is what defines an obsessive intrusive thought? or what factors lead to the development of OCD as opposed to other disorders in which intrusive thoughts are characteristic? Other cognitive processes reviewed in the current paper are also considered transdiagnostic, for example thought suppression as a response to cognitive experiences (within in GAD, phobias and depression: Becker, Rinck, Roth & Margraf, 1998; Muris, De Jongh, Merckebach, Postema & Vet, 1998; Kuyken & Brewin, 1995), and negative appraisals, including metacognitions (within GAD, PTSD, and psychosis; Wells & Papageorgiou; 1998; Holeva, Tarrier, & Wells, 2001; Papageorgiou & Wells, 2003). One possible aspect that may define intrusive thoughts between disorders is theme or content; specific obsessive content of intrusive thoughts, in combination with transdiagnostic processes, could determine the development of OCD. The suggestion that some cognitive processes are similar across disorders adds further weight to the call for a clear and concise definition of obsessive intrusive thoughts, which distinguishes them from intrusive thoughts in other disorders on the important features. Such a definition requires extensive consideration of

the processes that overlap between clinical disorders, and those that define the development of one disorder over the other.

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