AN EXPERIMENTAL INVESTIGATION OF PREORGASMIC RECONDITIONING AND POSTORGASMIC DECONDITIONING

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The effects of pre- and postorgasmic presentation of moderately erotic cues were assessed in an analogue study. Eight heterosexual male volunteers (18 to 23 years) participated in three assessment (baseline, termination-of-treatment, and two- to three-month followup) and eight masturbatory conditioning sessions. Three slides of nude females of initially equal erotic value were paired respectively with the plateau, refractory, and resolution phases of the subjects' sexual cycles. Over treatment, stimuli paired with the plateau phase increased significantly in penile tumescence indices of eroticism; conversely, stimuli paired with the refractory phase decreased significantly. The conditioned effects on tumescence were largely extinguished at followup. While treatment did not alter short-term subjective indices of eroticism, stimuli presented during the refractory phase were rated significantly less erotic than the other stimuli at followup. The findings suggest that the "pairing" model of orgasmic conditioning is insufficient to account for previously reported clinical findings. A broader conceptualization of the mechanisms of orgasmic conditioning, and implications for treatment are discussed.

DESCRIPTORS: sexual behavior, sexual deviation, penile erection, postorgasmic deconditioning, pre-orgasmic reconditioning, heterosexual males

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Over the last 14 yr, a number of successful case reports involving the application of orgasmic reconditioning (guided fantasy in masturbation) to modify stimulus control of sexual arousal have been published (see review by Abel and Blanchard, 1974). In only three instances, however, (two case reports and one controlled study) has orgasmic reconditioning been applied free of interpretively confounding treatment strategies. McQuire, Carlisle, and Young (1965) reported increased heterosexual interest among patients who fantasized heterosexual intercourse during a 5-sec period immediately preceding orgasm; no details were provided. Jackson (1969)

instructed a 20-yr-old male voyeur to masturbate whenever he felt the urge to peep; he was further told to focus on his most exciting pornographic photos before ejaculation. After two weeks of this regimen, the client reported no desire to peep; pornographic pictures were then replaced with Playboy-type nude female photos. At nine-month followup the client again reported no desire to peep and that he had experienced two satisfactory heterosexual relations in the interim. Finally, in a series of own-controlled experiments, Conrad and Wincze (1976) assessed attitudinal, behavioral, and physiological responses of four homosexuals to orgasmic reconditioning treatment. While the subjects in this study reported improvements in their sexual adjustment, behavioral and physiological measures failed to change.

Considering the sparse, confounded, and variable state of the orgasmic reconditioning literature there is a clear need for controlled studies to evaluate the effectiveness of orgasmic reconditioning and method(s) by which its effects are achieved.

If tumescence is, in fact, conditionable via pairing neutral cues with facilitative phases of the sexual cycle, the question arises whether it is possible to decondition tumescence by associating erotic cues with sexually neutral or suppressive phases of the sexual cycle. In nearly all males, and possibly in women as well (Bardwick, 1971), the offset of orgasm initiates a short refractory phase. During this period, rhythmical contractions gradually cease, a profound sense of muscular and subjective relaxation ensues, and tumescence is physically and powerfully inhibited (Masters and Johnson, 1966). Regardless of the sensual qualities of males' sexual partners, their tumescence eliciting power is commonly absent during the refractory phase. Only after this phase will males achieve another full erection and/or ejaculation.

At present it is not clear whether the refractory phase may function as a suppressive UCS in a manner analogous to the facilitative role of the plateau and orgasmic phases. Existing evidence is either uncontrolled or obliquely related to the issue at hand. Davis (1976) reported successfully decreasing a college male's homosexual fantasies from eight to zero per week, over three weeks, by instructing him to engage in homosexual fantasy for 5 min immediately after completing intercourse with his wife. The findings in this case are rendered suspect, however, by the lack of physiological and/or behavioral corroboration of the subject's self-report data (Conrad and Wincze, 1976). McConaghy (1970) and colleagues (Barr and McConaghy, 1971) conditioned penile volume decreases to neutral geometric forms by pairing them, respectively, with films of nudes of the subjects' nonpreferred sex and faradic shock. Finally, Rachman and Hodgson (1968) and Herman, Barlow, and Agras (1974) reported decreases in the arousal value of mildly erotic cues during backward conditioning phases of arousal conditioning experiments.

The absence of controlled studies investigating the effects of postorgasmic pairing on sexual arousal constitutes a second obvious gap in the orgasmic conditioning literature. The present study was designed to investigate, in a controlled fashion, the effects on sexual arousal of pre- and postorgasmic presentation of moderately erotic cues.

METHOD

Subjects

Eighteen adult males initially responded to advertisements (placed in local community and U.C.L.A. campus newspapers) requesting volunteers for research in physiological functioning. Three subjects chose to drop out after an initial interview during which the experimental protocol was explained. The subjects were informed that they would be asked to masturbate under private laboratory conditions and learn to estimate accurately 2 min before onset of ejaculation, and further, that they would be shown a number of moderately erotic slides of females during the treatment sessions and their sexual response to each would be assessed. For ethical reasons, the instructions made reference to possible deconditioning of arousal toward females similar to ones observed during the study. There was, however, no reference made to *differential* conditioning of arousal to different stimuli *i.e.*, arousal would decrease to some stimuli and increase to others.

Potential subjects were asked to sign a letter of informed consent, fill out a combined and modified version of the Sexual Behavior Inventory and masturbation questionnaire (Bentler, 1968), and participate in an extensive screening interview. Five subjects who evinced anxiety regarding their sexual functioning or who had abnormal sexual histories (dysfunction and/or deviation problems) were screened at this point. Two additional subjects were dropped after the baseline session: one showed no penile response to any of the female slides, the other left due to employment time constraints. Eight, normally functioning, heterosexual males (age 18 to 23) thus completed the experiment. The subjects were paid $25.00 for their participation in the study.

Measurement Apparatus

Penile circumference was measured using a close looped, mercury-in-rubber strain gauge (Parks Electronics) identical to that described by Rosen (1973). Voltage changes were received through a direct input dc coupler and recorded on a polygraph (Grass, model 5D1). The transducer was calibrated before and after each session by placing the loop around two standard cylinders and recording the resultant pen deflection.

Experimental Setting

The experimental setting consisted of two adjoining, soundproof rooms (2.7 by 3.7 m) connected by an intercom and observation window. A comfortable reclining chair was located in the subject's room beneath the observation window and facing a large movie screen on the opposite wall. A foot switch directly beneath the subject's left foot was wired to a slide projector and polygraph in the adjoining room. A press on this switch moved the slide projector to the next slide and activated the event marker pen of the polygraph. The subjects wore headphones, through which soft recorded music and verbal directions were presented as required. The adjoining room housed the stimuli presentation (slide projector and tape recorder), response recording (polygraph), and attention control (flashlight) equipment, allowing the experimenter to monitor the experimental protocol.

Procedure

Each subject participated in three assessment (baseline, termination of treatment, and two- to three-month followup) and eight experimental sessions.

Assessment sessions. The purpose of the assessment sessions was to assess changes over time in the eroticism of the slides of females presented during the experimental sessions. At the start of baseline assessment, the subject was instructed to place the transducer near the bottom of his penile shaft and avoid manipulating it once it was in place. In order to convert penile tumes-cence changes to per cent of maximum tumescence scores, the full tumescence range of each subject was first assessed. Flaccidity was defined as the subject's minimum circumference level once stabilization occurred (less than 1% of full-scale variability over 30 sec) while listening to soft, instrumental music. The subject was then asked to manipulate himself to full erection and press the foot switch if and when full erection was obtained. Full erection was defined as the maximum circumference level recorded during the self-manipulation stages of either the baseline, termination, or followup assessment sessions.

The subject was then presented with 13 color slides of nude and seminude females in poses of varying erotic appeal. As the slides were presented twice (in reverse order), 26 slides were presented in all. Each presentation was for 2 min, with 20 sec of baseline response (within 5% variability) required between slide presentations. The subject was instructed to look at each slide throughout its presentation interval and neither force, nor inhibit, but merely allow whatever response the slide elicited to occur. No fantasy instructions were provided. The subject was asked to signal if any of the slides appeared familiar.

Three commonly employed measures of tumescence were recorded during the slide presentation intervals: (a) the maximum amplitude of erectile response, (b) the latency to the maximum amplitude, and (c) the overall-tumescence response over the slide presentation interval, *i.e.,* the area under the pen deflection curve formed by the tumescence response to the slide presentation.

After the subject had removed the transducer and was fully dressed, he was asked to rank order the females in the 13 different slides from most sexually appealing to least sexually appealing. The subject was asked to do so fully dressed with transducer unattached in order to preclude him from ranking the slides on the basis of his estimate of the amount of erectile response elicited by each. The subject was then asked to rate each

of the 13 females on various Semantic Differential rating scales (Marks and Sartorious, 1968). Four scales were concerned with the subject's appraisal of the females' erotic appeal; six scales related to a general evaluation of the females' personality, and three scales were concerned with the affective impact of the females.

Finally, the subjects were asked to keep a written record of all instances in which the experimental slide females were employed, or "spontaneously" appeared, in sexual or nonsexual fantasies outside the laboratory.

Selection of experimental stimuli (CS+, CS—, CSe). For each subject, the two penile amplitude responses to each of the 13 slides were averaged and the results used to form an "objective" rank order of the slides, from most to least sexually arousing. The three median slides were selected for use as experimental stimuli because their median position allowed for later examination of arousal increments as well as decrements.

The exact median slide (labelled CSe) was presented during each experimental session after the subject's postorgasmic tumescence level had returned to baseline. CSe thus provided a measure of the effects of repeated exposure to a mildly erotic stimulus which is repeatedly incorporated into sexual fantasies. The two slides to either side of the exact median slide were alternately designated to subjects as the CS+ (presented shortly before ejaculation in the experimental sessions), and the CS— (presented after ejaculation).

This procedure was repeated for each subject. Different female slides were thus designated as the experimental stimuli for different subjects.

Experimental sessions. Each subject received eight identical experimental sessions spaced as closely as possible. Most subjects completed the sessions within two weeks; all finished the sessions within three weeks. No instructions were provided to subjects regarding use of experimental slide females in fantasies outside of the laboratory.

Once relaxed, the subject was asked to begin masturbating using whatever fantasy material

was necessary to produce arousal. He was further asked to estimate 2 min before ejaculation and press the foot switch at that point; this turned on the CS+ slide and resulted in the notation of an event on the polygraph record. At the onset of ejaculation, defined as the moment of first emission of fluid, the subject was asked to repress the switch thus turning off the CS+. The subject's report of the onset of orgasm was confirmed by a change in the polygraph record from a rapid, nonrhythmical pen deflection pattern during masturbation to a slower, rhythmical pattern during ejaculatory contractions. The total time that the CS+ was presented was recorded.

The subject was asked to repress the foot switch at the offset of ejaculation (defined as the moment of last emission of fluid). The accuracy of self-report was again confirmed by the polygraph record, *i.e.,* conclusion of the slow, rhythmical, ejaculatory pattern. The CS— slide was presented at that point; it was presented for the same length of time as was the CS+ on that trial. After the CS— was turned off, the subject was instructed to relax in the chair. The CSe slide was presented 6 to 8 min later, after the subject's penile circumference had returned to baseline (within 5% variability). The variable latency of CSe presentation was required to ensure that all subjects, regardless of CS— presentation intervals, were in the experimental context for the same length of time during postorgasmic detumescence. The CSe was presented for the same period of time as the CS+ and CS—.

Attention Control

During the experimental sessions, the subject was instructed to pay close attention to the females in the three slides and to incorporate them into sexual fantasies; he was cautioned, however, against closing his eyes, for fear that his fantasies might stray to extraneous females. To ensure that the subject paid close visual attention to the slide females throughout their presentations, a low-intensity light was momentarily flashed on the slides a random number of times (from 0 to 2) during each presentation interval. The sub-

ject was asked to press the foot switch whenever the light flashed on the screen. Failure to confirm each light flash resulted in cancellation, with repetition, of that experimental session.

Termination and followup assessments. The protocol during the treatment termination and followup assessments (two to three months after termination) was the same as during the baseline assessment.

At the conclusion of the followup session, the subjects were asked what specific hypothesis they thought was being investigated. All subjects overlooked the conditioning features of the study entirely. They reported that the sole purpose of the research was to assess the ability of males to estimate 2 min before orgasm. In their view, the experimental slides were inserted solely to assist them in masturbatory progress to orgasm. All hypotheses and results were then provided to the subjects.

The design of the experiment thus allowed for analysis of change in seven dependent measures (three objective and four subjective) at three points (baseline, termination of treatment, and followup).

RESULTS

Subjects were successful in reporting all attention control disks of light flashed on the treatment slides; no slides were reported as familiar.

A two-way analysis of variance was separately performed on the subjects' responses to the experimental stimuli at baseline on each dependent measure. The results indicate there were no initial differences between the stimuli groups on any of the three objective or four subjective measures.

Tumescence Results

The most direct measure of the effects of treatment appears to be the maximum level of penile tumescence achieved during each slide presentation interval. Penile amplitude was measured by subtracting the penile tumescence level

at the start of each slide presentation interval from the highest level reached during that interval. To convert amplitude scores to per cent of maximum amplitude scores, each subject's absolute responses were divided by his full tumescence range. Table 1 presents the subjects' average amplitude responses, expressed as absolute and as per cent scores, to the experimental stimuli at three phases of the experiment. The mean amplitude response to the CS+ increased over treatment by 6.6 mm circumference, or 18.3% of maximum. Similarly, the mean response to the CSe increased by 2.8 mm, or 7.6%. Conversely, the mean response to the CS— decreased over treatment by 3.2 mm, or 11.0%.

To separate treatment effects from changes over sessions in overall responsivity, each subject's amplitude scores were divided by the median score of his total distribution of responses within each assessment session. Experimental effects were assessed via change over time in the median ratio (henceforth referred to as "median") scores of the experimental stimuli.

Figure 1 presents the subjects' average median amplitude responses to the experimental stimuli at three phases of the experiment. Relative to each session's median response, CS+ and CSe increased over treatment by 86.3% and 37.3% respectively; CS— decreased by 26.1%.

A groups and sessions analysis of variance, applied to the baseline and termination amplitude data, indicated no overall Stimuli groups or Sessions effects; a significant interaction was found however, between Stimuli groups and Sessions over treatment $(F = 3.78, df = 2/14, p < 0.05)$. The analysis thus indicates that the experimental procedure had a differential impact on the tumescence elicitation potential of the various stimuli. Tests of simple main effects indicated that CS+ elicited significantly larger amplitude, and CS— elicited significantly smaller amplitude, at termination than at baseline $(p < 0.025$ in both cases). There was no significant change across sessions for the CSe stimuli. *A posteriori*, nonorthogonal comparisons, using Dunnetts' test, showed that CS+ elicited significantly

Table 1

Tumescence responses of subjects to three experimental stimuli at three phases of the experiment.

Treatment Stimuli	Amplitude		Overall Tumescence			Latency		
	mm[a]	per cent[b]	mm[c]	per cent	me-dian[d]	sec-onds[e]	per cent	me-dian
CS+								
Baseline	9.6	31.8	39.9	24.5	112.4	93.9	78.2	96.8
Termination	16.2	50.1	70.6	41.3	174.6	89.5	74.3	94.1
Followup	10.9	32.1	62.9	36.6	140.0	98.5	82.1	100.5
CS−								
Baseline	9.9	32.5	35.2	23.2	88.3	80.3	66.9	82.5
Termination	6.7	21.4	20.8	14.4	47.5	98.2	82.1	104.2
Followup	7.0	20.0	18.3	16.0	78.0	87.7	73.0	90.4
CSe								
Baseline	9.9	32.3	41.8	25.1	108.6	92.1	75.1	94.1
Termination	12.7	39.9	48.9	29.2	89.7	93.0	79.6	97.4
Followup	6.8	17.0	41.4	28.1	76.9	81.2	67.6	82.0

[a]Numbers indicate maximum penile circumference expansion.

[b]Numbers indicate percentage of maximum response recorded during the experiment.

[c]Numbers indicate area under the pen deflection curve formed by penile circumference expansion over 2-min stimuli presentation intervals.

[d]Numbers indicate ratio of the mean absolute score to the median score of the distribution of responses within that session.

[e]Numbers indicate time to maximum amplitude.

larger amplitude responses than CSe ($p < 0.05$), while CS− elicited significantly smaller amplitude than CSe ($p < 0.05$) at termination.

Data from the followup sessions were excluded from the analysis in appreciation of possible bias caused by nonparticipation of three subjects. A separate two-day analysis of the followup amplitude data indicated no significant differences between Stimuli groups at that time.

Overall tumescence was assessed via direct planimeter measurement of the area under the polygraph curve of the penile responses to the slide presentations. Each subject's absolute scores were divided by his largest overall-tumescence response during any of the assessment sessions and thus converted to per cent of maximum scores. The subjects' average overall-tumescence responses to the treatment stimuli at three phases of the experiment are presented as absolute, per cent of maximum, and as median response scores in Table 1. Table 1 indicates that CS+

increased over treatment by 62.2% relative to the median response. Conversely, both CSe and CS−decreased, by 18.9% and 40.8% respectively.

Analysis of variance, applied to the overall-tumescence data, indicated a significant interaction between Stimuli groups and Sessions over treatment ($F = 8.84$, $df = 2/14$, $p < 0.005$). As with amplitude measure, tests of simple main effects indicated that CS+ elicited significantly larger overall-tumescence responses, while CS− elicited significantly smaller responses at termination than at baseline ($p < 0.01$ in both cases). There was no significant change across sessions for the CSe stimuli. A posteriori comparisons indicated that CS+ elicited significantly larger overall-tumescence responses than CSe ($p < 0.01$), while CS− elicited significantly smaller overall-tumescence responses than CSe ($p < 0.05$) at termination. Two-way analysis of variance of the median overall-tumescence data at
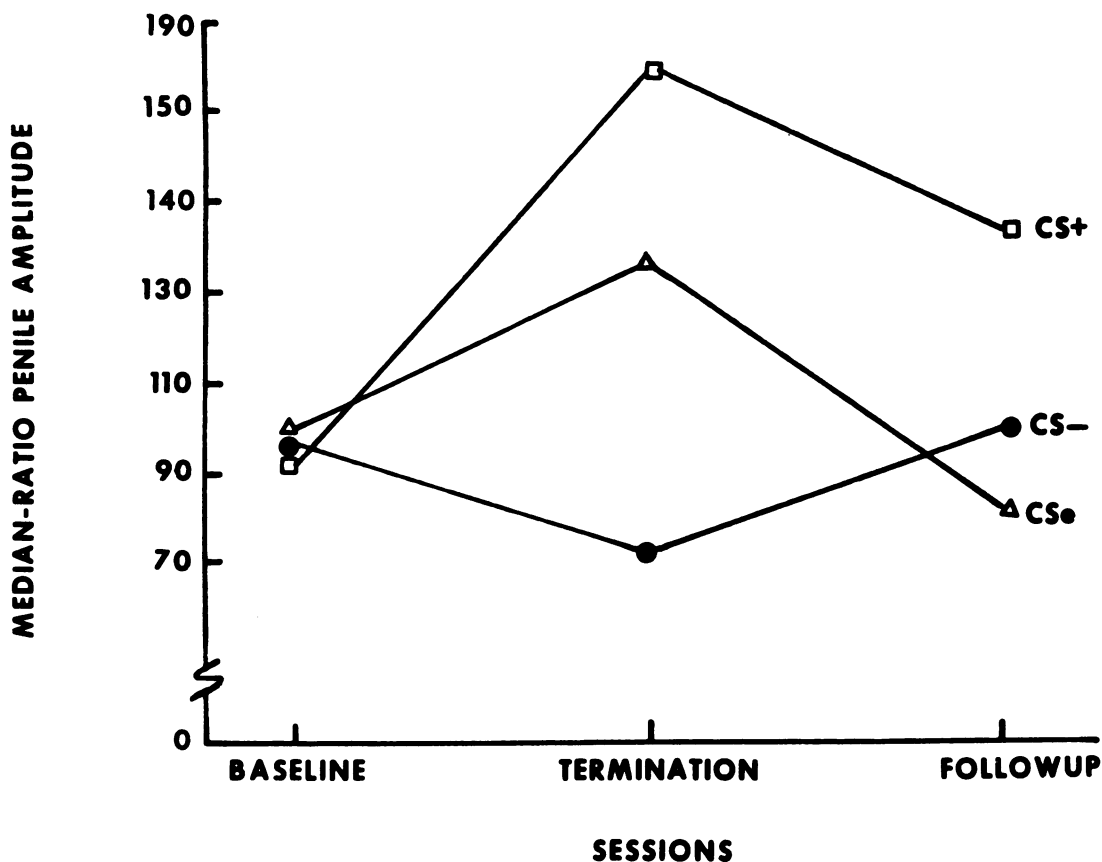
Fig. 1 Subjects' mean penile amplitude response (expressed as median-ratio scores) to three experimental stimuli at three phases of the experiment.

followup indicated no significant differences between Stimuli groups at that time.

Latency was defined as the period of time from onset of slide presentation until maximum tumenscence had been achieved. The subjects' average latencies to the experimental stimuli at three phases of the experiment are presented as absolute, per cent of maximum (using the subject's longest latency during any of the assessment sessions as base), and as median latency scores in Table 1. The only change of any magnitude was a 21.7% increase in CS— latency over treatment. Analysis of variance indicated no significant interaction between Stimuli groups and Sessions over treatment. Two-way analysis of variance of the median latency scores at followup similarly indicated no significant differences between Stimuli groups at that time.

Subjective Measures of Eroticism

Table 2 presents the mean ratings of the experimental stimuli on the eroticism scale of the semantic differential, and the position of those stimuli on the subjective rank order of eroticism at three phases of the experiment. Over treatment, there were small changes on both measures (less than 8.6%) in the subjective assessment of the eroticism of the experimental stimuli. Analysis of variance indicated no significant interaction between Stimuli groups and Sessions on either measure.

At followup, CS+ and CSe were rated at approximately baseline levels on both subjective measures of eroticism. Conversely, CS— was rated 15.7% below baseline on the semantic differential scale ratings and 15.4% below baseline on the subjective rank order of eroticism.

Table 2

Subjective assessment of the eroticism of three experimental stimuli at three phases of the experiment.

Treatment Stimuli	Subjective Measures of Eroticism	
	Semantic Differential Ratings[a]	Rank-Order Position[b]
CS+		
Baseline	5.1	8.6
Termination	4.8	7.9
Followup	4.9	9.2
CS−		
Baseline	3.9	4.2
Termination	3.6	3.6
Followup	2.8	2.2
CSe		
Baseline	4.4	6.5
Termination	4.7	6.2
Followup	4.5	7.6

[a]Numbers reflect mean ratings of experimental stimuli on a scale from 1 (least erotic) to 7 (most erotic).

[b]Numbers reflect mean rank position of experimental stimuli on a scale from 1 (least erotic) to 13 (most erotic).

Two-way analysis of variance of the subjective eroticism data at followup, indicated significant differences between Stimuli groups on both the semantic differential ($F = 6.40$, $df = 2/8$, $p < 0.025$) and subjective rank order ($F = 14.08$, $df = 218$, $p < 0.005$) measures. A posteriori comparisons showed that CS− was rated significantly less erotic than CSe on both the semantic differential ($p < 0.05$) and subjective rank order ($p < 0.01$) measures. There was no significant difference between CS+ and CSe on either measure.

Subjective Measures of Personality and Affect

Over treatment, there were small changes (less than 7.2%) in the ratings of the experimental stimuli on the personality and affect scales of the semantic differential. Analysis of variance indicated no significant interaction between Stimuli groups and Sessions on either measure. Two-way analysis of variance of the personality scale scores at followup indicated significant differences be-

tween Stimuli groups at that time, ($F = 7.58$, $df = 2/8$, $p < 0.025$). A posteriori comparisons at followup indicated, however, that neither CS+ nor CS− were rated significantly different in personality appeal than CSe. Two-way analysis of variance of the affect scores at followup indicated no significant differences between Stimuli groups at that time.

Relationship Between Objective and Subjective Measures

Rank-order correlations were computed between the median amplitude responses and both the erotic scale and subjective rank-order scores of the experimental stimuli at three phases of the experiment. Similar to findings of previous studies (Bancroft, 1970; Conrad and Wincze, 1976; Herman et al., 1974) the correlations were generally insignificant. The only coefficient of statistical significance (rho = 0.65, $p < 0.05$) was between the subjects' amplitude and erotic-scale assessments of the CS− at termination. As 18 coefficients were computed, however, chance factors may well have accounted for the one significant coefficient.

Fantasy Measure

There were no reports of voluntary employment or spontaneous appearance of experimental slide females in the subjects' masturbatory or other fantasies outside of the laboratory.

DISCUSSION

The results indicate that stimuli paired with the plateau phase of sexual arousal increased significantly in penile amplitude and in overall maintenance of tumescence over treatment. Conversely, stimuli paired with the postorgasmic refractory phase decreased significantly on those measures over treatment. At termination, the plateau and refractory phase stimuli elicited, respectively, significantly larger and significantly smaller tumescence responses than the exposure control stimuli. The results therefore would not appear adequately accounted for by the effects

of repeated exposure to the experimental stimuli. The conditioned effects on tumescence were largely extinguished at followup.

The results provide no evidence that the experimental procedures had a significant short-term effect on subjects' subjective appraisals of the sexual and nonsexual qualities of the experimental stimuli. At followup however, postorgasmically presented female slides were rated as significantly less erotic than exposure control female slides. Finally, there were no reports of voluntary employment, or spontaneous appearance, of experimental female images in the subjects' masturbatory or other fantasies outside of the laboratory.

Historically, the effects of preorgasmic conditioning have been interpreted as resulting from the temporal "pairing" of cues with ejaculation (Barlow, 1974). Previous clinical reports, however, have not permitted reasonably clear evaluation of this model. It would appear that even in the absence of confounding treatments, pairing factors in previous *real-life* reports were confounded to some degree by institutional, significant-other, and/or therapist pressures reinforcing desired alterations in sexual arousal. As sexual responsivity is modifiable via instructional control and reinforcement procedures (Henson and Rubin, 1971; Quinn, Harbison, and McAllister, 1970; Rosen, 1973), previously reported clinical gains were possibly due to operant factors or to some interaction between these factors and pairing processes.

The present experiment would appear to allow for a reasonably unconfounded examination of the effects of pairing processes. The experimental context consisted of normally functioning, heterosexual male volunteers viewing extremely common forms of nude female photographic material. It would appear unlikely that external factors existed that would reinforce alteration in subjects' arousal to the experimental slides. It is distinctly improbable that such external factors existed as would reinforce *differential* alterations in responsivity to CS+ and CS− females. To minimize possible experimental

bias, descriptive accounts of the study omitted reference to differential conditioning and stressed nonconditioning features of the research (*i.e.,* learning to predict 2 min before orgasm). The experimenter limited his commentary during the sessions to this latter feature. While these precautions fail to rule out the possibility of subtle experimental reinforcement factors, it is encouraging that at debriefing, all subjects were unaware of the conditioning features of the study. The findings thus tentatively suggest that pairing processes in preorgasmic conditioning lead to short-term increases in the elicitation of tumescence responses by target cues. There is no evidence that pairing processes lead to changes in subjective appraisals of the eroticism of those cues.

Interestingly, the one extant, controlled, *clinical* trial of preorgasmic conditioning (Conrad and Wincze, 1976) produced generally opposite findings to those reported in the present analogue context, *i.e.,* subjective reports of sexual adjustment changed along desired lines but physiological and behavioral measures failed to change.

A possibly important difference between the present analogue and clinical experiments is that the target cues in the analogue experiment were moderately arousing to subjects before treatment. By contrast, the clinical trial involved homosexual subjects who, before treatment, desired to increase their arousal to essentially neutral female cues. It is possible that the elicitation of tumescence gains depends, in part, on employment of target cues that facilitate (or at least do not impede) masturbatory progress to the consummatory response (*i.e.,* orgasm). Where facilitative cues are employed, short-term tumescence increases may result from association of the "facilitative" cues with the sexually pleasurable qualities of orgasm. Conversely, the introduction of neutral cues may interrupt or reverse progress toward the consummatory response. Some subjects may respond by switching their imaginal focus back to deviant cues, thus eliminating target cue-orgasm pairings. One of the *clinical*

subjects, for example, reported considerable difficulty in sustaining arousal while viewing females and that he occasionally "salvaged" his arousal by switching to male fantasies. Similar occurrences have been reported elsewhere (Rachman and Hodgson, 1968). Other subjects may remain focused on the nonfacilitative cues reaching orgasm, in their view, "in spite of" such contact. Where cognitively processed as such, pleasurable qualities of orgasm may not be effectively associated with the "nonfacilitative" cues.

The contrasting findings of Davison (1968) and Jackson (1969) may relate to the present focus of discussion. Davison and Jackson treated a male sadist and voyeur respectively. Guided masturbation was employed in both cases to increase the arousal value of heterosexual stimuli. While the sadist reported limited success and several "breakdowns" (before coincidental employment of covert sensitization), the voyeur achieved steady and rapid progress. While these two cases differ on many variables, one salient difference was the initial arousal value of the employed target cues. The sadist was instructed to masturbate to his usual sadistic fantasies but to switch to initially neutral female *Playboy* photos as early in each masturbatory sequence as possible. The voyeur was conversely instructed to masturbate initially to his most sexually arousing pornographic photos. As arousal to pornographic photos increased, these photos were replaced by *Playboy* photos that were initially of little arousal value.

While tumescence changes may occur consequent to facilitative cue-orgasm pairings, it would appear that subjective reports of sexual adjustment are more responsive to external reward factors. While the present analogue subjects increased in tumescence, they did not report increased subjective arousal to target cues. Conversely, the homosexuals treated by Conrad and Wincze did not show physiological changes, yet reported "desirable" alterations in sexual adjustment. Presumably only the latter group was subject to powerful, external reward factors. The consistently positive self-report findings in the

case study literature may similarly reflect the operation of confounding operant factors.

One additional difference between the present analogue and previous case report findings concerns the reported persistence of arousal changes in clinical settings. In contrast, the conditioned effects on CS+ females in the present study were extinguished at six-to-eight-week followup. One possibility is that the eight conditioning trials given in the present study were insufficient; clinical interventions have generally employed more trials, though the specific number has usually not been reported (Lobitz and Lopiccolo, 1972; Marquis, 1970). A second, more speculative possibility is as follows: in addition to pairing and operant factors, clinical application of preorgasmic conditioning involves the provision of raw material, practice, and reinforcement for "appropriate" fantasy generation by clients outside the laboratory context. The continuing incorporation of newly taught fantasies may play an important mediational role in fostering persistent changes in arousal patterns (Abel and Blanchard, 1974). Subjects in the present study did not report use of objectively conditioned cues in masturbatory and other sexual episodes outside the laboratory. This factor may have contributed to the rapid extinction of the conditioned effects. This finding tentatively suggests that pairing processes are insufficient, and operant factors may be necessary, to initiate appropriate home fantasy generation.

With respect to postorgasmic deconditioning, treatment potential is suggested by the marked short-term decrease in the objective arousal properties of the CS− females, and by the marked decrease at followup in the subjects' subjective appraisals of the CS− females' erotic appeal. When questioned at debriefing, subjects reported that they found the CS− females sexually boring or unattractive. This finding, if confirmed with larger and clinical samples, is intriguing. It implies that subjects may not seek to re-employ deviate fantasies in subsequent masturbation episodes once they have been postorgasmically deconditioned. While postorgasmic-

ally presented female slides appeared to decrease in erotic appeal, there was no evidence of change in their personality or affectual impact on the subjects. If clinically substantiated, this specificity of effect would be clinically useful. Sexual deviates require assistance only in decreasing the erotic appeal of unwanted erotic cues, not in modifying their personality or emotional valence.

The present findings would appear to carry some implications for the clinical application of orgasmic conditioning. The implications to be cited must be considered with caution. The present study was a laboratory analogue; the findings are based on a small and unrepresentative sample of college-age males who chose to participate in sexual research (Amoroso and Brown, 1973). While their sexual and social histories were unremarkable, the generality and clinical applicability of the present findings require assessment.

The present findings strongly suggest re-evaluation of treatment goals with poorly motivated and/or coerced clients. The absence of complementary instrumental factors appears to render pairing processes in preorgasmic conditioning ineffective in altering relevant subjective attitudes and appropriate fantasy generation. Thus, at best, short-term objective conditioned effects may be expected (Bancroft, 1969). The results here also suggest that optimization of tumescence change during orgasmic reconditioning may require gradual and systematic change in target cues. An important criteria for employment of target cues may be their ability to facilitate, rather than impede, masturbatory progress to orgasm. Finally, where behavioral analysis has determined the need to decondition directly the sexual arousal properties of certain cues, the therapist is faced with the dilemma of presenting painful or otherwise unpleasant stimuli to clients in the absence of clear evidence of benefit (Barlow, 1974; Wilson and Davison, 1974). If proved clinically efficacious, postorgasmic deconditioning would provide a useful treatment alternative.

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