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## Abstract

It has been suggested that an act of a betrayal by a trusted person is a particularly important “violation” which can lead to feelings of “mental contamination”. Most experimental research has used an imaginal task referred to as the “dirty kiss” (an imagined scenario of a non-consensual kiss). The theoretical emphasis in these studies has been on the element of betrayal; however, prominent in the imaginal task is that it involves contact and saliva. The aim of the present study was to disentangle these elements. Female participants ( $n=80$ ) were randomised to one of four conditions involving betrayal and contact/no contact. They imagined themselves as either receiving a non-consensual kiss from a friend or a stranger, or having a valued personal belonging stolen by a friend or a stranger. The betrayal manipulation was effective. Participants who imagined a non-consensual kiss reported the greatest feelings of mental contamination, irrespective of their relationship to the perpetrator. Violations not involving imagined physical contact did not result in feelings of contamination whether or not betrayal was evoked. It is concluded that imagined physical contact but not imagined betrayal is important in evoking feelings of contamination in this procedure.

Key words: Mental contamination; Betrayal; OCD; Contamination

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Obsessions focused on the fear of contamination have been found to be one of the most common forms of obsessions within OCD. Several studies have reported that around half of the participants in their clinical samples had fears of contamination (Rasmussen & Eisen, 1992; Rachman & Hodgson, 1980). Rachman (2004) defines contamination as a powerful and persistent feeling of having been infected as a result of direct physical contact with an object that is perceived to be contaminated. Rachman (2006) has also proposed that some contamination fears arise in the absence of direct physical contact; and describes this as “mental contamination” (MC) which is said to lead to a feeling of “internal or emotional dirtiness” (Herba & Rachman, 2007, p. 2805).

MC has been hypothesised to arise after a transgression which leaves an individual feeling betrayed, humiliated, ashamed, disgusted or violated and to lead to urges to wash (Coughtrey, Shafran, Lee & Rachman, 2012). At its simplest, individuals suffering from mental contamination may engage in washing not because they are dirty, but rather because they have been “treated like dirt”. Additionally, the perpetrator of the betrayal can in some cases become the source of the contaminant (Rachman, 2010).

Rachman (2006) highlights two key features that differentiate mental contamination from contact contamination; firstly that it generates a sense of internal intangible dirtiness, and secondly that it comes from a human source. Mental contamination has been associated with a number of triggers; it has been thought to be associated with immorality, for instance events that are perceived by the individual as wrong or inappropriate can generate symptoms of mental contamination (Elliott & Radomsky, 2009). This immorality can originate from the actions of the human source that has

caused the individual harm, or it can be self-generated if an individual feels they have violated one of their own moral standards, or if their mind is generating unacceptable thoughts or images (Rachman, 2006; Coughtrey et al., 2012).

Fairbrother, Newth and Rachman (2005) used the paradigm of the “dirty kiss” in an analogue (non-clinical) sample. Female undergraduate students were asked to listen to a recording of an imagined scenario that involved them in a consensual kiss with a man they were attracted to. Participants were then randomised to either listen to the consensual kiss scenario again or to listen to an imagined scenario that involved them in a non-consensual kiss, in which the man forces a kiss upon them. Those in the non-consensual condition reported feeling significantly more dirty on both the outside and inside, felt more immoral and ashamed and reported a greater urge to wash.

Herba and Rachman (2007) further examined vulnerability to mental contamination by randomising female undergraduate participants to listen to a recording of an imagined scenario that involved them in a non-consensual kiss with an undesirable man or a consensual kiss with desirable man. Participants in the non-consensual condition reported stronger feelings of dirtiness and urge to wash with 27% of participants in this group rinsing in response to the experiment.

Elliott and Radomsky (2009) conducted a similar study differentiating between receiving a consensual or non-consensual kiss from either a moral or immoral man. Participants in the non-consensual moral condition and non-consensual immoral conditions did not significantly differ in reported feelings of dirtiness or urges to wash but they reported significantly greater feelings of dirtiness and urge to wash than

participants in the consensual immoral condition. Participants in the consensual immoral condition reported significantly greater feelings of dirtiness and urges to wash than those in the consensual moral condition.

Following on from their 2009 study Elliot & Radomsky (2012) conducted a similar study which aimed to tease apart the manipulations of the physical description of the imagined protagonist by asking participants to image either a physically clean or dirty man who carried out either a consensual or non-consensual kiss. Participants who were asked to imagine the non-consensual kiss from a dirty man reported the greatest feelings of mental contamination however participants who were asked to imagine a non-consensual kiss from a clean man also experienced mental contamination to a similar extent on a number of the key dependent variables reported in this study.

The question of whether the perpetrator of an imagined non-consensual act can experience feelings of mental contamination in the same way as the victim was explored by Rachman, Radomsky, Elliot and Zysk (2012). In a series of 4 related experiments male undergraduate participants were randomised to imagine themselves at a party at which they gave a female a consensual or non-consensual kiss. New elements were added to the scenarios with the progression of experiments, aimed at heightening the effect of the procedure (Rachman et al, 2012). The theme of betrayal was made prominent in experiment 3 of the series, by asking participants to imagine that following the kiss they deny that the kiss was their idea and that they blame the woman in front of others. The participants were asked to imagine that the woman in the scenario was the sister of their best friend, who consequently tells the participant they have ‘betrayed’ them. Participant’s feelings of contamination and urges to wash increased with the

progression of the experiment and the largest increase was following the experiment in which elements of betrayal were made prominent (Rachman et al., 2012). This study demonstrated that feelings of mental contamination can also be evoked in the perpetrator of an imagined non-consensual act as well as the victim.

Although it can be concluded from the work on the “dirty kiss” paradigm that betrayal may be key to the experience of mental contamination, there is an obvious issue in that participants were asked to visualise being kissed, which clearly involves imagining elements of contact contamination and bodily fluids. Feelings of dirtiness may have been a response to the imagined idea of physical contamination rather than issues of betrayal and moral violation. Rachman (2010) defines betrayal as “a sense of being harmed by the intentional actions, or omissions, of a person who was assumed to be a trusted and loyal friend, relative, partner, colleague or companion” (p. 304).

When considering Rachman’s (2010) definition of betrayal, in light of previous studies, (Fairbrother, Newth & Rachman, 2005; Herba & Rachman, 2007; Elliott & Radomsky, 2009; Elliot & Radomsky, 2012) the participants’ relationship to the imagined male perpetrator is not specified, the perpetrator is described only as a ‘man.’ It is only in Rachman et al. (2012) study examining the effect on the perpetrator, that a relationship between the perpetrator and victim is made explicit. Rachman’s (2010) definition of betrayal suggests that the act is carried out by a trusted or loyal friend, and subsequently an event like this is more likely to generate feelings of mental contamination compared to a violation carried out by a stranger. In this study we are primarily concerned with the victims perceived relationship to the perpetrator and potential consequent betrayal.

We believe it is important to distinguish between two issues in this area; firstly, the extent to which an imagined violation involving betrayal by a trusted person is different from that by someone who is not trusted by the victim. Secondly, the relative importance of an imagined act of violation involving imagined physical contact with the person including contact with their saliva and an imagined act of violation not involving contact. The present study evaluates both factors by comparing an imagined non-consensual kiss with an imagined theft of an important valued item by either a trusted person or a stranger. The impact that feelings of betrayal have on feelings of mental contamination, specifically feelings of dirtiness and urges to wash are examined. We hypothesised that the important element in the “dirty kiss” experiments is the imagining of kissing rather than the element of betrayal; we therefore compared high vs low betrayal and unwanted kissing vs non-contact betrayal (theft).

## **Method**

### *Participants*

Female students and employees at the University of Bath (n=80, mean age 21.56, SD 4.79, range =18- 43) participated in this study. Sixty-six participants were undergraduate students, 4 were postgraduate, and 10 were in full-time employment. Participants were randomly assigned to one of four imagined conditions in a 2X2 design; Non-consensual kiss by a stranger (KS, n=22), Non-consensual kiss by a friend (KF n=19), Theft by a stranger (TS, n=20), Theft by a friend (TF, n=19).

### *Measures*

*Patient Health Questionnaire (PHQ-9)*: The PHQ-9 assesses the severity of depression

symptoms over the past two weeks. A PHQ-9 score greater than or equal to 10 was found to have a sensitivity of 88% (Kroenke, Spitzer & Williams, 2001).

*General Anxiety Disorder Assessment (GAD-7)*: This scale assesses the severity of generalised anxiety disorder symptoms. The scale has a sensitivity of 82% for generalised anxiety disorder specifically when using a threshold score of 10 (Kroenke, Spitzer, Williams, Monahan & Lowe, 2007).

*Obsessive Compulsive Inventory (OCI)*: This is a self-report inventory for assessing symptoms of obsessive-compulsive disorder. The OCI has been found to have excellent reliability and validity, and is able to distinguish well between those who have OCD and those who do not (Foa, Kozak, Salkovskis, Coles & Amir., 1998).

*Vancouver Obsessional Compulsive Inventory – Mental Contamination Scale (VOCI-MC; Rachman, 2006)*: This is a 20 item scale measuring aspects of mental contamination. Participants rate each item e.g. “Having an unpleasant image or memory can make me feel dirty inside” on a five point scale from 0= ‘not at all’ to 4= ‘very much’. The VOCI-MC has high internal consistency (Cronbach’s  $\alpha$  0.94; Rachman, 2006).

*Mental Contamination Report (MCR)*: The MCR for this study is a 19-item adapted questionnaire based on previous Mental Contamination Reports administered by Elliot and Radomsky (2009). The questionnaire assesses participants ease and vividness of imagining the scenario, feelings of dirtiness and its location, associated urges, level of perceived responsibility and blame and questions about previous experiences. The



report was identical for all conditions; however, the last three questions which ask about previous experience, differed depending on whether or not the scenario concerned an unwanted kiss or a theft. Participants rated their response on a scale ranging from 0='not at all' to 100 ='completely'.

*Break Behaviour Questionnaire (BBQ; Elliott & Radomsky, 2009):* The BBQ is a 3-item scale which assesses participants' behaviour during the break, examining if they washed their face or hands or if they drank any fluids and if so their reasons for engaging in such behaviour.

*Visual Analogue Scale (VAS):* Participants rated distress, anxiety, anger and fear on a scale ranging from 0='not at all' to 100='completely' at four points during the experiment.

### *Design*

The study was a 2X2 between subjects design, with a repeated measures element in terms of pre to post visualisation. Randomisation was carried out using sampling without replacement in blocks of eight.

### *Procedure*

Participants were supplied with a bottle of water, and given a questionnaire pack. Participants were then handed a visual analogue scale (VAS) listing four emotions (distress, anxiety, guilt and fear). Participants were introduced to the scale, and told that they were able to choose the numbers that were listed, as well as any unlisted numbers

between 0-100. Participants were asked to do this while thinking about how they felt 'right now.'

Participants were then played the mp3 recording of the scenario to which they had been randomised. All participants were asked to close their eyes and imagine the scene as vividly as possible, as if it was really happening right now. The recorded scenarios varied in length from 2.30 minutes to 3.24 minutes. There were four recordings: two recordings described a non-consensual kiss – in one the perpetrator is a stranger and the other he is a trusted friend. The remaining two recordings described a theft – again in one the perpetrator is a stranger and in the other he is a trusted friend. In the theft scenario the theft of the participant's locket that their grandmother had given them at birth is described. In each recording the introduction and party description was identical, as well as the music and party sounds in the background. These scenarios were based on previous work by Elliott & Radomsky (2009).

Following listening to a scenario participants completed the VAS in response to how they were feeling right at that moment. They were then asked to complete the Mental Contamination Report which examined a range of variables including how betrayed the participants felt after listening to the scenario. This was measured on a scale from 0-100, with 0 being 'not at all betrayed' and 100 being 'extremely betrayed.' On the same scale they were also asked to rate the scenario they had listened to with regards to how 'easy to imagine', 'vivid' and 'realistic' they perceived the scenario to be.

Participants were then given a 5 minute break. During the break each participant was reminded of the water available to them, as well as given directions to the bathroom.

These instructions were introduced in conversation and the phrase used included “You are welcome to a bottle of water that we have here and if you are looking for the bathroom, it is down the corridor on the left”. Participants were asked to not look at their phone, or anything else that they might have with them, during the break. The researcher then left the room, and told participants that they would return in 5 minutes. Upon the researchers return participants completed the Break Behaviour Questionnaire. Participants were then debriefed.

## **Results**

### *Sample characteristics*

Randomisation of participants to the four conditions was assessed in relation to demographics and baseline characteristics; one way ANOVA was used to compare individual differences between randomised groups. There were no group differences in age ( $F(3,76) = 5.38, p = .65$ ), ratings of anxiety, anger, sadness or distress before listening to the audio recording (all  $F_s < 1.0$ ). The sample means for PHQ-9, GAD-7, OCI and VOI-MC scores were assessed for each group to confirm the non-clinical nature of this sample and again there were no group differences (all  $F_s < 1.0$ ). Please see Table 1 for the means and standard deviations of the above-mentioned variable.

Insert Table 1 about here

### *Manipulation Checks*

Participants perceived the experimental scenarios as similarly easy to imagine, vivid and realistic ( $M = 71.24, 71.05, 69.12$  respectively, on a scale ranging from 0-100). A one-way ANOVA showed no significant differences between the conditions in terms of ease

of imagining the scenario ( $F(3, 76) = 2.06, p = .11$ ), clarity or vividness ( $F(3, 76) = 1.53, p = .21$ ) and how realistic the participants thought the scenario was ( $F(3, 76) = .12, p = .95$ ). Ratings of anxiety before ( $M=20.91, SD=19.45$ ) and immediately after ( $M=41.14, SD=25.78$ ) imagining the scenario indicated that anxiety increased ( $F(1, 76)=49.19, p<.001$ ) regardless of perpetrator. Similar results were obtained for distress and disgust.

In order to evaluate the extent to which the imagined scenarios had been successful in manipulating feelings of betrayal as intended, a 2X2 ANOVA was conducted on reported feelings of betrayal; this was type of violation (kiss vs theft) X relationship to perpetrator (friend vs stranger). There was a significant effect of relationship to perpetrator ( $F(1, 76) = 15.9, p < .001$ ). Participants felt significantly more betrayed if the imagined violation was carried out by a trusted friend compared to a stranger. There was no significant effect of type of violation (kiss vs theft) on feelings of betrayal ( $F(1, 76) = 1.33, p = .251$ ). Participants did not feel any more or any less betrayed regardless of the imagined perpetrators act. The interaction between perpetrator and violation was also not significant ( $F(1,76) = 2.97, p = .089$ ).

*Primary depending variable: feelings of dirtiness following imagined scenario*

A 2X2 ANOVA was conducted; this was type of imagined violation (kiss vs theft) X relationship to perpetrator (friend vs stranger). There was a significant main effect of type of violation ( $F(1, 76) = 38.36, p < .001$ ). Participants who imagined a kiss felt dirtier than those who imagined a theft. There was no significant main effect of relationship to perpetrator ( $F(1, 76) = 1.25, p = .267$ ). Participants did not feel any more or any less dirty regardless of who the imagined perpetrator was. The interaction

between perpetrator and violation was also not significant, ( $F(1, 76)=1.40, p =.240$ ).

This suggests that the extent of the “betrayal” did not influence feelings of dirtiness.

Figure 1 shows the means for participant’s feeling of dirtiness and betrayal in response to an imagined violation and perpetrator of this act. The mean scores for ‘feelings of dirtiness’ show large differences between those conditions involving an imagined kiss and those involving an imagined theft, with higher ratings being reported by those who imagined a non-consensual kiss. Higher ratings of feelings of betrayal appear to be reported by those who imagined a theft by a trusted friend compared to a stranger, with the lowest levels of betrayal being felt by those participants who imagined a theft by a stranger. The means and standard deviations are reported in table 1.

Insert Figure 1 about here

### *Urge to wash*

Urges to wash and wash out ones mouth in response to the imagined scenarios were measured by the Break Behaviour Questionnaire and analysed as a secondary outcome variable, with the urge to wash out ones mouth being the main rating of interest. There was a clear main effect of action ( $F(1, 76) = 31.10, p <.001$ ), indicating that imagining the non-consensual kiss resulted in stronger urges to wash out ones mouth. There was no significant main effect of relationship to perpetrator ( $F(1, 76) = .477, p =.492$ ) nor was the interaction significant, indicating that the urge was the same whether the perpetrator was a friend or stranger. Identical patterns of results were obtained for urge to wash ones face, brush their teeth, shower and try to think about something else.

## **Discussion**

The betrayal manipulation was effective, in that participants felt more betrayed when the violation was by a trusted friend as opposed to a stranger, with no differences between theft and kiss. Contamination feelings were only evoked by the imagined kiss, not by the theft, regardless of who the perpetrator was. We conclude from the results here that the impact of the “dirty kiss” (on the imagined victim of the violation) in terms of mental contamination is about the imagined kiss itself, not about feeling betrayed, which neither had an effect in itself on feelings of contamination nor interacts with the kiss/theft situations. Thus, imagining being kissed was enough to make participants feel contaminated and feel an urge to wash out their mouth, and betrayal in relation to the kiss or theft did not have an impact.

While the “dirty kiss” experiment has been shown to elicit contamination feelings in previous studies, (Fairbrother, Newth & Rachman, 2005; Herba & Rachman, 2007; Elliott & Radomsky, 2009; Elliot & Radomsky, 2012, Rachman et al., 2012), assumptions have been made about the betrayal aspect of the violation without regard to the physical characteristics of what is being imagined, that is, a kiss which inevitably includes elements of saliva, intrusion of tongue and so on. What has been required is a study in which a non-physical violation was imagined, in order to directly manipulate the construct of betrayal.

Rachman (2010) hypothesised that betrayal is an important trigger in mental contamination, and his working definition suggests that a betrayal is carried out by a trusted friend or person. It has been shown that incidents which involve a serious breach of trust can lead to an experience of mental contamination (Warnock-Parkes, Salkovskis

& Rachman, 2012). The present results do not necessarily show that betrayal is irrelevant to OCD involving mental contamination, but that the “dirty kiss” may be less relevant to OCD than was previously supposed.

Rachman (2010) writes that the “seriousness of the betrayal appears to be determined by an interaction between the significance and depth of the trusting bond, and the magnitude of the harm caused” (p.305). This quotation suggests that profound betrayals are more likely to cause feelings of harm and upset and, subsequently, generate mental contamination symptoms. Despite participants rating the imagined scenarios as clear, vivid and realistic, as well as the scenarios describing in detail the imagined relationship between the participant and the perpetrator, the depth of the trusting bond or the imagined act itself may not have been felt to be significant or profound enough. This could then explain why, although their subjective ratings of how betrayed participants felt were higher than those reported by the participants in the conditions involving an imagined stranger, it was not enough to invoke stronger feelings of dirtiness. It is important that future research further investigates this to assess whether or not different scenarios give rise to different results. However, it may also be possible that betrayal *in some circumstances* (not yet fully understood) is simply one of a class of events likely to lead to mental contamination in vulnerable individuals. Future research may want to consider how to define such events and vulnerabilities.

The observation that perpetrators of a violation may also experience feelings of mental contamination is surprising, and comparison between those experiencing problems following betrayal and being betrayed would repay evaluation. Although betrayal is an almost universal human experience, comparing the nature of specific betrayal experiences of people with OCD with and without elements of mental contamination

should also clarify the phenomenology, as would consideration of the extent of mental contamination across non-OCD problems such as depression.

In sum, mental contamination is a complex phenomenon, and the current study has helped to add to the existing body of research. Future research would benefit from considering a range of imagined violations and their possible interpersonal correlates involved in both non-clinical and clinical instances of mental contamination.



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