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AUTOMATIC PROCESSING OF INTRUSIVE THOUGHTS

by

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Abstract

Automatic Processing of Intrusive Thoughts

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Intrusive thoughts are distinct cognitive events that are unwanted and distressing. They are commonly experienced by clinical and nonclinical populations. Through self-report methods, it seems that intrusive thoughts are automatically activated. However, there is no known method that implicitly measures this assumption. The present study adapted an implicit measure of automatic processing to evaluate intrusive thoughts. Seventy-two participants listened to a recording in which they imagined receiving a consensual or nonconsensual kiss from a man described as physically clean or dirty (resulting in four mental contamination induction conditions: consensual clean, consensual dirty, nonconsensual clean or nonconsensual dirty). Then, they completed a primed lexical decision task, which measured automatic processing via prime-target pairs that varied in relatedness and expectancy. Due to the intrusive thoughts elicited from the mental contamination, it was hypothesized that participants would respond faster to related unexpected prime-target pairs compared to the unrelated expected pairs. However, this was not observed. Explanations for the results are discussed.

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CHAPTER ONE:

Introduction

Intrusive thoughts are defined as distinct, identifiable cognitive events that are unwanted, unintended, and recurrent (Clark, 2005; Wilson & Brekke, 1994). They interrupt the flow of thought, interfere with task performance, are associated with negative affect, and are difficult to control (Clark, 2005, Wegner, 1992). In addition, they are often distressing, especially when they are not consistent with an individual's moral belief system (Clark, 2005). These thoughts are related to many anxiety disorders, such as obsessive-compulsive disorder (OCD), generalized anxiety disorder (GAD), posttraumatic stress disorder (PTSD) and depression (Clark, 2005). However, it is not abnormal to experience them, as it is estimated that between 88.2% (Salkovskis & Harrison, 1984) and 99% (Niler & Beck, 1989) of the nonclinical population experience intrusive thoughts.

Intrusive thoughts can consist of a wide variety of content. However, the most common types of intrusions are sexual (e.g., images of being romantically involved with a child or stranger), aggressive (e.g., impulses to stab a close relative), religious (e.g., thoughts about completing a blasphemous act during a religious service) and worry-related (e.g., thoughts that the house will catch fire because one left the toaster plugged in after leaving; O'Neill, Nenzel & Caldwell, 2009). Furthermore, intrusions are not limited to thoughts, as they can also consist of images, impulses and dreams (Rachman, 1994).

Because intrusive thoughts are consistently described as unwanted, unintended, and difficult to control (Clark, 2005; Wegner, 1992; Wilson & Brekke, 1994), it seems that they are automatically activated. That is, when intrusive thoughts first enter a

person's mind, they are perceived as automatically processed. Automatic processing is a cognitive event that is nonconscious, unintentional, involuntary, and effortless. It occurs quickly and without a person's conscious awareness (Neely, 1977). The assumption that intrusive thoughts are automatically processed is realistic, as there are multiple theories that suggest certain thoughts are automatically activated. For example, stereotype thoughts occur subconsciously and automatically when one is in the presence of a member of a stigmatized group (Devine, 1989).

Although it seems intuitive that intrusive thoughts are automatically processed, the majority of intrusive thought questionnaires do not inquire about this type of processing. Instead, they tend to focus on frequency, such as the Automatic Thoughts Questionnaire (Hollon & Kendall, 1980), Cognition Checklist (Beck, Brown, Steer, Eidelson, & Riskind, 1987; Steer, Beck, Clark, & Beck, 1994) and the Distressing Thought Questionnaire (Clark & de Silva, 1985).

Similarly, many of the questionnaires focus on very specific and limited characteristics of intrusive thoughts or certain types of intrusive thoughts. For example, the Thought Control Questionnaire measures various ways in which people attempt to control their intrusive thoughts (Wells, & Davies, 1994), the Interpretation of Intrusions Inventory measures variability in how people interpret their intrusive thoughts and the Impact of Event Scale measures characteristics of intrusive thoughts associated with specific traumatic events (Horowitz, Wilner, & Alvarez, 1979). Unfortunately, none of these questionnaires directly evaluate automatic processing of intrusive thoughts.

However, there are a few self-report questionnaires that indirectly evaluate constructs similar to automatic processing of intrusive thoughts by inquiring about the

uncontrollability and/or unwantedness of intrusions. Uncontrollability is tied to automatic processing because it implies that the person did not consciously think about the thought (i.e., control it); instead it popped into his or her head without any effort (i.e., automatic activation). Similarly, if a thought is unwanted, a person would not choose to think about it, implying that if a person experiences an unwanted thought, he or she does not consciously bring it to mind (i.e., automatic processing). The Cognitive Intrusions Questionnaire (Clark & Purdon, 1995; Wahl et. al, 2011) and the Obsessional Intrusions Inventory (Clark & Purdon, 1995) are two examples of questionnaires that inquire about controllability. Similarly, the Intrusive Thought Questionnaire inquires about the degree to which intrusive thoughts are controllable and unwanted (Clark and Purdon, 1995; Rachman and De Silva, 1978).

Although there are a few questionnaires that measure proxies for automatic processing of intrusive thoughts, the only questionnaire that explicitly inquires about automaticity is the Experience of Intrusions Scale (EIS). This questionnaire consists of five items that are raked on a five-point likert scale. The item that inquires about automaticity asks, "On average, to what degree did the thoughts about *insert scenario* come out of the blue?" (Salters-Pedneault, Vine, Mills, Park, & Litz, 2009). However, relying on this self-report questionnaire is problematic, as other researchers have failed to replicate the psychometric strengths of the EIS. Furthermore, relying on a self-report method is not preferred because participants may be reluctant to truthfully respond to questions about socially unacceptable intrusive thoughts (e.g., thought of smothering a newborn). Thus, because it is difficult, if not impossible, to measure the validity of an intrusive thought (Clark, 1988), it would be beneficial to evaluate the automatic

activation of intrusive thoughts via an implicit measure, which is not subject to as much bias.

Although there are various methods of measuring automatic processing, one particular task that is frequently used is a primed lexical decision task (Neely, 1977). For the original task, both automatic and controlled processing were assessed. Controlled processing occurs when one consciously inhibits a thought and activates another belief in a willful manner. It requires more time than automatic processing, as time is needed to carry out the cognitive actions. The participants who completed Neely's (1977) task were required to identify if a target was a word or a set of nonsense syllables after being presented with a prime word (BIRD, BUILDING, BODY or XXX). Before the task began however, Neely (1977) established four expectancy conditions for the targets following each prime word. That is, the participants were told to expect specific types of targets after each prime word. Specifically, they were informed that if they were presented with the prime BIRD, the target (if it was a word) would be a type of bird the majority of the time. This created a semantically related expectancy because the participants were told that after they were presented with the prime BIRD, they should expect a target that was a related to this prime (e.g., BIRD: robin). He also created semantically unrelated expectancies for targets following the primes BODY and BUILDING. This was done by informing the participants that if they were presented with the prime BUILDING, the target (if it was a word) would be a body part the majority of the time, and if they are presented with the prime BODY, the target (if it is a word) would be a word associated with a building the majority of the time. Thus, for the prime BODY, they were told that if they were presented with the prime BODY, they should expect a

target that is not related to the prime, a word associated with a building (e.g., BODY: window). Finally, if they were presented with the prime XXX, the target (if it was a word) would be a type of bird, a body part or a part of a building on equal occasions. Thus, the prime XXX created no specific expectancy and served as the control condition. What the participants were not told, however, is that the expected pairings (e.g., BIRD: robin; BUILDING: arm; BODY: door) would not always occur—unexpected pairings would also be presented (e.g., BIRD: roof, BUILDING: eagle, BODY: leg). Ultimately, this resulted in five word-pairing conditions: related and expected, unrelated and expected, related and unexpected, unrelated and unexpected and neutral. All of the participants in Neely's (1977) study also had various intervals of time between the onset of the prime and the onset of the target (stimulus onset asynchrony; SOA). The various SOAs were 250-ms, 400-ms, 700-ms and 2000-ms. When participants were presented with a prime, they were told how much time they had before the target appeared. That is, they were explicitly informed which SOA to expect for each individual trial.

The results of this study revealed that when the participants had a short SOA, they responded quicker to prime-target pairs that were semantically related, even if they were not told to expect the pair. In other words, the participants responded faster to the pair BUILDING: window, even though they expected pairs such as BUILDING: leg. On the other hand, when the participants had a long SOA, they responded quicker to prime-target pairs that they expected, even if the word pairs were not semantically related. In other words, the participants responded faster to the pair BODY: window than to the pair BODY: leg. Neely (1977) credited these results to automatic and controlled processing. The participants responded faster to the semantically related prime-target pairs when they

had a short SOA because they did not have a lot of time to think about what kind of target to expect after the prime. Therefore, they respond in ways that could be automatically processed. When the participants had more time in between the prime and the target (i.e., long SOA), they had more time to think about the type of target to expect. They could cognitively eliminate the automatically processed semantically related pair and respond to the atypical but expected pairs instead, thus engaging in controlled processing.

Various researchers have adopted Neely's (1977) paradigm when conducting subsequent studies (Blair & Banaji 1996; McDonald, Brown & Gorell, 1996; Spicer, Brown & Gorell, 1994). For example, Clow and Esses (2007) used a similar primed lexical decision task in which participants needed to identify if targets were words or a non-words. However, in an effort to use the paradigm to evaluate the controlled and automatic processing of racial stereotypes, Clow and Esses (2007) altered the prime and target words, the type of control prime and the number of SOA conditions. The target stimuli that they used were types of social categories (Black, Chinese, criminal) instead of categories of things (BIRD, BUILDING, BODY). In Clow and Esses' (2007) original study, the prime NEUTRAL served as the neutral condition instead of XXX (from Neely's original approach). Clow and Esses (2007) also manipulated the SOA conditions differently than Neely (1977); they only included two SOA conditions: the shortest one (250-ms) and the longest one (2000-ms). Finally, Clow and Esses (2007) did not explicitly inform participants which SOA condition to expect with each trial. Instead, they had the participants complete practice trials that implicitly informed them of their consistent SOA condition. Clow and Esses' (2007) methodology most closely matches the one that will be used in the current study.

To date, the automatic nature of intrusive thoughts has been evaluated through self-report methods only and not through implicit methods. Thus, the present study will do just that by inducing an intrusive experience (mental contamination thoughts, feelings, urges, and/or images) in participants before they complete a variation of Clow and Esses' (2007) lexical decision task to identify if a prime word associated with an induced intrusive experience is automatically processed. If so, it would suggest that intrusive thoughts are automatically processed. Determining if intrusive thoughts are automatically processed via the outlined method will provide strong evidence to confirm or disconfirm the assumption that intrusive thoughts are automatically activated. If it is confirmed that intrusive thoughts are automatically activated, it would lend support to extant research and theories that assume intrusive thoughts are automatically processed. Likewise, if it is disconfirmed, it may identify a flaw in the intrusive thought literature. In addition, determining how these thoughts are processed may help determine how they become pathological in some individuals but not others, providing insights that may lead to effective prevention and treatment techniques.

The present study will use primes and targets that are more or less semantically related as a result of intrusive thinking (FOOD, CITY, and KISS; KISS is the prime word that is expected to vary as a function of intrusive thinking—see below for more explanation), instead of using targets that are socially related due to automatically activated racial stereotypes (as in Clow and Esses, 2007). In order to evaluate the automatic processing of intrusive thoughts, the present study will experimentally induce feelings of mental contamination, a common theme of intrusive thinking. Mental contamination, or mental pollution, is characterized by internal feelings of dirtiness that

can be invoked without physical contact with a seemingly infectious stimulus (Elliot & Radomsky, 2009; Rachman, 1994). It results in an intense feeling that one has been infected or dirtied by a person, place or thing. Mental contamination can be induced by simply thinking about an adverse event that makes a person feel impure or immoral. A bad memory or dream, for example, is sufficient to induce mental contamination (Rachman, 1994). It is also common for individuals to feel mental contamination after a sexual assault (Fairbrother & Rachman, 2004), as some victims report fearing that they are permanently polluted and experience intense feelings of hopelessness (Rachman, 2004). In fact, feelings of mental contamination have been induced in non-clinical female students by instructing them to imagine that they received a nonconsensual kiss from a man (Elliott & Radomsky, 2009; Fairbrother, Newth, & Rachman, 2005; Herba & Rachman, 2007).

The imagined kiss methodology was adopted for inducing mental contamination in the participants of the current study. Specifically, the participants listened to an audio recording in which they were told to imagine that they receive a kiss from either a man described as physically clean or physically dirty. For half of the participants, the imagined kiss was consensual and for the other half, it was nonconsensual. These experimental manipulations resulted in four possible induction conditions: consensual dirty, consensual clean, nonconsensual dirty and nonconsensual clean. These induction scenarios have successfully induced mental contamination in female undergraduate students (Elliott & Radomsky, 2012). However, in the previous study conducted by Elliott and Radomsky (2012), participants in the nonconsensual dirty condition experienced the most mental contamination. Thus, the contamination effect of the current

study is predicted to be strongest for the nonconsensual dirty condition. Similarly, the participants in the consensual clean condition in the previous study reported significantly less mental contamination than the participant in the other three conditions (i.e., consensual dirty, nonconsensual clean and nonconsensual dirty; Elliott & Radomsky, 2012). Thus, for the current study, it is predicted that mental contamination will have the smallest effect on the participants in the consensual clean condition.

After the induction of mental contamination, the participants completed a lexical decision task with a short SOA (250-ms) similar to Clow and Esses' (2007). The short SOA was used because it was suggested by previous studies to measure automatic processing. Similarly, the longer SOAs were not needed for the current study because they are used to measure controlled processing (Clow & Esses, 2007; Neely, 1977). Consistent with the research literature on the primed lexical decision task (Blair & Banaji 1996; Clow & Esses, 2007; McDonald, Brown & Gorell, 1996; Neely, 1977; Spicer, Brown & Gorell, 1994), it was hypothesized that when participants are presented with the primes CITY or FOOD, they would respond faster to prime-target pairs that were semantically related regardless of expectancy (i.e., FOOD: apple), given the short SOA used in this study. However, when they are presented with the KISS prime, the participants are expected to respond differently depending on their induction condition. The participants who experienced mental contamination (nonconsensual kiss) are predicted to respond faster to aversive targets related to the KISS prime regardless of expectancy. Such a finding would suggest that participants who imagined they received a nonconsensual kiss (either from a dirty or clean man) formed an association between the prime KISS and negative words (e.g., *yuck*) because of the mental contamination

intrusive experience. On the other hand, participants who did not experience mental contamination (either imagined they received a consensual kiss with a physically clean or dirty man) are expected to respond faster to positive targets related to the KISS prime regardless of expectancy. Such a finding would suggest that participants formed a positive association between the prime KISS and positive words (e.g., *enjoyable*). The latter hypothesis implies that participants in the consensual conditions will also be subjected to intrusions, just of a different nature than the participants in the nonconsensual conditions—they are positive in valence instead of negative. This seems likely because positive and negative intrusions are similar in regard to their uncontrollable and unwanted nature. Even though positive intrusions are typically perceived as more acceptable, individuals often attempt to eliminate them similarly to how individuals attempt to eliminate negative intrusions (Edwards & Dickerson, 1986).

CHAPTER TWO:

Method

Participants

One hundred undergraduate female students were recruited through Towson University's research pool, which provides research participation credit for voluntary participation. These credits are often used for course credit or extra credit in the undergraduate program. Participants ranged in age from 18 to 27 years old with a primary language of English. They self identified as Caucasian (59.7%), African American (20.8%), Hispanic (4.2%), Asian American (6.9%) and other (8.3%). Strictly females were permitted to participate in the study because inducing mental contamination using the aforementioned kiss scenarios is only known to be successful with females (Elliott & Radomsky, 2012). Seven participants were excluded from analyses because they did not attend efficiently to the audio recording (indicated by correctly responding to 70% or less of the questions on the comprehension test), one was eliminated because she did not identify as heterosexual, and twenty were eliminated because of technological issues (e.g., the software failed). Identifying as heterosexual was required because the manipulation required each participant to listen to an audio recording in which they imagined kissing a man. This scenario may evoke a different response in participants who identify as homosexual or bisexual.

Measures

Comprehension test. The participants completed a comprehension test specific to their respective scenario in the audio recording. It included 10 yes/no questions intended to determine if the participants attended to the scenario effectively. If a participant

correctly responded to 70% or less of the questions on the comprehension test, her responses were excluded from analysis.

Mental Contamination Report (MCR). The Mental Contamination Report (MCR) is a 29-item likert scale questionnaire that served as a manipulation check, similar to how it was used in the Elliott and Radomsky (2012) study. Specifically, it identified the degree in which the participants experienced mental contamination due to listening to the kiss scenarios in the audio recordings. An example of a question includes, "Do you feel dirty or unclean? Please rate the extent to which you feel dirty/unclean on a scale from 0 to 100 with 0 indicating not at all and 100 indicating completely." This measure also assessed how difficult it was for the participants to imagine the kiss scenarios (e.g., "How realistic was the imagined scenario?"). Cronbach's alpha was .94, indicating that there was good internal validity with our sample. In the present study, this questionnaire was administered twice: once after the audio recording and comprehension test and again after the primed lexical decision task. This allowed us to determine if the degree of mental contamination experienced by each participant was consistent throughout the primed lexical decision task.

Contamination Subscale of the Vancouver Obsessional Compulsive Inventory (VOCI-CTN). The Contamination Subscale of the Vancouver Obsessional Compulsive Inventory (VOCI-CTN) is a 12-item subscale of the VOCI questionnaire that assesses fear of physical contamination. This measure assesses the ease in which participants experience feelings of contamination by raking each statement from 1 to 5 with 1 indicating never true and 5 indicating always true (e.g., "I find it very difficult to touch garbage or garbage bins"). The entire questionnaire and all the subscales have

excellent test-retest reliability and internal consistency (Thordarson et al., 2004). Similar to how it was used in the Elliott and Radomsky (2012) study, in the current investigation, it was used to identify significant differences between each participant's susceptibility to experience contamination fear. Cronbach's alpha was .86, indicating that there was good internal validity with our sample. This was measured to use as a covariate if the groups (consensual clean, consensual dirty, nonconsensual clean and nonconsensual dirty) differed in propensity to experience contamination fear.

Demographics Form. The demographic questionnaire inquires about age, gender, race and sexual orientation.

Procedure

Each of the 72 participants included in analyses completed 240 trials, resulting in a total of 17,280 trials across all the participants. Because half (120 for each participant) of the trials used nonwords as targets, they were eliminated from analysis, resulting in of 8,640 trials. The analyses were limited to the trials that presented the KISS prime, because these were the trials that measured the intrusive thoughts caused by the mental contamination manipulation (i.e., scenarios in the audio recordings). Thus, of the 8,640 trials, two-thirds (the trials using the primes city or food) of them were eliminated, resulting in 2,880 potential trials included in the analysis. However, 669 of these trials were eliminated from analysis because the target was incorrectly identified as a word, resulting in 2,211 trials. Finally, 60 trials were eliminated because the reaction times (RTs) were three standard deviations (SD) away from the participant's mean RT, resulting in a total of 2,151 trials included in the analyses.

First, participants completed a demographic form and the Contamination Subscale

of the Vancouver Obsessional Compulsive Inventory (VOCI-CTN). After completing the VOCI-CTN, participants were randomly assigned to one of four conditions in which they listened to an audio recording of the respective mental contamination induction scenario through a set of computer speakers: nonconsensual dirty, nonconsensual clean, consensual dirty or consensual clean. The participants in the consensual clean condition listened to a scenario in which they were told to imagine receiving a consensual kiss from a man described as physically clean.

The participants in the consensual dirty condition listened to a scenario in which they were told to imagine receiving a consensual kiss from a man described as physically dirty. The participants in the nonconsensual clean condition listened to a scenario in which they were instructed to imagine receiving a nonconsensual kiss from a man described as physically clean and the participants in the nonconsensual dirty condition listened to a scenario in which they were instructed to imagine receiving a nonconsensual kiss from a man described as physically dirty. After listening to the induction recordings, participants completed the brief comprehension test and the MCR. See Appendix B for a list of the four different scripts of the audio recordings.

Subsequently, all the participants completed a computerized primed lexical decision task in which they identified if a target stimulus was a word or a non-word by pressing the designated key on the keyboard (they were instructed to press the number 1 if it was a word and number 3 if it was a non-word). There were an equal number of targets that were words and non-words presented during the task. The target word lists that correspond to the prime CITY consisted of both U.S. and international cities. The target word lists that correspond to the prime FOOD consisted of an equal number of

fruits and vegetables. The targets for these two primes were selected by consulting an article by Battig and Montague (1969) that outlines normative data from 56 different categories to identify what words people associated with certain categories. For this study, the authors asked college students to identify all the words that came to mind when presented with a certain category. Of these categories were cities and types of fruits and vegetables. The words that were most reported for the cities, fruits and vegetables categories were included as targets for the present study.

The target word lists that correspond to the prime KISS consisted of words that came directly from the scenarios in the audio recordings and adjectives associated with a consensual or nonconsensual kiss. For counterbalancing purposes, the words had three different valence types: positive (e.g., *passionate*), negative (e.g., *aggressive*) and neutral (e.g., *lips*). There were an equal number of targets with each of these valence types. These target words were determined by completing a pre-study in which volunteer undergraduate female students (total $n = 137$) at Towson University identified words that were related to the word *kiss* after listening to one of the four scenarios in the audio recordings. Specifically, participants were divided into four groups based on the four mental contamination induction scenarios: consensual clean ($n = 21$), consensual dirty ($n = 72$), nonconsensual clean ($n = 22$) and nonconsensual dirty ($n = 22$). After they listened to the respective audio recording, they were instructed to anonymously write down 10 words that come to mind when seeing the word *kiss*. The words that occurred most often were included as targets for the prime KISS in the present study.

The non-words used in the present study were generated by Wuggy, an electronic non-word generator that matched target words and non-words on number of syllables

(Keuleers & Brysbaert, 2010). They were specifically generated to appear realistic and pronounceable. This was intended to make the task of determining if the target is a word or a non-word more difficult and therefore may encourage the participants to use the expectancies provided to them. See Appendix A for a list of the words and nonword used as targets.

When completing the primed lexical decision task, the participants were first presented with a fixation point (+) for 300 ms. Then, they were presented with one of three prime words in all capital letters, CITY, FOOD or KISS, for 150-ms followed by a blank screen for 250-ms. Finally, a target stimulus (either a word or a non-word) appeared. The participants then indicated if the target was a word or a non-word by pressing the designated key. Once a response was made, a fixation point reappeared for 300-ms and the process repeated.

The participants were informed that if they were presented with a certain prime to expect a certain type of target word. For counterbalancing purposes, there were three different sets of expectancies that the participant could have received. Thus, one third of the participants received one of the three sets of expectancies, chosen at random:

1. If you see the prime CITY, expect targets that are a city
If you see the prime FOOD, expect targets that are associated with the kiss from the audio recording
If you see the prime KISS, expect targets that are either a fruit or a vegetable

2. If you see the prime FOOD, expect targets that are either a fruit or a vegetable
If you see the prime CITY, expect targets that are associated with the kiss from the audio recording
If you see the prime KISS, expect targets that are a city

3. If you see the prime KISS, expect targets that are associated with the kiss from the audio recording
If you see the prime FOOD, expect targets that are a city
If you see the prime CITY, expect targets that are either a fruit or a vegetable

What the participants were not be told, however, was that the expected pairings would not always occur—unexpected pairings would also be presented (e.g., in the first set of instructions, FOOD: words associated with the kiss). Ultimately, there were four word pairing conditions: related and expected, unrelated and expected, related and unexpected, and unrelated and unexpected. For each prime, expected targets followed the prime on half the trials and unexpected targets followed the prime on half the trials (unexpected targets were divided in half across the other two target lists). For example, for the first set of instructions, the prime FOOD was followed by a type of fruit or vegetable on 60 trials (related and expected), followed by a word associated with the kiss on 30 trials (unrelated and unexpected) and followed by a city on 30 trials (unrelated and unexpected).

The task took on average 45 minutes to complete. Each participant completed 8 practice trials, two with each relatedness and expectancy condition, followed by the set of experimental trials. They completed a total of 240 experimental trials; 120 with words as the targets and 120 with non-words as the targets. The targets used in the practice trials did not reappear in the experimental trials.

Lastly, after the primed lexical decision task, the participants completed a shortened version of the MCR to identify if the manipulation was consistent throughout the primed lexical decision task. All the tasks and questionnaires were presented to the participants via Empirisoft DirectRT and MediaLab 2008 (Empirisoft Corporation, 2008) experimental software on a PC. All of the questionnaires are found in appendices D to H.

CHAPTER THREE:

Results

Descriptive Data

Table 1 provides the mean scores on the various questionnaires (VOCI-CTN, MCR - ease to imagine scores, MCR- mental contamination scores and change between mental contamination scores) by induction condition. Figure 2 provides the mean scores on the related unexpected and unrelated expected trials by type of prime (CITY, FOOD and KISS).

Missing Data

Missing data were present because certain experimental conditions had no representation due to counterbalancing. The most common missing data pattern (~45% of missing data) was characterized by experimental cells with prime-target pairs that were related expected and had a positive, negative and neutral valence. An example of a related expected positive trial is KISS: love (this is related for the consensual condition), whereas an example of a related expected negative trial is KISS: gross (which is related for the nonconsensual condition). These cells have the largest percentage of missing data because only one third of the participants had an instruction set that created this type of expectancy for the targets followed by a kiss prime. Thus, only one third of the participants completed the related expected condition for the prime kiss. However, these experimental cells were not critical for the study's aims or for testing the hypotheses. In this respect, these missing data patterns can be conceptualized similarly to planned missingness research designs (Enders, 2010).

The second most common missing data pattern (~30%) was a primary experimental condition for the study. This pattern was characterized by missing responses to targets that were related and unexpected and had a positive, negative or neutral valence. The targets that are expected or unexpected are based on the instruction set. Thus, for the participants given the first instruction set, KISS: love is an example of a related unexpected target because the participants were told to expect targets that are a fruit after they are presented with the prime KISS (e.g., KISS: banana). The only participants who completed these conditions after receiving the kiss prime were the ones who were given the first and second instruction set (see pages 16 and 17 for the set of instructions). Thus one-third of the participants (the ones given the third instruction set) do not have responses for these conditions.

Fortunately, missing data patterns likely conformed to Missing at Random or Missing Completely at Random mechanisms (Enders, 2010), as there are no theoretical or methodological reasons to suspect that missingness for a respective variable was related to the constructs being measured. In fact, missingness was related to the counterbalancing approach. Thus, data analyses were carried out using multiple imputation, a gold-standard missing data handling technique for these set of circumstances (i.e., Missing at Random; Enders, 2010).

Multiple imputation was carried out separately for the omnibus test and *t*-test analyses. For the omnibus test, ten imputed datasets were carried out, and fifteen for the *t*-tests. This discrepancy was just a matter of convenience, as recommendations call for at least 10-15 imputations for yielding minimally biased parameter estimates (Enders, 2010). For deriving imputation datasets, auxiliary variables were used and included

condition, age, race, scores on the VOCI-CTN, scores on the MCR at first administration, scores on the MCR at second administration and ease to imagine scores. After multiple imputation analyses were computed, *F* values, *t* values and degrees of freedom were arithmetically averaged across the multiple data sets.

Manipulation Checks

Before the hypotheses were tested, preliminary analyses were conducted on the various measures used. First, the VOCI-CTN was used to determine if the four induction groups differed in terms of propensity to feel mentally contaminated. Baseline group differences would be problematic in terms of inducing different levels of mental contamination. A one-way between-subjects ANOVA using the variable condition with four levels (nonconsensual dirty, nonconsensual clean, consensual dirty or consensual clean) was computed on the scores on the VOCI- CTN. This analysis indicated that there was not a statistically significant difference between the conditions, $F(3, 68) = .966$. $p = .414$. partial eta square = .041. Thus, groups did not differ with respect to their propensity to feel contaminated at baseline. The mean scores on the VOCI-CTN for each induction condition can be found in table 1.

Next, the mean scores of certain questions on the MCR were used for multiple preliminary analyses. The first of these analyses used the first administration of the MCR to determine if the participants in the four induction conditions could easily imagine the scenario in the respective audio recordings. To determine the ease in which each participant imagined the scenario, the following three items from the MCR were averaged (henceforth referred to as “ease to imagine score”): "How easy was it to imagine the scenario in your mind?", "How clear/vivid was the imagined scenario?" and

"How realistic was the imagined scenario?". This method is consistent with previous research that used the MCR to evaluate the same audio recordings used in the current study (Elliott & Radomsky, 2012). Ease to imagine scores were computed across conditions to ensure that the one scenario was not more difficult to imagine than the others. Statistically significant group differences on ease to imagine scores would potentially introduce induction inconsistencies across groups. A one-way between subjects ANOVA using the variable condition with four levels (nonconsensual dirty, nonconsensual clean, consensual dirty or consensual clean) was computed on ease to imagine score. This analysis revealed that there were no significant differences between conditions in regard to how well the scenario in the audio recording was imagined, $F(3, 68) = .216$. $p = .885$. partial eta square = .009. See table 1 for the mean ease to imagine scores.

The scores on certain questions on the MCR (first administration) were also used to determine the degree in which the participants felt mentally contaminated by the scenario in the audio recordings. As done by Elliott and Radomsky (2012), the mean mental contamination score was calculated by averaging the scores of items in three domains: feelings of dirtiness (rate the extent in which you feel dirty/unclean), negative emotions (rate the extent in which you feel: distressed, anxious, angry, disgusted--by the man's physical attributes, disgusted by the man's behavior, ashamed, guilty, humiliated, afraid, sad, cheap, sleazy) and urges to wash (rate each urge: rinse mouth/spit/drink something, brush teeth/use mouthwash, wash face, wash hands and take a shower). Once this score was computed for the first administration of the MCR, a one-way between subjects ANOVA using the variable condition with four levels (nonconsensual dirty,

nonconsensual clean, consensual dirty or consensual clean) was conducted on this score. The analysis determined that there was a main effect for condition $F(3, 68) = 25.75$, $p < .001$, partial eta square = .532. Post hoc comparisons using the Fisher LSD test revealed that all conditions were significantly different from each other except for the nonconsensual dirty and consensual dirty conditions. Of note, this is not a critical group difference because two planned comparison analyses were done on the types of kiss. Thus, the consensual and nonconsensual conditions were analyzed in separate models. See table 1 for means and figure 1 for graph of results.

In addition to the manipulation check immediately following induction, we also evaluated change in the degree of induced mental contamination from pre- to post-primed lexical decision task. This was done to identify if the participants felt mentally contaminated throughout the primed lexical decision task. If the induction did not last through the entire task, null results would obscure inferences about study hypotheses (i.e., would non-significant results be due to a lack of continuous induction or because intrusions are not automatically processed, assuming statistical power were sufficient). To address this concern, a mixed design ANOVA was performed using MCR mental contamination scores as the dependent variable, and time point (i.e., pre- and post-primed lexical decision task) and induction condition (nonconsensual dirty, nonconsensual clean, consensual dirty or consensual clean) as the within-subject and between-subject factors, respectively. This analysis revealed that there was a main effect for time $F(1, 68) = 16.68$, $p < .001$, partial eta square = .197, suggesting that induction of mental contamination significantly reduced over the course of the primed lexical decision task. However, there was not a significant interaction of time by condition, $F(3, 68) = 2.04$, p

= .11, partial eta square = .083, indicating that reduction in mental contamination from pre- to post-primed lexical decision task did not differ across induction conditions. See table 1 for the mean scores for change of MCR.

Main Analyses

Finally, the study's main hypotheses were evaluated. This analysis included trials that used the prime KISS and targets that the participants correctly identified as a word. Of note, $\kappa = .68$, indicating that participants correctly identified that the target was a word or nonword above chance levels (i.e., 50%). This analysis consisted of a mixed design 4 x 3 8 ANOVA, including the between-subject variables of induction condition (nonconsensual dirty, nonconsensual clean, consensual dirty or consensual clean) and instruction set (three different instruction sets used for counterbalancing). For the within-subject variables, a composite variable was created. Specifically, this variable consisted of expectancy, relatedness and valence and had eight levels: related expected positive, related expected negative, related expected neutral, related unexpected positive, related unexpected negative, related unexpected neutral, unrelated expected no valence, unrelated unexpected no valence. The valence refers to the charge of the targets associated with the primes. The targets associated with the KISS prime could be positive, negative or neutral while the targets that are associated with the primes CITY and FOOD have no valence. This composite variable was used because the analyses were limited to these eight within-group conditions (because they corresponded to the KISS prime and the specific hypotheses) because of the empty experimental cells due to systematic missing data. See Appendix C for the instruction sets and corresponding expectancy conditions. This mixed-design ANOVA was performed to provide a test of the overall

model, but planned contrasts were also performed regardless of the omnibus test to specifically evaluate study hypotheses. De-emphasizing the omnibus test in favor of planned comparisons has support (Rutherford, 2001), despite not being universally accepted.

The mixed design 4 x 3 x 8 ANOVA was computed on the RT scores on the lexical decision task. This analysis included trials that used the prime KISS and targets that were correctly identified as a word. The factors included in analysis were induction condition (between-subject), instruction set (between-subject), and a composite within-subject variable which consisted of expectancy, relatedness and valence. The model was not statistically significant, $F(42, 354) = .769$, $p = .07$, partial eta square ranged from .061 to .106 across the imputed datasets.

Despite the nonsignificant omnibus test, two planned comparisons were carried out. For these analyses, induction conditions were divided based on type of kiss (nonconsensual and consensual), and one *t*-test was conducted for each. Similar to the omnibus test, the within-subject variables were combined to create a composite variable. Thus, this variable consisted of expectancy, relatedness and valence. For each of the *t*-tests, two of the eight levels of this composite variable were compared. For the first *t*-test, with the nonconsensual conditions, the related unexpected negative trials were compared to the unrelated expected no valence trials. These groups were compared because it was hypothesized that participants in the nonconsensual conditions would respond faster to aversive targets related to the KISS prime regardless of expectancy. That is, because of the nonconsensual mental contamination intrusive experience, it was expected that participants would respond significantly faster to the related unexpected pairs than the

unrelated expected pairs with KISS primes, suggesting automatic processing. For example, if automatic processing were being used to process negative intrusive thoughts, participants would respond faster to the prime target pair KISS: yuck (related, unexpected) even though they were told to expect pairs such as KISS: Boston (unrelated, expected). Using multiple imputation to handle missing data, the first *t*-test revealed that there was not a significant difference between the two means, $t(23) = .280$, $p = .79$. Cohen's *d* ranged from -0.0529 to 0.6876 across the imputed datasets. See figure 2 for a graph of the mean RT.

For the second dependent samples *t*-test, this time using the consensual conditions, the related unexpected positive trials were compared to the unrelated expected no valence trials. These groups were compared because it was predicted that participants in the consensual conditions would respond faster to positive targets related to the KISS prime regardless of expectancy. That is, because participants formed an association between KISS and positive words (e.g., passionate) after imagining a consensual kiss scenario, it was anticipated that they would respond faster to the related unexpected pairs than to the unrelated expected pairs, suggesting automatic processing. For instance, if automatic processing were used to process positive intrusive experiences, participants should respond faster to the prime target pair KISS: passionate (related, unexpected) even though they were told to expect pairs such as KISS: California (unrelated, expected). Using multiple imputation to handle missing data, the second planned comparison *t*-test revealed that there was not a significant difference between the two means, $t(23) = .362$, $p = .72$. Cohen's *d* ranged from -.0512 to .4941. See figure 2 for a graph of the mean RT.

Exploratory Analysis

Lastly, for exploration purposes, correlation analyses were carried out to identify relations between the RTs of the four conditions in the planned comparisons *t*-tests and VOCI-CTN scores, ease to imagine scores, mental contamination scores and the difference score of the two administrations of the MCR. For the participants in the nonconsensual condition, there was a positive correlation between the RT to the related unexpected trials (negative valence targets) and the unrelated expected trials (with targets with no valence), $r(15) = .848$, $p < .001$. There was also a positive correlation between the change in mental contamination scores and the mental contamination score, $r(22) = .404$, $p = .050$. There was a positive correlation between the RT to the related unexpected trials and the scores on the VOCI-CTN, $r(16) = .641$, $p = .004$. There was also a positive correlation between the scores on the RT to the unrelated expected trials to the scores on the VOCI-CTN, $r(21) = .534$, $p = 009$. Finally, of interest is that there was not a correlation between the related unexpected trials and the mental contamination score, $r(16) = -.049$, $p = .848$ or between the unrelated expected trials and the mental contamination score, $r(21) = .007$, $p = .974$.

For the participants in the consensual condition, there was a positive correlation between the RT to the related unexpected trials (with positive valence targets) and the unrelated expected trials (with targets with no valence), $r(18) = .660$, $p = .002$. There was not a correlation between the RT to the related unexpected trials and the scores on the VOCI-CTN, $r(18) = -.346$, $p = .135$. There was also not a correlation between the scores on the RT to the unrelated expected trials and the scores on the VOCI-CTN, $r(22) = -.136$, $p = .526$. There was not a correlation between the related unexpected trials and the

mental contamination score $r(18) = -.240$, $p = .307$ or between the unrelated expected trials and the mental contamination score, $r(22) = -.101$, $p = .640$. See table 2 for correlation tables.

Exploratory *t*-tests were also conducted on the RT between expected unrelated and unexpected related trials followed by the primes CITY (using both consensual and nonconsensual conditions) and FOOD (using both consensual and nonconsensual conditions) to identify if the trials using these primes produced the predicted response pattern. These analyses included trials that used the respective prime, CITY or FOOD, and targets that the participants correctly identified as a word. This analysis used the between-subject variables of induction condition (nonconsensual dirty, nonconsensual clean, consensual dirty or consensual clean) and instruction set (three different instruction sets used for counterbalancing). For the within-subject variables, a composite variable was created. Specifically, this variable consisted of expectancy, relatedness and valence and had four levels: related expected, related unexpected unrelated expected and unrelated unexpected. Multiple imputation was used to handle missing data. For the trials followed by the prime CITY, there was not a significant difference between the two means, $t(143) = -.603$, $p = .547$. Cohen's *d* ranged from . -.0235 to .042. For the trials followed by the prime FOOD, there was also not a significant difference between the two means, $t(143) = -1.168$, $p = 0.244$. Cohen's *d* ranged from -0.0648 to -0.3724. This suggests that the primed lexical decision task was not replicated in the current study. See figure 2 for the mean RT for the trials followed by each prime.

CHAPTER FOUR:

Discussion

The purpose of the present study was to identify if intrusive thoughts induced by mental contamination were cognitively processed via automatic processing by using an implicit measure. To do this, mental contamination was induced in female participants by requiring them to listen to audio recordings that were intended to bring about varying degrees of mental contamination. Then, they completed a primed lexical decision task that used relatedness and expectancies to measure automatic processing of intrusive thoughts associated with the mental contamination. It was predicted that when participants in the nonconsensual conditions (both clean and dirty) were presented with the prime KISS, they would respond faster to negative targets that were artificially related to the kiss and unexpected compared to pairs that are unrelated and expected. That is, they would respond faster to the pair KISS: gross even if they were told to expect pairings such as KISS: grape. Similarly, it was predicted that when participants in the consensual conditions (both clean and dirty) were presented with the prime KISS, they would respond faster to positive targets that were unexpected and artificially related to the kiss compared to pairs that were unrelated and expected. That is, they would respond faster to the pair KISS: passionate even if they are told to expect pairings such as KISS: orange.

The first planned comparison, on the nonconsensual conditions, did not indicate a significant difference between the RT to the related unexpected and unrelated expected trials. Similarly, the second planned comparison, on the consensual conditions, did not indicate a significant difference between the RT to the related unexpected and unrelated

expected trials. Thus, the hypotheses were not supported. We predicted that the participants would respond faster to the prime-target pairs that were related and unexpected than to the pairs that were unrelated and expected. Therefore, there would need to be a significant difference between the RT to the two types of trials, which was not the case. However, it is possible that a significant difference was not found for either the consensual or nonconsensual conditions because the participants were not affected by the mental contamination induction for the entire time it took them to complete the primed lexical decision task. Indeed, the degree of mental contamination significantly decreased for all the conditions from before to after the primed lexical decision task. Furthermore, participants indicated that they did not feel affected by the mental contamination induction for the entire time it took them to complete the task. When they answered the question, "How long were you affected by the audio recording?" on the second administration of the MCR, 31% reported feeling affected by it for 5 to 10 minutes while 43% reported feeling affected by it for 10 to 20 minutes. This is insufficient because the task took about 45 minutes to complete.

Because the mental contamination did not last through the entire primed lexical decision task, the participants likely did not respond to all the trials based on the contamination. This is also evident by a positive correlation between the RT to the related unexpected trials and the RT to the unrelated expected trials for both the nonconsensual and consensual conditions. This type of relationship indicates that as the RT to the related unexpected trials increased, the RT to the unrelated expected trials also increased. However, this is not what would be expected based on our hypotheses. If the participants responded based on the intrusive thoughts (induced from the audio recording), there

would be a negative correlation. That is, the faster they responded to related unexpected trials, the slower they would respond to unrelated expected trials. In other words, they should respond to targets that are related to the prime KISS quickly (or automatically) regardless if they were told to expect the prime-target pair. Similarly, they should respond much slower to targets that were not related to the prime KISS because they would have to consciously eliminate the intrusive thought related to the KISS prime and activate the prime-target pair they were told to expect instead. Ultimately, it is unclear if the lack of significant results is because the KISS prime was not automatic processed, because the induction manipulation was inadequate, or both.

Because participants did not respond to all the trials based on the mental contamination, contradictory relationships between variables were also observed. For example, the participants' propensity to feel mentally contaminated and the amount of mental contamination they experienced after listening to the audio recording did not influence their response style to the trials. This was indicated by the lack of correlation between the scores on the VOCI-CTN and the RT to either type of trial and by the lack of correlation between the scores on the MCR and the RT to either type of trial respectively. We would expect that the higher the participants' propensity to feel mentally contaminated and the more mental contamination they experienced, the more intrusive thoughts they would experience from the audio recording. This would result in them responding faster to targets that were related to the prime KISS. For the participants in the nonconsensual condition, the opposite relationship between propensity and responding patterns was found. Specifically, the more likely they were to feel mentally contaminated, the slower they responded to related unexpected trials (as indicated by a

positive correlation between RT to these trials and VOCI-CTN scores). For the participants in the consensual condition, there was not a significant correlation between propensity to feel mentally contaminated and response style. Thus, propensity to feel mentally contaminated did not influence their response style. Similarly, there was not a significant correlation between mental contamination scores and RT to the trials for both conditions. Thus, degree of induced mental contamination also did not influence their response style.

Although the results suggest that the manipulation did not last the entire time required for completing the primed lexical decision task, we did find that the mental contamination was initially effective. All the conditions (consensual clean, consensual dirty, nonconsensual clean and nonconsensual dirty) experienced a degree of mental contamination that was significantly different from each other, except for the nonconsensual dirty and consensual dirty conditions. Furthermore, the participants in each induction group did not differ at baseline in regard to their tendencies to feel mentally contaminated (as reflected by scores on the VOCI-CTN) or in their ease to imagine the induction scenario (as reflected by scores on the MCR), suggesting that randomization of group assignment removed these potential lurking variables.

Unexpected results in the study could have occurred for a number of reasons. For example, the study did not replicate the original primed lexical decision task, as evidenced by the two *t*-tests conducted on the two primes CITY and FOOD not demonstrating a significant difference between the related unexpected and unrelated expected trials. The current study is the first to use the primed lexical decision task to identify automatic processing of intrusive thoughts. Although this task is commonly used

to identify automatic processing (Clow & Esses, 2007; Neely, 1977), there is no known study that induced intrusive thinking with the task. Thus, mental contamination induction or its procedures may have interfered with the task. It is possible that combining the induction and the task made for a lengthy and/or confusing undertaking. The participants may have been confused or overwhelmed, causing them to respond in unpredictable ways. Another factor that may have played a role in not replicating the results was the instruction sets. Because we did not have a measure to identify if the participants understood them, it is possible that they did not and consequently responded to the trials in a haphazard manner (see page 16 and 17 for the instruction sets).

Because we experienced difficulties with the manipulation, it would be beneficial for future researchers to identify a type of mental contamination or other cognitive process that induces intrusive thoughts that would affect the participants for a longer period of time. Similarly, because the mental contamination lasted for 10 minutes or less, researchers could use an implicit task that takes about 10 minutes or less to complete (instead of the lengthy primed lexical decision task). These modifications would help ensure that the intrusive thoughts persisted throughout the implicit task.

It is also possible that the predicted results were not found because the scenarios in the audio recordings were not memorable. This is a possibility because the manipulation relied on the ability of the participants to attend to and remember the scenario in the corresponding audio recording. Although the participants reported that the scenarios were easily imagined and seemed realistic, there was no measure used to identify how memorable the scenarios seemed. Perhaps the content of the scenario was

forgotten before the participants finished the primed lexical decision task, influencing their overall level of contamination and responses on the task.

In addition to lacking a measure of how well the participants understood the instructions and remembered the scenario in the audio recording, the study is also limited because it only evaluated intrusive thoughts caused by mental contamination. Therefore, one cannot draw conclusions about other types of intrusive thoughts. Another limitation is that the study used a gender specific sample of participants, as only female undergraduate students at Towson University were included. Thus, the findings may not generalize to males.

Despite the unexpected findings and study limitations, we found some results that supported the fact that mental contamination could have influenced the response style for the consensual condition. Specifically, there was a positive correlation between the RT to the unrelated expected trials and the scores on the VOCI-CTN. This indicates that the higher the propensity to feel mentally contaminated, the slower the participants responded to targets that were not related to the prime KISS. Like mentioned previously, this is what we would expect to observe if the participants were consciously eliminating the intrusive thoughts (words related to the KISS prime) and activating the expected relationship instead (i.e., engaging in controlled processing).

Like mentioned previously, future researchers should make modifications to the manipulation (mental contamination or other intrusive thought eliciting cognitive event) to ensure that it lasts throughout the entire task. This can be done by seeking a different cognitive event that elicits intrusive thoughts or by using an implicit measure that takes about 10 minutes to complete. It would also be beneficial for future researchers to

complete studies that implicitly evaluate the automatic processing of other types of intrusive thoughts (e.g., sexual, aggressive, religious and worry-related), not just ones elicited by mental contamination. Finally, future researchers should include male participants in their studies to identify if there are gender differences in regard to automatic activation of intrusive thoughts. The current study is the first known study to use an implicit measure to evaluate the automatic processing of intrusive thoughts. This is significant because it may stress the importance of measuring this form of cognitive processing via an implicit measure and may encourage other researchers to complete similar studies.

It is vital that automatic activation of intrusive thoughts continue to be researched using implicit tasks. By using explicit tasks, it seems that intrusive thoughts are automatically processed. However, confirming this assumption with implicit measures is beneficial because they are not subject to biases from self report. Likewise, if automaticity of intrusions is disconfirmed, previous research, literature and theory regarding intrusive thoughts may be misleading. This has practical implications for the treatment of disorders that are characterized by intrusive thoughts (e.g., OCD, GAD, PTSD and depression). That is, there may be changes to current prevention and treatment techniques. If it is determined that intrusive thoughts are not automatically processed, cognitive behavioral therapy could be used to help the person prevent the onset of these intrusive experiences, obviating the development of aforementioned disorders related to intrusions, This prevention model contrasts current conceptualizations of cognitive-behavior therapy, which is currently used as an intervention (i.e., not a prevention) for helping to stem the distress and impairment caused by intrusions, which are assumed to

be automatically activated. Ultimately, determining how intrusive thoughts are processed may help determine why they become pathological in some individuals but not others. This is important so clinicians can identify who is at risk for these disorders.

Appendix A: Tables

Table 1.

Mean Scores on questionnaires by induction condition

	CC Mean (SD) N = 18	CD Mean (SD) N = 18	NC Mean (SD) N = 18	ND Mean (SD) N = 18	Total Mean (SD) N = 72
VOCI-CTN	23.50 (8.02)	27.33 (7.94)	24.05 (8.39)	23.72 (6.63)	24.65 (7.76)
Imagine	83.94 (14.00)	84.53 (16.69)	84.94 (13.53)	83.33 (13.30)	84.69 (14.20)
MC 1 score	12.95 (13.08)	61.08 (21.57)	33.46 (21.67)	60.18 (19.86)	41. 92 (27.71)
MC 2 score	11.89 (12.63)	50.62 (28.71)	26.05 (26.69)	44.69 (27.63)	33.31 (28.77)
Change MCR	1.06 (.45)	10.46 (7.14)	7.41 (5.02)	15.49 (7.77)	8.61 (1.06)

Note. CC, consensual clean condition; CD, consensual dirty condition; NC, nonconsensual clean condition; ND, nonconsensual dirty condition

VOCI-CTN, scores on the Vancouver Obsessional Compulsive Inventory Contamination Subscale that indicate the propensity to feel mentally contaminated; Imagine, ease to imagine score; MC 1 score, mental contamination score at first administration of MCR; MC 2 score, mental contamination score at second administration of MCR; Change MCR, the difference of mental contamination from the first administration of the MCR to the second administration

Table 2.

Correlations between RT and measures for the nonconsensual and consensual conditions

	RT Related Unexpected N = 20	RT Unrelated Expected N = 23	VOCI-CTN N = 24	Ease to Imagine N = 24	MC 1 Score N = 24	MC 2 Score N = 24	Change in MCR N = 24
RT Related Unexpected	--	.660*	-.346	.300	-.240	-.231	.003
RT Unrelated Expected	.884*	--	-.136*	.196	-.101	-.159	.139
VOCI-CTN	.641*	.534*	--	-.049	.568*	.578*	-.142*
Ease to Imagine	-.251	-.286	.030	--	.082	.114	-.081
MC 1 Score	.049	.007	.023	-.017	--	.877*	.042
MC 2 Score	.032	.098	.189	-.160	.664*	--	-.443**
Change in MCR	.027	-.111	-.205	.175	.404**	-.415**	--

**p<.01*

*** p<0.05*

Note. The correlations for the nonconsensual conditions are below the diagonal line and the correlations for the consensual conditions are above the diagonal line. VOCI-CTN, scores on the Vancouver Obsessional Compulsive Inventory Contamination Subscale that indicate the propensity to feel mentally contaminated; Imagine, ease to imagine score; MC 1 score, mental contamination score at first administration of MCR; MC 2 score, mental contamination score at second administration of MCR; Change MCR, the difference of mental contamination from the first administration of the MCR to the second administration.

Appendix B: Figures

Figure 1. Degree of mental contamination per condition

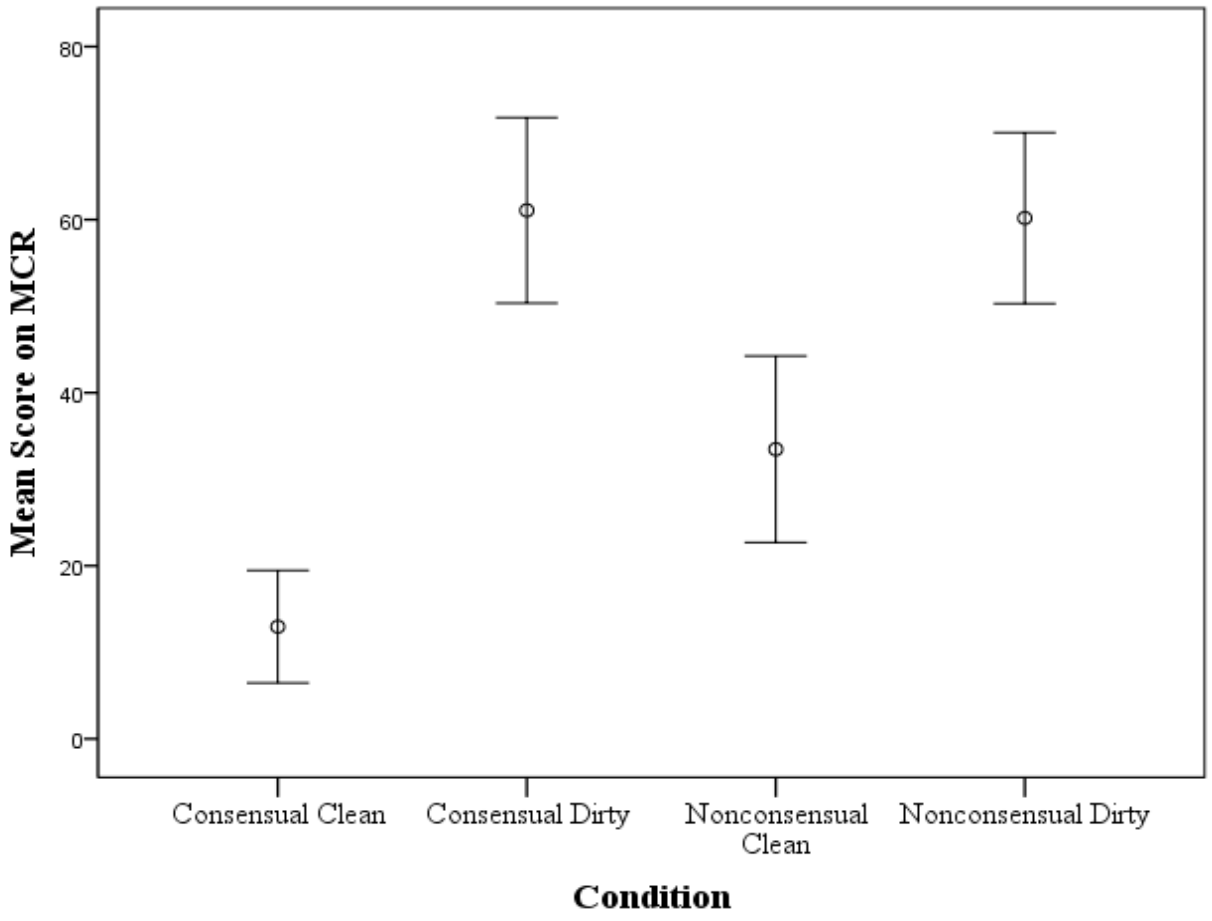
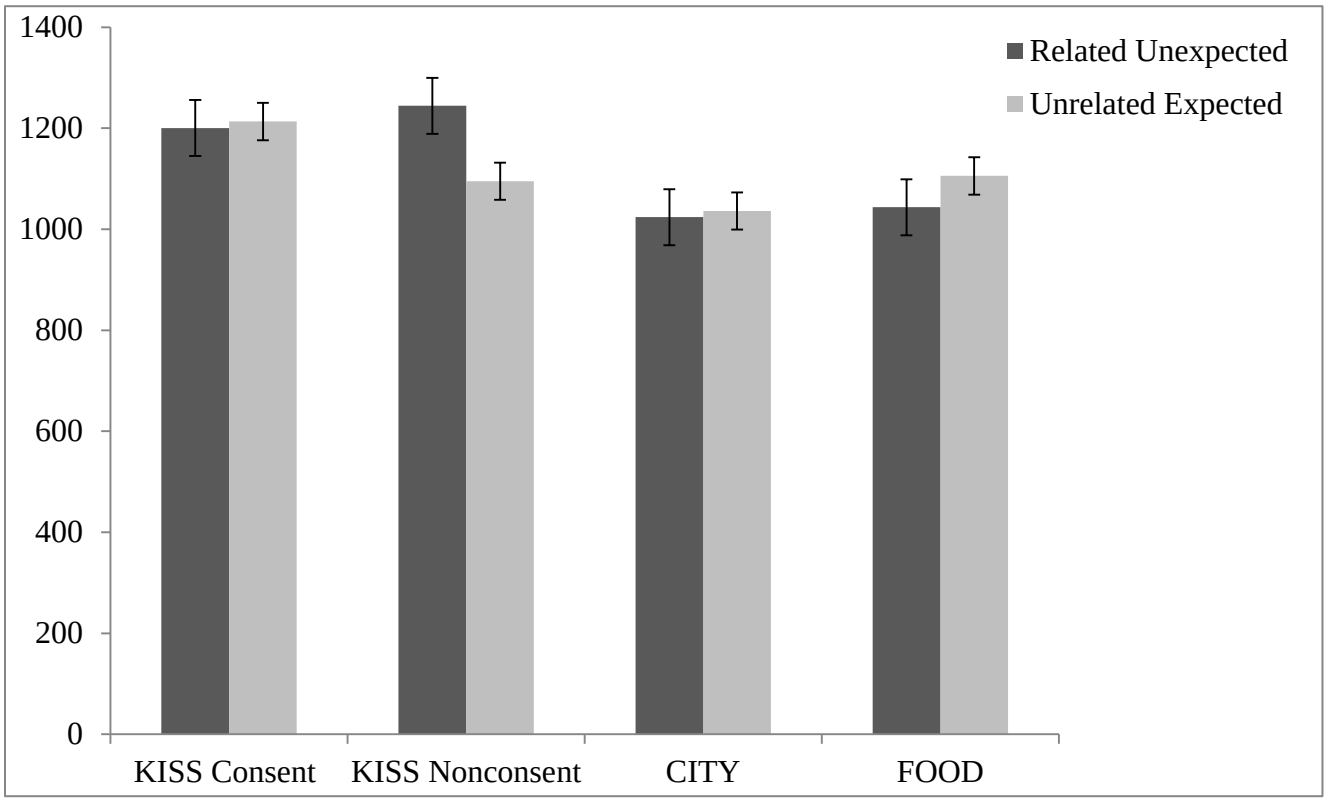


Figure 2. Mean RT to related unexpected and unrelated expected trials



Appendix C: List of target words

Kiss Targets	**Kiss Nonwords**	**Food Targets**	**Food Nonwords**	**City Targets**	**City Nonwords**
vile	vike	apple	adstel	Miami	Siegi
awful	autul	pear	pean	Dallas	Callos
yuck	yed	plum	blum	London	Fondin
repulsive	resonsive	banana	bareta	Florence	Sporerns
nasty	naggy	kiwi	kiju	Sydney	Misney
raunchy	rapedy	orange	uraint	Boston	Bossin
rude	tude	grape	grame	Rome	Kome
sleazy	dreaky	cherry	chessy	Venice	Jonice
distressing	dengressing	peach	peech	Vienna	Vianle
filthy	faisty	lemon	telon	Chicago	Chiromo
disgusting	diswicting	lime	lide	Washington	Cestington
forcefully	haithfully	grapefruit	grapegreet	Detroit	Detrump
stains	stazed	cantaloupe	cantaneeds	Baltimore	Baltisuse
garbarge	garlays	watermelon	katertoson	Toronto	Cunonto
Intimate	Entidant	pineapple	puseample	Cleveland	Fertland
crumbs	crubes	strawberry	striferry	Denver	Zenger
underwear	onderpoor	blueberry	cleyberry	Houston	Heatron
cigarettes	cegarothes	raspberry	clandmerry	Montreal	Ransteal
greasy	greeky	coconut	cocolop	Tokyo	Febco
restrains	restrorms	tangerine	tenferism	Amsterdam	Amblerin
gross	grole	mango	marmo	Springfield	Chringdeal
wrinkly	twinsty	nectorine	noscorine	Moscow	Zodcow
odor	obur	apricot	elphrant	Atlanta	Atmista
coated	Cooned	pomegrante	bontseberry	Berlin	Bumlin
stale	stass	kumquat	kumdrut	Beijing	Boofing
passionate	pattenate	avocado	afolapi	Tampa	Flampo
gentle	gundle	fig	fim	Brussels	Possels
sweet	bleet	prune	prene	Seattle	Ferdle
enjoyable	erhikable	carrot	barrat	Reno	Cano
delicate	ditirate	pea	poa	Dublin	Biblin
tender	aspartable	corn	coft	Minneapolis	Minreakus
sensual	rangual	bean	boan	Madrid	Masmid
pleasurable	steenorable	lettuce	tuttuce	Milwaukee	Pelwampea
romantic	salantic	spinach	flinaff	Honolulu	Hoscular
lustful	festful	asparagus	accaramos	Memphis	Mempris
sexy	pemy	broccoli	clictoli	Buffalo	Beggalo
intimate	subical	celery	mitery	Sacramento	Sorumento
mints	mimps	cabbage	babbard	Cincinnati	Cincisnum
smooth	smeath	cauliflower	caglipeper	Austin	Cubrin
lips	leps	beets	beens	Tallahassee	Vestahasso
soft	sork	squash	squank	Hollywood	Follyheed
attractive	amstratize	onions	uneans	Brooklyn	Drooklin

cologne	vonderpel	radishes	semishes	Phoenix	Fobing
fresh	frene	cucumber	cucopper	Indianapolis	Invoogamus
well-dressed	wesschessed	parsley	martley	Orlando	Omcedo
clean-cut	freencut	peppers	ruppers	Athens	Apeets
wash	Wamp	artichokes	amycuna	Istanbul	Mistangal
fun	fon	zuccini	kustoni	Nashville	Qashwille
share	chare	mushroom	mellroom	Juneau	Ganeau
clean	leans	chickpeas	chimedeas	Knoxville	Kroxwille
party	Marby	leek	loak	Munich	Zonich
mouth	mooth	pumpkin	pullcin	Philadelphia	Trilanchia
hallway	hartray	garlic	wartic	Paris	Manis
music	rudic	kale	kamp	Pittsburgh	Pristbuldge
dancing	dowling	okra	oslo	Annapolis	Atlefonis
wall	wans	turnup	fursup	Bethesda	Becluda
popcorn	pomcork	potato	pawnfip	Columbus	Coronsus
friend	friews	tomato	samato	Richmond	Rutmond
conversation	dinmergation	rasin	distin	Rockville	Rockelle
meet	reet				
evening	ertming				

Appendix D: Scripts of audio recordings

Consensual 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 computerized task.

Consensual 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 computerized task.

Nonconsensual 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 computerized task.

Nonconsensual 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 computerized task.

Appendix E: Instruction sets and the corresponding expectancy conditions

1. If you see the prime CITY, expect targets that are a city
If you see the prime FOOD, expect targets that are associated with the kiss from the audio recording
If you see the prime KISS, expect targets that are either a fruit or a vegetable

Prime	**Target**	**Expectancy**	**Valence of target**
KISS	City	Unexpected unrelated	No Valence
KISS	Associated with the kiss from the audio recording	Unexpected related	Positive, negative, neutral
KISS	Fruit or a vegetable	Expected unrelated	No Valence

2. If you see the prime FOOD, expect targets that are either a fruit or a vegetable
If you see the prime CITY, expect targets that are associated with the kiss from the audio recording
If you see the prime KISS, expect targets that are a city

Prime	**Target**	**Expectancy**	**Valence of target**
KISS	Fruit or a vegetable	Unexpected unrelated	No Valence
KISS	Associated with the kiss from the audio recording	Unexpected related	Positive, negative, neutral
KISS	City	Expected unrelated	No Valence

3. If you see the prime KISS, expect targets that are associated with the kiss from the audio recording
If you see the prime FOOD, expect targets that are a city
If you see the prime CITY, expect targets that are either a fruit or a vegetable

Prime	**Target**	**Expectancy**	**Valence of target**
KISS	Associated with the kiss from the audio recording	expected related	Positive, negative, neutral
KISS	Food	Unexpected unrelated	No Valence
KISS	City	Unexpected unrelated	No Valence

Appendix F: Demographics Form

1. Age (in years): _____

2. What is your gender?

___ Male

___ Female

___ Transgendered (male to female)

___ Transgendered (female to male)

___ Other (please specify) _____

3. Please indicate your ethnicity

___ Caucasian

___ African American

___ Hispanic

___ Asian American

___ Other (please specify) _____

4. With which sexual orientation do you most identify?

___ Heterosexual

___ Lesbian

___ Gay

___ Bisexual

___ Questioning

___ Other

Appendix G: Comprehension test

Below are comprehension questions about the audio recording you just heard. Please indicate if the statements are correct by selecting "yes" or incorrect by selecting "no".

1. The guy you met at the party pulled a bag of popcorn out of the garbage and ate it. YES NO

2. The guy you met at the party was wearing wrinkled clothes. YES NO

3. The guy you met at the party had a greasy face. YES NO

4. The guy you met at the party had breath that smelled like stale cigarettes. YES NO

5. The guy you met at the party had crumbs in the corners of his mouth. YES NO

6. The guy you met at the party washed his hands before he ate popcorn. YES NO

7. The guy you met at the party was well-dressed. YES NO

8. The guy you met at the party had a smooth face. YES NO

9. The guy you met at the party had fresh breath. YES NO

10. The guy you met at the party had soft lips. YES NO

Appendix H: Vancouver Obsessional Compulsive Inventory - Contamination Subscale (VOCI-CTN)

Below you will find a list of statements. Please rate how true each statement is for you by circling a number next to it. Use the scale below to make your choice.

1 never true
2 seldom true
3 sometimes true
4 almost always true
5 always true

1. I feel very dirty after touching money.	1	2	3	4	5
2. I use an excessive amount of disinfectants to keep my home or myself safe from germs.	1	2	3	4	5
3. I spend far too much time washing my hands.	1	2	3	4	5
4. Touching the bottom of my shoes makes me very anxious.	1	2	3	4	5
5. I find it very difficult to touch garbage or garbage bins.	1	2	3	4	5
6. I am excessively concerned about germs and disease.	1	2	3	4	5
7. I avoid using public telephones because of possible contamination.	1	2	3	4	5
8. I feel very contaminated if I touch an animal.	1	2	3	4	5
9. I am very afraid of having even slight contact with bodily secretions (blood, urine, sweat, etc.).	1	2	3	4	5
10. One of my major problems is that I am excessively concerned about cleanliness.	1	2	3	4	5
11. I often experience upsetting and unwanted thoughts about illness.	1	2	3	4	5
12. I am afraid to use even well kept public toilets because I am so concerned about germs.	1	2	3	4	5

Appendix I: Mental Contamination Report at first administration

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 behavior_____

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 (v) 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 (v) 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 nonconsensual (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 nonconsensual (i.e., forced) sexual encounter?

Yes No

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

12. Have you ever witnessed a nonconsensual (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)_____

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)_____

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

(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 behavior from this man?

(0-100)_____

29. Do you feel violated by this man's behavior?

(0-100)_____

Appendix J: Mental Contamination Report at second administration

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 behavior_____

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 (v) 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 (v) 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. How long were you affected after you listed to the audio recording?

[ ] Less than 5 minutes

[ ] 5 - 10 minutes

[ ] 10 - 20 minutes.

[ ] 20 - 30 minutes

[ ] 30 - 40 minutes

[ ] 40 - 50 minutes

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CURRICULUM VITA

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Education:
Towson University, Towson MD - May 2013
Masters of Arts in Experimental Psychology and a certification in Autism Studies

Bloomsburg University of Pennsylvania –May 2011
Bachelor of Arts in Psychology, concentration in Family, children and Youth

Professional Publications:
Jarosiewicz, S. R. & Chasson, G. (In Press). Social competence impairments in autism spectrum disorders. *The Comprehensive Book of Autism.* Sprimger Publishing.

Research:
Symposium - 46th annual Association for Behavioral and Cognitive Therapies
Jarosiewicz, S., Chasson, G.S., Martinelli, M., Chaban, N., & Gibby, B. (2012). *Detection of Social Visual Attention Bias in High-Functioning Autism using a Dot-Probe Task.*

Jarosiewicz, S. R. & Chasson, G. (2012). Are stereotype thoughts a type of intrusive thought? Poster accepted for presentation at the Student Research and Scholarship Expo, Towson, Maryland

Jarosiewicz, S.R., Holzinger, J. & Chasson, G. S. (2013). The Overlap between Stereotypes and Intrusive thoughts. Poster accepted for presentation at the Association for Psychological Science Convention, Washington, DC

Jarosiewicz, S. R. & Chasson, G. (2013). Automatic Processing of Intrusive Thoughts. Poster accepted for presentation at the Student Research and Scholarship Expo, Towson, Maryland

Employment:
Assistant and Commencement Coordinator
Office of Academic Affairs, Towson University - August 2011 - Present
Co-coordinate eight commencement ceremonies annually at Towson University. Also, co-coordinate the Multicultural conference held annually for faculty and staff at Towson University. Contact person for all involved in coordinating commencement ceremonies. Interact effectively with diverse campus population. Perform general office duties and complete daily tasks.

Teaching Assistant
Towson University - September 2012 - Present
Graded tests, held office hours, maintained contact with students through software such as BlackBoard, gave various lectures to approximately 100 undergraduate students. Under the supervision of Dr. Elizabeth Katz (Fall semester) and Dr. Maria Fracasso (Spring semester).

Aide
Belair, Maryland - March 2013 - Present
Care for young adult diagnosed with Pervasive developmental disorder not otherwise specified (PDD-NOS), intellectual disabilities and Lennox Gastaut Syndrome on a weekly basis.

Aide
Elicott City, Maryland - Spring 2012 - Spring 2013
Cared for a school aged child diagnosed with Pervasive developmental disorder not otherwise specified (PDD-NOS) on a weekly basis.

Assistant Therapist
Practicum- Belmont Center for Comprehensive Treatment, Philadelphia PA- Spring 2011
Maintained a 40 hour a week schedule in which I facilitated various group therapy sessions at an inpatient facility. Worked closely with patients in the paediatric, adolescent and geriatric units at the center. Attended weekly meetings with various professionals to provide optimal treatment plans to all patients and completed daily progress notes.

General Psychology Assistant
Bloomsburg University - September 2009- December 2011
Assisted four professors who taught the mass lecture general psychology courses. Utilize various computer software in communicating information to over 600 General Psychology students. Entrusted to grade tests and handle confidential information. Tutored students seeking assistance. Held office hours. Managed the Teaching Assistants in the Psychology department.

Teaching Assistant
Bloomsburg University - Fall 2009 - Fall 2011
Graded tests, held office hours, gave lectures to approximately 200 undergraduate students under the supervision of Dr. Brett Beck.

Secretary
Psychology Department, Bloomsburg University - January 2009- December 2011
Interact effectively with diverse campus population. Perform general office duties and complete daily tasks.