

## Penile Circumference, Skin Conductance, and Ranking Responses of Child Molesters and "Normals" to Sexual and Nonsexual Visual Stimuli

VERNON L. QUINSEY, CARY M. STEINMAN,  
SIDNEY G. BERGERSEN AND TIMOTHY F. HOLMES

*Oak Ridge Division, Mental Health Centre, Penetanguishene, Ontario*

Twenty male child molesters confined in a maximum security psychiatric institution were compared with eleven non-sex offender patients from the same institution and ten persons from the community. Each subject was shown a total of 20 slides which were of persons varying in age and sex as well as neutral or non-person slides. Penile circumference and skin conductance responses (PCRs and SCRs) to the slide stimuli were recorded. PCRs differentiated between the child molesters and "normals" but the SCRs did not. Subjects' rankings of the sexual attractiveness of the slides were similar in the "normal" and child molester groups. Correlations between the PCR, SCR, and ranking measures were low. PCRs varied with the child molesters' histories of victim choice.

Child molesters are among the most difficult persons to assess for possible release from psychiatric and correctional institutions (Quinsey, 1973). Freund (1965, 1967a, 1967b) has demonstrated that measurements of penile reactions to visual stimuli can differentiate between child molesters and normals. Penile measures appear relevant to the problems of assessing involuntarily confined child molesters even though some of them do not sexually prefer children and choose them as surrogates (Freund, McKnight, Langevin & Cibiri, 1972). Skin conductance has also been used to assess sexual interest (Zuckerman, 1971) and has been employed as a measure of progress in the treatment of child molesters (Steffy & Gauthier, 1970). Bancroft and Mathews (1971), recommended skin conductance as a measure of more general arousal to be used in conjunction with penile measurements, but found that skin conductance

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did not differentiate sexual from non-sexual stimuli among normal subjects whereas penile circumference responses did.

We have developed a short standard screening procedure for patients referred to us from within the Mental Health Centre. Part of the test consists of having the patients rank slides in order of their sexual attractiveness. This ranking procedure is used primarily because of the low verbal ability of some of the patients. The other part of the test consists of measuring subjects' penile and skin conductance responses to a relatively small number of slides.

The purpose of the present study was to compare penile, skin conductance and ranking responses of child molesters with those of persons who had not molested children. An additional purpose was to assess the ability of our short psychophysiological test to differentiate child molesters from other persons.

## METHOD

### *Subjects*

Two groups of subjects were employed: (a) 20 child molesters (CM), (b) a normal group (N), 10 non-sex offending patients and 11 nonpatients. The child molesters were referred from within the Mental Health Centre for assessment of their sexual preferences. Each had committed a sexual offence when 16 or over against a child 13 or under, such that a five year minimum age difference existed between him and the victim. In a few instances, the offences had occurred when the patient was under 16 but, in each case, the patient admitted preferring children under thirteen when he was over 16. Twenty percent of the group were known to have had sexual contact with boys, sixty percent with girls and twenty percent with both. Most of the child molesters had committed multiple offences. None of the offences were committed by fathers against their children. The mean age of group CM was 27.5 yr. The CM patients had been in the Mental Health Centre for an average of 24.8 mo. Ten percent of the group bore primary or secondary diagnoses as psychotics, sixty percent as personality or character disordered, and thirty percent as retardates.

Non-sex offender patients were selected from within the maximum security division of the Centre because most of the child molesters had been referred from there. Patients were selected on the basis of a review of their clinical file to insure that they had not committed any sexual offences, their willingness to participate, and their low risk status with respect to physical assaultiveness within the institution. They were paid for their participation and it was explained that the assessment was not part of their treatment and that the results would not be placed on their clinical files or discussed with other staff members. The experimenters informed these patient subjects that the purpose of the study was to see how non-sex offenders reacted to the slides. The mean age of these patients was 26.7 yr and they had been housed in Oak Ridge an average of 31.2 mo. Forty percent were diagnosed as psychotic, fifty percent as personality or character disordered and twenty percent as retarded. One subject was a homosexual. Nonpatient subjects were recruited from among the experimenters' acquaintances. One nonpatient reported to us that he was bisexual in his preferences but all others described themselves as heterosexually oriented. No nonpatient admitted to having committed any sexual offence. The purpose of the study was explained to these subjects in the same way it had been to the non-sex offending patients. The estimated average age of these subjects was 25.

### *Apparatus*

Subjects were seated in a reclining chair located in a sound attenuating and electrically shielded room equipped with a one way mirror, rear view projection screen and intercom.

Skin conductance was recorded with Beckman Biopotential Skin Electrodes (650-944) attached to the distal volar surface of the second and third fingers of the left hand. Beckman Biopotential Electrode Paste (201210) was used and the electrodes were taped to the subject's fingers. Skin conductance was measured directly as suggested by Lykken and Venables (1971) with a constant 0.5 V across the electrodes.

Penile circumference was measured using a mercury-in-rubber strain gauge which the subject placed on the shaft of his penis. The strain gauge was periodically calibrated with metal cylinders of known circumference and the relationship between diameter and pen deflection was found to be linear within the working range of the gauge. The leads from the gauge were connected to a Parks Electronics Model 270 Plethysmograph.

Slide changes, penile circumference responses (PCRs), and skin conductance responses (SCRs) were recorded on a Beckman Type RS Dynograph. Experimental events were controlled by a device built by Applied Automation Associates of Toronto. The programming apparatus and Dynograph were located outside the subjects' room.

### *Stimuli and Procedure*

In the slide sort test, two arrays of six black and white slides each were shown to the subject, one array at a time, on a lighted sorting tray. A seventh color slide depicting a sado-masochistic act was included in each array. In one array, the black and white figures were nude and, in the other, the figures were partially clothed. There was one representative of each sex at each of three age levels: adult (between 18 and 30 yr of age as judged by the experimenters), pubescent (12-15 yr) and child (5-11 yr). Each subject was asked to choose the slide that he found most sexually attractive and that slide was removed from the tray. This process was repeated until there was no slide left or until the subject reported that he found none of the remaining slides attractive. The ranking data were scored for each subject by ordering the slides within an array according to their order of choice. When not all the slides were chosen, the remaining slides were assigned the average of the remaining ranks. The data from the two arrays were combined by computing the average rank of the slides from the same category.

In the psychophysiological test, subjects were seated in the reclining chair and instructed to relax, look carefully at the slides and think of them in a sexual way. It was explained that the apparatus measured very tiny changes in penile circumference. Subjects were also told that they should avoid unnecessary movement as this would interfere with the measurements. The electrodes were attached and subjects were shown 20 slides in a fixed randomized sequence. Each slide presentation was 30 sec in duration and was separated by 60 sec from the next presentation. When a large PCR of long duration occurred, the next slide presentation was delayed until the PCR returned to a steady state near baseline. Full erections sometimes resulted in the PCR polygraph trace going off scale. These traces were scored by giving the subject the maximum reading that the scale allowed.

There were two slides in each of the following categories. In the "heterosexual activity" or HET category, a nude or partially clothed man and woman were depicted petting on a bed. In the person categories, there were pictures of single nude or partially clothed persons. The female categories were: "adult female" or AF (judged to be between 18 and 30 yr), "pubescent female" or PF (12-15 yr of age), and "child female", (5-11 yr of age). These age categories were identical in the male series. There were three additional categories: "children under five" or C < 5 (one picture of a male toddler and one of a female toddler), "sadistic" or SP (a female nurse being choked by a man and a man being whipped

by another man), and finally, "neutral" or NS (a chandelier and a landscape). None of the slides used in the slide sort were presented in the psychophysiological test in order to preserve novelty.

All the slides were chosen on the basis of apparent age since this was felt to be the socially relevant variable. Color and black and white slides were counterbalanced across the single person categories but the other slides were all color. The fixed order of presentation was chosen randomly, with the restriction that one member of a category could not immediately follow another member of the same category.

Penile circumference was measured in millimeters of circumference change. Penile circumference responses (PCRs) were scored as the difference between the reading at slide onset and the peak reading in the next 60 sec, disregarding responses occurring in the first two seconds of slide presentation. Skin conductance responses (SCRs) were scored as the difference between the reading at slide onset and the peak response in the next 30 sec disregarding the first 2 sec. Negative SCRs were assumed to be the result of random variability and were scored as zeros.

To determine whether there was a difference in the preference of normals and child molesters for children, a special analysis of the physiological data was conducted. A potential difficulty with such an analysis is that different child molesters preferred children of different sexes and ages. To circumvent this difficulty, a difference score was calculated for both measures for each subject by subtracting each subject's highest response to a pubescent or child category from his highest response to an adult person category (adult male or adult female).

## RESULTS

The CM subjects tended to respond more to the children slides than the subjects in group N (Fig. 1). An analysis of the PCR difference scores yielded a significant group effect ( $F(1,39) = 20.13, p < .001$ ), indicating that, relative to their PCRs to adult stimuli, the child molesters gave larger PCRs to the child slides than did the group N subjects.

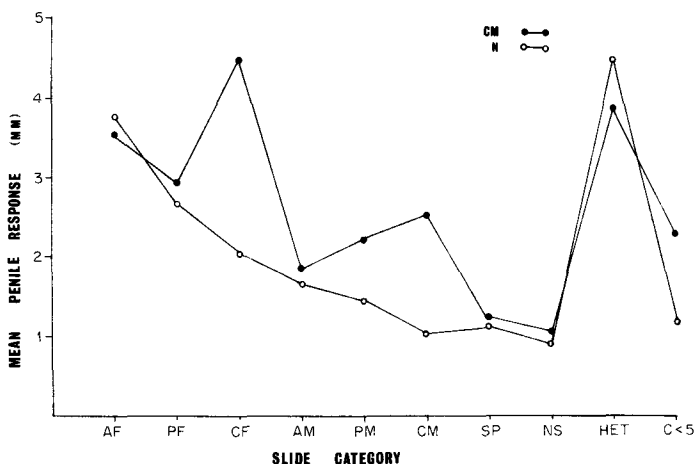


FIG. 1. Mean PCR for both groups to each slide category of the psychophysiological test.

The SCR difference score analysis, did not differentiate the two groups ( $F(1,39) = 0.15, p > .10$ ). In addition, the PCR data differentiated between neutral and adult female slide categories where the SCR data did not. The SCR data differentiated between the neutral and adult female slide categories in neither group CM ( $F(1,19) = .084, p < .10$ ) nor group N ( $F(1,20) = 2.96, p < .10$ ). The corresponding contrasts with the PCR data were significant:  $F = 8.57, p < .01$  for the CM group and  $F = 12.36, p < .005$  for group N.

The most striking aspect of the data was the disparity in preference structure between the ranking and PCR data among the CM subjects. Whereas the ranking and PCR profiles of group N were very similar despite the different slides employed in obtaining the different measures, group CM ranked adult females as highest while exhibiting the largest PCRs to child females. The ranking profiles of the two groups were very similar save that the child molesters ranked pubescent males somewhat higher than did group N.

The PCR averages for each category of slides were ranked in order of magnitude for each subject. These rankings were then correlated for each subject with their slide ranking scores using the rho statistic corrected for ties. The average CM rho, 0.304, did not differ significantly from the average N rho of 0.467. Rhos varied from  $-0.496$  to  $+0.880$ . Negative rhos and high variability were found in both groups. We initially felt that large discrepancies between ranking responses and PCRs would be indicative of faking because the subjects would find it easier to bias their ranking responses than their PCRs. The existence of discrepancies between these measures among the normal subjects presumably indicates that they do not always imply faking because the normal subjects would appear to have less reason to attempt to bias their responses. Inspection of the data from the three N subjects with negative correlations revealed that they had all chosen adult females first in the ranking task but that their PCR rankings indicated quite different preferences. Examination of their PCR preference profiles showed that, in comparison to other subjects, their responses to the person categories were unusually small relative to their responses to neutral slides. Relatively small responses to person categories may indicate an invalid PCR profile.

Subjects in group CM were divided according to whether their history of deviant object choice had been heterosexual, homosexual, or bisexual. The mean PCR data, graphed separately for each subgroup, are clearly related to the subjects' histories (Fig. 2). The profile of the heterosexual child molesters peaked on child females and that of the homosexual child molesters peaked on child males. The bisexual CM subjects were more responsive and peaked on child females. The bi-

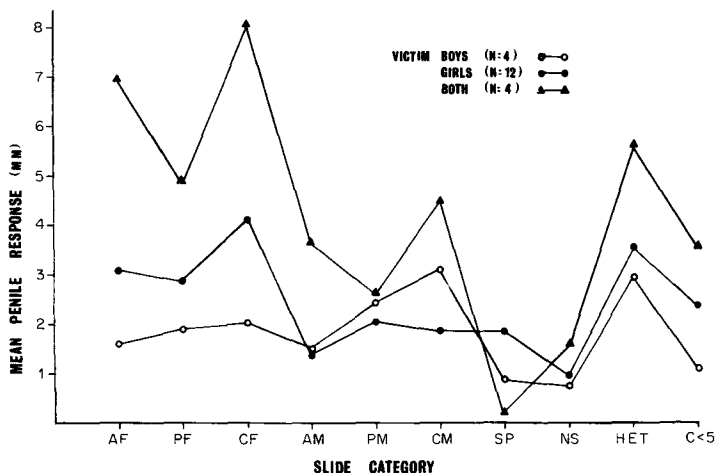


FIG. 2. Mean PCR to each slide category for child molesters with heterosexual, homosexual, and bisexual histories.

sexuals' second highest peak in the single person categories was to adult females. The bisexuals were the only subgroup to respond to the sado-masochistic slides and these responses were negative. These negative responses are not reflected well by the PCR measure reported here and do not appear in the figure.

When the same procedure was carried out using the ranking data, the subjects' ranking profiles were not clearly related to their history of victim choice. The homosexual child molesters peaked on adult males and second highest on pubescent males, the bisexuals had a relatively flat profile that peaked highest on adult females and second highest on pubescent males; whereas, the heterosexual child molesters peaked on adult females but picked pubescent females as their second choice, as did the normal subjects.

The correlations between the PCR and SCR measures averaged over subjects were low for both group CM ( $r = .071$ ,  $SD = .230$ ) and group N ( $r = .015$ ,  $SD = .199$ ). Correlations for individual subjects were not significant. Slide position did not correlate significantly with either penile circumference or skin conductance in any subject, indicating little habituation within a session.

## CONCLUSIONS

A short 20-slide series can be used to differentiate child molesters from others using penile circumference measures. In addition, the differences between the CM and N groups indicate that, even though the child molesters may have selected children as adult female surrogates in certain instances, inappropriate sexual preferences were also involved.

The penile response data assume greater importance because of the poor differentiation between groups obtained with the other two measures. There were marked discrepancies between the PCR and ranking data and between the ranking data and both the child molesters' and normals' histories. In addition, the PCRs did not show high within-subject correlations with the SCRs in either of the groups. Bancroft and Mathews (1971) found similar results with a sample of normal subjects. Skin conductance failed to differentiate sexual from neutral stimuli within either group.

### REFERENCES

- Bancroft, J., & Mathews, A. Autonomic correlates of penile erection. *Journal of Psychosomatic Research*, 1971, **15**, 154-167.
- Freund, K. Diagnosing heterosexual pedophilia by means of a test for sexual interest. *Behaviour Research and Therapy*, 1965, **3**, 229-234.
- Freund, K. Diagnosing homo- or heterosexuality and erotic age-preference by means of a psychophysiological test. *Behaviour Research and Therapy*, 1967a, **5**, 209-228.
- Freund, K. Erotic preference in pedophilia. *Behaviour Research and Therapy*, 1967b, **5**, 339-348.
- Freund, K., McKnight, C. K., Langevin, R., & Cibiri, S. The female child as surrogate object. *Archives of Sexual Behavior*, 1972, **2**, 119-132.
- Lykken, D. T., & Venables, P. H. Direct measurement of skin conductance: A proposal for standardization. *Psychophysiology*, 1971, **6**, 656-672.
- Quinsey, V. L. Methodological issues in evaluating the effectiveness of aversion therapies for institutionalized child molesters. *Canadian Psychologist*, 1973, **14**, 350-361.
- Steffy, R. A., & Gauthier, R. Psychophysiological factors in aversive therapies: a contrast between successfully and nonsuccessfully treated pedophile offenders. Paper read at meeting of the Ontario Psychological Association, Kingston, Ontario, 1970.
- Zuckerman, M. Physiological measures of sexual arousal in the human. *Psychological Bulletin*, 1971, **75**, 297-329.