Université de Montréal

Le contexte comme élément distinctif des obsessions dans le trouble obsessionnel compulsif : une analyse cognitive comportementale

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Le contexte comme élément distinctif des obsessions dans le trouble obsessionnel compulsif : une analyse cognitive comportementale

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Résumé

Le trouble obsessionnel compulsif (TOC) est caractérisé par la présence de pensées récurrentes et anxiogènes (obsessions) et de comportements compulsifs chronophages. Selon les théories cognitives du TOC, les obsessions sont centrales à notre compréhension et au traitement du TOC. Récemment, deux études ont montré que les obsessions et les intrusions pertinentes au TOC se produisaient sans preuve directe provenant de la réalité. Aussi, le lien entre le manque de preuve directe et les théories cognitives du TOC, c'est-à-dire l'approche de l'interprétation des pensées et l'approche basée sur les inférences, reste à être défini empiriquement. Le but de cette thèse est de fournir des preuves supplémentaires du rôle des pensées sans preuve directe et sans fondement dans la réalité dans le TOC et la relation avec les théories cognitives associées au TOC. Trois études ont été réalisées.

La première étude présente une revue systématique et une méta-analyse des caractéristiques qui permettent de distinguer les obsessions se produisant dans le TOC des intrusions à thème obsessionnel chez les populations non-cliniques et cliniques, ainsi que des intrusions à thème non obsessionnel chez les populations cliniques. Le but de cette étude était de vérifier si le manque de preuve directe pouvait être une caractéristique spécifique aux obsessions. Les résultats ont montré que le manque de fondement dans la réalité permet de distinguer les obsessions des intrusions à thèmes obsessionnels dans la population générale et des intrusions à thème non obsessionnels se produisant dans la dépression et le trouble d'anxiété généralisée.

La deuxième étude consiste en une manipulation expérimentale des preuves justifiant une intrusion afin de vérifier si le manque de preuve justificative est relié à la symptomatologie et aux processus psychologiques pertinents au TOC. Cinq cent cinquante-sept étudiants universitaires ont complété une batterie de questionnaires comprenant une tâche expérimentale composée de scénarios conçus afin de mesurer l'endossement d'intrusions spécifiques qui sont soit supportées ou non par des preuves directes. Les résultats ont montré que les intrusions sans preuve directe prédisent les symptômes du TOC, alors que ce n'était pas le cas pour les intrusions avec preuves

directes. Aussi, la confusion inférentielle, les perceptions d'un soi craint et les croyances obsessionnelles prédisaient les caractéristiques des intrusions sans preuve directe.

La troisième étude consiste en une analyse des justifications d'obsessions (narratifs) fournies par des participants souffrant de TOC. Les narratifs de 95 participants ont été évalués par trois ensembles de juges ayant une expertise et une allégeance thérapeutique différentes. Cette méthode s'est montrée comme étant fiable et exempte de biais significatifs. Les évaluations de manque de fondement dans la réalité dans le narratif étaient reliées aux symptômes obsessionnels compulsifs et à l'issue thérapeutique.

Les études présentées dans cette thèse supportent le rôle du manque de fondement dans la réalité comme une caractéristique importante du TOC. De plus, les résultats de ces études supportent les postulats de l'approche basée sur les inférences pour le TOC. D'autres études chez ceux souffrant de TOC et des études longitudinales sont nécessaires afin de continuer à valider l'importance de ce construit.

Mots-clés : TOC, TCC, Contexte, Fondement dans la réalité, Confusion inférentielle, Croyances obsessionnelles.

Abstract

Obsessive-compulsive disorder (OCD) is characterized by recurrent anxiogenic thoughts (obsessions) and time-consuming compulsive behaviours. According to cognitive theories of OCD, obsessions are central to our understanding and to the treatment of OCD. The cognitive appraisal model holds that obsessions are "normal" intrusive thoughts for which significance is misappraised according to obsessive beliefs. These obsessive beliefs have been related to OCD symptoms, but their specificity to OCD has not been convincingly established. Another cognitive theory of OCD, termed the inference-based approach, holds that obsessions are based on dysfunctional reasoning processes promoting distrust of the senses and overreliance on the imaginary, termed inferential confusion. Inferential confusion has been related to OCD symptoms and specificity to OCD has been established. More recently, two studies have highlighted that obsessions occur without direct evidence from reality. However, the relationship between cognitive theories on OCD and the lack of direct evidence remains to be empirically defined. The aim of this thesis is therefore to provide further evidence for the role of thoughts occurring without direct evidence and without any basis in reality to OCD. To do so, three studies were conducted.

Study one consisted of a systematic review and meta-analysis of characteristics distinguishing between obsessions occurring in OCD and both obsessionally- and non-obsessionally-themed intrusions occurring in non-clinical and clinical populations. Based on a registered protocol, 832 records were found, of which 15 were included in the systematic review and meta-analysis. Results showed that lack of any basis in reality differentiates between obsessions and non-obsessionally-themed intrusions occurring in depression and generalized anxiety disorder.

Study two consisted of an experimental manipulation of the evidence justifying an intrusion. Five hundred and fifty-seven undergraduate students completed a battery of questionnaires, including an experimental task made up of scenarios designed to gauge endorsement in specific intrusions that are either supported or not supported by direct evidence. Results showed that intrusions without direct evidence uniquely predicted OCD symptoms, whereas intrusions with

evidence did not; and that inferential confusion, feared-self perceptions and obsessive beliefs predicted characteristics of the intrusions without direct evidence.

The third study consisted of a content analysis of justifications for the obsessional doubt provided by participants with OCD, called OCD narrative. The narratives of 95 participants were rated by three sets of evaluators: graduate psychology students, therapists with an allegiance to the cognitive appraisal model and therapists with an allegiance to the inference-based approach. Results show no presence of significant bias and established reliability of this methodology. Narrative ratings of lack of basis in reality were found to be related to OCD symptoms and treatment outcome.

The studies presented in this thesis support the role of lack of any basis in reality as an important characteristic of OCD. Further, the result of these studies also supports the assertions of the inference-based approach to OCD. Other studies in those with OCD as well as longitudinal investigations are warranted to evaluate the relevance of this construct in OCD.

Keywords : OCD; CBT; Context; Basis in reality; Inferential confusion; Obsessive beliefs.

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Liste des sigles et abréviations

ABI: Approche basée sur les inférences

AN-R : Anorexia Nervosa restrictive subtype

APA: American Psychiatric Association

CAM: Cognitive Appraisal Model

CVT: Contextual Vignette Task

DA: Dissociative absorption scale

DASS-21: Depression Anxiety and Stress Scale – 21 item version

DASS-21 - D: Depression scale of the Depression Anxiety and Stress Scale – 21 item version

DSM-5: Diagnostic and Statistical Manual, 5th edition

ED: Eating disorder

FSQ: Feared Self Questionnaire

GAD: Generalized anxiety disorder

IBA : Inference-based approach

ICQ: Inferential Confusion Questionnaire – Extended version

ICT : Importance and control of thoughts scale of the obsessive beliefs questionnaire

MBI: Modèle base sur les interprétations

NS : Not significant

OBQ : Obsessive Beliefs Questionnaire

OCCWG : Obsessive Compulsive Cognition Working Group

OCD: Obsessive-compulsive disorder

PC : Perfectionism and certainty scale of the obsessive beliefs questionnaire

PRISMA: Preferred Reporting Items for Systematic review and Meta-Analysis

PROSPERO: International prospective register of systematic reviews

RT : Responsibility/Threat overestimation scale of the obsessive beliefs questionnaire

SPQ: Schizotypal personality questionnaire

TCC-C : Thérapie cognitive comportementale basée sur les croyances

TCC-I : Thérapie cognitive comportementale basée sur les inférences

TOC: Trouble obsessionnel compulsif

VOCI : Vancouver Obsessive Compulsive Inventory

YBOCS : Yale-Brown Obsessive Compulsive Inventory

Toute peur n'est qu'une illusion.

Cela est particulièrement vrai dans le trouble obsessionnel compulsif.

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Un doctorat ne se complète pas seul. Il se bâtit au fil de nos rencontres, de nos lectures, mais aussi de nos discussions de couloir. J'aimerais remercier tous ceux qui ont croisé mon chemin tout au long de ce parcours, qu'ils soient encore vivants ou non. Chaque interaction a été pour moi une inspiration et une opportunité de réflexions. J'ai réellement eu la chance de me tenir sur les épaules de géants. Deux personnes méritent des remerciements particuliers. Mon directeur de recherche, Frederick Aardema. Je n'ai rencontré personne d'autre qui avait autant de rigueur et qui aimait autant son sujet de recherche. Sans son aide et ses conseils, cette thèse serait probablement un condensé de longues phrases incompréhensibles comportant beaucoup trop de métaphores bibliques. Merci aussi à ma conjointe, Sabrina, pour son soutien et sa compréhension.

Chapitre 1 – Introduction

Le trouble obsessionnel compulsif (TOC) est caractérisé par la présence d'obsessions (pensées récurrentes provoquant de l'anxiété) et/ou de compulsions (comportements destinés à neutraliser l'anxiété générée par les obsessions) (American Psychiatric Association [APA], 2013). Les obsessions et les compulsions doivent occuper plus d'une heure du temps de la personne, lui causer une détresse significative ou impacter négativement son fonctionnement (APA, 2013). Le *Diagnostic and Statistical Manual, 5th edition* (DSM-5; APA, 2013) reconnaît aussi l'importance de l'*insight* dans le TOC, suivant un continuum allant de bon ou préservé (c.-à-d. que la personne reconnaît que l'obsession n'est pas vraie) à l'absence d'*insight* (c.-à-d. que la personne croit que son obsession est entièrement véridique). La prévalence à vie estimée du TOC est de 1.6% (Kessler, Berglund, et al., 2005), alors qu'elle est estimée à 1% dans les derniers 12 mois (Kessler, Chiu, Demler, Merikangas, & Walters, 2005). Deux périodes de vies sont plus propices au développement du TOC, la préadolescence (âge moyen de 11 ans) et le début de l'âge adulte (âge moyen de 23 ans) (Taylor, 2011). La majorité des personnes souffrant de TOC rapporte un début de leur trouble vers la préadolescence (73%) et ce groupe de patients rapporte un TOC plus sévère, une plus grande prévalence familiale de TOC et une association avec les troubles tics (Taylor, 2011). Le TOC a habituellement une évolution chronique, indiquant qu'une rémission spontanée est improbable, bien que plusieurs patients entrent en rémission après avoir suivi un ou plusieurs traitements adéquats (Marcks, Weisberg, Dyck, & Keller, 2011).

Bien que le DSM-5 ne reconnaisse pas de contenu de pensées spécifique au TOC, plusieurs études ont tenté de regrouper le contenu des différentes obsessions et compulsions en dimensions. Une méta-analyse des études se basant sur le *Yale-Brown Obsessive Compulsive Inventory* (Y-BOCS; Goodman, Price, Rasmussen, Mazure, Fleischmann, et al., 1989), une entrevue qui liste des contenus possibles d'obsessions et de compulsions, a trouvé quatre présentations de symptômes distinctes (Bloch, Landeros-Weisenberger, Rosario, Pittenger, & Leckman, 2008) : (1) la symétrie, avec des obsessions de symétries et de compulsions concernant la répétition, l'ordre et les suites de chiffres; (2) les pensées interdites, avec des obsessions sexuelles, agressives, religieuses et

somatiques avec des compulsions de vérifications; (3) le nettoyage, avec des obsessions de contamination avec des compulsions de nettoyage; et (4) l'accumulation, avec des obsessions d'acquisition et des compulsions d'accumulation. Toutefois, le contenu des compulsions du Y-BOCS ne prend pas bien en compte la neutralisation (aussi appelée compulsion mentale) et l'évitement, ce qui amène certains auteurs (par exemple, Abramowitz et al., 2010; Thordarson et al., 2004) à diviser la catégorie des pensées interdites en deux : (1) pensées répugnantes, avec les obsessions sexuelles, agressives, religieuses et somatiques où la personne qui a les obsessions est perçue comme un danger pour soi ou les autres avec principalement de la neutralisation et de l'évitement incluant certaines compulsions de vérification; et (2) la vérification, avec des obsessions concernant des événements négatifs qui pourraient arriver aux autres où la personne qui a les obsessions ressent un besoin de prévenir ce mal et des compulsions de vérifications. Il y a donc cinq dimensions de symptômes qui sont reconnues dans la littérature : la contamination, la vérification, les pensées interdites, la symétrie (aussi appelé *Just Right*) et l'accumulation, bien que cette dernière soit de moins en moins reconnue depuis l'avènement du DSM-5 et du diagnostic d'accumulation compulsive (APA, 2013).

Théories cognitives comportementales du TOC

Différentes théories cognitives comportementales ont proposé des modèles sur le développement, le maintien et le traitement du TOC. C'est en 1966 que Victor Meyer proposa le premier traitement efficace pour le TOC, une forme de thérapie comportementale où le patient est empêché d'accomplir ses compulsions (Meyer, 1966). Bien que purement comportemental et très similaire à l'exposition et la prévention de la réponse (Foa, 2010), le traitement avait pour but de modifier les attentes des patients envers le réalisme de leurs obsessions, plutôt dans la lignée des traitements cognitifs. Depuis, plusieurs modèles cognitifs comportementaux ont proposé des explications sur la nature du TOC, dont deux principaux : le modèle basé sur les interprétations (MBI) et l'approche basée sur les inférences (ABI). Une théorie plus récente sur les perceptions d'un soi craint mérite aussi une introduction.

Modèle basé sur les interprétations

Le MBI stipule que les obsessions sont des pensées intrusives « normales », c.-à-d. que tout le monde peut vivre, qui sont interprétées selon certaines croyances, ce qui augmente la détresse, l'anxiété et l'inconfort qu'elles causent, amenant des comportements visant à neutraliser (c.-à-d. des compulsions) la détresse et l'anxiété (Salkovskis, 1985). Ces comportements de neutralisation diminuent la détresse et l'anxiété, ce qui renforce l'utilisation de la neutralisation et donc maintient le TOC (Salkovskis, 1985). Par exemple, une personne a une intrusion reliée avec l'oubli de fermer une lumière, elle interprète cette intrusion en se disant que cet oubli est grave et qu'elle pourrait être renvoyée pour avoir été aussi insouciante. La personne se met donc à obséder sur la fermeture des lumières et vérifie plusieurs fois si les lumières sont éteintes afin de diminuer son anxiété et sa détresse (Salkovskis, 1985). Durant les années qui suivirent l'élaboration de cette théorie, différents groupes de recherche identifièrent 19 domaines de croyances potentiellement reliés à la mésinterprétation des pensées intrusives. Ces domaines de croyances ont subséquemment été réduits à six domaines de croyances : (1) la responsabilité; (2) la surestimation du danger; (3) l'importance donnée aux pensées; (4) le besoin de contrôler les pensées; (5) l'intolérance à l'incertitude et (6) le perfectionnisme (Obsessive Compulsive Cognitions Working Group [OCCWG], 1997). Après une analyse factorielle de questions portant sur ces croyances chez des participants souffrant de TOC, les six domaines de croyances ont été regroupés en trois facteurs : (1) la responsabilité et la surestimation du danger, (2) l'importance et le contrôle des pensées et (3) le perfectionnisme et l'intolérance à l'incertitude (OCCWG, 2005).

Ces trois domaines de croyances, aussi appelées croyances obsessionnelles, ont reçu plusieurs supports de leur validité et pertinence dans le TOC. Les participants souffrant de TOC endossent les croyances obsessionnelles plus fortement que les participants souffrant d'un trouble anxieux et que les participants de la communauté (OCCWG, 2005; Taylor et al., 2006). Les croyances obsessionnelles sont aussi corrélées aux symptômes obsessionnels compulsifs et préservent leur lien lorsque l'on contrôle pour les symptômes anxieux et dépressifs, bien qu'un seul domaine de croyance soit généralement associé avec chaque dimension de symptômes (OCCWG, 2005; Tolin, Brady, & Hannan, 2007; Wheaton, Abramowitz, Berman, Riemann, & Hale, 2010). Toutefois, certaines études ont aussi montré des faiblesses reliées aux croyances obsessionnelles. Lorsque

l'on contrôle pour les symptômes dépressifs, les croyances obsessionnelles ne diffèrent plus entre les participants souffrant de TOC et ceux souffrant de troubles anxieux, alors que lorsque l'on contrôle pour les traits anxieux, elles ne diffèrent plus entre les participants souffrant de TOC et les participants de la communauté (Tolin, Worhunsky, & Maltby, 2006b). Aussi, deux études ont montré qu'il existe un sous-groupe de participants souffrant de TOC (environ 20-25% des participants) qui endosse les croyances obsessionnelles à des niveaux similaires à ceux des participants de la communauté (Calamari et al., 2006; Taylor et al., 2006). Comparativement à ceux du sous-groupe avec peu de croyances obsessionnelles, les autres avaient des symptômes anxieux et dépressifs plus élevés, des symptômes obsessionnels compulsifs légèrement plus sévères et une plus grande tendance à rapporter des symptômes en lien avec les pensées répugnantes (Calamari et al., 2006; Taylor et al., 2006). Ces résultats suggèrent donc que les croyances obsessionnelles pourraient ne pas être suffisantes pour expliquer la présence de symptômes obsessionnels compulsifs chez toutes les personnes souffrant de TOC.

Le traitement découlant du MBI est la thérapie cognitive comportementale basée sur les croyances (TCC-C). Ce traitement cible les croyances menant à la mésinterprétation des intrusions puis utilise l'exposition et la prévention de la réponse comme moyen de vérifier la véracité des croyances mésadaptées et des nouvelles croyances (Salkovskis, 1985). Toutefois, plusieurs variations de la TCC-C existent, allant de l'exposition et de la prévention de la réponse à laquelle on ajoute un peu de traitement cognitif afin de rendre l'exposition plus acceptable, à des traitements cognitifs avec de l'exposition effectuée comme exercice complémentaire à faire chez soi (Steketee, Siev, Yovel, Lit, & Wilhelm, 2019). De manière générale, la TCC-C est montrée comme efficace dans la réduction des symptômes obsessionnels compulsifs (Olatunji, Davis, Powers, & Smits, 2013). Cependant, une méta-analyse comparant la TCC-C à l'exposition et la prévention de la réponse n'a pas trouvé de différence significative entre les deux traitements (Ost, Havnen, Hansen, & Kvale, 2015), ce qui a mené certains à suggérer que la composante cognitive de la TCC-C n'était pas nécessaire au succès thérapeutique (Franklin & Foa, 2011; Foa, 2010). Toutefois, une récente méga-analyse d'essais cliniques randomisés comparant l'exposition et la prévention de la réponse, la TCC-C et une combinaison des deux traitements a montré que l'efficacité thérapeutique et les taux de rémissions étaient supérieurs lorsque le traitement

incluait la TCC-C (avec ou sans exposition et prévention de la réponse) (Steketee et al., 2019). Concrètement, l'efficacité thérapeutique de l'exposition et de la prévention de la réponse pour la diminution des symptômes du TOC pendant la thérapie était de d=1.39 et le taux d'amélioration cliniquement significatif étaient de 36%, alors que l'efficacité thérapeutique montait à d=1.75-1.83 et le taux d'amélioration cliniquement à 48%-56% lorsque la TCC-C était utilisée (soit seule ou en combinaison avec l'exposition et la prévention de la réponse) (Steketee et al., 2019). L'utilisation de la TCC-C semble donc au moins aussi justifiée que l'exposition et la prévention de la réponse.

Toutefois, la TCC-C n'est pas efficace pour toutes les personnes souffrant de TOC. Les études sur les facteurs affectant l'efficacité thérapeutique ont montré que la principale caractéristique affectant l'issue thérapeutique de la TCC-C est la force de la conviction avec laquelle une personne tient son obsession pour vrai (Basogul, Lax, Kasvikis, & Marks, 1998; Kozak & Foa, 1994; Neziroglu & Mancusi, 2014). Ce haut degré de conviction est aussi connu sous le nom d'idée surévaluée (Neziroglu, McKay, Yaryura-Tobias, Stevens, & Todaro, 1999), qui implique, au-delà d'une conviction élevée, une identification avec le contenu de l'obsession et l'évaluation de l'obsession comme étant égo-syntone (c.-à-d. en accord avec les valeurs et la personnalité de la personne). De manière similaire, les obsessions ayant un contenu bizarre (par exemple « Je pourrais tuer des gens avec mes pensées ») ont aussi été notées comme étant plus difficiles à traiter (Basogul et al., 1998), principalement parce que les obsessions ayant un contenu bizarre doivent être tenues avec un haut degré de conviction afin de ne pas être automatiquement discréditées (Basogul et al., 1998).

Approche basée sur les inférences

Le développement de l'ABI s'est fait en partie en parallèle de celui du MBI. Contrairement au MBI, l'ABI considère que les obsessions ne sont pas des pensées « normales », mais plutôt des doutes quant à la réalité (O'Connor & Robillard, 1995). Ces doutes prennent des formes hypothétiques, par exemple : « Peut-être que j'ai oublié de barrer la porte… », et proviennent d'un processus de raisonnement appelé confusion inférentielle qui amène la personne à se méfier de ses sens au profit de son imagination (O'Connor, Aardema, & Pélissier, 2005; O'Connor & Robillard, 1995).

Originellement, six raisonnements distincts ont été proposés comme faisant partie de la confusion inférentielle (O'Connor, Aardema, & Pélissier, 2005), mais les investigations psychométriques n'ont pas supporté une contribution indépendante de leur part (Aardema, O'Connor, Emmelkamp, Marchand, & Todorov, 2005; Aardema et al., 2009). Plus récemment, ces six raisonnements ont été reclassifiés en trois dimensions : (1) l'inférence inverse, où les conclusions précèdent les faits, par exemple : « la porte doit être sale puisque plusieurs personnes passent par ici »; (2) le rejet actif de l'information sensorielle et de la connaissance de soi, par exemple : « Je sais que j'ai barré la porte, mais… peut-être que j'ai mal vu »; et (3) les associations hors contexte, où des associations non pertinentes sont considérées comme des faits, par exemple : « une caserne de pompier a déjà passé au feu parce que les ronds de poêles sont restés allumés, alors cela pourrait m'arriver aussi » (Aardema, Baraby, Wong, & Audet, 2019; Baraby, Wong, Radomsky, & Aardema, 2021; O'Connor, Aardema, & Pélissier, 2005). Les personnes souffrant de TOC utilisent (souvent non consciemment) les processus de la confusion inférentielle afin de justifier leur doute obsessionnel (O'Connor & Aardema, 2012a). Cela a été confirmé en regardant empiriquement les justifications que les personnes souffrant de TOC utilisent pour soutenir leur doute obsessionnel (O'Connor, Koszegi, Goulet, & Aardema, 2013). L'utilisation de processus qui promeuvent la méfiance envers les sens au profit de l'imaginaire crée une dissociation avec la réalité chez ceux souffrant de TOC lorsqu'ils sont absorbés dans leurs obsessions (O'Connor & Aardema, 2012b), un phénomène aussi noté par d'autres (Beck, 1976). L'ABI permet donc d'expliquer plus de phénomènes associés au TOC que le MBI.

L'ABI n'est pas incompatible avec le MBI. Selon l'ABI, le doute obsessionnel est suivi par une conséquence anticipée (par exemple, « Si j'ai oublié de barrer la porte… alors je pourrais être cambriolé ») qui peut être sujette à des interprétations erronées (« j'en serais responsable et ce sera terrible » (O'Connor, Aardema, & Pélissier, 2005; O'Connor & Robillard, 1995). L'ABI mentionne aussi que le doute obsessionnel et les conséquences anticipées peuvent exister à des niveaux variables, c.-à-d. qu'une personne peut avoir un doute obsessionnel faible (c.-à-d. évalué comme ayant une faible possibilité de se produire) avec des conséquences anticipées très investies et vice-versa (O'Connor & Robillard, 1995). Toutefois, selon cette théorie, le doute obsessionnel ne peut jamais être absent, alors qu'il peut y avoir une absence de conséquences

anticipées (O'Connor & Robillard, 1995). Le doute obsessionnel, les conséquences anticipées et les interprétations qui s'ensuivent provoquent des émotions négatives chez les personnes souffrant de TOC (par exemple de l'anxiété, de la détresse, de la culpabilité, de la honte, etc.) et cette séquence est neutralisée par l'utilisation de compulsions (O'Connor & Robillard, 1995). Toutefois, contrairement au MBI qui stipule que les compulsions maintiennent le TOC en diminuant la détresse, dans l'ABI les compulsions maintiennent le TOC en renforçant le doute obsessionnel (« si j'ai vérifié la porte c'est que j'ai eu raison de croire que je l'avais mal barrée ») (O'Connor, Aardema, & Pélissier, 2005). La séquence obsessionnelle décrite par l'ABI a été supportée par les résultats d'une étude empirique portant sur 115 adultes souffrant de TOC dont le doute obsessionnel et les conséquences anticipées ont été mesurés par des cliniciens (Grenier, O'Connor, & Belanger, 2010).

Les études supportent la contribution de la confusion inférentielle aux symptômes obsessionnels compulsifs. Les participants souffrant de TOC rapportent de plus hauts niveaux de confusion inférentielle que ceux souffrant de trouble anxieux ou ceux de la communauté (Aardema et al., 2005; Aardema et al., 2009). Chez les participants souffrant de TOC, la confusion inférentielle est reliée à la sévérité du TOC en contrôlant pour les symptômes anxieux et dépressifs ainsi que les croyances obsessionnelles (Aardema et al., 2005; Aardema, Wu, Moulding, Audet, & Baraby, 2018; Aardema et al., 2009). De plus, contrairement aux croyances obsessionnelles, un sous-groupe de participants souffrant de TOC et montrant de faibles scores au questionnaire de confusion inférentielle n'a pas été trouvé lors d'analyses de cluster (Polman, O'Connor, & Huisman, 2011).

Le traitement découlant de l'ABI est la thérapie cognitive comportementale basée sur les inférences (TCC-I). Ce traitement cible le doute à la base de la séquence obsessionnelle en montrant à la personne souffrant de TOC les erreurs de raisonnement soutenant son doute obsessionnel (O'Connor & Aardema, 2012a). Cela est fait avec une approche narrative, où le client fournit les justifications pour son doute obsessionnel (appelé narratif TOC), qui sont ensuite examinées avec le clinicien et remplacées par l'information provenant des sens. Contrairement à la TCC-C, il n'y a pas d'exposition formelle dans la TCC-I, les clients sont plutôt invités à arrêter d'effectuer leurs compulsions lorsqu'ils sentent que le doute obsessionnel n'est plus valide

(O'Connor & Aardema, 2012a). Deux essais contrôlés randomisés ont montré que la TCC-C et l'exposition avec prévention de la réponse n'étaient pas supérieures à la TCC-I (O'Connor, Aardema, Bouthillier, et al., 2005; Visser et al., 2015). La TCC-I est efficace pour toutes les dimensions de symptômes du TOC et avec les participants ayant une forte surévaluation de leurs obsessions (Aardema, O'Connor, Delorme, & Audet, 2017; Visser et al., 2015). De plus, une série de cas a montré la faisabilité de combiner la TCC-C à la TCC-I en obtenant une amélioration thérapeutique cliniquement significative (van Niekerk, Brown, Aardema, & O'Connor, 2014). Les études cliniques indiquent donc que la TCC-I semble avoir une efficacité similaire à la TCC-C et qu'il n'y a pas de sous-groupes connus pour lesquels la TCC-I n'est pas efficace.

Les perceptions d'un soi craint

Dès le début des conceptions cognitives pour le TOC, il a été remarqué que le TOC frappait ceux qui en souffrent « là où ça fait mal ». Ceux souffrant de TOC ont souvent été décrits comme étant d'une tendre conscience, contrastant avec les obsessions de meurtre, de blasphème ou de pédophilie qui pouvaient les hanter (Rachman, 1998). Les obsessions ont aussi souvent été notées comme étant égo-dystoniques, c.-à-d. contraires aux valeurs de la personne (Purdon, Cripps, Faull, Joseph, & Rowa, 2007; Salkovskis, 1985). Une analyse qualitative d'images intrusives chez les personnes souffrant de TOC a révélé que plus de la moitié des participants rapportait des images se rapportant à un soi dangereux, c'est-à-dire représentant un danger pour soi ou les autres en lien avec une vision de soi comme étant méchant, immoral ou dément (Lipton, Brewin, Linke, & Halperin, 2010). D'une manière similaire, d'autres ont proposé que les personnes souffrant de TOC en viennent à s'identifier à tort avec qui elles ont peur d'être ou de devenir, c.-à-d. avec une perception d'un soi craint (illusoire) (Aardema & O'Connor, 2007). Ce soi possible craint illusoire, qui peut prendre forme comme une peur d'être un meurtrier ou de devenir pédophile, remplace donc le soi actuel comme perception de « qui la personne croit être » (Aardema & O'Connor, 2007). Les personnes souffrant de TOC confondraient donc qui elles sont et qui elles pourraient être en utilisant un raisonnement basé sur la confusion inférentielle, par exemple « Peut-être que je pourrais commettre un meurtre… Oh non, seulement un meurtrier (comme moi) pourrait penser à commettre un meurtre… » (Aardema & O'Connor, 2007). Plus récemment, les perceptions d'un soi craint ont été placées au centre d'un modèle cognitif du TOC

où elles déterminent le thème de l'obsession et donc la cible de la confusion inférentielle et des interprétations erronées (Aardema & Wong, 2020).

Les études empiriques supportent les prétentions théoriques sur les perceptions d'un soi craint chez ceux qui souffrent d'obsessions répugnantes. Les participants souffrant de TOC rapportant une pensée répugnante comme obsession principale s'identifient plus à leurs perceptions d'un soi craint que les autres participants souffrant de TOC et ceux souffrant d'un trouble anxieux ou dépressif (Aardema, Moulding, et al., 2018). L'identification aux perceptions d'un soi craint montre une contribution unique aux symptômes reliés aux pensées répugnantes, indépendamment des symptômes anxieux et dépressifs ainsi que des croyances obsessionnelles et de la confusion inférentielle (Aardema, Moulding, et al., 2018; Melli, Aardema, & Moulding, 2016). De plus, l'identification aux perceptions d'un soi craint est corrélée avec les symptômes de *Just Right* (Aardema, Moulding, et al., 2018). Finalement, une réduction de l'identification aux perceptions d'un soi craint a été observée chez des patients souffrant de TOC ayant complété un traitement d'approche cognitif comportemental pour le TOC (Aardema, Wong, Audet, Melli, & Baraby, 2019). Cette réduction de l'identification aux perceptions d'un soi craint est uniquement reliée à la diminution des symptômes de contamination et de pensées répugnantes au-delà du changement aux symptômes dépressifs, aux croyances obsessionnelles, à la confusion inférentielle et à une autre conception du soi (Aardema, Wong, et al., 2019).

La spécificité des perceptions d'un soi craint pour les pensées répugnantes pourrait être due au contenu du soi qui est mesuré. Dans les études précédentes, les perceptions d'un soi craint qui était mesuré étaient celles d'un soi craint dangereux et d'autres thèmes (par exemple un soi craint irresponsable ou un soi craint souillé) pourraient être pertinents à d'autres présentations de symptômes du TOC (Aardema, Moulding, et al., 2018). Une étude récente chez des patients souffrant de TOC a montré que l'amorçage du soi craint (tous thèmes confondus) augmentait la détresse, l'anxiété et le besoin d'effectuer les compulsions (Sauvageau, O'Connor, Dupuis, & Aardema, 2020).

Le contexte comme caractéristiques des obsessions dans le TOC

Plus récemment, la notion que les obsessions pourraient se produire sans contexte justificatif a été avancée dans la littérature (Audet, Aardema, & Moulding, 2016; Julien, O'Connor & Aardema, 2009). Dans le cas présent, le contexte justificatif fait référence aux preuves qui soutiennent la présence d'une intrusion. Certaines pensées ou intrusions peuvent être présentes « avec des preuves directes », c'est-à-dire avec des preuves directes pour le fondement potentiel de l'intrusion dans la réalité (Audet et al., 2016). De manière similaire, une pensée ou une intrusion peut être présente « sans preuve directe », c'est-à-dire sans preuves directes pour le fondement potentiel de l'intrusion dans la réalité (Audet et al., 2016). Concrètement, le manque de preuves directes pour le fondement potentiel de l'intrusion dans la réalité réfère à une intrusion qui proviendrait de l'imagination de la personne et qui ne devrait pas avoir lieu selon les informations présentes dans l'ici et maintenant.

Une étude pionnière a demandé à des participants souffrant de TOC et à des participants de la communauté d'évaluer la force du lien entre leurs obsessions (pour les participants souffrant de TOC) ou leurs intrusions (pour les participants de la communauté) et la réalité (Julien, 'et al., 2009). Les participants devaient sélectionner les trois obsessions/intrusions qui leur causaient le plus de détresse et déterminer si ces obsessions/intrusions avaient un lien direct, indirect ou absent avec la réalité. Un lien direct était défini comme une intrusion ayant une relation directe avec l'information provenant des sens (par exemple voir une cigarette au bout rouge et penser qu'elle est allumée), un lien indirect était défini comme une intrusion n'ayant pas un lien précis et clair avec le contexte (par exemple voir une cigarette écrasée sur le sol et penser qu'elle pourrait être allumée) et une absence de lien était définie comme une intrusion n'ayant aucune relation avec le contexte dans laquelle elle se produit (par exemple marcher vers son lieu de travail et penser qu'une cigarette pourrait être restée allumée) (Julien et al., 2009). Les résultats ont montré qu'environ les deux tiers des participants souffrant de TOC rapportent leurs obsessions se produisant avec un lien non direct avec la réalité, alors que cette proportion est significativement inférieure pour les participants de la communauté (un tiers).

Une autre étude a demandé à des cliniciens d'évaluer des intrusions fournies par des étudiants universitaires afin de déterminer la relation entre celles jugées comme pertinentes au TOC et le contexte dans lequel elles se produisent (Audet, et al., 2016). Les étudiants universitaires devaient rapporter une intrusion récurrente, ce qui faisait en sorte qu'ils ont eu cette intrusion et pourquoi, selon eux, cette pensée revenait. Trois cliniciens avec une expérience considérable du TOC (10 à 15 ans) devaient ensuite déterminer si l'intrusion était pertinente au TOC (c'est-à-dire potentiellement indicative d'un TOC) et si elle se présentait avec ou sans preuve directe pour son fondement dans la réalité. Une très grande proportion (98.7%) d'intrusions évaluées comme pertinentes au TOC était aussi évaluée comme se produisant sans preuve directe soutenant leur fondement dans la réalité, alors que cette proportion était significativement plus faible pour les intrusions évaluées comme non pertinentes au TOC (56.6%). De plus, les intrusions évaluées comme se produisant sans preuve directe étaient rapportées par des participants présentant plus de symptômes obsessionnels compulsifs, de croyances obsessionnelles et de confusion inférentielle, mais pas d'identification à des perceptions d'un soi craint.

À la lumière des études précédentes, il devient apparent que le manque de preuves directes soutenant la réalité d'une pensée pourrait être une caractéristique importante permettant de distinguer les obsessions des intrusions. Il se pourrait que cette caractéristique soit une différence qualitative entre les obsessions présentes dans le TOC et les intrusions de la population générale alors que, jusqu'à maintenant, les caractéristiques proposées pour distinguer les obsessions des intrusions sont de nature quantitative, par exemple la fréquence et la détresse (Abramowitz et al., 2014; Julien, O'Connor, & Aardema, 2007). Aussi, si le manque de contexte permet de distinguer entre les obsessions et les intrusions, cette caractéristique pourrait permettre d'approfondir notre compréhension du TOC en la reliant aux différentes théories proposées comme étant à l'origine de ce trouble, dont le MBI et l'ABI. Déjà, l'étude de Audet et collaborateurs (2016) a relié le manque de preuves directes à la confusion inférentielle et aux croyances obsessionnelles, ce qui n'est pas surprenant en soi puisque l'absence de preuve directe est à la base des processus de raisonnement de la confusion inférentielle.

Toutefois, les deux études présentées plus haut sur l'absence de preuves directes dans le TOC ne nous permettent pas de supporter à elles seules que le manque de preuves directes distingue les

obsessions présentes dans le TOC des intrusions présentes dans la population générale. Afin de mieux étudier ce phénomène, d'autres études devraient être menées chez des participants souffrant de TOC. De plus, les deux études présentées sont corrélationnelles et des preuves expérimentales aideraient à soutenir et à mieux définir le rôle de l'absence de preuves directes dans le TOC. Aussi, l'importance du contexte dans lequel les obsessions se produisent n'a pas encore été évaluée en présence d'autres caractéristiques attribuées aux obsessions (telles que la fréquence et la détresse), il est donc difficile d'évaluer la spécificité de cette caractéristique pour distinguer entre les obsessions et les intrusions. Finalement, le lien entre le contexte et les différentes théories cognitives comportementales du TOC n'est pas clair. Bien qu'Audet et collaborateurs (2016) aient trouvé des liens avec les croyances obsessionnelles et la confusion inférentielle, ils ont suggéré que le manque de preuves directes peut être une conséquence de la confusion inférentielle, mais aussi que les intrusions sans preuve directe peuvent inviter un plus grand nombre d'interprétations erronées, ce qui reste toutefois à préciser.

Le but de cette thèse est donc de combler ces lacunes sur le manque de contexte justifiant les obsessions dans le TOC, opérationnalisé comme le manque de preuves directes pour soutenir la validité de l'obsession. Les objectifs de cette thèse sont donc : (1) vérifier dans la littérature si d'autres études mentionnent le manque de preuves directes comme étant une caractéristique spécifique aux obsessions; (2) présenter des preuves expérimentales soutenant le rôle du manque de preuves directes dans le TOC; et (3) évaluer le rôle du manque de fondement dans la réalité dans la justification du doute obsessionnel soutenant l'obsession.

À cette fin, trois études seront présentées. La première étude consistera en une revue systématique et une méta-analyse des caractéristiques propres aux obsessions comparativement aux autres types d'intrusions (chapitre 2). La deuxième étude consistera en une manipulation expérimentale de la présence de preuves directes dans la justification d'intrusions afin de mesurer leur impact sur les caractéristiques obsessionnelles des intrusions et leurs relations avec les processus cognitifs du TOC (chapitre 3). La troisième étude consistera en une évaluation des narratifs TOC par des cliniciens afin de mettre en relation les caractéristiques de ces narratifs (dont le manque de fondement dans la réalité), les symptômes obsessionnels compulsifs et l'efficacité thérapeutique (chapitre 4).

La première étude est en révision au *Journal of Affective Disorders* et a été écrite par Jean-Sébastien Audet, Lysandre Bourguignon et Frederick Aardema. Le premier auteur s'est occupé de la conceptualisation de l'étude, de l'administration de l'étude, de la collecte de données, de l'analyse des données, de l'écriture du manuscrit et de sa révision. La deuxième auteure s'est occupée de la validation de la collecte de données, de la validation de l'analyse des données et de la révision du manuscrit. Le troisième auteur s'est occupé de la supervision du projet et de la révision du manuscrit. La version du manuscrit présentée est la version qui a été soumise au journal, avec quelques modifications afin de se conformer au format de la thèse.

La deuxième étude a été publiée dans le *Journal of Obsessive Compulsive and Related Disorders* et a été écrite par Jean-Sébastien Audet, Shiu F. Wong, Adam S. Radomsky et Frederick Aardema. (Audet, J.-S., Wong, S. F., Radomsky, A. S., & Aardema, F. (2020). Not all intrusions are created equal: The role of context, feared-self perceptions and inferential confusion in the occurrence of abnormal intrusions. *Journal of Obsessive Compulsive and Related Disorders, 26, 100537. https://doi.org/10.1016/j.jocrd.2020.100537).* Le premier auteur a conceptualisé l'étude, administré le projet, fait les analyses statistiques, écrit le manuscrit et révisé le manuscrit. Le deuxième auteur a administré le projet, fait la collecte de données, et révisé le manuscrit. Le troisième auteur a fourni les ressources et révisé le manuscrit. Le quatrième auteur a conceptualisé l'étude, fourni les ressources, révisé le manuscrit et assuré la supervision du projet. La version du manuscrit présentée est la version acceptée du manuscrit, avec quelques modifications afin de se conformer au format de la thèse.

La troisième étude sera soumise sous peu à la revue *Clinical Psychology and Psychotherapy* et a été écrite par Jean-Sébastien Audet et Frederick Aardema. Le premier auteur a conceptualisé le projet, administré l'étude, collecté les données, fait les analyses statistiques, écrit le manuscrit et révisé le manuscrit. Le deuxième auteur a conceptualisé l'étude, fourni les ressources, révisé le manuscrit et assuré la supervision du projet.

Chapitre 2 – What Makes an Obsession? A Systematic-Review and Meta-Analysis on the Specific Characteristics of Intrusive Cognitions in OCD in Comparison with Other Clinical and Non-Clinical Populations.

Abstract

The *Diagnostic and Statistical Manual 5th ed. defines* obsessions in obsessive-compulsive disorder (OCD as frequent, persistent, intrusive, unwanted thoughts which provoke anxiety and distress and lead to attempt to neutralize them with either thoughts or actions. However, no systematic review has yet evaluated characteristics that are specific to obsessions occurring in OCD. The aim of the current systematic review and meta-analysis was to investigate the specific features of obsessions occurring in OCD by comparing them to both obsessionally and non-obsessionally-themed intrusions in non-clinical and clinical populations. Based on a registered protocol, 832 records were found, of which 15 were included in the systematic review and meta-analysis, with a total of 1891 participants. Results showed that obsessionally-themed intrusions that occur among those with OCD caused more distress, guilt, negative emotion and interference as compared to similarly-themed intrusions that occur within the general population. Obsessions in OCD also differed from similarly-themed intrusions in other clinical disorders, including those with anxiety and depressive disorders, although not to the same extent as the differences observed among non-clinical controls. Overall, the distinction between obsessionally-themed intrusions among those with OCD as compared to those with an anxiety and depressive disorder primarily revolves around a higher level of persistence, pervasiveness and distress associated with their occurrence. Further, unacceptability, uncontrollability, ego-dystonicity, alienness, guilt, the form of the intrusion, and lack of any basis in reality also differentiates between obsessions and intrusions occurring in other disorders.

Keywords: Depression, Anxiety, Eating disorders, CBT, Cognitive Behaviour Therapy, Context

Introduction

Obsessive-compulsive disorder (OCD) is characterized by intrusive cognitions (obsessions) that cause marked anxiety or distress and acts designed to neutralize the anxiety or distress generated by the intrusive cognitions (compulsions) that are either excessive or not realistically effective in preventing the dreaded consequences of obsessions (APA, 2013). Most cognitive-behavioural formulations locate the origin of obsessions in the occurrence of intrusive cognitions, which nonetheless have to be distinguished from obsessions as they occur in OCD (Rachman, 1998; Salkovskis, 1985). That is, according to these models, even though intrusive cognitions occur as a universal and normal phenomenon in the general population, due to a variety of etiological and developmental factors, intrusive cognitions may take on abnormal characteristics, at which point they are referred to as obsessions. There is indeed evidence that intrusive cognitions are a universal phenomenon in the general population across different cultures (Pascual-Vera et al., 2019; Radomsky et al., 2014), as well as other clinical populations (Pascual-Vera, Roncero-Sanchis, & Belloch, 2017; Wahl et al., 2019). In addition, a number of factors have been proposed which may contribute to the transformation of intrusions into obsessions, including responsibility, importance given to thoughts, the personal significance attached to intrusions, and dysfunctional reasoning (O'Connor & Robillard, 1995; Rachman, 1998; Salkovskis, 1985). However, regardless of these etiological and developmental factors, what are the abnormal characteristics of intrusive cognitions in OCD that differentiates them from those occurring in other populations? What makes an obsession?

The diagnostic and statistical manual of the APA 5th edition (DSM-5, APA, 2013) defines obsessions as thoughts fulfilling the following criteria: “(1) Recurrent and persistent thoughts, urges and images that are experienced, at some time during the disturbance, as intrusive and unwanted, and that in most individuals caused marked anxiety or distress” and “(2) The individual attempts to ignore or suppress such thoughts, urges or images, or to neutralize them with some other thoughts or action (i.e., by performing a compulsion).” In other words, DSM-5 proposes several parameters that differentiate an obsession from ordinary intrusive thoughts, or from thoughts as

they may occur in other clinical populations, which revolve around frequency, persistence, intrusiveness, unwantedness, anxiety and distress.

DSM-5 does not specify any particular content as defining obsessions, recognizing that obsessions may occur over a wide variety of domains and themes. However, classification systems typically do identify common obsessional themes — the most well-recognized revolving around contamination, checking, taboo thoughts and symmetry (Abramowitz, Franklin, Schwartz, & Furr, 2003; Calamari, Wiegartz, & Janeck, 1999; Mataix-Cols, Rauch, Manzo, Jenike, & Baer, 1999). Consequently, empirical investigations of intrusive cognitions that aim to establish the exact nature of obsessions in OCD typically focus on thoughts containing these themes (Abramowitz et al., 2014; Julien et al., 2007; Radomsky et al., 2014). Julien, Aardema & O'Connor (2007) previously conducted a narrative review focused on the specificity of intrusive cognitions in OCD and found that obsessionally-themed intrusions showed evidence of reliability, convergent validity with OCD measures and divergent validity with measures of general distress. They concluded that classifying an intrusion as related to OCD based on its content was valid for research purposes. However, the content of occurrence of obsessionally-related intrusions does not automatically make it an obsession as it occurs in OCD.

While it is generally recognized that the content of obsessionally-themed intrusions is highly similar across populations (Rachman & de Silva, 1978; Rassin, Cougle, & Muris, 2007; Rassin & Muris, 2007), there are other important differences that may be specific to obsessions as they occur in OCD. For example, previous reviews have highlighted differences in the number of different obsessional themes reported, and a lack of reality-based triggers for obsessionally-themed intrusions in OCD (Abramowitz et al., 2014; Berry & Laskey, 2012; Julien et al., 2007). Also, research has shown that obsessionally-themed intrusions in OCD also occur in other clinical populations. For example, differences have been found in frequency, interference and uncontrollability when comparing intrusions in those with OCD and those with anxiety disorders (Inozu, Hacıömeroğlu, Keser, Akın-Sarı, & Özmenler, 2021). As with comparison with non-clinical populations, comparisons with clinical populations may inform us of the specific characteristics of obsessionally-themed intrusions occurring within OCD. However, there has not yet been any systematic review of the literature directly comparing the different characteristics of

obsessionally-themed intrusions as they occur in OCD in comparison with those in the general population and in other clinical disorders.

A related line of research has focused on differences between obsessions and non-obsessionally themed intrusions occurring in other clinical disorders. DSM-5 primarily considers the content of the thought and the presence or absence of compulsions in differential diagnosis (APA, 2013), in line with the notion that specific thoughts contents are associated with specific disorders (Beck, 1976b). However, content can overlap between disorders, such as thoughts about harm coming to loved ones being a potential indicator of OCD, generalized anxiety disorder (GAD) or post-traumatic stress disorder (Franklin & Raines, 2019). In these cases, it has been suggested that other characteristics may be able to differentiate between obsessional and non-obsessional thoughts (Franklin & Raines, 2019). One narrative review reported on the differences between obsessionally-themed intrusions in OCD, anxiety-themed intrusions in anxiety disorders and depression-themed intrusions in depression (Julien et al., 2007). This review found that depression-themed intrusions (such a negative automatic thoughts) were experienced to be less intrusive and more difficult to retrieve into consciousness, perceived as more rational, more acceptable and more ego-syntonic (i.e., in accordance with the person's values) compared to obsessionally-themed intrusions (Julien et al., 2007). Further, anxiety-themed intrusions (such as worries) were more related to everyday concerns, more likely to be triggered by reality-based information, more acceptable, more resisted, manifesting themselves mostly as thoughts (as opposed to images or impulses, which were more prevalent within obsessionally-themed intrusions), more emotionally disturbing, and less intrusive compared to obsessionally-themed intrusions (Julien et al., 2007). However, this evidence is based on an unsystematic review of the literature, including non-empirical papers based on experts' opinion.

Further, some of the characteristics ascribed to obsessions, such as frequency, persistence, intrusiveness, unwantedness, anxiety and distress, as well as the need to neutralize, may not be specific to obsessionally-themed intrusions as they occur in OCD when compared with intrusions in other clinical disorders, even if such differences exist with non-clinical populations. For example, non-clinical participants tend to worry less frequently and for a shorter duration compared to participants suffering from GAD (Dupuy, Beaudoin, Rhéaume, Ladouceur, & Dugas,

2001), and similar differences in frequency and duration have been observed when comparing those with OCD and non-clinical populations (Rachman & de Silva, 1978). In order to gain a better understanding of the specificity of obsessions, similarities and differences with differently-themed intrusions occurring in other disorders are relevant as well.

The principal aim of the current study is to gain better insight into the specific characteristics of obsessionally-themed intrusions as they occur in OCD in comparison with other populations. Previous reviews have only focused on a relatively small number of studies, and a systematic review of OCD-themed intrusions in comparison to those occurring in other populations has not yet been conducted. Consequently, the first aim of the study is to provide a systematic review of the empirical evidence on the similarities and differences between obsessions as they occur in OCD with similarly *obsessionally-themed* intrusions as they occur in the general population and other clinical populations. The second aim of the study is to provide a systemic review of the empirical evidence of the similarities and differences between obsessions as they occur in OCD with *non-obsessionally-themed* intrusions in clinical populations.

Based on the extant literature, the current review will primarily consider the following parameters: frequency, duration, number of different obsessional themes, persistence, intrusiveness, unwantedness, distress, anxiety, need to neutralize, interference, uncontrollability, avoidance, ego-dystonicity, rationality, form, basis in reality, presence of triggers and perceived realism. Specific research questions are: (Q1) What are the differences between intrusions with obsessional themes occurring among those with OCD and those occurring in non-clinical populations? (Q2) What are the differences between intrusions with obsessional themes occurring among those with OCD and those occurring in other clinical populations? (Q3) What are the differences between intrusions with obsessional themes occurring among those with OCD in comparison to intrusions with non-obsessional themes occurring in other clinical populations?

Method

Inclusion criteria, method of selection of studies and method of analysis were pre-planned and documented in a protocol. The protocol was subsequently registered on PROSPERO (registration number: CRD42020172135). It was drafted according to the guidelines published by the Preferred

Reporting Items for Systematic review and Meta-Analysis (PRISMA) – Protocol (Moher et al., 2015).

Eligibility Criteria

Studies included in the review were: (1) original empirical research articles published in peer-reviewed journals; (2) compared participants with OCD's obsessionally-themed intrusions with other group(s) of non-clinical or clinical participants on their obsessionally-themed or non-obsessionally-themed intrusions; (3) written in English; (4) unrestricted on participants' age. No pre-planned definition of obsessionally-themed intrusions was utilized, and no limit on published dates was set.

Search Strategy and Data Collection

PubMed and PsychInfo online databases were used to search the literature. Reference list of all included studies were screened for additional eligible studies. The following terms were used in search engines: OCD, obsessive compulsive disorder, intrusion, intrusions, intrusive thought, intrusive thoughts, cognitive intrusion, cognitive intrusions. The following research strategy was used in PubMed: ((OCD[Title/Abstract] OR Obsessive compulsive disorder[Title/Abstract]) AND (intrusion[Title/Abstract] OR intrusions[Title/Abstract] OR intrusive thought[Title/Abstract] OR intrusive thoughts[Title/Abstract] OR cognitive intrusion[Title/Abstract] OR cognitive intrusions[Title/Abstract])). The following research strategy was used in PsychInfo: (OCD OR "Obsessive compulsive disorder") AND (Intrusion OR Intrusions OR "Intrusive thought" OR "Intrusive thoughts" OR "Cognitive intrusion" OR "Cognitive intrusions").

Records of included and excluded studies were inspected by two reviewers (JA and LB). They executed the extraction independently and their results were compared one article selection, removal of duplicate articles, exclusion of articles based on title and abstract and exclusion of articles after full text review. Disagreements were resolved by consensus; it was planned that the senior author (FA) would decide if no consensus was obtained, although this was not necessary.

The first reviewer drafted the narrative review and conducted the meta-analysis (JA). The second reviewer (LB) verified the information included in the narrative review and the effect size and

standard error extracted for the meta-analysis. Again, disagreements were resolved by consensus and it was planned that the senior author (FA) would decide if no consensus was obtained, although this was not necessary.

Two types of data were extracted from the included studies: study information and study outcome. The following information was extracted from studies: type of participants, screening of participants, method for/instrument assessing intrusion, and definition of intrusions. While extraction of study outcome was not pre-planned, we were expecting to find at least part of the following in each study: duration, number of different obsessional themes, persistence, intrusiveness, unwantedness, distress, anxiety, need to neutralize, interference, uncontrollability, avoidance, ego-dystonicity, rationality, form, basis in reality, presence of triggers and perceived realism.

Analysis and Risk of Bias Assessment

When meta-analysis was appropriate, results were reported using Cohen's d. Given that very few studies reported effect sizes, Cohen's d was calculated using the reported mean, standard deviation and number of participants according to recommended guidelines (Cohen, 1988). Meta-analyses were performed with fixed effect model if the I^2 value was below 50%. When the I^2 was at or above 50%, indicating heterogeneity (Higgins & Thompson, 2002), a restricted maximum-likelihood random effect model was used instead to account for individual variance between studies. Meta-analysis was performed only when the one outcome was compared across the same groups in three studies or more. In other cases, the results were summarized in a narrative review. Given the low number of studies included in meta-analysis, no additional analyses were performed (such as meta-regression). None were originally pre-planned.

To assess the risk of bias of individual studies, recruitment population as well as important methodological aspects were mentioned in a table (see Annexe 1). We described two major components for each study when assessing risk of bias: recruitment strategy (e.g. screening), and method for assessing intrusions (e.g. using a definition). Other relevant methodological qualities were also mentioned.

To evaluate selective reporting bias and potential selective reporting within studies, the funnel plot was evaluated visually. No formal test was performed because of the limited number of studies within each meta-analysis (Higgins et al., 2020). In order to complement this information, the fail-safe N was calculated, indicating the number of non-significant studies needed for the true effect to be non-significant (Orwin, 1983).

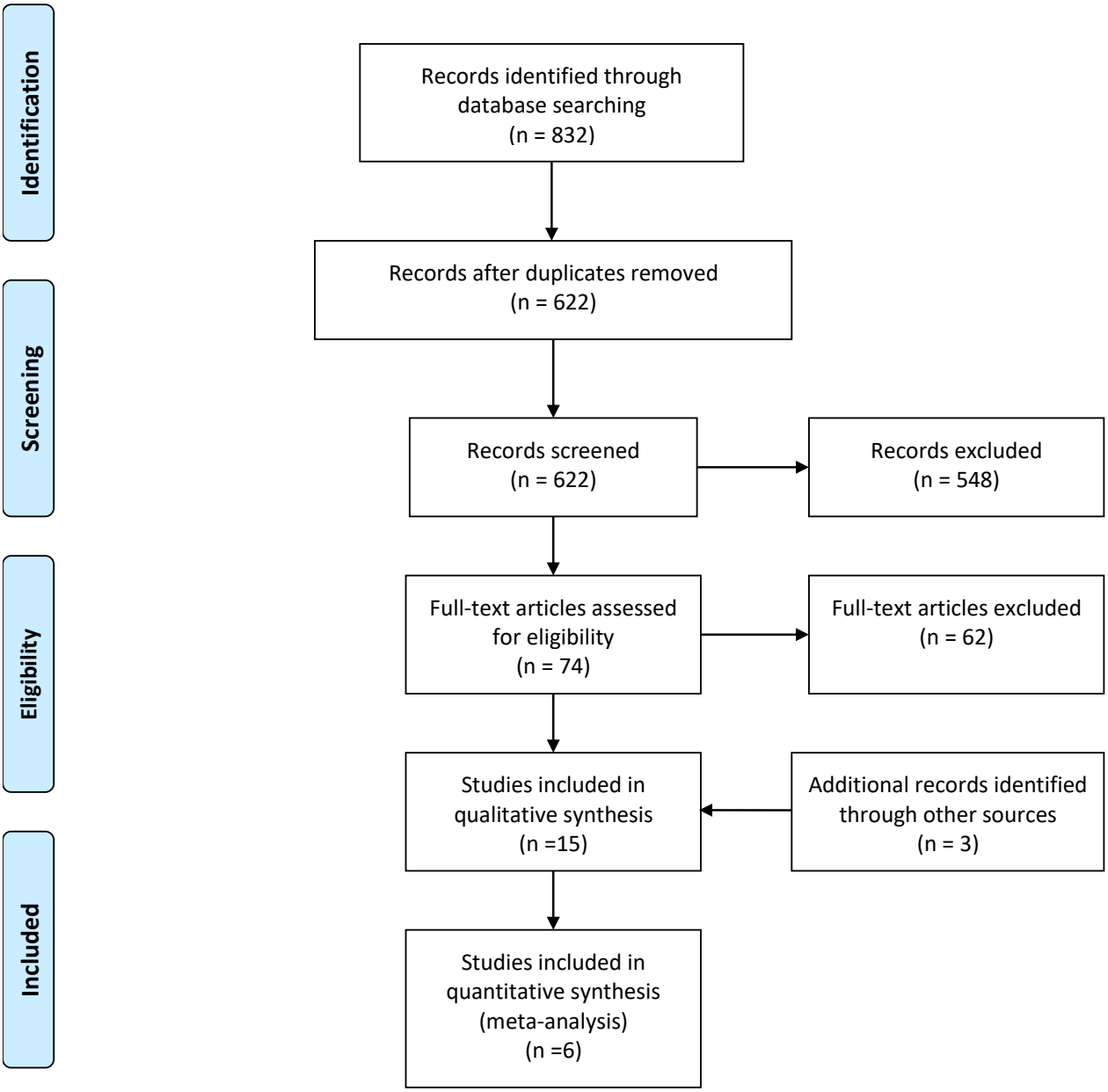
Results

Study Selection

The database search was performed on the 26th of October 2021. The search method yielded 832 records, of which 622 were not duplicate. A total of 548 studies were excluded based on title and abstract because they were either not written in English (52), not concerning OCD in humans (11), not empirical studies (e.g. commentary; 144) or not concerning intrusion's/obsession's characteristics (342), leaving 74 studies assessed by full text. From those screened by full text, 62 were removed for not investigating intrusions' characteristics specifically or not including an OCD group, leaving 12 studies selected, with two additional studies that were further included following inspection of the selected articles' reference list and one relevant ad hoc article for a total of 15 studies included in the review. All studies were included in the narrative review (qualitative synthesis) and six studies were also included in the meta-analysis (quantitative synthesis). The studies retrieved were published between 2007 and 2021. The review flow diagram is presented in figure 1.

Figure 1.

Flow diagram of the literature search



Note. This figure is based on the one provided in: Moher D, Liberati A, Tetzlaff J, Altman DG, The PRISMA Group (2009). Preferred Reporting Items for Systematic Reviews and Meta-Analyses: The PRISMA Statement. PLoS Med 6(7): e1000097. doi:10.1371/journal.pmed1000097

Figure 1. – Flow diagram of the literature search

Study Characteristics

The studies included varied with regards to the diagnosis of participants: all 15 studies reported data from participants with OCD (n= 620), 10 reported non-clinical participants data (n= 706), four reported data from participants with anxiety disorders (either mixed anxiety disorder or GAD) (n= 177), three reported data from participants with depressive disorder (either major depression and dysthymic disorder) (n= 98), two reported data from participants with ED (either mixed or anorexia nervosa restrictive subtype) (n= 211), one reported data from participants with schizophrenia (n= 45) and one reported data from participants with hypochondria (n= 34), for a total of 1 891 participants. Individual study characteristics are presented in Annexe 1.

In all selected articles, clinical groups were screened using interviews, except for one study which screened its participants with OCD by question checks (Moritz & Laroi, 2008). Non-clinical groups were screened by standardized instruments in two studies (Bouvard, Fournet, Denis, Sixdenier, & Clark, 2017; Wahl et al., 2019) and screened by question checks in the remaining eight studies. One study reported two participants with anxiety disorder in their non-clinical control group (Bouvard et al., 2017). In studies comparing clinical groups, five allowed no mutual co-morbidity (e.g., OCD + GAD when comparing OCD and anxiety disorder groups) and one study only included participants with OCD without co-morbidity (Garcia-Soriano & Belloch, 2013).

Intrusions were assessed from a list in 11 studies, while four used a definition to prompt intrusions from participants. All list of intrusions utilized underwent validation. Intrusive imagery was specifically investigated in one study (Lipton et al., 2010) and one study investigated repeated negative thoughts (Wahl et al., 2019), assuming that participants with OCD would report an obsession. When investigating a specific intrusion, nine selected the intrusion that was the most distressing, disturbing or upsetting, two the most frequent and personally relevant intrusion (Lipton et al., 2010; Wahl et al., 2011), one any unacceptable intrusion (Purdon et al., 2007), and another did not specify any characteristics beyond intrusiveness (Moritz & Laroi, 2008). The period of reference for intrusions varied from one to three months, with most studies (seven) using a period of reference of three months and six did not report using a specific period of reference.

There was no indication of selective reporting in any of the studies. As most studies used a standardized instrument to assess intrusions, no missing questions were observed. However, we were unable to assess this for studies using idiosyncratic measures.

What Are the Differences Between Intrusions with Obsessional Themes Occurring Among Those with OCD and Those Occurring in Non-Clinical Populations?

Frequency of Intrusions and Number of Obsessional Themes

A total of six studies reported the frequency of obsessionally-themed intrusions (Achachi, Bouvard, & Rey, 2017; Bouvard et al., 2017; Garcia-Soriano & Belloch, 2013; Garcia-Soriano, Belloch, Morillo, & Clark, 2011; Inozu et al., 2021; Morillo, Belloch, & Garcia-Soriano, 2007), and five studies reported the number of obsessional themes among participants with OCD and non-clinical participants (Achachi et al., 2017; Bouvard et al., 2017; Inozu et al., 2021; Julien et al., 2009; Morillo et al., 2007). All studies used a list to assess the intrusions of each participant. Regarding the frequency of the most distressing intrusion, meta-analysis showed a significant difference with a very strong different effect size for participants with OCD compared to non-clinical participants (d= 1.66, 95%CI [0.62-2.70] OCD n= 2444, non-clinical n= 241, p= .002, I^2= 96%, fail-safe n=443). Regarding the different number of obsessional *themes* experienced, meta-analysis showed a significant difference with a moderate effect size indicating that participants with OCD experience a significantly higher number of different obsessional themes (d= 0.55, 95%CI [0.22-0.88], OCD n= 161, non-clinical n= 215, p <.001, I^2= 54%, fail-safe n= 40).

Distress, Emotions and Interference

A total of six studies among participants with OCD and non-clinical participants (Achachi et al., 2017; Bouvard et al., 2017; Garcia-Soriano & Belloch, 2013; Inozu et al., 2021; Morillo et al., 2007; Moritz & Laroi, 2008) compared distress, emotions and interference associated with obsessionally-themed intrusions. Five of these studies used lists of intrusions given to participants, while the other study prompted intrusions from participants following a definition (Moritz & Laroi, 2008). One study showed that participants with OCD experienced their intrusions as more bothersome (Moritz & Laroi, 2008), while another reported the most upsetting intrusion

of those with OCD to be more unpleasant in comparison to non-clinical participants (Morillo et al., 2007). In general, intrusions among those with OCD are accompanied by more negative emotional reactions showing a very large effect size (d= 2.16) (Garcia-Soriano & Belloch, 2013). In addition, the level of interference caused by the most distressing intrusion shows a very large effect size, with those with OCD experiencing significantly more interference from these intrusions as compared to non-clinical participants (d= 1.78, 95%CI [1.10 – 2.47], OCD n= 158, non-clinical n= 156, p< .001, I^2= 84%, fail-safe n= 230).

Unwantedness, Uncontrollability and the Form of Intrusions

A total of five studies among participants with OCD and non-clinical participants (Achachi et al., 2017; Bouvard et al., 2017; Inozu et al., 2021; Morillo et al., 2007; Moritz & Laroi, 2008) compared unwantedness, uncontrollability and form associated with obsessionally-themed intrusions. All used a list of intrusions, with the exception of one study (Moritz & Laroi, 2008) that prompted intrusions from participants following a definition. Meta-analysis showed that those with OCD experienced their most distressing intrusion as significantly more unacceptable compared to non-clinical participants with a moderate effect size (d= 0.64, 95%CI [0.38 - 0.89] OCD n= 128, non-clinical n= 125, p <.001, I^2= 40%, fail-safe n=34). Meta-analysis also showed that those with OCD experienced these intrusions as far more uncontrollable, or more difficult to control, with a very large effect size (d= 1.98, 95%CI [1.38-2.58], OCD n= 128, non-clinical n= 125, p< .001, I^2= 72%, fail-safe n= 222). These results were replicated by qualitative analysis of intrusions between participants with OCD and non-clinical participants (Inozu et al., 2021; Moritz & Laroi, 2008). Also, those with OCD judged their intrusion to be more important to suppress than non-clinical participants (Achachi et al., 2017). Intrusions occurring in OCD were not more likely to occur as thoughts, impulses or images compared to those occurring in non-clinical population (Inozu et al., 2021). Finally, those suffering from OCD ascribed more characteristics to their intrusions, such as a voice tone, and considered them to be more real when compared to non-clinical participants (Moritz & Laroi, 2008).

Ego-Dystonicity, Reality-Basis and Perceived Realism

A total of five studies among participants with OCD and non-clinical participants (Inozu et al., 2021; Julien et al., 2009; Morillo et al., 2007; Moritz & Laroi, 2008; Purdon et al., 2007) reported information on ego-dystonicity, basis in reality and perceived realism associated with obsessionally-themed intrusions. Two of these studies assessing them using a list of intrusions given to participants (Julien et al., 2009; Morillo et al., 2007), and the remaining two studies assessed them by prompting intrusions from participants following a definition.

In terms of ego-dystonicity, those with OCD evaluated their intrusive thoughts as more inconsistent with morals, having more implications for their personality, and as more repugnant, but not as more irrational as compared to non-clinical controls (Purdon et al., 2007). Related to ego-dystonicity, those with OCD also evaluated their intrusions as stranger and more alien than non-clinical participants (Moritz & Laroi, 2008). Further, with regards to basis in reality, Julien and collaborators (2009) found intrusions among those with OCD to occur more often without a direct link to the environment compared to those occurring in non-clinical participants. Also, those with OCD are more likely to worry that their intrusion would come true as compared to non-clinical participants (Morillo et al., 2007). However, there are no differences between those with OCD compared to non-clinical participants regarding the presence or absence of any specific trigger (whether internal or external) for the intrusion (Inozu et al., 2021).

Conclusion

Overall, results are highly consistent across studies when comparing obsessionally-themed intrusions in OCD with those occurring in non-clinical populations. For those with OCD, these intrusions were more frequent, caused more distress, elicited more negative emotion, and were associated with higher levels of interference. In addition, those with OCD experienced obsessionally themed intrusions as more unwanted, more difficult to control, and eliciting a stronger urge to suppress the thought as compared to non-clinical populations. Further, obsessionally-themed intrusions among those with OCD were stranger, more alien, more inconsistent with one's morals, more repugnant, less likely to have any basis in reality and associated with a higher degree of worry that the obsession might come true. Those with OCD also experienced more intrusions across different themes. Also, while obsessionally-themed

intrusions were experienced as more ego-dystonic, alien and strange by those with OCD, they were not necessarily experienced as more irrational as compared to non-clinical controls. A summary of the differences between obsessionally-themed intrusions occurring in OCD compared to those occurring among non-clinical participants are presented in table 1.

What Are the Differences Between Intrusions with Obsessional Themes Among Those with OCD and Those Occurring in Other Clinical Populations*?*

Two studies compared obsessionally-themed intrusions occurring in those with OCD to those occurring in depression (Morillo et al., 2007; Wahl et al., 2011) and two studies compared them with those occurring in participants with mixed anxiety disorders (Inozu et al., 2021; Morillo et al., 2007). All studies used a list of obsessionally-themed intrusions to assess their characteristics.

Frequency, Duration and Number of Obsessional Themes

The most distressing obsessionally-themed intrusions is more frequent in those with OCD compared to those with anxiety and depression (Inozu et al., 2021; Morillo et al., 2007; Wahl et al., 2011). Further, intrusions among those with OCD were of a longer duration as compared to participants suffering from depression (Wahl et al., 2011). Regarding the number of obsessional themes reported by participants, there were no significant differences between those with OCD and those with depression (Morillo et al., 2007). However, evidence for a difference in the number of intrusions across themes in comparison to those with anxiety was mixed with one study reporting no significant differences (Morillo et al., 2007), while another reported significant differences (Inozu et al., 2021).

Distress, Emotions, Interference, Avoidance and Urge to Act

Those with OCD reported obsessionally-themed intrusions as being more unpleasant and eliciting more guilt compared to participants with an anxiety disorder (Morillo et al., 2007). Likewise, these intrusions provoked more distress and were experienced as more unpleasant as compared to those with a depressive disorder (Morillo et al., 2007; Wahl et al., 2011). There were no significant differences on the level of sadness, insecurity, worry, guilt and shame, but a significantly higher degree of interference with functioning and decision-making among those with OCD as compared

to those with a depressive disorder (Wahl et al., 2011). Similarly, intrusions among those with OCD were associated with a higher level of interference as compared to intrusions in those with an anxiety disorder (Inozu et al., 2021). No significant differences were found in the avoidance of the triggers compared to those with depression (Wahl et al., 2011). Also, those with OCD did not experience a stronger urge to act or need to prevent outcomes compared to those with depression (Wahl et al., 2011).

Unwantedness, Uncontrollability and the Form of Intrusions

Participants with OCD experienced their obsessionally-themed intrusions as less acceptable compared to participants suffering from anxiety disorders, but not compared to those suffering from depression (Morillo et al., 2007). Participants with OCD also experienced these intrusions as more uncontrollable compared to participants with an anxiety or depressive disorder (Garcia-Soriano et al., 2011; Inozu et al., 2021; Wahl et al., 2011). In addition, intrusions experienced by those with OCD were rated as more difficult to dismiss and requiring more effort to do so compared to those with depression (Morillo et al., 2007; Wahl et al., 2011). No significant differences were found with regards to the temporal orientation (past or future) of intrusions between those with OCD and depression (Wahl et al., 2011). Intrusions occurring in OCD also did not differ in form (thoughts, images or impulses) compared to those occurring in anxiety disorders (Inozu et al., 2021).

Ego-Dystonicity and Perceived Realism

Participants with OCD were more likely to worry that their obsessionally-themed intrusive thoughts would come true compared those suffering from anxiety disorder (Morillo et al., 2007). Also, intrusions occurring in OCD were more ego-dystonic compared to those occurring in anxiety disorders, but do not differ in the triggers (whether internal or external) of intrusions (Inozu et al., 2021). Further, contrary to anxiety with regards to ego-dystonicity, there appear to be no differences of these intrusions on irrationality, alienness, contradiction with the person's value and attitudes, revelation of self-attributes (whether positive or negative) compared to those occurring in depression (Morillo et al., 2007; Wahl et al., 2011). The same studies also report no

significant differences were found on realism, worry and perceived likelihood that the intrusion would come true, and on awareness of triggers (Morillo et al., 2007; Wahl et al., 2011).

Conclusion

The most upsetting obsessionally-themed intrusion among those with OCD occurs more frequently and elicits a higher level of guilt in comparison with other anxiety disorders. It is also experienced as more unpleasant, more unacceptable and more uncontrollable associated with a greater degree of worry that the intrusion could become true. In comparison to those with depressive disorder, those with OCD experienced their obsessionally-themed intrusions as more unpleasant, distressing, interfering, present and uncontrollable. Also, obsessionally-themed intrusions in OCD were of a longer duration as compared to those with a depressive disorder. However, one study reported a higher number of obsessional themes for those with OCD in comparison with anxiety disorders, whereas another did not. A summary of the differences between obsessionally-themed intrusions occurring in OCD compared to those occurring among those with anxiety and depression is presented in table 1.

Tableau 1. – Differences between obsessionally-themed intrusions in obsessive compulsive disorder in comparison with non-clinical controls, depressive disorders and anxiety disorders

	Non-clinical participants	Anxiety disorder	Depressive disorder
Distress	< OCD	< OCD	< OCD
Interference	< OCD (d= 2.18)	< OCD	< OCD
Uncontrollability	< OCD (d= 1.98)	< OCD	< OCD
Frequency (most upsetting)	< OCD (d= 1.66)	< OCD	< OCD
Negative emotion	< OCD (d= 2.16)	< OCD	NS
Unacceptability	< OCD (d= 0.64)	< OCD	NS
Ego-dystonicity	< OCD	< OCD	NS
Alienness/strangeness	< OCD	< OCD	NS
Perceived realism	< OCD	< OCD	NS
No. of obsessional themes	< OCD (d= 0.55)	Mixed	NS
Duration	-	-	< OCD
Lack of basis in reality	< OCD	-	-
Urge to act	< OCD	-	NS
Triggers	NS	NS	-
Form	NS	NS	NS
Avoidance	-	-	NS
Content	-	-	NS

Note. Cell content denotes a comparison of those with OCD with the population in the column heading. When available, effect sizes are reported, otherwise the general direction of the effect is reported. NS= Not significant; "-" Indicates that the comparison was not found.

What Are the Differences Between Intrusions with Obsessional Themes Occurring Among Those with OCD in Comparison to Intrusions with Non-Obsessional Themes Occurring in Other Clinical Populations?

A total of seven studies compared participants with OCD's obsessionally-themed intrusions with non-obsessionally themed intrusions occurring in other clinical samples: two with depression (Wahl et al., 2019; Wahl et al., 2011), two with GAD (Romero-Sanchiz, Nogueira-Arjona, Godoy-Avila, Gavino-Lazaro, & Freeston, 2017; Wahl et al., 2019), one with ED (Garcia-Soriano, Roncero, Perpina, & Belloch, 2014), one with anorexia nervosa – restrictive subtype (Roncero, Belloch, Perpina, Fornes, & Garcia-Soriano, 2013), one with intrusive imagery in mixed anxiety disorders

(Lipton et al., 2010), one with schizophrenia (Moritz & Laroi, 2008) and one with hypochondria (Romero-Sanchiz et al., 2017). Four studies provided a list of intrusions to participants (Garcia-Soriano et al., 2014; Romero-Sanchiz et al., 2017; Roncero et al., 2013; Wahl et al., 2011), while three prompted intrusions from participants following a definition (Lipton et al., 2010; Moritz & Laroi, 2008; Wahl et al., 2019).

Frequency and Duration

Obsessionally-themed intrusions among those with OCD occurred with the same level of frequency as compared to depression-themed intrusions among those with a depressive disorder (Wahl et al., 2011). Similarly, obsessionally-themed intrusions in those with OCD occurred with a similar level of frequency as compared to anxiety-themed intrusions occurring among those with GAD (Romero-Sanchiz et al., 2017). However, obsessionally-themed intrusions in those with OCD occurred significantly more frequently than the most distressing hypochondria-themed in hypochondria and ED-themed intrusion in EDs (Garcia-Soriano et al., 2014; Romero-Sanchiz et al., 2017; Roncero et al., 2013). Also, obsessionally-themed mental images experienced by those with OCD occurs more frequently than anxiety-themed mental images experienced by those with an anxiety disorder (Lipton et al., 2010). There were no significant differences in duration, presence during the day, and a sense of background presence for obsessionally-themed intrusions occurring in those with OCD in comparison to non-obsessionally-themed intrusions occurring in both depression and GAD (Wahl et al., 2019; Wahl et al., 2011).

Distress, Emotion, Interference and Avoidance

No significant differences were reported regarding the unpleasantness of obsessionally-themed obsessions in comparison to depressively-themed intrusions both in terms of their content and occurrence (Wahl et al., 2011). In addition, these studies reported no significant differences in levels of distress, sadness, shame, insecurity and worry resulting from obsessionally-themed intrusions when compared with those suffering from anxiety disorders and depression (Romero-Sanchiz et al., 2017; Wahl et al., 2011). Similar nonsignificant differences have been observed in comparison with ED-themed intrusions in those with an ED with no significant differences in unpleasantness, emotional disturbance, guilt, sadness, shame and anxiety (Roncero et al., 2013).

Likewise, there are no significant differences in the strength of emotions, distress and feelings of insecurity as a result of obsessionally-themed intrusive images in those with OCD compared to anxiety-themed intrusive mental images in anxiety disorders (Lipton et al., 2010; Romero-Sanchiz et al., 2017). However, obsessionally-themed intrusions among those with OCD generated significantly more guilt compared to anxiety-themed intrusions occurring in those with GAD and hypochondria-themed intrusions occurring in those with hypochondria (Romero-Sanchiz et al., 2017). In addition, the same study reported that obsessionally-themed intrusions among those with OCD also generated greater feelings of insecurity than hypochondria-themed intrusions occurring among those with hypochondria. Finally, one study reported that intrusions in OCD were experienced as more bothersome compared to intrusions among those with schizophrenia (Moritz & Laroi, 2008).

With respect to levels of interference, there were no significant differences between obsessionally-themed intrusions occurring in those with OCD as compared to depression-themed intrusions occurring in those with a depressive disorder, anxiety-themed intrusions occurring in those with GAD, and hypochondria-themed intrusions occurring in those with hypochondria (Romero-Sanchiz et al., 2017; Wahl et al., 2011). Also, obsessionally-themed intrusions in those with OCD did not require greater usage of mental capacity compared to non-obsessionally-themed intrusions occurring in depression and GAD (Wahl et al., 2019). However, obsessionally-themed intrusions occurring in OCD generated more disruption (i.e. disturbance, interference and control difficulties) compared to ED-themed intrusions occurring in ED (Garcia-Soriano et al., 2014).

There were no significant differences in the avoidance of triggers for obsessionally-themed intrusions occurring in OCD compared to depression-themed intrusions occurring in depression (Wahl et al., 2011) and obsessionally-themed intrusions occurring in OCD were not used more as a means of avoidance compared to non-obsessionally-themed intrusions occurring in depression and GAD (Wahl et al., 2019).

Form, Uncontrollability, Unacceptability and Urge to Act

There were no significant differences in form (either as an image, an impulse, a thought, a presence, and a doubt) and reported ownership of obsessionally-themed intrusions occurring in OCD as compared to depressively-themed intrusions in those with depression (Wahl et al., 2019; Wahl et al., 2011). However, those with OCD ascribed fewer characteristics to these intrusions (such as gender or emotions) (Moritz & Laroi, 2008). One study reported that obsessionally-themed intrusions occurring in OCD were less verbal and more visual compared to anxiety-themed intrusions occurring in GAD (Romero-Sanchiz et al., 2017). However, another found they did not differ with respect to level of abstractness and verbosity (Wahl et al., 2019). Further, obsessionally-themed intrusions occurring in OCD did not differ from hypochondria-themed intrusions occurring in hypochondria with regards to the proportion of verbal and visual content (Romero-Sanchiz et al., 2017). Those with OCD also did not report experiencing more intrusive images, vivid images, movement in images and inclusion of other sensory modalities when compared with anxiety-themed intrusive mental images occurring in anxiety disorders. However, those with OCD reported seeing their intrusive mental images from a field perspective more often when compared with anxiety-themed intrusive mental images occurring in anxiety disorders (Lipton et al., 2010).

Intrusions occurring in OCD were significantly harder to control compared to intrusions occurring in schizophrenia, but not significantly harder to control as compared to ED-themed intrusions occurring in anorexia nervosa – restrictive subtype (Moritz & Laroi, 2008; Roncero et al., 2013). Also, obsessionally-themed intrusions occurring in OCD did not differ on repetitiveness, intrusiveness and uncontrollability compared to non-obsessionally-themed intrusions occurring in depression and GAD (Wahl et al., 2019). However, obsessionally-themed intrusions occurring in OCD elicited a higher rating of disapproval as compared to anxiety-themed intrusions occurring in GAD and hypochondria-themed intrusions occurring in hypochondria (Romero-Sanchiz et al., 2017). Obsessionally-themed intrusions occurring in OCD were also found to be accompanied by a stronger urge to act than depressively-themed intrusions occurring in depression, but did not differ significantly in required effort, difficulty dismissing the thoughts, or the need to prevent the occurrence of the thought (Wahl et al., 2011). Also, obsessionally-themed intrusions among those

with OCD are perceived as more useful (productive) compared to non-obsessionally-themed intrusions occurring in depression (d= 0.88) and GAD (d= 0.67) (Wahl et al., 2019).

Ego-dystonicity, Self, Trigger, Basis in Reality and Perceived Realism

Obsessionally-themed intrusions occurring in OCD were experienced as more irrational and alien than depression-themed intrusions occurring in depression but did not differ with respect to their contradiction with the person's value system (Wahl et al., 2011). Also, intrusions occurring in OCD were experienced as less alien compared to intrusion occurring in schizophrenia (Moritz & Laroi, 2008). Obsessionally-themed intrusions occurring in OCD were experienced as more ego-dystonic compared to anxiety-themed intrusions occurring in GAD and hypochondria-themed intrusions occurring in hypochondria (Romero-Sanchiz et al., 2017).

Obsessionally-themed intrusions occurring in OCD were less based in reality compared to depression-themed intrusions occurring in depression, anxiety-themed intrusions occurring in GAD, but not hypochondria-themed intrusions occurring in hypochondria (Romero-Sanchiz et al., 2017; Wahl et al., 2011). Also, obsessionally-themed intrusions occurring in OCD were less likely to come true compared to depression-themed intrusions occurring in depression (Wahl et al., 2011). Those with OCD experienced their intrusions to be more real than intrusions of participants with schizophrenia (Moritz & Laroi, 2008). The absence or presence of a trigger of obsessionally-themed intrusions in OCD did not differ when compared with depression-themed intrusions occurring in depression (Wahl et al., 2011).

Obsessionally-themed intrusions occurring in OCD were rated to be less negatively self-revealing, compared to depression-themed intrusions occurring in depression (Wahl et al., 2011). There was no significant difference between these type of intrusions to the extent that they were evaluated as revealing something positive about the self (Wahl et al., 2011). More personal significance was given to ED-themed intrusions occurring in ED (Garcia-Soriano et al., 2014), but not when specifically investigating ED-themed intrusions occurring in anorexia nervosa – restrictive subtype (Roncero et al., 2013) when compared with obsessionally-themed intrusions in OCD. However, obsessionally-themed intrusive mental images occurring in OCD were more often categorized as

being relevant to a dangerous self than the anxiety-themed intrusive mental images occurring in anxiety disorders (Lipton et al., 2010).

Conclusion

A summary of the differences between obsessionally-themed intrusions occurring in participants with OCD and non-obsessionally-themed intrusions occurring in other clinical groups is presented in table 2. Obsessionally-themed intrusions occurring in OCD elicited a higher urge to act, were considered more productive, more irrational and more alien compared to depression-themed intrusions occurring in depression. Obsessionally-themed intrusions occurring in OCD elicited more guilt, more disapproval, were considered more productive, more ego-dystonic and less based in reality compared to anxiety-themed intrusions occurring in GAD. However, contradictory findings were reported on the form of the intrusion when comparing those in OCD to those in GAD, with one study reporting more visual and less verbal content for OCD, while the other reported no significant differences. Obsessionally-themed intrusive images occurring in OCD were more frequent, were more likely to be seen with a field perspective and were more likely to be associated with a dangerous self-representation compared to anxiety-themed intrusive images occurring in anxiety disorders. Obsessionally-themed intrusions in OCD were more frequent, disruptive and personally significant compared to ED-themed intrusions occurring in EDs, although there were no significant differences on disruptiveness and personal significance when comparing specifically with anorexia nervosa – restrictive subtype. Intrusions occurring in OCD were more bothering, ascribed fewer characteristics, perceived more unreal, harder to control and less alien compared to intrusions occurring in schizophrenia. Finally, obsessionally-themed intrusions occurring in OCD were more frequent, generated more guilt and insecurities, were more disapproved and more ego-dystonic compared to hypochondria-themed intrusions occurring in hypochondria.

Tableau 2. – Differences between obsessionally-themed intrusions in obsessive-compulsive disorder with non-obsessionally-themed intrusions in other clinical samples

	Depression	GAD	Anxiety disorder – Intrusive imagery	Hypochondria	ED	AN-R	Schizophrenia
Frequency (most upsetting)	NS	NS	< OCD	< OCD	< OCD	< OCD	-
Self	Negative > OCD	-	Dangerous < OCD	-	Personal significance > OCD	NS	-
Distress	NS	-	NS	-	< OCD	< OCD	< OCD
Urge to act	< OCD (d= 0.88)	< OCD (d= 0.67)	-	-	-	-	-
Unacceptability	-	< OCD	-	< OCD	-	-	-
Alienness	< OCD	-	-	-	-	-	> OCD
Ego-dystonicity	NS	< OCD	-	< OCD	-	-	-
Form	NS	Mixed	Field perspective > OCD	NS	-	-	Characteristics > OCD
Reality based	> OCD	> OCD	-	NS	-	-	
Uncontrollability	NS	NS	-	-	< OCD	NS	< OCD
Emotions	NS	Guilt < OCD	NS	Guilt, insecurity < OCD	NS	-	-
Perceived realism	-	-	-	-	-	-	< OCD
Interference	NS	NS	-	NS	< OCD	-	-
Triggers	NS	-	-	-	-	-	-
Duration	NS	NS	-	-	-	-	-
Intrusiveness	NS	NS	-	-	-	-	-
Avoidance	NS	NS	-	-	-	-	-

Note. Cell content denotes a comparison with the disorder in the column heading. When available effect sizes are reported, otherwise the general direction of the effect is reported. OCD= Obsessive Compulsive Disorder; GAD= Generalized Anxiety Disorder; ED= Eating disorder; AN-R= Anorexia Nervosa Restrictive subtype; NS= Not significant; "-" Indicates that no comparisons were found.

Discussion

The aim of the current paper was to systematically review the literature on the specific characteristics of obsessions as they occur in OCD in comparison with intrusive cognitions in other populations as well as differently-themed intrusive cognitions in other populations. Previous reviews have mostly focused on comparing the content of obsessionally-themed intrusions in those with OCD with those occurring general population (Abramowitz et al., 2014; Berry & Laskey, 2012; Julien et al., 2007). The current systematic review aimed to compare obsessionally-themed intrusions (i.e., obsessions) as they occur among those with OCD with: (1) obsessionally-themed intrusions in non-clinical and other clinical populations; and (2) non-obsessionally-themed intrusions in other clinical populations.

The first research question reviewed the evidence on similarities and differences between obsessionally-themed intrusions that occur in OCD and those that occur in non-clinical populations. Those with OCD reported a higher frequency in the occurrence of obsessionally themed intrusions, and also a higher number of intrusions across different obsessional themes. Further, obsessionally-themed intrusions that occur among those with OCD caused more distress, guilt, negative emotion and interference as compared to similarly-themed intrusions that occur within the general population. Moreover, obsessionally-themed intrusions among those with OCD were more upsetting, uncontrollable, unacceptable and ego-dystonic as compared to similar intrusions in non-clinical groups. Among those with OCD, obsessional-themed intrusions were also less likely to have a direct link or basis in reality as compared to non-clinical populations. Finally, non-clinical populations worried less than those with OCD that the content of the obsessionally-themed intrusion would come true.

Overall, in comparison with non-clinical populations, these findings are consistent with the DSM-5, which defines obsessions as frequent, persistent, intrusive, unwanted thoughts generating anxiety and distress and leading the individual to attempt to ignore, suppress or neutralize these thoughts (APA, 2013). Persistence, intrusiveness and urge to act were not explicitly investigated in any of the reviewed studies, but instead, most studies included these characteristics in their definition of intrusions when prompting participants, or when asking participants to select from

the list of obsessionally-themed intrusions as it applied to them. Further, intrusiveness is conceptually related to uncontrollability and interference (Rachman, 2007), which showed a significant difference between those with OCD and non-clinical controls in the current meta-analyses. We can therefore conclude that the parameters ascribed to obsessions in DSM-5 appear to reflect empirical differences with similarly themed intrusions in non-clinical populations.

The current review also identified other potentially relevant parameters that are not currently captured, or represented in DSM-5, including the presence of negative emotions other than anxiety (i.e. guilt), its out of context occurrence, and an elevated fear among those with OCD that the obsession will come true. In particular, the occurrence of obsessions without direct evidence for its reality, including its basis in the imagination as opposed to actual reality, may be a potential indicator of what defines an obsession in comparison with intrusions that occur in non-clinical populations as well as other clinical disorders (Aardema, Wu, et al., 2018; Audet et al., 2016; Audet, Wong, Radomsky, & Aardema, 2020; Julien, O'Connor, & Aardema, 2016).

The second research question focused on differences between obsessionally-themed intrusions that occur in OCD compared to those that occur in other clinical populations. Results showed that obsessionally-themed intrusions that occur among those with OCD cause more distress and guilt as compared to those that occur within anxiety disorders. Those with OCD also experienced these intrusions as more uncontrollable and unacceptable, and with higher levels of worry that intrusion might actually come true. Further, the most distressing obsessionally-themed intrusion occurs with a higher level of frequency and increased interference among those with OCD as compared to those with anxiety disorder.

While there were a relatively large number of differences between those with OCD in comparison with anxiety disorder, these differences were more limited in comparison to those with a depressive disorder. Obsessionally-themed intrusions among those with OCD occurred with similar levels of perceived realism, alienness, ego-dystonicity, unacceptability and negative emotions (e.g., guilt). However, those with OC experienced their obsessionally-themed intrusions with a significantly higher level of distress, uncontrollability, interference and as compared to those with a depressive disorder. In addition, while there were no differences in frequency, those

with OCD experienced obsessionally-themed intrusions with a significantly longer duration than those with a depressive disorder. Overall, these unique key features might best be summarized as reflecting a higher level of persistence, pervasiveness and distress associated with obsessions as they occur among those with OCD in comparison with similarly themed intrusions in both anxiety and depressive disorders.

The third research question investigated similarities and differences between obsessionally-themed intrusions that occur in OCD with non-obsessionally-themed intrusions that occur in other disorders. Comparisons of those with OCD with GAD indicated that obsessionally-themed intrusions in OCD were experienced as more unacceptable, more ego-dystonic, less reality based and producing more guilt, yet also as more productive than anxiously-themed intrusions in those with GAD. In addition, obsessionally-themed intrusive images among those with OCD were more frequent, less likely to be seen with a field perspective, and are more likely to be related to dangerous feared self compared with anxiety-themed mental imagery among those with an anxiety disorder. No significant differences were found on duration, interference, control and avoidance. Also, there were no differences in the level of distress or negative emotions experienced in association with obsessionally-themed mental images among those with OCD as compared to anxiety-themed mental images among those with anxiety disorders. These results are somewhat consistent with Julien and collaborators (2007) who found anxiety-themed intrusions to be more acceptable and based in reality, while we did not find evidence supporting that they were more related to everyday concerns, more resisted, more emotionally disturbing, less intrusive and more likely to manifest as thoughts.

Comparisons with depressively-themed intrusions among those with a depressive disorder, indicated that obsessionally-themed intrusions occurring in OCD were more alien, less reality-based, associated with a stronger urge to act, associated with less negative representation of the self and experienced as more useful in compared to depression-themed intrusions among those with a depressive disorder. No significant differences were found on frequency, duration, distress, emotions, control, interference, avoidance, ego-dystonicity and form. These results are consistent with Julien and collaborators (2007) who found that depressively-themed intrusions

were experienced as less intrusive, more rational, acceptable and ego-syntonic in comparison with obsessionally-themed intrusions.

Obsessionally-themed intrusions among those with OCD were also compared with disorder-specific intrusions as they occurred in those with EDs, hypochondria and schizophrenia. Obsessionally-themed intrusions OCD were more frequent and associated with higher levels of distress, uncontrollability, interference and less personal significance as compared to ED-themed intrusions among those with an ED. However, there were no differences in the emotions they elicited, and when investigating anorexia nervosa – restrictive subtype specifically, uncontrollability and personal significance were no longer significant. Hypochondria-themed intrusions among those with hypochondria were less frequent, insecurity and guilt-provoking, unacceptable and ego-dystonic as compared to obsessionally-themed intrusions in OCD. Finally, obsessionally-themed intrusions among those with OCD elicited more distress, were experienced as more uncontrollable and perceived as more real, but as less alien and with decreased characteristics (such as voice tone) in comparison with intrusions occurring in those with schizophrenia.

Overall, the current literature review suggests that the unique characteristics of obsessions in OCD in comparison to obsessionally-themed intrusions as they occur in other populations consist of elevated levels of distress, interference and uncontrollability associated with their occurrence. In addition, the current results suggest that increased frequency and distress, as well as association with a dangerous self may be important parameters to consider in differentiating obsessions in OCD from non-obsessionally-themed intrusions in other disorders. Unacceptability, ego-dystonicity, alienness, guilt, the form of the intrusion, its uncontrollability as well as its lack of basis in reality have also shown potential usefulness in differentiating between obsessions and non-obsessionally-themed intrusions occurring in other disorders. There was also some evidence that those with OCD may have a stronger urge to act on their intrusions and perceive them as more useful and productive, and further research is warranted in this area, especially with respect to the persistent and pervasiveness nature of compulsions as an important feature of OCD. Recent evidence suggests that certainty following compulsive activity, as well as the type of goals

that were set for the compulsion, defined its relevance for OCD (Bouvard, Fournet, Denis, Achachi, & Purdon, 2020; Bucarelli & Purdon, 2015; Dean & Purdon, 2021).

Several strengths and limitations deserved to be noted. The current review is the first systematic review and meta-analysis summarizing the evidence on the specific characteristics of obsessions in comparison with intrusions in other populations. A limitation is the relatively small number of studies investigating each specific feature of interest associated with the occurrence of obsessions, and a comparison of effect sizes was not feasible in all cases. Also, we were surprised not to find any studies directly investigating the intensity and/or strength of obsessions in comparison to intrusions in order disorders. The intensity of obsessions has traditionally been considered a core feature of obsessions and an important factor in distinguishing between obsessions in OCD and intrusive thoughts in non-clinical populations (Rachman & de Silva, 1978). Similarly, it has been suggested that obsessions are characterized by a high-level of absorption, imaginative involvement and reality value despite their often ego-dystonic nature (Aardema & O'Connor, 2003, 2007). Also, it was surprising that the intrusiveness of intrusive cognitions was rarely considered as a variable of interest in any of the studies reviewed. While intrusiveness is implied in the definition of intrusive cognitions, usually supplied to participants before asking them to rate its characteristics, it cannot be automatically assumed no differences in intrusiveness exist between different populations, or even whether the thoughts under investigation in each study are actually intrusive cognitions. Future research may also wish to include these parameters in investigations in order to help us further identify what exactly makes an obsession, and thereby improve our understanding of OCD and its treatment.

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Chapitre 3 – Not all intrusions are created equal: The role of context, feared-self perceptions and inferential confusion in the occurrence of abnormal intrusions

Abstract

It is well-established that intrusions are universal phenomena that differ from obsessions in frequency, intensity, and distress, but otherwise are very similar in content. This understanding has guided research in obsessive-compulsive disorder (OCD) to focus on the misappraisals of intrusions, rather than the intrusions themselves. However, recent evidence suggests that other factors might distinguish intrusions from obsessions, namely the context in which they arise. Indeed, intrusions that occur without direct evidence are related to increased OCD symptoms, obsessive beliefs, and the tendency to confuse reality with the imagination, especially confusing a feared possible self with the person's actual self. However, experimental evidence supporting these findings is lacking, a gap the current study aimed to fill. Five hundred and fifty-seven undergraduate students completed a battery of questionnaires online, which included an experimental task made up of scenarios designed to gauge endorsement in specific intrusions that are either supported or not supported by direct evidence. Results showed that intrusions without direct evidence supporting them uniquely predicted OCD symptoms, whereas intrusions with evidence did not predict OCD symptoms; and that inferential confusion and feared self-perceptions predicted characteristics of the intrusions without direct evidence. Implications for cognitive-behavioural formulations of OCD are discussed.

Keywords: Obsessive-compulsive disorder; OCD; Fear of self; Inference-based approach; CBT

Introduction

Obsessive-compulsive disorder (OCD) is characterized by recurrent and persistent thoughts, urges, or images that are experienced as intrusive and unwanted (i.e., obsessions) and/or repetitive behaviours that the person feels driven to perform in response to an obsession (i.e. compulsions; APA, 2013). According to traditional cognitive-behavioural theories, obsessions develop from intrusive cognitions, but are not considered any different from intrusions found in the rest of the population except for their frequency, intensity and associated distress (Abramowitz et al., 2014). Rachman and de Silva (1978) first showed that intrusions and obsessions are highly similar in content, a finding consistently replicated in subsequent studies (e.g., Purdon & Clark, 1993; Radomsky et al., 2014; Salkovskis & Harrison, 1984). Consequently, most influential theories of OCD have focused on factors other than content to explain why intrusions experienced by the vast majority of the population become obsessional in only a small minority.

Specifically, these models emphasize the misappraisal of intrusive cognitions as the main parameter differentiating between normal and abnormal intrusions (i.e. obsessions as they occur in OCD), and that misappraisals and their associated beliefs are at the root of OCD (Moulding, Coles, et al., 2014). According to these models, intrusive cognitions that are misinterpreted to be significant are more likely to develop into obsessions. That is, appraisals of significance are considered to be an important factor through which normal intrusions acquire abnormal characteristics like heightened frequency, intensity and associated distress (Rachman, 1997, 1998). For example, Salkovskis' (1985) cognitive model focused on misappraisals of inflated responsibility (e.g., "If I have this thought, I might be responsible for harm") playing a pivotal role in the development and maintenance of obsessions. However, others have argued that responsibility appraisals are not central to OCD (e.g., Purdon & Clark, 1999), and that a variety of beliefs and appraisal domains may be relevant to the escalation of intrusive cognitions into obsessions, including overestimation of threat, over-importance given to thoughts, a belief in the need to control thoughts, perfectionism, and intolerance of uncertainty (OCCWG, 1997, 2005). Although obsessive beliefs and appraisals are clearly related to symptoms of OCD, results remain inconsistent as to the specific nature of their role in OCD, such as the relationship between

particular beliefs and different types of obsessive-compulsive symptoms (Julien et al., 2007; Viar, Bilsky, Armstrong, & Olatunji, 2011).

Even though the universal nature of intrusive cognitions (including similarities in content with obsessions) is well-established, intrusions and abnormal intrusions (i.e., obsessions) may differ on parameters other than the way they are appraised. For example, a reanalysis of the original data presented by Rachman and de Silva (1978) showed that clinicians were able to distinguish normal intrusions from abnormal intrusions (i.e. obsessions) on more than one occasion (Rassin et al., 2007; Rassin & Muris, 2007). Although the authors suggested that the distinction was not related to content, they were unable to identify the variable responsible for this difference; suggesting that both phenomena may be equal entities only on the surface and differentiating factors may not be so easily identifiable or immediately apparent.

One potential differentiating factor that has recently received increased interest is the difference in the context in which normal intrusive cognitions and abnormal intrusions (i.e., obsessions) occur. Indeed, earlier studies have noted that abnormal intrusions occur more often without an identifiable trigger relative to normal intrusions (Rachman & de Silva, 1978). Similarly, obsessions appear to be distinct from worry in generalized anxiety disorder with obsessions more often occurring without any basis in reality (Langlois, Freeston, & Ladouceur, 2000). In other words, intrusions and obsessions might be similar in content but the context in which they occur may differ, most notably with respect to the lack of evidence supporting the obsession.

Based on the notion that intrusions and obsessions with similar content might not be entirely similar phenomena, Julien, O'Connor, and Aardema (2009) asked individuals with OCD and participants from the community to judge the context in which their intrusions occurred. Individuals with OCD reported that their obsessions (i.e., abnormal intrusions) occurred more often without direct evidence justifying the potential reality of the intrusion (indirect link and no link; two thirds of the time) than non-clinical controls (one third of the time). For example, they describe a non-clinical individual who experiences intrusions about a doorknob being contaminated after seeing someone sneezing and touching the doorknob versus an obsession about a contaminated doorknob that occurs without direct supporting evidence based in the

senses, but instead based on an internal narrative removed from the actual context and fuelled by reasoning distortions ("Microbes are everywhere and so they may infect me if I touch this doorknob"; Julien et al., 2009, p. 711). This finding, that a lack of direct evidence for the potential reality of the intrusion may determine its abnormality, was extended by Audet, Aardema, & Moulding (2016). Specifically, they asked clinicians to rate non-clinical participants' intrusions on whether or not these intrusions were directly supported by evidence. Additionally, clinicians rated the extent to which they considered each of the intrusions to be OCD-relevant given the context in which they occurred. Results showed that intrusions considered to be OCD-relevant were overwhelmingly rated to occur without any direct evidence (98.7%). Moreover, individuals who experienced intrusions without direct supporting evidence, relative to those who experienced intrusions with direct evidence, reported almost twice the amount of obsessive-compulsive symptomatology, as well as elevated levels of inferential confusion – a reasoning process characterized by a lack of evidence when arriving at conclusions about reality (Audet et al., 2016). These results suggest that the abnormality of intrusions (i.e., obsessions) may be, to an important extent, informed by the lack of direct evidence supporting its occurrence.

Fradkin and Huppert (2018) also reported that the frequency of thoughts without direct evidence was positively associated with self-reported OCD symptoms in a non-clinical sample; and most recently, Llorens-Aguilar and colleagues (2021) found that almost 93% of obsessions reported by patients with OCD were judged by clinicians to occur in "inappropriate" contexts (i.e., information available in the immediate context did not justify obsessional content). However, the same study expected but found no contextual differences between normal intrusions and abnormal intrusions/obsessions, suggesting that context alone may be insufficient in differentiating between both types of intrusions for individuals who already have developed OCD. Still, it could be that context and direct evidence may be more important when obsessions first develop, a "risk factor" or a vulnerability to the development of obsessions and OCD, although this hypothesis has not yet been investigated experimentally.

One model that has elaborated on cognitive processes responsible for the genesis of obsessions prior to misappraisals of 'normal' intrusions is an inference-based formulation of OCD (O'Connor, Aardema, & Pélissier, 2005). According to this model, intrusions are not a valid analogue of

obsessions because of the manner in which the latter arises, such as from a reasoning narrative that is solely based in the imagination without direct support from sensory-based information, both internal and external. This reasoning narrative is what is subjected to "inferential confusion", which is when the person distrusts their own senses or self, and mistakenly gives credibility to (negative) possibilities and ideas even though they should remain entirely irrelevant and invalid due to their lack of support in reality (Aardema & O'Connor, 2012; Aardema et al., 2005; Aardema & O'Connor, 2003, 2007; Aardema et al., 2009; O'Connor & Robillard, 1995).

Of note, this does not mean that OCD individuals are not also affected by reality-based information when justifying an obsession, as some have interpreted (cf. Gangemi, Mancini, & Dar, 2015), which would be akin to claiming that a person with obsessional fears of public bathrooms would not experience intrusions and anxiety when putting their hands into the toilet. Rather, the point is that obsessional (or abnormal) intrusions arise without any actual evidence for the obsession or without any real sensory evidence that one's hands have been contaminated when using the public bathroom. Hence, according to an inference-based approach, even intrusions that occur with direct evidence are associated with distress but are not uniquely relevant to symptoms of OCD; as opposed to intrusions that occur without any such direct evidence, rendering them to be truly obsessional in nature. Indeed, a relatively large number of studies have shown that inferential confusion predicts OCD symptoms independent from obsessive beliefs, anxiety, depression symptoms; and treatment-related improvements in inferential confusion predicts successful treatment outcome (Aardema, O'Connor, & Emmelkamp, 2006; Aardema, Radomsky, O'Connor, & Julien, 2008; Aardema, Wu, et al., 2018; Aardema et al., 2009). However, these studies have mainly relied on self-report, and the central tenet suggesting that obsessions are characterized by a context without direct evidence has so far not been investigated experimentally, although there is preliminary evidence that there is a causal relationship between inferential confusion and OCD symptoms (Wong & Grisham, 2017a).

The role of inferential confusion and the lack of direct contextual evidence in the development and maintenance of obsessions has since been extended to include the potential significance of imagined, possible feared selves (Aardema & O'Connor, 2003, 2007). This feared possible self is a set of attributes and characteristics a person fears possessing or developing (such as attraction

toward children and pedophiliac tendencies), but for which there is again no actual evidence (Aardema & O'Connor, 2007). It has been suggested that both inferential confusion and a fear of self is characteristic for those with OCD (Aardema & O'Connor, 2003, 2007; Aardema & Wong, 2020). That is, in a similar way that obsessions are constructed on an imaginary basis or without direct evidence for their reality, so is the feared possible self, which gives rise to obsessional intrusions and doubts.

A growing body of evidence supports the relevancy of a feared self in OCD, with studies reporting that highly upsetting thoughts often contradict most with the person's self-characteristics (Purdon et al., 2007; Karen Rowa & Purdon, 2003; Rowa, Purdon, Summerfeldt, & Antony, 2005) and people suffering from OCD also judge themselves to be closer to their feared self than do community controls and describe their feared self as dangerous, whereas anxiety controls describe it as being vulnerable (Ferrier & Brewin, 2005). Aardema and colleagues (Aardema et al., 2013; Nikodijevic, Moulding, Anglim, Aardema, & Nedeljkovic, 2015) have also suggested that a fear of self might be a central construct in OCD that may not only inform the appraisal of intrusive cognitions, but also the theme and occurrence of intrusive cognitions and obsessional doubts. Taken further, a feared self might inform the obsessional narratives that lend credibility to the reality of an obsession without any concrete, direct evidence (e.g., "*I might be a corrupted, defective person, since how can you ever truly know yourself? A lot of things happen unconsciously. I might be the sort of person who would sexually abuse children without even knowing it. I drove past a couple children the other day, and even though I do not remember getting out of the car, perhaps I blocked it out, and actually molested them*").

Since the feared self in OCD is an imagined (out-of-context) and not a factual entity, it may arise through similar processes as obsessions, such as those that negate the senses and the person's actual self. Indeed, there is now evidence that feared self-perceptions relate significantly to symptoms to OCD, in particular repugnant obsessions (Aardema, Moulding, et al., 2018; Aardema et al., 2013; Melli et al., 2016). Feared self-perceptions are also significantly elevated among those suffering from repugnant obsessions as compared to anxious and depressed controls (Aardema, Moulding, et al., 2018). Moreover, reductions in feared self-perceptions following psychological

treatment for OCD uniquely and significantly predicted reductions in OCD symptoms, particularly for repugnant and contamination obsessions (Aardema, Wong, et al., 2019).

Aim and Hypotheses

Earlier studies have proposed the role of context, and specifically, the intrusion's lack of direct contextual evidence as an important parameter that might differentiate abnormal from normal intrusions. The significance of this lack of evidence is echoed in OCD-relevant constructs like inferential confusion and feared self-perceptions. However, no studies have experimentally investigated the role of context and lack of evidence in obsessional (abnormal) intrusions. The current study aimed to investigate the role of contextual evidence (or lack thereof) for intrusions in relation to symptoms of OCD. That is, are intrusions that occur without direct evidence more related to symptoms of OCD than those that occur with evidence? To answer this question, participants were presented with a series of vignettes both with and without direct evidence for the reality of a potential intrusion. Following each of these scenarios, participants were asked to select from a list of potential intrusions the ones they might experience under these circumstances, as well as to rate the associated likelihood of the intrusion actually occurring, distress, and unwantedness. We hypothesized that:

(1) Both scenarios with and without direct evidence will result in the endorsement of intrusive cognitions ("proof of concept");

(2) Scenarios with direct evidence, relative to those without direct evidence, will be associated with more intrusions as well as higher levels of perceived likelihood, distress, and unwantedness;

(3) In contrast to intrusions with direct evidence, the number of intrusions that occur without direct evidence, including their associated likelihood, distress, and unwantedness will uniquely predict OCD symptoms; and

(4) Inferential confusion and feared self-perceptions will significantly predict the effects of out-of-context scenarios controlling for depressive symptoms and obsessive beliefs.

Method

Participants

Participants were undergraduate psychology students who received course credit for their participation. They signed up via the institution's research participation pool and were then provided with a link to the current study. Upon opening the link, participants answered a series of demographic questions followed by the battery of questionnaires. Following this, participants were thanked and credited for their participation. This study was approved by the local ethics committee.

Measures

Contextual vignettes task (CVT). This measures the presence of OCD-relevant intrusions triggered by scenarios with and without direct evidence. The CVT is composed of 10 vignettes, 5 describing scenarios with direct evidence, and 5 without direct evidence. The vignettes are distributed across five common OCD themes: aggressive, homosexual, religious/social convention, contamination, and checking. There are two vignettes associated with each theme, one with direct evidence and one without direct evidence.

The phrases "without direct evidence" and "direct evidence" were operationalized similarly to a previous study investigating contextual determinants of obsessions (Audet et al., 2016). The phrase "*without direct evidence*" refers to the occurrence of the intrusion without any direct evidence for the potential reality of the intrusion based in the senses, or one's inner senses. Intrusions that occur without direct evidence are said to occur "out-of-context" without any reasonable justification in the here-and-now and the context surrounding them. The phrase "*with direct evidence*" refers to the occurrence of the intrusion with direct evidence or justification in the (inner) senses for the potential reality of the intrusion. Intrusions that occur with direct evidence are said to occur "in-context" and are justified in the here-and-now by the circumstances surrounding them.

All vignettes were matched in length and checked by two independent experts with extensive knowledge of context's role in OCD, who blindly rated each vignette for either the presence or

absence of direct evidence. Both were able to accurately differentiate between both types of scenarios. The following is an example of a vignette *with* direct evidence (checking theme):

"*You wake up late for work. You hate it when it happens, you feel it starts the day on the wrong foot. Trying to keep your eyes open, you make it to the kitchen to prepare some coffee. You then keep going with your morning routine: breakfast, dressing up and grooming. As you groom yourself, you start thinking about alternative routes to get to work faster. You're about to go, but you remember you forgot to make your lunch. You step in the kitchen, and you wonder for an instant whether you should eat at the cafeteria or not. You decide that you would save more time by eating at the cafeteria. You step outside, but you realize that you forgot your keys, so you get back inside to get them. You leave, for the second time, in a hurry, feeling distracted and rushed. You cannot remember if you locked the door…*"

In this scenario, there is direct evidence or justification based in the (inner) senses for intrusions that might follow from it (e.g., "Perhaps I left the door unlocked"), including: a) being in a forgetful state of mind, b) being in a rush, c) feeling distracted, and d) not remembering having locked the door. The scenario logically leads up to a potential intrusion of having forgotten to unlock the door in a contextually appropriate manner relevant to the here-and-now.

Here is the same theme presented *without* direct evidence:

"*You just got off the phone with one of your friends. You haven't spoken for a long time and you decide to meet up the next day. A few minutes before the meeting, you leave the house and think about your neighbour who was robbed last week. He never thought to check if his door was locked. As you meet up, you notice your friend looks to be in a good mood. He tells you he has been offered a promotion and he's really enjoying it. He's not only happy with the increase in salary, but also with the new job he has. He tells you that he really needed it: he did hit rock bottom a few years back. His wife had left him, and he tells you for the first time that he had been robbed because he forgot to lock the door…*"

In this scenario, direct evidence for the potential reality of intrusions that might follow from the scenario is completely lacking (e.g., "Perhaps I left the door unlocked"). There are triggers for such an intrusion, but there is no direct evidence that is based in the (inner) senses that could

reasonably justify the potential reality of having left one's own door unlocked in the here and now. Consequently, the scenario leads up to potential intrusions surrounding the theme of having left one's door unlocked in a contextually inappropriate manner.

After reading each vignette, participants are presented with a list of potential intrusions, and asked to indicate the intrusions they would experience given each of the scenarios. In addition, participants are asked to rate the likelihood of having these intrusions, as well as the associated distress and unwantedness on a scale ranging from 0 (not at all) to 100 (all the time/absolutely). Mean scores were calculated across each question according to condition (with and without direct evidence). Examples of potential intrusions for vignettes related to checking include: "…that you might have left the door unlocked", "…that you might get robbed", "…that you might be careless". The full task is available in Annexe 2.

Depression Anxiety Stress Scale – 21 Item Version (DASS-21; Lovibond & Lovibond, 1995) measure depression, anxiety, and stress-related symptoms over the past week. For the current study only the depression subscale was used. The depression scale has shown excellent internal consistency (α = .91) and convergent validity with another measure of depression (r = .74; Lovibond & Lovibond, 1995). In the current study, internal consistency of the depression scale of the DASS-21 was excellent (α = .91). The depression scale contains 7 items and total score ranges from 0 to 63.

Vancouver Obsessional Compulsive Inventory (VOCI; Thordarson et al., 2004) measures the presence of OCD symptoms using multiple subscales: obsessions, checking, contamination, just right, indecisiveness, and hoarding. The questionnaire shows strong inter-item (α > .89) and retest (r = .52) reliability amongst student populations, as well as good convergent and divergent validity (Thordarson et al., 2004). In the current study, internal consistency of the VOCI was excellent (α = .97). The questionnaire is composed of 55 questions and the total score varies from 0 to 220.

Feared Self Questionnaire (FSQ; Aardema et al., 2013) measures the perceived proximity with who one is afraid of being or becoming (e.g. "I fear perhaps being a violent, crazy person"). This questionnaire shows excellent internal consistency (α =. 96) as well as convergent validity with measures of obsessionality (r =. 54) (Aardema et al., 2013). In the current study, internal

consistency of the FSQ was excellent (α = .92). The questionnaire is composed of 20 questions and the total score ranges from 20 to 120.

Inferential Confusion Questionnaire – Expanded Version (ICQ; Aardema et al., 2009) measures inferential confusion, a reasoning process heavily reliant on the imagination at the expense of one's trust in their senses and self. This questionnaire possesses excellent internal consistency (α = .97), test-retest reliability (r = .90) and good convergent and divergent validity (Aardema et al., 2009). In the current study, internal consistency of the ICQ was excellent (α = .98). The questionnaire is composed of 30 questions and the total score varies between 0 and 180.

Obsessive Beliefs Questionnaire (OBQ; OCCWG, 2005) measures beliefs that are specific to OCD: responsibility/danger, importance and control of thoughts, and perfectionism/uncertainty. Internal consistency (α > .88) and both convergent and divergent validity are good (OCCWG, 2005). In the current study, internal consistency of the OBQ was excellent (α = .97). The questionnaire is composed of 44 questions and the total scores vary from 44 to 308.

Results

557 participants were recruited, 87.8% identified themselves as female and mean age was 22.47 (SD = 4.29) years old. Mean scores and standard deviations for each questionnaire are presented in Table 3; the responses to the vignettes are presented in Table 4.

Tableau 3. – Questionnaire means and standard deviations

	Mean	SD
VOCI	35.64	30.35
DASS-21 - D	9.64	9.41
RT	50.21	17.71
ICT	28.69	12.12
PC	58.15	19.17
ICQ	74.30	32.72
FSQ	50.36	20.82

Note. SD= Standard deviation; VOCI= Vancouver Obsessive Compulsive Inventory; DASS-21 – D= Depression scale of the Depression Anxiety and Stress Scale; RT= Responsibility/Threat factor of the obsessive beliefs questionnaire; ICT= Importance/Control of thoughts scale of the obsessive beliefs questionnaire; PC= Perfectionism/Certainty scale of the obsessive beliefs questionnaire; ICQ= Inferential confusion questionnaire; FSQ= Feared-self questionnaire.

n= 557

T-tests were used to test hypothesis 1 (proof of concept), namely that the CVT induces an effect among participants on the number of intrusions endorsed, as well as their associated likelihood, distress, and unwantedness. Results showed that all dependent variables were significantly different from 0 (all ps ≤ .001), thus confirming that the CVT was able to simulate the situations in which intrusions occur.

Comparing Scenarios With and Without Direct Evidence

Paired-sample t-tests were used to test hypothesis 2, namely that scenarios with direct evidence, relative to scenarios without evidence, are associated with more intrusions endorsed, as well as greater likelihood, distress, and unwantedness (table 4). Results showed that scenarios with direct evidence were associated with significantly more intrusions endorsed, as well as higher ratings of likelihood, distress, and unwantedness. Effect sizes were large for comparisons related to intrusions, likelihood, and distress, but moderate for unwantedness.

Tableau 4. – Comparison of responses to vignettes with direct evidence to responses of vignettes without direct evidence.

	With direct evidence	Without direct evidence	t	d
Intrusion	8.93 (4.24)	5.42 (3.11)	22,54***	0.93
Likelihood	53.69 (24.93)	27.35 (20.02)	31,96***	1.32
Distress	40.75 (23.70)	23.67 (20.96)	24,42***	1.01
Unwantedness	28.90 (23.42)	21.41 (20.61)	11,57***	0.48

Note. Standard deviations are in parentheses.

n= 557

Contextual vignettes task and OCD symptoms

In order to test hypothesis 3, that scenarios without direct evidence uniquely predict OCD symptoms, four separate linear regressions were performed predicting the VOCI total score on the basis of each (1) with and without evidence – number of intrusions (2) with and without direct evidence – probability, (3) with and without direct evidence – distress and (4) with and without direct evidence – unwantedness. Hence, each regression was composed of only two variables (without and without evidence) entered in a single step. Results are presented in Table 5. Every variable presented without direct evidence was significantly and positively predicted OCD symptoms controlled for its direct evidence counterpart, with effects varying from moderate to large, confirming hypothesis 3. Moreover, direct evidence only positively predicted OCD symptoms through unwantedness, while both intrusions and distress showed no significant relation to OCD symptoms, and likelihood a (small) negative prediction of OCD symptoms.

Tableau 5. – Four regression analyses predicting the VOCI total score on the basis intrusion, likelihood, distress and unwantedness occurring with and without evidence.

	Direct Evidence	b	se	β
Intrusion	With	0.63	0.33	.08
	Without	3.41	0.47	.33***
Likelihood	With	-0.16	0.06	-.13**
	Without	0.73	0.08	.46***
Distress	With	0.06	0.07	.05
	Without	0.53	0.09	.35***
Unwantedness	With	0.19	0.08	.14*
	Without	0.39	0.09	.25***

Note. se= standard error.

n= 557

*p < .05; **p< .01; ***p< .001

Contextual Vignettes Task and OCD Related Processes

Linear regressions were conducted to test hypothesis 4, that inferential confusion and fear of self significantly predict variables related to the OCD vignettes not supported by direct evidence, linear regressions were performed. Subscales of the DASS-21 and OBQ were entered in step 1 and the ICQ and FSQ were entered in step 2. Results are presented in Table 6. For every regression, step 2 significantly increased the variance explained from step 1, therefore only step 2 results are presented. Control variables predicted all measured aspects of intrusions without direct evidence except for likelihood; depression only uniquely predicted the number of intrusions; importance/control of thoughts uniquely predicted the number of intrusions, distress, and unwantedness; and responsibility/threat and perfectionism/certainty did not uniquely predict any of the dependent variables. Regarding the variables of interest, inferential confusion uniquely predicted likelihood, distress, unwantedness, but not number of intrusions, while perceived

proximity to a feared self uniquely predicted the number of intrusions, likelihood, and distress, but not unwantedness.

Tableau 6. – Regression analyses predicting contextual vignettes task responses on the basis of OCD-related cognition controlled for depression in the "without direct evidence" condition.

	Intrusions		Likelihood		Distress		Unwantedness	
	ΔR^2	β	ΔR^2	β	ΔR^2	β	ΔR^2	β
Step 1	.20***		.16***		.16***		.15***	
Step 2	.01**		.03***		.03***		.02**	
DASS-21-D		.18***		.04		.03		.03
RT		.12		.07		.01		-.02
ICT		.15*		.09		.13*		.19**
PC		-.09		.03		.05		.02
ICQ		.05		.17**		.15**		.17**
FSQ		.15*		.14*		.15*		.08

Note. DASS-21-D= Depression scale of the Depression Anxiety and Stress Scale; RT= Responsibility/Threat factor of the obsessive beliefs questionnaire; ICT= Importance/Control of thoughts scale of the obsessive beliefs questionnaire; PC= Perfectionism/Certainty scale of the obsessive beliefs questionnaire; ICQ= Inferential confusion questionnaire; FSQ= Feared-self questionnaire.

n= 557

*p < .05; **p< .01; ***p< .001

Discussion

The aim of this study was to investigate the role of context surrounding the occurrence of intrusions, and to determine whether intrusions that occur without direct evidence are particularly relevant to feared self-perceptions and obsessive-compulsive symptomatology. To this end, participants were presented with a task (CVT) containing different scenarios that were either supported or not supported by direct evidence for the potential reality of an intrusion, after which participants were asked to rate the number of intrusions they would experience in these scenarios, as well as intrusion-related likelihood, distress, and unwantedness.

As expected, participants endorsed intrusions on the CVT regardless of scenario type. Hence, proof of concept was obtained, and supports the CVT as an instrument that is able to induce an effect in participants. In addition, we predicted that scenarios with direct evidence, relative to those without, would be associated with more intrusions as well as higher levels of likelihood, distress, and unwantedness. As noted earlier, it stands to reason that people would be more upset with intrusions that actually have some evidence to back them up, and this hypothesis was confirmed with a higher number of endorsed intrusions and associated distress in scenarios with direct evidence for the intrusion. However, most importantly, we also hypothesized that this reaction would not be particularly relevant to symptoms of OCD. Rather, we predicted that intrusions that occur *without* direct evidence, including associated probability, distress, and unwantedness uniquely predicts OCD symptoms, whereas intrusions and associated variables that occur *with* direct evidence do not uniquely predict OCD symptoms.

As expected, *despite* higher distress levels in scenarios with evidence, only scenarios without direct evidence and their associated degrees of likelihood, distress, and unwantedness uniquely predicted symptoms of OCD. This finding is consistent with previous studies that also reported that the lack of direct evidence and context is particularly related to OCD (Audet et al., 2016; Fradkin & Huppert, 2018; Julien et al., 2009; Llorens-Aguilar, Garcia-Soriano, Arnaez, Aardema, & O'Connor, 2021). It is also consistent with an inference-based approach to OCD, which claims obsessions arise as the result of dysfunctional reasoning where the person distrusts their own senses or self and mistakenly gives credibility to doubts, possibilities, and ideas that have no direct support or evidence (O'Connor, Aardema, & Pélissier, 2005). Or, as outlined by Aardema & Wong (2020), obsessions do not appear to arise from the tangible and visible, but instead, they rely heavily on unseen and hidden sources of menace at the expense of reality. Hence, lack of evidence for its validity in the context surrounding an intrusion deserves serious consideration as important parameter differentiating between normal and abnormal intrusions (i.e., obsessions).

As previously noted by Audet and colleagues (2016) in their investigation of contextual determinants of normal and abnormal intrusions, lack of evidence for obsessions may shed light on some long-standing questions on cognitive vulnerability to OCD that investigations into ego-dystonicity alone have so far not been able to satisfactorily answer (Clark & Inozu, 2014). In

particular, thoughts that have no evidence to back them up, yet occur without any apparent cause, may be particularly likely to result in negative cognitive processing and control – strategies that are bound to fail if the intrusion is not based on reality to begin with (Aardema, Wong, et al., 2019; Audet et al., 2016). Trying to ameliorate thoughts without any actual basis in reality, or any actual motivated intent behind it, is akin to attempting to change the picture on a television screen by cleaning the screen (Aardema & O'Connor, 2003). Given this confusion between what is real and imaginary, and acting as though the imaginary is real, perceptions of uncontrollability as proposed by Purdon and Clark (1999) are likely to increase, further contributing to development and maintenance of symptoms. Indeed, clinically speaking, patients with OCD often appear to get caught up in rushed and distressed attempts to control the thoughts, while often not realizing or insufficiently processing that there is no direct evidence for the reality of the intrusion to begin with. Alternatively, intrusions might simply be the result of a fear of self to begin with, rather than being part of their actual self. As noted by Aardema et al. (2019), the successful resolution of intrusive cognitions can be facilitated during treatment by closing the subjective disconnect between the occurrence of the thought and the self through a realization that the thought finds its origin in a feared and imagined possible self, as opposed to reality itself. In contrast, reminding the person of the normality of the intrusion can have the opposite effect, if this message is understood by the patient as validating the reality of the thought as one that needs to be accepted as a real part of him/herself (Aardema, Wong, et al., 2019). In fact, as previously suggested by Aardema & O'Connor (2007), the current results suggest that obsessions are not entirely normal, not because they do not share similarities with regular intrusions in terms of content, but because of the dysfunctional way they arise in comparison to normal intrusions (i.e., without direct evidence).

As expected, inferential confusion and a fear of self, both of which have been proposed to precede the onset of intrusions (Aardema & O'Connor, 2003, 2007; Aardema & Wong, 2020), as well as beliefs about importance and control of thoughts were significantly related to variables in scenarios without direct evidence. This provides some support for the notion that overinterpretation and control may be particularly relevant to intrusions occurring without direct evidence, and a potential hindrance to the successful resolution of obsessional doubts and

intrusions because the person gets caught up in the secondary effects of the intrusion, rather than being able to find any resolution in its imaginary origin.

Depressive symptoms were related only to the number of intrusions reported, probably because negative automatic thoughts, which bring about depressive symptoms (Beck, 1976), share similarities with OCD-related intrusions (see Julien et al., 2007). Also, responsibility/threat and perfectionism/certainty did not uniquely predict the number of intrusions, likelihood, distress, or unwantedness in intrusions that occurred without direct evidence. This is somewhat surprising given the important role ascribed to these beliefs in the appraisal of intrusive cognitions such that they are proposed to increase their associated frequency and distress. However, as noted earlier, obsessive beliefs regarding the importance given to thoughts and the perceived need to control did uniquely predict the effects of intrusive cognitions that occurred without direct evidence.

Overall, the relationship between reaction to scenarios without direct evidence and OCD symptoms is consistent with both inference and appraisal-based formulations of OCD, although they may differ in terms of the sequence by which intrusions develop into obsessions. As argued by Aardema & Wong (2020), inferential confusion and fear of self might precede the occurrence of obsessions, but simultaneously also make appraisals of significance more likely, only further removing the person from a successful resolution of obsessional intrusions, and thereby together significantly contributing to symptoms of OCD. Also, an appraisal-based conceptualization might benefit from the main finding of the current study, which suggests that the development of intrusions into obsessions as the result of appraisal may not apply to every type of intrusion. That is, intrusions may be a more valid analogue of obsessions if they occur without direct evidence, including the role of negative appraisals in their development.

The current study has several limitations. First, the study utilized a non-clinical sample, and although these samples are generally considered a valid analogue of symptoms as they occur in OCD patients (Abramowitz et al., 2014; Gagné, Kelly-Turner, & Radomsky, 2018), replication is still generally required in clinical samples before more definitive conclusions can be drawn. On the other hand, given that the current study focused on the development of obsessions, rather than when they already have established themselves, differences between normal and abnormal

obsessions might be more difficult to detect in clinical samples, and perhaps an alternative methodology might be required, such as a phenomenological or content analysis of OCD patients' obsessional narratives. Second, the CVT did not measure variables related to the neutralization of the intrusions, where obsessive beliefs about responsibility and threat overestimation and perfectionism and intolerance to uncertainty might have played a more important role. Third, symmetry and not just right experiences were not assessed by the task and so we cannot claim that it comprehensively addresses the range of OCD symptomatology. Fourth, other variables that may be associated with a lack of direct evidence for the potential reality of intrusions were not measured in the current study, such as "appropriateness", "uncertainty", "ego-dystonicity", and "perceived uncontrollability", and future studies may wish to include a wider range of dependent variables to shed further light on the role of the occurrence of abnormal intrusions in OC development and maintenance. Finally, the current study utilized written scenarios asking participants to imagine themselves and their response to these scenarios and do not represent a completely naturalistic representation of how intrusions might occur in real-life settings. Hence, ultimately, the current results need to be replicated in real-life settings where evidence with and without is manipulated in objective settings, as well the inclusion of more objective behavioural measures regarding an individual's reaction to both normal and abnormal intrusions.

The current study also has several strengths. It is the first experimental investigation into the role of the context surrounding the occurrence of intrusions, particularly the lack of evidence that appears to characterize abnormal intrusions as opposed to the common garden variety of thoughts we all experience. The experiment was set up with the expectancy that scenarios with direct evidence would induce greater degrees of discomfort and distress, often considered to provide the primary motivation behind the occurrence of compulsive behaviours, and yet, intrusions occurring without direct evidence with lower levels of distress were found to be more specific to symptoms of OCD. In those terms, OCD does not appear to follow a phobic model of development (Aardema et al., 2005; O'Connor & Audet, 2019). Instead, the current results suggest that further investigation into vulnerable themes and reasoning associated with the onset of obsessions may provide a more complete picture as to what differentiates OCD from (other) anxiety disorders.

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Chapitre 4 – Tell me your story: a narrative investigation into obsessional experience and treatment outcome

Abstract

Obsessive-compulsive disorder (OCD) is characterized by distressing obsessions and time-consuming compulsions. Cognitive theories have postulated that obsessive beliefs (about responsibility and threat, importance and control of thoughts, and perfectionism and intolerance of uncertainty), and dysfunctional reasoning processes underlying obsessions characterized by inferential confusion (lack of basis in reality, inverse inference, active dismissal and out-of-context associations) play a central role in the development and maintenance of OCD. Further, level of conviction, bizarreness, absorption, affect, ego-dystonicity, fear of loss of control, identification and personification have previously been noted as important features of OCD, as well as negative predictors for treatment outcome. However, these features and factors related to the development and maintenance of obsessions have never been directly investigated in a content analysis of obsessional narratives. The current study aimed to investigate the reliability and the bias of narrative ratings by clinicians by theoretical allegiance, as well as the association between clinical ratings of these cognitive variables and related features with symptoms of OCD symptoms and treatment outcome. The narratives of 95 participants with OCD were rated by three sets of evaluators: graduate psychology students, therapists with an allegiance to the cognitive appraisal model and therapists with an allegiance to the inference-based approach. Results showed that ratings were reliable and exempt from bias. Narrative ratings related only very modestly to corresponding psychometric measures but were found to be related to OCD symptoms and

treatment outcome. Particularly, the lack of any basis in reality for the obsession was at the core of OCD narratives. Implications for theory, research and treatment are discussed.

Introduction

Obsessive-compulsive disorder (OCD) is characterized by intrusive, recurrent, anxiogenic thoughts (i.e. obsessions) and time-consuming rituals aimed to prevent the anxiety or distress generated by the intrusive thoughts (i.e. compulsion) (APA, 2013). One cognitive-behavioural conceptualization of OCD, termed the cognitive appraisal model (CAM), argues that normal intrusive cognitions transform into obsessions due to misappraisals of their significance, thereby increasing their salience and frequency (Salkovskis, 1985). Expert consensus has previously identified six obsessive belief domains thought to be responsible for the misappraisal of normal intrusive thoughts, leading to the development of the Obsessive Beliefs Questionnaire (OBQ) with six separate scales (OCCWG, 1997). However, subsequent research based on factor-analyses has reduced these dimensions to the following overlapping belief domains in an empirically validated version of the OBQ, including 1) responsibility and threat overestimation, 2) importance and control of thoughts, and 3) perfectionism and intolerance of uncertainty (OCCWG, 2005).

Empirical investigations have generally supported the relationships between these belief domains with symptoms of OCD (OCCWG, 2005; Tolin et al., 2007; Tolin, Woods, & Abramowitz, 2003). In addition, scores tend to be elevated in comparison to non-clinical participants, although their specific relevance to OCD in comparison with other anxiety disorders has been mixed (OCCWG, 2005; Tolin, Worhunsky, & Maltby, 2006a). There are also subgroups of people with OCD (about 20-25%) that do not show elevated obsessive beliefs (Calamari et al., 2006; Polman et al., 2011; Taylor et al., 2006).

More recently, other beliefs guiding the misappraisal of intrusions have also received increased research attention. In particular, beliefs leading to a fear of loss of control of one's thoughts, emotions, behaviours and bodily functions have been proposed to relate to OCD symptomatology. While associated with the original construct of beliefs in the need to control thoughts, preliminary psychometric and experimental investigations in non-clinical participants have found additional contributions of concerns revolving around a fear of losing control in the prediction of OCD symptoms (Gagne & Radomsky, 2020; Radomsky & Gagne, 2020).

Another cognitive model, termed the inference-based approach (IBA), claims that obsessions do not arise out of normal intrusive thoughts, but rather, develop as the result of a distorted reasoning process that is termed “inferential confusion” (Aardema et al., 2009). Rather than viewing obsessions as originating from random, neutral intrusive thoughts, the model holds that obsessions contain an evaluative dimension which is incongruent or dystonic with reality or the self (Aardema & O’Connor, 2007; O’Connor & Aardema, 2012). In particular, during reasoning that is characterized by inferential confusion, an individual gives credibility to ideas and possibilities that have no actual basis in reality or common-sense (Aardema & Wong, 2020; O'Connor & Aardema, 2012a; O'Connor, Aardema, & Pélissier, 2005; O'Connor & Robillard, 1995).

There is empirical support for the notion that a lack of direct evidence for the reality of obsessions is a distinguishing characteristic of abnormal intrusions in OCD (Audet et al., 2016; Julien et al., 2009). In particular, one recent experimental study showed that intrusions experienced *without* direct evidence supporting their reality were related to OCD symptoms (Audet et al., 2020). In contrast, there was no relationship between intrusions that occurred *with* direct evidence and symptoms of OCD, suggesting that obsessional intrusions can be distinguished from normal intrusions based on the context in which they occur (e.g., with or without direct evidence for their reality).

Further, a number of more specific reasoning processes have been identified that share this common element of inferential confusion where the person reasons without any direct link to reality or sensory-based perception (Aardema, Baraby, et al., 2019). These processes include 1) inverse inference, 2) active dismissal and distrust of sensory information, self-knowledge and common sense, and 3) out-of-context associations during reasoning while arriving at conclusions about reality (Aardema, Baraby, et al., 2019). Inverse reasoning refers to drawing conclusions on the basis of hypothetical possibilities before any actual observations are made, contrasting with healthy reasoning where reality-based observations form the basis for drawing conclusions, e.g. “A lot of people must have walked on this floor, therefore it might be dirty” (O'Connor & Aardema, 2012a). Active dismissal refers to dismissing information coming from the senses, self-knowledge and common sense as these are not regarded as valid sources of information (Aardema, Baraby, et al., 2019), e.g. “Even if my senses tell me nothing is there, I know by my

intelligence that something must be" (O'Connor, Aardema, & Pélissier, 2005). Out-of-context associations refers to misapplying facts, objects, people, events or categories to justify a conclusion (Aardema, Baraby, et al., 2019), e.g. "I've made mistakes in the past, so I could make one right now" (O'Connor, Aardema, & Pélissier, 2005). In addition to the general construct of inferential confusion where the person draws conclusions without direct evidence, these processes have been found to be related with OCD symptoms in a non-clinical sample independently from obsessive beliefs and depressive mood (Baraby et al., 2021).

Studies have also shown that participants with OCD have higher levels of inferential confusion compared to community and anxiety controls, and predicts symptoms independently from obsessive beliefs and negative mood states in OCD samples (Aardema et al., 2005; Aardema, Wu, et al., 2018; Aardema et al., 2009; Paradisis, Aardema, & Wu, 2015). Specifically, inferential confusion has consistently been found to be a unique predictor of repugnant obsessions and "just right" symptoms, while findings in the prediction of checking and contamination have been mixed (Aardema et al., 2005; Aardema, Wu, et al., 2018; Aardema et al., 2009; Paradisis et al., 2015). Further, there is preliminary causal evidence to the role of inferential confusion in the development of OCD symptoms (Wong, Aardema, & Grisham, 2019; Wong & Grisham, 2017a, 2017b).

Closely related to the construct of inferential confusion, dissociative absorption has also been noted to play a potentially important role in OCD (Soffer-Dudek, Lassri, Soffer-Dudek, & Shahar, 2015), and was previously found to be related to OCD severity (Aardema & Wu, 2011; Paradisis et al., 2015). That is, as individuals get more absorbed into the obsessions as the result of dysfunctional reasoning that has no basis in reality, they lose touch with sense information and their own self, pre-empting any resolution of the obsessional doubt through sensory-based reasoning where the obsession would be experienced as having no reality (Aardema & Wu, 2011; O'Connor & Aardema, 2012b). This overinvestment into imagined possibilities at the expense of reality has also been suggested to account for the persistence and reality value of obsessions with bizarre content (e.g. "Maybe the devil will steal my soul") (O'Connor & Aardema, 2012a).

Bizarre and strange obsessions have traditionally been conceptualized as an indicator of schizotypal personality traits (Chmielewski & Watson, 2008), but in the case of OCD may also be conceptualized in terms of the degree to which obsessions are incongruent with reality in any given individual. Notably, obsessions with bizarre content are often more difficult to treat (Basogul et al., 1998; Rachman & Hodgson, 1980) similar to patients who present with high levels of absorption into their obsessional experience (Beck, 1976; O'Connor & Aardema, 2012a).

A related dimension of obsessions is the fixity of the obsession, or alternatively, the level of conviction by which obsessions or their perceived consequences are believed to true (Neziroglu et al., 1999). High conviction into obsessional beliefs includes seeing the obsession as ego-syntonic, identifying strongly with the obsessional content and having lower insight into one's obsessions (Kozak & Foa, 1994; Neziroglu et al., 1999). It is recognized as an important characteristic in DSM-5 (APA, 2013), and has shown to negatively impact treatment outcome (Basogul et al., 1998; Kozak & Foa, 1994).

Most research into the above-mentioned obsessional features and proposed factors related to their development has focused on psychometric and experimental paradigms, while investigations based on the lived-in and direct experience of those with OCD is relatively scarce. However, one pilot investigation into the obsessional experience of those with OCD has demonstrated the feasibility of identifying both inferential confusion and obsessive beliefs in obsessional narratives using independent evaluators (O'Connor et al., 2013). These narratives consisted of justifications for the obsessional doubt maintaining the obsession, for example (O'Connor et al., 2013, p. 66):

> "Perhaps the hot plates on my stove are still turned on because… I heard on the television that an apartment block caught fire and I guessed it was because the occupants had forgotten to shut off the cooker. Also, I was a witness once to a stove catching fire when my mother-in-law was cooking a meal. So, if the cooker caught fire, I'm saying to myself that you can't leave a stove unwatched or it will catch fire. This is another proof that you need to be hypervigilant about turning off the stove after using it. Also, when I shut off the stove, I have trouble being sure since the light indicating it is off is really tiny."

In this study, evaluators were asked to rate the degree of presence of reasoning processes or obsessive beliefs within the narrative, which showed both CAM-related obsessive beliefs and IBA-

related reasoning distortions were present in obsessional narratives without any indications that the theoretical and therapeutic allegiance of the evaluators or their expertise influenced these results (O'Connor et al., 2013). However, only a limited number of checking and contamination narratives were rated in this study, limiting the generalizability of the findings. Also, the comparison on therapeutic allegiance did not include a group of evaluators with an allegiance to the CAM, potentially underestimating the effect of theoretical allegiance. Further, while psychometric and experimental studies have shown evidence for the role of obsessive beliefs, reasoning distortions and related obsessional features with symptoms of OCD, these relationships have only rarely been investigated through a content-based analysis of obsessional narratives.

The principal aim of the current study was to provide converging evidence of the relationship between these cognitive variables with symptoms and treatment outcome through a quantitative content analysis of OCD narratives obtained from participants suffering from OCD. The specific objectives of the study included: (1) to assess the reliability, and role of theoretical allegiance on ratings of obsessive beliefs, dysfunctional reasoning processes and other related variables in obsessional narratives; and (2) to investigate the relationship of obsessive beliefs, dysfunctional reasoning processes, and other related variables in obsessional narratives with specific OCD symptom dimensions and severity and treatment outcome.

The hypotheses were as follows: (H1) ratings of obsessive beliefs, dysfunctional reasoning processes and related features of OCD are reliable and not biased by therapeutic allegiance or affected by clinical expertise; (H2) obsessional narratives are characterized by the presence of both obsessive beliefs and dysfunctional reasoning processes; (H3) Obsessive beliefs, dysfunctional reasoning processes as assessed by independent evaluators are related to their corresponding psychometric measure; (H4) Obsessive beliefs, dysfunctional reasoning processes and related features of obsessions, significantly relate to OCD severity and related symptomatology (i.e., anxiety and depressed mood); (H5) bizarreness, level of conviction, self-identification and lack of ego-dystonicity (i.e. ego-syntonicity) are related to worst treatment outcome.

Method

Participants

Participants were people with a diagnosis of OCD who underwent psychotherapy in treatment outcome studies investigating the efficacy of the inference-based cognitive-behaviour therapy (I-CBT). Inclusion and exclusion criteria for these studies were: (1) principal diagnosis of OCD; (2) aged between 18 and 65; (3) stable medication and willingness to keep medication stable throughout treatment; (4) no suicidal intent, current alcohol or substance abuse, lifetime psychotic disorder or neuropsychological disorder; and (5) not following another psychological treatment. For the purpose of this study, only participants with an OCD narrative present in their research file were included. When more than one narrative was present, only the narrative relating to the primary obsession as determined by an independent evaluator was included in the present study.

OCD Narratives, Evaluators and Ratings

OCD narratives in patients' dossiers originated from the evaluation and initial treatment sessions of I-CBT as part of initial homework assignments. In these homework assignments, clients are asked to describe and write down the justification and reasons for their obsession in the form of a narrative leading up to their primary inference of doubt (i.e., the obsession). Hence, the narrative is constructed early in treatment once the client has received psychoeducation and gained some insight into their obsessions, but before any meaningful interventions aimed at dismantling the credibility of the narrative are made, which is major focus during treatment with I-CBT. All narratives were coded so that they could not be traced back to the client, meaning that evaluators were blind to the OCD client clinical dossier, including pre- and post-therapy scores.

To rate these narratives, six different evaluators across three groups were used. Two evaluators were graduate psychology students frequently in contact with OCD patients but without allegiance to any particular cognitive-behavioural model of OCD (naïve evaluators), two evaluators were licensed psychologist with an allegiance to the CAM (CAM evaluators) and two evaluators were licensed psychologist with an allegiance to the IBA (IBA evaluators). These groups

were chosen to counterbalance theoretical allegiance (CAM vs IBA evaluators) as well as to verify that similar ratings could be obtained from evaluators with different levels of expertise in OCD (therapist vs graduate psychology students). In order to complete their ratings, evaluators were given a rating sheet for each narrative as well as brief definitions of each obsessive belief, reasoning distortion and related obsessional features (between 16 and 54 words, see below) based on definitions in the literature. Ratings were made on a 100-point percentage scale for each of these variables, reflecting the relative degree they were evaluated to be present in each of the narratives. Anchors were placed at 0 (Not at all present), 20 (A little bit present), 40 (Somewhat present), 60 (Quite Present), 80 (Strongly present) and 100 (Extremely present). Evaluators were instructed to spend on an average five minutes (and never more than 10 minutes) per narrative to prevent overanalyzing of any individual narrative and ensure consistency across the different evaluators in the overall time spend on ratings. The variables to rate in each of the narratives and their definitions provided to the evaluators were as follows:

Responsibility and threat overestimation: The tendency to overestimate the probability that negative consequences can occur and/or to overestimate the severity of the consequences that can result from inaction and personal responsibility for the occurrence of negative events.

Importance and control of thoughts: The tendency to give an exaggerated importance and significance to thoughts, to the belief that experiencing thoughts increases the probability that they will manifest in reality and/or to the necessity to control and get rid of intrusive thoughts.

Perfectionism and intolerance to uncertainty: The tendency to have high and absolute standards concerning the completion of action (either physical or mental), to be rigid concerning change, to perceive those errors are unacceptable and/or to experience excessive anxiety in the face of ambiguity.

Reality basis: The tendency for ideas expressed in the narrative to be supported by direct evidence for their potential reality. Direct evidence refers to ideas and conclusions based on the senses and common sense, in opposition to lack of realistic justification from senses and common sense for ideas and conclusions expressed in the narrative.

Inverse reasoning: The tendency to draw conclusions about reality on the basis of hypothetical possibilities that are not based on common sense or sense information.

Active dismissal of sense information and self-knowledge: The tendency to *actively* reject the information received from the internal and external environment, as well as the *active* rejection from self-knowledge and common sense. Information coming from the five senses and common sense are not deemed reliable when it is time to distinguish true from false.

Out-of-context associations: The tendency to draw conclusions on the basis of associations not relevant in the here and now and from arbitrary out-of-context information to justify an idea.

Conviction: The person's tendency to believe strongly in and to be convinced that the narrative represents reality, without any possible doubt.

Strangeness: The tendency of the narrative to have an unusual or bizarre character. Contains content that we do not expect to find. Interferes in one way or another with the functionality of the narrative as a credible story.

Absorption: The tendency to be absorbed by the narrative as if in a "lived experience". Absorption adds a certain quality and intensity by adding images, emotions and sensations. Refers to the degree to which the narrative leads to the absorption in the story.

Level of affect: The tendency of the narrative to be characterized by affect and emotions, including the quantity and the intensity of the affect supporting the ideas expressed in the narrative.

Egodystonicity: Tendency for an element to be perceived as having little or no context inside the sense of self or the personality of the person. The narrative is therefore perceived as occurring outside of the context of one's moral, attitude, belief, preference, past behaviour or expectation about what one wants or believe he should experience.

Identification: The tendency for the author of the narrative to identify with the emotions and idea expressed in the narrative as being authentic and being really part of him or her.

Fear of loss of control: The tendency to be scared of losing control of one's emotions, behaviours, thoughts or bodily functions.

Personification: The tendency to treat OCD as an entity that is separate from oneself with its own independent volition, emotion, intention and action.

Measures

The *Yale-Brown obsessive compulsive scale* (YBOCS) (Goodman, Price, Rasmussen, Mazure, Delgado, et al., 1989; Goodman, Price, Rasmussen, Mazure, Fleischmann, et al., 1989) is a semi-structured interview measuring the severity of obsessions and compulsions. It possesses excellent inter-rater reliability (r> .97), internal consistency (α > .87) and good convergent validity (r> .52 with other OCD symptoms measures) (Goodman, Price, Rasmussen, Mazure, Delgado, et al., 1989; Goodman, Price, Rasmussen, Mazure, Fleischmann, et al., 1989). The interview is comprised of 10 questions answered on a scale ranging from 0 (none) to 4 (extreme).

The *Vancouver obsessive compulsive inventory* (VOCI) (Thordarson et al., 2004) measures the presence of OCD symptoms using different scales: contamination, checking, obsessions, hoarding, just right and indecisiveness. The questionnaire shows excellent internal consistency (α= .94), test-retest reliability (r= .96), convergent validity with other OCD measures (r > 0.67) and divergent validity with measures of distress (r < .48) (Thordarson et al., 2004). The questionnaire is comprised of 55 questions answered on a scale ranging from 0 (not at all) to 4 (very much).

The *overvalued ideas scale* (OVIS) (Neziroglu et al., 1999) is an interview measuring the investment in overvalued ideation according to different dimensions such as righteousness of the belief, rigidity and compulsion's effectiveness. Internal consistency and test-retest reliability are excellent (α= 0.95 et r= .93), with good convergent validity with OCD symptoms (r from .44 to .83) (Neziroglu et al., 1999). This semi-structured interview is composed of 11 questions answered on a scale ranging from 0 (better insight) to 10 (worst insight).

Beck anxiety inventory (BAI) (Beck, Epstein, Brown, & Steer, 1988) is a questionnaire measuring the presence of anxiety symptoms in the previous week. Internal consistency and test-retest reliability are excellent (α= .92 et r= .75) and both convergent (r= .51 with another anxiety

measure) and divergent validity (r= .25 with a measure of depression) are good (Beck et al., 1988). The scale comprises 21 questions rated from 0 (Not at all) to 3 (Severely – I could barely stand it).

Beck depression inventory (BDI) (Beck, Steer, & Brown, 1996) measures the presence of depressive symptoms within the last two weeks. The scale is highly reliable (α= .91), has excellent test-retest reliability (r= 0.93) valid (r= .71 with another measure of depression) and often used (Beck, Steer, Ball, & Ranieri, 1996; Beck, Steer, & Brown, 1996). The scale comprises 21 questions rated from 0 (no symptom) to 3 (severe symptom).

The *inferential confusion questionnaire* – expanded version (ICQ-EV) measures the propensity to use inferential confusion (Frederick Aardema et al., 2009). The questionnaire possesses excellent test-retest reliability (r= .90), internal consistency (α= .97), good convergent (r> .49 with OCD symptoms) and divergent validity (r< .36 with distress measures) (Frederick Aardema et al., 2009). The scale comprises 30 questions answered on a scale ranging from 1 (strongly disagree) to 6 (strongly agree).

The *obsessive beliefs questionnaire* (OBQ) (Obsessive Compulsive Cognitions Working, 2005) measure beliefs related to OCD in three dimensions: responsibility/threat, importance/control of thoughts and perfectionism/intolerance to uncertainty. The three subscales show good internal consistency (α> .88) and good convergent validity (Obsessive Compulsive Cognitions Working, 2005). The questionnaire is comprised of 44 questions answered on a scale ranging from 1 (disagree very much) to 7 (agree very much).

The *dissociative absorption scale* (DA) (Soffer-Dudek et al., 2015) is a scale measuring dissociative absorption based on the items of Dissociative Experience Scale (Carlson & Putnam, 1993). It possesses good internal consistency (α= .84) and is a stronger predictor of OCD symptoms than it is of general psychopathology (Soffer-Dudek et al., 2015). The scale comprises 8 questions scored on an 11-points scale ranging from 0% to 100%.

The *schizotypal personality questionnaire* (SPQ) (Raine, 1991) measures the presence of schizotypal personality traits according to the nine criteria of DSM-III. The internal consistency of the scale is good (α= 0.91) (Raine, 1991). The 81 items are answered on a yes or no format, with total score ranging from 0 to 81.

Results

Data from 95 OCD participants with obsessional narratives and psychometric measures were available for analysis. Gender was equally distributed with 53% of participants identifying as female. The mean age of the sample was 36.7 years (SD= 12.3). OCD severity as measured by the Y-BOCS indicated severe symptoms (M= 26.5; SD= 6.2). Symptoms of depression (M= 17.5; SD= 12.0) and anxiety (M= 14.7; SD= 11.4) were moderate.

Reliability and Differences Between Evaluator Groups

In order to test that narrative ratings are reliable and bias free, intra-class correlation coefficients were calculated, and ratings scores were compared between groups of evaluators using repeated measures ANOVA (see table 7). Intra-class correlation coefficients were all significant, showing moderate to good reliability (Koo & Li, 2016), except for fear of loss of control and personification showing excellent and poor reliability respectively. Significant differences between groups of evaluators were found on all variables beside out-of-context associations, absorption, loss of control and personification. However, the differences found did not suggest bias from evaluators with respect to their theoretical allegiance. CAM evaluators gave the lowest scores on appraisal measures and IBA evaluators did not give the highest scores on reasoning processes measures, with the exception of inverse inference. CAM evaluators provided the lowest estimate for identification, but it is not a variable directly related to any particular theoretical orientation.

Tableau 7. – Comparison of the narrative evaluation according to the theoretical allegiance of the raters and reliability

	Naïve		CAM		IBA				
	Mean	SD	Mean	SD	Mean	SD	*F*	η^2	ICC
CAM									
Responsibility/threat	48.2 $_B$	31.2	37.3 $_A$	29.5	45.3 $_B$	32.6	11.26***	.11	.86
Importance/control of thoughts	18.7 $_B$	26.2	10.5 $_A$	21.3	18.9 $_B$	24.3	12.79***	.12	.86
Perfectionism/uncertainty	40.2 $_B$	28.2	27.8 $_A$	24.7	30.1 $_A$	25.5	11.96***	.11	.74
IBA									
Reality basis/direct evidence	6.6 $_B$	9.6	1.8 $_A$	6.1	5.4 $_B$	10.1	17.87***	.16	.75[d]
Inverse inference	46.0 $_A$	21.2	54.2 $_B$	19.2	77.9 $_C$	17.1	134.43***	.59	.61
Active dismissal	48.8 $_B$	26.2	58.2 $_C$	33.6	41.4 $_A$	20.8	17.80***	.16	.79
Out of context associations	64.8	21.7	65.1	18.7	66.8	22.4	0.45	.01	.70
Other									
Conviction	79.9 $_B$	11.0	74.4 $_A$	13.0	75.3 $_A$	14.0	10.13***	.10	.67
Strangeness	14.7 $_A$	17.4	21.5 $_B$	21.6	31.6 $_C$	24.5	28.49***	.23	.76
Absorption	49.8	18.2	46.$_8$	20.9	50.6	22.6	1.76	.02	.75
Affect	19.7 $_A$	18.6	29.9 $_B$	16.9	32.2 $_B$	23.5	26.58***	.22	.81
Ego-dystonicity	8.6 $_B$	14.2	2.0 $_A$	6.7	8.6 $_B$	18.5	10.50***	.10	.68
Identification	56.5 $_B$	15.1	19.7 $_A$	25.6	63.5 $_C$	18.6	184.47***	.66	.59
Loss of control	18.2	30.0	14.9	25.6	16.8	28.3	1.829	.02	.92
Personification	1.0	3.6	0.3	2.4	2.6	10.2	3.570	.04	.43[d]

Notes. CAM= Cognitive Appraisal Model; IBA= Inference Based Approach; SD= Standard deviation ICC= Intra-Class Correlation Coefficient. Means sharing the same subscript do not significantly differ from each other.
N= 95 for the comparison and N = 6 for the ICC, except for [d] where n= 5 because one rater evaluated all narrative at 0, which couldn't be included in the ICC calculation.
*** p< .001

Characteristics of OCD narratives

In order to test that obsessive beliefs and processes of inferential confusion are characteristic of OCD narratives, repeated measure ANOVA was performed comparing the mean narrative ratings, showing significant results ($F(7, 647)= 184.76$, $p< .001$, $\eta^2= .66$). Post-hoc comparisons of the ratings were done using Bonferroni correction and are reported in table 8. Overall, the results suggest that the processes of inferential confusion, obsessive beliefs (with the exception of importance and control of thoughts), conviction, absorption and identification are commonly found within OCD narratives. Importance and control of thoughts, strangeness, affect, and beliefs

about loss of control are uncommonly found, while ego-dystonicity, reality basis and personification are almost never identified.

Tableau 8. – Comparison between the ratings of obsessive beliefs, inferential confusion and other characteristics in OCD narrative.

	Mean	SD	Min-Max
CAM			
Responsibility/threat	43.7_{DE}	28.1	0 - 97.5
Importance/control of thoughts	16.0_{G}	21.5	0 - 85.0
Perfectionism/uncertainty	32.7_{EF}	21.3	0 - 84.2
IBA			
Reality basis/direct evidence	4.6_{H}	7.4	0 - 53.3
Inverse inference	59.3_{B}	15.5	21.7 - 90.0
Active dismissal	49.6_{BCD}	22.3	0 - 95.0
Out of context associations	65.5_{A}	16.9	18.3 - 90.8
Others			
Conviction	76.6	10.4	43.3 – 95.0
Strangeness	22.6_{FG}	17.2	0 - 80.3
Absorption	49.1_{CD}	16.9	7.5 - 90.0
Affect	27.3_{F}	17.0	0.8 - 83.3
Ego-dystonicity	6.4_{H}	10.4	0 - 52.5
Identification	46.5_{CD}	14.9	9.2 - 90.0
Loss of control	16.6_{G}	26.3	0 - 95.0
Personification	1.3	4.0	0 - 28.3

Note. Ratings sharing the same subscript do not differ significantly from each other. CAM= Cognitive appraisal model; IBA= Inference base approach

n= 95

Correlations between narrative ratings are presented in table 9. Beliefs guiding appraisals of intrusions show no intercorrelations, while the processes of inferential confusion show three intercorrelations (positive correlation between out-of-context associations and inverse inference and negative correlations between basis in reality with both inverse inference and active dismissal). Ratings of importance and control of thoughts showed association with most of the "other" (non-theory-based) characteristics of OCD narrative. Conviction and absorption were both related to the processes of inferential confusion. Absorption, conviction, identification and

affect showed high intercorrelations, as did ego-dystonicity, importance and control of thoughts and fear of loss of control. Strangeness also showed high correlations with both absorption and personification.

Tableau 9. – Correlations between ratings of the different characteristics found in the narratives

		1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	Responsibility/ threat														
2	Importance/ control of thoughts	.01													
3	Perfectionism/ uncertainty	.14	-.18												
4	Reality basis/ direct evidence	-.16	-.23*	-.04											
5	Inverse inference	.04	.03	-.18	-.22*										
6	Active dismissal	.25*	.11	.20*	-.38***	.02									
7	Out of context associations	-.03	.08	-.23*	-.16	.45***	-.03								
8	Conviction	.33**	.15	.15	-.30**	.37***	.17	.29**							
9	Strangeness	-.04	.42***	-.36*	-.21*	.08	-.10	.12	.28**						
10	Absorption	.25*	.38**	-.01	-.10	.08	.33**	.24*	.50***	.44**					
11	Affect	.22*	.51***	-.05	-.04	.02	.20*	.18	.22*	.36**	.66***				
12	Egodystonicity	-.06	.67***	-.25*	-.17	-.04	.16	-.01	-.01	.31**	.17	.41***			
13	Identification	.01	.38*	-.01	.07	.07	.09	.30**	.38**	.10	.53***	.62***	.24*		
14	Loss of control	.06	.65***	-.30**	-.18	.04	.11	.17	.09	.25*	.19	.45***	.71***	.31**	
15	Personification	-.01	.45***	-.17	-.11	-.19	-.03	-.03	.08	.49***	.16	.11	.25*	.02	.08

Note. n= 95

* p< .05; ** p< .01; *** p< .001

Relationship With Psychometric Measures

In order to test that narrative ratings are related to corresponding psychometric measures, correlations were computed between the narrative ratings and the questionnaire completed by the OCD participants. Correlations between narrative ratings and OCD-related cognitive processes are presented in table 10. Results indicate that the ratings of the processes of inferential confusion do not correlate with the ICQ, ratings of absorption do not correlate with DA, ratings of strangeness do not correlate with the SPQ and ratings of beliefs about perfectionism and uncertainty do not correlate with the perfectionism and uncertainty scale of the OBQ. However, ratings of threat and responsibility and importance and control of thoughts did correlate with their respective scale on the OBQ. Further, ratings of importance and control of thoughts correlated with the ICQ and the responsibility and threat scale of the OBQ. Ratings of ego-dystonicity and fear of loss of control correlated with the ICQ, while identification and fear of loss of control correlated with the responsibility and threat scale of the OBQ. Also, the importance and control of thoughts scale of the OBQ showed many significant correlations with the other characteristics found in OCD narratives.

Tableau 10. – Correlations between ratings of the characteristics within OCD narrative and OCD-relevant cognitive processes.

		OBQ				
	ICQ[a]	RT[a]	ICT[a]	PU[b]	DA[d]	SPQ[c]
CAM						
Responsibility/ threat	.06	.28**	-.07	.02	-.05	-.22
Importance/ control of thoughts	.29**	.26*	.56***	.16	.06	.01
Perfectionism/ uncertainty	.10	.11	-.12	.19	.06	-.05
IBA						
Reality basis/direct evidence	-.05	-.15	-.15	-.21	-.02	.03
Inverse inference	-.08	-.07	.08	-.14	.08	-.01
Active dismissal	.06	.11	.07	-.01	-.01	-.04
Out of context associations	-.05	-.08	.15	.03	.12	-.08
Others						
Conviction	.01	.19	-.00	.00	-.02	-.17
Strangeness	.19	.15	.28*	.02	-.17	.03
Absorption	.08	.11	.12	-.10	-.01	-.11
Affect	.16	.19	.33**	-.03	.11	-.11
Ego-dystonicity	.22*	.11	.43***	.10	.07	.07
Identification	.18	.22*	.29**	.11	.18	.03
Loss of control	.21*	.24*	.58***	.12	.10	-.05
Personification	.17	.14	.12	.11	-.13	.01

Note. Rows represent narrative ratings and columns represent questionnaire/evaluation data. ICQ= Inferential confusion questionnaire; OBQ= Obsessive beliefs questionnaire; RT= Responsibility and threat; ICT= Importance and control of thoughts; PU= Perfectionism and Intolerance to uncertainty; DA= Dissociative absorption scale; SPQ= Schizotypal personality questionnaire; CAM= Cognitive appraisal model; IBA= Inference based approach.

[a] n= 88, [b] n= 87, [c] n=80, [d] n= 71

* p< .05; **p< .01; *** p< .001

Relationship With OCD and Associated Symptoms

Regarding the correlations between narrative characteristics and symptom dimensions of OCD, contamination symptoms were correlated with higher ratings of responsibility and threat, while

checking symptoms were correlated with increased strangeness and active dismissal. Hoarding symptoms were correlated with higher conviction, but decreased active dismissal, just right symptoms were associated with lower inverse inference, and there were no significant correlations with indecisiveness. Obsessions (consisting of repugnant and unwanted thoughts) were associated with higher ratings of beliefs about the importance and control of thoughts, absorption, affect, ego-dystonicity, identification and fear of loss of control, but decreased basis in reality. Overvalued ideations were significantly associated with increased perfectionism and intolerance to uncertainty, lower ego-dystonicity (i.e., higher ego-sytonicity) and lower fear of loss of control. Importance and control of thoughts and identification were related to both depressive and anxious symptoms, while fear of loss of control was only related with depressive symptoms. Severity of OCD as measured by the YBOCS was only associated with lower ratings of basis in reality. Correlations between narrative ratings and OCD symptoms are presented in table 11.

Tableau 11. – Correlations between ratings of the characteristics found within the narrative and clinical data at pre-treatment.

	VOCI[d]									
	Cont	Check	Obs	Hoard	JR	Ind	YBOCS[a]	BAI[a]	BDI[b]	OVIS[c]
CAM										
Responsibility/ threat	.32**	.19	.03	-.11	.03	-.07	.06	.04	.04	-.08
Importance/ control of thoughts	.06	-.09	.51***	-.08	.10	.13	-.09	.27*	.24*	-.19
Perfectionism/ uncertainty	.04	.15	-.11	.04	.14	.21	-.07	-.15	-.13	.23*
IBA										
Reality basis/direct evidence	-.00	-.11	-.24*	.03	-.10	-.03	-.23*	.03	-.04	.14
Inverse inference	.11	-.14	-.05	-.03	-.23*	-.15	.04	-.09	.03	-.08
Active dismissal	.10	.40***	.07	-.39***	-.01	-.05	.02	-.17	-.09	-.17
Out of context associations	-.04	-.17	.01	.03	-.08	-.07	.08	-.05	-.01	-.07
Others										
Conviction	.19	-.03	.16	.24*	-.00	.09	.04	.01	.07	.00
Strangeness	.09	.22*	.22	.03	-.01	-.06	.15	.18	.18	-.06
Absorption	.13	-.04	.22*	-.01	.00	-.05	-.11	-.00	.03	-.08
Affect	.05	-.05	.53***	-.04	.07	-.05	-.10	.13	.14	-.10
Ego-dystonicity	-.05	.01	.42**	-.11	-.05	.07	-.17	.03	.11	-.22*
Identification	-.09	.00	.38***	.13	.06	.13	-.17	.23*	.25*	-.01
Loss of control	-.05	.04	.46***	-.15	-.05	.07	-.05	.15	.27**	-.23*
Personification	.13	-.11	.16	-.03	.15	.13	-.04	.14	-.02	-.13

Note. Rows represent narrative ratings and columns represent questionnaire/evaluation data. VOCI=Vancouver obsessive compulsive inventory; Cont= Contamination; Check= Checking; Obs= Obsessions; Hoard= Hoarding; JR= Just Right; Ind= Indecisiveness; YBOCS= Yale-Brown obsessive-compulsive Scale; BAI= Beck anxiety inventory; BDI= Beck depression inventory; OVIS= Overvalued idea scale.

[a] n= 94, [b] n= 93, [c] n= 89, [d] n= 81

* p< .05; **p< .01; *** p< .001

Relationship With Treatment Outcome

In order to test that some characteristics of OCD narrative are related to treatment outcome, correlations were computed between the narrative ratings and change score on the YBOCS (see table 12). Change in OCD severity as measured by the YBOCS was negatively related to strangeness, basis in reality and personification of OCD. None of the other variables negatively predicted treatment outcome.

Tableau 12. – Correlations between ratings of the narrative characteristics and symptoms change following inference based cognitive therapy.

	YBOCS
CAM	
Responsibility/threat	.13
Importance/control of thoughts	-.05
Perfectionism/uncertainty	.00
IBA	
Reality basis/direct evidence	-.27*
Inverse inference	.20
Active dismissal	.18
Out of context associations	-.00
Others	
Conviction	-.03
Strangeness	-.25*
Absorption	-.19
Affect	-.06
Ego-dystonicity	-.08
Identification	-.13
Loss of control	-.08
Personification	-.24*

Note. Positive relationship indicates more improvement. YBOCS= Yale-Brown obsessive compulsive inventory; CAM= Cognitive appraisal model; IBA= Inference based approach

n= 79

* p< .05

Discussion

The aim of the current study was to provide converging evidence of the relationship between cognitive variables of OCD and symptoms through a content-analysis of obsessional narratives of patients with OCD that justify their obsessional doubts. Three sets of evaluators were used to rate the narratives, showing that reliability was good to excellent for the ratings, with the exception of personification. In addition, although there were significant differences between the different groups of evaluators, results indicated that these were not due to theoretical allegiance or level of expertise for most variables under investigation, with the possible exception of inverse inference. Given that none of the other differences appeared to be impacted by therapeutic allegiance, the most likely explanation might be that inverse inference is a relatively complex and formal reasoning processes and possibly more difficult to identify without any broader knowledge of the IBA model. Future studies should seek to confirm this hypothesis by giving more comprehensive information to raters about the features under investigation, such as inverse inference.

Results confirmed that obsessional narratives contained dysfunctional reasoning processes characterized by inferential confusion as proposed by the IBA, as well as obsessive beliefs as proposed by the CAM. In particular, basis in reality for the obsession was judged to be virtually absent by all of the raters, which is consistent with the IBA that claims obsessions are characterized by a lack of evidence in reality for the obsession in the here and now. Further, out-of-context associations and inverse inference as proposed by the IBA were judged to be “quite strongly present” in the obsessional narratives, while active dismissal was judged as “somewhat present”. Also, the obsessive belief domains of responsibility and threat overestimation and perfectionism and intolerance to uncertainty as proposed by the CAM were rated as “somewhat present” in the obsessional narratives. However, beliefs about importance/control of thoughts were on average judged to only be “a little bit present” in the obsessional narratives.

Overall, these results support the claim that both the IBA and the CAM are relevant to obsessional experience (Aardema, Wu, et al., 2018). The low degree of presence of beliefs about importance and control of thoughts was unexpected given that this belief or appraisal domain has previously

been found to be a major predictor of symptoms, and unacceptable thoughts in particular (Aardema et al., 2017; Aardema, Wu, et al., 2018; Paradisis et al., 2015). Indeed, the ratings of importance and control of thoughts varied across a wide range of values across narratives, and it is possible that it may be highly present in some narratives relevant to specific symptom dimensions of OCD, and less so in others, resulting in an overall lower average across narratives.

Narratives were also rated for the presence of other clinical features previously proposed to be relevant to obsessional experience and symptomatology. Conviction was rated on average as "strongly present" in the narratives, while absorption and identification were rated as "somewhat present". These variables were also relatively strongly related to each other, in addition to showing relationships with affect, and may together reflect the overall intensity of the obsessional doubt (Rachman, 1998; Rachman & Hodgson, 1980).

The high level of conviction characterizing obsessional narratives is surprising, since this is not generally associated with obsessions, which have historically been considered to be experienced as senseless and irrational (i.e. ego-dystonic). However, results showed that obsessions, or more precisely put, the justification behind them, generally occurs with high levels of conviction. Indeed, ego-dystonicity was rated as virtually absent in any narratives, similar to fears of losing control. Interestingly, both these variables were related to the appraisal domain of importance/control of thoughts, all of which are considered to be particularly relevant to unacceptable thoughts, autogenous obsessions (Lee & Kwon, 2003). As noted earlier, it is possible these characteristics are more present in narratives specifically revolving around this symptom domain of OCD.

Narrative ratings were generally not associated, or only modestly so, with their psychometric counterpart. One possible explanation is that questionnaires measure one aspect of the underlying construct, while the narrative ratings measure another, yet independent aspect of the same construct. This phenomenon may be similar to the frequently observed divergences between self-report and clinician-based OCD symptom measures. These have been proposed to be due to clinician-based measures representing OCD severity independent of obsessional content, while self-report measures represent OCD severity that is dependent on obsessional

content (Abramowitz et al., 2010; Anholt et al., 2009; Baraby, Audet, & Aardema, 2018). Another explanation might be that self-report questionnaires measure more trait-like aspects across situations, while narrative ratings inform us on cognitive functioning in a specific obsessional situation only. It is therefore possible for OCD participants to show elevated levels of OCD-relevant cognitive processes (such as inferential confusion, obsessive beliefs or schizotypy/strangeness), but to not use these cognitive processes in OCD situations to a similar magnitude as to how they use them in everyday life.

Concerning the relationships between narrative ratings and specific symptom dimensions of OCD, results are partially consistent with the literature. Contamination symptoms were associated with beliefs about responsibility and threat overestimation, while checking was associated with active dismissal of sense and self-information, which is consistent with psychometric studies (Aardema, Wu, et al., 2018; OCCWG, 2005; Paradisis et al., 2015; Strauss et al., 2020; Wheaton et al., 2010). Checking was also associated with strangeness, supporting its association with magical ideation (Tolin, Abramowitz, Kozak, & Foa, 2001), although no previous association between schizotypy and this symptom dimension has been found (Paradisis et al., 2015). Also, hoarding was associated with higher levels of obsessional conviction, but lower levels of active dismissal. This is consistent with evidence suggesting that inferential confusion is not as elevated among this subtype (Paradisis et al., 2015), but that it is characterized by lower levels of insight. (Jakubovski et al., 2011).

There were also a number of relationships that were absent or ran contrary to expectations. “Just right” symptoms were significantly associated with *lower* levels inverse inference in the obsessional narratives. This is inconsistent with psychometric investigations reporting significant positive association with beliefs about perfectionism and intolerance to uncertainty and inferential confusion (Aardema, Wu, et al., 2018; OCCWG, 2005; Paradisis et al., 2015; Wheaton et al., 2010). As noted previously, inverse inference may be harder to identify for evaluators who are not familiar with IBA. This may be more so in “just right” symptom presentations where obsessional preoccupation are more vaguely defined (Ecker & Gonner, 2008). Also, indecisiveness was not associated with any of the narrative ratings, even though psychometric investigations have reported significant relationships with perfectionism and intolerance to uncertainty and

inferential confusion (Aardema, Wu, et al., 2018; OCCWG, 2005; Paradisis et al., 2015; Wheaton et al., 2010). One explanation might be that indecisiveness is not generally considered a specific symptom subtype of OCD (Bloch et al., 2008), and may therefore not show any differential patterns in its relationships.

Obsessions, as measured by the VOCI, were associated with higher beliefs about importance and control of thoughts, absorption, increased affect, ego-dystonicity, identification, fear of loss of control, but lower basis in reality. This is consistent with the literature on repugnant thoughts, with previous research also reporting a relationship with higher levels of beliefs about importance and control of thoughts, absorption, affect, ego-dystonicity, identification, fear of loss of control and lower basis in reality (Aardema, Wu, et al., 2018; Audet et al., 2016; OCCWG, 2005; Paradisis et al., 2015; Radomsky & Gagne, 2020; Wheaton et al., 2010).

Symptoms of depression and anxiety were both significantly related to a higher level of beliefs about importance and control of thoughts and identification in the obsessional narratives. Fear of loss of control was specifically related to depression, but not anxiety. These associations with symptoms of depression and anxiety could be a by-product of the relationship between these characteristics and the severity of repugnant thoughts. Repugnant obsessions have previously been noted to be accompanied by increased severity of anxiety and depression (Moulding, Aardema, & O'Connor, 2014).

Beliefs about perfectionism and intolerance to uncertainty, as well as lower ego-dystonicity and fear of loss of control were associated with higher levels of overvalued ideations. Lower ego-dystonicity (i.e. ego-syntonicity) is a dimension of overvalued ideation (Neziroglu et al., 1999) as it denotes increase acceptance of the obsession. In our study, associations between ego-dystonicity and fear of loss of control were high, which may indicate that lower fear of loss of control taps into this increased acceptance of obsessions, i.e. one does not need to fear losing control if one is certain about losing control. Results also suggest that those use interpretations of perfectionism and intolerance of uncertainty to justify their obsessional doubt may agree more with the content of their obsession, i.e. one must make sure the compulsions are performed with diligence given that they can prevent the consequences foreshadowed by the obsessional doubt.

OCD severity as measured by the YBOCS was only associated with lower basis in reality. This supports previous finding about the role of lack of reality basis and direct evidence into obsessions (Audet et al., 2016; Audet et al., 2020; Julien et al., 2009). Further, this suggests that the more a person with OCD bases his obsessional doubt on imaginary possibilities that are remote from reality, the more severe his OCD is, regardless of symptom subtypes. A lack of basis in reality during reasoning is a central feature of inferential confusion and these results supports the IBA conceptualization of obsessions (Aardema & Wong, 2020; O'Connor & Aardema, 2012a; O'Connor, Aardema, & Pélissier, 2005; O'Connor & Robillard, 1995).

Finally, there were significant relationships between narrative characteristics and treatment outcome. Specifically, strangeness, basis in reality and personification were negatively related to treatment outcome. This is consistent with previous literature, which has reported strangeness or bizarreness of obsessions to be a predictor of negative treatment outcome (Basogul et al., 1998; Rachman & Hodgson, 1980). No previous study reported a negative association between reality basis or personification and decreased OCD symptoms during psychotherapy. Close inspection of narrative scoring higher on their basis in reality revealed that they contained more elements relevant to past events, such as the situation leading to the onset of OCD. This reliance on (selected) past events maybe be harder to navigate with in psychotherapy. Personification of OCD may be a corollary of the decreased sense of agency in OCD which has been related to increased OCD symptoms (Fradkin, Eitam, Strauss, & Huppert, 2018; Tapal, Oren, Dar, & Eitam, 2017). Putting agency within OCD may diminish the capacity for action on one's obsessions as one takes the position of "victim" to their obsessions and therefore loses power over them.

The current study has several limitations. Some time elapsed between symptom measures and the timing of the narrative creation (6-8 weeks). Therefore, it is possible that the association between the narrative ratings and both questionnaire and evaluation at pretreatment might have been artificially lowered. Further, this study did not take into account feared self-perceptions, a more recent cognitive domain receiving increased research attention. Feared self-perceptions are related to several symptoms' presentation in OCD as well as treatment outcome and have been theorized as being related to the development of OCD (Frederick Aardema et al., 2021; Frederick Aardema, Wong, et al., 2019). Despite these limitations, the study also possesses several

strengths. In particular, there was a high level of method variance in the current study preventing inflation of associations between variables due to using common methodology. The current study is also the first large-scale study to investigate the justification of OCD participants' obsessional doubt.

Overall, results suggest that lack of basis in reality is an important feature of OCD, relating to its severity and treatment outcome, consistent with the IBA. Further, the study supports the distinction of inferential confusion reasoning processes, as evidence by their differential contribution to the symptoms dimension of OCD. Results also support the relevance of CAM-related obsessive beliefs and appraisal domains. Finally, the current confirms the importance of other obsessional features in obsessional narratives, including conviction, strangeness, absorption, affect, ego-dystonicity, identification, fear of loss of control and personification, which are important for an understanding of OCD and its treatment.

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Chapitre 5 – Discussion

Le but de cette thèse était de fournir des preuves supplémentaires soutenant le manque de contexte justificatif des obsessions comme une caractéristique importante du TOC. Trois objectifs ont été posés afin d'accomplir ce but : (1) vérifier dans la littérature si d'autres études mentionnent le manque de preuve directe comme étant une caractéristique des obsessions; (2) présenter des preuves expérimentales de l'importance du manque de preuve directe des obsessions dans le TOC; et (3) évaluer le rôle du manque de fondement dans la réalité de la justification du doute obsessionnel soutenant l'obsession. Trois études ont été effectuées afin d'accomplir ces objectifs.

Première étude

La première étude a présenté une revue systématique et une méta-analyse des caractéristiques permettant de distinguer entre les obsessionnelles et les intrusions à thème obsessionnel chez des populations non-cliniques et cliniques, ainsi que les intrusions non obsessionnelles chez les populations cliniques. Cette étude avait pour but de répondre à l'objectif 1, soit de vérifier si les études présentes dans la littérature indiquaient que le manque de preuve directe est une caractéristique permettant de distinguer entre les obsessions et les autres types d'intrusions. De manière générale, les études recensées ont montré que la détresse, l'interférence, l'incontrôlabilité et la fréquence distinguaient entre les obsessions chez les participants souffrant de TOC comparativement aux intrusions ayant un thème obsessionnel se produisant chez les participants ne souffrant pas de TOC. De plus, la fréquence, la relation avec le soi et la détresse étaient les meilleurs prédicteurs des obsessions se produisant dans le TOC comparativement aux autres types d'intrusions se produisant dans les autres troubles. Toutefois, les caractéristiques permettant de distinguer entre les obsessions et les intrusions non-obsessionnelles dans les autres groupes cliniques montraient beaucoup de variabilité dépendamment des comparaisons effectuées. Lorsque l'on regarde spécifiquement le manque de fondement dans la réalité, on remarque que cette caractéristique permet de distinguer entre les obsessions chez les participants souffrant de TOC des intrusions à thème obsessionnel chez les participants de la

communauté. Aussi, le manque de fondement dans la réalité permet de distinguer entre les obsessions et les intrusions à thème non obsessionnel dans la dépression et le trouble d'anxiété généralisée.

Les résultats de cette étude suggèrent donc que la fréquence, la détresse, l'interférence, l'incontrôlabilité et la relation avec le soi sont les caractéristiques qui seraient les plus spécifiques au TOC. Les études sur la relation avec le soi suggèrent que l'identification avec un soi dangereux serait le thème de soi montrant une spécificité avec le TOC. Cela n'est pas sans rappeler la théorie des perceptions d'un soi craint où les personnes souffrant de TOC s'identifient erronément avec qui elles craignent d'être ou de devenir, dont un soi dangereux (Aardema & Wong, 2020).

Les résultats de cette étude concernant le manque de fondement dans la réalité des obsessions supportent le rôle potentiel de la confusion inférentielle dans le développement des obsessions, le manque de fondement dans la réalité étant une caractéristique centrale à la confusion inférentielle (Aardema et al., 2009; Audet et al., 2016). Toutefois, le manque de fondement dans la réalité ne permettait pas de distinguer les obsessions des intrusions se produisant dans l'hypocondrie. Plusieurs auteurs conceptualisent l'hypocondrie comme formant un continuum avec le TOC (Pascual-Vera et al., 2019; Pascual-Vera & Belloch, 2018; Pascual-Vera et al., 2017), ce qui pourrait expliquer en partie pourquoi le manque de fondement dans la réalité ne permet pas de distinguer les intrusions se produisant dans les deux troubles. De plus, ce continuum inclurait aussi la peur d'une dysmorphie corporelle et les troubles alimentaires, le manque de fondement dans la réalité pourrait donc aussi être présent dans les intrusions de ces troubles. Toutefois, aucune étude n'a évalué le manque de fondement dans la réalité des intrusions que l'on retrouve dans la peur d'une dysmorphie corporelle et les troubles alimentaires.

Les résultats de cette étude doivent toutefois être généralisés avec précaution. Peu d'études ont évalué les caractéristiques distinguant entre les obsessions et les autres intrusions, il est donc possible que d'autres caractéristiques s'avèrent importantes dans les distinctions entre les obsessions et les autres intrusions. Aussi, certaines caractéristiques potentiellement importantes dans la distinction entre les obsessions et les autres intrusions n'ont été comparées que chez un petit nombre d'échantillon (clinique ou non clinique) différents, ce qui pourrait faire en sorte de

sous-estimer leur importance. Par exemple, l'urgence de neutraliser la pensée n'a été comparée qu'avec la dépression et l'anxiété généralisée, mais cette caractéristique pourrait aussi montrer une spécificité pour les obsessions dans le TOC lorsqu'on compare avec des intrusions présentes dans d'autres troubles. Il en va de même pour le manque de fondement dans la réalité qui n'a été comparé qu'avec des participants souffrant de dépression et de trouble d'anxiété généralisé.

Des études futures devraient donc continuer de comparer les caractéristiques des obsessions à celles d'autres types d'intrusions afin d'avoir des données supplémentaires sur les variables qui permettent de distinguer entre ces deux types de pensées. De plus, des études futures devraient combiner les caractéristiques permettant de distinguer entre les obsessions et d'autres types d'intrusions afin de déterminer quelles sont les caractéristiques les plus centrales à cette distinction. Cela permettrait d'avoir un portrait des caractéristiques qui sont nécessaires afin de différencier entre les obsessions et d'autres types d'intrusions. Cette connaissance pourrait ultimement aider à améliorer le diagnostic différentiel avec le TOC, surtout pour les cas qui sont plus complexes ou ambigus.

Deuxième étude

La deuxième étude a présenté une tâche expérimentale générant des intrusions à l'aide de scénarios comportant des thèmes reliés au TOC présenté sous deux conditions : une avec des preuves directes soutenant les intrusions et une sans preuve directe soutenant les intrusions. Cette étude avait pour but de répondre à l'objectif 2, soit de présenter des preuves expérimentales soutenant l'importance du manque de preuves directes dans le TOC. Les résultats de l'étude ont montré que les participants universitaires rapportent moins d'intrusions, une plus faible probabilité d'avoir une intrusion, moins de détresse face aux intrusions et moins d'indésirabilité de l'intrusion dans la condition sans preuve directe. Malgré des réactions moindres, celles de la condition sans preuve directe prédisent les symptômes du TOC au-delà des réactions aux scénarios avec preuves directes. Cela indique que les réactions aux scénarios sans preuve directe sont plus près de l'expérience obsessionnelle compulsive et donc que le manque de preuves directes pourrait être important dans l'étiologie des obsessions dans le TOC. De plus, les réactions aux scénarios sans preuves directes étaient reliées à la confusion inférentielle, aux

croyances sur l'importance et le contrôle des pensées et à l'identification avec des perceptions d'un soi craint. Ces variables sont donc importantes pour notre compréhension de manque de preuves directes dans le TOC.

Cette étude est la première à amener des preuves expérimentales supportant le manque de preuve directe dans le TOC. Cette étude a montré qu'il est possible d'induire des réactions similaires à celles que l'on s'attendrait à avoir dans le TOC en manipulant la présence de preuve directe. De plus, la nature de la tâche la rend plus près de l'expérience réelle de participants souffrant de TOC. D'autres études confirment la manipulation expérimentale avec des tâches purement comportementales qui manquent de validité écologique, par exemple trier des couteaux (Gagne & Radomsky, 2020). Toutefois, la dimension de symptôme obsessionnel compulsif *Just Right* n'a pas été mesurée par l'étude, il persiste donc une incertitude quant à la contribution du manque de preuve à cette dimension.

Cette étude a aussi pris en compte d'autres caractéristiques propres aux obsessions, soit le nombre d'intrusions, la probabilité de les avoir (utilisé comme analogue à la fréquence), la détresse et l'indésirabilité. Ces quatre caractéristiques ont été supportées comme distinguant entre les intrusions à thème obsessionnel se produisant chez les participants de la communauté et les participants souffrant de TOC dans l'étude présentée au chapitre 2. Cela ajoute donc du poids aux résultats de cette étude dans le sens où les différences trouvées entre les scénarios avec et sans preuve directe reflètent les différences trouvées entre les participants souffrant de TOC et ceux ne souffrant pas de TOC.

Les analyses de régression nous permettent d'affirmer que les réactions aux intrusions sans preuve directe sont reliées à la confusion inférentielle, les croyances en l'importance et le contrôle des pensées et l'identification avec les perceptions d'un soi craint au-delà des symptômes dépressifs. Cependant, la nature de l'étude ne nous permet pas de déterminer si les pensées sans preuve directe sont le résultat de la confusion inférentielle ou si elles sont des pensées aléatoires plus sujettes à des mésinterprétations (Audet et al., 2016). Cependant, cette étude nous permet de conclure que la réaction aux pensées sans preuve directe est générée à la fois par les croyances obsessionnelles et la confusion inférentielle. L'étude a été effectuée sur des

participants ne souffrant pas de TOC et, bien que les résultats de ce type d'étude sont considérés comme pertinents pour le TOC (Abramowitz et al., 2014), ils nécessitent une réplication dans les échantillons cliniques.

Des études futures devraient donc améliorer la tâche expérimentale utilisée dans cette étude afin d'inclure des scénarios permettant de générer des obsessions *Just Right*, ce qui permettra une meilleure généralisation des résultats au TOC. Les études futures pourraient aussi modifier la tâche afin d'inclure des comportements ressemblant à des compulsions afin d'évaluer si ces comportements dans des scénarios sans preuve directe sont aussi reliés aux TOC. Finalement, cette étude devrait être répliquée chez des participants souffrant de TOC. Cette réplication nous permettrait d'améliorer nos connaissances sur le manque de preuves directes dans le TOC.

Troisième étude

La troisième étude a présenté une analyse du raisonnement utilisé par les participants souffrant de TOC afin de justifier la validité de leur doute obsessionnel, aussi appelé narratif TOC. Cette étude avait pour but de répondre à l'objectif 3, soit d'évaluer le rôle du manque de fondement dans la réalité dans la justification de l'obsession. L'étude a montré que l'évaluation des narratifs pouvait être faite sans biais par des thérapeutes, sans regard à leur expérience ou leur allégeance théorique. Les caractéristiques évaluées dans les narratifs avaient peu de correspondance avec les mêmes caractéristiques évaluées par des questionnaires. Il pourrait donc s'agir d'une méthodologie permettant de mesurer la proportion d'une caractéristique qui est utilisée dans la genèse de l'obsession plutôt qu'un trait de personnalité.

L'étude a montré que le manque de fondement dans la réalité des justifications menant au doute obsessionnel était central dans le TOC. Ce manque de fondement dans la réalité était le seul prédicteur de la sévérité des symptômes obsessionnels compulsifs tel que mesurés par des évaluateurs indépendants. D'une manière plus large, cette étude a validé la pertinence de prendre en compte la confusion inférentielle et les croyances obsessionnelles pour mieux comprendre les obsessions dans le TOC. Les processus de la confusion inférentielle et les croyances obsessionnelles étaient évalués comme étant en moyenne « quelque peu présents » dans les narratifs TOC. De plus, la majorité de ces processus et croyances étaient en lien avec soit

la sévérité de certaines présentations de symptômes obsessionnels compulsifs, soit avec la sévérité de symptômes associés, telles la dépression et l'anxiété.

Cette étude a aussi montré que moins les narratifs étaient fondés dans la réalité, plus l'efficacité thérapeutique diminuait. Cela pourrait être dû à l'utilisation sélective d'événements passés afin de justifier le doute obsessionnel, plutôt que l'inclusion d'éléments provenant de l'ici et maintenant, ce qui donne l'impression que l'obsession se base sur quelque chose de tangible. L'utilisation d'arguments bizarres et la personnification du TOC dans les justifications du doute obsessionnel étaient aussi reliées à une diminution de l'efficacité thérapeutique de la TCC-I. Il est déjà connu que les obsessions à caractère bizarre amoindrissent l'efficacité de la TCC-C (Basogul et al., 1998), mais il s'agit de la première étude à indiquer que le manque de fondement dans la réalité et la personnification diminuent l'efficacité de la TCC-I. Il serait intéressant de vérifier si ces deux caractéristiques affectent aussi l'efficacité thérapeutique de la TCC-C ou si cet effet est spécifique à la TCC-I.

Bien qu'il s'agisse de la première étude d'envergure à investiguer les caractéristiques proposées comme pertinentes au TOC dans l'expérience des personnes souffrant de TOC. Toutefois, l'accord inter juge pour certaines caractéristiques était faible, alors que pour d'autres des différences importantes dans l'évaluation de celles-ci ont été mises en évidence. Les études futures utilisant cette méthodologie gagneraient à utiliser des définitions plus élaborées des caractéristiques à évaluer, à rendre les critères de codification des observations plus clairs et objectifs ou encore à donner une courte formation afin d'améliorer l'accord inter juge. L'amélioration de la fiabilité des évaluations pourrait permettre de diminuer le bruit statistique et de dégager des relations plus fortes entre les caractéristiques des narratifs et les symptômes du TOC.

Discussion générale et conclusion

Cette thèse amène une contribution importante dans notre compréhension du rôle du contexte dans le TOC. Les études présentées dans celle-ci ont permis d'apprendre que le manque de fondement dans la réalité distinguait d'une part entre les obsessions chez les personnes souffrant de TOC et d'autre part les intrusions dans la population générale ainsi que les intrusions non obsessionnelles chez ceux souffrant de dépression et de trouble d'anxiété généralisée. La

manipulation expérimentale de la présence de preuves directes justifiant la présence d'intrusions a permis d'apprendre que les intrusions se produisant sans preuve directe étaient reliées au TOC au-delà des intrusions se produisant avec des preuves directes. L'analyse du contenu des narratifs de participants souffrant de TOC a aussi permis d'apprendre que le manque de fondement dans la réalité est relié à la sévérité des symptômes obsessionnels compulsifs et qu'il est aussi relié à une moins bonne amélioration thérapeutique.

Les études présentées dans cette thèse supportent les postulats de l'ABI, principalement que la caractéristique principale des obsessions est un raisonnement caractérisé par un manque de fondement dans la réalité, c.-à-d. la confusion inférentielle (O'Connor, Aardema, & Pélissier, 2005; O'Connor & Robillard, 1995). Cette caractéristique serait spécifique au TOC et aux troubles formant un continuum avec le TOC, telles la peur d'une dysmorphie corporelle et l'accumulation compulsive (Aardema et al., 2005; O'Connor, 2017; Taillon, O'Connor, Dupuis, & Lavoie, 2013). Le doute obsessionnel non fondé dans la réalité inviterait aussi des interprétations erronées des conséquences qu'annonce le doute (O'Connor, Aardema, & Pélissier, 2005; O'Connor & Robillard, 1995).

D'autres troubles ne faisant pas partie des troubles associés au TOC pourrait aussi avoir comme caractéristiques importantes l'absence de preuves directes. Le manque de preuves directes soutenant les pensées est aussi présent dans la psychose. Le DSM-5 définit les hallucinations comme étant des phénomènes quasi identiques à la perception, mais sans stimuli sensoriels et les délires comme des croyances qui ne se modifient pas malgré des preuves du contraire (APA, 2013). Ce qui distingue les obsessions dans le TOC des hallucinations et délires dans la psychose est l'*insight*, c.-à-d. la capacité de savoir que la pensée est fausse (Kozak & Foa, 1994; APA, 2013). C'est pour cette raison que l'ABI conceptualise les obsessions comme des doutes envers la réalité (O'Connor & Robillard, 1995). L'obsession semble réelle, mais les personnes souffrant de TOC ont une incertitude quant à sa véracité dans la réalité (même si cette incertitude est parfois très faible), alors que dans la psychose il n'y a pas d'incertitude quant à la réalité de l'hallucination et du délire (O'Connor, Aardema & Pélissier, 2005). Les obsessions et les délires sont aussi parfois considérés comme faisant partie du même continuum qui est régi par le niveau d'*insight* (Kozak & Foa, 1994).

Cette thèse comporte plusieurs forces et faiblesses. Une force est la méthodologie variée utilisée afin d'obtenir différentes preuves sur le rôle de l'absence de fondement dans la réalité des obsessions dans le TOC. Les trois études présentées sont aussi pionnières à leur manière. La première étude présente la première revue systématique des caractéristiques permettant de distinguer les obsessions des autres types d'intrusions. La deuxième étude présente la première étude expérimentale manipulant la présence de preuves directes dans le TOC. La troisième étude présente la première étude d'envergure à investiguer la présence de caractéristiques propres au TOC dans le vécu de personnes qui en souffrent. Une des faiblesses de la thèse est qu'une seule étude a été effectuée chez des personnes souffrant de TOC. Bien que les résultats des deux premières études soit intéressant, ils devront être validés dans un échantillon de participants souffrant de TOC afin de confirmer leur relation avec le TOC. De plus, les études de la thèse étaient toutes transversales, il n'est donc pas possible d'établir une implication temporelle (ou causale) du manque de preuves directes dans le maintien et le développement du TOC.

D'autres études devraient être effectuées afin de continuer à valider l'importance du manque de fondement dans la réalité dans le TOC. Une manipulation expérimentale de la présence de preuves directes chez des participants souffrant de TOC nous permettrait de confirmer l'importance de cette caractéristique. Il serait aussi important de prendre en compte les symptômes de *Just Right* afin de mieux pouvoir généraliser les résultats à tous les sous-types de TOC. Des comparaisons de la présence de preuves directes dans la justification d'intrusions chez des participants souffrant d'autres troubles psychiatriques permettraient d'établir la spécificité de cette caractéristique pour le TOC. Aussi, des études longitudinales seraient cruciales pour mieux comprendre le rôle de cette caractéristique dans le maintien et le développement du TOC.

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Annexe 1 - Principal methodological characteristics of the studies included in the systematic review.

Authors	Participants	Diagnostic method	Intrusion definition	Instrument	Intrusion assessed
Morillo et al., 2007*	30 US, 31 OCD, 22 DEP and 25 anxiety disorder.	Clinical groups: DSM-IV diagnostic, no mutual comorbidity allowed. US: Question screen and questionnaire cutoff	Intrusive thoughts list	ROII	All from list and questions on most upsetting
Purdon et al., 2007	Study 1: 17 OCD and 278 US	14 OCD diagnosis from treating psychologist and 3 from OCD	"Nearly everyone experiences unpleasant and unwanted thoughts, although people vary in how frequently they occur and how distressing the are. We a re interested in some of these kinds of thoughts that you may have had. These	EDQ	Egodystonic thought

support group (self-diagnosis). US: none	can occur in several forms, such as images, like a picture in our heads, impulses to do or say something, or just thoughts about something. Specifically, we are interested in unpleasant and unwanted thoughts which you perceive as inconsistent with how you view yourself. Such thoughts are in conflict with important parts of yourself, such as morals, attitudes, beliefs, preferences, habitus, behaviours and rationality. These thoughts are not simple inconsistent with how you view yourself; rather they do not seem to fit who you truly believe you are. Here are some examples of the kind of unwanted unpleasant thoughts which many people perceive as being inconsistent with their personality: 1. An individual who loves their family having a thought about physically attacking or harming a family member. 2. An individual having thoughts about contaminating others even thought they know it is irrational. 3. An individual having a thought of sexually

			molesting a child even though the idea is repugnant, and they believe such an act to be immoral."		
Wahl et al., 2011	34 OCD and 34 MDD	SCID-IV diagnostic, no mutual comorbidity allowed	List of obsessive and ruminative thoughts, most frequent and personally relevant	CIQ	Most frequent and personally relevant
Moritz & Laroi, 2008	60 CC, 55 OCD (checking and washing compulsions only), 45 schizophrenia	Self-report diagnostic with question checks for all groups	"Intrusions were defined as thoughts that are not like willed “tools of rationality” but rather thoughts that seem to arise out of the blue. They may be bothersome or sticky thoughts that one does not want to dwell on, such as obsessions (e.g., fears to contaminate another person, feeling guilty of causing an accident), catchy tunes and strange thoughts that, for example, humiliate the person. They may, however, also contain creative ideas."	Thinking scale	General intrusive experience (not specified)
Romero-Sanchiz et al., 2017	35 OCD, 36 GAD and 34 hypochondria	SCID-1 diagnostic, some mutual	Intrusive thoughts list	CIQ-TV	Most disturbing though on

		comorbidity allowed			list from previous month
Lipton et al., 2010	21 OCD and 22 Anxiety disorder	SCID-1 diagnostic, some anxiety disorder comorbidity in the OCD group	"participants were asked a specific set of questions to help them identify images that were recurrent, came spontaneously to mind and were experienced negatively, in line with the definition of intrusive imagery by Horowitz (1970). For further clarification, images were defined as mental representations with visual or non-visual components, sensations (such as seeing, hearing, or smelling), or an impression (defined as an often indistinct or imprecise notion or remembrance: Merriam-Webster, 2002)."	Imagery self-rating	Most frequent image in the previous month
Julien et al., 2009	90 CC and 33 OCD participants	OCD: SCID diagnostic. CC: Questionnaire screen.	Intrusive thoughts list and 3 most distressing intrusion	II	Most distressing obsessions

Achachi et al., 2017*	17 CC and 19 treatment naïve OCD.	OCD: MINI diagnostic. CC: no mention.	Intrusive thoughts list	IITIS	All from list and most distressing intrusion in the previous three months
Garcia-Soriano et al., 2014	79 OCD and 177 ED	DSM-IV-TR diagnostic, no mutual comorbidity allowed	Intrusive thoughts list	INPIOS/INPIAS	All from list and most upsetting intrusion in the last three months
Bouvard et al., 2017*	28 OCD and 28 CC (although 2 with anxiety disorder)	OCD and CC: MINI diagnostic.	Intrusive thoughts list	IITIS	All from list and most distressing intrusion in the previous

					three months
Wahl et al., 2019	42 DEP, 35 GAD, 41 OCD and 35 NCC	Clinical groups: SCID diagnostic, no mutual comorbidity allowed. NCC: SCID screening form	"All questions referred to a typical RNT episode. This was defined as a situation in which individuals would think for an extended period of time about negative events, anticipated difficulties, and current problems."	PTQ	Typical episode of repeated negative thoughts
Garcia-Soriano et al., 2011*	55 OCD and 55 CC (matched subsample)	OCD: ADIS-IV-L. CC: question check.	Intrusive thoughts list	INPIOS	All from list and most upsetting intrusion in the last three months
Garcia-Soriano & Belloch, 2013*	61 OCD and 61 CC (matched)	OCD: SCID diagnostic, OCD without comorbidity and	Intrusive thoughts list	INPIOS	All from list and most upsetting intrusion in the last

		clearly defined subtypes. CC: question screen.			three months
Inozu et al., 2021*	50 OCD, 59 AD, 50 NCC	OCD and anxiety disorder: SCID diagnostic, no comorbidity allowed CC: question screen	Intrusive thoughts list	IITIS	All from list and most distressing intrusion in the previous three months
Roncero et al., 2013	61 OCD and 34 AN-R	DSM-IV-TR diagnostic, no mutual comorbidity allowed	Intrusive thoughts list	INPIOS/INPIAS	All from list and most upsetting intrusion in the last three months

Note. *= included in a meta-analysis; US= University student; CC= Community control OCD= Obsessive Compulsive Disorder; DEP=Depressed (including major depression and dysthymia) MDD= Major Depressive Disorder; GAD= Generalized Anxiety Disorder;

NCC= Non-Clinical Controls; ED= Eating disorders; AN-R= Anorexia Nervosa – Restrictive subtype; DSM-IV= Diagnostic and Statistical Manual,4th edition; SCID= Structured Clinical Interview for DSM; MINI= Mini International Neuropsychiatric Interview; ADIS= Anxiety Disorder Interview Schedule; ROII= Obsessional Intrusions Inventory – Revised; EDQ= Egodystonicity Questionnaire; CIQ= Cognitive Intrusion Questionnaire; CIQ-TV= Cognitive Intrusion Questionnaire – Transdiagnostic Version; II= Intrusion Inventory; IITIS= International Intrusive Thoughts Interview Schedule; INPIOS= Obsessive Intrusive Thoughts Inventory; INPIAS= Eating Intrusive Thoughts Inventory; PTQ= Perseverative Thinking Questionnaire

Annexe 2 - Vignette

Condition	**Scenario**	**Potential Intrusions**
Checking – Without direct evidence	You just got off the phone with one of your friends. You haven't spoken for a long time and you decide to meet up the next day. A few minutes before the meeting, you leave the house and think about your neighbour who was robbed last week. He never thought to check if his door was locked. As you meet up, you notice your friend looks to be in a good mood. He tells you he has been offered a promotion and he's really enjoying it. He's not only happy with the increase in salary, but also with the new job he has. He tells you that he really needed it: he did hit rock bottom a few years back. His wife had left him, and he tells you for the first time that he had been robbed because he forgot to lock the door…	"…that you might have left the door unlocked" "…that you might get robbed" "…that you might be careless" "…that your house is left unsecure" "…that you have been negligent"
Checking – With direct evidence	You wake up late for work. You hate it when it happens, you feel it starts the day on the wrong foot. Trying to keep your eyes open, you make it to the kitchen to prepare some coffee. You then keep going with your morning routine: breakfast, dressing up and grooming. As you groom yourself, you start thinking about alternative routes to get to work faster. You're about to go, but you remember you forgot to make your lunch. You step in the kitchen and you wonder for an instant whether you should eat at the cafeteria or not. You decide that	"…that you might have left the door unlocked" "…that you might get robbed" "…that you might be careless" "…that your house is left unsecure" "…that you have been negligent"

	you would save more time by eating at the cafeteria. You step outside, but you realize that you forgot your keys, so you get back inside to get them. You leave, for the second time, in a hurry, feeling distracted and rushed. You cannot remember if you locked the door…	
Aggressive – Without direct evidence	You are at home watching a documentary, as you usually do on Thursday. Every Thursday night, your wife and children visit your in-laws and you choose a movie that you watch by yourself. This is your moment of peace, away from the constant noise. You love your family deeply, but you need that moment to yourself. As you start to unwind, finishing your favorite snack, you find yourself getting sucked into the story more than usual. The movie is about a psychopath who kills his entire family. On the outside, the guy seemed entirely normal to everyone, until seemingly out of the blue, he went crazy. You wonder how this is possible, and it makes you feel a bit uncomfortable. Then, in the middle of your thoughts you hear the door. Your family arrived early...	"…that you might harm your family" "…that you might yell at your family" "…that you might tell obscenities to your family" "…that you might need to be restrained" "…that you might go out of control" "…that you may behave inappropriately" "…that you might be a psychopath"
Aggressive – With direct evidence	You are at work. Your day started out fine, but everyone seems tense. People are throwing quick glances at you and then quickly walk away. You are not sure why because you have been keeping to yourself lately. A few minutes later, the secretary of your boss asks that you meet him immediately. You start to tense up. He is not what	"…that you might harm your boss" "…that you might yell at your boss" "…that you might shout obscenities to your boss"

	you consider a respectful person. He has a history of humiliating employees publicly and he is openly cheating on his wife with his secretary. When you get in his office, he starts yelling at you, telling you what a bad job you've been doing lately. The more he yells, the closer he gets to you, invading your private space...	"…that you might need to be restrained" "…that you might go out of control" "…that you might behave inappropriately" "…that you might say something you regret later"
Superstitious/ Social convention – Without direct evidence	While you wait for the moving truck, you finish packing your belongings. You only have one box left to do. It is mostly composed with inheritance from your mother who passed away last year. You kept some of the things as they were of great sentimental value to her: the watch from her mother, a picture of her and your father at their marriage and her old crucifix. You get to your new house and you already start to feel at home. Your friends help you unload and you start to unpack your boxes. When you get to your mother's memento, you realize the crucifix has turned upside down. You remember that your mother always told you that an upside down crucifix means God is angry with you…	"…that you did something blasphemous" "…that you may have infringed a protocol" "…that you did something very inappropriate" "…that you did something bad or immoral" "…that you did something sacrilegious"
Superstitious/ Social convention – With direct evidence	You are on a trip in a foreign country. You decided to take a trip where you would discover other cultures and see something out of the ordinary. You meticulously planned your trip to get the most	"…that you did something blasphemous"

	out of your vacation. You first plan on visiting a local place of worship. You get in a cab and head that way. As you enter the temple, you find yourself immersed in beauty. This is a place like you've never seen before. You walk around and bathe in the atmosphere of peace. You look and see that people are looking at you with increased suspicion. There's even one group talking loudly and pointing in your direction, one of the members doing what seems like a quick prayer…	"…that you may have infringed a protocol" "…that you did something very inappropriate" "…that you did something bad or immoral "…that you did something sacrilegious"
Homosexual – Without direct evidence	You are late to the gym. Not late per se as you are not taking any classes, just doing some training by yourself, but you still want to get home early. You start changing in the dressing room (there's only one as this is a same-sex gym) and you try to figure out which exercises you can cut from your routine to leave early. As you get to the main training area, you noticed that most of the machines you planned on using are taken. You resign yourself to use the free weights. As you enter the free weights room, you notice the people there are in much better shape and you catch yourself glancing at them, admiring their muscle tone and definition…	"…that you might be homosexual" "…that you might feel sexually aroused by the same sex" "…that you are bi-sexual" "…that you might have sex with somebody at the gym" "…that you have sexual feelings for the same sex"
Homosexual – With direct evidence	You have been playing in a same-sex hockey league for a few years now. You've started playing because you noticed you gained a few pounds and you decided to become active to lose the extra weight. So far, everything has been good, you lost	"…that you might be homosexual" "…that you might feel sexually aroused by the same sex"

	the weight and managed to make a few friends. Today, you feel great after you score the winning goal in overtime. In the changing room, your teammates and you joke around and the fun continues in the shower. As you finish your shower, you notice that only you and one of your friends are left. As you look at your friend's naked body, you notice it is quite muscular and you feel aroused as your friend leans toward you…	"…that you are bi-sexual" "…that you might have sex with your friend" "…that you have sexual feelings for the same sex"
Contamination – Without direct evidence	You're out shopping. You've needed new clothes for quite some time now, but you've delayed buying them for a while. You're at the mall and you notice that they've installed a kiosk intended to inform people about the seasonal flu. They say the vaccine is more effective this year and they remind people of the protective measures against the flu. You walk right past it and enter a shoe store. Before you can find a pair you like, a salesman comes up to you and starts trying to sell you every pair of shoes in the store. You decide to leave, but the salesman forces you to shake his hand before letting you go…	"…that you might be contaminated" "…that you might be dirty" "…that you might get sick" "…that you might be infected" "…that you have become tainted"
Contamination – With direct evidence	You are at the hospital with your friend. She's been sick for a few days now, she does not know what she has, and she has nobody to go to the hospital with. She's been afraid of hospitals ever since her treatment for her chronic lung infection, so you took pity on her and you went to the emergency room with her. As usual, the wait is long, but at	"…that you might be contaminated" "…that you might be dirty" "…that you might get sick"

	least you're with somebody and it leaves you some time to talk and catch up. To tell the truth, you're not very comfortable around hospitals either, you've been in good health for most of your life and you want it to stay that way. Suddenly, your friend vomits at your feet…	"…that you might be infected" "…that you have become tainted"