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Increasing Neutral Distraction Inhibits Genital but not Subjective Sexual Arousal of Sexually Functional and Dysfunctional Men

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To assess the effects of distraction and level of erotic stimulation on physiological and subjective sexual arousal, sexually dysfunctional ($n = 23$) and functional ($n = 26$) men were studied. It was hypothesized from previous investigations that men with erectile dysfunction would show a different genital response pattern to distraction during sexual stimulation when compared with sexually functional men. Distraction load was manipulated through different verbal instructions about how to deal with pairs of random digits. Erotic stimulation level was manipulated through the selection of erotic video content. In both groups, increasing distraction was found to increasingly inhibit genital responding, but not to affect subjective arousal. Both physiological and subjective arousal were higher when erotic stimulation level was high. An interaction effect of distraction and erotic stimulation level was observed: the linear dose–response association that was found during high erotic stimulation was not found under low stimulation conditions, which may reflect a floor effect. The implications of the findings for the cognitive theory of sexual arousal disorder are discussed.

KEY WORDS: sexual arousal; distraction; genital arousal; subjective arousal; men.

INTRODUCTION

Psychological conceptualizations of sexual arousal disorder in men suggest a key role for attentional resource limitations in etiology and problem maintenance (Barlow, 1986; Geer & Fuhr, 1976; Sbrocco & Barlow, 1996). Men with erectile dysfunction (ED) are hypothesized to direct their attention, either consciously or unconsciously, to external or internal stimuli to such an extent that it might serve to inhibit sexual reactivity. They are held to process nonsexual thought content when they appraise a situation as demanding their sexual performance (Abrahamson, Barlow, Sakheim, Beck, & Athanasiou, 1985; Barlow, 1986). Thought content may include neutral nonsexual topics, such as household chores, or more affect-laden content, such as expectancies of not being able to achieve a full erection, loss of erection during continued sexual interaction, as well as ruminations about the expected negative reaction of the partner, and about the long-term negative consequences of sexual inadequacy for the relationship.

A number of studies have addressed the effects of distraction on sexual arousal by using a multiple-task paradigm. Both sex-related and neutral distraction tasks have been studied. For the purpose of this study, only research on neutral distraction effects is reviewed. The pertinent research can be divided in three groups: effects of distraction on the genital response to erotic stimulation, effects on subjective arousal, and effects of level of erotic stimulation on genital as well as subjective sexual arousal. These three lines of research will be briefly reviewed below.

As to genital arousal, neutral distraction was found to result in decreased responding in sexually functional male volunteers (Abrahamson et al., 1985; Farkas, Sine, & Evans, 1979; Geer & Fuhr, 1976). This effect was found with both auditory and audiovisual erotic stimulation and

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with distractor tasks in the same or different sensory modality as that of the sexual stimulus.

Unexpectedly, Abrahamson et al. (1985) found that sexually dysfunctional men did not respond to neutral distraction with decreased tumescence, but with the same rate of genital arousal as in the no-distraction condition. A floor effect explanation was proposed for the findings (Abrahamson et al., 1985; Barlow, 1986). Although thought content was not directly addressed in the study, distraction was hypothesized not to inhibit the genital response in dysfunctional men because they are already distracted by an attentional focus on worry-related thought content. Cognitive distraction that is not performance-related might redirect the person's attention away from his distracting performance concerns, and thus possibly even disinhibit genital arousal; however, the observation that both functional and dysfunctional participants reacted to erotic film with adequate (moderate) and equal levels of penile tumescence when not distracted by the extra task remains unexplained by this account. Abrahamson et al. (1985) suggested that the different composition of their sample compared with the samples of previous distraction studies could be responsible. Moreover, the distraction manipulation as experienced by the dysfunctional participants might not have been strong enough.

In another study, Abrahamson, Barlow, and Abrahamson (1989) found no inhibitory effect of neutral distraction, as compared with no distraction, on genital responding of both functional and sexually dysfunctional males. They examined the genital response to erotic video under conditions of no distraction, neutral distraction, and sexual-performance-related distraction. The absence of effect of neutral distraction was speculated to have been the result of the specific distraction manipulation that required little cognitive effort.

Although the results remain inconclusive, the studies reviewed suggest that inhibition level of male genital arousal by limitation of attentional resources may depend on the magnitude of the distraction load. Studies of distraction using graded levels of distraction have thus far not included sexually dysfunctional men.

As to the effect of distraction on subjective sexual arousal, findings have thus far been equivocal in sexually functional males, with less subjective sexual arousal with increasing cognitive load found in some studies (Becker & Byrne, 1988; Przybyla & Byrne, 1984), but an absence of such effect in other studies (Farkas et al., 1979; Viglietta, 1982). Abrahamson et al. (1985, 1989) compared sexually functional and dysfunctional men and found no decrease in subjective arousal in either group during neutral distraction compared to a no-distraction condition.

An explanation for the inconsistencies in the effects of distraction on subjective sexual arousal may be related to the different methods to measure subjective arousal. Studies using a real-time measure, such as moving a mechanical lever to continuously indicate the current level of experienced subjective arousal (Abrahamson et al., 1989; Farkas et al., 1979; Viglietta, 1982), have found no effect of distraction; in contrast, studies using a retrospective measure, such as a self-report question to rate the endorsement of adjectives describing feelings of arousal (see Becker & Byrne, 1988; Przybyla & Byrne, 1984), did find an inhibitory effect of distraction. A retrospective measure of subjective arousal thus might actually in part reflect level of genital responding and not the subjective experience of sexual arousal (for this effect in women, see Brotto & Gorzalka, 2002). Subjective arousal, operationalized by continuously moving a mechanical lever during stimulus presentation, on the other hand, might more accurately reflect the subject's cognitive/affective evaluation of the erotic stimulus quality. Continuous monitoring of subjective arousal has successfully been used in studies of sexual responsivity (Wincze, Venditti, Barlow, & Mavissakalian, 1980). It only interfered with genital arousal at low levels of sexual stimulation.

Level of intensity of erotic stimulation has been found to affect subjective arousal of healthy volunteers, with higher arousal reported in response to more explicit film, whereas genital response remained unaffected (Abrahamson et al., 1985; Farkas et al., 1979). This differential effect on subjective arousal was not found in sexually dysfunctional men (Abrahamson et al., 1985), but this was ascribed to high intragroup variability. As noted earlier, level of stimulation was also found to moderate the effect of attentional focus manipulation in sexually functional men (Wincze et al., 1980). To control for this differential effect, level of erotic stimulation was included in the present study.

This study aimed at providing a comprehensive test of the effect of distraction on genital and subjective sexual arousal by systematically varying level of distraction in a parametric design within samples of both sexually functional and dysfunctional men, while including low and high levels of erotic stimulation to control for stimulation level.

Summary of Hypotheses

1. Men with ED will show increased genital responding to increased distraction during sexual stimulation, compared with no distraction. In contrast, sexually functional men will show a

Table I. Demographic Characteristics of Sexually Functional and Dysfunctional Men

Characteristic	Sexually functional ($n = 26$)	Sexually dysfunctional ($n = 23$)	t or χ^2
Age (in years)			
M	47.9	55.7	2.6*
SD	11.9	9.1	
Education (years)			
M	14.5	12.9	*ns*
SD	5.1	5.2	
Marital status (%)			
Married	35	48	*ns*
Widower	0	4	*ns*
Separated/divorced	27	39	*ns*
Single	31	9	*ns*
Steady partner	8	0	*ns*
Cohabitating (%)	54	52	*ns*
Employed (%)	65	57	*ns*

* $p < .05$.

decrease in genital response under increased distraction.

2. When distraction level is further increased, both functional and dysfunctional men will show decreased genital responding.
3. Compared with high level of erotic stimulation, genital response to low level of erotic stimulation will decrease faster under increasing distraction.
4. Subjective sexual response will not be affected by level of distraction, when continuously assessed during erotic stimulus presentation.
5. Compared with low level of erotic stimulation, subjective sexual arousal will be higher during high level of erotic stimulation.

METHOD

Participants

Sexually functional participants ($n = 26$) were recruited through media advertisements. Sexually dysfunctional participants ($n = 23$) were recruited in the hospital's sexology and urology departments, and through media advertisements. The ads invited healthy heterosexual men 25 years and older, with and without, erectile difficulties. They announced the assessment of physical sexual functioning and subjective sexual arousal during audiovisual erotic stimulation in a laboratory situation and guaranteed privacy. All participants were paid NLG 50 (US$20) for their participation. Demographic characteristics are shown in Table I. Sexually dysfunctional men were significantly older than functional men. Other demographic group characteristics were not significantly different.

Participants in the sexually functional group explicitly denied having any sexual complaints. Sexual dysfunction was ruled out by means of sexual history taking. During history taking attention was paid to the enhancement of rapport with the applicant, and participants were encouraged to reveal any sexual complaints. Male participants were included in the dysfunctional group when they reported to have ED according to *DSM-IV* (American Psychiatric Association, 1994) criteria. Only men were included with psychogenic ED. The recent occurrence of good erections upon awakening or during masturbation was considered sufficient evidence of the psychogenic nature of the problem (Everaerd, 1993). If these were absent in the man's recent history, major biological causes could be examined through waking erectile assessment using penile Doppler ultrasonography during visual erotic stimulation; however, no Doppler screening proved necessary. Before allocation to the clinical status group on the basis of sexual history results, participants completed the QSD.[3] Subjects in both groups were post hoc found to differ significantly on all ED items of this instrument, with healthy volunteers scoring lower than ED patients.

Applicants for participation in the study were screened by means of sexual history taking for exclusive or predominant heterosexual orientation. Men with premature ejaculation according to *DSM-IV* criteria were

[3]QSD data are available from the first author upon request.

excluded from the sexually dysfunctional sample because of possible differences in etiology between men with exclusive erectile disorder and men with erectile disorder + premature ejaculation (Rowland, Cooper, & Slob, 1996).

Persons were excluded in case a diagnosis was established of current major depression or psychotic disorder, as assessed by structured interviewing using the Composite International Diagnostic Interview (World Health Organization, 1990). Three applicants for participation were excluded. One reported being homosexual; two other excluded applicants were found to be severely depressed.

Stimulus Materials

Sexual stimuli were selected parts of erotic color films with sound with a duration of 3 min, presented on a color TV monitor with a diagonal screen width of 60 cm placed at a distance of approximately 200 cm. Highly explicit stimuli depicted explicit heterosexual acts of fellatio, cunnilingus, and vaginal intercourse, including close-up shots of the genital area. These stimuli were selected excerpts from commercially available erotic videos. Low explicit stimuli depicted heterosexual intense kissing, undressing, and clothed and nude caressing without showing the genital areas in close-up. Female breasts were shown. Oral sex and intercourse were not shown. The low explicit stimuli were selected excerpts from a commercially available video series for sex education and self-help for sexual difficulties (Drenth & Liekens, 1992). Whether high and low explicit stimuli possess the assumed differential sexual arousal qualities was not evaluated in previous research.

Distraction stimuli were pairs of random digits (0–9) presented through loudspeakers placed laterally at both sides of the participant at a distance of approximately 150 cm. The digits were read aloud by a female voice at a normal speaking volume level. Digits of each pair were separated by 1-s intervals. Digit pairs were separated by 5-s intervals. The sound levels of the film and the distraction stimuli were adjusted so that both were at approximately the same level. The manipulation of cognitive load of the distraction task was modeled after Geer and Fuhr (1976). The smallest load was created by the instruction (1) "Pairs of digits will be heard during the erotic film. You don't have to do anything with these digits." Other instructions producing increasing cognitive loads were (2) to repeat the digit pairs aloud, (3) to add up the pairs and verbalize the result aloud, and (4) to classify the pairs according to a complex rule and verbalize the result aloud. The instruction for the classification rule was "combined together the digits form a number (3 and 5 are: 35; 6 and 1 are: 61); odd numbers under 50 are classified as A; even numbers under 50 are classified as B; odd numbers over 50 are classified as B; even numbers over 50 are classified as A."

Assessment

Physiological Recordings

An electromechanical strain gauge was used for penile circumference measurement (Barlow, Becker, Leitenberg, & Agras, 1970), connected to a BIO2 high-sensitivity bio-amplifier (Psylab) and an IBM-compatible computer. The DC signal recorded changes in mV electrical output caused by penile circumference change. The participants were instructed to position the gauge on the midsection of the penile shaft with the gauge part at the dorsal side of the penis. The gauge was disinfected in ethanol 70% for 10 min before every usage. Calibration was performed after every session using a round calibration device, with eight subsequent steps of 5-mm circumference increase, ranging from 95 to 130 mm.

Subjective Measure of Sexual Arousal

Subjective sexual arousal was measured real-time and continuously. Participants received instructions to use the rotating dial of a potentiometer that was mounted on a small plastic box and could be moved through an 180° arc along a sliding scale to indicate their subjectively experienced sexual arousal. The box was mounted on the right- hand armrest for both right-handed and left-handed men. The signal produced by the potentiometer was calibrated to a linear 0–100 scale, with 0 indicating *absence of arousal* and 100 indicating *maximum subjective sexual arousal*.

Questionnaire for the Screening of Sexual Dysfunction

A 10-item version of the Vragenlijst voor het Signaleren van Seksuele Dysfuncties (Questionnaire for the Screening of Sexual Dysfunction, QSD; Vroege, 1995) was employed to assess the level of sexual dysfunction in participants. It contains five questions concerning masturbatory sexual activity and five questions concerning sexual interaction with partner. Regarding each sexual situation, three questions assessed erectile functioning (problems with not achieving erection at all, with attaining

full penile rigidity, and with maintenance of rigidity). Two questions assessed premature ejaculation (problems with ejaculating faster than one desired and with ejaculating almost immediately upon onset of sexual stimulation). For every problem aspect, both estimated frequency and level of associated distress were reported using 5-point Likert scales. Anchor points used were *almost never* and *always* for frequency and *no trouble* and *very much trouble* for associated distress.

Procedure

Upon arrival at the laboratory, a research assistant explained the experimental procedure with sufficient detail to enable an informed decision of the participant. An informed consent text was read and signed. The participant then completed the QSD and a sexual history was taken. Placement of the mechanical strain gauge was explained, including the mid-shaft positioning with the gauge part at the dorsal side of the penis. The assistant left the room and subsequent contact was conducted over an intercom to assure privacy. The participant removed his clothing as far as necessary and then sat in a comfortable recliner chair. The participant positioned the penile gauge and was asked to cover his lower body with a textile cover that he could find next to his chair. The assistant explained the use of the subjective dial. Next, the cognitive task was explained. A trial period then started in which the participant practiced with all different instructions for this task. Then the experimental procedure began. The first 3 min were considered an adaptation period. During it, quiet music was played. During the next 60 s a penile circumference baseline was established. After baseline measurement, eight stimulus presentations of 3 min each were performed. Before the start of every erotic film segment, a prerecorded instruction was given for the cognitive task that was to be performed during the subsequent presentation. Between each stimulus presentation, a rest period allowed the participant's arousal to return to baseline. The duration of the rest period was at least 2 min but was prolonged if necessary until baseline arousal level was reached. The last 60 s of every interstimulus interval was used to measure prestimulus baseline penile circumference. The cognitive distraction tasks during erotic stimulation were presented in two identical series, each moving from the least distracting task to the one with the highest cognitive load. Four different film presentation sequences were used in which the sequence of high- and low-explicit stimuli were counterbalanced, as well as the presentation sequence of the four film clips within each erotic stimulation cluster. Random assignment to one of the four sequences was performed separately for both groups of participants before the start of every experimental session.

Study Design

This study employed a $2 \times 4 \times 2 \times 2$ factorial design. Group (sexually functional vs. sexually dysfunctional) and stimulus presentation order (first high, then low explicit vs. first low, then high explicit) were investigated as between-subjects factors. Distraction with four steps of increasing cognitive load and erotic stimulation level (high vs. low) were investigated as within-subjects factors.

Data Reduction

An IBM-AT computer sampled data for offline analysis. Physiological recordings were stored after conversion from mV to mm circumference change, based on the individual post-session calibration data. Data were averaged to provide one measurement for every epoch of 10-s duration. The difference between pre-stimulus baseline circumference and circumference during erotic stimulus presentation provided a measure of genital reactivity. The average genital response per epoch was used for analysis. Subjective data were also averaged for every 10-s epoch. Level of distraction was analyzed as categorical variable.

RESULTS

Genital Responding

Because of computer failure, data were lost for three participants. A 2 (Group) $\times$ 4 (Distraction) $\times$ 2 (Erotic Stimulation Level) $\times$ 2 (Order) repeated measures ANCOVA was performed on the genital response data (age covaried), with mean penile circumference change as the dependent variable. Main effects were found for Distraction, $F(3, 43) = 5.75$, $p < .01$, and Erotic Stimulation Level, $F(1, 45) = 5.71$, $p < .05$, as well as a Distraction $\times$ Erotic Stimulation Level interaction, $F(3, 43) = 3.77$, $p < .05$; see Fig. 1. Post hoc analysis revealed that there is a significant difference between the two means (low vs. high stimulation) on the first (Listen Only) and the second (Repeat), but not on the third (Add) and fourth (Classify) level of distraction. The ps are .012, .003, .380, and .784, respectively. At the high level of stimulation the response means of all distraction levels differ significant from each other (all ps $< .05$). Whereas

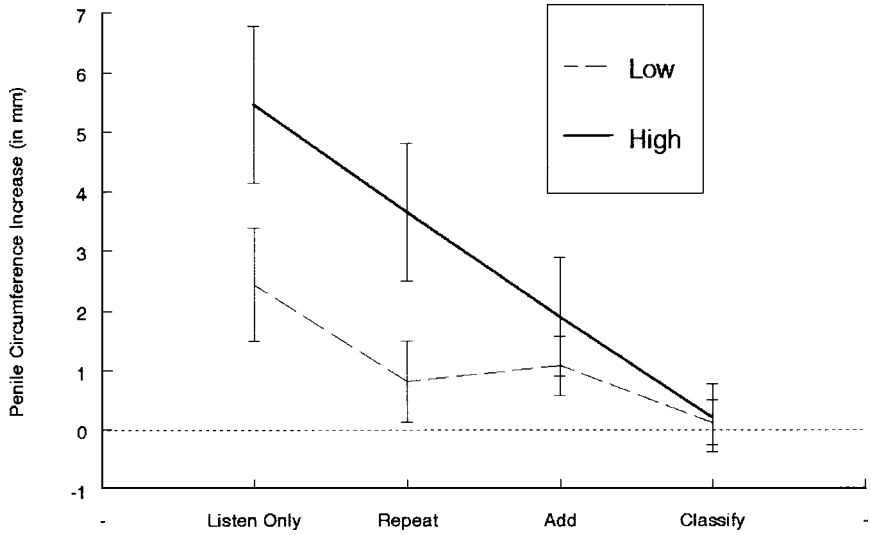

Fig. 1. Effects of distraction and level of erotic stimulation on genital sexual arousal.

at the low level only the first (Listen Only) and the fourth (Classify) differ significantly ($p = .022$).

Subjective Sexual Arousal

A 2 (Group) × 4 (Distraction) × 2 (Erotic Stimulation Level) × 2 (Order) repeated measures ANCOVA was performed on mean subjective response data, with age covaried. A main effect was found for Erotic Stimulation Level, $F(1, 45) = 16.15$, $p < .001$. Compared with low stimulation level, high stimulation level was associated with higher ratings of subjective arousal (see Fig. 2).

Concordance of Genital and Subjective Arousal

Tables II and III show the results of a Pearson's product–moment correlation of mean and maximum genital and subjective sexual responses across subjects, level of distraction and level of erotic stimulation, respectively. Mean and maximum responses were found to correlate highly (rs $> .80$, ps $< .001$) under both

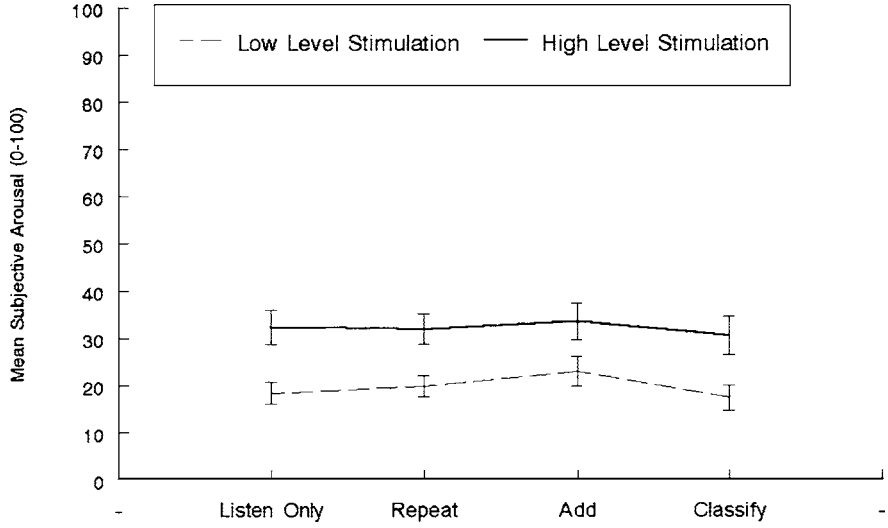

Fig. 2. Effects of distraction and level of erotic stimulation on subjective sexual arousal.

Table II. Pearson's Correlation of Genital and Subjective Sexual Arousal Under High and Low Level of Erotic Stimulation and Conditions of Increasing Distraction: Mean and Maximum Scores

Genital/subjective correlation	Low-level stimulation				High-level stimulation			
	Listen only	Repeat	Add	Classify	Listen only	Repeat	Add	Classify
Mean	.09	.07	.17	.25	.23	.17	.24	−.05
Maximum	.13	.12	.19	.11	.34*	.22	.15	.13

*$p < .05$.

low- and high-level of erotic stimulation and at all levels of distraction, whereas genital and subjective responses yielded nonsignificant correlations, with the exception of maximum response under high erotic stimulation at the lowest level of distraction ($r = .34$, $p < .05$).

DISCUSSION

As to the effects of neutral distraction by means of a secondary nonsexual task, a straightforward impeding effect on genital sexual arousal was revealed. Increasing distraction levels interfered increasingly and in a linear fashion with genital response to erotic video, which was reduced to baseline level during the most distracting secondary task (confirming Hypothesis 2). An interaction effect on genital arousal was found for distraction level and level of erotic stimulation (confirming Hypothesis 3). Although genital arousal decreased from the Repeat condition to the Add condition under high-level stimulation, this was not found under low-level stimulation. This finding probably reflects a floor effect in the low stimulation condition where arousal was already brought back to baseline level when moving from the first (Listen Only) to the second (Repeat) distraction level. Subjective sexual arousal was not affected by neutral distraction (confirming Hypothesis 4). As to erotic stimulation level, an independent effect was found (confirming Hypothesis 5). Compared with low stimulation level, highly explicit videos produced higher subjective and genital responses. No differences between sexually functional and dysfunctional men were found in their reactions to distraction or level of erotic stimulation (disconfirming Hypothesis 1).

The distraction effects on genital arousal were in line with earlier investigations of sexually functional men (Abrahamson et al., 1985; Farkas et al., 1979; Geer & Fuhr, 1976; but see Abrahamson et al., 1989). They contradicted, however, previous findings regarding sexually dysfunctional males who remained unaffected (Abrahamson et al., 1985). Compared with the memory task in Abrahamson et al. (1985), and the estimation task in Abrahamson et al. (1989), the digit manipulation tasks in the present study might have created a larger cognitive load, impeding erection in sexually dysfunctional and functional men alike. The findings on erotic stimulation level were in line with those of Abrahamson et al. (1985), although they found subjective responding to a highly explicit sexual video only to be higher in functional participants.

The absence of a distraction effect on subjective arousal was in line with earlier studies that also employed real-time measurement of subjective arousal (Abrahamson et al., 1985, 1989; Farkas et al., 1979; Viglietta, 1982), both in sexually functional and dysfunctional males.

The distinction between automaticity and controlledness of information processing during erotic stimulation can be invoked as an explanatory concept for the finding of differential effects of distraction on genital

Table III. Pearson's Correlation of Mean and Maximum Level of Sexual Arousal Under High and Low Level of Erotic Stimulation and Conditions of Increasing Distraction: Genital and Subjective Measures

Mean/maximum correlation	Low-level stimulation				High-level stimulation			
	Listen only	Repeat	Add	Classify	Listen only	Repeat	Add	Classify
Genital	.93*	.93*	.83*	.81*	.98*	.94*	.96*	.86*
Subjective	.91*	.89*	.86*	.91*	.85*	.89*	.90*	.91*

*$p < .001$.

and subjective arousal in this study. Cognitive processes are considered automatic when they do not require conscious awareness, preexisting intention or goal-directedness, volitional control, and when they are "efficient" in the sense that very little attentional capacity is required for their operation (Bargh, 1994; McNally, 1995).

With respect to the efficiency characteristic, genital sexual arousal cannot be considered an automated process. However, decreasing attentional resources did not hinder sustained subjective sexual arousal. This might reflect an automatic cognitive process.

Although sustained genital sexual responding can thus be viewed as a result of controlled cognitive information processing, the very early components of sexual responding have recently been theorized to constitute an automatic process (Janssen, Everaerd, Spiering, & Janssen, 2000). Janssen et al. hypothesized that genital responses are elicited in a fast, automatic fashion, even under difficult or adverse conditions (Janssen & Everaerd, 1993, p. 240; see also Geer, Lapour, & Jackson, 1993; Janssen et al., 2000; and for female sexual arousal, Everaerd, Laan, Both, & van der Velden, 2000). The model states that subjective arousal, on the other hand, is a controlled cognitive process that is moderated by situational and attributional factors. The implications of the model are clearest when dealing with the initial phases of sexual response preparation. When sexual meaning is encoded after stimulus perception, response preparation occurs automatically. Automatic processing continues to elicit genital responding even when attentional resources decrease, as long as the processing of sexual stimuli is not competing with threat- or worry-related thought content (E. Janssen, personal communication). Sustained responding could thus be hypothesized to depend on the continuous generation of "GO-responses" to which the predictions of the early phase model apply. This model, however, cannot accommodate the present finding that neutral distraction inhibited the genital but not the subjective dimension of sustained sexual responding.

An alternative account for these findings might be provided by a "dual systems" model of emotion and motivation (e.g., Baeyens, Vansteenwegen, Hermans, & Eelen, 2001), which presupposes distinct strategical and tactical dimensions of emotion (see Bradley, 2000, p. 603; Lang, Bradley, & Cuthbert, 1990). A referential system would serve a strategic purpose whereas an expectancy system would operate in the tactical phase of response generation.

The referential system serves to quickly assess "likes and dislikes" in a global dichotomy of stimuli which are either positive and approachable or negative and avoidable. It attaches a positive or negative affective "tag" to perceptual input and determines global response tendencies to either approach or hold on to, or to get rid of, avoid or escape from stimuli. The nature of the referential system entails little cognitive effort, making it energetically inexpensive and capable of simultaneously scanning large numbers of perceptual elements, spanning the entire perceptual field.

The expectancy system, in contrast, is postulated to identify reliable predictors of biologically significant events and to prepare the organism for dealing with this anticipated event in a cost-effective way. This includes the activation at a suitable moment of autonomic and motor responses of appetitive (to affectively positive stimuli), defensive (to negative stimuli), or orienting (to affectively neutral stimuli) nature (Baeyens et al., 2001; Lang et al., 1990). The activation of autonomic, visceral, and motor responses, however, seriously taxes the organism's limited energetic, attentional, and processing resources. To reduce response cost, the expectancy system will tend to respond only to reliable predictor stimuli. Baeyens et al. (2001) hypothesized that this system feature presupposes a sensitivity of the expectancy system for contingency relationships between stimuli and for the relative informational value of predictors. As a consequence of these characteristics, the expectancy system requires substantial attentional capacity.

The genital response to erotic stimulation is a slow and costly appetitive response, preparing the individual for approaching a positively evaluated sexual stimulus. From an evolutionary perspective, it would, therefore, be economic to confine erectile responding to situations in which reliable predictors are assessed for the completion of a sexual approach. This implies that a controlled cognitive process, specifically the expectancy system, may govern the deployment of genital sexual responses. In contrast, the subjective response to erotic stimulation can be viewed as involving the referential system. Although controlled elaboration of sexual stimuli will take place, for instance during conscious sexual fantasy, the primary appraisal of the emotional valence of changing perceptual aspects of the stimulus constellation during ongoing erotic stimulation requires continuous monitoring of the perceptual field, invoking the operation of a referential system. The hypothesized involvement of the referential system predicts that subjective sexual arousal will be less demanding with respect to available attentional capacity.

Sexually functional and dysfunctional males reacted with equal genital arousal while being (relatively) undistracted during the lowest level of a competing cognitive

task. The absence of significant differences occurred despite the obvious clinical differences between these groups of participants during initial screening. These results contradict earlier contentions (Abrahamson et al., 1985; Barlow, 1986; Janssen, Everaerd, van Lunsen, & Oerlemans, 1994) that sexually dysfunctional men are chronically more distracted from attending to external stimuli compared with functional men. It remains possible that disinhibition of genital response in sexually dysfunctional men by neutral distraction is a more subtle effect which can only be observed at lower levels of distraction. It may be that the laboratory setting in the present study constituted a more distracting environment than that in Abrahamson et al.'s (1985) study.

The observed effect of erotic stimulation level confirms earlier work with regard to subjective arousal in volunteers (Farkas et al., 1979). However, our finding that genital reactivity in this group, as well as in sexually dysfunctional men, is also strongly influenced by erotic stimulation level stands in contrast with results of Farkas et al. (1979), who found no effect of erotic stimulation level on genital arousal. This discrepancy might be accounted for by differences between the two studies in level of erotic stimulation.

The "dose–response" relationship between attentional capacity and genital response indicates a robust phenomenon. But although it demonstrates that becoming severely distracted has a deleterious influence on the erectile response to visual erotic stimulation, it adds little to our understanding of the genesis or maintenance of sexual dysfunction. Other interventions did have differential effects on genital and subjective responses to sexual stimulation in healthy and sexually dysfunctional men (Barlow, 1986; Bruce & Barlow, 1990; Janssen & Everaerd, 1993). Among these are performance demand (Abrahamson et al., 1989; Beck, Barlow, & Sakheim, 1983; Heiman & Rowland, 1983), self-evaluation (Beck et al., 1983), and the interaction of self-focused attention and dispositional self-consciousness (van Lankveld, van den Hout, & Schouten, in press), and some of these findings have withstood replication tests. Thus, it appears that limiting task-relevant attention by inducing sex-related thought content allows discerning healthy and dysfunctional males. The absence of differential responding between sexually healthy men and men with ED suggests that being distracted by a non-sex-related distractor while sexually stimulated may not be an essential factor in the process of becoming sexually dysfunctional. The low range of obtained subjective responses, which might have eliminated distraction effects through a floor effect, limits the confidence in our inferences with respect to distraction effects on subjective arousal.

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