00107

Sexual Abuse: A Journal of Research and Treatment, Vol. 7, No. 4, 1995

Age and Adolescent Sexual Offender Arousal

Kris L. Kaemingk,[1] Margaret Koselka,[1] Judith V. Becker,[1] and Meg S. Kaplan[2]

As the demand for assessment and treatment of adolescent sexual offenders continues to grow, increasing numbers of clinicians are using penile circumference measures as an objective measure of arousal in this population. The purpose of this study was to examine the relationship between age and sexual arousal as assessed by penile plethysmography in adolescent sexual offenders. Since younger adolescents might have a diminished ability to inhibit erectile responses, it was hypothesized that erectile responses would be negatively correlated with age. Data were derived from 104 inner-city adolescent males, aged 13 to 17, who were evaluated and underwent assessment of erectile responses at an outpatient clinic for adolescent sexual offenders. In this group, age accounted for a significant proportion of variance in erection measures. Younger adolescents had erectile responses to a greater number of assessment stimuli and greater mean percentage full erection scores across assessment stimuli. Findings suggest that the relationship between age and erection measures merits further attention as research examining the utility, limitations, and appropriate use of the plethysmograph continues.

KEY WORDS: adolescent offenders; plethysmograph; sexual arousal; sexual offenders.

INTRODUCTION

Adolescent sexual offending is a serious problem facing society today. Arrest statistics and victim survey data suggest that at least 30% of child sexual abuse cases and about 20% of rapes are committed by adolescents (Davis & Leitenberg, 1987). Additionally, approximately half of adult sexual

[1]Department of Psychology, University of Arizona, Tucson, Arizona 85721.
[2]New York State Psychiatric Institute, Columbia University College of Physicians and Surgeons, 513 West 166 Street, Third Floor, New York, New York 10032.

1079-0632/95/1200-0249$07.50/0

offenders report that the onset of their deviant sexual arousal and behavior occurred before the age of 18 (Abel, Mittelman, & Becker, 1985).

As the demand for assessment and treatment of adolescent sexual offenders continues to grow, increasing numbers of clinicians are using penile circumference measures as an objective measure of arousal in this population. While penile erection measurement has been reported to be an accurate and sensitive method of determining sexual arousal and preference in adult males (Zuckerman, 1971; Rosen & Keefe, 1978), the relationship between erection measures and sexual preference has not been directly examined in adolescents. Additionally, erectile responses may be associated not only with sexual arousal but also with individual characteristics (Murphy & Barbaree, 1988), and this influence has yet to be systematically examined in adolescents. Given the growing controversy about assessing adolescents with the plethysmograph (e.g., exposing adolescents to sexual stimuli, placing a device on genitalia of adolescents), research examining the utility, limitations, and appropriate use of this device is important.

The purpose of this study was to examine the relationship between age and erectile response assessed by penile plethysmography in adolescent sexual offenders. Age is frequently mentioned in discussions about appropriate use of the plethysmograph, but relationships between age and erectile response have not yet been reported in the literature. Age may also be important from a neuropsychological view since the frontal lobes may play a role in modulation of sexual and other emotional behavior, and since frontal system development continues throughout childhood and adolescence (Dennis, 1991; Thatcher, 1991). The frontal lobes, notably prefrontal areas, are also critical to impulse control and frontally mediated response inhibition. Since younger adolescents might have a diminished frontally mediated ability to inhibit erectile responses, it was hypothesized that plethysmograph response would be negatively correlated with age. Specific hypotheses were that younger adolescents would have erectile responses to a greater number of assessment stimuli and that younger adolescents would have a proportionately greater response across all assessment stimuli.

METHOD

Participants. Data were obtained from 104 inner-city adolescent males (ages 13 to 17) who were evaluated at the Sexual Behavior Clinic, an outpatient evaluation and treatment clinic for adolescent sexual offenders in New York City, from 1985 to 1990. These adolescents had been charged with, or convicted of, a sexual offense. Offenses included sexual abuse of age-inappropriate partners and/or coercive sexual behavior with female

and/or male victims. The majority were referred by the criminal justice system. Fifteen percent of the adolescents were Caucasian, 29% were Hispanic, and 55% were Black.

Procedure. Informed consent was obtained from each participant and his parent(s) or guardian. Adolescents were not evaluated if it was suspected that they were intoxicated or if they could not understand the reason for the evaluation. Subsequently the adolescent underwent a structured clinical interview and assessment of erectile responses.

Erectile responses were assessed in a laboratory setting. The adolescent was seated in a sound-attenuated room which afforded privacy and was free of potentially distracting stimuli. A male technician sat in an adjacent room which contained the recording apparatus and communicated with the participant via an intercom. The rooms were separated by a door which remained closed throughout the assessment. Each participant was instructed to place a mercury-in-rubber strain gauge, a circumferential transducer, halfway down the penile shaft and told that he would listen to 19 scenarios (stimuli) through a standard earphone headset (specific instructions are given by Becker & Kaplan, 1988). After each scenario, the adolescent was asked if he "*liked*," "*disliked*," or was "*neutral*" to the scenario and was requested to rate his sexual arousal to the scenario on a scale of 1 (minimum) to 10 (maximum). The technician occasionally asked each participant to repeat the content of the scenario after it was given to ensure that he was listening. Titles of the taped scenarios are included in Table I.

Circumference changes were recorded on a Grass Model 7 polygraph. The technician calibrated the strain gauge using a standard calibration cone before and after each assessment. The gauge was calibrated so that a 5-mm deflection in the gauge equaled a 5-mm pen deflection, thus producing a linear measurement of penile circumference change. Full/maximum erection was defined according to the self report of the participant. The first scenario was presented after a calibration period during which the participant reported 0% of full erection (flaccid). Subsequent cues were presented when the erectile response dropped below 20% of full erection, with a minimal interscenario delay of 30 sec.

Efforts to minimize faking and suppression employed by Becker and Kaplan (1988, p. 113) in collecting these data included framing the assessment's purpose as "to find out the different kinds of things that you are sexually interested in," providing concrete instructions, and having the technician spot-check whether the participant was listening by asking him to repeat the content of scenarios after they were presented. Nevertheless, assessment results could have been influenced by attempts to minimize or fake responses.

Table I. Titles of Taped Scenarious

Audio cue description	Correlation with age
1. Voyeurism	-.14
2. Male under age 8	-.19
3. Male age 9–12 with force	-.14
4. Female under age 8	-.15
5. Female age 13–18 with force	-.20
6. Female age 13–18 consensual	-.21
7. Female age 9–12 with force	-.27
8. Frottage	-.24
9. Incest with female child	-.18
10. Assault on male	-.08
11. Male age 9–12 consensual	-.12
12. Exhibitionism	-.28
13. Female 9–12 consensual	-.15
14. Incest with male child	-.16
15. Nonsexual social interaction	-.14
16. Assault on a female	-.20
17. Male age 13–18 consensual	-.25
18. Male age 13–18 with force	-.15
19. Rape adult female	-.19

Statistical Analysis. Simple regression techniques were utilized to analyze the relationship between age and erection measures. Regression analysis allows for identification of the proportion of variance in a dependent variable or measure that is attributable to an independent variable. In this study the proportion of variance in erection measures that was attributable to age was examined. To test the hypotheses and minimize the number of statistical comparisons, two composite erection scores were created: number of responses and mean percentage of full erection. These scores allowed the hypothesis that erectile response would be negatively correlated with age to be tested in relationship to the total number of responses to audio cues (of 19) and in relationship to the average/mean response across cues. Mean percentage of full erection was computed for each adolescent by averaging the percentage of full erection scores for each of the 19 stimuli. Number of responses was counted as the total number of audio cues to which an adolescent had a response equal to, or greater than, 20% of full erection. This value was selected, as it was used by Becker, Kaplan, and Tenke (1992) in their examination of erectile response profiles for adolescent sexual offenders.

RESULTS

Age accounted for a significant proportion of variance in number of erectile responses ($F = 7.263$ df = 1,102 $p = .008$) and mean percentage of full erection ($F = 6.884$ df = 1,102 $p = .010$). Age was inversely related to number of responses ($r = -.26$) and accounted for almost 6% of the variability in this measure (adjusted multiple $r = .057$). Results are illustrated in Fig. 1, which shows that younger adolescents had erectile responses to a greater number of stimuli.

There was also a negative correlation between age and mean percentage of full erection ($r = -.251$), with age accounting for about 5% of the variability in this measure (adjusted multiple $r = .054$). As shown in Fig. 2, younger adolescents had greater mean percentage of full erection scores.

Subsequent descriptive review of the data revealed negative correlations between age and percentage of full erection scores for each of the 19 stimuli. The correlations between age and the percentage of full erection values for stimuli are given in Table I. The correlation between the two

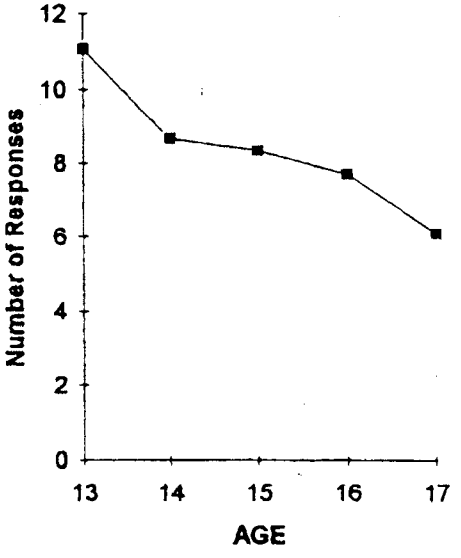

Fig. 1. Mean number of responses to stimuli by age.

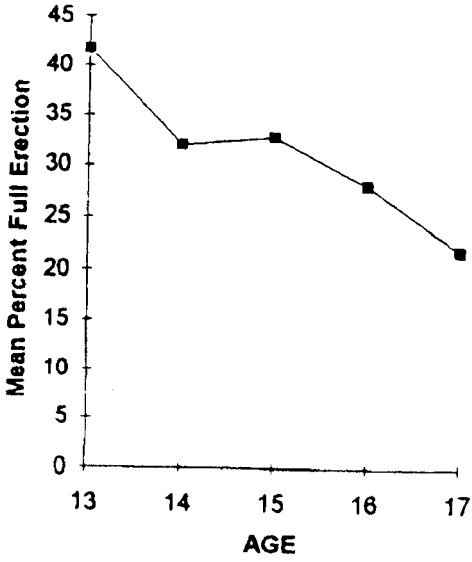

Fig. 2. Mean percentage of full erection by age.

erection measures, mean percentage of full erection and number of responses, was $r = .96$.

DISCUSSION

The practice of measuring erectile responses to sexual stimuli in the sexual offender population grew out of a need for a reliable and valid alternative to self-report of sexual arousal and preferences. Appropriate use of penile plethysmography depends on knowing what factors influence the validity of erection measures. The finding that age accounted for a significant proportion of variance in erection measures suggests that age is one factor to consider when making decisions to use erection measures and/or making specific judgments about sexual interests based on erection measures. However, this study examined only erectile responses of one group of adolescent male sexual offenders in one setting and did not address erectile responses of other populations of age groups.

The finding that age is negatively correlated with erection measures could be attributable to differences in the ability to suppress arousal, de-

mand characteristics, differences in sexual interest or arousal patterns, or other factors. Differences in the ability to suppress arousal could be attributable to a number of factors. Among these are age-related changes in frontal system function since frontal system development continues throughout childhood and adolescence (Dennis, 1991; Thatcher, 1991) and since developmental changes in frontal system structure parallel cognitive development (Grattan & Eslinger, 1991). Other age-related and developmental changes are also worth considering. For example, mental age may influence erectile responses to sexual stimuli. Studies conducted on adult sexual offenders and nonoffenders suggest that lower IQs may be associated with greater responses to deviant stimuli (Barbaree & Marshall, 1989; Marshall, Barbaree, & Christophe, 1986; Murphy, Haynes, Coleman, & Flanagan, 1985; Wormith, Bradford, Pawlak, Borzecki, & Zohar, 1988). Age-related endocrine changes (e.g., testosterone levels) could also be influential. The relationship among age (chronological and mental), frontal system function, developmental stages, and other cognitive abilities and erectile responses remains to be systematically examined.

There are also significant demand characteristics associated with assessment of erectile responses (Murphy & Barbaree, 1988), and demand characteristics could also be influenced by age. For example, younger adolescents might have felt less pressure to conform their responses to a societal norm. Younger adolescents might also have been more responsive to the transducer placed on the penis or might have responded to more stimuli since the purpose of the evaluation was to assess sexual interests. Age-related differences in sexual interest or arousal must also be considered, but there is little information available to address this issue. There is also a notable lack of erectile response data for adolescent populations and significant obstacles to research in this area. Another possibility is that an earlier onset of deviant sexual behavior could be indicative of more severe pathology.

A relationship between age and erectile response, if replicated, could have treatment implications for adolescent sexual offenders. Hunter and Goodwin (1992) reported that younger juvenile perpetrators appear to have more difficulty learning to lower deviant arousal in response to verbal satiation therapy. If younger adolescents have more difficulty controlling or learning to control sexual arousal, treatment interventions may require modification.

In summary, the relationship between age and erection measures merits further attention as research examining the utility, limitations, and appropriate use of the plethysmograph continues. While awaiting additional information, age is a consideration when making decisions to use erection measures in adolescents and when making specific judgments about sexual

interests based on these measures. It is important to note that since the purpose of this study was to examine the relationship between age and erectile response in a heterogeneous group of adolescent offenders (type of offense and victim age and sex varied), response profiles or patterns of responding were not examined. The authors recommend that clinicians follow guidelines set forth by the Association for the Treatment of Sexual Abusers (ATSA, 1993) for the use of the penile plethysmograph when conducting assessments. Guidelines include interpreting physiological data in conjunction with a comprehensive psychological examination and having plethysmograph procedures reviewed by an appropriate advisory group when this assessment method is used with persons under age 15. Finally, age may be related to treatment outcome if younger adolescents *do* have more difficulty controlling, or learning to control, sexual arousal; this possibility warrants further investigation.

ACKNOWLEDGMENT

This investigation was supported in part by NIMH National Research Service Award 1 F32 MH10457-01 VTS.

REFERENCES

Abel, G. G., Mittelman, M., & Becker, J. V. (1985). Sex offenders: Results of assessment and recommendations for treatment. In S. Ben-Aron, S. Hucher, & C. Webster (Eds.), *Clinical criminology: Current concepts* (pp. 191-205). Toronto: M&M Graphics.

ATSA (1993). *Association for the Treatment of Sexual Abusers Practioner's Handbook.* Lake Oswego, OR: Association for the Treatment of Sexual Abusers.

Barbaree, H. E., & Marshall, W. L. (1989). Erectile responses among heterosexual child molesters, father-daughter incest offenders and matched nonoffenders: Five distinct age preference profiles. *Canadian Journal of Behavioral Science, 21,* 70-82.

Becker, J. V., & Kaplan, M. S. (1988). The assessment of adolescent sex offenders. In R. J. Prinz (Ed.), *Advancement in behavioral assessment of children and families, Vol. 4.* (pp. 97-118). Greenwich, CT: JAI.

Becker, J. V., Kaplan, M. S., & Tenke, C. E. (1992). The relationship of abuse history, denial and erectile response profiles of adolescent sexual perpetrators. *Behavior Therapy, 23,* 87-97.

Davis, G. E., & Leitenberg, H. E. (1987). Adolescent sex offenders. *Psychological Bulletin, 101,* 417-427.

Dennis, M. (1991). Frontal lobe function in childhood and adolescence: A heuristic for assessing attention regulation, executive control, and the intentional states important for social discourse. *Developmental Neuropsychology, 7,* 327-358.

Grattan, L. M., & Eslinger, P. J. (1991). Frontal lobe damage in children and adults: A comparative review. *Developmental Neuropsychology, 7,* 283-326.

Hunter, J. A., Jr., & Goodwin, D. W. (1992). The clinical utility of satiation therapy with juvenile sexual offenders: Variations and efficacy. *Annals of Sex Research, 5,* 71-80.

Marshall, W. L., Barbaree, H. E., & Christophe, D. (1986). Sexual offenders against female children: Sexual preferences for age of victims and type of behavior. *Canadian Journal of Behavioral Science, 18*, 424-439.

Murphy, W. D., & Barbaree, H. E. (1988). *Assessments of sexual offenders by measures of erectile response: Psychometric properties and decision making* (Monograph Order No. 86M0506500501D). Rockville, MD: National Institutes of Health.

Murphy, W. D., Haynes, M. R., Coleman, E. M., & Flanagan, B. (1985). Sexual responding of "nonrapists" to aggressive sexual themes: Normative data. *Journal of Psychopathology and Behavioral Assessment, 7*, 37-47.

Rosen, R. C., & Keefe, F. J. (1978). The measurement of human penile tumescence. *Psychophysiology, 15*, 366-376.

Thatcher, R. W. (1991). Maturation of the human frontal lobes: Physiological evidence for staging. *Developmental Neuropsychology, 7*, 397-419.

Wormith, J. S., Bradford, J. M. W., Pawlak, A., Borzecki, M., & Zohar, A. (1988). The assessment of deviant sexual arousal as a function of intelligence, instructional set and alcohol ingestion. *Canadian Journal of Psychiatry, 33*, 800-808.

Zuckerman, M. (1971). Psychological measures of sexual arousal in the human. *Psychological Bulletin, 75*, 297-239.