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# An attempt to shape human penile responses*

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POTENCY disorders of insidious onset and long duration have a poor prognosis both in conventional therapy (Johnson 1965) and when treated by desensitization (Cooper 1969). Homosexual patients with little heterosexual interest prior to treatment show a poor response to anticipatory avoidance conditioning (Feldman 1969). McConaghy (1969) suggests that at least some forms of aversion therapy may be followed by a further reduction in heterosexual interest: aversion therapy may therefore be particularly inappropriate in patients who already exhibit reduced or absent heterosexual interest. Thus, in the treatment of some homosexuals and in some potency disorders there is a need for a new technique which would strengthen heterosexual interest.

Classical conditioning has been used by Rachman (1967) and Rachman and Hodgson (1968) to produce conditioned phallic responses to previously neutral stimuli in normal males. Laws and Rubin (1969) have used instructions to control normal male sexual responses.

Recently operant conditioning of autonomic responses has been convincingly demonstrated in animals and less definitely in man (Katkin and Murray, 1968). As operant procedures exert a characteristically strong control over the occurrence and amplitude of responses they may be particularly appropriate for the manipulation of heterosexual interest. The present study reports a pilot attempt to give a heterosexual stimulus discriminative control over phallic responses in a homosexual.

## CASE STUDY

A 28-year-old patient with a long history of homosexuality (Kinsey rating 5) was found on psychometric testing to be of superior intelligence and of relatively normal personality; he therefore received 35 sessions of anticipatory avoidance conditioning (Feldman and MacCullough, 1965). Following treatment he described a great reduction in his homosexual interest but complained of anxiety and "black depression" when imagining or attempting heterosexual behaviour. He received 10 sessions of desensitization to reduce this anxiety. Eighteen months later the patient showed increasing homosexual interest and complained that he was only free from anxiety and depression when he avoided heterosexual fantasy or behaviour.

## METHOD

(a) *Equipment*

The penile plethysmograph used was a mercury-in-rubber strain gauge based on a design outlined by Bancroft *et al.* (1966). The amplifier used involved improved circuitry and provided an output suitable for connection to a pen-recorder.

Signal from this instrument was carried to a separate room for write-out on a Devices M8 Polygraph, together with EMG, GSR and Finger Photo-plethysmograph signals. Further amplification for the penile plethysmograph recording was provided by a Devices DC 2C high sensitivity d.c. pre-amplifier with a Devices Sub 1C plug-in for use with strain gauge circuits. This provides a very high sensitivity output essential for use in response shaping procedures.

GSR was monitored on a Short's GSR Meter, using bipolar electrodes described by Lykken (1959). Again final amplification for recording was provided by two Devices DC3 with Sub 5 pre-amplifiers, one for amplification of the basal level resistance signal, and the other for the response signal. Short's machine produces independent outputs for these two signals.

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EMG was monitored between the two palmar eminences to act as an indicator of general body movement and therefore an "artefact" signal for the penile plethysmograph. Amplification was by a Devices DC 3/2 EMG Integrator.

(b) *Deprivation state*

Water deprivation is widely used as an antecedent for behaviour control with fluid reinforcement. Conventional 23 hr deprivation or percentage body weight criterion depletion are not feasible in the clinical situation. The patient was deprived of fluid for 18 hr prior to the treatment session. He also received three 1300 mg doses of entric coated Sodium Chloride at 6, 4 and 2 hr before treatment began. Two hours before the session he received 20 mg of Frusemide (a potent oral diuretic). Prior to this regime he was screened to exclude any physical abnormalities with special attention to renal function.

(c) *Procedure*

The patient was presented with a female slide which he had previously rated as very attractive and was encouraged to imagine to this slide as long as it was present. He was told that his phallic blood flow would be monitored and as a result of change in this he would receive a reward (a drink of iced lime). Reinforcement was signalled to him by a small cue light. Following a 10 min baseline period the slide was presented and his phallic response shaped over the session which lasted until 30 reinforcements had been earned or 45 min had elapsed. Shaping followed the usual procedure of successive approximations in that a very small phallic response was initially reinforced but that the criterion for reinforcement was progressively increased throughout a session. As sessions progressed the initial criterion was also progressively increased. To avoid movement artefacts a time out of 20 sec followed each reinforcement. Physiological responses were monitored for a further 10 min after the slide was removed. In all the patient received 20 conditioning sessions.

## RESULTS

This was a pilot study and although no quantative analysis of the responses was made, there was a progressive increase in amplitude of phallic response from the beginning to the end of the experiment. The increase can clearly be seen in the samples of response from typical early and late sessions (Fig. 1). As treatment progressed the patient described a marked reduction in tension and an increased vividness of heterosexual fantasy. His reports of change in fantasy and increased phallic responding appeared fairly closely correlated, though on some sessions there was a discrepancy between physiological response and reported vividness of fantasy.

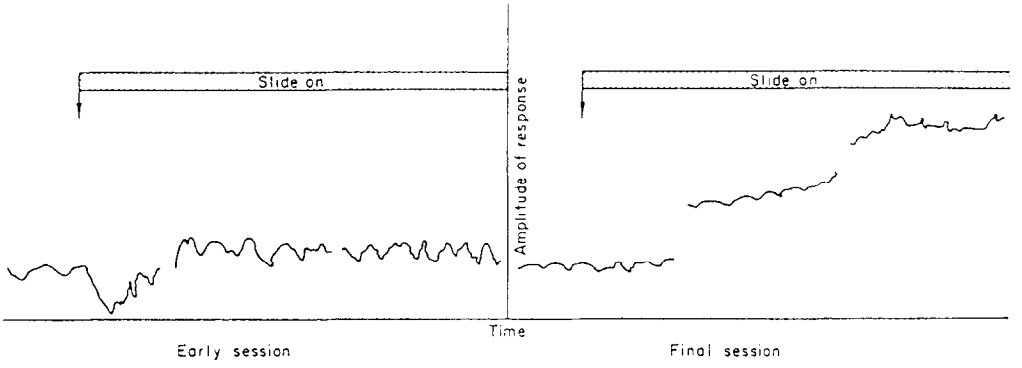


FIG. 1. Penile plethysmograph responses from an early and a late session of treatment. Three 24 sec samples from each session are shown; the presentation of stimulus, mid-way through session and immediately before stimulus is withdrawn.

In one session the patient became anxious and complained of his "black depression". This was associated with attempts to imagine coital penetration. He was instructed to approach this fantasy in a hierarchical manner and then successfully completed this fantasy without complaining of anxiety.

Figure 2 shows changes in the SOM (Feldman *et al.*, 1966) which assesses homo- and hetero- sexual interest. The changes associated both with the aversion therapy and the positive reinforcement procedure can be seen. Heterosexual interest has increased following positive conditioning. The treatment was ended at 20 sessions. We have not enough experience with this procedure to know what is the optimum end point in treatment, but there appeared to be an increase in heterosexual interest in the ward situation in daytime and in masturbatory fantasy. There was an increase in physiological response which did not reach full erection.

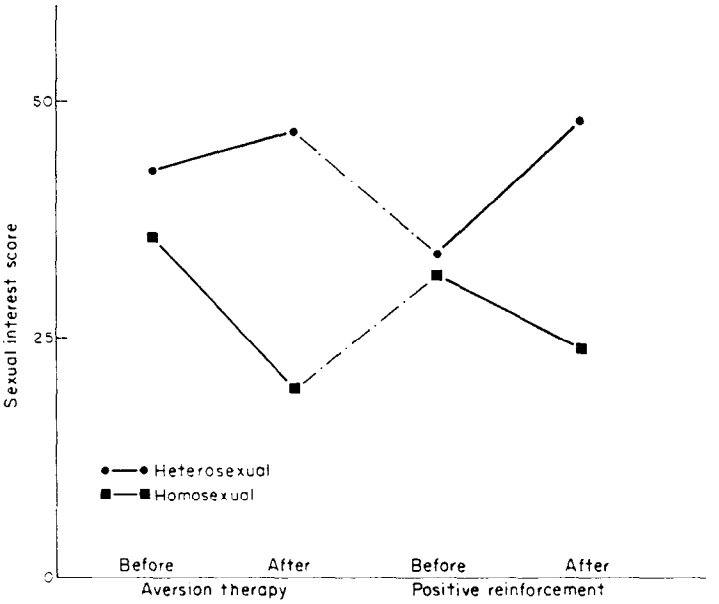


FIG. 2. Changes in SOM homosexual and heterosexual interest scores before and after behavioural treatments.

## DISCUSSION

Only the most tentative conclusions can be drawn from this preliminary study. It does appear that the method has promise as a means of directly increasing heterosexual interest.

The study raises a number of problems of theoretical interest. In operant conditioning a response is normally defined in terms of the reinforcing contingencies. This is easy when the response concerned is a bar-press or even a change in heart rate but in the present study an unsolved difficulty remains as to what should be reinforced: should we reinforce amplitude of response, duration of response or rate of increase in phallic blood flow?

Secondly, this patient may represent a special case in that heterosexual behaviour elicited a report of anxiety. It could be argued that the treatment described involved true counterconditioning of anxiety (Lomont, 1965). These special considerations would not apply to patients who were impotent for a long time or who had no response of any kind to heterosexual stimuli.

Finally, no attempt was made to distinguish between primary reinforcement (lime juice) and social and other reinforcement (the light, etc.) related to feedback. Indeed the patient reported satiation on some sessions, but clearly the light still exercised stimulus control.

We noted in this study a complex interaction between fantasy and phallic response. Rachman and Teasdale (1969) have questioned whether phallic response or fantasy should be negatively reinforced in aversion therapy. The same problem arises with positive reinforcement. Work is in progress relating to this dilemma.

*Department of Mental Health*
*and Department of Psychology*
*Queens University, Belfast*

J. T. QUINN
J. J. M. HARBISON
H. MCALLISTER

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