Published in final edited form as:

Cognit Ther Res. 2013 August 1; 37(4): 697–703. doi:10.1007/s10608-013-9529-0.

Examination of Increased Mental Contamination as a Potential Mechanism in the Association Between Disgust Sensitivity and Sexual Assault-Related Posttraumatic Stress

Christal L. Badour,

Department of Psychology, University of Arkansas, 216 Memorial Hall, Fayetteville, AR 72701, USA

Matthew T. Feldner,

Department of Psychology, University of Arkansas, 216 Memorial Hall, Fayetteville, AR 72701, USA

Laureate Institute for Brain Research, 6655 S Yale Ave, Tulsa, OK 74136, USA

Heidemarie Blumenthal, and

University of North Texas, 155 Union Circle #311280, Denton, TX 76203, USA

Sarah J. Bujarski

Department of Psychology, University of Arkansas, 216 Memorial Hall, Fayetteville, AR 72701, USA

Abstract

Disgust sensitivity and feelings of mental contamination have both been independently linked to posttraumatic stress symptoms following sexual assault. Theory suggests that feelings of mental contamination may arise, at least in part, as a result of interpreting feelings of disgust experienced in relation to sexual assault to mean that one has been contaminated or tainted by the experience. This study involved an initial test of this model by examining relations among disgust sensitivity, feelings of mental contamination, and posttraumatic stress symptom severity among a sample of female sexual assault victims. Results suggested that one mechanism through which disgust sensitivity might relate to posttraumatic stress symptom severity is through its association with increased feelings of mental contamination. These findings highlight the importance of assessing feelings of disgust and mental contamination among victims of sexual assault, and the need for future research to elucidate the nature of these relations with posttraumatic stress.

Keywords

Sexual assault; Posttraumatic stress; PTSD; Disgust; Mental contamination

Introduction

Traumatic events involving sexual victimization have been linked to elevated feelings of disgust (Badour et al. 2011; Feldner et al. 2010; Petrak et al. 1997; Rüsch et al. 2011; Shin et al. 1999). For example, adolescents are six times more likely to endorse the presence of

disgust during a sexual assault relative to a physical assault (Feldner et al. 2010), and the majority of sexually assaulted women report ongoing distress related to feelings of self-disgust (Petrak et al. 1997). This is critical in light of evidence documenting a unique association between disgust and increased posttraumatic stress symptomatology following sexual trauma. For example, intensity of disgust experienced toward the perpetrator of a sexual assault relates to severity of posttraumatic stress symptoms even after accounting for intensity of fear experienced during the assault (Badour et al. 2012). Several studies have also linked posttraumatic stress disorder (PTSD) secondary to childhood sexual abuse to heightened disgust responding. Specifically, women with PTSD evidence stronger associations between the self and disgust relative to associations between the self and anxiety (Rüsch et al. 2011). As compared to those without PTSD, they are also more likely to experience increased disgust in response to ideographic trauma reminders (Shin et al. 1999) as well as a range of non-trauma-relevant stimuli (as indexed by heightened disgust propensity; Rüsch et al. 2011).

Despite a growing recognition of links between sexual assault-related disgust and posttraumatic stress, relatively little work has investigated the relation between disgust sensitivity, or the trait-like vulnerability to interpret feelings of disgust as negative or harmful (van Overveld et al. 2006), and posttraumatic stress. Disgust sensitivity has been consistently linked to elevations in other types of anxiety psychopathology including specific phobias, contamination-based obsessive-compulsive symptoms, and health anxiety/hypochondriasis (Olatunji 2009; Cisler et al. 2009). Preliminary work in the area of posttraumatic stress suggests elevated disgust sensitivity may strengthen the relation between feelings of disgust experienced during a traumatic event and subsequent posttraumatic stress symptomatology (Engelhard et al. 2011). Moreover, recent work has documented a significant positive correlation between disgust sensitivity and posttraumatic stress symptom severity among sexual and non-sexual assault victims specifically (Badour et al. 2012). The nature of this relation, however, remains unclear.

Feelings of mental contamination, or perceptions of internal dirtiness that persist in the absence of a physical contaminant and are not alleviated by washing (Rachman 1994), also appear linked to sexual assault (Fairbrother and Rachman 2004; Jung and Steil 2012; Steil et al. 2011). As many as 70 % of victims experience urges to wash following their assault, and a substantial minority will continue to experience such urges for several months to more than a year post-assault (Fairbrother and Rachman 2004). Moreover, feelings of mental contamination positively correlate with posttraumatic stress symptom severity among sexually assaulted women (Fairbrother and Rachman 2004) and preliminary evidence suggests that such feelings may serve to maintain symptoms of posttraumatic stress by increasing negative or maladaptive cognitions about the self and the world (Olatunji et al. 2008).

Theoretical work has recently begun focusing on integrating these lines of evidence, directly linking both disgust sensitivity and mental contamination to sexual assault-related posttraumatic stress. It has been postulated that negative interpretations of feelings of disgust related to a sexual assault, which is potentiated by elevated disgust sensitivity, may lead victims to view themselves as having been contaminated or tainted by the experience (Jung and Steil 2012; Olatunji et al. 2008; Steil et al. 2011). This elevated perception of contamination may be involved in maintaining posttraumatic stress symptoms (Olatunji et al. 2008). The current study aimed to specifically test this model by conducting a preliminary test of how both disgust sensitivity and sexual assault-related mental contamination relate to posttraumatic stress symptom severity among a community-recruited sample of female victims of traumatic sexual assault. Consistent with prior research, it was hypothesized that (1) disgust sensitivity would positively relate to posttraumatic stress symptom severity and

(2) sexual assault-related mental contamination would positively relate to posttraumatic stress symptom severity. It was further hypothesized that (3) an indirect effect of disgust sensitivity in predicting posttraumatic stress symptom severity would emerge through increased sexual assault-related feelings of mental contamination. Given that (a) temporal relations between increased feelings of mental contamination and the development of posttraumatic stress have not yet been examined empirically, and (b) the current study was cross-sectional in nature, two alternative models were tested to further explore relations among these variables.

Method

Participants

Thirty-eight adult women ($M_{\text{age}} = 32.34$, $SD = 13.55$) with a history of at least one DSM-IV-defined traumatic sexual assault [American Psychiatric Association (APA) 1994] were recruited from the community as part of a larger investigation focused on examining sexual assault-related affective processes. Specifically, 7.9 % of participants identified as Hispanic/Latina, 73.7 % Caucasian, 7.9 % African American, 5.3 % Asian, 7.9 % bi- or multiracial, and 5.3 % other. High school or high school equivalent was the highest level of education completed for 10.5 % of the sample, 44.7 % had completed some college, 18.5 % graduated from a 2-year or 4-year college, 13.2 % completed some graduate or professional school, and 13.2 % completed graduate or professional school. Median annual income for the sample was \$12,000 ($M = \$19,500$, $SD = \$18,734$).

Measure

Assault Characteristics—A modified version of the Assault Information and History Interview (AIHI; Foa and Rothbaum 2001) was administered in questionnaire format to assess for history of sexual assault and the nature of the respondent's relationship to her assailant.

Posttraumatic Stress Symptoms—Posttraumatic stress symptom severity was measured continuously using the Clinician-Administered PTSD Scale (CAPS; Blake et al. 1995), a well-established semistructured interview that provides an index of past-month frequency and intensity of 17 posttraumatic stress symptoms, and a dichotomous index of current PTSD diagnosis per the criteria of the DSM-IV (APA 1994). The current study utilized a continuous index of posttraumatic stress symptom severity based upon research suggesting these symptoms are best represented by a dimensional (as opposed to taxonic) symptom structure, with PTSD at the upper end of this continuum (Ruscio et al. 2002). Additionally, diagnostic status was obtained for descriptive purposes.

The CAPS evidences excellent psychometric properties including both convergent and discriminant validity, adequate test-retest and interrater reliability, as well as internal consistency ($\alpha = .93$ in the current sample), and is considered a gold standard of PTSD assessment (Weathers et al. 2001). A predoctoral researcher trained in the administration of the CAPS delivered all interviews. Reliability checks of 20 % of interviews conducted by an independent predoctoral researcher trained in administration of the CAPS yielded 100 % diagnostic agreement and 97.8 % agreement on the continuous index of posttraumatic stress symptom severity.

Disgust Sensitivity—Disgust sensitivity was assessed using the Disgust Propensity and Sensitivity Scale-Revised (DPSS-R; van Overveld et al. 2006). The DPSS-R is a 16-item questionnaire comprised of two subscales: (1) Disgust Propensity—the trait-like proclivity to experience disgust in response to a variety of stimuli and (2) Disgust Sensitivity—the

degree to which the experience of disgust is perceived as emotionally aversive. Items are rated on a 5-point scale (0 = *never* to 5 = *always*). The DPSS-R total score evidences adequate psychometric properties, including internal consistency as well as convergent and discriminant validity (Olatunji et al. 2007; van Overveld et al. 2006). The Disgust Sensitivity subscale used in the current study evidenced acceptable levels of internal consistency in the current sample ($\alpha = .83$).

Sexual Assault-Related Mental Contamination—Mental contamination was assessed via the sexual assault and rape appraisals (SARA; Fairbrother and Rachman 2004) inventory. The SARA is an 80-item questionnaire designed to measure four domains of negative appraisals associated with rape/sexual assault: self, world, future, and current symptoms. Respondents are asked to indicate the degree to which they believe a statement is true about their perceptions of their sexual assault/rape experience on a four-point scale (0 = *not at all true* to 3 = *completely true*). Degree of sexual assault-related mental contamination is assessed via the following three items: (1) *I feel contaminated by my sexual assault/rape, no matter how much I wash*, (2) *I still feel dirty on the inside*, and (3) *I feel that I will never be clean again*. This index of mental contamination has been utilized in previous studies examining relations between mental contamination and posttraumatic stress symptomatology (Fairbrother and Rachman 2004; Olatunji et al. 2008). This measure evidences convergent validity with indices of feelings of dirtiness, urges to wash, and actual washing behavior elicited in the laboratory (Fairbrother and Rachman 2004), as well as adequate internal consistency in the current sample ($\alpha = .80$).

Procedure

The University Institutional Review Board approved all study procedures prior to participant contact. Participants were recruited via electronic and paper flyers as well as media advertisements placed throughout the community. Interested individuals were given instructions to contact the laboratory where a preliminary screening for eligibility was conducted via telephone. Persons deemed potentially eligible upon initial phone screening were invited to the laboratory.

All eligible individuals provided written informed consent prior to study participation. Participants were given the option to complete questionnaires online prior to their scheduled laboratory visit or at the beginning of their in-person appointment. No differences in disgust sensitivity were observed based on response format. During the laboratory session all participants were administered the CAPS interview. Individuals identified as ineligible were thanked, debriefed, and compensated \$10 for completing the initial portion of the study. Eligible participants then completed the SARA as well as other questionnaires and laboratory procedures not relevant to the current investigation. All participants were then debriefed regarding study procedures and thanked for their time. Information regarding local mental health services was provided and participants were compensated \$40 for their time.

Data Analytic Approach

First, zero-order correlations were examined among all continuous factors. A process analysis was then conducted in SPSS 19 using the PROCESS custom dialog (Hayes 2012) to test the hypothesis that disgust sensitivity should relate to posttraumatic stress symptom severity through its association with increased sexual assault-related mental contamination. Because the presence of posttraumatic stress symptoms may lead to increases in both mental contamination and disgust sensitivity, two alternative models were also tested. First, a reverse process model was run to examine whether disgust sensitivity may relate to sexual assault-related mental contamination through its association with increased posttraumatic stress symptoms. Second, the indirect effect of posttraumatic stress symptoms on sexual

assault-related mental contamination through increased disgust sensitivity was also examined. All continuous variables were standardized ($M = 0$; $SD = 1$) to aid in interpretation of path coefficients. A bias-corrected (BC) 95 % CI was used as the criterion for evaluating significance of the indirect effect. A bootstrapping approach was employed to assess for the presence of indirect effect based on evidence that relative to both the traditional causal model approach and the more conservative Sobel test bootstrapping has been identified as a more powerful (Williams and MacKinnon 2008) and preferred analytic technique, particularly among small samples (Hayes 2009). A total of 5,000 bootstrapping samples were utilized. Significance of the indirect effect is determined if zero is not included in the confidence interval (CI) generated based on the established sampling distribution.

Results

Descriptive Information and Zero-Order Correlations

Of the total sample, 23.7 % met criteria for a current diagnosis of PTSD. Detailed assault information was obtained in relation to participants' self-identified index (most upsetting) sexual assault; however, 81.6 % of participants reported a lifetime history of more than one sexual assault. The following non-consensual acts were reported in relation to participants' self-identified index sexual assault: vaginal intercourse (34.2 %), anal intercourse (10.5 %), another person displayed his/her sexual organs (15.8 %), own sexual organs displayed to another person (13.2 %), touched/fondled another person's sexual organs (10.5 %), own sexual organs touched/fondled (36.8 %), performed oral sex on another person (21.1 %), received oral sex (10.5 %), and other (2.6 %). The average age at which the index sexual assault occurred was 12.75 years ($SD = 6.49$). Relationship to the assailant included relative (31.6 %), intimate partner/spouse (13.2 %), friend (13.2 %), acquaintance (10.5 %), other known person (21.1 %), and stranger (10.5 %).

Table 1 includes additional descriptive information and zero-order correlations among all continuous variables. Of note, disgust sensitivity, posttraumatic stress symptoms, and mental contamination were all significantly correlated. Given the wide range of ages and time elapsed since assault in the current sample, these variables were examined as possible covariates. However, neither of these variables was significantly related to any of the primary study variables.

Primary Process Analysis

Figure 1 presents results of the primary process analysis. The omnibus regression model accounted for 50.48 % of the total variance in posttraumatic stress symptoms [$F(2, 35) = 17.83$, $p = .006$]. As predicted, the total effect (path c) of disgust sensitivity on posttraumatic stress symptom severity was significant ($\beta = .51$, $SE = .51$, $p < .001$). Similarly, disgust sensitivity was significantly positively related to mental contamination (path a: $\beta = .43$, $SE = .06$, $p = .006$), and mental contamination was significantly positively associated posttraumatic stress symptom severity after accounting for disgust sensitivity (path b: $\beta = .54$, $SE = 1.19$, $p < .001$). As hypothesized, bootstrapping analysis revealed a significant indirect effect of disgust sensitivity on posttraumatic stress symptom severity, through its positive association with mental contamination (path ab: $\beta = .23$, $SE = .46$, BC 95 % CI [.001, 1.79], $\kappa^2 = .25$). Examination of the ratio of the indirect to total effect indicated that the indirect effect accounted for 44.9 % of the total effect of disgust sensitivity on posttraumatic stress symptom severity. Finally, the direct effect of disgust sensitivity on posttraumatic stress symptom severity was still significant after accounting for the indirect effect (path c': $\beta = .29$, $SE = .47$, $p = .04$).

Alternative Models

In the reverse process model, the omnibus regression model (including disgust sensitivity and posttraumatic stress symptoms) accounted for 44.91 % of the total variance in sexual assault-related mental contamination [$F(2, 35) = 14.27, p < .001$]. Similar to the primary model, the total effect (path c) of disgust sensitivity on mental contamination was significant ($\beta = .43, SE = .15, p = .006$). Disgust sensitivity was significantly positively related to posttraumatic stress symptoms (path a: $\beta = .51, SE = .14, p < .001$), and posttraumatic stress symptom severity was significantly positively associated with mental contamination after accounting for disgust sensitivity (path b: $\beta = .60, SE = .15, p < .001$). Bootstrapping analysis revealed a significant indirect effect of disgust sensitivity on mental contamination, through its positive association with posttraumatic stress symptom severity (path ab: $\beta = .31, SE = .14, BC\ 95\ \% CI [.09, .67], \kappa^2 = .30$). Examination of the ratio of the indirect to total effect indicated that the indirect effect accounted for 71.77 % of the total effect of disgust sensitivity on mental contamination. Finally, the direct effect of disgust sensitivity on sexual mental contamination was no longer statistically significant after accounting for the indirect effect (path c': $\beta = .12, SE = .15, p = .41$).

The second alternative model evaluated the indirect effect of posttraumatic stress symptoms on sexual assault-related mental contamination through increased disgust sensitivity. Similar to the other models, the total effect (path c) of posttraumatic stress symptoms on mental contamination was significant ($\beta = .66, SE = .13, p < .001$). Posttraumatic stress symptoms were positively associated with disgust sensitivity (path a: $\beta = .52, SE = .14, p < .001$). However, disgust sensitivity was not significantly associated with mental contamination after accounting for posttraumatic stress symptoms (path b: $\beta = .12, SE = .15, p < .41$), precluding a test of the indirect effect.

Discussion

Research has begun to document associations between posttraumatic stress symptomatology and feelings of both disgust (Badour et al. 2012; Shin et al. 1999) and mental contamination (Fairbrother and Rachman 2004; Olatunji et al. 2008) following experiences of sexual assault. It has been postulated that feelings of mental contamination may arise, at least in part, from the internalization of feelings of disgust related to a sexual assault, leading to interpretations that one has been contaminated or otherwise tainted by the assault (Olatunji et al. 2008). Results of the current study provide preliminary support for this model by replicating and extending previous findings in this area.

Both disgust sensitivity and sexual assault-related mental contamination were significantly correlated with posttraumatic stress symptom severity. Further, a significant indirect effect was observed such that disgust sensitivity predicted posttraumatic stress through its relation with feelings of mental contamination. These findings suggest individuals who are likely to perceive the consequences of disgust as particularly negative may feel contaminated by the sexual assault (e.g., "I will never be clean again"). This elevated mental contamination may maintain posttraumatic stress symptoms by potentiating additional negative emotions (e.g., disgust, guilt, shame) and encouraging maladaptive coping (e.g., avoidance of traumatic event reminders, compulsive washing behavior; Ehlers and Clark 2000; Fairbrother and Rachman 2004; Olatunji et al. 2008). Although the indirect effect of increased mental contamination accounted for nearly half of the association between mental contamination and posttraumatic stress symptoms, other important mediators are likely involved in this relation. These findings are broadly consistent with traditional definitions of partial mediation (Baron and Kenny 1986).

The primary process analysis was based on our current understanding of temporal patterning. However, the cross-sectional nature of the study design precludes confident conclusions regarding the naturalistic temporal patterning among the variables examined. Indeed, the finding that disgust sensitivity also exhibited an indirect effect in predicting sexual assault-related mental contamination through its relation with increased posttraumatic stress symptoms suggests that elevations in posttraumatic stress may precede the development of feelings of mental contamination following sexual assault. It is also possible that these symptoms may be bi-directional in nature. In addition, although disgust sensitivity has been conceptualized as a trait-like variable (van Overveld et al. 2006), it is possible that the presence of elevated posttraumatic stress symptoms may lead to increases in disgust sensitivity. Indeed, this has been observed with other trait-like variables (e.g., anxiety sensitivity; Marshall et al. 2010). Although the current findings did not support a model whereby posttraumatic stress symptoms relate to sexual assault-related mental contamination through increased disgust sensitivity, longitudinal research using a larger sample is needed to further elaborate upon the nature of these relations.

Additional limitations of this study warrant consideration. Although previous research has consistently identified disgust as an emotion central to both the peri- and posttraumatic emotional experience of sexual assault (Badour et al. 2011; Feldner et al. 2010; Petrak et al. 1997; Shin et al. 1999), there are likely individual differences in the degree of disgust experienced. It is possible that disgust sensitivity may evidence an interaction with intensity of peri- and/or posttraumatic feelings of disgust in predicting feelings of mental contamination subsequent to sexual assault. Given that the current study does not directly speak to how intensity of disgust experienced in relation to sexual assault fits into the model, a sufficiently powered test of this conditional indirect effect is now needed. In addition, although taxometric research supports the examination of posttraumatic stress symptomatology on a continuum with a PTSD diagnosis representing the upper end of this spectrum (Broman-Fulks et al. 2009; Ruscio et al. 2002), another important next step will be to replicate these findings among a clinical sample of individuals with a current diagnosis of PTSD. Although unlikely, it remains possible that disgust sensitivity and mental contamination may not be significantly related at the upper end of this continuum. Finally, this sample was comprised of largely Caucasian women. Future studies will need to replicate these findings among larger and more diverse samples including those with a broader range of racial and ethnic backgrounds as well as among male victims of sexual assault.

Despite study limitations, these findings offer a number of tentative clinical implications. First, it may be particularly important to normalize feelings of disgust experienced in response to sexual assault, particularly among individuals high in disgust sensitivity. Clinicians treating sexual assault-related PTSD also should consider assessing for the presence of persistent feelings of disgust and mental contamination. In particular, individuals with such concerns may be likely to engage in related avoidance behaviors (e.g., compulsive washing) that warrant additional clinical attention (de Silva and Marks 1999). Further, evidence from case studies with adult survivors of childhood sexual abuse suggest some individuals may benefit from adjunctive cognitive therapy in addition to exposure-based treatment for PTSD aimed at specifically challenging appraisals related to perceptions of contamination (Jung and Steil 2012; Steil et al. 2011). Tailoring treatment to specifically target feelings of disgust and mental contamination may function to optimize current PTSD treatments and result in greater reduction in symptoms and improved treatment outcomes for some individuals.

This study contributes to a growing body of research identifying the importance of disgust-related factors and mental contamination in understanding the nature of sexual assault-related posttraumatic stress reactions.

Acknowledgments

This investigation was supported by the National Institutes of Health under Ruth L. Kirschstein National Research Service Award (F31 MH092994-01) awarded to the first author.

References

- American Psychiatric Association. Diagnostic and statistical manual of mental disorders. 4th ed. Author; Washington: 1994.
- Badour CL, Feldner MT, Blumenthal H, Bujarski SJ, Leen-Feldner EW, Babson KA. Specificity of peritraumatic fear in predicting panic-relevant reactivity to a biological challenge among traumatic event-exposed adolescents. *Cognitive Therapy and Research*. 2011; 42:427–438. doi: 10.1007/s10608-011-9380-0.
- Badour CL, Bown S, Adams TG, Bunaciu L, Feldner M. Specificity of fear and disgust experienced during traumatic interpersonal victimization in predicting posttraumatic stress and contamination-based obsessive-compulsive symptoms. *Journal of Anxiety Disorders*. 2012; 26:590–598. doi: 10.1016/j.janxdis.2012.03.001. [PubMed: 22465821]
- Baron RM, Kenny DA. The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology*. 1986; 51:1173–1182. doi:10.1037/0022-3514.51.6.1173. [PubMed: 3806354]
- Blake DD, Weathers FW, Nagy LM, Kaloupek DG, Gusman FD, Charney DS, et al. The development of a clinician-administered PTSD scale. *Journal of Traumatic Stress*. 1995; 8:75–90. doi:10.1002/jts.2490080106. [PubMed: 7712061]
- Cisler JM, Olatunji BO, Lohr JM. Disgust sensitivity and emotion regulation potentiate the effect of disgust propensity on spider fear, blood-injection-injury fear, and contamination fear. *Journal of Behavior Therapy and Experimental Psychiatry*. 2009; 40:219–229. doi:10.1016/j.jbtep.2008.10.002. [PubMed: 19041963]
- de Silva P, Marks M. The role of traumatic experiences in the genesis of obsessive-compulsive disorder. *Behaviour Research and Therapy*. 1999; 37:941–951. doi:10.1016/S0005-7967(98)00185-5. [PubMed: 10472711]
- Ehlers A, Clark DM. A cognitive model of posttraumatic stress disorder. *Behaviour Research and Therapy*. 2000; 38:319–345. doi:10.1016/S0005-7967(99)00123-0. [PubMed: 10761279]
- Engelhard IM, Olatunji BO, de Jong PJ. Disgust and the development of posttraumatic stress among soldiers deployed to Afghanistan. *Journal of Anxiety Disorders*. 2011; 25:58–63. doi:10.1016/j.janxdis.2010.08.003. [PubMed: 20800428]
- Fairbrother N, Rachman S. Feelings of mental pollution subsequent to sexual assault. *Behaviour Research and Therapy*. 2004; 42:173–189. doi:10.1016/S0005-7967(03)00108-6. [PubMed: 14975779]
- Feldner MT, Frala J, Badour C, Leen-Feldner EW, Olatunji BO. An empirical test of the association between disgust and sexual assault. *International Journal of Cognitive Therapy*. 2010; 3:11–22. doi:10.1521/ijct.2010.3.1.11.
- Foa, EB.; Rothbaum, BO. Treating the trauma of rape: Cognitive behavioral therapy for PTSD. Guilford Press; New York: 2001.
- Hayes AF. Beyond Baron and Kenny: Statistical mediation analysis in the new millennium. *Communication Monographs*. 2009; 76:408–420. doi:10.1080/03637750903310360.
- Hayes AF. An analytical primer and computational tool for observing variable moderation, mediation, and conditional process modeling. Manuscript under review. 2012
- Jung K, Steil R. The feeling of being contaminated in adult survivors of childhood sexual abuse and its treatment via a two-session program of cognitive restructuring and imagery modification: A case

study. *Behavior Modification*. 2012; 36:67–86. doi:10.1177/0145445511421436. [PubMed: 21937567]

- Marshall GN, Miles JNV, Stewart SH. Anxiety sensitivity and PTSD symptom severity are reciprocally related: Evidence from a longitudinal study of physical trauma survivors. *Journal of Abnormal Psychology*. 2010; 119:143–150. doi:10.1037/a0018009. [PubMed: 20141251]
- Olatunji BO. Incremental specificity of disgust propensity and sensitivity in the prediction of health anxiety dimensions. *Journal of Behavior Therapy and Experimental Psychiatry*. 2009; 40:230–239. doi:10.1016/j.jbtep.2008.10.003. [PubMed: 19061989]
- Olatunji BO, Cisler JM, Deacon BJ, Connolly K, Lohr JM. The disgust propensity and sensitivity scale-revised: Psychometric properties and specificity in relation to anxiety disorder symptoms. *Journal of Anxiety Disorders*. 2007; 21:917–930. doi:10.1016/j.anxdis.2006.12.005.
- Olatunji BO, Elwood L, Williams N, Lohr JM. Feelings of mental pollution and PTSD symptoms in victims of sexual assault. The mediating role of trauma-related cognitions. *Journal of Cognitive Psychotherapy*. 2008; 22:37–47. doi:10.1891/0889.8391.22.1.37.
- Petrak J, Doyle A-M, Williams L, Buchan L, Forster G. The psychological impact of sexual assault: A study of female attenders of a sexual health psychology service. *Sexual and Marital Therapy*. 1997; 12:339–345. doi:10.1080/026746597 08408177.
- Rachman S. Pollution of the mind. *Behavior Research and Therapy*. 1994; 32:311–314. doi: 10.1016/0005-7967(94)90127-9.
- Rüsch N, Schulz D, Valerius G, Steil R, Bohus M, Schmahl C. Disgust and implicit self-concept in women with borderline personality disorder and posttraumatic stress disorder. *European Archives of Psychiatry and Clinical Neuroscience*. 2011; 261:369–376. doi:10.1007/s00406-010-0174-2. [PubMed: 21132504]
- Ruscio AM, Ruscio J, Keane TM. The latent structure of posttraumatic stress disorder. A taxometric investigation of reactions to extreme stress. *Journal of Abnormal Psychology*. 2002; 111:290–301. doi:10.1037//001-843X.111.2.290.
- Shin LM, McNally RJ, Kosslyn SM, Thompson WL, Rauch SL, Alpert N, et al. Regional cerebral blood flow during script-driven imagery in childhood sexual abuse-related PTSD: A PET investigation. *American Journal of Psychiatry*. 1999; 156:575–584. [PubMed: 10200737]
- Steil R, Jung K, Stangier U. Efficacy of a two-session program of cognitive restructuring and imagery modification to reduce the feeling of being contaminated in adult survivors of childhood sexual abuse: A pilot study. *Journal of Behavior Therapy and Experimental Psychiatry*. 2011; 42:325–329. doi:10.1016/j.jbtep.2011.01.008. [PubMed: 21367358]
- van Overveld WJM, de Jong PJ, Peters ML, Cavanagh K, Davey GCL. Disgust propensity and disgust sensitivity: Separate constructs that are differentially related to specific fears. *Personality and Individual Differences*. 2006; 41:1241–1252. doi:10.1016/j.paid.2006.04.021.
- Weathers FW, Keane TM, Davidson JR. Clinician-Administered PTSD Scale: A review of the first 10 years of research. *Depression and Anxiety*. 2001; 13:132–156. doi:10.1002/da.1029. [PubMed: 11387733]
- Williams J, MacKinnon DP. Resampling and distribution of the product methods for testing indirect effects in complex models. *Structural Equation Modeling*. 2008; 15:23–51. doi: 10.1080/10705510701758166. [PubMed: 20179778]

Fig. 1.

A diagram of the hypothesized process model. **a** The total effect of disgust sensitivity on posttraumatic stress symptom severity. **b** The indirect effect of disgust sensitivity on posttraumatic stress symptom severity through increases in sexual assault-related mental contamination. Unstandardized path coefficients are displayed, with corresponding standardized coefficients in parentheses

Table 1

Descriptive data and zero-order relations among continuous predictor and criterion variables

	1	2	3	4	5	<i>M (SD)</i>	Range
1. Age of index assault	–	–.02	.05	.05	.01	12.80 (6.20)	4–25
2. Current age	–	–	–.08	–.15	–.25	32.34 (13.54)	18–59
3. Disgust sensitivity	–	–	–	.43 **	.52 **	15.16 (5.60)	8–34
4. Mental contamination	–	–	–	–	.66 ***	1.92 (2.21)	0–9
5. PTS symptom severity	–	–	–	–	–	32.66 (19.93)	5–91

N = 38. *PTS* posttraumatic stress*
p < .05**
p < .01***
p < .001