



UvA-DARE (Digital Academic Repository)

Central activation of the sexual system

Spiering, M.

[Link to publication](#)

Citation for published version (APA):
Spiering, M. (2004). Central activation of the sexual system.

General rights

It is not permitted to download or to forward/distribute the text or part of it without the consent of the author(s) and/or copyright holder(s), other than for strictly personal, individual use, unless the work is under an open content license (like Creative Commons).

Disclaimer/Complaints regulations

If you believe that digital publication of certain material infringes any of your rights or (privacy) interests, please let the Library know, stating your reasons. In case of a legitimate complaint, the Library will make the material inaccessible and/or remove it from the website. Please Ask the Library: <https://uba.uva.nl/en/contact>, or a letter to: Library of the University of Amsterdam, Secretariat, Singel 425, 1012 WP Amsterdam, The Netherlands. You will be contacted as soon as possible.

Chapter 8

General Discussion

Theoretical Remarks and Limitations

Data showed that subliminally presented sexual primes facilitated recognition of sexual targets (Chapter 2, Experiment 1; Chapter 3, Experiment 2). It was hypothesized that sexual responses are activated without the need of conscious evaluation. To what extent do the data provide support for this hypothesis, which are the alternative explanations and limitations of this effect? First, faster decisions to sexual target stimuli, when preceded by sexual primes compared to neutral primes, was interpreted as *facilitation* by sexual primes, however, could also be *deceleration* by neutral primes. Second, sexual primes may have produced *general* arousal rather than *sexual* arousal. Third, since no (sexually specific) physiological response served as dependent variable, it can be suggested that effects cannot be extrapolated to emotional (sexual) responding. We will reflect on these points.

Deceleration by neutral primes

Subliminally presented sexual primes facilitated categorization of sexual targets compared to neutrally primed sexual targets. We interpreted this effect as evidence for activation of implicit sexual memory. An alternative interpretation is that the neutral (i.e., plant) primes decelerated decisions to the incongruent, that is, sexual, targets. The underlying mechanism for this deceleration effect can be a Stroop-like response conflict; primes do not influence the encoding of the targets but merely the selection of the correct response (De Houwer, Hermans, Rothermund, & Wentura, 2002; see also compound-cue theory, Rattcliff & McKoon, 1988, 1995).

Data from our experiments, however, contradict this alternative interpretation. Only decisions in the congruent sex-sex trials differed from their incongruent equivalent, plant-sex. Decisions after incongruent sex-plant (Chapter 2, Experiment 1) or baby-plant trials (Chapter 3, Experiment 2) did not differ from the congruent plant-plant trials. It is unlikely that Stroop-like response conflicts only occurred after plant primes and not after sex or baby primes. It is concluded that the emotional significance of sexual information is responsible for the difference between sex-sex and plant-sex trials, and that this difference indeed can be interpreted as facilitation of recognition of sexual targets by subliminally presented sexual primes.

General arousal rather than sexual arousal

Can it be that sexual primes elicited general arousal and thereby speeded up decisions to sexual targets? Stated this way, this seems unlikely because main effects of Prime were not found (Chapter 2, Experiment 1; Chapter 3, Experiment 2). Decisions after sex primes were only faster regarding sex targets, and not regarding neutral targets. Stated differently, however, it might have been that subliminal sexual primes elicited a *diffuse* emotional response that subsequently was attributed to the sexual targets (cf. Murphy & Zajonc, 1993). Öhman and Soares (1994) showed that very brief presentations of emotional slides do not prevent a relatively specific analysis of content. Snake fearful participants showed enhanced SCR's to subliminally presented pictures of snakes and spider fearful participants to subliminally presented pictures of spiders. However, this can only serve as an indirect argument in relation to the specificity of the effect caused by subliminally presented sex primes.

The data from our experiments do not exclude the alternative explanation that sex primes activated nonspecific emotional representations instead of sexually specific representations. A design in which pictures with other emotional content function as targets would probably clear up this issue. Another research strategy is to implement a sexually specific physiological dependent variable. This will be elaborated on below.

Lack of a physiological dependent variable

We did not include a physiological dependent variable in the design of our experiments while physiological activation is an important construct in our model (see Chapter 7, Figure 7.3). This can be seen as an important limitation. In general, studying the sexual emotions has the advantage of a specific physiological measure available, i.e., genital vasocongestion. We supervised a pilot study in women in which genital response was measured through monitoring of Vaginal Pulse Amplitude (VPA; Glas, & Van Kemp, 2001). Eight sexual pictures were presented for 8000 ms. In between these presentations were subliminally presented sexual and neutral pictures. Data revealed no enhanced effect on VPA of subliminal sexual pictures compared to neutral pictures. In the study of Janssen et al. (2000) that was reported on in the Introduction of this thesis, the measurement of penile circumference changes also failed to produce clear effects. In conclusion, the measurement

genital vasocongestion may be not sensitive enough to pick up the small priming effects.

In stead of genital vasocongestion, we have tried to register corpus cavernosum smooth muscle action potentials (CC-EMG). Wagner, Gerstenberg, and Levin (1989) showed that erectile responding is associated with decreased smooth muscle activity. Because this effect precedes circumference changes, it would very well be suitable to detect fast effects of subliminally presented pictures. However, the low signal-noise ratio prevented us to find reliable effects in our lab and also other authors have reported that the measurement of CC-EMG is currently problematical (Geer & Janssen, 2000; Jiang et al., 2003).

Although strong empirical evidence for unconscious activation of a physiological sexual response is absent, two studies can provide indirect evidence. First, in the Janssen et al. (2000) study an effect of subliminal primes on circumference was found, although the direction of this effect was reversed; it was suggested that during initial stages of erection the penis undergoes an increase in length, which is associated with a simultaneous *decrease* in circumference (General Introduction, p. 11). Second, a recent study employed a classical conditioning procedure in which a subliminally presented picture with sexual relevance (i.e., abdomen of the opposite sex) was paired to a sexual film clip (Hoffmann, Janssen, & Turner, 2003). Both men and women showed evidence of conditioning on measurements of genital vasocongestion. This might imply that unconscious perception of the "sexual" picture resulted in sexually specific information processing.

If we assume that sexual primes activated sexual representations in memory in our experiments, can this activation correspond to memory associations without relevance to emotional processing? This depends on the definition of emotion. We agree with Damasio (2003) that the *feeling*, the perception of a certain state of the body, can be viewed as essential to emotions. This feeling, however, can be thought about as a product of unconscious information processing that starts with the activation of representations in memory. For a full-blown sexual response, the activation of representations in explicit and implicit memory is a necessary condition (see Chapter 7, Figure 7.3). Emotion processing in the brain, although clearly involving subcortical regions such as the amygdala, is not limited to those regions but rather involves a wide range of brain systems (Compton,

2003). In this respect, memory associations do not contradict emotional processing, but in stead can be seen as a part of this.

Outcome of the Research Objectives

We end this thesis by a short evaluation of the outcome of our research objectives that were presented at the end of the General Introduction.

A first objective was to improve the preattentive priming paradigm that was introduced by Janssen (1995). In Chapter 2 and 5, I report about experiments that enhanced the interpretations of the priming effects found by Janssen et al. (2000). The main conclusions are: the sexual system can be activated without the need of conscious evaluation (Chapter 2); the deceleration effect of consciously presented sexual primes is dependent of instructions and not specific for sexual response (Chapter 5).

The experiments reported in Chapter 3 and 4 relate to the second objective, to extrapolate the findings to a female population and investigate gender differences with respect to activational mechanisms. The main conclusion is that implicit effects may be weaker in women but qualitatively the same (Chapter 3). Gender differences are present in explicit sexual memory (Chapter 4).

A third objective was to investigate the clinical applications of the priming approach. As was stated in Chapter 6, the main conclusion may be that priming effects are too small to have an individual clinical value.

A last objective was to further test, and when necessary modify, our model of sexual arousal (Janssen et al, 2000; Chapter 1, Figure 1.1). Although the experiments provide further support for this model, the search for a suitable physiological dependent variable did not succeed. We did develop the theoretical model and a more precise version was presented in Chapter 7 (Figure 7.3).

The main objective of this thesis pertained to clarify central activation of the sexual system. Activation of sexual response may be largely unconscious. For sustained response attention to internal or external sexual cues is needed. Also, regulation of the response merely functions through conscious evaluation, for which attention is a prerequisite. Future research along this line constitutes a promising area that could lead to a deeper understanding of pathways of activation of sexual response.