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Sexual Deviants Two Years after Electric Aversion

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This paper presents the results of electric aversion therapy in 24 patients with transvestism, fetishism, and sado-masochism. Preliminary findings have been reported elsewhere, together with a review of the literature and a discussion of the process of change during treatment (Marks and Gelder, 1967; Bancroft and Marks, 1968; Gelder and Marks, 1969). In these studies the available evidence indicated that the manifestations of the sexual disorder were diminished by treatment, and this appeared to be directly due to aversion rather than to non-specific components of treatment. The present report is concerned with the clinical outcome of these cases, with prognostic variables, and with the part aversion therapy should play in the treatment of these sexual disorders.

Method of Treatment

This was described in detail by Marks and Gelder (1967), and will be referred to briefly here. Patients were admitted to hospital for 2 to 3 weeks and received aversion treatment twice daily, with an average total of 19 sessions. Electric shocks from a battery-operated shock box provided the aversive stimuli. They were delivered to the forearm or leg at an intensity which was selected by the patient as being unpleasant but not unduly painful. The therapist kept in mind that some patients might suffer unduly strong shocks in an excessive effort to co-operate or for other reasons, including masochism. Shocks were given under two conditions: when patients were carrying out items of behaviour most relevant to their sexual deviation, e.g. putting on women's clothes (referred to later as 'practice' trials), and when imagining this behaviour ('fantasy' trials). For the first three days of aversion, treatment was aimed at one specific aspect of the deviation (e.g. one article of clothing); henceforth other objects were also included to cover the most important areas of deviant interest or behaviour. During practice trials one to three shocks were given from 1 to 120 seconds after the cross-dressing began. Each lasted for half a second, and shocks were given at random intervals until the patient had stopped the deviant behaviour (e.g. had taken all the women's clothes off) whereupon no more shocks were given. Sexual arousal was assessed by measuring changes in penile size with a small transducer (Bancroft *et al.*, 1966). A partial reinforcement schedule was used, in which shocks were omitted from about 25 per cent of trials. All patients had some fantasy trials. Most also took part in practice trials, but these were not always feasible because of the nature of the deviation. In fantasy trials the patient signalled as soon as he experienced a clear mental image of the deviant behaviour, and one or two shocks were given immediately. It was found important to ask patients to keep to one clearly defined fantasy at a time, rather than change them from trial to trial, otherwise changes could not be measured systematically.

The Patients

'Simple' transvestites and fetishists (12 patients)

The mean age of these patients was 30 (range 21–43). Nine were transvestites and three fetishists (a shoe fetishist, a rubber fetishist, and a man with a fetish for lame women). Four of the transvestites also reported a minor fetish for rubber garments, and two had minor sadistic or masochistic components to the deviation. The mean age of onset was 12 years, and in all but two patients symptoms had been present continuously. The mean age of these patients at puberty was 12 years. Only two patients recalled being brought up in a girlish way in early life. All described some degree of attraction to women, and seven had experienced satisfactory intercourse at some time, only one reporting that deviant fantasies played any part in this. Of the rest, two were partially impotent and two had premature and one delayed ejaculation. Four were married, two unhappily. Only two reported that they had ever experienced any sexual attraction to men, and both said this was 'weak'. Six patients had definite interpersonal difficulties in addition to the sexual deviation.

Transsexual transvestites (7 patients). Transsexual patients are distinguished from the simple transvestites by their desire to have the body of a woman and to lead the life of a woman. Unlike the simple transvestite, they were not always aroused sexually by articles of women's clothing. The mean age of these seven patients was 38 (range 26–51). One had

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an additional strong fetishistic interest in one-legged women, and another a fetish for women's shoes. In only three was the cross-dressing associated regularly with sexual arousal.

The condition began before puberty in all but one patient (mean age of onset 8, mean age at puberty 14). However, in four patients transsexual ideas were reported to have been preceded by transvestite behaviour associated with sexual arousal. Four of the seven patients recalled being brought up in a girlish way in early childhood. The condition of five patients had been present continuously: in two it had remitted for about two years but had returned before treatment was sought. All seven had experienced satisfactory sexual intercourse at some time, although four usually used deviant fantasies to attain this. Three were married (all unhappily), two were divorced. None had any homosexual interest or experience. Two of the seven had definite interpersonal difficulties in addition to the sexual deviation.

Sado-masochists (5 patients). Mean age was 32 years (range 18–57)

Three had both sadistic and masochistic tendencies, one sadistic only and one masochistic only. In two the deviation began before puberty (mean age at onset 14, mean age at puberty 13). In two patients there had been long periods of remission, 6 years in one and 20 years in the other. Three patients had experienced sexual intercourse, one usually with sadistic practices. Two were married (one unhappily), one was engaged, and the other two had never had a girl friend. Three patients had shown homosexual interests at some stage. Two patients had definite interpersonal difficulties in addition to the sexual deviation.

Untreated patients. Twelve patients were assessed for treatment but did not receive it, in all but two cases because an offer of treatment was rejected. Their motivation presumably differed from that of the treated group and they cannot, of course, be considered as controls. Their mean age was 34 (range 19–50). Four were transsexuals and the other eight transvestites, four with associated fetishism. Symptoms began before puberty in two patients only. Seven were married, four with satisfactory sexual relationships. Two were divorced and three single.

Seven were offered treatment but refused at the assessment interview; these patients had usually come at someone else's suggestion. Three others at first agreed to be treated but later withdrew. One patient was not offered treatment in the first place because he was thought unsuitable, and one other was turned down because his symptoms were considered too mild to warrant treatment.

Assessment

Patients and their relatives were interviewed by a doctor every few weeks, and by a psychiatric social worker (P.S.W.) once during treatment and once at the end of the follow-up. The frequency of *deviant sexual behaviour* was rated on a 0–9 scale, 0 indicating total absence of deviant behaviour and 9 indicating any kind of deviant behaviour carried out daily. The rating 'before treatment' covered the year before admission.

Deviant fantasies were rated on a 0–11 scale on which 0 denoted total absence of fantasies while 11 denoted daily deviant fantasies present both during masturbation and at other times. If the same patient reported both transvestite and transsexual fantasies the scores for these were added, thus scores for transsexuals were on average higher than those of other deviants.

Overall improvement in sexual deviance: Patients were rated 'improved' when their total score (fantasies and acts combined) fell by 25 per cent or more, and rated 'much improved' when their total score fell by 50 per cent or more.

A psychiatric social worker rated 11 patients and their relatives at follow-up on the same scales to determine the inter-rater agreement. She agreed to within two points with the doctor's ratings for change of deviance. As it was not possible for her to rate all patients, these ratings were not included in the final evaluation.

Transsexual feelings: Three statements were rated by patients on 0–4 scales, viz.: (a) 'I wish my body could be changed into that of a woman,' (b) 'I wish I could be a woman during sexual intercourse', and (c) 'I wish I could live a woman's life'. Thus 12, the maximum score, indicated severe and unremitting transsexualism. The psychiatrists also rated transsexualism, in this case on a 0–2 scale and a 0–6 scale.

Heterosexual adjustment was rated on a scale from 0–8, 0 indicating absence of heterosexual fantasies and behaviour and 8 regular and frequent sexual intercourse unaccompanied by deviant fantasies or behaviour. Agreement on heterosexual adjustment was obtained between P.S.W.s and doctors on 10 out of the 11 patients seen by both. *Depressive* symptoms, *work* and *leisure* adjustment and *relationship to spouse* were each rated on 0–4 scales on which 4 indicated maximum disturbance.

Attitudes: Patients' attitudes were measured on 10 semantic differential scales, the administration and characteristics of which have been described elsewhere (Marks, 1965; Marks and Sartorius, 1968). On the basis of principal component analyses the ten scales were grouped into three factors—*general evaluation* (3 scales: pleasant-unpleasant, good-bad, kind-cruel), *sexual evaluation* (4 scales: seductive-repulsive, sexy-

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sexless, exciting-dull, erotic-frigid) and *anxiety* (3 scales: placid-jittery, calm-anxious, relaxed-tense).

The patient rated twenty concepts on each of the 10 scales: 4 concepts judged to be most relevant to his particular sexual deviation (e.g. *woman's dress, high heeled shoes*): 3 concepts concerning normal sexual relations (*my wife/fiancée/girl-friend, sexual intercourse*); 9 concerning matters relevant to his clinical state and treatment (*my G.P., psychiatrists, the Maudsley Hospital, my father, my mother, myself, myself as I would like to be, people with the same trouble as me, and electric shocks*) and 4 control concepts.

Patients rated the concepts at the following times: when first seen for assessment, on admission to hospital (on average six weeks later), after three days in hospital but before receiving aversion treatment, after three further days in hospital receiving aversion directed at deviant behaviour to which one of the 'deviant' concepts referred, on discharge from hospital (two to three weeks after admission) and twice during follow-up on average seven and 17 months after discharge.

In assessing changes in attitudes, means and standard errors were computed for raw scores and change scores at each point in time first for the whole group of patients and then separately for the transsexual patients and the rest. Standard errors of the differences between means were used to assess significance.

Results

Changes in deviant and normal sexual behaviour will be reported first, then changes in attitudes. Prognostic factors will then be discussed, and the effect of treatment on the patient's relatives will be noted. Finally the outcome of the untreated patients will be mentioned briefly. Table I summarizes the main clinical and outcome measures.

Deviant sexual behaviour (Fig. 1, Table II). In the year before treatment all 12 trans-

Table I

Summary of clinical and outcome measures
(mean ratings)

	Transvestites, fetishists and sadomasochists. (n = 17)	Transsexuals (n = 7)
Variables on admission		
Age at treatment	31	38
Age at which symptoms began	12	11
Symptom duration (years)	18	28
Severity of total deviance (acts and fantasies combined) (0–20)	10·5	14·6
Severity of deviant acts (0–9)	3·8	4·1
Attitude to 4 deviant concepts (0–7) (4 sex and 3 general evaluative scales combined)	2·8	2·0
Heterosexual adjustment (0–8)	1·8	2·5
Transsexualism severity:		
patient rating (0–12)	2·4	9·3
doctor's rating (0–6)	0·5	6·0
Treatment variables:		
No. of fantasy trials with shock threat	152	243
No. of practice trials with shock threat	177	287
Total no. of shocked trials	259	469
No. of aversion sessions	18	21
Measures of outcome:		
Decrease in total deviance: end of treatment	7·6	3·9
Decrease in total deviance: end of follow-up	6·4	0·3
Decrease in deviant acts: end of follow-up	3·3	0
Change in deviant attitudes: end of treatment	1·4	1·5
Change in deviant attitudes: end of follow-up	0·9	−0·1
Overall improvement in deviance: (Improved = 1, Much Improved = 2)		
end of treatment	1·8	0·7
end of follow-up	1·7	0·0
Improvement in heterosexuality (0–8)	1·1	−0·8

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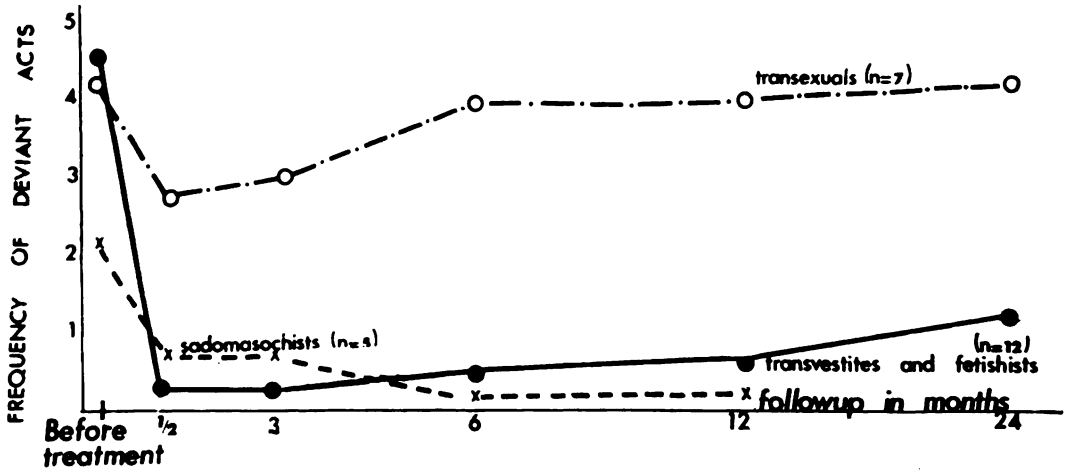


FIG. 1.—Course of deviant acts after electric aversion.

TABLE II

Mean scores for each treatment group

	Before treatment	Follow-up				
		2 weeks	3 months	6 months	1 year	2 years
Transvestites and fetishists (n = 12)						
Deviant fantasies	6·9	2·3	3·0	2·9	3·8	3·4
Deviant acts alone	4·5	0·2	0·3	0·6	0·8	1·2
Heterosexuality..	1·8	2·8	2·9	3·1	2·7	3·4
Transsexuals (*n* = 7)						
Deviant fantasies	10·3	7·9	9·6	9·2	10·2	11·0
Deviant acts	4·2	2·8	3·0	4·0	3·2	3·0
Heterosexuality..	2·7	3·2	3·0	3·2	1·8	1·2
Sadomasachists (*n* = 5)						
Deviant fantasies	4·0	1·4	1·4	1·2	2·6	–
Deviant acts	2·2	0·8	0·8	0·8	0·0	–
Heterosexuality..	1·6	2·0	2·5	2·4	2·5	–

vestites and fetishists had engaged in deviant sexual behaviour. In the period from treatment to the final follow-up, half had continued to do so, but in every case less frequently and with less enjoyment; the other six had not engaged in any deviant behaviour in this period, except that three cross-dressed a few times soon after discharge from hospital but quickly stopped doing this without further treatment. Of the five sado-masochists four had engaged in deviant behaviour in the year before treatment, but in the period afterwards only one continued to do this. All seven transsexual patients had cross-dressed before treatment, and every one continued to do so in the period up to the final follow-up.

Changes in deviant fantasies (Fig. 2, Table II). These ran parallel to changes in deviant behaviour. After treatment, transsexual patients reported much less diminution in deviant fantasies than did the other patients; indeed all the transsexuals had relapsed completely by the

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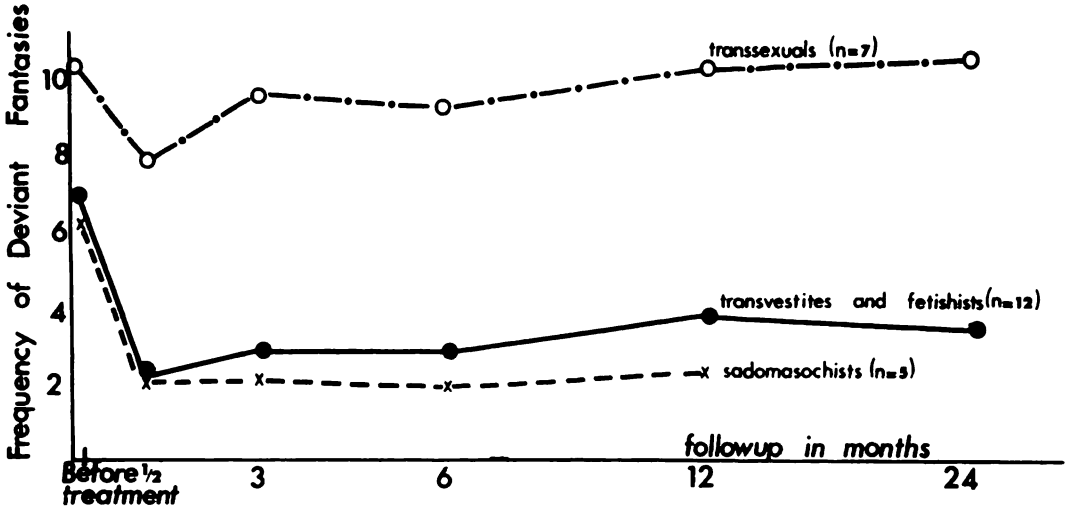


FIG. 2.—Course of deviant fantasies after electric aversion.

final follow-up and most within a few months of treatment. Of the transvestites and fetishists only three had lost the deviant fantasies completely when interviewed at the end of follow-up, but all reported that they had diminished in frequency.

Overall improvement in sexual deviance (Table III). This was assessed by combining changes in behaviour and fantasies. The results were similar to those already given.

Heterosexual adjustment after treatment. In the year before treatment 4 of the 12 transvestites and fetishists, 2 of the 5 sadomasochists and 4 of the 7 transsexuals engaged in heterosexual intercourse more than once a month. However, some patients reported deviant fantasies during intercourse and, when their partners allowed it, engaged in deviant behaviour. Tables I and II show the level of heterosexual adjustment for each group.

Heterosexual fantasies usually increased immediately after treatment, and enjoyment of sexual intercourse heightened in patients who had been capable of it before treatment. In all except the transsexual patients, any deviant fantasies or behaviour which had accompanied sexual intercourse before treatment diminished after treatment and up to the time of the final follow-up. Of the nine patients who had never experienced normal sexual intercourse before treatment, only two succeeded in having regular sexual intercourse afterwards. The remaining seven who did not achieve intercourse reported that after treatment masturbation was accompanied by heterosexual fantasies instead of fantasies about the sexual deviation. They tried to establish relationships with women, but

TABLE III

Percentage improvement in each group of deviants at end of treatment and follow-up

	Treated group		Untreated group
	End of treatment	End of follow-up	End of follow-up
Transvestites and fetishists	(n = 12)	(n = 12)	(n = 8)
% Much improved	84	67	25
% Improved ..	8	0	25
% No change ..	*8	*33	25
% Worse ..	0	0	25
Transsexuals	(n = 7)	(n = 6)	(n = 4)
% Much improved	29	0	0
% Improved ..	14	0	25
% No change ..	57	*100	75
Sadomasochists	(n = 5)	(n = 5)	
% Much improved	80	60	—
% Improved ..	0	40	—
% No change ..	20	0	—

* Including dropouts whose fate is unknown

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found these difficult and achieved only short-lived friendships. Although all the transsexual patients had taken part in normal sexual intercourse at some time before treatment, this improved little, and every one had relapsed by the end of the follow-up.

Thus there were patients whose sexual deviation improved with treatment but who did not achieve normal sexual relations afterwards and were left with heterosexual masturbation fantasies as their only sexual expression—a pattern which is a normal stage of development in adolescence.

Changes in attitudes (Fig. 3)

While on the waiting list, the attitudes of transvestites, fetishists, and sadomasochists to concepts related to the sexual deviation did not change. During the course of treatment the four concepts concerned with the sexual deviation became significantly devalued in both the general and sexual evaluative scales ($p < \cdot 001$ for the 'deviant concept' first treated; $p < \cdot 01$ for the other three deviant concepts). When patients improved clinically, these attitudes to the deviant object or behaviour became neutral (as one would expect in sexually normal men); they did not change to the opposite end of the scale. Attitudes had not changed further at the end of the follow-up.

Before treatment, transsexuals valued their deviant concepts rather more highly than did other patients, but the difference was not significant. Their attitudes changed less during treatment ($p < \cdot 05$).

No other concept changed significantly during treatment.

Nearly all the change in attitudes to concepts concerned with deviant behaviour took place during the period of aversion treatment, although with some patients attitudes did change a little either while they were on the waiting list or during the first few days of their stay in hospital before aversion started.

Concepts concerned with normal sex did not change significantly. The discrepancy between '*myself*' and '*myself as I'd like to be*' did not vary significantly either before or after treatment, even in patients who improved. This is in contrast to the observation that self-ideal discrepancy diminishes in patients undergoing one form of psychotherapy (Rogers and Dymond, 1954).

Time of relapse. 'Relapse' was defined as a change during follow-up from a rating of 'improved' or 'much improved' to that of 'no change'. Two transvestites, one fetishist and two transsexuals relapsed, always in the first year of the two-year follow-up. One patient relapsed at a time of marital stress, another shortly after

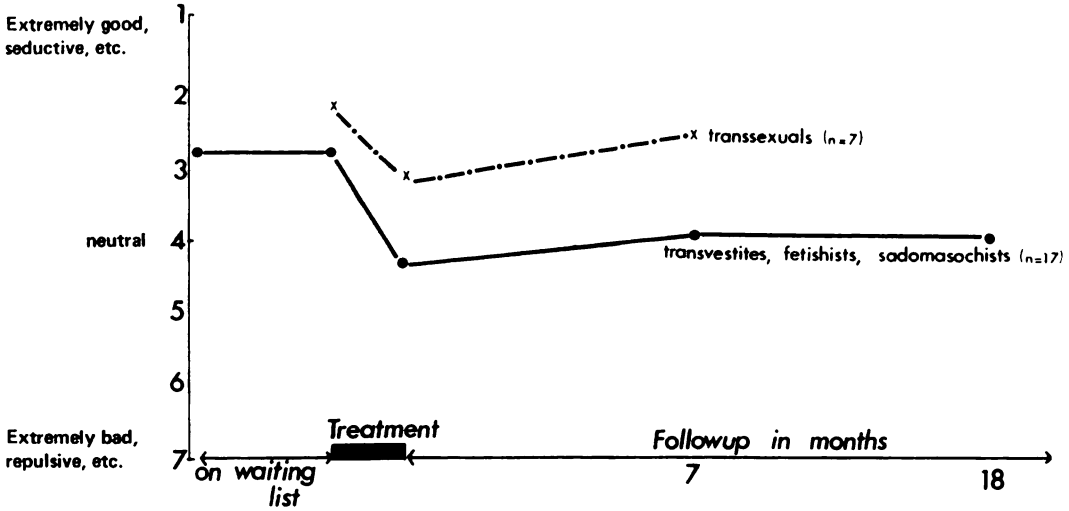


FIG. 3. Course of deviant attitudes after aversion. Scores are mean of 4 evaluative and 3 sex scales (Marks and Sartorius, 1968) on 4 deviant concepts.

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leaving his girl-friend but in the other two cases there was no obvious precipitant.

Effect of further treatment. One transvestite and one transsexual were re-admitted for a second course of aversion after they relapsed, and two transsexuals were re-treated as out-patients. None showed any lasting improvement after the second course of treatment.

Depression

Eight patients became depressed briefly during aversion treatment, but all lost this before they left hospital. However, the mean ratings of depression of the whole group did not change significantly from the first to the final assessment. Depression was not related to outcome.

Six patients reported experiencing moderate or marked depression in the year before treatment, and all continued to have depression intermittently during follow-up. On the other hand, depression was not observed during follow-up in any of the 11 patients who had been free from depression in the year before treatment.

Social adjustment

Ratings of work adjustment, leisure and social activities changed little during treatment or follow-up. Most patients showed little disturbance in these areas, though four were leading isolated lives.

Family relationships

Relatives or close friends were interviewed before treatment in 19 cases, and in 11 they were also interviewed at the final follow-up.

Of the wives interviewed, all except two said that they had not known of the deviant behaviour at the time of their marriage; these two said they believed it to have been cured. The attitude of the wives after discovering the deviance varied: three turned a blind eye to it in spite of evidence that it continued; four participated in it at times; and one regarded it with indulgence. On the other hand five patients came for treatment mainly because of pressure from the wife or sexual partner, and in some this had amounted to a final ultimatum.

Although the physical sexual relationship was often satisfactory before treatment, the general marital adjustment of most of the married patients was poor. Difficulties ranged from long-standing problems in interpersonal relationships to serious arguments with consideration of separation or divorce. The blame for the obvious difficulties in the marital relationship was often put solely on the deviant behaviour, even though other factors appeared obvious to the interviewer.

Following treatment, five marriages improved, one did not change and three became worse; these last three marriages had been under serious strain before treatment.

Two marriages can serve as examples. The partners in one had been unhappy and distant for twenty years. After treatment the husband felt much more attracted to his wife and sought her affection. She, however (having insisted on the treatment in the first place), not only turned from him with indifference but told him that she had formed an attachment to another man. In another, where serious arguments had taken place before treatment and where the wife had insisted on treatment, the patient's deviant sexual behaviour ceased after treatment. The wife then complained that her husband's depression and 'sulks' were more difficult to bear than his cross-dressing, and she forced him to leave the home.

Of the five patients who received treatment at the insistence of wives or mistresses, three reported that once the deviation improved their marriage was more strained than previously. It appeared that removal of the deviance revealed to the partner other sources of stress in the marriage to which they had previously turned a blind eye.

Prognostic Factors

Correlation matrices were prepared with the following outcome criteria: decrease in deviant acts at end of treatment and follow-up, decrease in 'total deviance' (fantasies and acts combined) at end of follow-up, improvement rating at end of treatment and at follow-up (much improved or unchanged) attitudes to and attitude change in four deviant concepts at end of treatment and follow-up (evaluative and sex factors combined).

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The following measures were correlated with these outcome criteria; age at treatment, age at which deviance began, symptom duration, overall severity of deviance before admission, frequency of deviant acts before admission, transsexualism ratings by patient and doctor on admission, heterosexual adjustment before treatment and at the end of follow-up, number of practice trials threatened with shock in treatment, number of fantasy trials threatened with shock in treatment, total number of trials, number of aversion sessions, attitude change to first deviant concept after three days aversion (evaluative and sex factors combined), evaluative scores on admission for '*myself*' '*my G.P.*', '*psychiatrists*' '*Maudsley Hospital*', *and* '*people with the same trouble as me*', and anxiety factor raw scores and change scores for '*myself*', 'first two deviant concepts', '*women*' '*girl friend*', '*sexual intercourse*' and '*electric shocks*' at start of treatment, after three days aversion, and at the end of treatment. The correlations were computed first for all 24 deviant patients together, then omitting the seven transsexual patients. For brevity only correlations with outcome at the end of follow-up are shown in Table IV, where correlations with outcome at the end of treatment are of interest they are referred to in the text. The following variables were found to correlate significantly with criteria of outcome (Table IV).

1. *Transsexualism* ratings by both patients and doctors correlated negatively with ratings of improvement at the end of follow-up (−·66, −·59; p<·001). Transsexualism ratings by patients also correlated negatively with attitude

TABLE IV

Correlates with final outcome

Variable	Criterion of outcome at follow-up: Decrease in deviant acts	Decrease in 'total deviance' (acts and fantasies combined)	Improvement rating	Change in attitude to deviant concepts
Transsexualism: On admission, patient's rating ..			−·66***	−·54*
Transsexualism: On admission, doctor's rating ..	−·53*		−·59***	
Amount of aversion in treatment:				
Number of shocks given			−·53†	
Number of aversion sessions			−·57†	
Status of deviance at end of treatment:				
Change in 'total deviance'	·52*			
Improvement rating	·59***	·51*	·60***	
Change in attitude to deviant concepts 1.:				
After 3 days aversion: 1st concept only	(·72***)			
At end of treatment: all 4 concepts	·55†	·54†	·62***	·67***
Other attitudes:				
Anxiety score for '*myself*' after three days aversion	−·60***			
Anxiety score for '*electric shocks*' on admission ..		(−·54*)		−·52*
Evaluative score for '*other people with the same trouble as me*' on admission		−·78***		
Evaluative score for '*Maudsley Hospital*' admission			−·66***	

Figures in parentheses; transsexuals omitted from the analysis

1: Evaluative and sex scales combined

* p<·05 †p<·02

** p<·01 ***p<·001

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change at the end of follow-up ($-\cdot 54$, $p<\cdot 05$), while doctors' ratings of transsexualism correlated negatively with decrease in deviant acts at the end of follow-up ($-\cdot 53$, $p<\cdot 05$).

2. *Attitude changes to concepts concerned with the sexual deviation* (Evaluative and sex factors combined). When transsexual patients were omitted, the change in attitude toward the first 'deviant' concept after three days aversion correlated $\cdot 72$ ($p<\cdot 001$) with decrease in deviant acts at end of follow-up. Taking all patients, the change in attitudes to the four 'deviant' concepts at end of treatment correlated significantly both with improvement at the end of follow-up ($\cdot 62$, $<p\cdot 001$) and with the decrease in deviant acts at the end of follow-up ($\cdot 55$, $p<\cdot 02$).

3. *Clinical status at end of treatment.* Ratings of outcome at the end of treatment correlated with ratings of outcome at the final follow-up (from $\cdot 52$ to $\cdot 62$ $p = <\cdot 05$ to $<\cdot 001$ on different criteria). Several other items correlated negatively with outcome, but this was accounted for by their association with transsexualism. They were: age at treatment, symptom duration and severity, number of shocks administered and number of aversion sessions (see Table I). When transsexual patients were omitted from the analysis, these items no longer correlated significantly with outcome.

4. *Other attitudes.* Contrary to expectation, increased anxiety about treatment was associated with a poorer outcome at end of treatment and follow-up. High anxiety ratings about the concept '*myself*' after three days aversion correlated negatively both with the outcome at the end of treatment ($r = -\cdot 43$; $p<\cdot 05$) and outcome at end of follow-up (Decrease in deviant acts) ($r = -\cdot 60$, $p<\cdot 001$). Similarly, the anxiety rating of '*electric shocks*' made on admission to hospital correlated $-\cdot 54$ ($p<\cdot 05$) with decrease in 'total deviance' at the end of follow-up (transsexuals omitted). Anxiety scores on the first deviant concept, made after three days aversion, correlated $-\cdot 67$ ($p<\cdot 001$) with improvement at the end of treatment.

The evaluative score for the concept '*other people with the same trouble as mine*' made on admission to hospital, correlated $-\cdot 78$ ($p<\cdot 001$) with the decrease in 'total deviance' at the end of follow-up. Thus the lower the patient's opinion of other people with the same deviation the worse his outcome. Similarly, the worse his evaluation of the hospital on admission the less he had improved at the end of follow-up ($r = 0\cdot 66$; $p<\cdot 001$).

To summarize: the variables found to be most clearly associated with improvement in deviant behaviour at follow-up were attitude change at the end of treatment and ratings of transsexualism. Outcome was not better in those who received longer than average treatment. It was worse in those who recorded much anxiety about aversion before treatment, who rated themselves anxious during treatment, and who, before treatment, recorded poor opinions about the hospital and about others with the same sexual deviation.

The only variable which correlated significantly with heterosexual adjustment at the end of follow-up was heterosexual adjustment before treatment ($r = \cdot 68$, $p<\cdot 001$). The only variable which predicted marital adjustment at follow-up was the rating of marital adjustment before treatment. Marriages which were under strain before treatment continued so during follow-up, regardless of changes in the patient's deviance.

The outcome of untreated patients

It is of interest to know the outcome of the 12 patients who were referred for aversion therapy but for one reason or another did not receive it.

At follow-up, two of the transvestites were rated 'much improved', and two 'improved'. One of the transsexuals was rated 'improved'. There was substantially less change in the untreated transvestites than in the treated transvestites (Table V), but the significance of this observation is difficult to assess.

Discussion

(a) *Outcome of treatment.* The main result is that aversion treatment was followed by a lasting reduction of deviant behaviour in most of the tranvestites, fetishists and sadomasochists, but not in the transsexuals. There was no evidence of symptom substitution in patients whose deviant behaviour subsided. On the other hand, improvement in deviant behaviour

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TABLE V
Mean scores for untreated patients

	Before treatment	1–2 year follow-up
Transvestites and fetishists (n = 8)		
Deviant fantasies	5·9	5·2
Deviant acts	3·6	3·1
Heterosexuality	3·3	2·3
Transsexuals (n = 4)		
Deviant fantasies	5·3	5·8
Deviant acts	6·1	5·5
Heterosexuality	2·0	1·8

was not necessarily followed by improved social or sexual relationships, either in marriage or outside it. Patients who had been depressed before treatment continued to be so after treatment, whether the sexual deviation improved or not.

These findings indicate that despite its unpleasant nature aversion therapy may be of value in the treatment of certain sexual deviations. However, final proof requires a controlled trial in which patients are assigned at random to aversion and to another procedure. Our findings cannot be evaluated without reference to the rate of spontaneous improvement of transvestism and transsexualism, particularly as the patients whom we did not treat changed to some extent. It is unfortunate that the literature gives so little guidance about the natural history of these conditions. However, the little which is known indicates that spontaneous changes are not the rule. Perhaps our best evidence for a specific effect of treatment comes from the close correspondence between measured changes and the start of active treatment which was described in more detail in our previous report (Marks and Gelder, 1967).

(b) *Case selection.* The descriptions of transvestism and transsexualism given by Lukianowicz (1959), by Randell (1959), and by Roth and Ball (1964) indicate the diversity of patients who display these deviant patterns of behaviour. There is no agreed classification, but our 'simple' transvestites resemble the non-homosexual section of Roth and Ball's 'symptomatic transvestites' and Lukianowicz's milder form, i.e. they were sexually aroused by cross-dressing. These patients cross-dressed for sexual gratification and had well-developed heterosexual interests. The transsexuals differed in that by the time they came for treatment four no longer experienced sexual arousal when they cross-dressed and they had no current heterosexual interests (though these had once been present); however, the other three were still aroused by cross-dressing. Our transsexuals differed from those reported by Green (1969), by Hastings and Blum (1967), and by Wålinder (1967), for none of their patients either obtained sexual arousal from cross-dressing or achieved heterosexual intercourse. On the other hand, our patients were not dissimilar from the series described by Roth and Ball (1964), of which 56 per cent engaged in heterosexual intercourse. Transsexuals who seek a sex-change operation often take oestrogens, and it is possible that this may explain the low libido of the transsexual patients in some reported series. Only two of our seven patients took oestrogens. Despite these differences our transsexuals resembled patients in other reported series in several ways: mean age of onset was before puberty, they had no homosexual desires for sexual relations with a man *as a man* (transsexuals sometimes report fantasies of having sexual relations with a man in which they take the part of a woman), and four of the seven recalled some potentially feminizing influence in their upbringing (compared with two of the 12 transvestites and fetishists). The differences are not surprising, as our patients were seeking an entirely different type of treatment from those who requested a sex-change operation.

The association of transsexual feelings with poor response to aversion requires explanation. Two possibilities suggest themselves. The development of transsexualism after some years of transvestist activity might take place only when the transvestist tendencies are especially intense: if so transsexualism is an index of severity, and poor response merely reflects the intensity of the condition being treated. Alternatively, transsexualism may indicate an additional and earlier disturbance of gender identity formation in childhood. If that

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is so, response to treatment might be poor because experiences learnt very early in life are hard to modify in the adult. These supposed mechanisms do not exclude one another.

(c) *Relapses.* Several patients cross-dressed briefly a few times after treatment and yet went on to sustained improvement. Two also experienced emotive dreams about their deviant sexual behaviour some months after treatment and yet continued to improve. Brief relapses do not necessarily demand further aversion treatment, and may even provide a valuable learning experience, especially when the patient finds that the pattern of behaviour leads to less sexual arousal than it did before. Four patients were given further aversion because relapse persisted, but in none was their previous improvement regained.

(d) *Method of aversion.* Our method concentrated mainly on the association of the aversive stimulus with the deviant behaviour and fantasies. We did not systematically employ methods aimed at strengthening heterosexual fantasies; correspondingly heterosexual behaviour improved rather little. Other methods which pay more attention to the use of heterosexual fantasies have resulted in more striking increases in heterosexual behaviour (MacCulloch, and Feldman, 1967; Bancroft, 1969). Thus it may be advisable to pay more attention to normal heterosexual fantasies and behaviour than we did.

All patients except one co-operated fully. This was true even for the two who came for treatment because of pressure from the Courts, both of whom did well. The one patient in this series who was reluctant to co-operate was a transsexual.

(e) *Conditioned anxiety.* Only a few patients who responded to aversion therapy developed obvious conditioned anxiety to the objects of their deviation. Most lost their pleasurable attraction to the objects of their sexual deviation, but did not become averse to them. They developed a neutral attitude which resembled that which sexually normal people show towards the items of clothing or other objects concerned in the deviations. Finally, higher ratings of anxiety about 'deviant concepts' during early stages of treatment were not associated with good outcome; on the contrary, they correlated significantly with poorer outcome. These findings do not support a simple explanation that aversion affected improvement in our patients by producing conditioned anxiety.

(f) *Attitude changes.* Attitude change after only three days of aversion correlated significantly with outcome. Not only is this finding potentially useful in prognosis early in treatment, but it may also indicate that attitude change early in treatment is an important part of the psychological mechanism by which lasting clinical changes are brought about.

The specificity of these attitude changes was striking, and was consistent with our preliminary findings (Marks and Gelder, 1967). Out of the 20 concepts rated, only the four concepts concerned with aspects of deviant behaviour which had been shocked changed materially throughout the study. This resembles the focused attitude change found by Hoehn-Saric *et al.* (1968) in neurotic patients who received highly specific suggestions as part of their treatment.

(g) *Heterosexual adjustment.* Although deviant behaviour diminished quickly, patients were slow to develop normal heterosexual behaviour when this had not been present before treatment, even though heterosexual fantasies did increase. This is not surprising, for normal adolescents take several years to develop mature sexual relationships. Indeed, the situation of some of our patients was comparable to that of some adolescents in that they experienced normal heterosexual fantasies but were still unable to make easy social relationships with the opposite sex. Although several of our patients made some progress in this regard, by the time of final follow-up only two had achieved regular sexual intercourse. Several others were beginning to take girls out and to establish sexual relationships.

(h) *Masochism:* None of our few masochistic patients developed any liking for electric shocks. However, occasional patients did show slight transient increases in erections as shocks were given and careful watch must be kept for the possibility that shocks may aggravate the masochistic response. However, on the basis of present experience masochism is not a contradication to aversion treatment.

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(i) *Suppression of imagery.* In an earlier paper (Marks and Gelder, 1967) it was noted that some patients found it increasingly difficult to imagine deviant fantasies as they received shocks in treatment. Elsewhere (Marks, 1968) generalization gradients have been reported, i.e. the nearer the relation of the fantasy content to the shocked material, the longer it took for the patient to conjure up that fantasy in his mind. This suggested that the suppression may be a special form of conditioned avoidance response. We did not follow this process systematically during follow-up, but it was still present in two patients retested four months after discharge, and with one patient definite generalization gradients could still be demonstrated at that time. On average patients who showed suppression of fantasies during treatment did slightly better than those who did not, but several patients who failed to suppress still improved. The precise mechanisms at work require further investigation.

(j) *Symptom substitution and the plan of treatment.* The absence of symptom substitution after treatment was in keeping with previous findings with desensitisation for phobic states. (Gelder, Marks and Wolff, 1967; Gelder and Marks, 1968). This is not to say, however, that sexual problems or other symptoms can be treated in isolation; it is essential to use behaviour therapy as part of a wider plan of psychiatric treatment which takes account of all the problems of the patient and his family. Nevertheless, the fear that aversion may precipitate a worse disorder appears unfounded.

Such a plan requires a careful initial evaluation in which attention is paid to the precise patterns of abnormal behaviour, to the situations which provoke it, to the presence of depressive symptoms, to the level of heterosexual adjustment reached before treatment and to the patient's marital or other personal relationships. Aversion therapy appears to produce specific effects on deviant sexual behaviour, and these other problems can only be expected to improve if they are the direct consequence of the sexual disorder. A careful watch must always be kept on the marital relationship during and immediately after treatment. A few joint interviews may be required, or more prolonged marital counselling, or psychotherapy.

Treatment should not be embarked on lightly, however much the patient presses for an early start. In addition to the points already listed it is always important to determine the patient's reasons for seeking treatment. Sexual difficulties have usually been present for many years, and it is essential to understand why the patient has come at this particular time. Some seek treatment because they have heard about aversion therapy; others come because of some recent social consequence of their deviation—they are in danger of discovery, or have already been found out by the police, employers, neighbours or family; still others come at the insistence of the wife. However, the wife's demands for treatment may reflect her mounting dissatisfaction with other aspects of the marriage rather than the deviation itself: if so, successful treatment of the deviance will not help the marriage. Finally, a patient may come because he is depressed and blames himself for behaviour which usually causes him neither guilt nor distress. Unless all these possibilities are kept carefully in mind, treatment may fail, or depression or crises in the marriage may take the therapist by surprise. However, with careful preliminary psychiatric assessment aversion therapy can make a valuable contribution to the treatment of patients with sexual deviations.

Summary

1. Twenty-four sexual deviants were treated by electric aversion for 2 to 3 weeks as inpatients and were followed up for two years. The patients comprised 12 transvestites and fetishists, 7 transsexuals and 5 sadomasochists. Nearly all patients were co-operative and well motivated; 9 were married, and 17 had some previous heterosexual experience.

2. Progress was assessed on ratings made after regular interviews with patients and their relatives by psychiatrists and a psychiatric social worker. Patients also filled in semantic differential scales at intervals.

3. After treatment, deviant acts and fantasies diminished considerably in transvestites, fetishists and sadomasochists. Deviant attitudes changed correspondingly. Improvement was

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usually maintained throughout follow-up, despite minor relapses. When normal before treatment, heterosexual behaviour continued so after treatment, Where heterosexual behaviour had been absent before treatment, improvement after treatment occurred more in heterosexual fantasies than in overt behaviour.

4. Improvement was transient or absent in the patients who had strong transsexual feelings.

5. Specific changes in attitudes occurred only in 'deviant concepts' related to treatment. Other concepts changed very little.

6. When marked depression, marital and interpersonal problems were present before treatment, these continued during follow-up, but improvement in sexual deviance was not accompanied by symptom substitution.

7. Evidence of conditioned anxiety was uncommon.

8. Improvement was not related to the amount of treatment: those who improved usually showed evidence of change early in treatment.

9. Sexual deviants who remained untreated changed less during 14 months follow-up.

10. Electric aversion produced worthwhile improvement in most patients who did not have strong transsexual feelings, but had to be part of a careful plan of clinical management.

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