

VOLUNTARY CONTROL OF PENILE TUMESCENCE WHILE RECEIVING  
BOTH COGNITIVE AND PHYSICAL STIMULATION

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A Doctoral Research Project  
Presented to  
The School of Graduate Studies  
Department of Psychology  
Indiana State University  
Terre Haute, Indiana

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In Partial Fulfillment  
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Doctor of Psychology

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by  
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The doctoral research project of Todd M. Carpenter, Contribution to the School of Graduate Studies, Indiana State University, Series IV, Number 85, under the title *Voluntary Control of Penile Tumescence While Receiving Both Cognitive and Physical Stimulation* is approved as partial fulfillment of the requirements for the Doctor of Psychology Degree.

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## ABSTRACT

Voluntary control of erectile responses represents a serious threat to the validity of phallometry (or penile plethysmography). Cognitive methods, such as not attending to the sexual stimuli or distraction through the use of fantasy, may be used effectively to distort phallometric measures. The primary purpose of this study was to explore the degree of control men have over their sexual arousal while receiving both cognitive and vibrotactile stimulation. More specifically, this study examined the ability of males to suppress penile tumescence to preferred sexual stimuli as well as their ability to enhance tumescence to nonpreferred and neutral stimuli. Participants were randomly assigned to view one of three 4-minute video clips (heterosexual scene, homosexual scene, or neutral scene) while also receiving low-level penile vibrotactile stimulation. A 3 X 2 X 2 mixed model MANOVA was used to analyze the data.

The results indicated that while receiving low-level vibrotactile stimulation, participants were able to "enhance" sexual arousal when instructed to do so regardless of video type but had much greater difficulty "suppressing" sexual arousal to the preferred video. Furthermore, under "enhance" instructions, mean and peak tumescence measures were not significantly different when comparing men who

viewed a heterosexual vs homosexual video. The findings of this study are somewhat inconsistent with those of previous research and raise important issues clinically, theoretically, and legally regarding the use of penile plethysmography.

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## Chapter 1

### INTRODUCTION

In general, penile tumescence is considered to be an involuntary or reflex response to erotic stimulation and under the control of the autonomic nervous system. It is believed to be a reflexive phenomenon over which men have little direct voluntary control, that is, men cannot will or demand an erection (Masters & Johnson, 1970).

The types of stimulation that can elicit erection have typically been classified as either "psychogenic" (cognitive/psychological) or "reflexogenic" (tactile) in nature (Weiss, 1972). Auditory, visual, and imaginative stimuli may arouse the erotic centers of the brain and result in a "psychogenic erection." On the other hand, physical stimulation of the genital regions, or stimuli arising in the bladder or rectum, may result in a so-called "reflexogenic erection." Further, it appears that

psychogenic and reflexogenic stimuli often act synergistically in producing erections. For example, the degree of tactile genital stimulation required to produce erection is diminished in the presence of erotic cognitive stimulation, and vice-versa. In addition, emotions (psychological stimuli) such as guilt, hostility, or anxiety can inhibit the erection reflex (Weiss, 1972).

One of the major advances in the study of sexual functioning in males has been the introduction of reliable psychophysiological measurements of sexual arousal. Zuckerman (1971), in a review of various psychophysiological measurements of sexual arousal, concluded that direct genital measurement (penile tumescence) was the most sensitive and accurate physiological index of sexual arousal in men. Currently, there is a wide consensus that the most valid and reliable measure of sexual arousal in an adult, awake male is the penile response or tumescence.

Phallometry is a technique for measuring penile tumescence in response to sexual stimuli. This procedure involves continuously monitoring changes in volume or circumference of the penis in the presence of various sexual stimuli. Typically, the individual places a strain-gauge that is made of a thin bore elastic tube filled with mercury around his penis (Bancroft, Jones, & Pullen, 1966). Changes

in the circumference of the penis lead to changes in the electrical resistance of the mercury column in the strain gauge. These changes in resistance are amplified and recorded electronically, thus providing a relatively noninvasive physiological measure of male sexual arousal. This procedure offers the advantages of face validity, objectivity, and simplicity. Furthermore, empirical data have consistently upheld the usefulness of phallometry with a variety of clinical populations. Studies have shown that the technique is useful in differentiating heterosexuals from homosexuals, rapists, and pedophiles (Earls, 1983).

The phallometric method is frequently used in assessing the sexual response of sexual offenders in order to aid the courts in dispositional planning of each individual offender. In fact, over one-third of all sex offender assessment centers in the United States use phallometry as an integral part of their assessment procedure (Launay, 1994). Furthermore, according to Barker and Howell (1992), the phallometric technique is often used as the single most important source of predictive data in some court rooms, boards of pardons, and for prison inmate classification systems. In addition, phallometry is often used in treatment as a means of measuring change in response to deviant and normal sexual stimulation. It is assumed that

direct genital measurement is a more objective measure of sexual arousal and more difficult to distort than other methods of assessment that are currently available. However, the belief in the utility of the phallometric evaluation is not apparent in the United Kingdom where the technique remains highly controversial. Furthermore, a large number of practitioners in the U.K. doubt its usefulness and harbor reservations about the ethics of its use with sexual offenders (Launay, 1994).

In certain situations, the possibility of voluntary control of penile tumescence poses a major problem for the phallometric technique of measuring sexual responding (Adams, Motsinger, McAnulty, & Moore, 1992). The finding that some males are able to deliberately distort the results of this procedure has raised concerns about its limitations (Hutch, 1981; McAnulty & Adams, 1991). Furthermore, the extent to which sexual arousal can be voluntarily controlled in general has raised important issues clinically, theoretically, and legally.

When individuals participate in a cooperative manner, penile tumescence measurements are a fairly accurate index of the individual's typical pattern of sexual arousal (Strassberg, Kelly, Carrol, & Kircher, 1987). However, when this method is used with individuals who may be motivated to

create a false impression, such as sexual offenders or those with paraphilias, then the utility of the technique is far less clear. Hall, Proctor, and Nelson (1988) reported that 88% of their sample of incarcerated sex offenders were able to completely eliminate erections to deviant stimuli when instructed to do so. Other studies have also supported the finding that some sex offenders are able to exert voluntary control over their penile responses by suppressing penile tumescence (Freund, Watson, & Reinzo, 1988; Wydra, Marshall, Earls, & Barbaree, 1983). In addition, McAnulty and Adams (1991) found that both heterosexual and homosexual subjects were able to significantly suppress erections to preferred sexual stimuli when provided with a financial incentive. Certainly the ability of some males to effectively suppress penile tumescence raises concerns about the utility of penile plethysmography when used to assess sexual arousal patterns and preferences.

The above mentioned studies addressed the issue of "control" over sexual arousal by assessing the ability of men to suppress penile tumescence. But having control over sexual arousal really means having the ability to both suppress as well as enhance penile tumescence. If males can suppress sexual arousal through various cognitive methods, can they also enhance arousal?

Bancroft and Mathews (1971) demonstrated that males can become sexually aroused in the absence of both overt erotic stimuli and physical stimulation simply by thinking sexually arousing thoughts. Rubin and Henson (1975) also attempted to explore the ability of men to enhance sexual arousal as measured by penile tumescence and found mixed results. Four of their six subjects were able to voluntarily enhance their penile tumescence to a preferred erotic film, when instructed to do so, by means of fantasy. The other two subjects did not enhance their arousal level to the erotic film and, in fact, produced their smallest peak and mean erections under instructions to enhance sexual arousal. Thus, it appears that for some males, attempts to cognitively enhance sexual arousal may actually interfere with their ability to do so.

In a study by Card and Farrall (1990), 18 males (homosexual and heterosexual pedophiles) were instructed to fake penile responses to sexual stimuli. The authors found that suppression of penile responses to preferred sexual stimuli was clearly easier to produce than enhancement to nonpreferred stimuli. Participants were able to successfully suppress arousal in 57% of their attempts, but only 30% of the attempts at enhancing penile responses were successful.

In a more recent study by Adams, Motsinger, McAnulty, and Moore (1992), normal homosexual and heterosexual subjects were exposed to sexual materials and asked to suppress erectile responses to preferred stimuli and to enhance penile tumescence to nonpreferred stimuli. Across groups, the results revealed some degree of suppression of erections but no significant enhancement of erections. Thus, it appears that both clinical and nonclinical men are able to significantly suppress sexual arousal to preferred stimuli but may have greater difficulty enhancing sexual arousal, particularly to nonpreferred stimuli.

The finding that erectile responses can be suppressed or faked to simulate a normal sexual response profile has raised concerns about the utility of penile plethysmography. Concerns about the effect of voluntary control on test results have led to efforts to identify signs of faking and to devise methods for offsetting it (Freund, Watson, & Reinzo, 1988; Malcolm, Davidson, & Marshall, 1985; Wydra, Marshall, Earls, & Barbaree, 1983). However, there are at present no generally accepted procedures for detecting or controlling for it. Current methods of eliminating or reducing the possibility of successfully faking are considered inadequate (Malcolm, Davidson, & Marshall, 1985).

To date, the psychophysiological study of sexual

responses in the laboratory has been conducted almost exclusively through the use of visual or auditory erotic stimulation or self-generated fantasy. In other words, studies examining sexual arousal in males have utilized cognitive stimulation alone (videotapes, slides, or audio) and neglected the role of physical stimulation. In conducting a review of the relevant literature, only three studies were found which utilized vibrotactile stimulation. However, none of these studies were examining voluntary control of sexual arousal. Two of these studies focused on developing a better understanding of sexual response patterns of sexually dysfunctional males (Rowland, Cooper, & Slob, 1996; Rowland, Haensel, Blom, & Slob, 1993), and the third focused on the role of vibrotactile stimulation in producing erection (Rowland & Slob, 1992).

It has been demonstrated that the viewing of an erotic video combined with vibrotactile stimulation provides a maximally arousing situation for generating high levels of sexual arousal (Cerny, 1989; Rowland & Slob, 1992; Rowland, Cooper, & Slob, 1996). In addition, the combination of cognitive and vibrotactile stimulation more closely approximates an actual sexual encounter. In studies using only cognitive stimulation, some men may effectively suppress arousal simply by not attending to the stimuli or



utilizing aversive covert images and distracting fantasy (Alford, Wedding, & Jones, 1983). Whether or not these cognitive and aversion tactics might override the enhancing effects of vibrotactile stimulation has not yet been assessed. However, it is hypothesized that the combination of cognitive and vibrotactile stimulation may make it more difficult to suppress penile responses and make it more difficult to successfully fake/distort results.

The present study was designed to explore the extent to which men can exert voluntary control over penile tumescence (both suppress and enhance) while receiving either preferred, nonpreferred, or neutral cognitive stimulation (videotapes) plus low-level vibrotactile stimulation (30mv). The majority of studies examining voluntary control over sexual arousal have focused primarily on man's ability to suppress sexual arousal to preferred stimuli. The issue of penile enhancement to nonpreferred or neutral stimuli has been addressed in only a few studies and has produced mixed results. This study is one of the few in the literature that attempts to assess whether males are capable of enhancing penile tumescence in the presence of nonpreferred or neutral stimuli. Furthermore, of the studies reviewed concerning voluntary control of penile tumescence, this is the only study that utilized physical stimulation of the

penis - an important component in sexual arousal responses.

The three general hypotheses put forth in this study were that: (a) Heterosexual men will be able to suppress penile tumescence to low-level vibrotactile stimulation when combined with a neutral or nonpreferred sexual videotape (homosexual) but not when combined with a preferred sexual videotape (heterosexual), (b) Penile tumescence will be greatest when viewing the preferred videotape, and least when viewing the nonpreferred videotape, and (c) Heterosexual men will be able to significantly enhance penile tumescence to both the preferred and neutral videos but not to the nonpreferred videotape.

## Chapter 2

### METHOD

#### Participants

The subject sample consisted of 45, heterosexual male college students from Indiana State University. The participants ranged in age from 18-26 years with a mean age of 20. The majority of men were Caucasian (89%), circumcised (96%), and not married (98%). The one participant who was married was in the neutral video group. All of the men were recruited from the Psychology 100 (Introduction to Human Sexuality) and Psychology 101 (Introduction to General Psychology) courses and earned extra-credit points according to their instructor's guidelines. Participants were administered a screening interview (see Appendix A) to ensure suitability and appropriateness for the study. Individuals were excluded if they had physical or sexual problems, were on medication, or

had a bisexual or homosexual orientation. Individuals who met inclusion criteria were given a tour of the laboratory and received a detailed explanation of the study. Any questions or concerns the individual may have had were addressed at that time. If the individual wished to participate in the study, a time for the experimental session was scheduled. Prior to participation in the experimental session, each participant provided informed, voluntary consent (see Appendix B).

### Psychological Measures

All participants were given the Personality Inventory package (see Appendix C). The package comprised four questionnaires that were combined to assess attitudes toward sexuality: the Sex Anxiety Inventory (Janda & O'Grady, 1980); the Sex Guilt and the Morality-Conscience Guilt Scales of the Mosher (1966) Forced-choice Guilt Inventory; and the Sensation Seeking Scale (Zuckerman, Kolin, Price, & Zoob, 1964). These four questionnaires were selected because they assess attitudes which are believed to influence sexual behavior and performance (Masters & Johnson, 1970; Weiss, 1972).

The Sex Anxiety Inventory (SAI) measures generalized anxiety associated with the violation of perceived normative

standards of acceptable sexual behavior. The SAI has a test-retest reliability of 0.85 for males, and its internal consistency is 0.86 (Janda & O'Grady, 1980). Scores can range from 0-25 with higher scores indicating higher levels of sexual anxiety. Tolor and Barbieri (1981) administered the SAI to 115 college students and obtained a mean score of 9.44.

The Mosher Forced-Choice Guilt Inventory (MFCGI) is a self-report measure of the guilt one experiences for the violation of internalized standards of socially acceptable behavior. The MFCGI is reported to have alpha coefficients that average around 0.90 (Davis, Yarber, & Davis, 1988). The MFCGI consists of three scales (Sex Guilt, Hostility Guilt, and Morality-Conscience Guilt). Two of the scales were included in the present study: the Sex Guilt Scale and the Morality-Conscience Guilt Scale.

The Sex Guilt Scale consists of 28 forced-choice items designed to measure guilt associated with violating perceived sexual norms. Weighted scores can range from -45 to +37 with higher scores indicating higher levels of guilt. Mosher and Abramson (1977) administered the inventory to 96 male students enrolled in an introductory psychology class and obtained a mean Sex Guilt score of -21.02. Numerous studies have demonstrated the predictive validity of the Sex

Guilt Scale, and Mosher and Abramson (1977) have indicated that there is a significant relationship between guilt over sex and responses to explicitly sexual stimuli.

Furthermore, Mosher and Cross (1971) found that high sex guilt is associated with less sexual experience and less permissive sexual standards.

The Morality-Conscience Guilt Scale consists of 22 items that are related to feelings of guilt associated with violating internalized standards of socially acceptable behavior. O'Grady and Janda (1979) administered this scale to 148 male undergraduate psychology students and obtained a mean score of 11.68. Higher scores are associated with higher levels of morality-conscience guilt. Individuals higher in morality-conscience guilt are characterized by a more conventional personality style in that they are more conforming, are more self-critical, and express more interest in friendly, nonsexual relationships (Abramson, Mosher, Abramson, & Woychowski, 1977).

The Sensation Seeking Scale (SSS) was the fourth questionnaire included in the Personality Inventory package and measures a person's need for novel sensations and experiences. It consists of 40 paired items. Zuckerman, Eysenck, and Eysenck (1978) found a linear decline in SSS scores with age, and a mean SSS score of 19.3 for their

sample of males in the age range of 20-29. Reliability of the SSS for males is 0.68 (Zuckerman, Kolin, Price, & Zoob, 1964).

The entire Personality Inventory package consisted of 130 questions and required approximately 30-45 minutes to complete. It is a forced-choice test and was administered on an individual basis.

### Physiological Measures

Measures of the participant's penile tumescence, heart rate, and respiration rate were recorded throughout the experimental trial. All physiological measurements were recorded on an eight channel Grass Polygraph (Model 7B). Penile tumescence was monitored with a mercury-in-rubber digital strain gauge (Parks Electronics). The strain gauge consisted of a small rubber tube filled with mercury. As the tube is stretched, resistance changes in the mercury column can be measured and recorded by the Grass 7B Polygraph. Changes in heart rate were monitored by EKG sensors attached to the participant's chest and recorded on the polygraph. Respiratory rate was measured and recorded by a Grass respirometer which was placed around the participant's chest.

## Apparatus

The apparatus for this study consisted of a chair with a wooden stand in front of it, to which the vibrator was attached. The height of the stand was adjustable to suit the individual participant. The vibrator was mounted to the top of the stand by two bolts, one on each side, allowing the vibrator to swivel vertically through a 60 degree arc. Attached to the top of the vibrator was an 18 cm long silicon rubber sheath (internal diameter = 4.5 cm) into which the participant placed his penis. A water soluble lubricant (K-Y Jelly) was used in the rubber sheath to reduce friction. An accelerometer was attached to the shaft of the vibrator and provided a direct measure of vibratory amplitude (in millivolts) that was displayed on a VOM. The vibrator was regulated by a 10-turn variable resistor. This apparatus has been used successfully in previous studies assessing sexual arousal (Cerny, Hutchinson, Guido, & Katz, 1988; Cerny, Katz, & Carpenter, 1990; Mitchell & Cerny, 1994).

Other materials utilized included three 4-minute videotape segments: (a) a preferred video (heterosexual scene), (b) a nonpreferred video (homosexual scene), and (c) a neutral video (nature scene). Every effort was made to select videotape clips that were cinematically similar in



quality. The two videotapes that depicted sexual activity each included scenes of kissing, oral-genital contact, and sexual intercourse. The neutral film was a video tour of Yosemite National Park. A Sony VHS videocassette recorder was used to project the videotape segments onto a 20 inch Zenith color television which was approximately 6 feet in front of the participant. Participants signaled the start of each trial and full erection by pushing a button which was attached to a table next to the participant and that activated a marking pen on the polygraph. Communication between the experimenter and participant during the experimental session was accomplished by means of an intercom system.

### Procedure

All physiological measures were obtained in a single session consisting of two 4-minute trials. In one trial of the session, participants were asked to SUPPRESS sexual arousal while receiving low-level (30mv) vibrotactile stimulation and viewing a 4-minute videotape, and in the other trial participants were asked to ENHANCE sexual arousal while viewing the same videotape and receiving vibrotactile stimulation. Successful suppression of sexual arousal was defined as a peak penile tumescence measure

$\leq 30\%$  of full erection during the suppress condition, while successful enhancement was defined as achieving a peak tumescence  $\geq 70\%$  of full erection during the enhance condition.

The criteria for successful suppression/enhancement was established based on the findings from past research. According to Launay (1994), erections under 15% are below the level of an individual's consciousness. Howes (1995), in a survey of Plethysmographic Assessment Centers in North America, found that most centers when asked about the minimum percentage erection considered significant for clinical interpretation indicated 20% to be the critical value. Davidson and Malcom (1985) defined "low responders" in their study as participants who achieved peak erection measures below 30%. Consequently, it was felt that the criteria of 30% and 70% of full erection would be appropriate cut-off values for this study as it would create two distinct groups, allow for penile changes in the participant's awareness, and be consistent with the definition of a low-responder as defined in previous research.

Participants were randomly assigned to the heterosexual, homosexual, or neutral videotape group, and the order of instructions was counter-balanced across

conditions. Each participant was asked to ejaculate approximately 24 hours prior to his scheduled lab session and then to abstain from ejaculation until after completing the experimental session. Upon arrival at the laboratory for the experimental session, the participant completed the informed consent form (see Appendix B) and a pre-experimental questionnaire (see Appendix D) that solicited his expectations of whether he would be able to suppress and enhance penile tumescence as instructed during the two trials. After completing the required forms, the participant was familiarized with the laboratory equipment and procedure by the experimenter.

The following instructions were presented to the participant prior to beginning the experimental procedures in the human sexuality laboratory:

For this study, you will be required to remove all your clothing and wear this hospital gown. You will have EKG sensors and a respirometer attached to you in order to monitor your heart rate and breathing rate. I would like you to place the strain gauge over your penis at the base of the shaft with the wire down like this (experimenter demonstrates on a model) being careful not to twist the gauge. In this experiment, you will be shown a 4-minute videotape twice while using the vibrator apparatus. During the session, I want you to keep the vibrator in one steady position; for instance, do not manually move the vibrator up and down on your penis to help increase stimulation.

I would like you to keep your left hand on this button at all times. When the video and vibrator start, I want you to push the button on the lever once. This button activates a marker on the polygraph and serves as a signal that the session/videotape has

begun. At that time, I will turn on the vibrator apparatus from the other room. If at some point during the videotape you feel as though you have reached full erection, push the button twice. If you should ejaculate, push the button and hold it down until you have completed your orgasm. After the vibrator and video stop, sit still and wait for me to re-enter the room. If you want to talk to me at any time during the session, you may use the intercom located right here. When you are viewing the videotape, please pay attention to it at all times. Do you have any questions?

After the above instructions were given, the experimenter left the room while the participant disrobed and put on a hospital gown and the strain gauge. The experimenter then re-entered the room and visually inspected the strain gauge to verify proper placement. The experimenter then attached the EKG electrodes and respirometer to the participant while the participant was seated in the chair. The rubber penile sheath was lubricated with K-Y Jelly, and the participant was asked to place his penis into the tube. The participant was informed of the video he had been randomly assigned to view and was given one of the following instructions: "I want you to attempt to SUPPRESS sexual arousal while attending to the film at all times" or "I want you to attempt to ENHANCE sexual arousal while attending to the film at all times." The experimenter then left the room and a 2-minute baseline of the participant's physiological measures were recorded on the polygraph. When a stable baseline had been secured, the

experimenter communicated via intercom with the participant to insure that he was ready to begin and to repeat the instructions for that particular trial. At that time the 4-minute videotape and vibrator were turned on. At the end of the video, the vibrator was turned off and the participant was given a brief questionnaire (see Appendix E) pertaining to the film he had just viewed to insure that he was attending to the stimulus material. This time period also served to allow the participant to return to a baseline level of arousal. When the questionnaire was completed and the baseline level of arousal had been achieved, the participant was ready to begin the second trial of the experiment. The participant was given new instructions (suppress or enhance arousal) and the same videotape was replayed with the same low-level vibrotactile stimulation.

If the participant did not signal achievement of full erection during either trial of the session, he was asked to self-stimulate to full erection to be used later as a comparison measure for calculating percent of full erection achieved. At the end of the experimental session, the experimenter reentered the room and removed the EKG sensors and respirometer from the participant. The participant was asked to gently remove the strain gauge from his penis and was provided with cleansing materials, e.g., paper towels,

wet wipes, tissues, and then the experimenter left the room. The participant was asked to dress himself and join the experimenter in the adjacent room. A post-experimental questionnaire (see Appendix F) pertaining to the participant's perceived ability to "control" sexual arousal during the experiment was administered. The questionnaire also explored any cognitive or physical strategies utilized by the participant during the experiment to help suppress or enhance penile tumescence.

#### Debriefing

Each participant was given a debriefing (see Appendix G) immediately following participation in the experiment. The experimenter reviewed the rationale and purpose of the study and inquired into any potential sources of discomfort. At that time, the experimenter sensitively addressed any questions or concerns of the participant. None of the participants reported any negative feelings regarding participation in the study or their performance.

#### Data Sampling

Analog polygraph records obtained from each participant contained continuous measures of penile tumescence, heart rate, and respiration rate. Baseline measures were obtained

for all three of the dependent variables. The baseline penile tumescence was sampled just prior to start (within 5 sec.) of each trial. Peak penile tumescence measures were obtained for each trial by identifying the point at which penile circumference was largest as indicated on the polygraph record. The baseline tumescence measure for each trial was then subtracted from the peak tumescence measure for each trial, divided by the penile change required to achieve full erection, and multiplied by 100 to yield values representing the maximum percent of full erection achieved for each trial. The mean percent change in penile tumescence for each trial was calculated by sampling penile tumescence at a rate of three times per minute (every 20th sec.) for each of the 4-minute trials. A mean tumescence measure was then calculated for each minute of the trial, and the baseline measure was subtracted from those values yielding the mean change in penile tumescence from baseline for each minute. An overall mean change in tumescence from baseline was then calculated for each trial, divided by the penile change required to achieve full erection, and multiplied by 100 to yield values representing mean percent of full erection achieved for each trial.

The baseline heart rate measure was calculated by sampling data for 10-second epochs every 20 seconds during the 1-minute period just prior to start of each trial. The total number of heart beats obtained from the three sampling

epochs was multiplied by two yielding the baseline heart rate per minute. Heart rate data for each minute of each trial were calculated using the same method. The overall mean heart rate for each trial was then calculated by summing the number of heart beats per minute and dividing by four.

The baseline respiration measure was obtained by simply counting the number of breaths recorded by the respirometer during the 1-minute period just prior to start of each trial. Respiration rates for each trial were also calculated by counting the number of breaths per minute as recorded by the respirometer for each of the 4-minute trials.



## Chapter 3

### RESULTS

#### Overview

First, a descriptive analysis was conducted to ensure that the experimental protocol was performed as described. Specifically, did the participant view and attend to the film as instructed? This issue was assessed by having participants complete a brief multiple choice questionnaire about the videos and comparing their responses with what actually occurred in the video they viewed.

Second, participant personal characteristics were examined and analyses conducted to ascertain similarity of the groups. A one-way between-subjects multivariate analysis of variance (MANOVA) was used to examine potential differences among the three video groups.

Third, the main hypotheses were examined by using a 3(video type) X 2(instructions) X 2(instruction order) mixed

model multivariate analysis of variance (MANOVA). Initially, an omnibus MANOVA was conducted. When a significant overall MANOVA was found, then univariate F-tests were calculated followed by Scheffe' post-hoc tests, if necessary. Estimates of treatment magnitude for significant univariate effects were evaluated by eta squared ( $\eta^2$ ) (Guilford & Fruchter, 1973).

Finally, data from the experimental questionnaires were examined and their correlations with participants' performance during the experimental trials were explored. In addition, specific methods utilized by participants in an effort to increase control over penile tumescence were surveyed.

### Descriptive Analyses

Each participant completed a questionnaire regarding specific activities that may have occurred in the video he watched. This questionnaire was used to ensure that each participant viewed and attended to the video. Responses to the experimental questionnaire showed 100% agreement with the participant's experimental condition, indicating that all participants did attend to the video as instructed.

### Participant Characteristics

Differences among the three video groups with respect to self-reported anxiety level, intercourse frequency, masturbation frequency, and scores on the Sex-Anxiety, Sex-Guilt, Morality-Conscience, and Sensation-Seeking scales were tested with a one-way MANOVA.

Table 1  
Analysis of Participant Characteristics by Video Type

<u>Variables</u>	<u>VIDEO TYPE</u>			<u>F(2, 38)</u>
	<u>Hetero</u>	<u>Homo</u>	<u>Neutral</u>	
	<u>M</u>	<u>M</u>	<u>M</u>	
Reported anxiety	3.69 (1.84)	3.38 (1.80)	2.73 (1.28)	1.25
Intercourse frequency	9.54 (10.51)	10.38 (8.07)	9.40 (8.76)	0.05
Masturbation frequency	5.23 (7.06)	6.46 (5.32)	11.00 (10.37)	2.04
Personality Inventory:				
Sex-Anxiety	9.38 (2.50)	7.46 (2.63)	7.53 (3.16)	2.01
Sex-Guilt	-16.69 (12.17)	-25.00 (10.98)	-24.13 (18.16)	1.34
Morality-Conscience	6.54 (10.23)	-9.38 (13.18)	-7.47 (16.72)	5.23*
Sensation-Seeking	24.08 (5.69)	24.15 (4.72)	25.00 (5.46)	0.13

Note. Hetero=Heterosexual, Homo=Homosexual  
Standard deviations for each variable are shown in parentheses. Reported anxiety was recorded on a 1(low) - 7(high) Likert-Type scale. Intercourse and masturbation frequency data are per month.

\*p<.01

However, data for two participants in the heterosexual and two participants in the homosexual video group were not included in the analysis due to missing questionnaires. As evident in Table 1, no significant differences among groups were found on any of the above participant characteristics except on the Morality-Conscience scale. It is not clear why the heterosexual video group differed significantly from the other groups on this scale, but it may be due to the small sample size.

### Primary Analyses

Measures of penile tumescence (mean and peak), heart rate, and respiration rate were analyzed using a 3 X 2 X 2 (Video type X Instructions X Instruction Order) mixed model MANOVA with repeated measures on instructions. An alpha level of .05 was used for all statistical tests.

The MANOVA produced a significant main effect for video type,  $F(8,72) = 2.48$ ,  $p < .02$ . The follow-up univariate tests were significant for both mean and peak circumference measures (see Table 2). The amount of variance accounted for by this variable is 23% for mean circumference, and 30% for peak circumference. A Scheffe' post-hoc test revealed that mean and peak tumescence measures for the heterosexual video group differed significantly from the neutral group

( $p < .01$ ). The mean and peak tumescence measures between the homosexual and heterosexual video groups, and the homosexual and neutral video groups did not differ significantly. When collapsed across instructions, the greatest change in penile circumference measures (both mean and peak) were achieved while viewing the heterosexual video, while the least change occurred when viewing the neutral video. Table 2 also indicates that no significant differences were found in heart rate and respiration rate across the three video types.

Table 2  
Mean Percentage of Full Erection, and Mean Changes in Heart Rate and Respiration Rate as a Function of Video Type

<u>Variables</u>	<u>VIDEO TYPE</u>			<u>F(2, 39)</u>
	<u>Hetero</u>	<u>Homo</u>	<u>Neutral</u>	
	<u>M</u>	<u>M</u>	<u>M</u>	
Penile Circumference				
Mean	41.39% <sub>a</sub> (28.34)	33.64% <sub>b</sub> (30.45)	17.04% <sub>c</sub> (30.18)	5.95*
Peak	68.00% <sub>a</sub> (33.95)	53.12% <sub>b</sub> (39.59)	29.62% <sub>c</sub> (40.48)	8.40*
Heart Rate	2.37 (5.55)	0.78 (6.27)	1.72 (7.79)	0.47
Respiration Rate	1.30 (3.84)	0.82 (2.28)	0.32 (3.31)	0.59

Note. Hetero=Heterosexual, Homo=Homosexual. Means in the same row that share subscripts differ significantly on Scheffe's test. Standard deviations for each variable are shown in parentheses.

\* $p < .01$

The MANOVA also produced a significant main effect for instructions,  $F(4,36)=16.87$ ,  $p<.001$ . The follow-up univariate tests were significant for all four dependent variables (see Table 3). The amount of total variance accounted for by this main effect for mean and peak tumescence, heart rate, and respiration rate were 53%, 49%, 26%, and 29%, respectively. Table 3 shows that significantly greater changes from baseline occurred on all four dependent variables during the ENHANCE condition when collapsed across video type than occurred during the SUPPRESS condition.

Table 3  
Mean Percentage of Full Erection, and Mean Changes in Heart Rate and Respiration Rate as a Function of Instructions

Variables	INSTRUCTIONS		F(1,39)
	Suppress	Enhance	
	M	M	
Penile Circumference			
Mean	16.95% (24.18)	44.43% (31.32)	43.92*
Peak	33.05% (34.47)	67.45% (39.88)	36.99*
Heart Rate	-0.71 (5.18)	3.96 (7.01)	13.84*
Respiration Rate	-0.37 (2.31)	2.01 (3.53)	15.94*

Note. Standard deviations for each variable are shown in parentheses.

\* $p<.001$

A MANOVA main effect for order of instruction (suppress-enhance vs. enhance-suppress) also was significant,  $F(4,36)=2.93$ ,  $p<.034$ . The univariate follow-up tests were significant for both mean and peak tumescence measures as shown in Table 4. An estimate of treatment magnitude indicates that approximately 20% of the total variance for mean tumescence, and 16% of the total variance for peak tumescence is accounted for by this main effect.

Table 4

Mean Percentage of Full Erection, and Mean Changes in Heart Rate and Respiration Rate as a Function of Instruction-Order

<u>Variables</u>	<u>INSTRUCTION-ORDER</u>		<u>F(1, 39)</u>
	<u>Sup-Enh</u>	<u>Enh-Sup</u>	
	<u>M</u>	<u>M</u>	
Penile Circumference			
Mean	39.60% (33.04)	21.38% (26.10)	9.86*
Peak	59.92% (40.00)	40.14% (39.79)	7.21*
Heart Rate	1.73 (7.41)	1.51 (5.63)	0.04
Respiration Rate	0.22 (2.95)	1.44 (3.36)	3.38

Note. Sup=Suppress, Enh=Enhance. Standard deviations for each variable are shown in parentheses.

\* $p<.01$

In general, participants who first tried to suppress their penile tumescence showed significantly greater change from baseline measures across both trials than was observed when

participants first attempted to enhance their penile tumescence. No significant changes were observed in heart and respiration rates when examining instruction-order.

Although no significant interactions were found, Table 5 shows the mean scores for the video by instruction interaction for each of the four dependent variables. As might be expected, smaller changes from baseline measures were found for all of the dependent variables during the suppress condition than the enhance condition regardless of the video type.

Table 5  
Mean Percentage of Full Erection, and Changes in Heart Rate and Respiration Rate as a Function of the Interaction between Video Type and Instruction

<u>Variables</u>	<u>Video Type:</u>	<u>HETERO</u>	<u>HOMO</u>	<u>NEUTRAL</u>
	<u>Instructions:</u>	<u>Sup / Enh</u>	<u>Sup / Enh</u>	<u>Sup / Enh</u>
Mean Circumference		32% / 51%	18% / 49%	0% / 34%
Peak Circumference		56% / 80%	37% / 69%	6% / 53%
Heart Rate		.20 / 4.53	-.90 / 2.47	-1.43 / 4.87
Respiration Rate		-.10 / 2.70	.37 / 1.28	-1.38 / 2.03

Note. Hetero=Heterosexual, Homo=Homosexual, Sup=Suppress, and Enh=Enhance.

Another way of looking at the data is to examine the number of participants who met the criteria for successful suppression or enhancement of erection. Successfully suppressing erection was defined as achieving a peak



tumescence measure  $\leq 30\%$  of full erection throughout the suppress condition, while successfully enhancing erection was defined as achieving a peak tumescence  $\geq 70\%$  of full erection at any point during the enhance condition. Table 6 shows the number of participants in each video group who met the above criteria and were able to successfully suppress and/or enhance their penile tumescence. A chi-square analysis was significant for the SUPPRESS condition,  $X^2(2, N=45) = 20.61, p < .001$ , but not significant for the ENHANCE condition. A total of 13 participants (29%) demonstrated what may be considered "good control" over their sexual arousal by achieving criteria for both suppression and enhancement of penile tumescence.

Table 6  
Total Number and % of Participants Who Successfully Suppressed and/or Enhanced Penile Tumescence as a Function of Video Type

<u>Variable</u>	<u>VIDEO TYPE</u>		
	<u>Hetero</u>	<u>Homo</u>	<u>Neutral</u>
Suppress $\leq 30\%$ of FE	3 (20%)	10 (67%)	15 (100%)
Enhance $\geq 70\%$ of FE	12 (90%)	10 (67%)	7 (47%)
Both Sup & Enh $\leq 30\%$ & $\geq 70\%$ FE	1 (7%)	5 (33%)	7 (47%)

Note. Hetero=Heterosexual, Homo=Homosexual, Sup=Suppress, Enh=Enhance, and FE=Full Erection. Percentage of participants meeting suppress/enhance criteria are shown in parentheses.

Data analyzed from the experimental questionnaires included the participants' ratings regarding how "sexually arousing" and how "disgusting" they found the video as well as their perception of the extent to which they were able to successfully exert voluntary control over their penile tumescence during the two trials. Differences among the three video groups were tested with a one-way MANOVA. As evident in Table 7, significant differences were found across video type on all self-ratings except participants' perception of their ability to enhance tumescence.

Table 7  
Self-Ratings of Video Arousability and Disgust, and Perceived Ability to Suppress and Enhance Penile Tumescence

<u>Self-Ratings</u>	<u>VIDEO TYPE</u>			<u>F(2, 42)</u>
	<u>Hetero</u>	<u>Homo</u>	<u>Neutral</u>	
	<u>M</u>	<u>M</u>	<u>M</u>	
Level of Arousability	4.53 <sub>a</sub>	1.53 <sub>b</sub>	1.07 <sub>c</sub>	67.46**
Level of Disgust	1.33 <sub>a</sub>	4.67 <sub>b</sub>	1.00 <sub>c</sub>	25.22**
Ability to Suppress	5.27 <sub>a</sub>	6.27 <sub>b</sub>	6.73 <sub>b</sub>	4.86*
Ability to Enhance	4.33	4.47	3.67	0.63

Note. Hetero=Heterosexual, Homo=Homosexual. Self-ratings were recorded on a 1(low) - 7(high) Likert-Type scale. Means in the same row having different subscripts differ significantly on Scheffe's test.  
 \* $p < .05$ , \*\* $p < .001$

These results show that the heterosexual video received

a mean rating of "moderately sexually arousing" while the homosexual and neutral videos were rated "not at all sexually arousing." In addition, both the heterosexual and neutral videos received a mean rating of "not at all disgusting" while the homosexual video was rated "moderately disgusting." In regards to participants' perceived ability to successfully exert voluntary control over their tumescence during the experiment, participants reported suppressing arousal "moderately - very well" when instructed to do so and enhancing arousal "moderately well," regardless of video type.

Various strategies utilized by participants in an effort to suppress/enhance penile tumescence during the two experimental trials were also examined. Strategies used to SUPPRESS tumescence fell into two general categories: (a) Use of distracting thoughts, and (b) avoidance of sexual thoughts. Only one participant performed mathematical calculations, i.e., counting backwards by three. Strategies used to ENHANCE tumescence also fell into two general categories: (a) Recalling past sexual experiences, and (b) imagining self as a participant in the erotic video. Only four of the 45 participants reported focusing on the vibrotactile stimulation as a means of enhancing sexual arousal, and only two participants used tensing of muscles.

No participants mentioned breathing control.

In regards to participants pre-experimental expectations, a total of 35 participants (78%) expected they would be able to SUPPRESS penile tumescence when instructed. However, only 25 of those participants who initially expected they would successfully suppress actually met the suppress criteria. A total of 35 participants (78%) expected they would be able to ENHANCE penile tumescence when instructed. However, only 24 of those participants actually met the enhance criteria. It should be noted that eight participants actually produced their smallest peak tumescence measure during the ENHANCE condition.

## Chapter 4

### DISCUSSION

The present study investigated the extent to which individuals exerted voluntary control over their sexual arousal as measured by penile tumescence. In general, the results indicated that most participants were able to enhance sexual arousal rather well regardless of the video being viewed, but had much more difficulty suppressing arousal when viewing the preferred video. Furthermore, when collapsed across video type, heart and respiration rates varied according to the instructions participants received with significantly greater rates occurring during the enhance condition. Surprisingly, a significant main effect for order of instructions also was found, but it is not clear as to why. Several factors may have contributed to an order effect including participant anxiety during the first trial, novelty effect, habituation to video, and/or a

rebound effect.

The results of this study are somewhat inconsistent with the findings of previous research in that many participants were able to successfully enhance sexual arousal when instructed but had much more difficulty suppressing sexual arousal. More specifically, the results of this study indicated that while receiving penile vibrotactile and cognitive stimulation men were able to enhance arousal to at least 70% of full erection to the nonpreferred and neutral videos when instructed to do so (67% and 47% of participants, respectively). This finding is somewhat inconsistent with those of previous research where little or no significant enhancement of erections was found (i.e., Card & Farrall, 1990; Adams et al., 1992). Furthermore, the failure of participants in this study to successfully suppress arousal to the preferred video (only 20% of participants) is also somewhat inconsistent with previous research (i.e., McAnulty & Adams, 1991; Freund et al., 1988; Hall et al., 1988; Wydra et al., 1983).

There are several possible reasons for these inconsistencies. It is possible that the inconsistencies between findings from previous research and the present research are due to the use of a vibrator apparatus which was not utilized in the previous studies. It has been

demonstrated in past research that vibrotactile stimulation combined with an erotic video augments erectile response (Rowland & Slob, 1992). Given that cognitive and physical stimulation seem to work in a synergistic manner in producing penile erection, the addition of penile vibrotactile stimulation in this study may have facilitated the enhancement of tumescence while interfering with the participant's ability to suppress tumescence.

It should be noted that a low-level amplitude (30mv) of vibrotactile stimulation was selected purposely for the present study to allow participants the opportunity to both cognitively enhance and suppress sexual arousal. Cerny (1989, unpublished) looked specifically at output amplitude relationships to ejaculatory latency in men. In that study there was an increasing linear relationship among three output amplitudes (30mv, 60mv, and 90mv) and sexual arousal. The results indicated that 60mv and 90mv of output produced the best results and, by far, 30mv had the smallest effect on sexual arousal. It was believed that a high level of vibrotactile stimulation would generate too much sexual arousal and interfere with the participant's ability to suppress penile tumescence. Whether this is true remains to be tested. However, the lack of penile tumescence found in males viewing the neutral video in the suppress condition

(mean = 0% and peak = 6% of FE) suggests that participants were able to quite effectively inhibit sexual arousal due to the vibrotactile stimulation provided at 30mv.

Consequently, it appears that men are able to suppress sexual arousal when receiving either vibrotactile stimulation (30mv) or viewing a preferred erotic video. However, the combination of vibrotactile stimulation and a preferred erotic video seems to produce a level of sexual arousal that is too difficult for most men to effectively suppress.

Another possible explanation for the observed discrepancies with past research is the manner in which successful suppression/enhancement have been defined. Most research in this area of study utilized a "standard instruction" condition in which subjects are asked to respond to the video as they naturally would. The resulting penile tumescence measures are then compared with the suppress and/or enhance condition and statistical analyses performed to determine significant differences. It may have been helpful, for comparative purposes, to have included a "standard instruction" condition in the present study.

Although some research has utilized a pre-established criteria for determining successful enhancement and successful suppression (as did the current study), the cut-



off criteria seem to be randomly determined and vary between researchers. For instance, Card and Farrall (1990) utilized a cut-off of 15% above baseline tumescence. In other words, when attempting to enhance sexual arousal, penile tumescence measures greater than 15% of baseline were categorized as successful enhancement while, when attempting to suppress, tumescence measures less than 15% of baseline were categorized as successful suppression. This lack of consistent and standard criteria illustrates one of the major problems with current sexual arousal research utilizing the phallometric method, that is the lack of standardization.

According to Howes' (1995) survey of 48 North American plethysmographic assessment centers, there is abundant inconsistency in both plethysmographic assessment procedures and data interpretation. Enormous variability exists regarding type of erotic stimuli presented (video, slides, audiotape), content and quality of erotic stimuli, duration of erotic presentation, scoring of data (in mm, percent full erection, z scores), and interpretation of data. As is the case with any good psychometric testing instrument, standardization procedures are essential. As Howe (1995) noted, a standardized version of penile plethysmography needs to be developed if the technique is to be established

as a satisfactory scientific procedure. Hopefully, operators can agree on a set of standardized procedures and stimuli in the near future.

Despite some apparent inconsistencies with past research, the results of this study have clear implications for the use of phallometry in our legal system where the results of an evaluation may have major consequences for the individual being assessed. The limitations of the phallometric technique as a means of assessing an individual's sexual preference are clearly demonstrated in this study and support previous research on the limitations of phallometry. Although phallometry is generally considered a valid, reliable, and objective measure of sexual arousal, it is limited to the extent that men can voluntarily control penile tumescence. Given the apparent ability of some males to exert significant voluntary control over their tumescence, the use of the phallometric technique in the courtroom where the question of guilt or innocence is at stake would seem clearly inappropriate and unethical. As previously noted by Farrall and Card (1988), phallometry should not be used as a type of sexual "lie detector." This is particularly true when used with individuals who may be motivated to fake or distort their sexual responses, i.e., sexual offenders and those with paraphilias. Furthermore,

as is the case with any psychometric test, penile plethysmography should never be used as the sole source of data regarding an individual's sexual preferences but rather should be used in conjunction with multiple data sources. In addition, it is important to keep in mind that phallometry only provides a measure of sexual arousal, and says little about an individual's actual behaviors. The technique has not been demonstrated at this point to have predictive validity and, therefore, should not be relied upon, on its own, as a means of predicting future behaviors or recidivism among sexual offenders.

The results of this study also have implications for the use of phallometry in clinical settings. The use of the phallometric technique as a means for assessing treatment progress or identifying sexual arousal patterns would seem to be of significant benefit. Despite the degree of voluntary control some males have over their tumescence, phallometry is still superior to any other objective method available in regards to assessing sexual response patterns and is clearly a much more objective and reliable method than the individual's self-report. However, until valid methods for detecting when individuals are "faking" are developed, the results obtained from the use of phallometry should be viewed cautiously and care should be taken not to

over interpret results. In addition, phallometry should be only one of many sources of data used in the overall assessment of sexual arousal.

The results of this study also have implications for the identification of individuals who may be attempting to fake or distort their sexual response pattern. The use of low-level vibrotactile stimulation in this study may have made it easier for participants to enhance sexual arousal and more difficult to suppress sexual arousal when compared to other studies that did not use vibrotactile stimulation. The results of this study indicated that most participants were able to suppress tumescence to both the nonpreferred and neutral videos, despite receiving vibrotactile stimulation, but had much difficulty suppressing tumescence while viewing the preferred video. This suggests that the use of two trials may be helpful in more accurately identifying the individual's sexual arousal pattern and reducing the likelihood of successfully faking. In one trial, vibrotactile stimulation could be used in conjunction with cognitive stimulation and the individual instructed to suppress sexual arousal. Since the physical and cognitive components of sexual arousal tend to work synergistically, the addition of vibrotactile stimulation in combination with a preferred video may together generate sufficient sexual

arousal to be too difficult to suppress. However, the use of vibrotactile stimulation in conjunction with a nonpreferred or neutral video does not seem to generate such a level of sexual arousal. Consequently, the use of a vibrator may help reduce the chance that men will successfully suppress sexual arousal to preferred stimuli and thus fake their response pattern. In the second trial, the individual should view the videos without vibrotactile stimulation and receive no instructions regarding attempting to enhance or suppress penile tumescence. Unless the individual is attempting to fake or distort the results, we would expect the highest arousal levels to occur during the viewing of the same video in both trial one and two. In order for the individual to successfully fake his arousal pattern, he would have to both enhance arousal to nonpreferred sexual stimuli (which previous research suggests is quite difficult without vibrotactile stimulation) and suppress arousal to preferred sexual stimuli while receiving vibrotactile stimulation (which the present study suggests is quite difficult). Although this method of assessing sexual arousal does not guarantee correct identification of one's preferred sexual preferences, it may significantly increase the difficulty of distorting results and produce greater confidence in

observed tumescence patterns.

Another interesting finding when examining the present data was that greater nonsignificant penile tumescence was observed when participants viewed the homosexual video than when they viewed the neutral video. This overall greater responsiveness held true in both the enhance and suppress conditions. This finding was in contrast to one of the initial hypotheses proposed by the experimenter. It was initially assumed that greater enhancement of sexual arousal would be seen while viewing the neutral video than the homosexual video because of society's predominantly negative attitudes toward homosexuality and the cognitive dissonance it may generate in the individual should he become aroused while viewing the homosexual video. Consequently, it was assumed that participants would inhibit sexual arousal during viewing of the homosexual video (despite instructions to enhance) and feel more comfortable becoming sexually aroused while viewing the neutral video. However, this was not the case. There are several possible explanations.

Perhaps it was easier for individuals to become sexually aroused to the homosexual video simply because of the sexual content in the video. Thus, cognitive stimulation (sexual fantasy) may have been easier to generate while viewing the homosexual film thereby producing

greater penile tumescence measures than observed during viewing of the neutral film. An alternative explanation is that the use of a vibrator apparatus may have actually reduced the cognitive dissonance experienced by the participants in regards to their self-identified sexual orientation by providing the individual with an acceptable attribution for their arousal. Consequently, the individual may have been able to attribute sexual arousal to the vibrator rather than the homosexual video, thus reducing cognitive dissonance and the need for inhibition and permitting the participant to experience more sexual arousal. In other words, the vibrator may have served as a "disinhibiting" factor when viewing the homosexual video. There is some research that supports inhibition of sexual response by males when viewing socially unacceptable material. Quinsey, Chaplin, and Varney (1981) "disinhibited" one of their groups of males by instructing them that sexual arousal to depiction of rape was common among normal men. They found that the group with the disinhibiting instruction showed higher arousal to the rape scenes. In addition, there is also some evidence that disinhibiting subjects by using alcohol increases their erectile response to rape stimuli (Barbaree, Marshall, Yates, & Lightfoot, 1983). It is possible that in the

present study, the vibrator apparatus may have served as a disinhibiting factor allowing participants to become sexually aroused to the homosexual video and providing them with an acceptable attribution for their arousal. In fact, four participants reportedly focused on the vibratory stimulation as the primary method for enhancing sexual arousal. Three of those participants viewed the homosexual video, and all three achieved 100% full erection during the enhance condition.

It would be interesting, and fairly simple, to test this "attribution" or "disinhibition" theory by conducting a blind study in which participants believed they were receiving vibrotactile stimulation but were, in fact, not. For instance, the rubber sheath in which the participant's penis is inserted could be disconnected from the vibrator apparatus. Consequently, when the vibrator is turned on the sound of the motor would be heard but the sheath would not vibrate. A sheet or towel could be placed over the participant's lap and the vibrator apparatus in order to prevent the participant from seeing that the vibrator is not actually vibrating. He could be informed that the sheet is to "provide him with more privacy." The penile tumescence measures of this group could then be compared with the tumescence measures of a group of males who viewed the same



homosexual video but did not use the vibrator apparatus. Differences in penile tumescence measures between the two groups may support an attribution/disinhibition theory of sexual arousal.

Another interesting finding regarding the viewing of the homosexual video was that despite participants rating the homosexual video "not at all sexually arousing" and "moderately disgusting" (see Table 7), participants achieved significant penile tumescence. In fact, when considering the mean "percent of full erection" achieved over the 4-minute interval, there was virtually no difference between the heterosexual video group and the homosexual video group under the ENHANCE instructions (51% FE and 49% FE, respectively). Furthermore, when comparing those individuals who viewed the homosexual tape with those who viewed the neutral tape, both groups rated their video as "not at all sexually arousing" (see Table 7). However, greater penile tumescence measures were observed under both the "suppress" and "enhance" instructions among participants viewing the homosexual video than the neutral video. It appears that, in general, the participants' self-ratings of how sexually arousing they found the homosexual video was inconsistent with their physical response measures, i.e. penile tumescence. This is interesting because past

research has generally found a significant correlation between participants' subjective ratings and their objective measures of sexual arousal (Steinman, Sakheim, Wincze, & Barlow, 1979; Rowland & Slob, 1992). Perhaps, when completing the Film Questionnaire (Appendix E), participants responded by providing what they perceived to be a "socially acceptable" response which would produce little or no cognitive dissonance with their self-identified sexual orientation.

One possible explanation for the unexpectedly high tumescence levels achieved by participants viewing the homosexual video may have to do with the participants' degree of homophobia. In a recent study by Adams, Wright, and Lohr (1996), participants were assigned to one of two groups on the basis of their scores on the Index of Homophobia (Hudson & Ricketts, 1980). The group consisting of homophobic men showed an increase in penile erection to male homosexual stimuli, whereas the group of nonhomophobic men did not. The authors postulated two possible explanations for their findings: (a) Homophobia may be a type of latent homosexuality where persons are either unaware of or deny their homosexual urges, or (b) viewing homosexual stimuli may cause anxiety in homophobic men, and anxiety has been shown to enhance arousal and erection.

Consequently, it would have been interesting to have assessed participants' level of homophobia in the present study to see if any correlations existed between achieved penile tumescence and homophobia. Perhaps participants who were assigned to the homosexual video group had high levels of homophobia.

In conclusion, there is much evidence in the research literature to support the utility of the phallometric technique in the assessment and treatment of sexual offenders and those with paraphilias. Although phallometry is currently considered the best objective measure of male sexual arousal, the resulting data must be interpreted conservatively due to the ability of some males to exert voluntary control over penile tumescence. Furthermore, standardized operating procedures for the use of phallometry need to be developed and utilized if the technique is to evolve to its full potential. Finally, future studies should consider utilizing vibrotactile stimulation in conjunction with cognitive stimulation. Physical stimulation of the penis is an important component of sexual arousal that has, to a large extent, been neglected in sexual arousal research. Furthermore, there is a need to do more parametric studies on vibratory threshold levels. To date, there are no parametric studies on the low end of

vibratory thresholds. Certainly, continued research of sexual arousal using vibrotactile stimulation at various amplitudes and in conjunction with cognitive stimulation is warranted.

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APPENDIXES

## APPENDIX A

## Screening Interview

Subject #: Race:  
 Code Name: Religion:  
 Age: Marital Status:  
 Date: Occup/Education:

Reason for Volunteering:

Circumcised  
 Easily embarrassed about their body  
 Concerns about viewing erotic material  
 Experience with erotic material  
 Preference for hetero or homosexual material  
 Vibrator experience

Dating frequency (6 mos)  
 Intercourse frequency (6 mos) Ejaculation time:  
 Masturbation frequency (6 mos) Ejaculation time:  
 Avg # of orgasms (6 mos)  
 Date of last orgasm

Sexual orientation - Behavioral:  
 Cognitive :

Any physical or sexual problems  
 Allergies, infections, or venereal disease

Concerns about strain gauge  
 Concerns about vibrator  
 Concerns about film content  
 Feelings of family & friends  
 Anxiety rating (0-10)

Decision: YES NO

Notes:

## APPENDIX B

## Informed Consent Form

I understand that I am being invited to participate in a study in human sexuality exploring issues related to voluntary control of sexual arousal in males. This research is being conducted by Todd M. Carpenter and Dr. Jerome A. Cerny of the Psychology Department at Indiana State University. I also understand that my participation in this study may require the viewing of sexually explicit material and physiological measures of sexual arousal. Further, the experimenters are also interested in my responses to various questionnaires.

In this experiment I will be required to attend a session lasting about 1 hour. During the session I will be required to use a mechanical vibrator to physically stimulate myself. While using the vibrator apparatus, I will also be required to watch a videotape that will contain either heterosexual, homosexual or no sexual activity. During the session I will be required to wear a small elastic band around the base of my penis to record penile circumference changes. I will also have EKG sensors taped to my shoulders and arm to record changes in heart rate. Furthermore, I understand that in order to allow me as much privacy as possible, I will be by myself in the experimental room throughout the session.

I understand that if I am enrolled in psychology 100 or psychology 101 courses I will receive extra credit points in my psychology class for participation in this study.

I understand that I will be required to complete a set of questionnaires that measure sexual attitudes and ask about sexual behavior. I agree that the results of the questionnaires will not be made available to me. I further understand that my identity will be held confidential and my responses coded so that they will in no way identify me. If at any time I object to any aspect of the study, I may withdraw from the study without any penalty, except that extra credit points may be prorated as a result of less than full participation in the study.

I hereby grant unqualified permission to use the results of this study in any publication, of either general or limited distribution, except that all publications

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resulting from this study will contain data which are anonymous and which do not disclose the identity of the individual participants.

I acknowledge that the potential risks involved in this study have been explained to me in language that I fully understand and that an offer has been made to answer any questions that I may have about the research.

I have read the above material and hereby voluntarily agree to participate in the study under the terms and conditions heretofore stated. Furthermore, I certify that I am at least 18 years of age.

Name: Signature \_\_\_\_\_

Name: Printed \_\_\_\_\_

Date: \_\_\_\_\_

Witnessed by: \_\_\_\_\_

## APPENDIX C

## Personality Inventory

INSTRUCTIONS: You are to read the stem and the pair of completions and decide which you most agree with or which is most characteristic of you. Your choice, in each instance, should be in terms of what you believe, how you feel, or how you would react, and not in terms of how you think you should believe, feel, or respond. This is not a test. There are no right or wrong answers. Your choices should be a description of your own personal beliefs, feelings, or reactions.

In some instances you may discover that you believe both completions or neither completion to be characteristic of you. In such cases select the one you more strongly believe to be the case as far as you are concerned. Be sure to find an answer for every choice. Do not omit an item even though it is very difficult for you to decide, just select the more characteristic member of the pair.

Your answers are to be recorded on a separate answer sheet. If alternative A is more characteristic of you for a particular item blacken the space in the column under A. If alternative B is more characteristic of you for a particular item blacken the space under the column headed B.

---

1. Psychedelic drugs
  - a. should never be used
  - b. are no worse than alcohol
2. Drinking
  - a. is an enjoyable social activity
  - b. is often abused
3. Cheating can be justified
  - a. in some instances
  - b. Never
4. Extramarital sex
  - a. Is OK if everyone agrees
  - b. Can break up families

5. Sex
  - a. Can cause as much anxiety as pleasure
  - b. On the whole is good and enjoyable
6. Gambling
  - a. Causes crime
  - b. Can be fun
7. Masturbation
  - a. Causes me to worry
  - b. Can be a useful substitute
8. After having sexual thoughts
  - a. I feel aroused
  - b. I feel jittery
9. When I engage in petting
  - a. I feel scared at first
  - b. I thoroughly enjoy it
10. Initiating sexual relationships
  - a. Is a very stressful experience
  - b. Causes me no problem at all
11. If I were to tell a lie
  - a. It would be my own business
  - b. I would try to make up for it
12. Oral sex
  - a. Would arouse me
  - b. Would terrify me
13. If I were angry at a close friend
  - a. I would let them know about it
  - b. I would try to get over it
14. If I murdered someone
  - a. I would probably be justified
  - b. It would be an unforgivable act
15. I feel nervous
  - a. About initiating sexual relations
  - b. About nothing when it comes to members of the opposite sex
16. Physical fights
  - a. Can always be avoided
  - b. Are sometimes necessary



17. When I meet someone I'm attracted to
  - a. I get to know them
  - b. I feel nervous
18. When I was younger
  - a. I was looking forward to having sex
  - b. The thought of sex scared me
19. When others flirt with me
  - a. I don't know what to do
  - b. I flirt back
20. I feel sorry
  - a. About nothing I've ever done
  - b. About mistakes I've made
21. Group sex
  - a. Would scare me to death
  - b. Might be interesting
22. After an argument
  - a. I feel angry
  - b. I am ashamed
23. When I was a child, stealing
  - a. Thrilled me
  - b. Disgusted me
24. White lies
  - a. can save hurt feelings
  - b. Should never be told
25. If in the future I committed adultery
  - a. I would probably get caught
  - b. I wouldn't feel bad about it
26. I would
  - a. Feel too nervous to tell a dirty joke in mixed company
  - b. Tell a dirty joke if it were funny
27. Dirty jokes
  - a. Make me feel uncomfortable
  - b. Often make me laugh
28. If in the future I committed a crime
  - a. I would not feel bad about it
  - b. I would worry about getting caught

29. When I awake from sex dreams
  - a. I feel pleasant and relaxed
  - b. I feel tense
30. When I have sexual desires
  - a. I worry about what I should do
  - b. I do something to satisfy them
31. If in the future I committed adultery
  - a. It would be nobody's business but my own
  - b. I would worry about my spouse finding out
32. Buying a pornographic book
  - a. Wouldn't bother me
  - b. Would make me nervous
33. Casual sex
  - a. Is better than no sex at all
  - b. Can hurt many people
34. Extramarital sex
  - a. Is sometimes necessary
  - b. Can damage one's career
35. If I were to cheat on an exam
  - a. I wouldn't tell anyone
  - b. I would feel terrible
36. Sexual advances
  - a. Leave me feeling tense
  - b. Are welcomed
37. Most parents
  - a. Are too strict with their children
  - b. Should be friends with their children.
38. When I have sexual relations
  - a. I feel satisfied
  - b. I worry about being discovered
39. When talking about sex in mixed company
  - a. I feel nervous
  - b. I sometimes get excited
40. If I were to flirt with someone
  - a. I would worry about their reaction
  - b. I would enjoy it

41. When I tell a lie
  - a. It hurts
  - b. I make it a good one
42. Women who curse
  - a. Are normal
  - b. Make me sick
43. I punish myself
  - a. For the evil I do
  - b. Very seldom for other people do it for me
44. If in the future I committed adultery
  - a. I wouldn't feel bad about it
  - b. It would be sinful
45. Obscene literature
  - a. Is a sinful and corrupt business
  - b. Is fascinating reading
46. "Dirty" jokes in mixed company
  - a. Are common in our town
  - b. Should be avoided
47. As a child, sex play
  - a. Never entered my mind
  - b. Is quite widespread
48. I detest myself
  - a. For my sins and failures
  - b. For not having more exciting sexual experiences
49. Sex relations before marriage
  - a. Ruin many a happy couple
  - b. Are good in my opinion
50. If in the future I committed adultery
  - a. I wouldn't tell anyone
  - b. I would probably feel bad about it
51. When I have sexual desires
  - a. I usually try to curb them
  - b. I generally satisfy them
52. Unusual sex practices
  - a. Might be interesting
  - b. Don't interest me

53. I punish myself
  - a. Never
  - b. By feeling nervous and depressed
54. Prostitution
  - a. Is a must
  - b. Breeds only evil
55. When I tell a lie
  - a. I'm angry with myself
  - b. I mix it with truth and serve it like a martini
56. As a child, sex play
  - a. Is not good for mental and emotional well being
  - b. Is natural and innocent
57. As a child, sex play
  - a. Was a big taboo and I was deathly afraid of it
  - b. Was common without guilt feelings
58. "Dirty" jokes in mixed company
  - a. Are not proper
  - b. Are exciting and amusing
59. Unusual sex practices
  - a. Are awful and unthinkable
  - b. Are not so unusual to me
60. When I have sex dreams
  - a. I cannot remember them in the morning
  - b. I wake up happy
61. One should not
  - a. Knowingly sin
  - b. Try to follow absolutes
62. I detest myself for
  - a. Nothing, I love life
  - b. Not being more nearly perfect
63. "Dirty" jokes in mixed company
  - a. Are lots of fun
  - b. Are course to say the least
64. Petting
  - a. Is something that should be controlled
  - b. Is a form of education

65. Obscene literature
  - a. Should be freely published
  - b. Helps people become sexual perverts
66. I regret
  - a. My sexual experiences
  - b. Nothing I've ever done
67. A guilty conscience
  - a. Does not bother me too much
  - b. Is worse than a sickness to me
68. Unusual sex practices
  - a. Are O.K. as long as they are heterosexual
  - b. Usually aren't pleasurable because you have preconceived feelings about their being wrong
69. I regret
  - a. Getting caught, but nothing else
  - b. All of my sins
70. When I tell a lie
  - a. My conscience bothers me
  - b. I wonder whether I'll get away with it
71. Sex relations before marriage
  - a. Are practiced too much to be wrong
  - b. In my opinion, should not be practiced
72. As a child, sex play
  - a. Is dangerous
  - b. Is not harmful but does create sexual pleasure
73. When caught in the act
  - a. I try to bluff my way out
  - b. Truth is the best policy
74. As a child, sex play
  - a. Was indulged in
  - b. Is immature and ridiculous
75. When I tell a lie
  - a. It is an exception or rather an odd occurrence
  - b. I tell a lie
76. If I robbed a bank
  - a. I would give up I suppose
  - b. I probably would get away with it

77. When I have sexual desires
  - a. They are quite strong
  - b. I attempt to repress them
78. Sin and failure
  - a. Are two situations we try to avoid
  - b. Do not depress me for long
79. Sex relations before marriage
  - a. Help people to adjust
  - b. Should not be recommended
80. If I robbed a bank
  - a. I would live like a king
  - b. I should get caught
81. Masturbation
  - a. Is a habit that should be controlled
  - b. Is very common
82. Sin and failure
  - a. Are the works of the devil
  - b. Have not bothered me yet
83. If I committed a homosexual act
  - a. It would be my business
  - b. It would show weakness in me
84. Prostitution
  - a. Is a sign of moral decay in society
  - b. Is acceptable and needed by some people
85. Sexual relations before marriage
  - a. Are O.K. if both partners are in agreement
  - b. Are dangerous
86. I tried to make amends
  - a. For all my misdeeds, but I can't forget them
  - b. But not if I could help it
87. I detest myself for
  - a. Nothing, and only rarely dislike myself
  - b. Thoughts I sometimes have
88. Masturbation
  - a. Is all right
  - b. Should not be practiced

89. Sex  
a. Is a beautiful gift of God not to be cheapened  
b. Is good and enjoyable
90. Prostitution  
a. Should be legalized  
b. Cannot really afford enjoyment

#### INTEREST AND PREFERENCE TEST

Directions: For the following items, indicate on your answer sheet which of the choices most describes your likes and the way you feel. In some cases you may find items in which both choices describe your likes or the way you feel. Please choose the one which better describes your likes or feelings. In some cases you may find items in which you do not like either choice. In these cases mark the choice you dislike least.

It is important you respond to all items with only one choice, A or B. We are interested only in your likes or feelings, not in how others feel about these things or how one is supposed to feel. There are no right or wrong answers. Be frank and give your honest appraisal of yourself.

91. A. I like "wild" uninhibited parties.  
B. I prefer quiet parties with good conversations.
92. A. There are some movies I enjoy seeing a second or even third time.  
B. I can't stand watching a movie that I've seen before.
93. A. I often wish I could be a mountain climber.  
B. I can't understand people who risk their necks climbing mountains.
94. A. I dislike all body odors.  
B. I like some of the earthy body smells.
95. A. I get bored seeing the same old faces.  
B. I like the comfortable familiarity of everyday friends.

96. A. I like to explore a strange city or section of town by myself, even if it means getting lost.  
B. I prefer a guide when I am in a place I don't know well.
97. A. I dislike people who do or say things just to shock or upset others.  
B. When you can predict almost everything a person will do and say, he or she must be a bore.
98. A. I usually don't enjoy a movie or play where I can predict what will happen in advance.  
B. I don't mind watching a movie or play where I can predict what will happen in advance.
99. A. I have tried marijuana or would like to.  
B. I would never smoke marijuana.
100. A. I would not like to try any drug which might produce strange and dangerous effects on me.  
B. I would like to try some of the new drugs that produce hallucinations.
101. A. A sensible person avoids activities that are dangerous.  
B. I sometimes like to do things that are a little frightening.
102. A. I dislike "swingers".  
B. I enjoy the company of real "swingers".
103. A. I find that stimulants make me uncomfortable.  
B. I often like to get high (drinking liquor or smoking marijuana).
104. A. I like to try new foods that I have never tasted before.  
B. I order the dishes with which I am familiar, so as to avoid disappointment and unpleasantness.
105. A. I enjoy looking at home movies or travel slides.  
B. Looking at someone's home movies or travel slides bores me tremendously.
106. A. I would like to take up the sport of water skiing.  
B. I would not like to take up water skiing.



107. A. I would like to try surf-board riding.  
B. I would not like to try surf-board riding.
108. A. I would like to take off on a trip with no pre-planned or definite routes, or timetable.  
B. When I go on a trip I like to plan my route and timetable fairly carefully.
109. A. I prefer the "down-to-earth" kinds of people as friends.  
B. I would like to make friends in some of the "far-out" groups like artists or "hippies".
110. A. I would not like to learn to fly an airplane.  
B. I would like to learn to fly an airplane.
111. A. I prefer the surface of the water to the depths.  
B. I would like to go scuba diving.
112. A. I would like to meet some persons who are homosexual (men or women).  
B. I stay away from anyone I suspect of being "queer".
113. A. I would like to try parachute jumping.  
B. I would never want to try jumping out of a plane with or without a parachute.
114. A. I prefer friends who are excitingly unpredictable.  
B. I prefer friends who are reliable and predictable.
115. A. I am not interested in experience for its own sake.  
B. I like to have new and exciting experiences and sensations even if they are a little frightening, unconventional, or illegal.
116. A. The essence of good art is in its clarity, symmetry of form and harmony of colors.  
B. I often find beauty in the "clashing" colors and irregular forms of modern painting.
117. A. I enjoy spending time in the familiar surroundings of home.  
B. I get very restless if I have to stay around home for any length of time.
118. A. I like to dive off the high board.  
B. I don't like the feeling I get standing on the high board (or I don't go near it at all).

119. A. I like to date members of the opposite sex who are physically exciting.  
B. I like to date members of the opposite sex who share my values.
120. A. Heavy drinking usually ruins a party because some people get loud and boisterous.  
B. Keeping the drinks full is the key to a good party.
121. A. The worst social sin is to be rude.  
B. The worst social sin is to be a bore.
122. A. A person should have considerable sexual experience before marriage.  
B. It's better if two married persons begin their sexual experience with each other.
123. A. Even if I had the money I would not care to associate with flighty persons like those in the "jet set".  
B. I could conceive of myself seeking pleasure around the world with the "jet set".
124. A. I like people who are sharp and witty even if they do sometimes insult others.  
B. I dislike people who have their fun at the expense of hurting the feelings of others.
125. A. There is altogether too much portrayal of sex in movies.  
B. I enjoy watching many of the "sexy" scenes in movies.
126. A. I feel best after taking a couple of drinks.  
B. Something is wrong with people who need liquor to feel good.
127. A. People should dress according to some standards of taste, neatness, and style.  
B. People should dress in individual ways even if the effects are sometimes strange.
128. A. Sailing long distances in small sailing crafts is foolhardy.  
B. I would like to sail a long distance in a small but seaworthy sailing craft.

129. A. I have no patience with dull or boring persons.  
B. I find something interesting in every person I talk with.
130. A. Skiing fast down a high mountain slope is a good way to end up on crutches.  
B. I think I would enjoy the sensations of skiing very fast down a high mountain slope.

## APPENDIX D

## Pre-experimental Questionnaire

Subject# \_\_\_\_\_ Date: \_\_\_\_\_ Film: HT - HO - Nt

1. My last ejaculation was \_\_\_\_\_ hours ago.
2. On the average, over the past 6 months, I self-stimulated to ejaculation \_\_\_\_\_ times per month.
3. In general, the average length of time it takes me to ejaculate when I self-stimulate is \_\_\_\_\_ minutes.
4. On the average, over the past 6 months, I ejaculated in two person sex \_\_\_\_\_ times per month.
5. In general, the average length of time it takes me to ejaculate in two person sex is \_\_\_\_\_ minutes.
6. Over the past 6 months, I have had an average of \_\_\_\_\_ ejaculations per month.
7. Have you taken any medication over the past 2-3 weeks?  
If so, what kind? \_\_\_\_\_

Think carefully about the next two questions before answering!

8. During this study, I anticipate that I WILL / WILL NOT be able to suppress my sexual arousal when instructed to do so. (Circle one)
9. During this study, I anticipate that I WILL / WILL NOT be able to enhance my sexual arousal when instructed to do so. (Circle one)

## APPENDIX E

## Film Questionnaire

Subject # \_\_\_\_\_ Date: \_\_\_\_\_ Film: HT - HO - Nt

1. The film showed which of the following?
  - A. Homosexual behavior
  - B. Heterosexual behavior
  - C. No sexual behavior
  - D. Masturbation
  
2. The scene took place?
  - A. On a bed in the bedroom
  - B. On a couch in the living room
  - C. On a table outside
  - D. At a National Park/Forest
  
3. The film showed?
  - A. 2 males and 1 female
  - B. 1 male and 1 female
  - C. a nature scene
  - D. 2 males
  
4. Which of the following sexual behaviors were shown in the film?
  - A. Oral sex
  - B. Kissing
  - C. Vaginal intercourse
  - D. None of the above
  
5. I would rate this film as:
 

A. Not at all sexually arousing	Moderately sexually arousing	Highly sexually arousing
1      2      3	4      5      6	7

  

B. Not at all disgusting	Moderately disgusting	Highly disgusting
1      2      3	4      5      6	7

## APPENDIX F

## Post-experimental Questionnaire

Subject # \_\_\_\_\_ Date: \_\_\_\_\_ Film: HT - HO - Nt

1. I was able to SUPPRESS my erection when instructed to

Not at all			Moderately well			Very well
1	2	3	4	5	6	7

2. I was able to ENHANCE my erection when instructed to

Not at all			Moderately well			Very well
1	2	3	4	5	6	7

3. During this experiment I was

Not at all			Moderately			Very
nervous			nervous			nervous
1	2	3	4	5	6	7

4. How did you attempt to suppress your erection?

5. How did you attempt to enhance your erection?

## APPENDIX G

## Debriefing Interview

I would like to spend a few minutes with you now to answer any questions you might have about the study in which you just participated.

- 1) Was this experiment what you expected it to be from what we had initially told you?
- 2) Can you suggest any changes in this study that might make it more comfortable for other men who might participate in the future?
- 3) Did anything in the study cause you upset, annoyance, or discomfort?
- 4) After having participated in this study would you participate in similar studies? Would you recommend others participate?
- 5) What sort of feelings do you have now that you've participated in this study?
- 6) Do you have any questions, or is there anything you would like to know about the study?

I would like to thank you for participating in this study, and if you think of any questions about the experiment at a later date, please feel free to contact us here at the Psychology Department. We will be glad to talk with you.