# Mental Contamination: A Cognitive Approach

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## ABSTRACT

### Mental Contamination: A Cognitive Approach

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Recent research on mental contamination (i.e., internal, psychological feelings of dirtiness) has focused primarily on examining the experimental variables necessary to provoke contamination-related thoughts, feelings and behaviour; yet, relatively little is known regarding the individual differences among participants' mental contamination responses to these situational and experimental characteristics. Three interconnected studies of mental contamination were conducted. The aim of these studies was twofold: 1) to tease apart manipulations of imagined physical descriptions (i.e., clean versus dirty), in the context of both morally sound and reprehensible acts (i.e., consensual versus non-consensual kiss) to expand our understanding of the experimental variables which may evoke mental contamination and address limitations of previous research; and 2) to expand on previous findings by examining the predictive ability of symptoms, beliefs and appraisals in the experience of mental contamination in the context of established and unique situations. In all three studies, female undergraduate students were asked to complete a series of questionnaires, and then listen to an audio recording. The participants imagined that they are receiving either a consensual or non-consensual kiss from a man whose physical appearance and character was described in various ways. Participants in all three studies were then asked to indicate the presence and degree of mental contamination and appraisals of the man and act, before completing a behavioural task in which spontaneous washing was recorded. Results are discussed in terms of cognitive-behavioural conceptualizations of and treatments for contamination fears.

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Relative contribution: The author contributed to the study design, data collection and analyses, and wrote the first draft of the manuscript for publication.

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# CHAPTER 1

## Introduction

The fear of contamination is an interesting phenomenon involving intense, persistent feelings of dirtiness, urges to wash, negative emotions (e.g., anxiety) and repeated washing behaviour following contact with a contaminant (Rachman, 2004). Fear of contamination can also be a puzzling phenomenon in that the "contact" with said contaminants is not necessarily physical in nature. For example, individuals may manifest contamination fear responses from interpretations of their own thoughts or by sight alone (Rachman, 1994, 2004, 2006). The primary focus of research and clinical work in this area has been on contamination fear more obviously connected to direct contact with a physical contaminant. This is unsurprising given the more easily identifiable connection to be made between physical contact with a contaminant, and subsequent fear of contamination response. The seemingly inexplicable connection between events and contamination responses when physical contact is absent may partially explain the relatively stronger traditional focus on the physical realm. Although clinicians and researchers have tended to focus on contamination fears involving physical contact as evidenced by traditional assessment measures which only assess contact contamination (see the Maudsley Obsessional Compulsive Inventory (Hodgson & Rachman, 1977); the Obsessive-Compulsive Inventory (Foa, Kozak, Salkovskis, Coles, & Amir, 1998); the Vancouver Obsessional Compulsive Inventory (Thordarson et al., 2004); and the Yale-Brown Obsessive Compulsive Scale (Goodman, Price, Rasmussen, & Mazure, 1989a; Goodman, Price, Rasmussen, & Mazure, 1989b)), there has been a recent shift towards attempting to better understand contamination fears which occur in the absence of physical contact (see Coughtrey, Shafran, Lee, & Rachman, 2012; Elliott & Radomsky,

2009; Fairbrother & Rachman, 2004; Herba & Rachman, 2007; Rachman, Radomsky, Elliott, & Zysk, 2011; Zhong & Liljenquist, 2006). In particular, more concerted efforts have been developed to better understand symptoms associated with obsessive-compulsive disorder (OCD), such as feelings of dirtiness, urges to wash and repeated washing behaviour, which may operate outside of the physical realm and are referred to as mental contamination.

*Obsessive-compulsive disorder (OCD)*

OCD is an anxiety disorder which affects roughly 1-2.5% of the population (American Psychiatric Association (APA), 2000). It is often a severe and disabling disorder which negatively affects not only those suffering from related symptoms, but also their loved ones. Indeed, the World Health Organization (1999) has identified OCD as the 10$^{th}$ leading cause of disability worldwide. According to the APA's Diagnostic and Statistical Manual (4$^{th}$ Ed., Text Revision (DSM-IV-TR), APA, 2000), OCD is primarily characterized by obsessions (i.e., unwanted, intrusive thoughts, images and/or impulses) and/or compulsions (i.e., repeated engagement in actions meant to prevent a feared outcome such as a dreaded event or discomfort; APA, 2000). Recommendations for the fifth edition of the DSM (DSM-5) include classifying a component of obsessions as "urges" rather than "impulses" (Leckman et al., 2010), and will be referred to as such henceforth. Unwanted, intrusive thoughts, images and urges are normative phenomena in that the majority of people report experiencing them; albeit to a lesser degree than the clinical phenomena of obsessions in terms of intensity and frequency as reported by clinical populations (Belloch, Morillo, Lucero, Cabedo, & Carrió, 2004; García-Soriano, Belloch, Morillo, & Clark, 2011; Freeston, Ladouceur, Thibodeau, & Gagnon, 1991; Purdon & Clark, 1993; Rachman & de Silva, 1978). Similarly, repetitive behaviour (e.g.,

repeatedly checking for your passport on your way to the airport) can be a commonplace occurrence, yet these behaviours rarely interfere in daily life to the same degree as compulsions seen among individuals meeting the diagnostic criteria for OCD.

OCD is a heterogeneous disorder in that there are many different variations of related symptomatology. However, the frequency, intensity, and duration of obsessions and compulsions involved in OCD may be experienced to a similar degree regardless of OCD subtype. In addition, the Obsessive Compulsive Cognitions Working Group (OCCWG) identified six common belief domains (1997) relevant to the experience of OCD, which were collapsed (based on factor analyses) into three subgroups (2005): 1) responsibility and overestimation of threat; 2) perfectionism and intolerance of uncertainty; and, 3) importance of thoughts and control of thoughts. The content of obsessions may include themes such as violence, sexuality, blasphemy, contamination, and doubt, and the form of compulsions may include behaviour such as washing, physical checking and reassurance seeking, as well as mental acts such as mental checking, counting and praying (APA, 2000). Individuals may experience more than one obsessional theme; however, the obsessions tend to be personally significant and the compulsions are usually related to the obsessions (Rachman, 2003). For example, unwanted urges to harm a child may be particularly troublesome to the mother of a newborn, and repetitive washing may be preceded by urges to wash and/or appraisals involving overestimation of threat from a perceived contaminant. Individuals may present collectively with dissimilar obsessional themes and compulsive behaviour; yet, similar mechanisms such as catastrophic misinterpretations of the meaning of their thoughts and avoidance behaviour are thought to maintain obsessions and compulsions (Rachman, 1997, 1998).

There are empirically supported treatments available for OCD. Selective serotonin reuptake inhibitors (SSRIs), such as fluoxetine, fluvoxamine, paroxeine or sertraline are the most recommended pharmacological treatment for OCD (APA, 2007). Meta-analyses have demonstrated greater efficacy for clomipramine, a mixed serotonin and norepinephrine reuptake inhibitor, than for fluoxetine, fluvoxamine and sertraline (Ackerman & Greenland, 2002; Eddy, Dutra, Bradley, & Westen, 2004; Jenike, Baer, & Greist, 1990). However, the side effects associated with the SSRIs are proposed to be less problematic, and thus for this reason, the SSRI's are the most recommended psychopharmacological treatment.

The most recommended psychological treatment for OCD is exposure and response prevention (ERP) because it has received the greatest amount of empirical support of all psychotherapies (APA, 2007). ERP alone has been demonstrated to be as effective as ERP in combination with clomipramine (Foa et al., 2005). Unfortunately, roughly 50% of individuals suffering from OCD refuse or discontinue treatment, or fail to reach significant therapeutic gains from the leading current behavioural treatment, ERP (Fisher & Wells, 2005; Foa et al., 2005). Fortunately, although less-widely administered, there is also empirical support for OCD treatments that primarily employ cognitive strategies to target obsessions and compulsions.

One of the most common forms of compulsions, second only to checking, is washing/cleaning compulsions (Rachman & Hodgson, 1980). Washing/cleaning compulsions involve repetitive attempts to remove a perceived contaminant from a person who, or an object that is believed to have become 'contaminated' (see below for a list of contaminants). A fear of contamination underlies washing compulsions (Rachman, 1994), and this type of fear is reported by roughly 50% of those who meet diagnostic criteria for

OCD (Rachman & Hodgson, 1980; Rasmussen & Eisen, 1992). Interestingly, despite repeated washing behaviour, some individuals fail to feel clean. The disconnect between washing behaviour and feelings of dirtiness prompted Rachman (1994) to raise the question, "How is it possible to wash repeatedly and yet remain dirty?" (p. 311). The introduction of a new conceptualization of a fear of contamination has increased our understanding of the reasons why washing attempts may fail - primarily because people struggling with contamination fears are dealing with "surface" issues when they wash and not addressing the underlying mechanism.

*A fear of contamination*

In his book, *The Fear of Contamination: Assessment and Treatment* (2006), and other writings (1994, 2004, 2010), Rachman outlines various forms of contamination fear, including mental contamination, as well as potential underlying mechanisms for the experience of different forms of contamination. However, research in this area, particularly involving mental contamination, is still in its infancy and many of the proposed theoretical underpinnings of contamination fears have only begun to receive empirical support. Two main domains of contamination fear have been identified: Contact contamination and mental contamination; and each are believed to involve various sub-forms of related contamination fear.

*Contact contamination* involves external, readily identifiable feelings of dirtiness and urges to wash (Rachman, 2004; 2006). Contact contamination is evoked through direct physical contact with a perceived contaminant and aptly the location of contamination is objectively identifiable. Many individuals would report contact contamination fear after touching a perceived contaminant and may successfully wash the physical contaminant away with some relief until future contact with another contaminant

occurs. Three types of contact contaminants have been proposed: 1) disease; 2) dirt; and 3) harmful substances (Rachman, 2006). The contaminants involved in these subtypes of contact contamination fear could include a substance perceived to be infected with HIV, dog feces and battery acid, respectively. In due course, scientist-practitioners observed individuals experiencing symptoms of contamination fear despite a lack of physical contact with a contaminant.

*Mental contamination* involves internal, psychological feelings of dirtiness and urges to wash (Rachman, 2004; 2006). A feeling of mental contamination is evoked by thoughts, words, memories, images, and presumably, perceived contaminants in sight (Rachman, 1994, 2004, 2006). Given that mental contamination is not evoked by physical contact with a contaminant, the point of contamination is not directly observable by others, the individual may experience these feelings as diffuse and difficult to locate and consequently, attempts to wash away the contaminant are ineffective. Individuals suffering from mental contamination fears recognize this experience is unique to them in that the thoughts and images which make them feel mentally contaminated are acknowledged to not necessarily make others feel mentally contaminated. Five subtypes of mental contamination have been proposed (Rachman, 2006): 1) self contamination; 2) psychological violation; 3) physical violation; 4) visual contamination; and 5) morphing. The contaminants involved in these subtypes of mental contamination fear could include an imagined event, betrayal, recalling a sexual assault, an immoral person and fears of acquiring attributes of an undesirable person by sight alone, respectively. The 'contaminants' involved in mental contamination often involve an immoral person. The immoral person may be another person, or the individual themselves. An illustrious (albeit literary) demonstration of mental contamination involves Lady Macbeth. Although her

hands were never physically soiled, she washed them repeatedly in vain to remove feelings of pollution, “What! Will these hands ne’er be clean?” (Shakespeare, 1623/1929, p. 74; Of course, Lady Macbeth is a fictional character, although her case provides a clear example of mental contamination, even as recognized in the 17th century).

Contact and mental contamination fears are not mutually exclusive as evidenced by the great deal of overlap found between them (Coughtrey, Shafren, Lee, & Rachman, 2012; Rachman, 2004, 2006). For example, victims of sexual assault may continue to experience mental contamination long after the experience (and following a great deal of washing) even though the assault initially involved physical contact (Fairbrother & Rachman, 2004). Mental contamination may persist independently from such physical contact in this manner by means of recalling memories and images of the assault (Rachman, 2004). In addition, feelings of mental contamination may be evoked from imagined events involving being either the victim (e.g., Elliott & Radomsky, 2009; Fairbrother, Newth, & Rachman, 2005), or the perpetrator (Rachman, Radomsky, Elliott, & Zysk, 2011). It is likely that perceptions, interpretations and beliefs are fundamental to the construct of mental contamination given the cognitive nature of this phenomenon. However, there has been little research conducted to date which examined appraisals in a mental contaminating context.

*A cognitive approach*

A shift in thought away from psychoanalytic principles and introspection toward behavioural learning principles prompted Meyer (1966) to apply behavioural therapy to OCD. Meyer was the first to knowingly expose individuals suffering from OCD to anxiety-provoking situations, and then prevent their engagement in their anxiety-reducing behaviour (e.g., compulsions). This initial treatment endeavour was administered to

inpatients and at times involved turning off the water supply to completely prevent washing compulsions (Rachman, 2009). Although successful for some, this rudimentary attempt at ERP was unsuccessful for many others and relapse was common (Steketee & Barlow, 2002).

Therapeutic interventions of a more cognitive nature began to develop at roughly the same time as Meyer's (1966) early work with ERP; indeed the title of Meyer's (1966) article is "Modification of expectations in cases with obsessional rituals", clearly indicating a cognitive target, despite the behavioural focus of the intervention. Behavioural therapy such as exposure and response prevention may be said to operate on the principle of preventing avoidance behaviour (Eysenck & Rachman, 1965); whereas, cognitive therapy may be said to operate on the principle of modifying maladaptive cognitions, or rather (mis)interpretations. Both principles essentially help individuals to gain new information to challenge their faulty beliefs, fears, appraisals, etc. Interestingly, it is believed that cognitive principles were developed as a means of improving treatments for depression; yet, cognitive strategies have proven more successful for anxiety disorders (Rachman, 2009).

The integration of behaviour and cognitive therapies into cognitive-behavioural therapy began to gain momentum in the late 1980's following the introduction of Clark's (1986) cognitive theory of panic disorder (Rachman, 2009). Clark proposed that a catastrophic interpretation of the meaning of one's bodily sensations likely leads to an increased panic-like state. Rachman (1997, 1998) later proposed that a catastrophic misinterpretation of the meaning of one's thoughts likely underlies obsessions and related behaviour associated with OCD. Despite many theoretical and treatment advances in the context of anxiety disorders, in particular OCD, there remains a substantial number of

individuals who achieve less than ideal therapeutic gains (as noted above). The greater aim of this body of work is to help address questions which may further advance cognitive strategies as a supplement or even replacement of more behavioural techniques such as ERP. In this manner, a cognitive approach has been applied to increase our understanding of the cognitive components of mental contamination and ideally foster a cognitive solution.

*Present studies*

A series of three interconnected studies was conducted to expand on previous findings by examining the predictive ability of symptoms, beliefs and appraisals in the experience of mental contamination in the context of established and unique situations. In all three studies, female undergraduate students were asked to complete a series of questionnaires then listen to an audio recording. Some of these studies addressed limitations associated with a potential confound of situational variables (i.e., simultaneous manipulation of variables pertaining to immorality and physical disgust in previous work) apparent in previous work; whereas, others were designed to further our understanding of how appraisals and other theoretically important constructs would perform in the prediction of a number of mental contamination indices. In Study 1, participants imagined that they received a forced, non-consensual kiss from a man described as moral or immoral to assess individual differences in this context, and including new appraisal variables. In particular, whether or not appraisals of the degree to which the man is believed to be immoral, the act is found to be violating and participants' feel personally responsible for the occurrence of the act may predict indices of mental contamination. In Study 2, participants imagined that they received either a consensual or non-consensual kiss from a man described as either physically clean or dirty. This 2 x 2 design expanded

the number of situational contexts assessed for mental contamination, while simultaneously addressing limitations of previous studies. In Study 3, participants imagined that they received a non-consensual kiss from a man described as physically dirty to expand on previous findings involving individual differences in the experience of mental contamination with a focus on the new appraisal variables. Participants in all three studies were asked to indicate the presence and degree of mental contamination and appraisals of the man and act, and then complete a behavioural task in which spontaneous washing was recorded. This series of studies is followed by a general discussion in which a summary and future directions are reviewed.

# CHAPTER 2

## Analyses of mental contamination: Part II, individual differences

Obsessive-compulsive disorder (OCD) is a serious and often severe anxiety disorder that affects roughly 1-2.5% of the general population (American Psychiatric Association, 2000). The World Health Organization indicated that OCD was the 10th leading cause of disability worldwide (1999). Despite the presence of relatively effective treatments for OCD (Fisher & Wells, 2005), more than 50% of those who are offered the treatment either refuse, dropout, or fail to achieve significant gains (see Foa et al., 2005; Fisher & Wells, 2005). There is therefore a clear need to examine possible ways to enhance our ability to help more people struggling with this challenging disorder.

Washing and checking are the two most common forms of compulsions present among those suffering from OCD (Rachman & Hodgson, 1980). Rachman (1994, 2004, 2006) has proposed two different types of fears of contamination believed to underlie contamination concerns: physical and mental fears of contamination. Physical contamination refers to contaminants which are clear and objective (e.g., germs, dirt and harmful substances), whereas mental contamination refers to 'contaminants' which may reach the individual without any physical contact whatsoever (e.g., self-contamination and visual contamination; Rachman, 2006). There has been increasing interest in attempting to delineate mental contamination (internal, psychological feelings of dirtiness and urges to wash) from physical contamination (external, readily identifiable feelings of dirtiness and urges to wash), and much recent work has been done to elicit mental contamination through experimental provocations (e.g., Elliott & Radomsky, 2009; Fairbrother & Rachman, 2004; Rachman, 2006). Much of this work has begun to increase our understanding of the situational variables necessary to evoke fears of contamination (e.g.,

harmful substances, immoral human sources, etc.); yet, relatively little is known regarding the individual differences among participants' mental contamination responses to these situational and experimental characteristics.

A series of case studies has demonstrated that some individuals who develop post-traumatic stress disorder (PTSD) following a sexual assault, may also develop washing concerns consistent with the assault experience in both physical and mental forms (Gershuny, Baer, Radomsky, Wilson, & Jenike, 2003; de Silva & Marks, 1999). In both of these articles, the most common OCD symptom in the majority of those suffering from co-morbid PTSD and OCD was contamination-related thoughts and/or washing behaviour. This appears to demonstrate some sort of functional relationship between particular traumatic experiences and mental contamination in OCD.

Previous work in the area of mental contamination has demonstrated that a sexual assault experience (Fairbrother & Rachman, 2004) as well as the *imagined* occurrence of a non-consensual kiss (Elliott & Radomsky, 2009; Fairbrother, Newth, & Rachman, 2005; Herba & Rachman, 2007) are sufficient conditions to evoke both subjective reports of mental contamination in the form of feelings of dirtiness and urges to wash, and, importantly, actual washing behaviour. Although critical in explaining causal factors related to how mental contamination can be evoked, this work made few claims about factors which might put someone at greater risk to experience mental contamination in response to provoking experiences and experiments.

In Part I of the current work (Elliott & Radomsky, 2009), we reported that there were no significant differences in feelings of mental contamination among women who imagined experiencing a non-consensual kiss from a man described (before the kiss occurred) as either moral or immoral. In addition, women who imagined sharing a

consensual kiss from a man described as immoral reported feelings of mental contamination, but to a lesser degree than in the non-consensual conditions. These results suggest that pleasant or neutral events may also evoke mental contamination if the other person involved (i.e., the source) is believed to be immoral, adding further support for Rachman's (1994, 2004, 2006) conceptualisation of mental contamination.

One study involving mental contamination has conducted an initial evaluation of individual differences in feelings of mental contamination after experiencing an imagined non-consensual kiss. In the experimental portion of their study, Herba and Rachman (2007) asked participants to listen to an audio recording and imagine experiencing the events described. The scenarios on the recordings involved receiving either a consensual kiss (n = 20) from a man described as physically attractive (e.g., "cute"), or a forced, non-consensual kiss (n = 120) from a man described as physically dirty (e.g., "crumbs of food in the corners of his mouth"). They found that participants in the non-consensual condition reported significantly greater feelings of mental contamination (e.g., feelings of dirtiness and urges to wash) than did participants in the consensual condition. In the individual difference analysis of their study, Herba and Rachman (2007) found that scores among non-consensual participants on measures assessing physical contamination symptoms (i.e., Vancouver Obsessional Compulsive Inventory Physical Contamination subscale (VOCI-CTN), Thordarson et al., 2004) and sensitivity to disgust (e.g., Disgust Scale (DS), Haidt, McCauley, & Rozin, 1994) could predict participants' ratings of feelings of dirtiness. In addition, there was a trend for scores on a measure of anxiety sensitivity (ASI; Reiss et al., 1986) to predict feelings of dirtiness. These researchers also found that reports of physical contamination symptoms could predict ratings of urges to wash; whereas, lower fears of negative evaluation (Fear of Negative Evaluation- Brief

Version (FNEB); Leary, 1983) scores could also predict urges to wash. However, this last finding was likely due to classical statistical suppression (Conger, 1974) given that fears of negative evaluation were not significantly correlated with urges to wash (Herba & Rachman, 2007). Finally, Herba and Rachman (2007) found that a prior non-consensual sexual encounter (PNCSE) could significantly predict washing behaviour (e.g., rinsing one's mouth during a 5-minute break), and there was also a trend for FNEB to do so.

There are many theoretical reasons to expect that variables other than self-reported symptoms of OCD, anxiety sensitivity, disgust sensitivity, and fears of negative evaluation (as reported above) might prove to be valuable in predicting vulnerabilities to the experience of mental contamination. For the purposes of the current investigation, these were chosen based on constructs and specific interpretations identified by Rachman (2004, 2006) and others (e.g., Salkovskis, 1985, 1999) as potentially problematic for contamination and OCD concerns. Rachman (2004) has proposed that the presence of a correlation between measures assessing anxiety sensitivity and disgust sensitivity may represent an underlying "generally elevated sensitivity" such as "neuroticism perhaps?" (p. 1235), or a general sensitivity to contamination (Rachman, 2006). Rachman (2006) has also proposed that fears of mental contamination may stem from an "immoral human source" (p. 19) as well as "perceived ill-treatment" (p. 28). Salkovskis (1999) has proposed that an inflated sense of "responsibility for harm to oneself or other people" (p. S31) may connect unwanted, intrusive thoughts (also images and/or impulses) and compulsions.

The purpose of the current study was to examine individual difference variables proposed to be involved in the experience of mental contamination fears. Our hypotheses for candidate constructs to predict mental contamination fears are based on specific (e.g.,

anxiety sensitivity, disgust sensitivity, and fear of negative evaluation; Herba & Rachman, 2007) and general sensitivities (e.g., neuroticism; Rachman, 2004), as well as on individuals' appraisals of the negative provoking event (e.g., perceptions of personal responsibility); it is expected that these appraisal variables will predict feelings of and behaviour associated with mental contamination above and beyond the presence of specific and general sensitivities to experience fear and disgust, as well as symptoms of physical contamination (as measured by the contamination subscale of the VOCI). We hypothesized that individual difference variables involving specific and general sensitivities in mental contamination fears (e.g., anxiety sensitivity, disgust sensitivity, fear of negative evaluation and neuroticism) will predict feelings of mental contamination over and above symptoms of physical contamination (VOCI-CTN scores). In addition, we hypothesized that negative appraisals of an imagined non-consensual kiss would uniquely predict feelings of and behaviour associated with mental contamination above and beyond the variables involving specific and general sensitivities to experience fear, disgust, and negative evaluation, as well as symptoms of physical contamination.

## Method

### *Participants*

Female undergraduate students at Concordia University participated in this study. There were 70 participants (average age = 23.30, SD = 4.77, range = 18 to 43-years) from Part I (Elliott & Radomsky, 2009) included in this sample. Each of these participants had been randomly assigned to an imagined non-consensual (NC) kiss condition, involving receiving either moral (M) or immoral (I) pre-kiss information about the man whom they imagine to force a kiss upon them. (All Part I participants who were assigned to consensual conditions were excluded from the current study.) Participants received either

course credit or an entry for a cash prize draw as compensation for their participation. Please see Appendix A for a copy of the Certificate of Ethical Acceptability for Research Involving Human Subjects granted by Concordia University's Human Research Ethics Committee which is applicable to all three of the present studies. Please see Appendix B for a copy of the Consent Forms used in each of the three present studies.

*Measures*

All of the measures in Part 2 were exactly the same as in Part I: Demographic & Baseline Ratings Questionnaire (DBRQ; Elliott & Radomsky, 2009; Please see Appendix C for a copy of the DBRQ); Fear of Physical Contamination Subscale of the Vancouver Obsessional Compulsive Inventory (VOCI-CTN; Thordarson et al., 2004); Mental Contamination Report (MCR; Elliott & Radomsky, 2009; Please see Appendix D for a copy of the MCR); and Break Behaviour Questionnaire (BBQ; Elliott & Radomsky, 2009; Please see Appendix E for a copy of the BBQ), except for the inclusion of the following four self-report questionnaires (see below).

*Anxiety Sensitivity Index* (*ASI*; Reiss et al., 1986). The ASI is a 16-item questionnaire that assesses sensitivity to and/or fear based concerns regarding negative outcomes due to physiological feelings and thoughts of an anxious nature. Items involve consequences such as illness (e.g., "When I notice that my heart is beating rapidly, I worry that I might have a heart attack") and a loss of control (e.g., "It is important for me to stay in control of my emotions"). Participants' responses are based on a 5-point Likert scale ranging from 0 (very little) to 4 (very much). Test-retest reliability (Pearson product-moment $r = .75$) has been demonstrated for this scale in a student sample (Reiss et al., 1986).

*Disgust Scale* (DS; Haidt, McCauley, & Rozin, 1994). The DS is a 32-item questionnaire that assesses sensitivity to disgust. Items involve seven disgust domains including food (e.g., "You are about to drink a glass of milk when you smell that it is spoiled"), and body products (e.g., "If I see someone vomit, it makes me sick to my stomach"). Participants' responses are based on a true and false scale for the first set of 16 questions, and based on a 3-point Likert scale ranging from 0 (not disgusting) to 1 (very disgusting) for the second set of 16 questions. This scale has been found to demonstrate internal consistency across four samples ($\alpha = .84$), as well as divergent and some convergent validities (Haidt, McCauley, & Rozin, 1994).

*Fear of Negative Evaluation- Brief Version* (FNEB, Leary, 1983). The FNEB is a 12-item questionnaire that assesses the degree to which individuals fear being negatively evaluated by others. Items involve concern about what other people are thinking and that the person may act inappropriately (e.g., "Sometimes I think I am too concerned with what other people think of me", and "I often worry that I will say or do the wrong things"). Responses are indicated on a 5-point Likert scale ranging from 1 (not at all characteristic of me) to 5 (extremely characteristic of me). Excellent 2-week test-retest reliability ($r = .94$) has been demonstrated for this scale, as have criterion and discriminant validities (Collins et al., 2005).

*Big Five Inventory – Neuroticism versus Emotional Stability Subscale* (BFI-N; John, Donahue, & Kentle, 1991). The BFI-N is an 8-item questionnaire subscale that assesses the personality trait of neuroticism. Items involve negative affect (e.g., "negative emotionality") based on perceptions of self (e.g., "I see myself as someone who can be moody", and "I see myself as someone who gets nervous easily"). Participants' responses are based on a 5-point Likert scale ranging from 1 (disagree strongly) to 5 (agree

strongly). Three month test-retest reliability (*r*'s range from .80 to .90) as well as convergent and divergent validities have been demonstrated for the overall scale (John & Srivastava, 1999). In addition, the average inter-item reliabilities for the subscales are above .80 (ranging from .75 to .90) in North American samples.

*Appraisal variables*. Three appraisal variables were assessed within the context of the MCR (Elliott and Radomsky (2009), and Appendix D). More specifically, ratings of personal responsibility for the occurrence of the kiss, ratings of the occurrence of the kiss as a perceived violation, and ratings of post-kiss perceptions of immorality of the man's character. All three appraisal variable questions were based on a scale from 0 ("not at all") to 100 ("completely"), and were devised for the purposes of this study (In keeping with our goal of generating appraisals which would capture possibly distinct and ideographic interpretations of the recording, Cronbach's α in this sample = 0.41). We were interested in examining each of these appraisal variables as individual constructs to assess their predictive ability for feelings and behaviour associated with mental contamination.

*Procedure*

The procedure in Part 2 was exactly the same as in Part I, except for the inclusion of the four questionnaires mentioned above. First, participants completed the DBRQ, VOCI-CTN, ASI, DS, FNEB, and BFI-N. Next, participants listened to an audio recording involving a non-consensual kiss from a man described as either moral or immoral (Please Appendix F for audio recording scripts). Participants imagined that they were the woman described in the scenario and that the events were happening to them at that moment in the laboratory. Next, participants completed the MCR, assessing feelings of mental contamination and appraisals of the negative event. Participants were then given a five minute break to create an opportunity for participants' to engage in washing

behaviour. Recall that a bottle of water and plastic cups were available in the testing room and a public washroom was nearby outside of the laboratory. The purpose of the break was undisclosed to participants. Finally, participants were asked to complete the BBQ after the break to assess for washing behaviours engaged in during the break.

## Results

### *Suitability of combining the two non-consensual conditions from Part I*

In Part I, we reported multivariate repeated measures ANOVA's and/or ANOVA'S and follow-up contrasts (if necessary) for age, ease to imagine the scenario described on the corresponding audio recording, VOCI-CTN scores, prior non-consensual sexual encounters, as well as feelings of dirtiness, urges to wash, and negative internal and negative external emotions evoked by the manipulation. There were no significant differences between the two non-consensual conditions on any of these variables (Elliott & Radomsky, 2009). In addition, these two non-consensual conditions included exactly the same number of Washers ($n$ = 4 for each condition). We also assessed for group differences on the four additional measures used in part 2 and found that there were no significant differences for ASI $t$ (68) = -1.20, $p$ = 0.23, DS $t$ (68) = 0.62, $p$ = 0.54, FNEB $t$ (68) = .65, $p$ = 0.52, or BFI-N $t$ (68) = 0.10, $p$ = 0.92 scores between the two non-consensual conditions. ASI scores were significantly correlated with DS ($r$ = .29; $p$ < .01), FNEB ($r$ = .37, $p$ < .01), and BFI-N ($r$ = .40; $p$ < .001) scores. DS scores were not significantly correlated with FNEB ($r$ = .001; $p$ = .50), but were with BFI-N ($r$ = .34; $p$ < .01) scores, as were FNEB and BFI-N ($r$ = .29; $p$ < .01) scores. Given that there were no significant differences between the two non-consensual conditions on any of the above-mentioned variables, that the regressions below computed for the two conditions separately produced similar results, and that the additional questionnaires in this study

were administered before participants underwent the manipulation, we combined these two non-consensual conditions to form one sample for this study ($n$ = 70). However, we did control for condition (e.g., moral vs. immoral pre-kiss information) using dummy coding in each regression analyses (see below). Please see Table 2.1 for means and standard deviations of questionnaire variables.

Table 2.1

*Mean Scores and Standard Deviations for Questionnaire Measures*

| Variable | M | SD |
|---|---|---|
| VOCI-CTN | 7.13 | 8.78 |
| ASI | 16.09 | 11.95 |
| DS | 18.62 | 5.46 |
| FNEB | 38.39 | 9.41 |
| BFI-N | 24.17 | 7.09 |

*n* = 70. VOCI-CTN = Contamination Subscale of the Vancouver Obsessional Compulsive Inventory; items from 0 (“not at all”) to 4 (“very much”). ASI = Anxiety Sensitivity Index; items from 0 (“very little”) to 4 (“very much”). DS = Disgust Scale; items true or false or from 0 (“not disgusting”) to 1 (“very disgusting”). FNEB = Fear of Negative Evaluation – Brief Version; items from 1 (“not at all characteristic of me”) to 5 (“extremely characteristic of me”). BFI-N = Big Five Inventory – Neuroticism; items from 1 (“disagree strongly”) to 5 (“agree strongly”).

*Feelings of mental contamination*

To examine which variables predicted feelings of mental contamination, we assessed feelings of dirtiness, urges to wash, internal negative emotions (INE; e.g., shame), external negative emotions (ENE; e.g., anger), and actual washing behaviour. Feelings of dirtiness scores were based on responses to one question on the MCR (Elliott & Radomsky, 2009). Urges to wash scores were based on the average of an aggregate measure of five items on the MCR: rinse mouth/spit/drink something, brush teeth/use mouthwash, wash face, wash hands and take a shower (Cronbach's $\alpha = 0.88$ in this study). INE scores were based on an aggregate measure of seven items on the MCR: feelings of being ashamed, guilty, humiliated, afraid, sad, cheap and sleazy (Cronbach's $\alpha = 0.89$ in this study). ENE scores were based on an aggregate measure of five items on the MCR: feelings of being anxious, distressed, angry, disgusted by the man's physical appearance and by the man's behaviour (Cronbach's $\alpha = 0.82$ in this study). All ratings were based on a scale from 0 ("not at all") to 100 ("completely"). Washing behaviour was assessed by two questions on the BBQ (Elliott & Radomsky, 2009) categorizing participants as 'Washers' or 'Non-washers'. Similar to results reported in Part I, ratings of feelings of dirtiness, urges to wash, INE and ENE were significantly correlated (one-tailed) with each other (all $r$'s $\geq .45$; all $p$'s $< .001$), but not with washing behaviour (all $r$'s $< .13$; all $p$'s $> .05$). Please see Table 2.2 for means and standard deviations of each index of mental contamination and Table 2.3 for correlation coefficients between indices of mental contamination and questionnaire variables.

Table 2.2

*Mean Scores and Standard Deviations for Indices of Mental Contamination and Appraisal Variables*

| Variable | M | SD |
|---|---|---|
| Dirtiness | 52.24 | 33.80 |
| Urges to Wash | 43.93 | 32.56 |
| INE | 39.59 | 27.22 |
| ENE | 69.31 | 22.71 |
| Responsibility | 16.44 | 20.30 |
| Violation | 84.51 | 23.20 |
| Post-Kiss Immorality | 92.86 | 11.15 |

*n* = 70. Dirtiness = Ratings of Feelings of Dirtiness. Urges to Wash = Ratings of Urges to Wash. INE = Ratings of Internal Negative Emotions. ENE = Ratings of External Emotions. Responsibility = Ratings of personal responsibility for Kiss Occurrence. Violation = Ratings of Kiss as Perceived Violation. Post-Kiss Immorality = Ratings of Post-Kiss Perceptions of Immorality of the man's character. All ratings were based on a scale from 0 ("not at all") to 100 ("completely").

Table 2.3

*Correlation Coefficients (One-Tailed) between Predictor and Outcome Variables*

| | Condition | | | |
|---|---|---|---|---|
| Variable | Dirtiness | Urges to Wash | INE | ENE |
| VOCI-CTN | .32** | .25* | .33** | .26* |
| Age | -.09 | .06 | -.26* | -.07 |
| Condition | -.16[ae] | .06[a] | -.10[a] | -.07[a] |
| PNCSE | -.01[a] | .08[a] | -.04[a] | -.06[a] |
| ASI | .17[c] | .26* | .26* | .29** |
| DS | .13 | .28* | .23* | .43** |
| FNEB | .05 | .05 | .12 | -.07 |
| BFI-N | .22* | .39** | .25* | .16[d] |
| Responsibility | .39** | .37** | .55** | -.02 |
| Violation | .41** | .31** | .44** | .37** |
| Post-Kiss Immorality | .28** | .36** | .24* | .31** |

*n* = 70. *p < .05. **p < .01. Pearson *r*, except where indicated. [a]Biserial *r*. [b]*p* = .06. (trend). [c]*p* = .08 (trend). [d]*p* = .09 (trend). [e]*p* = .10 (trend). PNCSE = Previous Non-Consensual Sexual Experience occurrence.

*Appraisal variables*

In addition to previously mentioned questionnaire-based variables (e.g., VOCI-CTN, ASI, DS, FNEB, BFI-N), we also assessed various appraisals of the man and the act as possible predictors of feelings of mental contamination. These appraisal variables included: Ratings of personal responsibility for the occurrence of the kiss, ratings of the occurrence of the kiss as a perceived violation and ratings of post-kiss perceptions of immorality of the man's character. Ratings of personal responsibility for the occurrence of the kiss were not significantly correlated (one-tailed) with post-kiss perceptions of immorality of the man's character ($r$ = .11; $p$ = .18); there was a trend, however, for ratings of personal responsibility for the occurrence of the kiss to be correlated with ratings of the occurrence of the kiss as a perceived violation ($r$ = .18; $p$ = .07). Ratings of the occurrence of the kiss as a perceived violation and post-kiss perceptions of immorality of the man's character were significantly correlated with each other ($r$ = .36; $p$ = .001). Please see Table 2.2 for means and standard deviations of appraisal variables and Table 2.3 for correlation coefficients between indices of mental contamination and appraisal variables.

*Hierarchical regression analyses structure*

In each of the following hierarchical regression analyses, variables in Model 1 included VOCI-CTN scores, participants' age, and whether or not participants themselves had previously experienced a non-consensual sexual encounter (PNCSE) such as a kiss ($n$ = 31). In addition, dummy coding for pre-kiss (im)moral information was included in Model 1 to control for condition (e.g., moral vs. immoral). Variables entered into Model 2 included: ASI, DS, FNEB, and BFI-N scores. We also conducted separate hierarchical regression analyses for each variable in Model 2, to assess whether any of these variables

had predictive power when the other variables were not included in the model, given the inter-correlations among some of these items. The one variable which emerged with a trend to be a significant predictor when the other variables in Model 2 were excluded from the analysis is noted below (see urges to wash). Variables entered into Model 3 included: appraisal ratings of personal responsibility for the occurrence of the kiss, the occurrence of the kiss as a perceived violation, and post-kiss perceptions of immorality of the man's character.

*Feelings of dirtiness*

Results from a hierarchical regression analysis revealed that VOCI-CTN ($\beta$ = 1.20, $t$ = 2.57, $p$ = .01) scores predicted feelings of dirtiness in Model 1 ($R^2$= .12, $F$ Δ (4, 65) = 2.19, $p$ = .08), but Age, PNCSE, and Condition did not. ASI, DS, FNEB and BFI-N scores did not account for unique variance in Model 2 ($R^2$= .14, $F$ Δ (4, 61) = 0.30, $p$ = .88). Responsibility ($\beta$ = .50, $t$ = 2.23, $p$ = .03), and violation ($\beta$ = .41, $t$ = 2.35, $p$ = .02) appraisal scores did account for unique variance in feelings of dirtiness, and there was a trend for post-kiss immoral ($\beta$ = .69, $t$ = 1.90, $p$ = .06) appraisal scores to do so in Model 3 ($R^2$= .37, $F$ Δ (3, 58) = 7.35, $p$ < .001).

*Urges to wash*

Results from a hierarchical regression analysis revealed that VOCI-CTN ($\beta$ = .99, $t$ = 2.16, $p$ = .035) scores predicted urges to wash in Model 1 ($R^2$= .08, $F$ Δ (4, 65) = 1.36, $p$ = .26), but Age, PNCSE, and Condition did not. BFI-N ($\beta$ = 1.45, $t$ = 2.35, $p$ = .02) scores accounted for unique variance in Model 2 ($R^2$= .20, $F$ Δ (4, 61) = 2.42, $p$ = .06), but ASI, DS[1], and FNEB scores did not account for unique variance. Responsibility ($\beta$ = .60, $t$ = 2.90, $p$ = .005), and post-kiss immoral ($\beta$ = .84, $t$ = 2.47, $p$ = .016) appraisal scores did

account for unique variance in Model 3 ($R^2$= .42, $F$ Δ (3, 58) = 7.23, $p$ < .001), but violation appraisals scores did not.

*Internal negative emotions (INE)*

Results from a hierarchical regression analysis revealed that VOCI-CTN ($\beta$ = .92, $t$ = 2.50, $p$ = .015) scores did predict INE, and there was a trend for Age ($\beta$ = -1.26, $t$ = -1.90, $p$ = .06), to do so in Model 1 ($R^2$= .16, $F$ Δ (4, 65) = 2.99, $p$ = .03), but PNCSE and Condition could not predict INE. ASI, DS, FNEB and BFI-N scores did not account for unique variance in INE in Model 2 ($R^2$= .18, $F$ Δ (4, 61) = 0.48, $p$ = .75). Responsibility ($\beta$ = .78, $t$ = 5.22, $p$ < .001), and violation ($\beta$ = .37, $t$ = 3.14, $p$ = .003) appraisal scores did account for unique variance in Model 3 ($R^2$= .56, $F$ Δ (3, 58) = 16.56, $p$ < .001), but post-kiss immoral appraisal scores did not account for unique variance in INE.

*External negative emotions*

Results from a hierarchical regression analysis revealed that VOCI-CTN ($\beta$ = .71, $t$ = 2.20, $p$ = .03) scores did predict ENE in Model 1 ($R^2$= .08, $F$ Δ (4, 65) = 1.41, $p$ = .24), but Age, PNCSE, and Condition did not. ASI ($\beta$ = .66, $t$ = 2.13, $p$ = .037) and DS ($\beta$ = 1.54, $t$ = 2.96, $p$ = .004), scores did account for unique variance in Model 2 ($R^2$= .27, $F$ Δ (4, 61) = 4.08, $p$ = .005; recall that one of the five items used to construct this variable are based on ratings of anxiety and two are based on ratings of disgust), but FNEB and BFI-N scores did not. Violation ($\beta$ = .23, $t$ = 2.01, $p$ = .049) appraisal scores did account for unique variance in ENE in Model 3 ($R^2$= .38, $F$ Δ (3, 58) = 3.38, $p$ = .024), but responsibility and post-kiss immoral appraisal scores did not account for unique variance in ENE.

*Actual washing behaviour*

Participants were classified as "Washers" ($n$ = 8) or "Non-washers" ($n$ = 62) depending on whether or not they washed their mouth or hands during the behavioural task, and attributed this behaviour as a means to reduce sensations evoked from the imagined scenario. Washing behaviour was not significantly correlated (one-tailed) with feelings of dirtiness, urges to wash, INE, ENE, or any of the specific or general sensitivity individual difference measures or appraisal scores (all $r$'s < .13; all $p$'s > .05). Washing behaviour was also not significantly correlated with self-reports of a previous non-consensual sexual encounter ($n$ = 31 in this study; $r$ = .13; $p$ = .14). A hierarchical logistic regression revealed that there was a trend for lower BFI-N (β = -.12, odds ratio = .88, 95% CI: 0.77-1.02, $p$ = .09) scores to account for unique variance in washing behaviour in Model 2 after accounting for VOCI-CTN scores, Age, PNCSE and Condition in Model 1. In Model 3, there was a trend for responsibility (β = .05, odds ratio = 1.05, 95% CI: 0.99-1.12, $p$ = .09) appraisals to contribute unique variance in washing behaviour. There were no other significant predictors of washing behaviour. However, these results are likely due to classical statistical suppression of irrelevant variance given that neither BFI-N or responsibility appraisal scores were significantly correlated with washing behaviour (Conger, 1974; the former finding is unlikely to be a case of negative suppression because the negative regression weight is not opposite in sign as expected, as evidenced by the non-significant correlation between BFI-N scores and washing behaviour in the negative direction).

We decided to conduct a *post hoc* analysis to assess if washing behaviour was correlated with any of the individual internal (e.g., shame) and external (e.g., anger) negative emotions. We found that washing behaviour was significantly correlated with ratings of feelings of shame ($r$ = .20; $p$ = .047) and guilt ($r$ = .21; $p$ = .04), but was not

significantly correlated with any other individual INE or ENE. A *post hoc* hierarchical logistic regression analysis revealed that VOCI-CTN, Age, PNCSE and Condition were unable to predict washing behaviour in Model 1, and feelings of guilt and shame were unable to account for unique variance in Model 2 (none of the other variables were included in this analysis). However; feelings of guilt and shame were highly significantly correlated (one-tailed) with each other ($r = .80$; $p < .001$). When these variables were entered individually in Model 2 in two separate logistic regressions, there was a tendency for feelings of guilt (β = .03, odds ratio = 1.03, 95% CI: 1.00-1.06, $p = .057$) and shame (β = .03, odds ratio = 1.03, 95% CI: 1.00-1.06, $p = .055$) to predict washing behaviour which was not evident when they were included in the same model of the same hierarchical logistic regression. Results for the other variables remained non-significant. These findings suggest that those individuals who feel a greater degree of guilt or shame after the imagined experience of a forced, non-consensual kiss *may* be more likely to wash.

## Discussion

We examined individual differences among women who were subjected to a provocation (an imagined non-consensual kiss) associated with mental contamination. We hypothesized that symptoms of physical contamination fears would emerge as an initial predictor of indices of mental contamination, but that specific (i.e., ASI, DS, FNEB) and general (i.e., Neuroticism) underlying sensitivities would predict mental contamination over and above physical contamination symptoms. Finally, it was hypothesized that appraisals of personal responsibility for the occurrence of the kiss, of the occurrence of the kiss as a perceived violation, and of post-kiss perceptions of immorality of the man's character would uniquely predict mental contamination indices above and beyond

previous predictor variables. These hypotheses were generally supported by our findings, though nuances in these findings are discussed below.

*Symptoms of physical contamination fears*

Consistent with findings previously reported by Herba and Rachman (2007), we found that symptoms of physical contamination fears (e.g., VOCI-CTN scores) could predict feelings of dirtiness and urges to wash. In addition, we found symptoms of physical contamination fears could predict internal (e.g., shame, guilt) and external (e.g., anxiety and disgust) negative emotions. These findings lend support to Rachman's (2004, 2006) conceptualization of an underlying sensitivity to contamination (whether specific to contamination or a general elevated sensitivity). It is interesting that in the context of a manipulation meant to evoke mental contamination, emotions which are more self- or other-focused are more likely to be predicted by physical contamination concerns. This finding speaks to the interrelatedness of mental and physical contamination, and to the notion that concerns about external contaminants might be exacerbated by internally- and externally-focused emotional states. It would be interesting to examine if other types of mental contamination (e.g., psychological violation) which do not involve any physical contact (real or imagined), could be predicted by symptoms of physical contamination. Even though this study employed an *imagined* event, the scenario did involve imagined physical contact. Women who experience a non-consensual sexual encounter may fear contracting a sexually transmitted or other disease from their assailant. Perhaps a victim of emotional abuse or betrayal (other potential triggers of mental contamination, according to Rachman (2004)) would not have similar physical contamination concerns?

Factors which emerged as predictors after variance attributable to symptoms of physical contamination was accounted for may represent more specificity in determining

the individual difference factors associated with *mental* contamination. A *proneness* to experience anxiety or disgust sensitivity, or possessing a "neurotic" disposition may not be as important as the *actual* interpretation(s) one generates during a threatening situation when considering individual difference factors in mental contamination. It is possible that these interpretations stem from a more specific sensitivity to contamination.

*Specific and general sensitivities to contamination*

Contrary to our predictions, we found that anxiety sensitivity, disgust sensitivity, fears of negative evaluation and neuroticism could not consistently predict feelings of mental contamination after controlling for symptoms of physical contamination fears. In particular, we found only that neuroticism could predict urges to wash and that anxiety sensitivity and disgust sensitivity could predict ENE's over and above symptoms of physical contamination. It is important to note that our ENE construct included one rating (out of five) which assessed feelings of anxiety and two ratings which assessed feelings of disgust in response to the manipulation. Recall that Herba and Rachman (2007) found disgust sensitivity and a trend for anxiety sensitivity to predict feelings of dirtiness (with VOCI-CTN scores in the same model). In our study, neither anxiety sensitivity nor disgust sensitivity could predict feelings of dirtiness over and above symptoms of physical contamination, and disgust sensitivity was not significantly correlated with feelings of dirtiness. One explanation may be that the manipulation in the Herba and Rachman (2007) study involved a description of the man as physically dirty; whereas, the manipulation in this study involved descriptions of the man as clean, but as having either a moral or immoral character. These results suggest that although some specific sensitivities already identified as being present in contamination concerns (e.g., ASI, DS, FNEB) and a generally elevated sensitivity (e.g., neuroticism) may play some role, there seem to be

other factors at play which may indicate the possibility of specific risks for experiencing feelings of mental contamination.

*Appraisals of a mental contamination evoking event*

Consistent with our predictions, we found that participants' appraisals of the negative event could consistently significantly predict feelings of mental contamination above and beyond symptoms of physical contamination fears, as well as specific and general sensitivities. In particular, we found that appraisals of personal responsibility for the occurrence of the kiss predicted feelings of dirtiness, urges to wash, and INE but not ENE; appraisals of the occurrence of the kiss as a perceived violation predicted feelings of dirtiness, INE and ENE, but not urges to wash; and appraisals of post-kiss perceptions of immorality of the man's character demonstrated a trend to predict feelings of dirtiness, and did predict urges to wash, but did not predict INE or ENE. These findings provide support for Rachman's (1997, 1998, 2004, 2006) and Salkovskis' (1985, 1999) conceptualisations regarding the importance of interpretations and appraisals regarding symptoms of OCD in general, and of physical and/or mental contamination fears specifically. These results suggest that although some individual differences in the experience of mental contamination may be accounted for by underlying physical contamination fears, disgust sensitivity, etc., it seems to be more critical as to how individuals interpret or appraise events and situations to determine the degree to which they will be affected. An alternative explanation for this relatively robust finding is that feelings of mental contamination (as provoked by imagining a non-consensual kiss) led to the negative appraisals, and future research on the time sequence of negative appraisals and the experience of feelings of mental contamination are warranted.

*Washing behaviour*

In the context of this study involving a non-consensual kiss from a man described as either moral or immoral, we did not find that women who had previously experienced a non-consensual sexual act or reported elevated fears of negative evaluation were more likely to engage in washing behaviour. There were eight women in this study who engaged in washing behaviour during a post-recording break; five of which reported a PNCSE and three of which did not. One interpretation of these findings may be that there are other factors which would lead women to be more likely to wash after a manipulation involving a physically dirty description of a perpetrator. Another interpretation of these findings may be that such a small number of washers in this study did not generate enough power to detect individual differences between those who washed and those who did not, particularly when the manipulation did not involve a description of the assailant as physically dirty. As such, a replication with a larger sample, perhaps focused on washing behaviour, is warranted. On the other hand, we did find that BFI-N (negative direction) scores could predict washing behaviour once symptoms of physical contamination had been accounted for, and responsibility (positive direction) appraisal scores contributed further unique variance in washing behaviour. However, it is difficult to interpret these results given that classical statistical suppression (Conger, 1974) seems likely to have been involved and attempts to replicate these results would be helpful to assist in elucidating these findings.

Moreover, none of the variables in this study were significantly correlated with washing behaviour, except for ratings of feelings of shame and guilt. There was a tendency for women who reported a greater degree of shame and guilt after experiencing the imagined negative event to engage in washing behaviour during the break. These findings suggest that although participants who engaged in washing behaviour may not

have been more likely to appraise the negative event as a violation, they were more likely to feel ashamed and guilty. Given that there is a great body of work indicating that these emotions are often associated with (or even result from) negative appraisals (e.g., Rachman, 1997, 1998; Salkovskis, 1985, 1999; Shafran, 1997; Shafran, Watkins, & Charman, 1996), it is entirely possible that the appraisals measured in this study did not encompass the full slate of idiosyncratic negative appraisals often seen in individuals diagnosed with OCD (OCCWG, 1997, 2001). As such, future investigations may wish to include broader measures of negative appraisals in an attempt to 'map out' which ones might specifically predict washing behaviour.

*Clinical implications*

There are a number of clinical implications of the current work. Although the sample was a non-clinical sample, that mental contamination can be provoked in this sample (e.g., Elliott & Radomsky, 2009) has important implications for understanding both the onset and exacerbation of OCD symptoms associated with feelings of dirtiness, urges to wash, INE, ENE and washing behaviour. Furthermore, the current study provides some indication of who might be at risk for the experience of mental contamination. Individuals with physical contamination concerns may be at risk; however, it seems likely that those who appraise situations involving others as a violation, in terms of responsibility, or in terms of their moral character, could well be at greater risk. Assessing for these, and other negative appraisals, particularly of intimate contact, may be quite helpful in identifying those who could benefit from cognitive-behavioural interventions for mental contamination within the context of OCD (e.g., Rachman, 2006).

Although neither Part I of this study (Elliott & Radomsky, 2009) nor the current investigation provides any information about treatment, the findings are certainly relevant

to those providing cognitive-behavioural therapy for those experiencing mental contamination concerns. It seems entirely likely that addressing appraisals of responsibility, of violation and of morality, perhaps through established methods (Clark, 2004; Rachman, 2003; Freeston et al, 1997; Wilhelm & Steketee, 2006), should have a strong effect on the reduction of feelings of mental contamination. This is important because the predominant intervention for contamination-related OCD is ERP which, as stated above, has been associated with significant numbers of patients who refuse the treatment and/or drop out (Fisher & Wells, 2005; Foa et al., 2005). As such, these results may pave the way for treatments for contamination related OCD (particularly involving mental contamination) which are more cognitively-based. Of course, additional work is required to address limitations above, and also to determine whether or not cognitively-based interventions for mental contamination are feasible, but the current study does indicate that this type of approach may be promising.

*Conclusions*

In examining the individual differences among mental contamination feelings and indices in female participants who imagined receiving a non-consensual kiss from a man, it was found that although some general risk factors may be at play (e.g., symptoms of physical contamination), negative appraisals of personal responsibility for the occurrence of the kiss, of the occurrence of the kiss as a perceived violation, and of post-kiss perceptions of immorality of the man's character were highly predictive of feelings of mental contamination. These variables were neither however significantly nor consistently correlated with washing behaviour in the current sample. One limitation of the experimental paradigm used in this study is that some participants may have found it difficult to relate to the scenario in their everyday lives as the negative event occurs at a

party. For example, recall that there was a trend for the participants' ages to predict INE scores, such that younger participants had a tendency to report feelings of shame, guilt, etc. to a greater degree than older participants. It may be that older participants were not affected in the same way; however, experimental paradigms which include greater emphasis on age, sex and gender would be helpful to elucidate the broader characteristics of mental contamination.

Although the findings must be taken in the context of the current work, and are in need of replication, they point to important topics of focus in both the assessment and treatment of mental contamination in OCD, and possibly PTSD. Furthermore, they might be helpful in identifying those who might be at risk of experiencing mental contamination in response to particular events. Fortunately, these appraisal characteristics are commonly assessed and altered during treatment. As such, the current study may well offer opportunities to broaden the treatment options available to those who struggle with contamination-related symptoms and disorders.

# CHAPTER 3

## Bridge: Teasing apart experimental factors

There is a growing body of empirical support for Rachman's (1994, 2004, 2006) conceptualization of mental contamination. The above study demonstrated the predictive ability of specific appraisals in a manipulation involving morally reprehensible behaviour. However, some previous work in this area may have faced limitations in that more than one construct was manipulated simultaneously. In particular, the combination of an imagined physically dirty perpetrator and a morally reprehensible act (e.g., he was described as having "crumbs of food in the corner of his mouth" and the kiss was described as non-consensual; see Fairbrother, Newth, & Rachman, 2005; and Herba & Rachman, 2007). The aim of Study 2 study was to tease apart manipulations of imagined physical descriptions (i.e., clean versus dirty), in the context of both morally sound and reprehensible acts (i.e., consensual versus non-consensual kiss) to expand our understanding of the conditional variables which may evoke mental contamination and address limitations of previous research. In this manner, a thorough examination of the role of imagined physical dirt in the absence of an imagined non-consensual sexual encounter could also be conducted. Such an analysis would allow for the examination of whether or not cognitions involving physical dirt are sufficient to evoke contamination fears in the absence of an immoral act, which would subsequently increase our understanding of the contaminants likely to be involved in the experience of mental contamination. Study 2 examines whether or not mental contamination could be evoked to a greater degree when an imagined situation involved both physical dirt (e.g., has "beer breath") and unwanted sexual contact (e.g., a non-consensual kiss), and whether or not

feelings of mental contamination could be evoked by imagined physical dirt alone (e.g., thinking about a consensual kiss with a physically dirty man).

# CHAPTER 4

## Mental contamination: The effects of imagined physical dirt and immoral behaviour

A fear of contamination has been conceptualized to include intense, persistent physiological and emotional components (Rachman, 1994, 2004, 2006). In particular, these components may involve feelings of dirtiness and urges to wash, as well as negative emotions such as anxiety and disgust. Akin to some of the functional mechanisms underlying anxiety and disgust, individuals suffering from persistent fears of contamination are proposed to engage in avoidance behaviour, as well as repeated washing behaviour. Two primary categories have been identified by Rachman under the umbrella of fears of contamination: contact contamination and mental contamination.

Contact contamination involves external feelings of dirtiness evoked by physical contact with a readily identifiable contaminant such as dirt, disease and/or germs (Rachman, 2004, 2006). Mental contamination, however, involves internal, psychological feelings of dirtiness evoked without physical contact (e.g., by thoughts, images, memories, etc.). The mental contaminant may involve another person or oneself, and the person concerned is normally perceived to be immoral (i.e., immoral human source). Mental contamination situations may involve psychological violations (e.g., betrayal), physical violations (e.g., sexual assault), self-contamination (e.g., self-generated blasphemous, sexual and/or violent obsessions), visual contamination (e.g., by sight alone) and the related visual phenomenon of morphing (i.e., a fear of acquiring the characteristics of an immoral/undesirable person).

Although there are many features which distinguish contact from mental contamination, they are not mutually exclusive as there is overlap found between them (Coughtrey, Shafren, Lee, & Rachman, 2012; Rachman, 2004, 2006). For reasons related

to this overlap, ‘contaminants’ in mental contamination are likely to exist beyond immoral human sources. For example, an individual who *generates images of* or *remembers* touching a dirty stimulus not associated with immorality, and consequently experiences feelings of contamination, would be experiencing mental, not contact contamination (Rachman, Radomsky, Elliott, Shafran, & Coughtrey, 2010). In other words, contact and mental contamination are likely primarily dissimilar in the manner they may be evoked (e.g., physical contact versus images, thoughts, etc.).

There is a growing body of empirical support for Rachman’s (2006) conceptualization of mental contamination. Female victims of sexual assault have retrospectively reported feelings of mental contamination and engaged in repeated washing behaviour following the assault experience (Fairbrother & Rachman, 2004). Feelings of mental contamination persist independently from initial physical contact in that these women also reported experiencing feelings of dirtiness and urges to wash in the laboratory when they recalled their sexual assault experience, and a few engaged in washing behaviour (Fairbrother & Rachman, 2004). The presentation of OCD-related symptoms such as repeated washing following a significant trauma seems to demonstrate a functional relationship between OCD and posttraumatic stress disorder (PTSD; see Gershuny, Baer, Radomsky, Wilson, & Jenike, 2003). Mental contamination has also been evoked by imagined events in samples of undergraduates who imagined receiving, or forcing a non-consensual kiss (Elliott & Radomsky, 2009; Fairbrother, Newth, & Rachman, 2005; Herba & Rachman, 2007; Rachman, Radomsky, Elliott, & Zysk, 2011).

One limitation of some of the previous experiments involved manipulating more than one relevant construct simultaneously. In particular, the combination of an imagined physically dirty perpetrator and a morally reprehensible act (e.g., he was described as

having crumbs in the corner of his mouth and the kiss was described as non-consensual), and/or the combination of an imagined morally reprehensible act and immoral person co-occurred in the manipulation (see Fairbrother, Newth, & Rachman, 2005; Herba & Rachman, 2007). One study addressed limitations in dirty kiss studies by teasing apart the immorality of the perpetrator from the immorality of the act (Elliott & Radomsky, 2009). Results indicated that an immoral, human source and a neutral event (e.g., a consensual kiss) in the absence of imagined physical dirt was sufficient to evoke mental contamination. However, there has been sparse research conducted to address the inclusion of both a physically dirty male and a morally reprehensible act.

The aim of the current study was to expand our understanding of the situational variables necessary/sufficient to evoke mental contamination, as well as to tease apart the imagined physical aspects of the man (e.g., smells good vs. smells bad), and the (im)moral aspects of the act (e.g., consensual vs. non-consensual kiss). We examined whether mental contamination could be evoked to a greater degree when an imagined situation involved both physical dirt (e.g., has "beer breath") and unwanted sexual contact (e.g., non-consensual kiss), and whether feelings of mental contamination could be evoked by imagined physical dirt alone (e.g., thinking about a consensual kiss with a physically dirty man).

We hypothesized that participants in the non-consensual conditions would report mental contamination to a greater degree than participants in the consensual conditions, that participants who imagined receiving a kiss from a man described as physically dirty would report mental contamination to a greater degree than participants who imagined receiving a kiss from a man described as physically clean, and that participants who

imagined receiving a forced, non-consensual kiss from a man described as physically dirty would report the experience of mental contamination to the highest degree.

## Method

### *Participants*

Female undergraduate students at Concordia University ($n$ = 140; mean age = 22.70; $SD$ = 5.29; range = 18 to 55 years) participated in this study. Each participant was randomly assigned to either an imagined consensual (C) or non-consensual (NC) kiss condition, involving receiving either physically clean (PC) or physically dirty (PD) information about the appearance of the man whom they imagine to kiss them, such that they were assigned to either the CPC ($n$ = 35), CPD ($n$ = 35), NCPC ($n$ = 35) or NCPD ($n$ = 35) condition. Sexual orientation was assessed (Kinsey, Pomeroy, & Martin, 1948) given the imagined sexual acts involved in this study included members of the opposite sex. One participant in each of the CPC and CPD conditions, and two in the NCPC condition identified themselves as being exclusively homosexual; the sample was deemed generally appropriate for this experimental paradigm (i.e., none of these participants scored three standard deviations above or below their mean on any variable).

### *Measures*

*Beck Depression Inventory - 2* (BDI-II; Beck, Steer, & Brown, 1996), and *Beck Anxiety Inventory* (BAI; Beck & Steer, 1990). BDI-II assesses depressive symptoms during the past two weeks. In an undergraduate sample, internal consistency (α = .93), as well as convergent and divergent validity (Beck et al., 1996) have been demonstrated. BAI assesses anxiety symptoms during the past week. Excellent internal consistency (α = .92) has been demonstrated.

*Contamination Subscale of the Vancouver Obsessional Compulsive Inventory* (VOCI-CTN; Thordarson et al., 2004). VOCI-CTN is a 12-item subscale that assesses a fear of contact contamination such as direct physical contact with a contaminant, (e.g., I feel very dirty after touching money). Items are based on a 5-point (e.g., 0 to 4) likert scale. Internal consistency ($\alpha = .87$; $\alpha = .88$ in this sample), as well as convergent and divergent validity (Thordarson et al., 2004), and test-retest reliability ($r = 0.90$; Radomsky et al., 2006) have been demonstrated in student samples.

*Mental Contamination Report* (MCR; Elliott & Radomsky, 2009): We administered a similar version of the MCR as used in Elliott & Radomsky (2009), with the addition of two manipulation check questions: the degree to which participants found the man to be physically dirty before and after the kiss. The MCR also assessed participants' ratings of ease to imagine the scenario (e.g., an aggregate measure of how easy it was to imagine the scenario, how vividly the scenario was imagined and how realistic the scenario was found to be by participants), perceptions of kiss desirability, and four indices of mental contamination; all based on a scale from 0 to 100 for which 0 represented "not at all" and 100 represented "completely". Please see Appendix G for the MCR used in Studies 2 and 3.

*Break Behaviour Questionnaire* (BBQ; Elliott & Radomsky, 2009): We administered a similar version of the BBQ as used in Elliott & Radomsky (2009), with the addition of one item to assess the use of hand sanitizer. Participants reported whether or not they engaged in any washing behaviour (e.g., rinsed mouth, cleansed hands, etc.) during the behavioural "bathroom break" task, as well as their reasons for engaging in this washing behaviour. Please see Appendix H for the BBQ used in Studies 2 and 3.

*Procedure*

The procedure for this study was exactly the same as in Elliott & Radomsky (2009), except for the content of the audio recordings and the presence of hand sanitizer. Participants completed the BDI-II, BAI, and VOCI-CTN. They were then randomly assigned to one of four conditions (CPC, CPD, NCPC or NCPD) in which they listened to an audio recording (using headphones) involving an attractive man who administers either a consensual or non-consensual kiss and who is described as either physically clean or physically dirty (audio recording scripts are available by request from the corresponding author; Please see Appendix I for a copy of the audio recording scripts). Audio recording length ranged from three minutes 45 seconds, to three minutes 59 seconds, across conditions. Audio content was matched across conditions (i.e., those in the consensual conditions heard exactly the same descriptions of consensual information matched with either the clean or dirty information audio clips, and vice versa for the non-consensual conditions). Participants were asked to imagine that they were the woman described in the scenario and that the events were happening to them at that moment in time. A blind study design was employed such that the experimenter did not know to which of the conditions the participants had been assigned. Following the imagined event, participants were asked to complete the MCR to assess feelings of mental contamination. A behavioural task was then administered in which participants were given a five minute break as a means of providing them with the opportunity to engage in washing behaviour and were then asked to complete the BBQ.

## Results

### *Sample characteristics*

Two participants in the CPC condition scored more than 3.29 standard deviations from the corresponding mean in their condition on more than one dependent variable, and

thus were removed from the sample. There were no significant differences between conditions in terms of age, BDI-II, BAI or VOCI-CTN scores, or baseline ratings of disgust, anxiety or feelings of dirtiness (all *F*'s (3, 137) < 2.21; all *p*'s > .09). In this sample, 45% of participants reported experiencing a previous non-consensual sexual encounter (PNCSE) such as a kiss, and there were no significant PNCSE differences ($X^2$ (3, 135) = 3.28; *p* = .35) between the CPC, CPD, NCPC and NCPD conditions (*n*'s = 11, 19, 17, and 15, respectively).

Ease to imagine the scenario ratings were based on an aggregate measure of the three items noted above (α = .81). There were significant differences between the conditions in terms of ease for which participants imagined the scenario *F* (3, 134) = 5.20; *p* < .01. In particular, participants in the NCPD condition reported that it was significantly easier to imagine the scenario than did participants in the CPC (*p* = .047), CPD (*p* < .001) and NCPC (*p* = .03) conditions. There was a trend for participants in the CPC condition to report imagining the scenario more easily than those in the CPD (*p* = .06) condition, but CPC participants did not differ from those in the NCPC condition (*p* = .84). Finally, there was a tendency for participants in the NCPC condition to report a greater ease to imagine the scenario than participants did in the CPD condition (*p* = .092). Ease to imagine the scenario ratings were entered as a covariate given significant group differences. Please see Table 4.1 for means and standard deviations.

Table 4.1

*Mean Scores and Standard Deviations on Demographic and Baseline Ratings, Questionnaire Scores and Ease to Imagine Scenario Ratings for each Condition*

| Variable | Condition | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | CPC | | CPD | | NCPC | | NCPD | |
| | M | SD | M | SD | M | SD | M | SD |
| Age | 24.12 [a] | 7.59 | 22.6 [a] | 4.19 | 22.57[a] | 4.23 | 21.54 [a] | 4.44 |
| Baseline Anxiety | 20.91[a] | 28.95 | 19.66[a] | 22.10 | 20.83[a] | 25.52 | 27.3[a] | 28.41 |
| Baseline Disgust | 4.24[a] | 14.85 | 2.71[a] | 7.00 | 1.37[a] | 4.43 | 1.54[a] | 4.31 |
| Baseline Dirtiness | 10.52[a] | 16.23 | 10.43[a] | 13.52 | 7.46[a] | 12.57 | 6.69[a] | 1.49 |
| Ease to Imagine | 78.89[ab+] | 14.80 | 71.73[b+] | 20.58 | 78.12[a] | 15.00 | 86.55[c] | 11.06 |
| BDI-II | 9.12[a] | 7.80 | 9.40[a] | 6.83 | 9.86[a] | 6.95 | 9.71[a] | 7.62 |
| BAI | 10.12[a] | 9.48 | 13.40[a] | 9.63 | 12.34[a] | 8.29 | 12.00[a] | 8.64 |
| VOCI-CTN | 4.33[a] | 5.45 | 5.60[a] | 6.30 | 8.09[a] | 7.52 | 7.60[a] | 7.85 |

+$p$ = .06. CPC = Consensual Physically Clean condition. CPD = Consensual Physically Dirty condition. NCPC = Non-consensual Physically Clean condition. NCPD = Non-consensual Physically Dirty condition. Baseline and Ease to Imagine Scenario ratings are based on ratings from 0 (“not at all”) to 100 (“completely”). BDI-II = Beck Depression Inventory-2; items from 0 to 3 (indicating the degree of each symptom if present). BAI = Beck Anxiety Inventory; items from 0 (“not at all”) to 3 (“severely, I could barely stand it”). VOCI-CTN = Contact Contamination Subscale of the Vancouver Obsessional

Compulsive Inventory; items from 0 (“not at all”) to 4 (“very much”). For each row, values which share the same superscript are not significantly different from each other at the $p < .05$ level.

*Manipulation checks*

1. *Perceived kiss desirability*

There was a significant effect of the covariate, ease to imagine the scenario scores, on kiss desirability scores $F$ (1, 137) = 8.39, $p < .01$, *partial* $\eta^2 = .06$. There were also significant group differences on how desirable participants perceived the kiss $F$ (3, 137) = 33.95, $p < .001$, *partial* $\eta^2 = .43$, after controlling for the covariate. Participants in the CPC and CPD conditions did not differ significantly from each other in terms of perceived kiss desirability (p = .31). They did, however, report that the kiss was perceived as significantly more desirable than those in the NCPC (p's < .001) condition who in turn reported significantly greater perceptions of kiss desirability ratings than did those in the NCPD (p < .01) condition. Please see Table 4.2 for means and standard deviations of all manipulation check variables.

Table 4.2

*Mean Scores and Standard Deviations on Manipulation Checks Ratings and Indices of Mental Contamination for each Condition*

| Variable | Condition | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | CPC | | CPD | | NCPC | | NCPD | |
| | M | SD | M | SD | M | SD | M | SD |
| Kiss Desirability | 64.01[a] | 28.38 | 54.43[a] | 33.60 | 25.11[b] | 24.73 | 9.46[c] | 20.98 |
| Man Dirty Before | 3.64[a] | 6.65 | 36.29[b] | 32.86 | 8.69[a] | 13.69 | 50.40[c] | 27.44 |
| Man Dirty After | 8.33[a] | 16.33 | 77.40[b] | 21.47 | 57.86[c] | 30.31 | 92.46[d] | 8.95 |
| Feelings of Dirtiness | 4.27[a] | 8.92 | 48.37[b] | 34.39 | 44.06[b] | 26.13 | 76.57[c] | 17.10 |
| Urges to Wash | 1.76[a] | 6.85 | 42.21[b] | 34.78 | 35.25[b] | 28.30 | 58.25[c] | 27.55 |
| Internal Negative Emotions | 6.26[a] | 12.44 | 30.31[b+] | 24.94 | 34.43[b] | 24.18 | 40.30[b+] | 21.49 |
| External Negative Emotions | 5.33[a] | 9.86 | 33.60[b] | 23.03 | 53.41[c] | 20.99 | 72.44[d] | 20.77 |

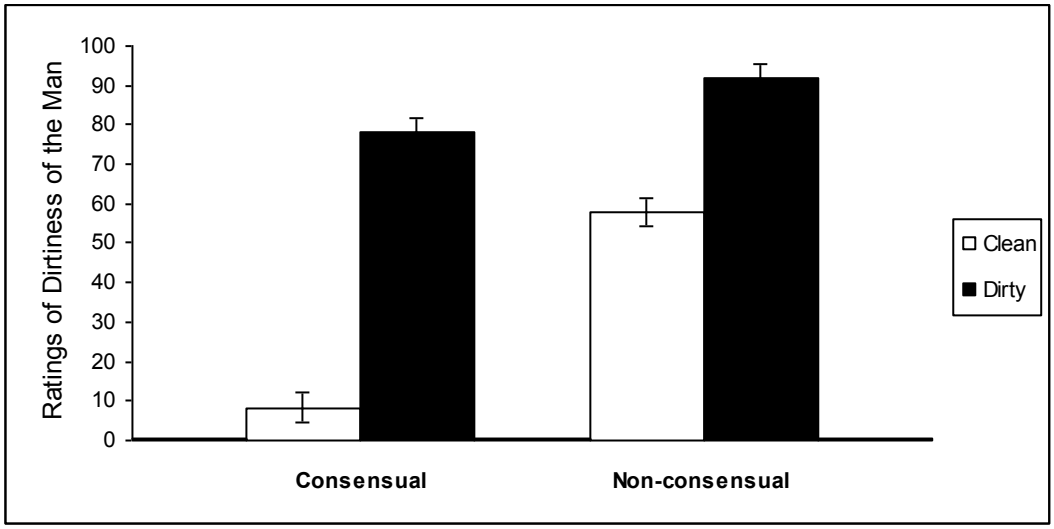
+$p = .054$. CPC = Consensual Physically Clean condition. CPD = Consensual Physically Dirty condition. NCPC = Non-consensual Physically Clean condition. NCPD = Non-consensual Physically Dirty condition. Variable scores are based on ratings from 0 ("not at all") to 100 ("completely"). For each row, values which share the same superscript are not significantly different from each other at the $p < .05$ level.

*2. Pre-kiss perceived physical dirtiness of the man*

There was no significant effect of the covariate $F$ (1, 137) = .23, $p$ = .63, *partial* $\eta^2$ = .002; however, there were significant group differences in terms of how physically dirty participants perceived the man to be, prior to the imagined kiss $F$ (3, 137) = 31.94, $p$ < .001, *partial* $\eta^2$ = .42, after controlling for the covariate. Participants in the NCPD condition reported significantly greater perceptions of the man being physically dirty before the kiss than participants in all other conditions (all p's < .024). Participants in the NCPC and CPC conditions did not differ significantly from each other (p = .36), but participants in both conditions reported significantly lower pre-kiss perceptions of physical dirtiness of the man than did participants in the CPD (p's < .001) condition.

*3. Post-kiss perceived physical dirtiness of the man*

There was no significant effect of the covariate $F$ (1, 137) = .63, $p$ = .43, *partial* $\eta^2$ = .005; however, there were significant group differences in terms of how physically dirty participants perceived the man to be, after the imagined kiss $F$ (3, 137) = 103.00, $p$ < .001, *partial* $\eta^2$ = .70, after controlling for the covariate. Each condition was significantly different from the others (all p's < .01) such that those in the NCPD condition reported the greatest post-kiss perceptions of physical dirtiness of the man, followed by those in the CPD, NCPC and CPC conditions, respectively. Note that participants in the CPD condition found the man to be significantly dirtier following the kiss than participants in the NCPC condition (see Figure 4.1 for ratings of perceptions of physical dirtiness of the man in each condition).


Ratings of Dirtiness of the Man
100
90
80
70
60
50
40
30
20
10
0
Consensual
Non-consensual
Clean
Dirty

*4. Differences between pre- and post-physical dirtiness scores*

There was no significant effect of the covariate $F$ (1, 137) = .04, $p$ = .84, *partial* $\eta^2$ < .001; however, there were significant differences between the conditions on difference scores of pre- to post-kiss perceptions in physical dirtiness of the man $F$ (3, 137) = 17.31, $p$ < .001, *partial* $\eta^2$ = .28, after controlling for the covariate. In particular, there were no significant differences between the CPD, NCPC and NCPD (all p's > .25) conditions, but they were all significantly greater than ratings obtained in the CPC (all p's < .001) condition.

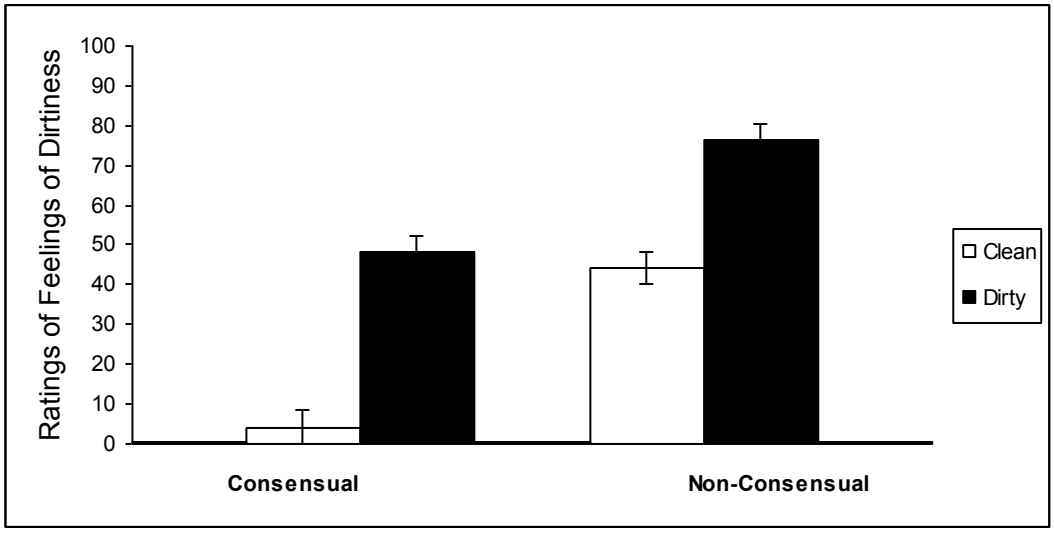
*Feelings of mental contamination*

We examined feelings of dirtiness, urges to wash, internal negative emotions (INE; e.g., shame), and external negative emotions (ENE; e.g., anger). An aggregate measure of five items (e.g., rinse mouth/spit/drink something, brush teeth/use mouthwash, wash face, wash hands and take a shower) was used (α = .92 in this study) to assess ratings of urges to wash. Negative emotions were separated into two components (see Herba, 2005, and Elliott & Radomsky, 2009): INE ((α = .90 in this study); e.g., feelings of being ashamed, guilty, humiliated, afraid, sad, cheap and sleazy), and ENE ((α = .88 in this study); e.g., feelings of being anxious, distressed, angry, disgusted by the man's physical appearance and disgusted by the man's behaviour). Please see Table 4.2 for means and standard deviations of these indices of mental contamination.

A multivariate repeated measures ANCOVA was conducted to assess the effect of the desirability of the kiss (e.g., consensual vs. non-consensual), the physicality of the man (e.g., clean vs. dirty) and their interaction on the dependent variables after controlling for the covariate (e.g., ease to imagine the scenario ratings). Results revealed a trend for an effect of the covariate $F$ (3, 137) = 3.57, $p$ = .061, *partial* $\eta^2$ = .03; on the indices of

mental contamination. Results also revealed a main effect of desirability of the kiss $F$ (1, 132) = 85.28, $p < .001$, *partial* $\eta^2 = .39$; a main effect of physicality of the man $F$ (1, 132) = 77.84, $p < .001$, *partial* $\eta^2 = .37$; and an interaction between them $F$ (1, 132) = 7.87, $p < .01$, *partial* $\eta^2 = .06$, after controlling for the covariate, such that women in the NCPD condition reported the greatest feelings of mental contamination, while women in the CPC condition reported the least.

Results indicated an effect of the covariate $F$ (1, 137) = 5.36, $p = .02$, *partial* $\eta^2 = .04$, on feelings of dirtiness. Significant group differences were also revealed $F$ (3, 137) = 51.35, $p < .001$, *partial* $\eta^2 = .54$, after controlling for the covariate. We found that participants who imagined a non-consensual kiss from a man described as physically dirty reported significantly greater feelings of dirtiness than those in the other three conditions (all $p$'s < .001), participants who imagined a consensual kiss from a man described as physically clean reported significantly lower feelings of dirtiness than those in the other three conditions (all $p$'s < .001), and there was no significant difference between participants who imagined a non-consensual kiss from a man described as physically clean or a consensual kiss from a man described as physically dirty ($p = .27$; see Figure 4.2 for ratings of feelings of dirtiness in each condition).


Ratings of Feelings of Dirtiness
100
90
80
70
60
50
40
30
20
10
0
Consensual
Non-Consensual
Clean
Dirty

There was a trend for an effect of the covariate $F$ (1, 137) = 3.17, $p$ = .08, *partial* $\eta^2$ = .023, on urges to wash. A similar pattern of significant group differences was also revealed $F$ (3, 137) = 25.78, $p$ < .001, *partial* $\eta^2$ = .37, after controlling for the covariate. We also found that participants in the NCPD condition reported the greatest urges to wash relative to the NCPC and CPC conditions (all $p$'s < .01), but only a trend to report greater urges to wash than those in the CPD condition ($p$ = .075). Further, participants in the CPC condition reported the lowest (all $p$'s < .001) degree of urges to wash than those in the other three conditions. There was also no significant difference between participants in the CPD and NCPC conditions ($p$ = .18) in their reported urges to wash.

Findings revealed that there was no effect of the covariate $F$ (1, 137) = .03, $p$ = .87, *partial* $\eta^2$ < .001, on INE. However, significant group differences were revealed $F$ (3, 137) = 16.00; $p$ < .001; *partial* $\eta^2$ = .27, after controlling for the covariate. Participants in the CPC condition reported significantly lower INE than participants in the other three conditions (all $p$'s < .001), participants in the NCPC condition did not differ significantly from the CPD ($p$ = .44) or NCPD ($p$ = .28) conditions, and there was a trend for participants in the NCPD condition to report significantly greater INE than participants in the CPD ($p$ = .077) condition.

There was also no effect of the covariate $F$ (1, 137) = .07, $p$ = .79, *partial* $\eta^2$ = .001, on ENE; and significant group differences were revealed $F$ (3, 137) = 70.45, $p$ < .001, *partial* $\eta^2$ = .61, after controlling for the covariate. Participants in all four conditions differed significantly from each other in descending order from greatest to least: NCPD, NCPC, CPD to CPC (all $p$'s < .001).

*Subsequent washing behaviour*

Participants in the NC conditions ($n$ = 6) engaged in washing behaviour during the break at a significantly greater frequency than participants in the C conditions ($n$ = 0; $X^2$ (1, 138) = 6.09, p = .014), but there was no significant difference between the PC ($n$ = 4) and PD ($n$ = 2; $X^2$ (1, 138) = .76, p = .38) conditions. However, results from a binary logistic regression revealed that participants in the NC (odds ratio < .001, $p$ > .05), or PD (odds ratio = .26, 95% CI: .04-1.75, $p$ = .17), conditions were not significantly more likely to wash than those in the C or PC conditions after accounting for the covariate. There was a trend for participants who found it easier to imagine the scenario to engage in washing behaviour during the break (odds ratio = 1.09, 95% CI: .99-1.20, $p$ = .08).

## Discussion

We examined whether mental contamination could be evoked to a greater degree when an imagined situation involved both physical dirt and unwanted sexual contact, and whether feelings of mental contamination could be evoked by imagined physical dirt alone.

### *Replication and expansion of previous findings*

Results that the imagined occurrence of a non-consensual kiss from a man described as physically dirty could evoke mental contamination, and that the imagined occurrence of a consensual kiss from a man described as physically clean did not evoke mental contamination are consistent with predictions made in Rachman's (1994, 2004, 2006) early descriptions of the construct of mental contamination. Results from this study also expand on Rachman's conceptualization in that participants who imagined experiencing either a consensual kiss from a man described as physically dirty, or a non-consensual kiss from a man described as physically clean experienced mental contamination to a similar degree on many dependent variables of interest. Findings

suggest that the frequency of washing behaviour in the CPD condition may have been greater if participants had found it as straightforward to imagine the scenario. These findings demonstrate that not only can feelings of mental contamination result from an immoral human source, but that they can also result from an imagined physically dirty stimulus. This lends empirical support to the idea that a distinguishing factor between contact and mental contamination may be the means by which these fears are triggered (e.g., by physical contact versus by images, memories, thoughts), and not immorality alone.

The results of this study are largely consistent with other 'dirty kiss' studies (e.g., Fairbrother, Newth, & Rachman, 2005; Herba & Rachman, 2007) in that an imagined non-consensual kiss evoked feelings of mental contamination to a greater degree than a consensual kiss. Results are inconsistent with findings of Herba & Rachman (2007) given that they found 27% of women who imagined a non-consensual kiss from a man described as physically dirty engaged in washing behaviour whereas only 8.6% of women in our NC conditions did so. The reason for such a discrepancy in percentage of washers is unclear. However, the percentage of washers in our study *is* consistent with the percentage of washers in other studies involving a non-consensual kiss, specifically 8.8% and 11.4% in the non-consensual conditions of Fairbrother, Newth, and Rachman (2005), and Elliott and Radomsky (2009), respectively.

*Limitations of this study*

The limitations of this study are similar to those reported in Elliott and Radomsky (2009). There is a possibility of demand characteristics, although a blind design and a control condition (i.e., CPC condition) were implemented. The generalizability of these findings is limited due to the use of a non-clinical sample of young, female, undergraduate

students. The imagined event paradigm employed in this study relies on participants' abilities to imagine and experience the scenario at that moment in the laboratory. Finally, pre-kiss manipulation check ratings were collected following the imagined event.

*Research and clinical implications*

Research implications from these findings target paradigms involving manipulations using vignettes, audio clips and video clips. Specifically, these types of paradigms involving physically dirty stimuli may be tapping into the larger construct of mental contamination rather than basic emotions such as fear and disgust; two emotions implicated in contamination fears. Research using such paradigms may benefit from the inclusion of measures of variables such as state anxiety, state disgust, feelings of dirtiness and urges to wash to ensure that researchers are evoking the construct of interest, and not neglecting to measure mental contamination.

Clinical implications from these findings involve highlighting the role of cognitions in fears of contamination, and in particular, mental contamination. We found that the mere thought of a contaminant (i.e., CPD condition), in the absence of direct physical contact with that contaminant and issues of immorality, is sufficient to evoke fears of mental contamination. These results suggest that the assessment and treatment of feelings of contamination should be tailored to identify and target mental contamination-related thoughts, images, memories, etc. Exposure to physically dirty stimuli may be insufficient if an individual is also suffering from the mentally contaminating effects of certain thoughts and images. An individual's fear may persist if they are generating thoughts and images which increase the degree of perceived contamination of the physical stimuli and in turn increase the level of perceived danger. In addition, experiences of humiliation and/or betrayal could be assessed for and the personal significance of certain

appraisals and interpretations. Behavioural experiments could then be employed to target identified appraisals and interpretations by testing and evaluating specific predictions (Radomsky & Elliott, 2009). Fortunately, a number of cognitively-based treatments for OCD have been established (see Clark, 2004; Rachman, 1997; 1998; Radomsky, Shafran, Coughtrey & Rachman, 2010; and Wilhelm & Steketee, 2006).

*Conclusions*

In sum, the findings from this study provide further empirical support for, and expand on Rachman's (1994, 2004, 2006) conceptualization of mental contamination, and address potential limitations of previous research. In particular, an imagined immoral act conducted by an immoral person (recall that the man is deemed immoral once the immoral act is committed (Elliott & Radomsky, 2009)), who is also described as physically dirty evoked mental contamination to a greater degree than when the man was described as physically clean or the kiss was described as consensual. In addition, findings from this study demonstrate that imagined physical contact with a physically dirty stimulus (e.g., the man) can evoke mental contamination.

Future mental contamination research would benefit from examining other negative events which do not involve physical contact (imagined or not), such as betrayal, and other types of "dirty" stimuli. The descriptions of dirt in this study primarily involved practices of being unhygienic. It would be interesting to examine conceptual situations for which a more immediate threat of contracting an illness is present. Future research in this area would have important clinical implications in terms of improving both assessment and treatment of fears of contamination by identifying factors which might put individuals at greater (or reduced) risk to experience mental contamination.

# CHAPTER 5

## Bridge: Synthesis of experimental and predictive factors

Although the above study was aimed at increasing our understanding of the experimental factors which evoke symptoms of contamination fears, our understanding of the predictive factors is less well-developed. In particular, identification of the individual differences associated with mental contamination fears is still in its infancy. This is important because some of these factors are likely to be potential targets of cognitive-behavioural interventions such as appraisal/interpretation variables. Appraisals of personal responsibility, degree of violation and immorality of the perpetrator have been demonstrated to predict mental contamination responses to an imagined negative event which did not involve descriptions of physical dirt. According to anecdotal reports of individuals struggling with contamination-related OCD, imagined physical dirt can be an important and distressing component of unwanted, intrusive thoughts, images and memories associated with obsessive-compulsive disorder. The aim of Study 3 was to assess for individual differences, including specific appraisals, in the context of an imagined event involving both an immoral act and physical dirt. In particular, this study would allow for examination of whether or not variables associated with symptoms, beliefs and appraisals could predict the experience of mental contamination after an established provocation involving imagined physical dirt. Such an analysis is important in terms of identifying specific appraisals which are hypothesized to operate in mental contamination evoking situations (e.g., involving both a negative event and images of dirt), and other appraisals which may be at play only in specific situations (e.g., only involving a negative event or images of dirt).

# CHAPTER 6

## Meaning and mental contamination: Appraisals predict contamination responses

A fear of contamination is reported by roughly 50% of individuals who meet the diagnostic criteria for obsessive-compulsive disorder (OCD; APA, 2000; Rachman & Hodgson, 1980; Rasmussen & Eisen, 1992). Individuals may experience symptoms of contamination fear not only through direct physical contact with a perceived contaminant (e.g., by touch), but also through mental means (e.g., by thoughts, images, memories, etc.). Therefore, two types of contamination fear have been proposed: Contact contamination and mental contamination (Rachman, 1994, 2004, 2006).

Contact contamination and mental contamination are not necessarily experienced exclusively and there has been a great deal of overlap demonstrated between these two types of contamination fears (Coughtrey, Shafran, Lee, & Rachman, 2012). As such, it is reasonable to consider that there may be both similar and dissimilar mechanisms underlying each of these contamination fears. Both types involve behavior such as avoidance and washing compulsions, emotions such as anxiety and disgust (Rachman, 2004; 2006), and cognitions such as inflated responsibility for events and thought-action fusion (OCCWG, 1997; Rachman, 2006; Radomsky & Elliott, 2009; Salkovskis, 1985; 1999; Shafran, Thordarson, & Rachman, 1996). However, it may be that contact contamination is associated with certain elements of disgust (e.g., 'core disgust' and cognitions such as concerns about having contracted a disease); whereas, certain forms of mental contamination such as a psychological violation (e.g., betrayal) and self-contamination (e.g., stemming from blasphemous obsessions) may be more strongly associated with other elements of disgust such as self-disgust, moral disgust (Fairbrother

& Rachman, 2004; Rachman, 2004; 2006), and/or cognitions involving perceived violation (Rachman, 2006; Radomsky & Elliott, 2009).

In addition, conditions necessary for experiencing the two types of contamination fears are dissimilar in that contact contamination results after coming into physical contact with an infectious or harmful substance; whereas, mental contamination more likely results after an imagined event (Elliott & Radomsky, 2009; in press; Fairbrother, Newth, & Rachman, 2005), or one of a number of other types of cognitive processes. In our earlier research, we found an interactive effect between imagined physical dirt and immoral behavior such that those who imagined a non-consensual kiss from a man described as physically dirty reported the greatest feelings of mental contamination, and those who imagined a consensual kiss from a man described as physically clean reported the least (Elliott & Radomsky, in press). In addition, we demonstrated that feelings of mental contamination may be evoked by *imagining* a scenario involving physical dirt, in the absence of a negative event, to a similar degree as a scenario involving a negative event, in the absence of physical dirt. These findings suggest that cognitions including physical dirt may evoke feelings of mental contamination, and that these feelings will be even more pronounced if nested within the context of a negative event. Although recent work has aimed at increasing our understanding of the experimental factors (e.g., harmful substances, immoral human sources, etc.) which evoke symptoms of contamination fears, our understanding of the predictive factors involved in contamination fears is less well developed. For example, anxiety sensitivity and disgust sensitivity are believed to be involved in contamination fears (Rachman, 2006). Yet, the high degree of association between these two constructs has led some researchers to propose that a third variable

(Woody & Teachman, 2000), such as neuroticism or contamination sensitivity (Rachman, 2004; 2006), may underlie a fear of contamination.

Individual differences relating to mental contamination have been examined in two correlational studies. Herba and Rachman (2007) demonstrated that symptoms of contact contamination fear were a stronger predictor of feelings of dirtiness and urges to wash associated with a mental contamination inducing situation than either anxiety sensitivity or disgust sensitivity. In a similar vein, Radomsky and Elliott (2009) demonstrated that anxiety sensitivity and disgust sensitivity were unable to account for unique variance in these mental contamination symptoms above and beyond symptoms of contact contamination. In the former study, the perpetrator in the negative event was described as physically dirty; whereas, in the latter study, the perpetrator was not described as physically dirty, albeit both of these studies involved *imagined* physical contact. The findings of these two studies lend empirical support to Rachman's (2006) conceptualization of contamination fears. In particular, those who were more sensitive to experiencing contact contamination (as measured by the [contact] Contamination Subscale of the Vancouver Obsessional Compulsive Inventory (VOCI-CTN), Thordarson, Radomsky, Rachman, Shafran, Sawchuk, & Hakstian, 2004), were also more sensitive to experiencing feelings of mental contamination, suggesting a general sensitivity to contamination.

Perceptions, interpretations and beliefs are likely intrinsically involved in mental contamination given the cognitive nature of this phenomenon. Radomsky and Elliott (2009) demonstrated that ratings of perceived responsibility for a negative event, as well as of the perceived degree of violation resulting from the negative event consistently predicted symptoms of mental contamination above and beyond other constructs. These

findings are consistent with a number of cognitive models of both OCD (Rachman, 1997; 1998; Wilhelm & Steketee, 2006; Clark, 2004), and posttraumatic stress disorder (PTSD; Ehlers & Clark, 2000). There appears to be a functional relationship between OCD and PTSD in that individuals who meet diagnostic criteria for PTSD may present with OCD-like symptoms such as washing behavior, and a number of individuals diagnosed with OCD have experienced a functionally related traumatic event (De Silva & Marks, 1999; Gershuny et al., 2008; Gershuny, Baer, Radomsky, Wilson, & Jenike, 2003). These findings highlight the role of appraisals and functional connections between a variety of events, thoughts, and symptoms. Despite these important findings, there remains a need for an investigation of appraisals in the context of an imagined negative event which includes imagined physical dirt. Imagined physical dirt can be an important and distressing component of unwanted, intrusive thoughts, images and memories associated with obsessive-compulsive disorder.

The aim of this study was to assess for individual differences, including specific appraisals, in the context of an imagined event involving both an immoral act and physical dirt. We planned to examine appraisal variables found to be associated with mental contamination in a previous study which did not involve mention of physical dirt (Radomsky & Elliott, 2009), in the context of a non-consensual kiss by a perpetrator described as being unhygienic. In particular, these appraisals included perceptions of participants' personal responsibility for the negative event, the degree to which the negative event was found to be violating, and the degree to which the man was found to be physically dirty. Such an analysis is important in terms of identifying specific appraisals which are hypothesized to operate in mental contamination evoking situations (e.g., involving both a negative event and images of dirt), and other appraisals which may

be at play only in specific situations (e.g., only involving a negative event or images of dirt). We predicted results consistent with Radomsky and Elliott (2009) - specifically, that symptoms of contact contamination (as measured by the VOCI-CTN) would predict feelings of mental contamination (e.g., feelings of dirtiness, urges to wash, internally- and externally-focused emotions), and that the appraisal variables noted above would contribute unique variance above and beyond symptoms of contact contamination, as well as specific (as measured by the Anxiety Sensitivity Index (ASI; Reiss et al., 1986), Disgust Scale (DS; Haidt, McCauley, & Rozin, 1994) and Brief Version of the Fear of Negative Evaluation Scale (FNEB; Leary, 1983)) and general (as measured by the Neuroticism versus Emotional Stability Subscale of the Big Five Inventory (BFI-N; John, Donahue, & Kentle, 1991)) sensitivities to contamination.

## Method

### *Participants*

Female undergraduates at Concordia University ($n$ = 59; average age = 21.59, $SD$ = 4.01, range = 18 to 44-years) participated in this study. Thirty-five of these participants were taken from a study reported by Elliott and Radomsky (in press) described above. An additional 24 participants were recruited and tested in the same paradigm for the purposes of this study. The current study is a correlational analysis of the participants in the imagined non-consensual kiss condition which involved receiving information about the man's physical appearance as being physically dirty (Elliott & Radomsky, in press). Given that the paradigm employed in this study involved a *non-consensual* kiss, all reported variations of sexual orientation were deemed generally appropriate for this sample. However, the single participant who reported being exclusively homosexual also reported scores more than 3.60 standard deviations below the mean on more than one

variable and was subsequently removed from the sample (see below). Roughly 37% (*n* = 22) of the sample reported previously experiencing a non-consensual sexual encounter such as a kiss (PNCSE).

*Measures*

All of the measures were exactly the same as in Radomsky and Elliott (2009), except for the addition of two items on the Mental Contamination Report, noted below: Demographic & Baseline Ratings Questionnaire (DBRQ; Elliott & Radomsky, 2009; Elliott & Radomsky, in press); Fear of Contact Contamination Subscale of the Vancouver Obsessional Compulsive Inventory (VOCI-CTN; Thordarson et al., 2004); Anxiety Sensitivity Index (ASI; Reiss et al., 1986); Disgust Scale (DS; Haidt, McCauley, & Rozin, 1994); Fear of Negative Evaluation- Brief Version (FNEB; Leary, 1983); Big Five Inventory – Neuroticism versus Emotional Stability Subscale (BFI-N; John, Donahue, & Kentle, 1991); Mental Contamination Report (MCR; Elliott & Radomsky, 2009; Elliott & Radomsky, in press); and Break Behaviour Questionnaire (BBQ; Elliott & Radomsky, 2009; in press). Please refer to Radomsky and Elliott (2009) for descriptions of the questionnaires not noted below (e.g., VOCI-CTN, ASI, DS, FNEB, & BFI-N).

*Mental Contamination Report* (MCR; Elliott & Radomsky, 2009; in press). The MCR assesses feelings of dirtiness, urges to wash, internally- and externally-focused negative emotions, perceptions of personal responsibility for the occurrence of the kiss and the occurrence of the kiss as a perceived violation. Two items were added to this scale for the purposes of this study: Pre- and post-kiss perceptions of the degree to which the man was found to be physically dirty. All variables were based on a scale from 0 to 100 for which 0 represented “not at all” and 100 represented “completely”.

*Break Behaviour Questionnaire* (BBQ; Elliott & Radomsky, 2009; in press). The BBQ assesses whether or not participants engaged in washing behavior (e.g., rinsed mouth) during the behavioral task and the reasons for doing so (e.g., they were thirsty, they attempted to remove physical sensations evoked from the imagined scenario, etc.).

*Procedure*

The procedure was exactly the same as in Radomsky and Elliott (2009), except for the content of the audio recording and two appraisal ratings noted above. Participants were asked to complete the DBRQ, VOCI-CTN, ASI, DS, FNEB and BFI-N. They were then asked to listen to an audio recording and imagine receiving a forced, non-consensual kiss from a man who was described as physically dirty (see Elliott & Radomsky, in press, for details). Following the imagined event, participants completed the MCR to assess for indices of mental contamination and the appraisal variables of interest. Participants then completed a behavioral task involving a five minute break to create an opportunity to engage in washing behavior. Finally, participants were asked to complete the BBQ to assess whether or not they had washed during the break and the reasons for doing so.

## Results

*Outliers*

There were three participants who scored more than 3.60 standard deviations above or below the mean on feelings of dirtiness, perceptions of the man as physically dirty, the VOCI-CTN or the ASI. These three participants were removed from the sample to prevent a misrepresentation of the data (Kline, 2010).

*Feelings of mental contamination*

To assess for individual differences in mental contamination responses, we examined five indices: 1) Feelings of dirtiness; 2) urges to wash; 3) internally- (INE; e.g.,

shame); and 4) externally-focused negative emotions (ENE; e.g., anger); and 5) actual washing behavior.

Feelings of dirtiness scores were based on one item (Elliott & Radomsky, 2009; in press). Urges to wash scores were based on the average of five items: Urge to rinse mouth/spit/drink something, brush teeth/use mouthwash, wash face, wash hands and take a shower ($\alpha = 0.81$ in this study). INE scores were based on the average of seven items: Feelings of being ashamed ($M = 48.70$, $SD = 34.39$), guilty ($M = 30.66$, $SD = 30.69$), humiliated ($M = 67.09$, $SD = 29.80$), afraid ($M = 49.98$, $SD = 36.39$), sad ($M = 32.45$, $SD = 32.05$), cheap ($M = 39.70$, $SD = 34.51$), and sleazy ($M = 36.76$, $SD = 32.88$; $\alpha = 0.86$ in this study). ENE scores were based on the average of five items: Feelings of being anxious ($M = 57.84$, $SD = 31.18$), distressed ($M = 65.18$, $SD = 32.02$), angry ($M = 68.73$, $SD = 32.16$), disgusted by the man's physical appearance ($M = 86.84$, $SD = 15.80$), and disgusted by the man's behavior ($M = 86.24$, $SD = 22.86$; $\alpha = 0.79$ in this study). All items were rated on a scale from 0 ("not at all") to 100 ("completely"). Washing behavior was assessed by three items (Elliott & Radomsky, 2009; in press) categorizing participants as 'Washers' or 'Non-washers'.

Feelings of dirtiness, INE and ENE were all significantly correlated (one-tailed) with each other (all $r$'s $\geq .33$; all $p$'s $< .01$). Feelings of dirtiness were also significantly correlated with urges to wash ($r = .35$; $p < .01$), and there was a trend for ENE to be significantly correlated with urges to wash ($r = .20$; $p = .07$). INE was not significantly correlated with urges to wash ($r = .10$; $p = .24$), and none of these variables were significantly correlated with washing behavior (all $r$'s $< .13$; all $p$'s $> .05$). In addition, none of the individual emotion ratings used to construct the aggregate measures of INE and ENE were significantly correlated with washing behavior. Please see Table 6.1 for

means, standard deviations and range of mental contamination indices and questionnaire scores.

Table 6.1. *Means and Standard Deviations of Mental Contamination Indices, Appraisal Variables and Questionnaire Scores*.

| Variable | M | SD | Minimum | Maximum |
|---|---|---|---|---|
| Dirtiness | 76.30 | 17.86 | 30 | 100 |
| Urges to Wash | 58.49 | 25.28 | 0 | 100 |
| INE | 43.78 | 24.55 | 0 | 88.57 |
| ENE | 72.76 | 21.28 | 15 | 100 |
| Responsibility | 26.80 | 25.10 | 0 | 100 |
| Violation | 86.34 | 18.87 | 20 | 100 |
| Post-Kiss Man is Dirty | 93.45 | 7.71 | 60 | 100 |
| Pre-Kiss Man is Dirty | 50.43 | 26.88 | 0 | 100 |
| VOCI-CTN | 6.25 | 5.66 | 0 | 28 |
| ASI | 15.71 | 9.18 | 1 | 41 |
| DS | 19.61 | 4.36 | 7 | 29 |
| FNEB | 38.98 | 10.71 | 17 | 60 |
| BFI-N | 24.34 | 7.28 | 11 | 39 |

*n* = 56. Dirtiness = Ratings of Feelings of Dirtiness. Urges to Wash = Ratings of Urges to Wash. INE = Ratings of Internal Negative Emotions. ENE = Ratings of External Negative Emotions. Responsibility = Ratings of personal responsibility for Kiss Occurrence. Violation = Ratings of Kiss as Perceived Violation. Post-Kiss Man is Dirty = Ratings of Post-Kiss Perceptions of the degree the man was found to be dirty. Pre-Kiss Man is Dirty

= Ratings of Pre-Kiss Perceptions of the degree the man was found to be dirty. All appraisal ratings were based on a scale from 0 (“not at all”) to 100 (“completely”). VOCI-CTN = Contact Contamination Subscale of the Vancouver Obsessional Compulsive Inventory; items from 0 (“not at all”) to 4 (“very much”). ASI = Anxiety Sensitivity Index; items from 0 (“very little”) to 4 (“very much”). DS = Disgust Scale; items true or false or from 0 (“not disgusting”) to 1 (“very disgusting”). FNEB = Fear of Negative Evaluation – Brief Version; items from 1 (“not at all characteristic of me”) to 5 (“extremely characteristic of me”). BFI-N = Big Five Inventory – Neuroticism; items from 1 (“disagree strongly”) to 5 (“agree strongly”).

*Appraisal variables*

Appraisal variables included: Ratings of personal responsibility for the occurrence of the kiss, ratings of the occurrence of the kiss as a perceived violation and ratings of post-kiss perceptions of the man being physically dirty. Ratings of personal responsibility for the occurrence of the kiss were not significantly correlated with post-kiss perceptions of the man being physically dirty ($r$ = -.01; $p$ = .47); or the occurrence of the kiss as a perceived violation (r = -.06; p = .33). Ratings of the occurrence of the kiss as a perceived violation and post-kiss perceptions of the man being physically dirty were significantly correlated with each other ($r$ = .37; $p$ < .01). Please see Table 6.1 for means, standard deviations and range of appraisal variables and Table 6.2 for correlation coefficients between indices of mental contamination and all predictor variables.

Table 6.2. *Correlation Coefficients between Mental Contamination Indices and Appraisal Variables and Questionnaire Scores*.

| | Dependent Variables | | | |
|---|---|---|---|---|
| Variable | Dirtiness | Urges to Wash | INE | ENE |
| VOCI-CTN | .25* | .08 | .26* | .13 |
| Age | .04 | -.12 | -.19[c] | .06 |
| PNCSE | .03[a] | .05[a] | .09[a] | -.01[a] |
| Pre-Kiss Man is Dirty | .18[c] | .14 | .20[b] | .07 |
| ASI | .04 | .25* | -.04 | -.09 |
| DS | .24* | .24* | .13 | .14 |
| FNEB | .07 | .03 | .15 | -.09 |
| BFI-N | .11 | -.04 | .07 | -.01 |
| Responsibility | .20[b] | .14 | .37** | -.03 |
| Violation | .10 | .08 | .22* | .49** |
| Post-Kiss Man is Dirty | .31** | -.13 | .25* | .26** |

$n = 56$. *$p < .05$. **$p < .01$. Pearson $r$, except where indicated. [a]Biserial $r$. [b]$p = .07$. (trend). [c]$p = .08$ (trend).

*Hierarchical regression analyses structure*

The structure of the following hierarchical regression analyses is exactly the same as in Radomsky and Elliott (2009), except for one change in Model 1. Variables included in Model 1 were: VOCI-CTN scores, participants' age, and whether or not participants had previously experienced a non-consensual sexual encounter (PNCSE). Rather than controlling for pre-kiss (im)moral information, we controlled for the degree to which participants perceived the man to be physically dirty before the kiss occurrence. Variables included in Model 2 were: ASI, DS, FNEB, and BFI-N scores. Variables included in Model 3 were: appraisal ratings of personal responsibility for the occurrence of the kiss, the occurrence of the kiss as a perceived violation, and post-kiss perceptions of the degree to which the man was found to be physically dirty.

*Feelings of dirtiness*

Results indicated a trend for VOCI-CTN scores ($B$ = .82, *S.E.* = .42, $\beta$ = .26, $t$ = 1.94, $p$ = .06) to predict feelings of dirtiness in Model 1 ($R^2$= .10, $F\,\Delta$ (4, 51) = 1.43, $p$ = .24), but age, PNCSE and pre-kiss perceptions of the man as physically dirty scores did not. However, there was not a significant amount of variance in feelings of dirtiness accounted for by the variables in Model 1. ASI, DS, FNEB and BFI-N scores did not contribute a significant amount of unique variance in Model 2 ($R^2$= .12, $R^2\,\Delta$ = .02, $F\,\Delta$ (4, 47) = 0.31, $p$ = .87). There was a trend for Responsibility scores ($B$ = .18, *S.E.* = .10, $\beta$ = .25, $t$ = 1.76, $p$ = .09) to account for unique variance in feelings of dirtiness, and post-kiss perceptions of the man as physically dirty ($B$ = .91, *S.E.* = .40, $\beta$ = .39, $t$ = 2.28, $p$ = .03) did account for a significant amount of unique variance in feelings of dirtiness in Model 3 ($R^2$= .26, $R^2\,\Delta$ = .14, $F\,\Delta$ (3, 44) = 2.66, $p$ = .06), but violation appraisal scores did not.

*Urges to wash*

Results revealed that there were no significant predictors in Model 1 ($R^2$= .04, $F$ Δ (4, 50) = 0.50, $p$ = .74). ASI ($B$ = .98, *S.E.* = .45, $\beta$ = 0.35, $t$ = 2.15, $p$ = .04) and DS scores ($B$ = 2.04, *S.E.* = .96, $\beta$ = 0.35, $t$ = 2.12, $p$ = .04) were significant predictors in Model 2 ($R^2$= .19, $R^2$ Δ = .15, $F$ Δ (4, 46) = 2.06, $p$ = .10), although Model 2 results were only approaching a trend to account for a significant amount of unique variance. None of the appraisal variables contributed a significant amount of unique variance in Model 3 ($R^2$= .26, $R^2$ Δ = .07, $F$ Δ (3, 43) = 1.35, $p$ = .27).

*Internal negative emotions (INE)*

Results indicated a trend for VOCI-CTN scores ($B$ = 1.02, *S.E.* = .57, $\beta$ = .24, $t$ = 1.80, $p$ = .08) to predict INE in Model 1 ($R^2$= .14, $R^2$ Δ = .14, $F$ Δ (4, 65) = 2.08, $p$ = .09), but age, PNCSE and pre-kiss perceptions of the man as physically dirty scores did not. There was a trend for lower ASI scores ($B$ = -.84, *S.E.* = .43, $\beta$ = -.31, $t$ = -1.94, $p$ = .06) to predict INE in Model 2 ($R^2$= .22, $R^2$ Δ = .08, $F$ Δ (4, 47) = 1.15, $p$ = .34), although Model 2 did not contribute a significant amount of unique variance from Model 1. Responsibility ($B$ = .36, *S.E.* = .12, $\beta$ = .37, $t$ = 2.92, $p$ < .01), and violation ($B$ = .36, *S.E.* = .18, $\beta$ = .27, $t$ = 2.01, $p$ = .05) appraisal scores did account for unique variance in Model 3 ($R^2$= .44, $R^2$ Δ = .22, $F$ Δ (3, 44) = 5.82, $p$ < .01), and there was a trend for post-kiss perceptions of the man as physically dirty ($B$ = .88, *S.E.* = .48, $\beta$ = .28, $t$ = 1.86, $p$ = .07) to do so as well.

*External negative emotions (ENE)*

Results indicated there were no significant predictors of ENE in Model 1 ($R^2$= .03, $R^2$ Δ = .03, $F$ Δ (4, 51) = .38, $p$ = .83). There were also no significant predictors in Model 2 ($R^2$= .06, $R^2$ Δ = .03, $F$ Δ (4, 47) = .37, $p$ = .83). Violation appraisal scores ($B$ = .59,

*S.E.* = .17, $\beta$ = .53, $t$ = 3.53, $p$ = .001) accounted for a significant amount of unique variance in ENE in Model 3 ($R^2$= .34, $R^2$ $\Delta$ = .28, $F$ $\Delta$ (3, 44) = 6.10, $p$ = .001), but responsibility appraisal and post-kiss perceptions of the man as physically dirty scores did not.

*Actual washing behavior*

We were unable to examine individual differences in washing behavior in this sample given that only three women reported washing behavior during the break to relieve themselves of physical sensations experienced in direct response to the imagined event.

## Discussion

*Contact contamination symptoms, specific and general sensitivities*

Contrary to our predictions and the results of Radomsky and Elliott (2009) and Herba and Rachman (2007), symptoms of contact-related contamination fear were unable to consistently predict indices of mental contamination in this study. Similarly, specific and general sensitivities to experience contamination fears did not account for unique variance in feelings of mental contamination. Although there was a trend for contact contamination symptoms to predict feelings of dirtiness and internally-focused negative emotions, a trend for lower anxiety sensitivity to predict internally-focused negative emotions and for anxiety sensitivity and disgust sensitivity to significantly predict urges to wash, these models did not account for a significant amount of unique variance in the dependent variables of interest.

One possible explanation may be that in the context of this study involving imagined physical dirt, participants were more likely to experience feelings of dirtiness and urges to wash in response to the manipulation. In fact, participants in this study

reported roughly 32% greater feelings of dirtiness and roughly 25% greater urges to wash than those who imagined a non-consensual kiss which did not involve physical dirt as assessed by Radomsky and Elliott (2009). In addition, participants reported roughly 40% greater feelings of disgust by the man's physical appearance than participants in Radomsky and Elliott (2009); whereas, feelings of disgust by the man's behavior was only 5% lower in this study (Radomsky & Elliott, 2009). This may have resulted in a ceiling effect which may have prevented us from detecting individual differences in this regard in this study. Another possible explanation may be that we controlled for pre-kiss perceptions of the man being physically dirty while Herba and Rachman (2007) did not. Finally, given that mentally contaminating situations often involve immorality, the measures traditionally used to assess contact contamination may not be sensitive enough to the nuances of mental contamination. Specifically, the disgust sensitivity scale used in this study does not include a moral disgust subscale. It is not surprising that disgust sensitivity was unable to predict feelings of mental contamination given that the Disgust Scale items are primarily "physical" or contact-based in nature (Elliott, Milosevic, Radomsky et al., 2007).

*Appraisals of a mental contamination evoking event*

Consistent with our predictions and with the results of Radomsky and Elliott (2009), the appraisal variables generally accounted for unique variance in the indices of mental contamination above and beyond the other predictor variables. Appraisals of personal responsibility tended to predict feelings of dirtiness and predicted INE, appraisals of a violation predicted INE and ENE, and appraisals of the man as dirty following the kiss predicted feelings of dirtiness and INE. Findings from this study demonstrate that interpretations of a negative event regarding personal responsibility and

degree of violation are still relevant in a situation for which the negative event is compounded with imagined physical dirt, and that appraisals of a perpetrator as physically dirty may also predict responses to such an event. As suggested by Radomsky and Elliott (2009), further investigation of the time sequence of these variables is warranted to determine if feelings of contamination lead to certain appraisals, or if certain appraisals lead to feelings of contamination.

*Limitations*

Limitations of this study are similar to those reported in other dirty kiss paradigm studies (Elliott & Radomsky, 2009; in press; Radomsky & Elliott, 2009; Rachman et al., 2011). In particular, limitations involving the use of a non-clinical sample, reliance on participants' ability to imagine a negative event and possibility of demand characteristics. However, a blind design was used and participants who imagined a consensual kiss from a man described as physically clean reported significantly lower feelings of mental contamination (see Elliott & Radomsky, in press). In addition, perceptions of the degree to which participants perceived the man as physically dirty prior to the non-consensual kiss were obtained following the imagined encounter.

*Conclusions*

Although this study does not directly assess treatment or assessment strategies aimed at contamination fears, there are important clinical implications that can be drawn from these results. First, standard assessments for a fear of contamination do not readily involve items pertaining to mental contamination. Through identification of factors which may leave some vulnerable to developing symptoms of mental contamination, assessments could be improved by exploring specific maladaptive appraisals (e.g., personal responsibility) linked to specific life events (e.g., betrayal). Second, cognitive

strategies could be employed as a supplement to (or perhaps replacement of) behavioral techniques (e.g., Exposure and Response Prevention) – especially given the cognitive nature of mental contamination. There are a number of cognitive treatments developed for OCD (see Clark, 2004; Rachman, 2003; Radomsky, Shafran, Coughtrey et al., 2010; Whittal, Woody, McLean, et al., 2010; Wilhelm & Steketee, 2006). Adaptations of recognized treatments for contact contamination fears, as well as the development of new cognitive techniques to address appraisals of personal responsibility, violation, immorality and physical dirtiness should have a beneficial impact on mental contamination fears. To further identify individual differences in the experience of mental contamination, future studies should examine situations which involve physical dirt in the absence of imagined physical contact. In addition, future studies would benefit from measures assessing contamination sensitivity as well as moral disgust to further assess for similar and dissimilar individual differences between contact and mental contamination fears. Finally, factors which lead some individuals to be resilient to mental contamination should be examined to provide important information regarding the treatment of this relatively understudied psychological problem.

# CHAPTER 7

## General Discussion

This body of work aimed to increase of our understanding of contamination fear - most notably mental contamination. Established as well as new factors were examined to expand on previous findings in this area. In addition, individual differences were assessed to identify potential factors which may lead some to be more vulnerable to suffer from mental contamination fears. In particular, various appraisals suggested by Rachman (2004, 2006) and others to be underlying various components of OCD were selected for examination given the cognitive nature of mental contamination. In this manner, a cognitive approach was employed as a means of providing important clues for the cognitive treatment of this cognitive problem. Although still in its infancy, theoretical and empirical work involving mental contamination continues to steadily grow. Findings from the current studies will ideally help to address some questions about this puzzling phenomenon, as well as help to point the way toward future considerations and research in the area of mental contamination.

### *Conditional variables*

Previous research examining mental contamination responses may have faced limitations in that more than one variable of interest was manipulated simultaneously (i.e., an imagined physically dirty man who commits immoral behaviour involving a non-consensual kiss). As such, Study 2 examined whether or not imagined physical dirt and immoral behaviour together have an interactive effect on indices of mental contamination, and whether or not imagined physical dirt is sufficient to evoke mental contamination in the absence of immoral behaviour. Results indicated that imagined physical dirt or immoral behaviour evoke mental contamination to roughly the same degree; whereas,

situations which involve both components have the potential to evoke mental contamination to the highest degree. This lends empirical support to the idea that a distinguishing factor between contact and mental contamination is the manner in which these fears are triggered such as physical contact versus thoughts, and not simply the content such as dirt versus immorality.

*Predictor variables*

A number of potential factors which may lead to mental contamination responses were also examined in Studies 1 and 3. These factors were selected from more traditional examinations of contact contamination as a means of simultaneously assessing for a general sensitivity to contamination given the overlap between anxiety and disgust sensitivity. New factors involving appraisals of the actor, self and situation were also developed to allow for a more cognitive approach to understanding and predicting the vulnerability and/or manifestation of mental contamination fears. Symptoms of contact contamination fears generally predicted indices of mental contamination (Study 1), except when the situation also involved imagined physical dirt (Study 3). This latter finding may represent a ceiling effect in that participants were more likely to feel dirty and experience urges to wash when imagined physical dirt was involved in the scenario. Anxiety sensitivity and disgust sensitivity were unable to predict mental contamination responses after controlling for contact contamination concerns. This may lend empirical support to Rachman's (2006) proposition of a general sensitivity to contamination. Future studies should include the new Contamination Sensitivity Scale (Rachman, 2006) to further elucidate whether or not there is a specific or general proneness to develop contamination fears. In addition, future research should work towards developing a scale capable of assessing a sensitivity to experience moral disgust. The leading disgust sensitivity scales

do not include subscales tapping into disgust of a more moral nature, which is likely more relevant to the type of mental contamination examined in the current studies.

Individuals' appraisals of the act, other person and personal role in the situation did consistently predict indices of mental contamination. These results suggest that cognitions are indeed involved in mental contamination responses and provide important evidence for the more cognitive component of Rachman's (1994, 2004, 2006, 2010) conceptualization of this type of contamination fear. Appraisals of personal responsibility for the occurrence of a negative event, the occurrence of a negative event as a perceived violation, immorality of the perpetrator's character and the degree of physically dirtiness of the perpetrator all appear to have potential to trigger various components of fear of mental contamination. These findings are consistent with a number of cognitive models of OCD (Clark, 2004; Rachman, 2003; Wilhelm & Steketee, 2006) which outline the relation between maladaptive cognitions, emotional responses and behaviour. A basic premise of CBT is that our thoughts, emotions and behaviour all influence each other. Future research should attempt to examine if perhaps the initial trigger involves maladaptive cognitions, which are later influenced by negative mood and unproductive behaviour such as repeated washing.

*Limitations*

All of the three current studies faced similar limitations which should be noted. First, it is possible that participants in these studies were affected by demand characteristics. However, a blind design was used and participants in control conditions did report significantly lower scores on all indices of mental contamination. Second, findings from these studies may be limited in terms of generalizability to other populations given the samples included young, female, undergraduate students. Future

studies should examine symptoms of mental contamination in a sample of individuals suffering from clinical levels of contamination fears, as well as older and male populations. Third, the paradigm employed in these studies heavily relied on participants' ability to imagine events described and experience them at that moment in the laboratory. Future studies should also examine this ability in participants and how it affects mental contamination responses. Fourth, perceptions of physical dirtiness of the man prior to the kiss experienced were obtained following the imagined scenario. Fifth, only one pathway to mental contamination was investigated. Although there are likely to be many other pathways, themes of betrayal are likely prevalent (see Rachman, 2010). Sixth, the various scenarios described in the current studies all involved imagined physical contact. Although this was not actual physical contact, future studies would benefit from developing new paradigms which did not involve any type of physical contact. Finally, the time sequence of negative appraisals and the experience of mental contamination was not measured or controlled for in these studies. It remains unclear if appraisals of the corresponding imagined scenario led to feelings of mental contamination, or alternatively, if feelings of mental contamination led to the negative appraisals. Thus, future studies examining the time sequence of cognitive, physiological and emotional responses is warranted.

*Clinical implications*

The paradigms used in the three current studies involved evoking mental contamination - not treating related symptoms. However, findings from these studies do have a number of important clinical implications for those administering CBT for mental contamination concerns. It would be important for clinicians and patients to understand that thoughts, images and memories of physical dirt may be sufficient to evoke fears of

contamination in the absence of actual physical contact with a contaminant, as suggested by the results of Study 2. It is also highly plausible that targeting appraisals of responsibility, violation and morality, as well as perceptions of physical dirtiness would have a beneficial impact in terms of minimizing mental contamination concerns. This is inferred from the predictive ability of each of the appraisal variables used in the current studies for certain indices of this type of contamination fear, as found in Studies 1 and 3. There are a number of established cognitive treatments for OCD (see Clark, 2004; Rachman, 2003; Radomsky et al., 2010; Whittal, Woody, McLean, et al., 2010; and Wilhelm & Steketee, 2006) which could potentially be adapted to address specific appraisals in specific mentally contaminating contexts. As previously noted, the time sequence of appraisals and mental contamination responses were not assessed in these studies and remains unclear. However, it is not unreasonable to consider the predictive ability of appraisals given that most cognitive models of anxiety disorders, including OCD, involve cognitions earlier on in the corresponding maladaptive chain of events.

*Future directions*

Future mental contamination research would have important clinical implications in terms of improving both assessment and treatment of fears of contamination by identifying factors which might put individuals at greater (or reduced) risk to experience mental contamination. As previously noted, future studies would benefit from measures assessing contamination sensitivity as well as moral disgust to further assess for similar and dissimilar individual differences between contact and mental contamination fears. It would be important to further explore whether appraisals impact mental contamination responses or mental contamination responses trigger appraisals, as well as additional appraisal variables which may be involved generally or specifically in the various

subtypes of mental contamination. Future mental contamination research would benefit from examining other negative events which do not involve physical contact (imagined or not), such as betrayal, and other types of "dirty" stimuli. The descriptions of dirt in this study primarily involved practices of being unhygienic. It would be interesting to examine conceptual situations for which a more immediate threat of contracting an illness is present. In addition, to further identify individual differences in the experience of mental contamination, future studies should examine situations which involve physical dirt in the absence of imagined physical contact. Finally, factors which lead some individuals to be resilient to mental contamination should also be examined to provide important information regarding the treatment of this relatively understudied psychological problem.

*Conclusions*

Taken together, the results of the current studies are consistent with and provide empirical support for Rachman's (1994, 2004, 2006) theory of mental contamination. The "dirty kiss" paradigm employed in the current studies did not allow for assessment of treatment of mental contamination concerns, but rather evoked these symptoms in an ethical manner. However, results from this body of work do provide important information with the potential to clinically inform us in terms of highlighting situational and vulnerability factors which may prove problematic in the development of mental contamination fears. Assessment techniques would be greatly improved by examining for and identifying mental contamination in the first place. Existing cognitively-based treatment strategies would also benefit from refinement to better address the nuances of mental contamination. Even better, new cognitive techniques could be developed as a supplement or more likely replacement of behavioural techniques such as ERP - especially given the more cognitive nature of mental contamination fears. In addition,

identification of those who may be at risk to experience mental contamination could be enhanced and developing and including measures of moral disgust could prove helpful in this regard. Although recent strides have been made to better understand contamination fears, there is much work remaining to be done. Ultimately, future research in the area of mental contamination will continue to work towards facilitating the identification of initiating and maintaining factors in clinical populations, as well as treatment of this cognitive phenomenon.

# ENDNOTE

1. *Post hoc* regression analyses. When ASI and FNEB scores were removed from Model 2 of this analysis, BFI-N ($\beta$ = 1.43, $t$ = 2.48, $p$ = .02) scores remained a significant predictor of urges to wash and DS ($\beta$ = .94, $t$ = 1.23, $p$ = .23) scores continued not to contribute unique variance. However, when BFI-N scores were also removed from this analysis such that only DS scores were included in Model 2, a trend emerged for DS ($\beta$ = 1.35, $t$ = 1.74, $p$ = .086) scores to contribute unique variance in urges to wash. Furthermore, when ASI scores were reinstated into Model 2 such that ASI and DS scores were both included in the same model in the absence of FNEB and BFI-N scores, a trend was still evident for DS ($\beta$ = 1.32, $t$ = 1.69, $p$ = .095) scores to contribute unique variance and ASI ($\beta$ = .41, $t$ = .95, $p$ = .35) scores continued not to contribute unique variance.

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# Appendix A: Certificate of Ethical Acceptability

Concordia
UNIVERSITY

CERTIFICATION OF ETHICAL ACCEPTABILITY
FOR RESEARCH INVOLVING HUMAN SUBJECTS

| | |
|---|---|
| Name of Applicant: | Adam Radomsky |
| Department: | Psychology |
| Agency: | CIHR |
| Title of Project: | Fear of contamination: Psychometric and experimental investigations |
| Certification Number: | UH2007-001 |

The members of the University Human Research Ethics Committee have examined the application for a grant to support the above-named project, and consider the experimental procedures, as outlined by the applicant, to be acceptable on ethical grounds for research involving human subjects.

Dr. James Pfaus
Chair, University Human Research Ethics Committee
Date: February 12, 2007

26/03/2003

# Appendix B: Consent Forms

Consent Form – Study 1

**CONSENT FORM TO PARTICIPATE IN RESEARCH**

This is to state that I agree to participate in a program of research being conducted by Dr. Adam S. Radomsky in the Psychology Department of Concordia University.

**A. PURPOSE**

I have been informed that the purpose of this study is to investigate undergraduates' behaviour at parties.

**B. PROCEDURES**

If you agree to participate in this study, you will first be asked to complete a brief questionnaire package. You will then be asked to listen to an audio recording of undergraduate students at a party. Next, you will be asked your thoughts about their behaviour. Finally, you will be fully debriefed about the purpose of the study as well as our hypotheses. The study should take about 60-90 minutes. For your participation, you will receive the opportunity to submit your name in a draw for cash prizes, OR course credit if you are part of the undergraduate participant pool at Concordia University. Please note that participation in this experiment may lead to some feelings of anxiety and discomfort; however, you are reminded that you are free to withdraw from the study at any point.

**C. CONDITIONS OF PARTICIPATION**

I understand that I am free to withdraw my consent and discontinue my participation in this study at any time, without any negative consequences whatsoever. I understand that all information obtained will be kept strictly confidential and will be stored under lock and key for a period of seven years after which they will be shredded. Access to this information will be made available only to restricted members of Dr. Radomsky's and Dr. Rachman's research teams. I understand that to ensure my confidentiality all data will be coded by number only and will be kept separate from my name. I understand that data from this study may be published, but that no identifying information will be released.

If you have any questions concerning the study, please feel free to ask the experimenter now. If other questions or concerns come up following the study, please feel free to contact our lab at (514) 848-2424, ext. 2199.

Adam S. Radomsky, Ph.D., Assistant Professor
Stefanie Lavoie, B.A., Senior Research Assistant
Corinna Elliott, B.A., Graduate Student

**I HAVE CAREFULLY STUDIED THE ABOVE AND UNDERSTAND THIS AGREEMENT. I FREELY CONSENT AND VOLUNTARILY AGREE TO PARTICIPATE IN THIS STUDY.**

NAME (please print) _____ DATE _____

SIGNATURE _____ WITNESS SIGNATURE _____

*If at any time you have questions about your rights as a research participant, please contact Adela Reid, Research Ethics and Compliance Office, Concordia University, at 514-848-2424, ext. 7481 or by e-mail at* Adela.Reid@concordia.ca

Consent Form – Studies 2 and 3

**CONSENT FORM TO PARTICIPATE IN RESEARCH**

This is to state that I agree to participate in a program of research being conducted by Dr. Adam S. Radomsky in the Psychology Department of Concordia University.

**A. PURPOSE**

I have been informed that the purpose of this study is to investigate undergraduates' behaviour at parties.

**B. PROCEDURES**

If you agree to participate in this study, you will first be asked to complete a brief questionnaire package. You will then be asked to listen to an audio recording of undergraduate students at a party. Next, you will be asked your thoughts about their behaviour. Your responses to one question following the audio recording will be audio recorded to ensure accurate data collection. No other portion of this study will be recorded. Finally, you will be fully debriefed about the purpose of the study as well as our hypotheses. The study should take about 60-90 minutes. For your participation, you will receive the opportunity to submit your name in a draw for cash prizes, OR course credit if you are part of the undergraduate participant pool at Concordia University. Please note that participation in this experiment may lead to some feelings of anxiety and discomfort; however, you are reminded that you are free to withdraw from the study at any point.

**C. CONDITIONS OF PARTICIPATION**

I understand that I am free to withdraw my consent and discontinue my participation in this study at any time, without any negative consequences whatsoever. I understand that all information obtained will be kept strictly confidential and will be stored under lock and key for a period of seven years after which they will be shredded. Access to this information will be made available only to restricted members of Dr. Radomsky's research team. I understand that to ensure my confidentiality all data will be coded by number only and will be kept separate from my name. I understand that data from this study may be published, but that no identifying information will be released.

If you have any questions concerning the study, please feel free to ask the experimenter now. If other questions or concerns come up following the study, please feel free to contact our lab at (514) 848-2424, ext. 2199.

Adam S. Radomsky, Ph.D., Assistant Professor
Stefanie Lavoie, B.A., Senior Research Assistant
Corinna Elliott, M.A., Graduate Student

**I HAVE CAREFULLY STUDIED THE ABOVE AND UNDERSTAND THIS AGREEMENT. I FREELY CONSENT AND VOLUNTARILY AGREE TO PARTICIPATE IN THIS STUDY.**

NAME (please print) _____ DATE _____

SIGNATURE _____ WITNESS SIGNATURE _____

*If at any time you have questions about your rights as a research participant, please contact Adela Reid, Research Ethics and Compliance Office, Concordia University, at 514-848-2424, ext. 7481 or by e-mail at* Adela.Reid@concordia.ca

Final Consent Form – Studies 1 to 3

**CONSENT FORM TO PARTICIPATE IN RESEARCH**

As you have just been informed, the use of deceptive information was essential in this study to assess whether participants engaged in any neutralizing behaviours such as rinsing their mouth or washing their hands to relieve physical sensations evoked by the audio recording.

By signing below you indicate that you have been informed of this minor deception and allow us to include your results in our analyses.

Signature _____

Witness _____

Date _____

# Appendix C: Demographic and Baseline Rating Questionnaire

Demographic and Baseline Rating Questionnaire

**Please provide the following information about yourself in the space provided.**

1. Age _____ 2. Gender (circle one): Male / Female 3. Years in university_____

4. Language spoken at home _____ 5. Length of time speaking English_____

6. Ethnicity _____ 7. Country of birth_____

8. Length of time in Canada _____

9. Are you currently involved in a romantic relationship? Yes No

If so, how long have you been involved in this relationship? _____

10. Please indicate the most accurate description of your sexual orientation based on the following scale (circle one):

0 - Exclusively heterosexual

1 - Predominantly heterosexual, only incidentally homosexual

2 - Predominantly heterosexual, but more than incidentally homosexual

3 - Equally heterosexual and homosexual

4 - Predominantly homosexual, but more than incidentally heterosexual

5 - Predominantly homosexual, only incidentally heterosexual

6 - Exclusively homosexual

11. On a scale from 0 to 100, where 0 represents "not at all" and 100 represents "completely", please rate the extent to which you feel **at this moment**:

| | | |
|---|---|---|
| Happy _____ | Anxious _____ | Hungry _____ |
| Bored _____ | Joyous _____ | Dirty _____ |
| Afraid _____ | Thirsty _____ | Angry _____ |

Sad _____ Clean _____ Disgusted _____

Sleepy _____ Surprised _____ Guilty _____

Appendix D: Mental Contamination Report – Study 1

Mental Contamination Report – Study 1

Now that you have imagined yourself in that scenario, please answer the following questions about how you feel **at this moment:**

1. On a scale from 0 to 100, where 0 represents "not at all" and 100 represents "completely", please rate the extent to which you feel:

Distressed_____ Anxious_____ Angry_____

Disgusted--by the man's physical attributes_____

Disgusted--by the man's behaviour_____

Ashamed_____ Guilty_____ Humiliated_____

Afraid_____ Sad_____ Cheap_____

Sleazy _____

2. Do you feel dirty or unclean? Please rate the extent to which you feel dirty/unclean on a scale from 0 to 100.

Rating: _____

3. If you feel dirty, can you locate this feeling of dirtiness? -- Please **check (√)** where you feel dirty:

[ ] Mouth [ ] Arms

[ ] Tongue [ ] Diffuse (all over)

[ ] Face [ ] Difficult to locate

[ ] Hands [ ] Internal

[ ] Stomach [ ] Other _____

4. If you feel dirty, do you have an urge to do anything about this feeling of dirtiness? Please rate each urge on a scale from 0 to 100.

Rinse mouth/spit/drink something_____ Wash my face_____
Brush teeth/use mouthwash_____ Wash my hands_____
Try to think about something else_____ Take a shower_____
Other (please specify) _____

5. For the urges you endorsed in question 4, think about why you want to do this. **Check (√)** off the statement(s) that most apply to you:

[ ] I am worried that, when I leave this room, other people will be able to tell that I feel dirty.

[ ] It would make me feel less distressed or anxious.

[ ] I am worried about spreading this dirtiness to other things or people.

[ ] It would prevent me from getting sick.

[ ] It would make me stop thinking about it.

[ ] I cannot think of a reason.

[ ] I have another reason (please specify)

_____

6. How easy was it to imagine the scenario in your mind?

(0-100)_____

7. How clear/vivid was the imagined scenario?

(0-100)_____

8. How realistic was the imagined scenario?

(0-100)_____

9. Have you ever been to a party like the one described in the tape? (Circle one)

Never Rarely Sometimes Often

10. Have you ever experienced a non-consensual (i.e., forced) sexual encounter, such as a kiss?

Yes No

If so, did it occur at a party? Yes No

11. Has a friend of yours ever experienced a non-consensual (i.e., forced) sexual encounter?

Yes No

If so, did it occur at a party? Yes No

12. Have you ever witnessed a non-consensual (i.e., forced) sexual encounter, such as a kiss?

Yes No
If so, did it occur at a party? Yes No

On a scale from 0 to 100, where 0 represents "not at all" and 100 represents "completely", please answer the following questions:

13. Based on your impression of the man in the scenario **before** you experience the kiss, how immoral would you say the man is?

(0-100)_____

14. Based on your impression of the man in the scenario **after** you experience the kiss, how immoral would you say the man is?

(0-100)_____

15. At the moment that you experience the kiss in the recording, how much would you say that you wanted the kiss to happen?

(0-100)_____

16. How inappropriate (socially/morally wrong) would you rate the man's behaviour?

(0-100)_____

17. Do you think this man is trustworthy?

(0-100)_____

18. Do you think this man would help someone if they were in need?

(0-100)_____

19. Do you think this man would take advantage of a vulnerable or defenseless person?

(0-100)_____

20. Do you think this man would risk harming someone else in order to get something he wanted?

(0-100)_____

21. Do you think this man would decide not to do something immoral if he thought it might harm someone else?

(0-100)_____

On a scale from 0 to 100, where 0 represents “not at all” and 100 represents “completely”, please answer the following questions:

22. Do you think this man would choose to do the “right” thing even though he didn’t want to do it?

(0-100)_____

23. Do you think this man would decide not to do something he thought was wrong even though he really wanted to do it?

(0-100)_____

24. Do you think you did anything wrong in this situation? (0-100)_____

Why or why not?

_____

_____

25. Do you think the man in the scenario did anything wrong in this situation? (0-100)_____

Why or why not?

_____

_____

26. How responsible do you feel for the events that occurred in this situation?

(0-100)_____

27. Do you think you could have prevented this situation?

(0-100)_____

28. Would you expect this type of behaviour from this man?

(0-100)_____

29. Do you feel violated by this man’s behaviour?

(0-100)_____

Appendix E: Break Behaviour Questionnaire, Study 1

Break Behaviour Questionnaire

1. a) Before listening to the tape, did you drink anything? Y N

1. b) If you drank, was it **(Check (√)** off the statement that most applies to you):

[ ] because you were thirsty
[ ] to get rid of physical sensations in your mouth
[ ] I don't know

2. a) After listening to the tape (e.g., during the break), did you drink anything? Y N

2. b) If you drank, was it **(Check (√)** off the statement that most applies to you):

[ ] because you were thirsty
[ ] to get rid of physical sensations in your mouth
[ ] I don't know

2. c) If it was to get rid of physical sensations in your mouth, did it help? Y N

3. a) After listening to the tape (e.g., during the break), did you wash:

your hands? Y N
your face? Y N

3. b) If yes, was it because **(Check (√)** off the statement that most applies to you):

[ ] you had just used the washroom
[ ] to get rid of feelings of dirtiness
[ ] I don't know

3. c) If it was to get rid of feelings of dirtiness, did it help? Y N

# Appendix F: Mental Contamination Audio Recording Scripts – Components of (Im)morality

Mental Contamination Audio Recording Scripts – Components of (Im)morality

*Non-consensual Moral Condition*

Narrator: Please take a moment to make yourself comfortable in your chair. Close your eyes, relax, and take a few slow deep breaths. Slowly breathe in and out. As you exhale, allow yourself to become more and more relaxed. As I describe the scenario to you, try to imagine it as clearly and in as much detail as you are able to. I will describe slowly so that you have time to fully picture it in your mind. Try to imagine that you are the woman in the scenario and that the events I am describing are happening right now. Try not to picture yourself in the scene. Instead, try to imagine you are seeing it through your own eyes. You are at a party.

[Background music and conversation murmur sounds begin].

It is a big party and there are at least 100 people there, including some of your friends. You've come with a girlfriend who knows the host.

[Background sounds fade out].

Friend: This is going to be fun! She always throws the best parties!

[Background sounds return].

Narrator: In fact, it is a house party and you are having fun. The music is pretty loud and some people are dancing in the living room. The lights are low everywhere except in the kitchen. Around 11 o'clock, you end up alone in the hallway with a guy you met earlier in the evening.

Man: Hey. I remember you.

Narrator: You are leaning against the wall and he is standing in front of you as you both make conversation. You have never seen him before tonight, and you think he is really cute. You're having a bit of trouble concentrating on the conversation because

you're thinking that, even though he's cute, you're not that interested in him.

Then you realize that although you have never met this guy before, you have heard about him from some of your friends. In fact, on your way to the party tonight, the friend you came with said to you

[Background sounds fade out]

Friend: There may be a guy here tonight that I hope you meet. Apparently, he's really nice, a really great guy. He never tries to pick up girls with cheap pick-up lines or made-up stories, and he never spreads rumours about his experiences with girls. He's the type of guy who would go out of his way to help other people no matter what their race is or how old they are, like helping an elderly person cross the street and then carry their groceries home for them. In fact, a friend told me that he volunteers at a homeless shelter and I think he sometimes stays home on the weekend to look after his sick mom. One time my cousin's wallet fell out of his pocket on the bus. He was sitting next to this guy who returned it to my cousin with the money still inside. He just sounds like a wonderful person.

[Background sounds return]

Narrator: As he's talking to you, you notice that he appears normal and clean-cut, and you think about how he seems to have a strong moral conscience as he never lies, cheats or steals and genuinely cares about people.

Gradually he moves closer to you. You get the feeling he would like to kiss you. You are not interested in him sexually, so you begin to walk away. But he grabs you and begins to kiss you on the mouth. You try to push him away, but are unable to and he presses his body against yours.

As he restrains you with his hands and arms, your back presses against the wall. You feel his tongue press against your tongue and move to the back corners of your mouth. You do not want this kiss to happen. He continues to kiss you aggressively, but you cannot push him off you. Eventually someone else comes down the hallway, and he stops forcefully kissing you and releases you from his grip.

[Background sounds fade out].

Before he walks away he turns to you and says

Male: That was nice. I'm going to find you later.

Narrator: The person coming down the hallway turns out to be your friend and she asks you

Friend: How did you end up kissing that guy?

[Pause in recording]

Narrator: Please take off the headphones and complete the questionnaire inside of the envelope.

*Non-consensual Immoral Condition*

Narrator: Please take a moment to make yourself comfortable in your chair. Close your eyes, relax, and take a few slow deep breaths. Slowly breathe in and out. As you exhale, allow yourself to become more and more relaxed. As I describe the scenario to you, try to imagine it as clearly and in as much detail as you are able to. I will describe slowly so that you have time to fully picture it in your mind. Try to imagine that you are the woman in the scenario and that the events I am describing are happening right now. Try not to picture yourself in the scene. Instead, try to imagine you are seeing it through your own eyes. You are at a party.

[Background music and conversation murmur sounds begin].

It is a big party and there are at least 100 people there, including some of your friends. You've come with a girlfriend who knows the host.

[Background sounds fade out].

Friend: This is going to be fun! She always throws the best parties!

[Background sounds return].

Narrator: In fact, it is a house party and you are having fun. The music is pretty loud and some people are dancing in the living room. The lights are low everywhere except in the kitchen. Around 11 o'clock, you end up alone in the hallway with a guy you met earlier in the evening.

Man: Hey. I remember you.

Narrator: You are leaning against the wall and he is standing in front of you as you both make conversation. You have never seen him before tonight, and you think he is really cute. You're having a bit of trouble concentrating on the conversation because you're thinking that, even though he's cute, you're not that interested in him.

Then you realize that although you have never met this guy before, you have heard about him from some of your friends. In fact, on your way to the party tonight, the friend you came with said to you

[Background sounds fade out]

Friend: There may be a guy here tonight that I hope you don't meet. Apparently, he's really weird and a major jerk. He tries to pick up every girl he sees with cheap pick-up lines or made-up stories, and he spreads rumours that he has slept with girls he has never even met. He's the type of guy who would go out of his way to hurt other people, especially people of a different race. I heard a few times that he's tried to take advantage of girls while they were drunk and I think he has recently been spending a lot of time around underage girls. One time my cousin's wallet fell out of his pocket on the bus. He was sitting next to this guy who returned it to my cousin but stole the money out first. He just sounds like a horrible person.

[Background sounds return]

Narrator: As he's talking to you, you notice that he appears normal and clean-cut, but you think about how he doesn't seem to have any moral conscience; he lies, cheats and steals without any remorse and he doesn't care about other people.

Gradually he moves closer to you. You get the feeling he would like to kiss you. You are not interested in him sexually, so you begin to walk away. But he grabs you and begins to kiss you on the mouth. You try to push him away, but are unable to and he presses his body against yours.

As he restrains you with his hands and arms, your back presses against the wall. You feel his tongue press against your tongue and move to the back corners of your mouth. You do not want this kiss to happen. He continues to kiss you aggressively, but you cannot push

him off you. Eventually someone else comes down the hallway, and he stops forcefully kissing you and releases you from his grip.

[Background sounds fade out].

Before he walks away he turns to you and says

Male: That was nice. I'm going to find you later.

Narrator: The person coming down the hallway turns out to be your friend and she asks you

Friend: How did you end up kissing that guy?

[Pause in recording]

Narrator: Please take off the headphones and complete the questionnaire inside of the envelope.

Appendix G: Mental Contamination Report – Studies 2 and 3

Mental Contamination Report – Studies 2 and 3

Now that you have imagined yourself in that scenario, please answer the following questions about how you feel **at this moment:**

1. On a scale from 0 to 100, where 0 represents "not at all" and 100 represents "completely", please rate the extent to which you feel:

Distressed_____ Anxious_____ Angry_____

Disgusted--by the man's physical attributes_____

Disgusted--by the man's behaviour, the manner in which he came to kiss you_____

Ashamed_____ Guilty_____ Humiliated_____

Afraid_____ Sad_____ Cheap_____

Sleazy _____

2. Do you feel dirty or unclean? Please rate the extent to which you feel dirty/unclean on a scale from 0 to 100.

Rating: _____

3. If you feel dirty, can you locate this feeling of dirtiness? -- Please **check (√)** where you feel dirty:

[ ] Mouth [ ] Arms

[ ] Tongue [ ] Diffuse (all over)

[ ] Face [ ] Difficult to locate

[ ] Hands [ ] Internal

[ ] Stomach [ ] Other _____

4. If you feel dirty, do you have an urge to do anything about this feeling of dirtiness? Please rate each urge on a scale from 0 to 100.

Rinse mouth/spit/drink something_____ Wash my face_____
Brush teeth/use mouthwash_____ Wash my hands_____
Try to think about something else_____ Take a shower_____
Other (please specify) _____

5. For the urges you endorsed in question 4, think about why you want to do this. **Check (√)** off the statement(s) that most apply to you:

   [ ] I am worried that, when I leave this room, other people will be able to tell that I feel dirty.

   [ ] It would make me feel less distressed or anxious.

   [ ] I am worried about spreading this dirtiness to other things or people.

   [ ] It would prevent me from getting sick.

   [ ] It would make me stop thinking about it.

   [ ] I cannot think of a reason.

   [ ] I have another reason (please specify)
   _____

6. How <u>easy</u> was it to imagine the scenario in your mind?

   (0-100)_____

7. How <u>clear/vivid</u> was the imagined scenario?

   (0-100)_____

8. How <u>realistic</u> was the imagined scenario?

   (0-100)_____

9. Have you ever been to a party like the one described in the tape? (Circle one)

   Never Rarely Sometimes Often

10. Have you ever experienced a non-consensual (i.e., forced) sexual encounter, such as a kiss?
   Yes No
If so, did it occur at a party? Yes No

11. Has a friend of yours ever experienced a non-consensual (i.e., forced) sexual encounter?
   Yes No
If so, did it occur at a party? Yes No

12. Have you ever witnessed a non-consensual (i.e., forced) sexual encounter, such as a kiss?

Yes No

If so, did it occur at a party? Yes No

On a scale from 0 to 100, where 0 represents "not at all" and 100 represents "completely", please answer the following questions:

13. Based on your impression of the man in the scenario **before** you experience the kiss, how physically dirty would you say the man is?

(0-100)_____

14. Based on your impression of the man in the scenario **after** you experience the kiss, how physically dirty would you say the man is?

(0-100)_____

15. At the moment that you experience the kiss in the recording, how much would you say that you wanted the kiss to happen?

(0-100)_____

16. Do you think you did anything wrong in this situation? (0-100)_____

Why or why not?

_____

_____

17. Do you think the man in the scenario did anything wrong in this situation? (0-100)___

Why or why not?

_____

_____

18. How responsible do you feel for the events that occurred in this situation?

(0-100)_____

19. Do you think you could have prevented this situation?

(0-100)_____

20. Would you expect this type of behaviour from this man?

(0-100)_____

21. Do you feel violated by this man's behaviour?

(0-100)_____

Appendix H: Break Behaviour Questionnaire – Studies 2 and 3

Break Behaviour Questionnaire

1. a) Before listening to the audio recording, did you drink anything (i.e., from the bottle of water and a plastic cup in this room, or anything else to drink that you brought with you)?

Yes No

b) If you drank, please **Check (√)** off the statement that most applies to you:

[ ] I was thirsty
[ ] I don't know why I drank
[ ] Other reason:_____

2. a) After listening to the audio recording (e.g., during the break), did you drink anything (i.e., from a source outside of this room such as a water fountain, or from the bottle of water and a plastic cup in this room, or anything else to drink that you brought with you)?

Yes No

b) If you drank, please **Check (√)** off the statement that most applies to you:

[ ] I was thirsty
[ ] I wanted to get rid of physical sensations in my mouth brought on by the audio recording
[ ] I don't know why I drank
[ ] Other reason:_____

c) If it was to get rid of physical sensations in your mouth brought on by the audio recording,
did it help?

Yes No

3. a) After listening to the tape (e.g., during the break), did you wash your hands or face with soap and water:

your hands? Yes No
your face? Yes No

b) If yes, please **Check (√)** off the statement that most applies to you:

[ ] I had just used the washroom
[ ] My hands felt physically dirty from touching something.
Explain:_____
[ ] I wanted to get rid of feelings of dirtiness brought on by the audio recording
[ ] I don't know why I washed my hands or face
[ ] Other reason:_____

c) If it was to get rid of physical sensations brought on by the audio recording, did it help?

Yes No

4. a) After listening to the audio recording (e.g., during the break), did you use hand sanitizer
lotion to clean your hands?

Yes No

b) If you used hand sanitizer lotion, please **Check (√)** off the statement that most applies to
you:
[ ] My hands felt physically dirty from touching something.
Explain:_____
[ ] I wanted to get rid of feelings of dirtiness brought on by the audio recording
[ ] I don't know why I used hand sanitizer lotion
[ ] Other reason:_____

c) If it was to get rid of physical sensations brought on by the audio recording, did it help?

Yes No

# Appendix I: Mental Contamination Audio Recording Scripts – Components of Physical Dirt

Mental Contamination Audio Recording Scripts – Components of Physical Dirt

*Consensual Physically Clean Condition*

Narrator: Please take a moment to make yourself comfortable in your chair. Close your eyes, relax, and take a few slow deep breaths. Slowly breathe in and out. As you exhale, allow yourself to become more and more relaxed. As I describe the scenario to you, try to imagine it as clearly and in as much detail as you are able to. I will describe slowly so that you have time to fully picture it in your mind. Try to imagine that you are the woman in the scenario and that the events I am describing are happening right now. Try not to picture yourself in the scene. Instead, try to imagine you are seeing it through your own eyes. You are at a party.

[Background music and conversation murmur sounds begin].

It is a big party and there are at least 100 people there, including some of your friends. You've come with a girlfriend who knows the host.

[Background sounds fade out].

Friend: This is going to be fun! She always throws the best parties!

[Background sounds return].

Narrator: In fact, it is a house party and you are having fun. The music is pretty loud and some people are dancing in the living room. The lights are low everywhere except in the kitchen. Around 11 o'clock, you end up alone in the hallway with a guy you met earlier in the evening.

Man: Hey. I remember you.

Narrator: You are leaning against the wall and he is standing in front of you as you both make conversation. You have never seen him before tonight, and you think he is really cute. You're having a bit of trouble concentrating on the conversation because you're

thinking of what it would be like to kiss him. Then you realize that although you have never met this guy before, you have heard about him from some of your friends. In fact, on your way to the party tonight, the friend you came with said to you [Background sounds fade out]

Friend: There may be a guy here tonight that I hope you meet. He is really attractive! I heard that he is always well dressed and wears the best smelling cologne. Now this is good – apparently he is really clean for a guy and never does disgusting things like eat food off of the ground. Seriously! You know what guys can be like! My cousin told me he saw this guy wash his hands before he ate popcorn at the movie theatre and that he doesn't burp and fart like some guys! He just sounds like a wonderful person! [Background sounds return]

Narrator: As he's talking to you, you notice that he appears well-dressed and clean-cut, and you think about how your friend was right – he really does smell good. Gradually you and he move closer to each other. You start to get the feeling he would like to kiss you too. There is a brief pause in conversation and he leans towards you and begins to kiss you on the mouth. You return his kiss and your bodies press together. As he holds you in his arms, your back presses against the wall. It feels nice to have his mouth against yours and you notice what a good kisser he is. This is exactly the kiss you wanted to share with him. You can't help noticing that his mouth tastes fresh and his tongue feels smooth. His breath smells of mints and as you kiss you feel how soft his lips are. There is a distinct smell of cologne that you really like and his face feels smooth against your skin. You continue to kiss until someone else comes down the hallway and he stops kissing you. [Background sounds fade out].

Before he walks away he turns to you and says

Male: I'm glad I met you. Make sure you find me later so I can get your phone number and see you again.

Narrator: The person coming down the hallway turns out to be your friend and she asks you

Friend: Wow! How did you end up kissing that guy?

[Pause in recording]

Narrator: Please take off the headphones and complete the questionnaire inside of the envelope.

*Consensual Physically Dirty Condition*

Narrator: Please take a moment to make yourself comfortable in your chair. Close your eyes, relax, and take a few slow deep breaths. Slowly breathe in and out. As you exhale, allow yourself to become more and more relaxed. As I describe the scenario to you, try to imagine it as clearly and in as much detail as you are able to. I will describe slowly so that you have time to fully picture it in your mind. Try to imagine that you are the woman in the scenario and that the events I am describing are happening right now. Try not to picture yourself in the scene. Instead, try to imagine you are seeing it through your own eyes. You are at a party.

[Background music and conversation murmur sounds begin].

It is a big party and there are at least 100 people there, including some of your friends. You've come with a girlfriend who knows the host.

[Background sounds fade out].

Friend: This is going to be fun! She always throws the best parties!

[Background sounds return].

Narrator: In fact, it is a house party and you are having fun. The music is pretty loud and some people are dancing in the living room. The lights are low everywhere except in the kitchen. Around 11 o'clock, you end up alone in the hallway with a guy you met earlier in the evening.

Man: Hey. I remember you.

Narrator: You are leaning against the wall and he is standing in front of you as you both make conversation. You have never seen him before tonight, and you think he is really cute. You're having a bit of trouble concentrating on the conversation because you're thinking of what it would be like to kiss him. Then you realize that although you have

never met this guy before, you have heard about him from some of your friends. In fact, on your way to the party tonight, the friend you came with said to you

[Background sounds fade out]

Friend: There may be a guy here tonight that I hope you don't meet. He's really gross! I heard that he often wears his socks and underwear more than once, and has food stains down the front of his shirt. Now this is really dirty – apparently he eats food off the ground and, you won't believe this, but even from the garbage. Seriously! My cousin told me he saw this guy take a bag of used popcorn out of the garbage bin at the movie theatre, then eat it! He just sounds like a really disgusting person!

[Background sounds return]

Narrator: As he's talking to you, you notice that despite what your friend said, he actually looks pretty normal, but you think about how he doesn't seem to notice how wrinkly his clothes are.

Gradually you and he move closer to each other. You start to get the feeling he would like to kiss you too. There is a brief pause in conversation and he leans towards you and begins to kiss you on the mouth. You return his kiss and your bodies press together. As he holds you in his arms, your back presses against the wall. It feels nice to have his mouth against yours and you notice what a good kisser he is. This is exactly the kiss you wanted to share with him. You can't help noticing that his mouth tastes of sour beer and his tongue feels coated. His breath also smells of stale cigarettes and as you kiss you feel crumbs of food in the corners of his mouth. There is a distinct smell of bad body odor and his face feels greasy against your skin. You continue to kiss until someone else comes down the hallway and he stops kissing you.

[Background sounds fade out].

Before he walks away he turns to you and says

Male: I'm glad I met you. Make sure you find me later so I can get your phone number and see you again.

Narrator: The person coming down the hallway turns out to be your friend and she asks you

Friend: Whoa! How did you end up kissing that guy?

[Pause in recording]

Narrator: Please take off the headphones and complete the questionnaire inside of the envelope.

*Non-consensual Physically Clean Condition*

Narrator: Please take a moment to make yourself comfortable in your chair. Close your eyes, relax, and take a few slow deep breaths. Slowly breathe in and out. As you exhale, allow yourself to become more and more relaxed. As I describe the scenario to you, try to imagine it as clearly and in as much detail as you are able to. I will describe slowly so that you have time to fully picture it in your mind. Try to imagine that you are the woman in the scenario and that the events I am describing are happening right now. Try not to picture yourself in the scene. Instead, try to imagine you are seeing it through your own eyes. You are at a party.

[Background music and conversation murmur sounds begin].

It is a big party and there are at least 100 people there , including some of your friends. You've come with a girlfriend who knows the host.

[Background sounds fade out].

Friend: This is going to be fun! She always throws the best parties!

[Background sounds return].

Narrator: In fact, it is a house party and you are having fun. The music is pretty loud and some people are dancing in the living room. The lights are low everywhere except in the kitchen. Around 11 o'clock, you end up alone in the hallway with a guy you met earlier in the evening.

Man: Hey. I remember you.

Narrator: You are leaning against the wall and he is standing in front of you as you both make conversation. You have never seen him before tonight, and you think he is really cute. You're having a bit of trouble concentrating on the conversation because you're thinking that, even though he's cute, you're not that interested in him. Then you realize

that although you have never met this guy before, you have heard about him from some of your friends. In fact, on your way to the party tonight, the friend you came with said to you

[Background sounds fade out]

Friend: There may be a guy here tonight that I hope you meet. He is really attractive! I heard that he is always well dressed and wears the best smelling cologne. Now this is good – apparently he is really clean for a guy and never does disgusting things like eat food off of the ground. Seriously! You know what guys can be like! My cousin told me he saw this guy wash his hands before he ate popcorn at the movie theatre and that he doesn't burp and fart like some guys! He just sounds like a wonderful person!

[Background sounds return]

Narrator: As he's talking to you, you notice that he appears well-dressed and clean-cut, and you think about how your friend was right – he really does smell good. Gradually he moves closer to you. You get the feeling he would like to kiss you. You are not interested in him sexually, so you begin to walk away. But he grabs you and begins to kiss you on the mouth. You try to push him away, but are unable to and he presses his body against yours. As he restrains you with his hands and arms, your back presses against the wall. You feel his tongue press against your tongue and move to the back corners of your mouth. You do not want this kiss to happen. You can't help noticing that his mouth tastes fresh and his tongue feels smooth. His breath smells of mints and as you kiss you feel how soft his lips are. There is a distinct smell of cologne that you really like and his face feels smooth against your skin. He continues to kiss you aggressively, but you cannot push him off you. Eventually someone else comes down the hallway, and he stops forcefully kissing you and releases you from his grip.

[Background sounds fade out].

Before he walks away he turns to you and says

Male: I'm glad I met you. Make sure you find me later so I can get your phone number and see you again.

Narrator: The person coming down the hallway turns out to be your friend and she asks you

Friend: Wow! How did you end up kissing that guy?

[Pause in recording]

Narrator: Please take off the headphones and complete the questionnaire inside of the envelope.

*Non-consensual Physically Dirty Condition*

Narrator: Please take a moment to make yourself comfortable in your chair. Close your eyes, relax, and take a few slow deep breaths. Slowly breathe in and out. As you exhale, allow yourself to become more and more relaxed. As I describe the scenario to you, try to imagine it as clearly and in as much detail as you are able to. I will describe slowly so that you have time to fully picture it in your mind. Try to imagine that you are the woman in the scenario and that the events I am describing are happening right now. Try not to picture yourself in the scene. Instead, try to imagine you are seeing it through your own eyes. You are at a party.

[Background music and conversation murmur sounds begin].

It is a big party and there are at least 100 people there, including some of your friends. You've come with a girlfriend who knows the host. [Background sounds fade out].

Friend: This is going to be fun! She always throws the best parties!

[Background sounds return].

Narrator: In fact, it is a house party and you are having fun. The music is pretty loud and some people are dancing in the living room. The lights are low everywhere except in the kitchen. Around 11 o'clock, you end up alone in the hallway with a guy you met earlier in the evening.

Man: Hey. I remember you.

Narrator: You are leaning against the wall and he is standing in front of you as you both make conversation. You have never seen him before tonight, and you think he is really cute. You're having a bit of trouble concentrating on the conversation because you're thinking that, even though he's cute, you're not that interested in him. Then you realize that although you have never met this guy before, you have heard about him from some of

your friends. In fact, on your way to the party tonight, the friend you came with said to you

[Background sounds fade out]

Friend: There may be a guy here tonight that I hope you don't meet. He's really gross! I heard that he often wears his socks and underwear more than once, and has food stains down the front of his shirt. Now this is really dirty – apparently he eats food off the ground and, you won't believe this, but even from the garbage. Seriously! My cousin told me he saw this guy take a bag of used popcorn out of the garbage bin at the movie theatre, then eat it! He just sounds like a really disgusting person!

[Background sounds return]

Narrator: As he's talking to you, you notice that despite what your friend said, he actually looks pretty normal, but you think about how he doesn't seem to notice how wrinkly his clothes are.

Gradually he moves closer to you. You get the feeling he would like to kiss you. You are not interested in him sexually, so you begin to walk away. But he grabs you and begins to kiss you on the mouth. You try to push him away, but are unable to and he presses his body against yours. As he restrains you with his hands and arms, your back presses against the wall. You feel his tongue press against your tongue and move to the back corners of your mouth. You do not want this kiss to happen. You can't help noticing that his mouth tastes of sour beer and his tongue feels coated. His breath also smells of stale cigarettes and as you kiss you feel crumbs of food in the corners of his mouth. There is a distinct smell of bad body odor and his face feels greasy against your skin. He continues to kiss you aggressively, but you cannot push him off you. Eventually someone else

comes down the hallway, and he stops forcefully kissing you and releases you from his grip.

[Background sounds fade out].

Before he walks away he turns to you and says

Male: I'm glad I met you. Make sure you find me later so I can get your phone number and see you again.

Narrator: The person coming down the hallway turns out to be your friend and she asks you

Friend: Whoa! How did you end up kissing that guy?

[Pause in recording]

Narrator: Please take off the headphones and complete the questionnaire inside of the envelope.