Sex and the sexual dysfunctions : the role of disgust and contamination sensitivity

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SEX AND THE SEXUAL DYSFUNCTIONS: THE ROLE OF DISGUST AND CONTAMINATION SENSITIVITY

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Current psychological views of sexual behavior roughly consider sexual dysfunction to be a consequence of a negative emotional reaction to erotic stimulation, which then becomes the focus of attention (e.g., Barlow, 1986; Janssen & Everaerd, 1993). Although disgust seems an obvious candidate for being one of these negative emotional reactions that interferes with healthy sexual behavior and/or sexual pleasure, current theories and empirical research focus predominantly on emotional and cognitive processes related to fear and pain (e.g., Payne, Binik, Amsel, & Khalifé, 2005), whereas the reference to disgust is mainly anecdotal (e.g., Carnes, 1998; Kaneko, 2001). In a similar vein, current cognitive–behavioral interventions often include some form of fear reduction exercises (exposure or cognitive restructuring) and pain management techniques (e.g., van Lankveld et al., 2006), whereas interventions targeted at reducing or neutralizing disgust-related feelings, appraisals, and/or action tendencies are virtually absent in the literature (for a short overview of current psychological interventions, see Heiman, 2002).

Therefore, it appears that disgust is largely overlooked as a potentially relevant factor in the etiology of sexual dysfunction. In this chapter we defend the notion that disgust nevertheless has a great promise for improving our understanding of common sexual behavior and sexual complaints and may

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provide potentially interesting clues for treatment as well. We first succinctly outline how disgust and contamination sensitivity may play roles in common sexual behaviors and may contribute to the generation of sexual complaints. We then briefly discuss how disgust and contamination sensitivity may be involved in the major sexual dysfunctions described in the *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, Text Revision* (*DSM–IV–TR*; American Psychiatric Association [APA], 2000). A major part of this chapter then focuses on vaginismus and illustrates on the basis of research how a disgust conceptualization of vaginismus may help explain this "most perplexing problem" (Leiblum, 2000, p. 181). In the final part of this chapter we discuss the clinical implications of such a disgust conceptualization for the treatment of vaginismus and related concerns.

DISGUST AND SEX

Rozin, Haidt, and McCauley (1999) argued that disgusting stimuli can be classified into several broad categories of disgust elicitors (see also chap. 1, this volume). In this section, we discuss the categories of disgust that seem most relevant for the present context of sexual behaviors: core disgust, animal-reminder disgust, and sociomoral disgust.

Core Disgust

From an evolutionary perspective, disgust is seen as a defensive mechanism that has evolved to protect the organism from contamination by pathogens and toxins present in the environment (Curtis, Aunger, & Rabie, 2004). Accordingly, disgust is focused on the intersection between the body and the environment and concentrates on the skin and body apertures (Fessler & Haley, 2006; Rozin, Nemeroff, Horowitz, Gordon, & Voet, 1995). The various body parts differ with respect to their sensitivity to contamination. It has been found that the mouth, vagina, and penis are the body parts with the highest subjective contamination sensitivity. Given the central role of these organs in the context of sexual behavior, together with the fact that bodily products (e.g., saliva, sweat, semen) and smells are among the strongest disgust elicitors (Rozin & Fallon, 1987), it is not very difficult to envisage that feelings of disgust and disgust-related appraisals may arise during sex, which in turn may influence sexual behaviors as well.

Feelings of Disgust

The notion that feelings of disgust may be elicited by sexual stimuli or sexual behaviors is not only theoretically and intuitively plausible but is also

supported by empirical evidence (e.g., Carnes, 1998; Koukounas & McCabe, 1997). Consistent with the idea that disgust may interfere with sexual pleasure, it was found that the level of experienced disgust correlated negatively with positive feelings, sexual arousal, and absorption, whereas there was a positive relationship with experienced anxiety (Koukounas & McCabe, 1997). Future studies in which state disgust is experimentally manipulated are necessary to test more rigorously the alleged causal influence of disgust in reducing sexual arousal.

Avoidant Behavior

Disgust is a defensive emotion associated with avoidance tendencies motivated to create distance from the disgusting situation or object. This may be accomplished by removal of the self from the situation but also by withdrawal of attention (closing eyes or nose, engaging in some distraction). Research in the context of spider phobia, blood-injection distress, and washing compulsions provided clear evidence that feelings of disgust (state disgust) may indeed motivate avoidant behaviors. Experimentally evoked disgust was the strongest predictor of avoidance and less compliance in a series of behavioral-approach tasks involving disgusting food, nondangerous disgusting animals, a surgery video, and simulated vomit (e.g., Olatunji, Lohr, Sawchuk, & Tolin, 2007; see also Woody, McLean, & Klassen, 2005). In a similar vein, state disgust may motivate withdrawal or avoidance of particular sexual behaviors or sex-related stimuli. In support of this, a vignette study showed that anticipated feelings of disgust were closely related to participants' willingness to carry out an action that implied physical contact with certain sexual stimuli (e.g., touching the face with a towel that has been previously used for wiping off sperm or vaginal fluids of the partner; Genten, 2005). In addition, some clinical cases have been described in the literature, in which sexual stimuli seem to elicit such profound feelings of disgust that people even attempt to avoid anything sexual in themselves and others, a condition known as *sexual anorexia* (Carnes, 1998).

Defensive Reflexes

It is conceivable that disgust and fear of contamination elicit defensive reflexes that may interfere with functional sexual behaviors. From its function to protect the organism from contamination, disgust may give rise to reflexes that are associated with the expulsion of potentially hazardous pathogens from our body. Accordingly, disgust may elicit retching during oral sex or French kissing. In addition, disgust and fear of contamination may give rise to defensive muscular contractions that are associated with the prevention of contaminants crossing the intersection of the environment and the body. There is evidence that involuntary contraction of the pelvic floor muscles is part of a general defense mechanism (van der Velde, Laan, & Everaerd, 2000) that may be

elicited by (the anticipation of) fearful and/or painful occurrences (e.g., van der Velde & Everaerd, 2001). It seems reasonable to assume that similar defensive contractions of the pelvic floor muscles can be elicited or potentiated by disgust-related appraisals (e.g., Yartz & Hawk, 2002). Following this, the prospect of mere physical contact with the vagina or anus (highly contamination-sensitive body parts) and/or the anticipation of penetration by the partner's penis (a body part with very high contamination potency; Rozin et al., 1995) may well elicit involuntary pelvic floor muscle activity (cf. van der Velde & Everaerd, 2001). In its turn, increased activity of these muscles will result in enhanced friction between penis and vulvar or anal skin, eventually giving rise to genital pain during intercourse or adding to the impossibility of having intercourse (or anal sex) altogether. This type of experience may be the start of a cascade of negative sexual experiences that not only seriously detract from sexual pleasure or satisfaction but may also result in all kinds of relational conflicts (e.g., Rathus, Nevid, & Fichner-Rathus, 2005). It would be important for future research to test whether indeed feelings of intense disgust and/or fear of contamination are accompanied by increased pelvic floor muscle activity.

Cognition

Disgust may influence pertinent cognitive processes as well. In the context of anxiety and fear, it has been consistently found that people direct their attention toward stimuli in the environment that are central to their concerns (i.e., threat cues; Harvey, Watkins, Mansell, & Shafran, 2004). The initial orientation toward threatening stimuli has been argued to be adaptive in the sense that it helps the individual to readily escape from potentially dangerous situations (Mogg, Bradley, Miles, & Dixon, 2004). Meanwhile, in sexual situations, vigilance for threat is likely to be antithetical to an efficient attentional focus on erotic cues, a requirement for functional sexual performance (e.g., Barlow, 1986; Janssen & Everaerd, 1993).

It is interesting to note that some research showed that disgust-related stimuli might have involuntary attention-attracting properties (Charash & McKay, 2002). Similar to the attention bias for threat, attention bias for disgust-related stimuli is likely to interfere with becoming absorbed in current sexual activities. Hence increased vigilance for disgusting stimuli will logically undermine the generation of sexual arousal (e.g., erection or lubrication) and will interfere with functional sexual performance. Consistent with this, it has been found that individuals who experienced relatively strong feelings of disgust indicated that they had problems in becoming absorbed in the activities portrayed in an erotic film and reported lower levels of sexual arousal (Koukounas & McCabe, 1997).

Some experimental work showed that disgust not only affects attentional processes but also may influence interpretational processes. More specifically,

it has been found that experienced disgust facilitated negative interpretations of potentially negative ambiguous cues, whereas it reduced the chance of interpreting potentially positive ambiguous cues as positive (Davey, Bickerstaffe, & MacDonald, 2006). Such disgust-induced negative interpretation bias may add further to the activation of negative emotional reactions and withdrawal responses in the context of sexual behaviors (e.g., Dorfan & Woody, 2006).

Animal-Reminder Disgust

It has been argued that the defensive mechanism of disgust originally evolved to prevent the body from contamination by pathogens and toxins from the outside environment is extended to stimuli and/or behaviors that remind us of our animal nature (Rozin et al., 1999). This disgust-mediated rejection of our animal nature is argued to serve a defensive function by maintaining the hierarchical division between humans and animals through distancing the self from animals and animal properties (Haidt, McCauley, & Rozin, 1994). Because sexual behavior is highly suggestive of our underlying animal nature, sexual behaviors and/or sexual advances may well elicit disgust to guard the human–animal border and may thus give rise to avoidance behaviors that interfere with functional sexual behaviors.

This type of disgust-relevant appraisal may also be problematic for experiencing orgasm because orgasm involves a sudden loss of voluntary control. Disgust-induced reluctance of "letting go" may thus block sexual arousal. The impossibility of experiencing orgasms may also give rise to all kinds of dysfunctional thoughts or appraisals (e.g., "I am not a normal person"; "I am a failure"; "My partner will think that I find him/her not attractive"), which in turn may result in various secondary problems, whereas the negative preoccupations with the failure of experiencing orgasms may further strengthen the original problem (e.g., through detracting the attentional focus from the arousing features of sex).

Sociomoral Disgust

A third category of disgust that may be relevant for a proper understanding of people's sexual behavior is sociomoral disgust (Rozin et al., 1999). This type of disgust is argued to be linked to the protection and internalization of (sub)culture-based rules, and it is elicited by behaviors that apparently violate such rules (Rozin et al., 1999). For example, parents who grew up in a strict heterosexual peer group may react with disgust when seeing their daughter having sex with another woman (or their son with another man) because their child's behavior violates the heterosexual standard of the parent's reference group. Rozin et al. (1999) further stressed the importance of disgust in learning to adhere to dominant sociomoral rules by arguing that

disgust is a major force for negative socialization in children: "a very effective way to internalize culturally prescribed rejections (perhaps starting with feces) is to make them disgusting" (p. 439). Accordingly, learning strict moral rules concerning sexual behaviors, or even more explicitly learning that sex is dirty altogether, may strongly influence individuals' subsequent emotional responding toward particular sexual behaviors in later life, which may contribute to the generation of sexual complaints.

What is morally correct and what is not is a very subjective and sensitive issue that may differ widely even within one culture. It is therefore possible that a specific sexual activity will elicit highly positive feelings in one person (e.g., sexual masochism, transvestism), whereas another person may consider exactly the same activity as highly disgusting because he or she feels it is not "right," it is something you should not be doing, or it is even immoral just because it is not compliant with the person's internalized sociomoral values. In a similar vein it has been shown that women with relatively liberal moral values were more inclined to be sexually active during menses and were also more unconventional in their attitudes toward sex in general (e.g., Rempel & Baumgartner, 2003). Supporting the idea that *moral disgust* may be involved in sexual behaviors, it has been shown that women with relatively restrictive attitudes toward sexual behaviors experienced more disgust when they viewed erotic slides and/or videos and had more difficulty in becoming immersed in a situation without getting distracted (Koukounas & McCabe, 1997).

On the basis of research in the context of anxiety showing that people tend to infer danger from experienced anxiety ("If I feel anxious, there must be danger"; Arntz, Rauner, & van den Hout, 1995), one could speculate that elicited feelings of disgust may also further confirm the importance of adhering to certain sociomoral rules through a similar form of emotional reasoning of the type, "if I feel disgusted it must be an inappropriate behaviour" (cf. Rachman, 2004, p. 1252). Making these kinds of emotion-based inferences will logically act in a way to further inhibit individuals' motivation to get involved in these particular disgust-eliciting sexual behaviors or in addition motivate people to refrain from sex altogether. In support of the notion that the experience of disgust may indeed bolster already internalized sociomoral rules, there is evidence that experimentally augmenting feelings of disgust can increase the severity of moral judgments (Wheatley & Haidt, 2005).

DISGUST AND SEXUAL DYSFUNCTIONS

In this section, we discuss how disgust may be involved in the generation of sexual problems and how considering the potential role of disgust may help to improve therapeutic interventions.

Desire, Arousal, and Orgasm

Sexual dysfunctions are defined as persistent or recurrent sexual problems that interfere with normal performance and cause distress for the individual and his or her partner (e.g., McAnulty & Burnette, 2004). The categories of sexual dysfunctions as described in the *DSM–IV–TR* (APA, 2000) closely follow Kaplan's three-stage model of the sexual response cycle, which consists of desire, excitement, and orgasm. Accordingly, dysfunctions are defined on the basis of problems involving desire (hypoactive sexual desire disorder, sexual aversive disorder), excitement (female sexual arousal disorder, male erectile disorder), and orgasm (female orgasmic disorder, male orgasmic disorder, premature ejaculation). As an additional category the *DSM–IV–TR* refers to sexual pain disorders, including dyspareunia and vaginismus.

As we argued in the previous section, anticipated feelings of disgust will logically motivate sexual avoidance and withdrawal, whereas cognitive biases may further confirm the negative appreciation of sex. Accordingly, enhanced feelings of disgust may well contribute to hypoactive sexual desire disorder and sexual aversive disorder. In support of this, there is clinical evidence that disgust-related appraisals are prominent in these conditions (e.g., Carnes, 1998), which led Kaneko (2001) to argue that it would be important to more fully appreciate the potential role of disgust in the diagnostic process. However, thus far the particular role of disgust in these disorders has not been the focus of empirical research. Therefore, it remains for future research to determine what type of disgust is most prominently involved (core, animal reminder, and/or sociomoral), whether the particular disgust-related preoccupations vary across patients, and whether disgust should be considered as a cause, a consequence of the complaints, or both. Yet, on theoretical grounds it seems reasonable to argue that any factor that may enhance individuals' disgust and contamination sensitivity, and/or the particular sensitivity of the body parts that are involved in sexual behavior, and/or enhance the anticipated contamination potency of relevant body parts or body products of sexual partners may set people at risk for developing sexual disorders linked to reduced sexual desire (e.g., Rempel & Baumgartner, 2003).

A very similar line of reasoning can be followed for the other disorders that are based on the stages of the sexual response cycle, with the addition that feelings of disgust and disgust-related appraisals will logically oppose the generation of sexual arousal and may thus also contribute to problems associated with reduced sexual arousal (e.g., erection problems) as well as to male or female orgasmic disorder. It may be the interaction of disgust with other factors that eventually determines the exact phenomenology of an individual's complaints. Feelings of disgust and disgust-related appraisals may perhaps be best considered as transdiagnostic phenomena (see Harvey et al., 2004). Following from this, it may well be that a more thorough appreciation of the

role of disgust in the various complaints may help to improve the current diagnostic categories (see, e.g., Basson, 2002) and provide more specific clues for more tailored interventions.

Disgust may not only help improving our understanding of the dysfunctions associated with the sexual response cycle (for both men and women), but it may also provide some fresh and promising clues that may help to explain the most perplexing and ill-understood sexual dysfunction: vaginismus. In the final section of this chapter, "The Case of Vaginismus," we therefore focus more extensively on the potential role of disgust in the generation of vaginistic complaints in a way that illustrates how considering the potential role of disgust in sexual behaviors may help to improve the conceptualization of the sexual disorders and may point to fresh starting points for therapeutical interventions.

The Case of Vaginismus

Vaginismus is defined as recurrent or persistent involuntary spasm of the musculature of the outer third of the vagina that interferes with intercourse (APA, 2000). The vaginistic complaints are characterized by persistent difficulties to allow vaginal entry of a penis, a finger, or an object, despite the woman's expressed wish to do so (Basson et al., 2003). Vaginismus may result in considerable emotional distress and often takes a chronic course (Weijmar Schultz & van der Wiel, 2005). Unfortunately, the etiology of this "perplexing condition" is largely unknown (Leiblum, 2000) and currently available treatment strategies are not very effective in reducing these complaints (e.g., van Lankveld et al., 2006).

Although the first published case reports of vaginistic complaints stem from the 19th century, still little is known about the factors that are responsible for this condition (Beck, 1993). This state of affairs led Beck to conclude that vaginismus is "an interesting illustration of scientific neglect" (p. 381). For a long time the dominant view implied that vaginismus essentially reflected a medical problem, and much effort has been invested in designing and testing various surgical solutions for the impossibility of having sexual intercourse (Abromov, Wolman, & David, 1994). More recently, injection with botuline (perhaps better known as Botox) has been used to paralyze the pelvic floor muscles to allow penetration (Ghazizadeh & Nikzad, 2004; Münchau & Bhatia, 2000).

Dominant psychological explanations imply highly aversive sexual experiences and/or sexual harassment as an important factor in the etiology of vaginismus (Rathus et al., 2005). Accordingly, the *DSM–IV–TR* (APA, 2000) refers to sexual trauma as an etiological feature of vaginismus. However, some empirical studies showed that sexual trauma is neither a necessary nor a sufficient condition for the generation of vaginistic complaints. Although a considerable proportion of women with vaginismus report a history of sexual

abuse (in terms of attempts of sexual abuse and/or forced sexual touching or being touched with hands, mouth, or objects; e.g., Reissing, Binik, Khalifé, Cohen, & Amsel, 2003), a considerable number of women with these complaints indicate that they have not experienced such abuse (e.g., ter Kuile et al., 2007). The specificity of a history of sexual abuse in the etiology of vaginismus is further questioned by the finding that sexual abuse is also quite frequent in women with complaints that certainly do not involve difficulties in allowing vaginal entry, such as sexual addiction (Carnes, 1998). Hence it appears that this type of specific aversive-conditioning experience is not relatively frequent in women with vaginistic complaints (see also Weimar Schultz & van der Wiel, 2005).

More recently, it has been argued that pain-related fears may be critically involved in vaginismus (e.g., Reissing, Yitzchak, Khalifé, Cohen, & Amsel, 2004). Although the report of pain is not a requirement for the diagnosis of vaginismus, women with vaginismus indeed often have comorbid pain complaints (e.g., Reissing et al., 2004). Accordingly, it has been shown that a considerable percentage of women with lifelong vaginismus report vestibular pain on touch with a cotton swab (e.g., ter Kuile, van Lankveld, Vlieland, Willekes, & Weijenborg, 2005). Following on from this, one could argue that vaginistic reactions may reflect a defensive response that is elicited by fear of pain associated with penetration. However, although such a fear-of-pain conceptualization of vaginismus may help in explaining the maintenance of vaginistic complaints, it is not immediately evident how such a view could explain the etiology of vaginismus, especially for those women who report a lifelong course of the condition.

The validity of a fear-of-pain explanation is further questioned by a randomized waiting-list controlled treatment trial that tested the efficacy of cognitive–behavioral therapy, aiming at reducing fearful preoccupations with vaginal entry in women with lifelong vaginismus (van Lankveld et al., 2006). Although this intervention was found to be successful in reducing vaginistic complaints (van Lankveld et al., 2006), the effect size of this cognitive–behavioral intervention was modest at best, and only a very small minority (12%) of treated individuals eventually reported successful intercourse at 1-year follow up. The disappointing effect size of the treatment of vaginismus on this target outcome measure not only points to the importance of future efforts to improve the available interventions but also casts further doubt on the validity of the current fear of pain conceptualization of vaginistic complaints. Therefore, it seems that other factors are critically involved in vaginismus apart from fear of pain.

Disgust and fear of contamination are probable candidates in this respect. Accordingly, it was proposed that the involuntary contraction of the pelvic floor muscles in women with vaginismus may be elicited by the prospect of penetration by a potential contaminant (e.g., penis) rather than by the prospect of pain per se (de Jong, van Overveld, Weijmar Schultz, Peters, & Buwalda,

in press). Such a disgust conceptualization of vaginismus would give rise to at least three testable hypotheses. First, it might be that these women are extremely sensitive to disgust and contamination. Such enhanced disgust sensitivity could reflect a general tendency to respond with the emotion of disgust to any given stimulus and/or a more focused tendency to respond with extreme disgust that is restricted to sexual stimuli. Second, women with vaginismus may be characterized by restricted moral values in general or with respect to sexual behaviors in particular, which may result in moral-disgust-induced defensive responses in the prospect of sexual intercourse (cf. Rozin et al., 1999). Third, women with vaginismus may be characterized by a particular individual physiological response stereotype to react with extreme contraction of the pelvic floor muscles in response to acute feelings of threat and/or disgust (for a test of a conceptually similar hypothesis in the context of chronic low back pain, see Vlaeyen et al., 1999).

Vaginismus: Enhanced Contamination Potency of Sexual Stimuli

As a first exploration of the possible role of disgust in vaginistic complaints, we examined whether sexual stimuli have indeed relatively strong contaminating potency in women with lifelong vaginistic complaints compared with patients with *dyspareunia* (defined as recurrent genital pain associated with sexual intercourse) and women without sexual complaints (de Jong et al., in press). In support of the idea that disgust may indeed be involved in vaginismus, results showed that women with vaginistic complaints displayed a relatively strong avoidance of stimuli that were potentially contaminated by sexual stimuli compared with women with dyspareunia or without sexual complaints.

It is interesting to note that the enhanced sensitivity for disgust and contamination in women with vaginistic complaints was not restricted to sexual stimuli but was evident in other domains of possible disgust elicitors as well. The difference between the vaginistic group on the one hand and the dyspareunia and control groups on the other hand was mainly carried by their differential scores on the Hygiene and Death subscales of the Disgust Scale (DS; developed by Haidt et al., 1994). The items of these scales represent disgust elicitors capable of producing contaminating agents (cf. Olatunji, Sawchuk, Lohr, & de Jong, 2004). High scores on these items seem therefore to imply some aversion toward, and avoidance of coming into contact with, objects that may transmit contaminating agents (e.g., DS Hygiene: "I never let any part of my body touch the toilet seat in a public washroom"; DS Death: "It would bother me tremendously to touch a dead body"). In other words, the high levels of disgust propensity in the vaginistic group seem to reflect a fearful preoccupation with contamination.

The preliminary finding that vaginistic women show a generally enhanced aversion toward coming into contact with stimuli that are capable of pro-

ducing or transmitting contaminating agents, points to the possibility that high levels of disgust and contamination sensitivity are a premorbid characteristic that makes people liable to develop vaginistic complaints. That is, intercourse-related stimuli (e.g., penis) are more likely to acquire inflated contamination potency in women with high, than in women with low, levels of disgust and contamination sensitivity. In a similar vein, the vagina is more likely to acquire strong contamination sensitivity in women with high disgust propensity (cf. Davey, Forster, & Mayhew, 1993). Both characteristics will logically facilitate the generation of disgust-motivated avoidance tendencies, such as the contraction of the pelvic musculature in the prospect of penetration.

One way to further explore the potential role of enhanced disgust and contamination sensitivity in the development of vaginismus would be to test whether the generally enhanced disgust and contamination sensitivity (e.g., as indexed by the DS) is affected by treatment. If indeed strong contamination sensitivity sets people at risk for developing vaginismus rather than being a consequence of these complaints, one would expect an individual's general contamination sensitivity to remain largely unaffected by successful treatment (cf. de Jong, Andrea, & Muris, 1997).

Vaginismus: Enhanced Disgust-Eliciting Properties of Sexual Stimuli

As a more direct test of the role of disgust in vaginismus, we subsequently investigated whether individuals with vaginistic complaints reacted with (enhanced) feelings of disgust in response to erotic slides and video materials displaying sexual intercourse (de Jong, 2007). In support of the idea that disgust and fear of contamination is somehow involved in vaginismus, women with vaginistic complaints reported considerably higher levels of experienced disgust on a visual analog scale ranging from 0 to 100 than did women without these complaints (55 vs. 31). In addition, the women with vaginistic complaints reported higher levels of experienced threat (35 vs. 5), higher levels of annoyance (53 vs. 30), and lower levels of pleasant feelings (22 vs. 43). These between-groups differences were specific for the erotic slides or videos and were absent for generally disgusting pictures selected from the domain of core-disgust elicitors (e.g., unflushed feces, maggots, vomit).

Unexpectedly, this pattern of subjective feelings was not accompanied by participants' facial electromyographic (EMG) responding. In line with previous research, the generally disgusting pictures evoked stronger EMG responses of the *m. levator labii superioris alaeque nasi* (the muscle that is responsible for wrinkling the nose) than did the neutral pictures (e.g., de Jong, Peters, & Vanderhallen, 2002; Vrana, 1993; see chap. 5, this volume). However, similar responses were absent for the erotic slides. Although there was a trend in the predicted direction, indicating that specifically the vaginistic group responded

with an increase of levator activity in response to the erotic slides, the effect size was small ($eta^2 = .12$) and did not reach significance. One explanation might be that the elicited disgust was not so much motivated by core-disgust related appraisals but by moral disgust. The nose wrinkle (that is indexed by levator activity) has been most closely associated with disgust situations related to oral incorporation, whereas raising the upper lip has been most associated with more elaborated disgust elicitors such as dead bodies and certain moral violations (Rozin, Lowery, & Ebert, 1994). Following on from this, it would be important to replicate this procedure, measuring both nose wrinkle and upper lip raise to see whether indeed the induced feelings of disgust reflect moral rather than core disgust.

Vaginismus and Moral Disgust

A parallel vignette study provided some tentative evidence for the idea that enhanced moral disgust may be involved in vaginismus (de Jong, Peters, Weijmar Schultz, & van Overveld, 2008). Women with relatively high scores on the vaginismus subscale of the Golombok Rust Inventory of Sexual Satisfaction (Rust & Golombok, 1986) indicated expecting relatively strong feelings of disgust when they imagined getting involved in particular uncommon sex-related behaviors that may violate the sociomoral rules of particular subgroups, such as watching a video showing your partner while he or she is masturbating (de Jong et al., 2008). In a similar vein there was a strong negative correlation between the willingness to get involved in this type of situations and participants' level of vaginistic complaints. These findings seem consistent with the hypothesis that women with vaginismus are characterized by relatively restricted sexual standards. Restricted sexual values set people at risk for experiencing disgust during sexual behaviors (i.e., as a result of some violation), which in turn may facilitate the generation of vaginistic complaints.

To see whether vaginismus would be more generally connected with strict moral values irrespective of the sexual domain, we also asked participants to complete the Schwartz Value Survey (Schwartz & Bilsky, 1987). Most important for the present context, the vaginistic women rated "conformity," which was defined as restraint of actions and impulses that may harm others or violate social expectations, as much more important than women without sexual complaints (Trautman, 2006). Hence it appears that vaginistic women are characterized by relatively strict sociomoral values irrespective of the domain of concern. To get some insight into whether relatively restrictive (sexual) standards have a causal influence on the generation of vaginistic complaints, it would be interesting to see whether challenging the rigidity of individuals' sexual moral and/or learning a more flexible attitude toward the full range of socially acceptable sexual behaviors has a favorable influence on the intensity

of vaginistic complaints. If so, this would not only be of theoretical interest but it may also provide a relatively unexplored starting point for the treatment of vaginismus.

Some Speculations in Regard to Clinical Implications

Although there is some tentative empirical evidence that disgust and contamination sensitivity may contribute to the various sexual dysfunctions, much research remains to be done to get a clearer picture of the actual role of disgust in this domain of psychopathology and of how, for example, disgust interacts with other relevant emotions such as shame, fear, and pain in generating particular complaints. Meanwhile, a disgust conceptualization of sexual dysfunctions provides some fresh clues that may help to improve the available interventions. For example, it suggests that it might be worthwhile in cognitive–behavioral therapy to add a focus on contamination-related preoccupations and to include exposure exercises aimed at reducing the contamination potency of sexual products and/or the sensitivity to contamination of the individual's body parts (cf. de Jong, Vorage, & van den Hout, 2000). In addition, it suggests that it might be helpful to include exposure exercises to more generally reduce individuals' disgust propensity irrespective of the particular domain of sex-related stimuli.

In their review, Rozin and Fallon (1987) reported three different mechanisms that may act to unmake disgust responses, and all of these mechanisms may be integrated in regular treatment. The first mechanism concerns the initiation of accepting expressions by others toward the relevant object or action. Following this, the framing of homework assignments as well as the therapist's expressed attitudes toward the ingredients of the assignments both during the instruction and the evaluation stage may well contribute to a positive change in the evaluation of particular behaviors as well as of particular stimuli. It is important to note, however, that Rozin and Fallon expressed doubt concerning the efficacy of this type of process for well-established disgust elicitors (as might be the case in sexual dysfunctions).

As the second mechanism, Rozin and Fallon (1987) mentioned *conceptual reorientation*. This notion refers to the phenomenon that the disgust response can disappear when, for example, a person discovers that what he or she thought was rotting milk is actually yogurt. Such a cognitive switch may also be of relevance in the context of sexual complaints. For example, a meaningful proportion of people with sexual complaints might never have had a close and detailed look at their own sex organs or at their sex partner's. Homework assignments to get a more elaborated and accurate view of the sex organs and their responding to the various stages of the sexual response cycle may, for example, contribute to a reorientation of a penis from being an atrocious, uncontrollable, attacking, dirty monster toward the conception of the penis

as a cute, caring body part that can share love and sexual pleasure with a loved sex partner. To the extent that moral disgust is involved it might be helpful to use cognitive–behavioral therapy-like techniques to facilitate change of a dysfunctional conception of sex as being dirty, sinful, and immoral acts into a more functional (and arousing) conception of sex.

Finally, Rozin and Fallon (1987) argued that the strength of the disgust response can weaken through extinction or habituation, for example, when someone is consistently forced into close contact with the disgusting item (e.g., when cleaning toilets is part of your job, the aversion to dirty toilets gradually declines). In a similar vein, there is preliminary evidence to suggest that exposure may be helpful in the modification of food aversions (de Silva, 1988). Yet, as for disgusting items in general, individuals experiencing disgust-relevant sexual dysfunctions will ordinarily avoid opportunities that would provide for the extinction or habituation of the disgust response. They are likely to use all kinds of strategies, such as distracting attention, withdrawing particular behaviors, or avoiding sustained contact with particular sexual products, and so forth. Therefore, it might be useful to arrange homework assignments that help the clients to force themselves to tolerate close and sustained direct physical contact with disgusting stimuli. It may be most efficient to arrange these assignments in a gradual manner (disgust hierarchy) from stimuli or situations that are only mildly disgusting or aversive to stimuli or situations that are maximally disgusting. Given the lack of effective, theory derived psychological interventions for sexual dysfunctions (Heiman, 2002), future efforts to further develop and test interventions targeted at reducing disgust-related feelings and appraisals may lead to welcome contributions to the available intervention techniques.

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