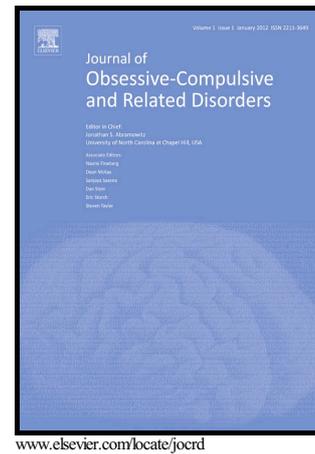


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## Abnormal and Normal Mental Contamination

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## Abstract

Mental contamination is defined and the main features of the phenomenon are set out. In addition to the familiar form of abnormal mental contamination, as evident in psychological disorders, notably Obsessive-compulsive Disorder, the phenomenon of non-clinical mental contamination is common. The clinical form is distressing, uncontrollable, constant and dysfunctional. The normal phenomenon can be disturbing but it is usually dormant, evoked intermittently, transient, tolerable, manageable, not dysfunctional and psychologically fascinating. The cognitive theory of mental contamination encompasses the causes of mental contamination, its persistence, and individual vulnerability. The field would benefit greatly from additional work, such as that reported elsewhere in this Special Issue, to incorporate the unusual manifestations of visual contamination, morphing and self-contamination, and to account for the experience of mental contamination in nonclinical and other clinical manifestations.

Keywords: Mental contamination; OCD; symptoms; analogue research; contamination fear; compulsive washing.

## Contact and Mental Contamination

There is converging evidence that the phenomenon of mental contamination is common and not confined to obsessive-compulsive disorder (OCD). Most of our considerable knowledge about mental contamination is drawn from the study and treatment of this disorder, but the understandable focus on OCD clouded the recognition of mental contamination as a distinctive psychological phenomenon. Interestingly, mental contamination was mentioned as early as 1980 (Rachman & Hodgson) but the phenomenon was not followed up until it was encountered in recent studies of the treatment of contact contamination. Contact contamination is caused by physical contact with dirty, disgusting, dangerous, diseased items or objects. It is unpleasant and generates strong urges to clean away the residue and/or source of the contaminating substance. Contact contamination is a common phenomenon (Rachman, 2004; Rachman & Hodgson, 1980) and in most instances people remove the residue and its traces easily and safely. In extreme cases however, the affected person is distressed and struggles to overcome the intense feelings of dirtiness/disgust. In attempting to deal with the contaminant, the person typically engages in repetitive compulsive cleaning and unadaptive avoidance. Compulsive cleaning arising from distressing feelings of contamination is one of the two most common symptoms of OCD. The other common symptom is compulsive checking.

In instances of contact contamination the site of the dirtiness is localized and accessible. In mental contamination however, the feelings of pollution are diffuse – an internal dirtiness without a circumscribed site of contamination. As the site of the contamination is not easily accessible, the compulsive washing usually focuses on the hands (a well-practised habit). For sufferers of mental contamination, this compulsive cleaning is misdirected and rarely successful.

The feelings of mental contamination can be evoked by memories, images, thoughts, impulses, and hence the affected person is vulnerable to recurrences of the feelings of contamination in many seemingly neutral circumstances, and without touching any discernibly contaminated item or object. It can emerge even while sitting alone at home. It is distressing, recognisably irrational and baffling. The main features of mental contamination include:

- Feelings of internal dirtiness/pollution
- Feelings of dread, discomfort, shame and guilt that arise without physical contact with a contaminant
- Primary source of the contamination is a person not a substance
- Caused by misinterpretations of the significance of a perceived violation
- Usually has a moral element
- The violator becomes a contaminant and is strictly avoided; often the affected person cannot or will not say the violator's name
- The site of contamination is not accessible
- Compulsive washing/cleaning
- Feelings of contamination can be generated internally by intrusive disturbing thoughts, memories, images and impulses
- Recognisably irrational
- Abnormal mental contamination is constant but normal mental contamination is dormant and evoked intermittently

### **Normal and Abnormal Contamination**

There are two forms of contact contamination<sup>1</sup> - normal commonplace feelings of manageable contamination, and a pathological form. There are also two forms of mental contamination – pathological and normal commonplace mental contamination. The pathological form is distressing, causes significant interference in daily living, and is commonly associated with a clinical diagnosis; it is proposed to be caused by serious misinterpretations of perceived

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<sup>1</sup> Indeed, there are multiple ways to categorize and describe contact contamination. Although one could consider fear-based vs. disgust-based contact contamination, forms based on the source (e.g., animal vs. human), and others, we have elected to highlight normal vs. abnormal forms in order to underscore the vast potential to further understand mental contamination based on examinations of more common forms.

psychological and/or physical violation, and the originating source is human, not contact with inanimate objects or items.

One purpose of this article is to draw attention to the intriguing phenomenon of common, normal mental contamination. It is time to expand the scope of the construct. Severe, distressing, dysfunctional mental contamination is abnormal, constant and dominating. It drives compulsive washing/cleaning. Mild mental contamination is tolerable. This mild normal form can remain dormant for lengthy periods, only to be re-evoked intermittently by reminders of the violator or the violation.

The reactions caused by serious psychological and/or physical violations are proposed to include feelings of pollution and internal dirtiness. These feelings are often accompanied by fear, disgust, dislike, helplessness and anger (Rachman, Coughtrey, Shafran & Radomsky, 2015). If these feelings and associated behaviour become intense, distressing, interfering, constant, and drives dysfunctional compulsive behaviour, it/they might then qualify as a psychological disorder. There are reliable assessment procedures for making the distinction between mental contamination which is symptomatic of a psychological disorder, and the phenomenon of normal mental contamination (e.g., Rachman, et al., 2015; Radomsky et al., 2014). The main features of abnormal and normal mental contamination are summarised in Table 1.

Table 1 – Differences between abnormal and normal mental contamination

<b>Abnormal Mental Contamination</b>	<b>Normal Mental Contamination</b>
Uncontrollable	Dormant but evocable
Internal dirtiness triggered by reminders of the violation/perpetrator	Triggered by reminders
Recurrent, repugnant intrusive images, thoughts and memories	Occasional repugnant images, memories, thoughts

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Distressing with a strong moral element and sense of shame or guilt	Disturbing
Constant	Transient
Powerful urges to clean oneself, strong avoidance and compulsive washing and cleaning	Tolerable
Dysfunctional (significantly distressing, interferes with daily living)	Not dysfunctional (not particularly distressing, minimal or no interference with daily living)

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### Laboratory Findings

In the course of a study of the effects of a sexual assault, fifty female volunteers completed self-report scales of their short and long-term reactions to the violation (Fairbrother & Rachman, 2004). Their most significant reactions were feeling internally dirty and washing intensively. They reported that their negative feelings were re-evoked by memories of the violation and/or by images of the violation, and continued long after the violation had occurred.

The finding that negative feelings can be evoked by images of the violation was subsequently explored in a series of experiments in which non-clinical participants were asked to form various imaginal scenarios of receiving a non-consensual kiss. Using a variety of imaginal scenarios, the results consistently showed that feelings of mental contamination are readily induced in non-clinical participants (Elliott & Radomsky, 2009a, 2012; Rachman, Coughtrey, Shafran & Radomsky, 2015). Moreover, the induced feelings of internal dirtiness were associated with strong urges to wash. A significant minority of the participants in these experiments engaged in actual washing behaviour and/or rinsing their mouths, despite only having listened to an audio recording.

Coughtrey, Shafran and Rachman (2014) also discovered that feelings of contamination and pollution can be elicited in volunteer participants by asking them to recall/imagine a

personally violating experience such as being humiliated, degraded, painfully criticised, betrayed. No physical contacts with dirty/dangerous, diseased objects were involved. When volunteers were asked to imagine a scenario in which they perpetrate a socially obnoxious action (e.g. betrayal, offensive criticism), a significant number experienced feelings of contamination (Rachman, Radomsky, Elliott & Zysk, 2012). The results of surveys are indicative of the presence of the phenomenon (Coughtrey, Shafran, Knibbs & Rachman, 2012).

### **Mental Contamination is a Common Phenomenon**

There are several sources of evidence demonstrating that mental contamination is a common phenomenon. Given that most people experience some disturbing/distressing events and misfortunes (Bonanno, 2004), and assuming that perceived violations are among such disturbances, it follows that there should be considerable evidence of mental contamination in the general population. It also follows that the phenomenon of mental contamination should be encountered in many cultural settings. It is to be expected that the nature of the perceived violations will be coloured by prevailing cultural beliefs and moral factors, but the basic phenomena of mental contamination should be discernible.

A recent meta-analysis of procedures to induce symptoms of OCD found a medium effect size for induction procedures in healthy populations and the magnitude of this effect was strongest for mental contamination, thought-action fusion and threat inductions (De Putter, Van Yper & Koster, submitted). Our earlier work on the subject has demonstrated that mental contamination is a statistically coherent and measureable phenomenon, and a body of evidence confirms that many non-clinical respondents endorse scales that measure mental contamination. (Radomsky, Rachman, Shafran, Coughtrey & Barber, 2014).

## **The Cognitive Theory of Mental Contamination**

The theory encompasses the causes of mental contamination, its persistence, and individual vulnerability. Mental contamination is proposed to be caused by a serious misinterpretation of the personal significance of a psychological or physical violation. The source of the violation is invariably a person, and the common violations are degradation, humiliation, painful criticism, sexual assault and/or betrayal. The reactions to the violation are negative appraisals, such as ‘I am pathetic, weak, hopeless, insignificant and incapable of defending myself’. Self-appraisals of this type tend to be prospective and sustain the person’s feeling of being under current threat. This approach is modelled on Clark’s (1986) theory of panic disorder.

Clinical examples of the negative appraisals include: I will never get rid of the feeling that I am unclean and dirty; some people think that I am tarnished because of what happened; I feel permanently tarnished by what happened; If I cannot control my repugnant, repulsive thoughts I will go crazy; I will continue to feel polluted all of my life. Mental contamination is distressing and the affected person attempts to get rid of the exceedingly unpleasant feelings of pollution by vigorous repetitive washing/cleaning. Usually the clients/patients resort to washing their hands but it rarely helps because the site of the pollution is internal and hence inaccessible. The resort to their hands is explicable because most of us wash our hands several times each day; it is a simple, easy and satisfactory way to remove minimal discomforts.

In an experiment on non-clinical participants, mental contamination was induced when the participants formed the imagined scenario of receiving a non-consensual kiss with a man whose behaviour was described as highly immoral (Radomsky & Elliott, 2009, p.1010). They found that “negative appraisals ...of the kiss as a perceived violation” predicted mental

contamination”. Additionally, “...negative appraisals of personal responsibility for the occurrence of the kiss” also predicted mental contamination. This finding was replicated in the context of a kiss from a man described as highly moral (Elliott & Radomsky, 2013), highlighting the important role of misinterpretations of perceived violations.

The affected person was typically treated with contempt – they were humiliated, insulted, betrayed and/or degraded—but typically unable to assert her/himself satisfactorily. The consequent self-appraisals are negative—I am pathetic, weak, hopeless and/or incapable. Disturbing memories, thoughts and images of the violation and violator reinforce these negative appraisals. The feelings of pollution provoke compulsive washing/cleaning, and this recognisably irrational dysfunctional behaviour can give rise to a fear of developing a mental illness.

### **Why is abnormal mental contamination so persistent?**

Intermittent occurrences of unpleasant but tolerable, transient disturbances are not dysfunctional. If the person responds satisfactorily to the violation, the probability of developing a pathological form of mental contamination is reduced. Given that mental contamination is proposed to be caused by perceptions of a personal violation, even without any physical contact with contaminants, the feelings of pollution can be evoked at a distance. The mere sight of the violator, or of the circumstances of the violation, or reminders of the violation, can evoke contamination. If the affected person has experienced deep and/or prolonged degradation that impairs their sense of identity, a fear of morphing can be evoked when encountering people who have undesirable negative characteristics (e.g., people who exhibit strange, abnormal behaviour or actions). The evoked fear drives strong urges to carry out compulsive cleansing behaviour.

The seemingly bizarre manifestation of *self*-contamination is suggested to be caused by unwanted, objectionable images or thoughts or memories (e.g., repugnant sexual urges, or violent actions against one's family, or certain strangers). We propose that it can also be caused by repugnant sexual or violent dreams. It generates guilt, avoidance, anxiety. The resort to compulsive washing is not sufficiently cleansing. As intrusive thoughts of these types are so incredibly common (Rachman & de Silva, 1978; Radomsky, Alcolado, Abramowitz, et al., 2014), and as memories of unpleasant events are known to recur, it is understandable that these triggers would contribute dramatically to the persistence of feelings of contamination and pollution – even in the absence of direct contact with a perceived contaminant.

Given the putative cause of abnormal manifestations of mental contamination, the appropriate treatment should focus on the patient's appraisal of the personal significance of the violation and the violator (Rachman, Shafran, Coughtrey & Radomsky, 2015). This cognitive approach to obsessions (Rachman, 1997, 1998), and to panic disorder (Clark, 1986) is effective and the Case Series in which it was employed of patients (Coughtrey, Shafran, Lee & Rachman, 2013) was encouraging. The treatment should be affective to the extent that the patient's erroneous appraisals of the personal significance of the violation/s are reduced or removed.

Bonanno's (2004) assertion that human resilience is seriously underestimated provides a starting point for considering vulnerability to mental contamination. According to this view, most people experience some misfortunes/trauma/violations in their lives, but pathological mental contamination is rare, and this speaks to the presence of human resilience. As discussed above, tolerance and manageability of normal mental contamination is probably common, so what is it that distinguishes the unfortunate minority who develop pathological mental contamination? The cognitive theory states that it develops when a person makes a very serious

over-interpretation of the personal significance of the violation, and this should therefore result in an increase of negative self-appraisals ('I am hopeless, worthless, weak, pathetic, etc.). What is the basis of the over-interpretation? In an early experiment in the series on laboratory-induced feelings of pollution by means of imaginal scenarios of experiencing a non-consensual kiss, we unexpectedly came across a correlation between the pollution and a fear of negative self-evaluation (Herba & Rachman, 2007).

The fear of negative evaluation is a well-researched subject mainly in connection with social anxiety (Leary, 1983) and it remains to be seen whether a correlation between a fear of negative evaluation (FNE; Leary, 1983) and mental contamination can be replicated. It is reasonable to expect a connection because people who have an elevated fear of negative evaluation are likely to be exceptionally sensitive to violations such as public humiliation, degradation, harsh criticism, betrayal, perhaps even to perceive them in scenarios in which others may not. On the other hand their fear of negative evaluation might be the result of a single violation or a prolonged violation such as degradation. Longitudinal studies are called for, and the probable connection between social anxiety and mental contamination should be explored. It seems likely that sufferers from mental contamination will feel socially anxious; it is unlikely that they are socially confident. The evidence on which the theory is based consists of an abundance of case histories, treated case series, surveys of clinical and non-clinical respondents, psychometric data, and laboratory experiments (Rachman, Coughtrey, Shafran & Radomsky, 2015).

The recurrent, distressing images experienced by patients with mental contamination also help to explain the unyielding persistence of their feelings of pollution. These intrusive disturbing images also sustain other forms of psychological problems, such as PTSD, and

chronic pain. There is new evidence that imagery rescripting can also reduce distressing images of dreaded *future events*. Patients suffering from chronic or acute pain describe prospective images of becoming bed-ridden, unable to clean or feed themselves, helpless, impoverished, and so on (Muse et al., 2010). Rescripting these distressing future images can produce “remarkable reductions in emotion, cognitions and pain levels” (Philips & Samson, 2012), and are likely to have a similar impact on symptoms of mental contamination which are tied to recurrent, distressing images.

### **Methods of Assessment**

Three reasonably brief self-report scales were developed to assess various aspects of mental contamination (Radomsky, Rachman, Shafran, Coughtrey & Barber, 2014). These include the Vancouver Obsessional Compulsive Inventory – Mental Contamination Scale (VOCI-MC; Radomsky et al., 2014), the Contamination Sensitivity Scale (CSS; Radomsky et al., 2014) and the Contamination Thought-Action Fusion Scale (C-TAF; Radomsky et al., 2014). The measures were psychometrically sound, and allow for the assessment of various elements of mental contamination in both clinical and nonclinical populations. Interestingly, although scores among participants diagnosed with OCD who reported contamination fear as a primary symptom were markedly higher than those of clinical and nonclinical controls, elevated scores were found in each sample, indicating both the presence of mental contamination in a ‘normal’ population, and the possibility of mental contamination in a transdiagnostic context.

Of course, there is great potential for the use of other forms of assessment. We strongly encourage the evaluation and further development of semi-structured and other forms of interview-based assessments (e.g., Rachman, Coughtrey, Shafran & Radomsky, 2015). In

addition, laboratory-based and other behavioural forms of assessment (e.g., behavioural approach tests) have great potential. Examining feelings of dirtiness, urges to wash, and actual washing behaviour in the laboratory context have, and will continue to be fruitful in mental contamination research. Although some will find interest in computer-based laboratory assessment tools, our preference has always been for assessments that maximize ecological validity.

### **Is Mental Contamination ‘Transdiagnostic’?**

Interest in ‘transdiagnostic’ constructs began in earnest in the early 2000s with the publication of a ‘transdiagnostic’ theory and treatment for eating disorder (Fairburn, Cooper & Shafran, 2003). This theory proposed that there were common maintaining mechanisms across the different types of eating disorders. The rationale for the transdiagnostic approach was twofold. First, the same people moved between the different eating disorder diagnoses over time. Those with a diagnosis of anorexia nervosa would often subsequently receive diagnoses of bulimia nervosa and ‘eating disorder not otherwise specified’. Second, they were considered to have common maintaining mechanisms – for example, the over-evaluation of eating, shape, and weight. Although shared among the eating disorders, the maintaining mechanisms were specific to the diagnosis of an eating disorder, and not shared with other diagnoses.

There were a number of other significant developments that were noteworthy at the time of the surge of interest in transdiagnostic treatments. These included the recognition that there were a number of common cognitive and behavioural ‘processes’ shared among the emotional disorders, including attentional biases, avoidance, rumination and perfectionism (Mansell, Harvey, Watkins & Shafran, 2008). There was frustration with the failure to implement evidence-based treatments in routine care, attributed in part to the plethora of disorder-specific

manuals that clinicians were required to learn (McHugh & Barlow, 2010). Data from the large epidemiological study in the United States of America (Kessler et al., 2005) confirmed what clinicians already knew – that many patients had multiple disorders – and a transdiagnostic solution therefore had particular appeal as an efficient intervention that could be delivered in services where sessions were becoming increasingly restricted. The interest in transdiagnostic processes was particularly welcomed by those who disliked the medical model of psychopathology in general, and diagnoses in particular. Such approaches were also highly consistent with the approach for the treatment of anxiety disorders in young people – typically in heterogeneous, transdiagnostic groups and moving towards becoming ‘modular’ to allow clinicians to help young people with anxiety, depression and behavioural problems (Chorpita et al., 2011).

The explosion of interest in transdiagnostic approaches is demonstrated by the number of publications with the word in the title (10 in 2010; 31 in 2012; 73 in 2015 – PubMed search) but the construct has different meanings to different researchers and there is a lack of clarity. There are many examples of clinical features that appear across disorders being called transdiagnostic when the term is simply being used to draw attention to the fact that many/most clients/patients suffering from psychological problems have symptoms that occur across the multiple diagnoses. When the term is used to imply that the comorbid diagnoses are maintained by common processes, it is implied that the same treatment techniques can be used and/or developed to treat the index disorder and the co-morbid condition. But this is not a novel notion. In patients/clients with anxiety disorders, the associated depression, for example, often improves with treatment and, if not, is directly addressed where possible. A recent attempt to obtain clarity and consensus considered that the term ‘transdiagnostic’ also refers to three distinct categories of treatment

approaches: universally applied therapeutic principles such as mindfulness, empirically based modular strategies or ‘common elements’ treatment, and targeting shared mechanisms across classes of disorders (Sauer-Zavala et al., 2017).

Although there could be a number of possible advantages to conceptualizing mental contamination as ‘transdiagnostic’ (e.g., highlighting common psychological constructs across diagnostic categories, recognizing the limitations of our current classificatory system, etc.), in this case, we find it difficult to see the ‘added value’ of describing it as a ‘transdiagnostic’ construct. In our view, the occurrence of mental contamination in people without a mental health disorder and in people with a diagnosis other than OCD is only of interest if it is of therapeutic value. Since the data do not yet convincingly support mental contamination either as being present across multiple diagnoses, or as maintaining psychopathology across disorders, at present, we find it hard to see the therapeutic value of describing mental contamination in this way and therefore believe it may serve to confuse what is already a relatively complex construct.

### **Future Prospects**

The theory is plausible but there is a need for studies to test specific hypotheses derived from the theory. Dedicated longitudinal and experimental investigations into the various manifestations of mental contamination, such as visual contamination, self-contamination and morphing, remain to be undertaken.

### **Strategies, priorities and tactics.**

The concept of mental contamination can be explored by analyses of patients who experience intense, persisting feelings of internal pollution, by experimental investigations of the

provocation of such feelings in non-clinical participants, and by psychometric studies of patients diagnosed with OCD and people who score above a high score of mental contamination on the VOI-MC scale, for example.

Priority should be given to testing deductions drawn from the cognitive theory of mental contamination; it states that this phenomenon is caused by misinterpretations of the significance of a physical and/or psychological violation... “the source of the violation is invariably a person. The most common violations are degradation, humiliation, painful criticism, betrayal, and sexual assault” (Rachman, Coughtrey, Shafran & Radomsky, 2015, p.56). Examples of the misinterpretations include a belief that they were violated because people regard them as worthless, pathetic, weak, and insignificant.

Deductions that warrant testing include the following:

1. The intense persistent feelings of mental contamination (internal pollution) are caused by perceptions of the actions of another person/persons.
2. The actions implicated in this causative process are physical violation and/or psychological violation (such as humiliation, betrayal, degradation, physical assault, sexual assault).
3. There is a moral element in the violation.

Mild and/or transient reactions to violations far outnumber the pathological reactions. Most people experience misfortunes (Bonanno, 2004), and no doubt many misfortunes are promoted by violations. This raises the important question of why a minority of people are susceptible to pathological mental contamination. Psychometric methods are well suited for detecting possible predisposing vulnerabilities, measures of disgust sensitivity, moral standards, thought-action fusion, along with the three existing mental contamination measures are likely to

be fruitful here. Strong feelings of contamination can be elicited by asking people who return high scores on the VOICI-MC Scale to recall a humiliating, or other violating experience (Coughtrey, Shafran & Rachman, 2014). An examination of the factor or factors that may predict who is most susceptible to such provocations would no doubt be helpful.

The results of the laboratory experiments and probes have expanded our knowledge of mental contamination. In particular, the impact of recurrent vivid imagery pertaining to the violation/s can be powerful and sustain the associated distress and anxiety. The images tend to be fully formed, complete, easily accessible, and unchanging; some remain unchanged for decades. Intrusive images are difficult to block or control, and are open to damaging misinterpretations. As Freud (1895, 1957 Ed., p.299) presciently observed, these images are difficult to disavow. He noted that trivial images are transient, but the most upsetting ones are difficult to modify. The content of the recurring images can be diagnostically revealing (see also, Beck, 1976, pp.152-157). Recent findings on imagery in cases of mental contamination are consistent with Freud's observations on cases of 'hysteria'.

Indeed, the contributions to the current issue represent interesting and important steps in understanding the clinical and nonclinical manifestations of mental contamination. Understanding the chronology of and beliefs about mental contamination (Shafran et al., this issue) among those diagnosed with OCD can be most useful in both laboratory and clinical settings. Indeed, understanding the pathways to the development and/or acquisition of mental contamination will have important implications for studying mental contamination provocations in the lab, as well as for understanding different aetiologies of the problem; clinical interventions tied to a better understanding of how the mental contamination problem developed will no doubt be both more engaging for clients/patients, but also promise to enhance the impact of

cognitively-based interventions. The finding that bullying was prevalent in the histories of those struggling with mental contamination also opens the doors to a number of longitudinal designs, and with careful ethical considerations, perhaps experimental methodologies as well.

Jacoby et al.'s (this issue) focus on the association between mental contamination and unwanted intrusive thoughts is consistent with the theory, above, and again, has important implications for future experimental and clinical investigations. In hindsight, one might not be surprised about links between inflated responsibility and mental contamination symptomatology, not just because of the pervasive links between responsibility and a host of OCD symptoms (Salkovskis, 1985), but also because of responsibility beliefs individuals might hold about any perceived violations that may have occurred (Elliott & Radomsky, 2013; Radomsky & Elliott, 2009). This paper underscores not only the cognitive complexity underlying mental contamination, but also highlights a number of important domains to be addressed by clinicians; future experiments designed to manipulate a range of cognitions and examine subsequent mental contamination symptoms based on this work are tantalizing.

The links reported by Fergus and Rowatt (this issue) between thought-action fusion and mental contamination again highlight the important role of appraisal in the experience of (and likely the treatment for) mental contamination. The experimental nature of the task they employed is a strength of their work and again underscores the promise and impact of laboratory-based approaches to studying mental contamination. Future investigations focused more specifically on contamination-related TAF hold much promise for further elucidating the cognitive underpinnings of mental contamination.

The contributions from Ojserkis, McKay, and Lebeaut (this issue) and Brake et al. (this issue) highlight not only the important role of disgust in mental contamination, but in examining

their associations within the context of PTSD, also emphasize the important role of perceived violations in the experience of mental contamination symptomatology. Although most mental contamination research has been conducted in the context of OCD, these two studies open the door to important work in association not only with other diagnoses, but importantly, in association with other emotions and cognitive domains. The impact of traumatic or other negative experiences (e.g., bullying) on the development and/or expression of mental contamination symptomatology will no doubt prove fascinating in future longitudinal and experimental studies.

Finally, Coughtrey et al. (this issue) examine tantalizing relationships between mental contamination and perfectionism, as well as other psychopathologies, underlining the degree to which this phenomenon is present in numerous clinical and nonclinical forms. Some intriguing aspects of this correlational study include associations with fear of compassion, depression and low self-esteem. Are these simply explained by a common construct like neuroticism, or is there something about the nature of mental contamination that ties it to feelings of worthlessness and associated beliefs? Of course, this is an empirical question, and the other contributions in this Special Issue highlight not only the important work being carried out on mental contamination, but also the large number of questions yet to be addressed by research.

Progress has been made in treating mental contamination, and Case Series and abundant case-histories have prepared the ground for randomised controlled trials. The theory is partly applicable to the phenomenon of normal mental contamination, minus the dysfunctional aspects. The incidence of normal mental contamination needs to be determined. It is likely to be high. Increasing attention will be paid to the phenomenon of mental contamination. Among other

questions, it will be interesting to test the applicability of the cognitive theory of abnormal mental contamination to the common normal form of the phenomenon.

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#### Highlights

- The phenomenon of mental contamination is reviewed
- The cognitive theory of mental contamination is outlined
- In addition to past work on pathological mental contamination, we report on the phenomenon of normal mental contamination
- Current and future research directions are described