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Title of Dissertation: "The Effects of False Physiological Feeback, on Sexual Arousal in Sexually Functional and Dysfunctional Men"

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Doctor of Philosophy Degree
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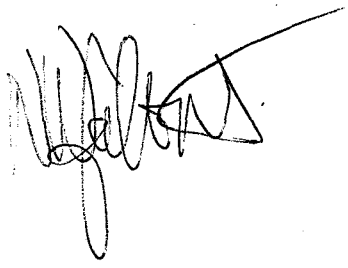

ABSTRACT

Title of Dissertation: The Effect of False Physiological Feedback on Sexual Arousal in Sexually Functional and Dysfunctional Men

Major Nathan W. Galbreath, Doctor of Philosophy, 2003

Dissertation directed by: Tracy Sbrocco, Ph.D.

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In the present study, a false feedback paradigm was used to manipulate the experience of seventy-six men to produce a discrepancy between actual and expected sexual performance. Thirty-nine men were diagnosed with male erectile disorder due to psychogenic factors, while the other thirty-seven were sexually functional. Experimental participants were provided with inflated feedback concerning the size of their erections while they viewed an erotic videotape. By examining changes in expectations of sexual performance, confidence, and tumescence over time, the impact of false feedback on sexual function was experimentally evaluated.

It was proposed that inflated feedback would differentially modify cognitive set and penile tumescence in sexually functional and dysfunctional men. Based on prior studies, experimental groups were expected to show decreased erectile response, despite receiving inflated feedback. Functional men were expected to increase expectancies, while those of dysfunctional men were expected to decrease. Furthermore, functional men were expected to regain tumescence with additional exposure to erotica. Dysfunctional men were not expected to restore tumescence. Functionals responded to inflated feedback by increasing their expectancy associated with the feedback itself. While predicted tumescence and confidence did not increase, the functional men believed they experienced larger erections. Dysfunctionals also believed they had larger erections and were more surprised by the inflated score than the functionals. However, dysfunctional men did not increase expectancies or confidence.

The study found limited support for the idea that additional exposure to erotica restores tumescence. Neither group experienced a decrease in average tumescence, so there was no loss

of tumescence to be "restored." An unexpected between-groups difference in speed of sexual response made the data for functional men uninterpretable. However, inflated feedback appeared to have unexpected "restorative" effects for dysfunctional men, as they showed no difference from normals on measures of erectile response. Dysfunctionals that did not receive feedback demonstrated less tumescence throughout the experimental manipulation than functional controls. This finding, if replicated, may have potential as a basis for a new intervention in the treatment of erectile dysfunction.

THE EFFECT OF FALSE PHYSIOLOGICAL FEEDBACK ON SEXUAL AROUSAL IN SEXUALLY FUNCTIONAL AND DYSFUNCTIONAL MEN

BY

NATHAN W. GALBREATH, MAJOR, USAF

Dissertation proposal submitted to the Faculty of the
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PART I: INTRODUCTION

Definition, History and Diagnosis of Erectile Dysfunction

The term "erectile dysfunction" has replaced impotence because of the latter's negative connotations and imprecise meaning. Erectile dysfunction (ED) is defined by the National Institutes of Health (1992) as the inability of the male to achieve or maintain an erection sufficient for satisfactory sexual performance. The American Psychiatric Association has labeled this same condition, "male erectile disorder." (DSM-IV, 1994)

Much of the study into human sexuality has only occurred in the last forty years. Prior to the 1980 revision, the DSM referred to all sexual dysfunctions as genitourinary disorders. The publication of Masters and Johnson's (1966, 1970) work into human sexual response and dysfunction encouraged others to take greater interest in the diagnosis and treatment of sexual problems. The scientific community's increased knowledge and reconceptualization of human sexuality was reflected in DSM-III (1980), as the manual included categories for the diagnoses of disorders of sexual desire, arousal and orgasm. The DSM-IV (1994) was the first revision to include a category for drug induced sexual dysfunction (Segraves, 2002).

Erectile dysfunction has likely been a problem throughout man's evolutionary history. Man as a species is unique, as most other animals procreate very quickly or have some degree of calcification in their phallus to aid entry into the vagina. Protracted erections for the purpose of pleasure are extremely rare in the animal kingdom. Western history suggests that impotency was seen a punishment by the gods. Ancient Greek men prayed to Aphrodite for relief. The Bible indicates in Genesis 20:3 that God rendered Abimelech impotent as punishment for having sex with Sarah, Abraham's wife. Later on in history, witches were believed to direct the devil's power over the male genitalia to destroy virility (Dunsmuir, 1999).

Hippocrates suggested that any imbalance in the four humours could prevent pneuma (air) and vital spirits from entering the penis to cause tumescence. Da Vinci deflated this theory when he found that blood filled the penises of men who had developed reflexogenic erections

during execution hangings. Impotence has historically been the source of great humiliation and shame for men, and a "legitimate" cause for marriage dissolution and annulment. The 16th century Catholic Church held ecclesiastic trials for impotence, where complainants could bring ED victims before a jury of theologians, physicians and midwives. The accused was then ordered to prove himself with public displays of erection and ejaculation. Despite their popularity, these trials were abolished in 1677 by the High Court of Paris (Van Driel, Van de Wiel, & Mensink, 1994). More detailed theories weren't developed until the 19th century, when three schools of thought emerged. Some believed that there was an endocrine disorder that caused ED. Castration was used as evidence to support this theory, in that castrated males were largely believed to be sexually nonfunctional. Others believed that impotence was caused by damage to, or abuse of the genitals. Hoping to restore virility of afflicted men, Voronoff transplanted ape testicles into humans and claimed that such a procedure would rejuvenate and restore potency (Dunsmuir, 1999). Yet a third group, including Freud, believed that impotence was caused by psychogenic factors. Men developed ED as a result of regression relating to unresolved conflicts in the unconscious mind. Only psychoanalysis could restore men's sexual functioning. In addition, this group's cure often included abstaining from sex and masturbation in order to resensitize the erectile mechanism. A series of electrical and mechanical anti-masturbation devices were developed to help those who found it difficult to abstain (Dunsmuir, 1999). In the late 1800s, Kellogg recommended abstinence, electric shock, diet, and exercise to restore health and virility.

At the turn of the previous century, male sexual functioning was conceptualized as involving two separate stages: tumescence (the engorgement of the penis with blood resulting in erection), and detumescence (the outflow of blood from the penis following orgasm) (Ellis, 1906). Masters and Johnson further developed this model during the 1950s and 1960s. Based on more than 10,000 observations of sexual functioning with human volunteers, they expanded Ellis's two-stage model into four stages (Figure 1):

A. Excitement. For men, this involves erection of the penis, which usually occurs within a few seconds after sexual stimulation begins. In addition, skin ridges of the scrotum smooth out and the testes are drawn towards the body.
B. Plateau. In men, the diameter of the head of the penis increases slightly and deepens in color because of increased blood flow. Vasocongestion also causes the testes to swell, becoming 50 to 100 percent larger than in the unstimulated state. In addition, small amounts of clear fluid may sometimes be secreted from the Cowper's gland and appear from the male urethra.
C. Orgasm. Men ejaculate semen during this stage, which actually has two parts: First, men experience a sensation of ejaculatory inevitability, which occurs just before ejaculation begins. Second, contractions of the urethra, penis and prostate glad serve to expel semen from the head of the penis.
D. Resolution. Immediately after ejaculation, men enter a refractory period, during which further orgasm or ejaculation is not possible. This time varies greatly between men and increases with age. A partial loss of erection occurs during the refractory period. Eventually, blood flow to the genitals returns to pre-excitement levels. (Masters and Johnson, 1966).

For thirty years this model has served as the foundation for the study of human sexual response and sexual dysfunction.

In the 1970s, Kaplan (1974) and later Lief (1977) identified a subset of individuals whose sexual dysfunction did not lie within the four stages described by Masters and Johnson (1966). Instead, these people experienced little interest in sexual activity. This fifth stage, theoretically occurring prior to those described by Masters and Johnson, was labeled sexual desire (Figure 1). Kaplan (1974) and Lief (1977) observed that patients with desire problems complained of an inability to become aroused, lacked interest in sexual activity, and even avoided sexual functioning.

With the latest revision of the diagnostic categories in the American Psychiatric Association's (APA) Diagnostic and Statistical Manual (DSM-IV, 1994), current theory regarding sexual psychopathology was reduced to four categories: desire, arousal, orgasm and pain associated with sexual function. While stage theory better reflects the continuum of human sexual response, the APA categorical approach creates a useful scheme to describe sexual dysfunction (Wincze & Carey, 2001).

Diagnostic Criteria for Male Erectile Disorder

The DSM-IV (1994) lists Male Erectile Disorder as one of the nine primary diagnostic categories for sexual dysfunction. Criteria for diagnosis are as follows:

A. Persistent or recurrent inability to attain, or to maintain until completion of the sexual activity, an adequate erection.
B. The disturbance causes marked distress or interpersonal difficulty.
C. The erectile dysfunction is not better accounted for by another Axis I disorder and is not due exclusively to the direct physiological effects of a substance or general medical condition.

Specifiers are included with the criteria to differentiate etiological considerations of the disorder:

• 'lifelong' (since the outset of sexual functioning) versus 'acquired' (recent onset),

• 'generalized' (across the continuum of sexual behaviors) versus 'situational' (appears only in certain activities), and

• 'due to psychological factors' or 'due to combined (physiological, pharmacological, and/or psychological) factors'.

Those men who experience lifelong and generalized male erectile disorder are considered more difficult to treat and are reportedly somewhat rare. It is more likely to encounter men who experience ED in one domain of sexual functioning (e.g., coitus), and function with little impairment in other domains (e.g., masturbation). (Wincze & Carey, 2001).

While some men have problems obtaining an erection, others may have difficulty maintaining it. To further complicate matters, the nature of erectile problems may change over time. Consequently, what begins as a problem maintaining sufficient erection for penetration may later transition into an overall inability to obtain an erection. Prior to making any diagnosis of erectile dysfunction, the clinician should carefully evaluate physiological and pharmacological factors that contribute to this disorder. Approximately two thirds of ED cases have a contributing physiological factor (Alberta Medical Association, 2001). For instance, diabetics have been known to acquire erectile dysfunction as one of the many complications of their disease (Klein, Klein, Lee, Moss & Cruickshanks, 1996). In addition, persons taking anti-depressant and antihypertensive drugs have also noticed erectile dysfunction as a likely side effect of the drugs (Anderson & Mulhall, 2001; Goldstein & Krane, 1983). Physiological and pharmacological factors impacting male erectile disorder will be covered later in more detail.

Prevalence and Incidence

Recent estimates suggest that the number of men in the United States with erectile dysfunction (ED) nears 10 to 20 million (NIH, 1992). If individuals with minimal dysfunction are included, the estimate increases to approximately 30 million (Benet & Melman, 1995). The prevalence of ED increases with age, history of heart disease, diabetes, treated hypertension, untreated ulcer, arthritis, allergy, and smoking (Simons & Carey, 2001). However, sexual arousal problems are not relegated just to the aging or ill. Masters, Johnson and Kolodny (1994) estimated that nearly fifty percent of all men would experience some form of erectile problem at some point during their lifetime.

Two extensive epidemiological surveys, the Massachusetts Male Aging Study (MMAS) and the National Health and Social Life Survey (NHSLS), confirmed the high prevalence of this disorder. Feldman, et. al., (1994) based MMAS results on a sample of 1290 men 40 to 70 years of age. The overall prevalence of some form of erectile dysfunction was 52%, with 10% of men reporting complete ED, 25% reporting moderate ED, and 17% reporting mild ED. The other 48%

reported no problems at all with sexual functioning. The MMAS further found that any level of ED has an incidence of 40% at age 40 and 67% at age 75. Incidence of complete erectile dysfunction was 5% at age 40 and 25% at age 75 (Anderson and Mulhall, 2001).

Using age-adjusted data from the MMAS, Aytac, et. al., (2000) identified an increased risk for ED in men without a college degree, and men who worked in blue collar jobs. However, despite its longitudinal design, the MMAS was not a nationally representative sample in that 96% of participants were identified as "White", 2% were "Black," and 2% were "Other." (Feldman, Goldstein, Hatzichristou, et.al., 1994). In contrast, the NHSLS produced a better quality sample, involving 1410 men and 1749 women aged 18 to 59 years. Checks with other high-quality samples, such as US census data, indicated that the NHSLS produced a truly representative sample of the population (Laumann, Paik, & Rosen, 1999). This survey's age and education related findings were consistent with those of the MMAS. In addition, the NHSLS found a significantly increased risk for ED in never married men, and a trend for significant risk in divorced, separated or widowed men. While race was not a significant predictor of ED, black men (Odds Ratio [OR] = 1.21, 95% Confidence Interval [CI], 0.67 – 2.17) were at somewhat greater risk than white men (referent) and Hispanic men (OR = 0.53, 95% CI, 0.20 – 1.39) (Laumann, Paik, & Rosen, 1999). Well-designed epidemiological studies that more adequately address race and erectile dysfunction remain to be conducted (Boyle, 1999). However, a limited study using a convenience sample of 112 African American and 93 Caucasian men was conducted at a Veteran's Administration healthcare center in Southern California. Using the Sexual Health Inventory for Men (SHIM), a five question shortened version of the International Index of Erectile Functioning (IIEF; Rosen, et. al., 1997; see Part IV: Research Design and Methodology – Self Report Measures for a brief description and sample of this instrument), the authors compared the perceptions of symptom severity of men referred for an ED evaluation. The authors found no significant differences between the two groups on any of the five items. At least in an equal access healthcare system, it appears that men from both races have similar

assessments of their erectile functioning (Conde, Bennett, Keller, Myles, & Lo, 2002). Figure 2 lists SHIM questions and study results.

While ED is most closely associated with increasing age, several other age-independent risk factors have been identified, including health and lifestyle, financial status, childhood sexual abuse, sexual assault perpetration, and smoking. High levels of anger expression, anger suppression, and depression all increase the risk of ED (Feldman, et. al., 1994). Emotional problems and stress have also been identified as significant predictors of ED (Laumann, Paik, & Rosen, 1999)

PART II: ETIOLOGICAL THEORIES OF ERECTILE DYSFUNCTION

As suggested above, the etiology of erectile dysfunction is multifactorial. Historically, most characterized the etiology of ED as either organic or psychogenic. Organic explanations tended to focus on physiological or neurological problems such as treated hypertension, spinal injury, diabetes mellitus, and vascular disease. Common psychogenic causes included depression, anxiety, and alcohol dependence. However, this categorical approach has given way to the understanding that erectile dysfunction grows from a combination of problems in both areas. Currently, the etiology of erectile dysfunction has been explained through the use of four distinct but overlapping approaches: biological, psychological, sociocultural, and biopsychosocial (an integration of the preceding three approaches). First, the physiology of the erection process will be reviewed. Afterwards, the most important theories in each of the four domains will be discussed.

Male Erectile Function

An erection requires the successful flow of blood into the penis, relaxation of smooth muscle, and restriction of venous outflow from the erectile bodies (Figure 3). The penis is composed of 3 cylinders, the corpus spongiosum (containing the urethra) and the paired erectile bodies (corpora cavernosa) (Figure 4). The erectile bodies are composed of sponge-like tissue

surrounded by a tough, fibrous membrane. There is a central artery within the sponge-like tissue and veins that exit through the membrane and drain the erectile bodies. The smooth muscles lining the corpora cavernosa and the central artery are tonically contracted during the flaccid state. Thus, the resistance in the vasculature of this tissue is normally quite high.

In the absence of ED, appropriate stimulation leads to penile erection. The first event is smooth muscle relaxation, mediated by the parasympathetic nervous system, and initiated by psychogenic factors (response to erotic stimuli) or by reflexogenic factors (nocturnal erections during sleep or early morning erections). The vascular changes that occur during erection are governed by neural inputs from cholinergic preganglionic neurons residing within the sacral spinal cord (S2-S4) (Boyle, 1999) (Figure 5). Sympathetic nervous stimulation of the cavernous nerves releases at least three neurotransmitters that can relax the cavernous smooth muscle: nitric oxide (NO), acetylcholine (ACh), and vasoactive intestinal polypeptide (VIP)(Figure 6). NO has been shown to be the most important of the three and provides the chemical pathway exploited by the drug Viagra®. The cavernous nerves trigger the vascular endothelium to synthesize NO from neuronal nitric oxide synthase and L-arginine. NO subsequently activates the enzyme guanylate cyclase, which stimulates a second biochemical messenger, cyclic guanodine monophosphate (cGMP). cGMP produces a fall in cytosolic calcium ions, which in turn causes smooth muscle cell relaxation. Vascular resistance is reduced when the smooth muscle surrounding penile arterioles relax, causing the similarly relaxed corpora cavernosa to fill with blood (Steers, 2002).

Acetylcholine also contributes to the production of NO via the sympathetically stimulated cavernous nerves. ACh binds to muscarinic receptors in the endothelium, which causes synthesis of NO from endothelial nitric oxide synthase. VIP acts through adenylate cyclase to relax smooth muscle. VIP triggers a rise in cyclic adenosine monophosphate (cAMP), causing cytosolic calcium ions to flow out of the cavernous muscle cells, relaxing the muscle (Rehman & Melman, 2001).

Erection also occurs through the inhibition of contractile mechanisms. Norepinephrine (NE), activated by alpha adrenergic receptors in blood vessels and smooth muscle, causes contraction of cavernous smooth muscle. NE is released via the sympathetic fibers running through the cavernous nerves and the dorsal nerve of the penis. NE prevents the erectile bodies within the penis from filling with blood by keeping cytosolic concentrations of calcium ions high, contracting smooth muscle. NE impacts calcium concentration via the release of inositol triphosphate (IP3), which in turn triggers calcium production from the sarcoplasmic reticulum. A fourth chemical pathway involving Rho kinase has recently been discovered to impact erectile functioning. Essentially, inhibition of Rho kinase has been shown to prevent crossbridge formation in penile smooth muscle. Without such crossbridge formation, the muscle loses contractility and relaxes, allowing the blood to flow into the erectile bodies (Steers, 2002).

As the erectile bodies become engorged, the tough membranes that surround them compress drainage veins, trapping blood in the penis. The flaccid state of the penis normally returns with the cessation of erotic stimuli, or the release of catecholamines during orgasm and ejaculation. Nitric oxide is quickly broken down by the body, as it has an extremely short half-life measured in nanoseconds. Cyclic GMP, however, is very stable. Consequently, vascular smooth muscle cells metabolize cGMP with an enzyme specific for the penile tissues, phosphodiesterase type 5 (PDE5) (Kloner & Jarow, 1999). PDE5 inhibitors, such as Viagra®, will be discussed in more detail below. In the acetylcholine pathway, cAMP is metabolized by PDE3 and PDE4, which are also present in the myocardium. Consequently, pharmacological intervention using PDE3 and PDE4 inhibitors is unlikely due to cardiac side effects (Steers, 2002).

Biological Theory of ED Etiology

Normal sexual functioning requires good health. In many cases, ED is caused by factors that interfere with the relaxation of cavernous smooth muscle. Consequently, problems in the endocrine, vascular and/or neurological systems can result in erectile dysfunction. After

adjusting for age, men treated for heart disease, diabetes, and hypertension have significantly higher probabilities for ED. Untreated ulcers, arthritis, and allergies are also significant risk factors for ED (Feldman, et. al., 1994). Erectile dysfunction has also been associated with abnormal HDL cholesterol levels, but not total serum cholesterol (Feldman, et. al., 1994). Pharmacological agents may also impact sexual functioning, and will be discussed in greater detail below.

Neurologic Injuries and Diseases. Neurologic disorders cause approximately ten percent of erectile dysfunction cases (Murray, Geisser and Murphy, 1995). Damage to the autonomic pathways that begin in the central nervous system and innervate the penis may impede psychogenic erections. Injuries to the somatic nervous pathways may also halt reflexogenic erections and can interrupt the tactile sensations needed to maintain a psychogenic erection. Spinal cord lesions can also cause varying degrees of erectile dysfunction depending on the location and severity of the injury (Carrier, Brock, Kour and Lue, 1993).

The majority of neurologically based erection problems are due to spinal cord injury (Murray, Geisser and Murphy, 1995). The nature, location, and extent of the lesion will determine the degree of impairment (NIH, 1993). In general, patients with less extensive spinal damage achieve better erectile function than those with serious injury. However, any damage to the central nervous system, including head trauma, brain injury, and lumbar disc surgery, can impair erectile functioning. Multiple sclerosis (MS) is another neurological condition associated with a high incidence of erectile dysfunction. Partial or total erectile dysfunction has been observed in between 50% to 70% of men with an established diagnosis of multiple sclerosis (Goldstein, Siroky, and Sax, 1982). Other ED-producing conditions include cerebrovascular disease, stroke, Parkinson's disease, and Alzheimer's disease. These conditions usually involve centers of the brain associated with sexual function. Unfortunately, there is no specific treatment for neurologically based erectile dysfunction (O'Keefe & Hunt, 1995). Prostheses and vacuum constriction devices may be the only treatments available to men with neurologically based ED.

Endocrine Abnormalities. The majority of endocrine disorders produce either a deficiency of serum testosterone or elevation of serum prolactin levels (Murray, Geiser, & Murphy, 1995). Testosterone levels lower than 250 ng/dl may decrease sex drive and cause problems with obtaining and maintaining erections. Lowered serum testosterone levels may also be found in patients with hypothyroidism and primary adrenal insufficiency. Serum prolactin levels greater than 20 ng/ml in men may influence erection capabilities independent of testosterone level. A high prolactin level is particularly concerning for men as it may indicate the presence of a pituitary tumor. While most agree that androgens are necessary for normal sex drive, they do not appear to be an essential component for normal sexual functioning. In fact, the MMAS found that out of 17 hormones measured in the study, the only one that was highly correlated with ED was dehydroepiandrosterone sulfate (DHEAS). As serum levels of DHEAS decreased from 10 to 0.5 μg./ml, the age adjusted probability of complete ED increased from 3.4 to 16%. In contrast, Dihydrotestosterone (DHT) and cortisol have a relatively small impact on erectile functioning. Neither serum testosterone nor other androgens were associated with ED (Feldman, et. al., 1994).

Consequently, the role of testosterone in erectile function is not exactly clear. As demonstrated in the previous section, the biochemical erection process does not involve testosterone as a primary actor. Testosterone is needed for maintenance of fertility, libido, secondary sexual characteristics, and preservation of muscle and bone mass. Lack of testosterone can produce poor sexual performance, lower sex drive, and minimize sexual thoughts (Bancroft & Wu, 1983). However, patients with low levels of testosterone may achieve erections triggered by visual or sexual stimulation comparable to patients with normal testosterone levels (Davidson, Camargo, Smith & Kwan, 1983). In fact, patients who have been "chemically" or surgically castrated maintain erectile functioning, albeit decreased libido. Androgens produced by the adrenal glands are sufficient for corpora cavernosal function (Lewis, et. al., 2000). Consequently, there is some agreement that hormonal factors are usually not the primary or singular cause of erectile dysfunction (Jones, 1985; Schover & Jensen, 1988).

However, as hormones more directly influence libido, interest and focus on things sexual may be difficult to sustain by men with low androgens. Inability to focus on erotic dues and distraction are covered in great detail in a later section.

Hormone levels should be checked during any assessment for erectile dysfunction. At a minimum, serum testosterone and serum prolactin should be evaluated. Normal range for testosterone in men is typically from 280 to 1100 ng/dl. While prolactin is usually associated with mammary function in females, it is also believed to be essential for sexual arousal in men. A normal level in men is between 0 and 20 ng/ml. Treatment of ED with testosterone was recently found to be effective in the majority of cases involving low hormonal levels. Jain, Rademaker and McVary (2000) conducted a meta-analysis of sixteen studies published between 1969 and 1998. Overall, they found that 57% of cases responded favorably to testosterone replacement therapy. However, transdermal therapy (81%) was significantly more effective than intramuscular injection and oral treatments (51% and 53%, respectively).

Vascular Problems. Atherosclerosis of the penile arteries and venous leaks are the two vascular diseases most closely associated with erectile dysfunction. They can and often do occur together in the same individual. Overall, 10 to 20 percent of cases of erectile dysfunction can be accounted for by vascular disease. When men aged 50 years and older are considered alone, vascular disease accounts for more than 50% of cases (Murray, et al, 1995; Mulligan & Katz, 1989). Poor arterial blood flow may be caused by injury, congenital anomalies, or any other disease that limits the amount of blood reaching the penis. In fact, some sports injuries and chronic insult to the perineum in bicycle riding have been reported to cause ED in healthy males (Munarriz, Yan, Nehra, Udelson, & Goldstein, 1995).

Most cases of vascular disease-related ED result from atherosclerosis (Carrier, et al, 1993). One study found that 64% of 131 men, aged 31-86, hospitalized for an acute myocardial infarction had ED (Wabrek & Bruchell, 1990). Surgery can sometimes correct these problems if a particular obstruction is found within the penis. Patients with atherosclerosis of the penile arteries also have an increased chance of developing atherosclerosis in other organs. Morely and

colleagues (1988) found that 23% of men who were diagnosed with erectile dysfunction due to vascular problems later had a heart attack or stroke within two years post diagnosis, as compared to only 4.5% of patients with normal sexual functioning. Men who have atherosclerosis may also fear the exertion associated with sexual function, which can bring on psychogenically mediated ED (Muller, El Damanhoury, Ruth, & Lue, 1991).

Hypertension is another known risk factor for developing cardiovascular disease. Not only does this condition contribute to the process of atherosclerosis, medications used to treat the disease can also increase the severity of erectile dysfunction. However, diseases such as hypertension may induce erectile dysfunction independent of the medication used to treat the condition (Bansal, 1988). Drugs that contribute to ED will be discussed later in greater detail. Recently, Sullivan (1999) and colleagues found evidence for a link between ischemic heart disease and erectile dysfunction: both diseases share similar risk factors that negatively impact nitrous oxide levels in the body. Consequently, it is not surprising that these diseases are found comorbidly.

Diabetes mellitus Type I and II are also closely associated with erectile dysfunction, mostly due to the neuropathy and vascular damage that stems from poor glycemic maintenance (Meisler, Carey, Lantinga & Krauss, 1989). Half of diabetics will notice symptoms ED within ten years of onset of the disease (Whitehead & Klyde, 1990) However, Type I diabetics are more likely to experience symptoms sooner than Type II diabetics, despite equal incidence in both populations (Lewis, et. al., 2000). Diabetic men with ED cannot synthesize enough NO from endothelial sources to cause relaxation of cavernous smooth muscle. ED in diabetes co-occurs with retinopathy, peripheral neuropathy, cardiovascular disease, higher glycoslylated hemoglobin, and a higher body mass index (Boyle, 1999). The MMAS found that the age-adjusted probability of complete ED was three times higher in men treated for diabetes than in men without diabetes (Feldman, et. al., 1994).

Erectile dysfunction can also be caused by irregularities within the penile venous system. Some patients may experience shunting of blood from the corpora cavernosal bodies

directly to medium-sized veins, so the penile tissues never become completely engorged. This is called venous leakage. Venous closure problems have been shown to be either the main or concomitant cause of erectile dysfunction in 90% of patients who do not achieve an adequate erection with intracavernous vasoactive agents (Wespes, 1993). Surgery can sometimes correct this issue, however venous leakage problems account for the fewest cases of ED and remain some of the most difficult cases for surgical repair (Lewis, 1991).

Drug Induced Erectile Dysfunction. Three hundred thirty two medications have been associated with erectile dysfunction (Meinhardt, Dropman, Vermeij, Lycklama, Nijeholdt, & Zwartendijk, 1997). The Massachusetts Male Aging Study found that men who were taking vasodilators (36%), cardiac drugs (28%), hypoglycemic drugs (26%), and antihypertensives (14%) were at significantly greater risk for ED than the study sample as a whole (9.6%) (Feldman, et. al., 1994). Antihypertensives (beta-blockers, alpha-blockers, calcium-channel blockers, diuretics, etc.) may produce ED via their autonomic nervous system effects, or by dropping the blood pressure below that required to maintain pressure in the corpora cavernosa (Anderson and Mulhall, 2001). Beta-blockers appear to cause the most ED, due to the change in balance between alpha and beta sympathetic influence. This imbalance results in insufficient antagonism of alpha channel mediated vasoconstriction in the penile arteries and corpora cavernosa (Lewis, et. al., 2000).

Antiandrogen medications are also known to impede normal sexual functioning. Depo Provera and Depo Lupron are two such drugs typically used in prostate cancer and sex offender treatments. Patients using Provera and Lupron report ED because of the drugs' ability to block the body's usage of serum testosterone or significantly reduce testosterone bioavailability (Bradford, 1990; Galbreath & Berlin, 2002). As stated before, testosterone does not play a part in penile erection, per se. However, testosterone does have a central nervous system effect that powers libido and sexual cognition.

Tricyclic and tetracyclic antidepressants, lithium, monoamine oxidase inhibitors (MAOI), and selective serotonin reuptake inhibitors (SSRI) may also impede central nervous

system mechanisms of normal erectile response (Goldstein & Krane, 1983). SSRIs have been associated with increased erectile difficulty, decreases in libido and impaired ejaculation (Rosen, Lane, & Menza, 1999). Of the many different SSRIs available, paroxetine (Paxil®) has been found to be the most inhibitory of sexual function. Paroxetine's anticholinergic activity and inhibition of nitric oxide synthase are thought to contribute to ED (Brock & Bochinski, 2001). Conversely, bupropion has been shown to have little impact on sexual function in limited studies (Labbate, Brodrick, Nelson, Lydiard, & Arana, 2001; Modell, May & Katholi, 2000). In fact, bupropion may have prosexual side effects in some men, including increased libido, better erectile functioning, and reduced delay in orgasm/ejaculation (Modell, May, & Katholi, 2000). Bupropion is thought to increase dopamine levels in the central nervous system, thereby initiating penile erection via D_2 receptors. However, a definitive study on the prosexual qualities of bupropion has yet to be completed.

Many antipsychotic drugs have been associated with erectile dysfunction and other forms of sexual dysfunction. Erectile dysfunction usually occurs shortly after the initiation of pharmacotherapy, not uncommonly within 24 hours. Thioridazine (Melleril®) and chlorpromazine (Thorazine®) appear to be the worst offenders, with an incidence of ED as high as 40 to 60% (Brock & Lue, 1993). Antipsychotics can impair erectile functioning via anticholinergic effects, alpha-adrenergic blockade, endocrine effects, and sedative effects (Brock & Bochinski, 2001).

Histamine-2-receptor antagonists, specifically cimetidine (Tagamet®), can have antiandrogenic effects and may increase serum prolactin levels. These drugs are most often used with ulcer and gastroesophageal reflux diseases to inhibit acid secretion in the stomach. However, ranitidine (Zantac®) and famotidine (Pepcid®) appear to have little impact on sexual functioning (Lewis, et. al., 2000; Brock & Bochinski, 2001).

Smoking, ethanol, and recreational drugs can also contribute to erectile dysfunction. As previously indicated, smoking appears to enhance ED related to certain illnesses and medications, and injure the vascular endothelium. Alcohol's immediate impact on sexual

functioning is well known. Despite its disinhibitory effects, alcohol's sedative qualities typically degrade erectile functioning. Long-term alcohol overuse can cause damage to nerve conduction mechanisms, especially in the presence of other diseases (NIH, 1993; Schover & Jensen, 1988). Narcotics, especially opiates, have been known to cause ED by shunting blood away from the genitals into systemic circulation (Brock & Bochinski, 2001). Marijuana's active ingredient, THC, reduces serum testosterone over the long term, thereby reducing libido and erectile functioning. Cocaine has a mixed effect on sexual functioning. Long-term users of cocaine report reduced libido and ED. However, users describe short-term effects, including an aphrodisiac quality. This may be due to cocaine's ability to decrease catecholamine reuptake, causing an excitatory action on the central nervous system (Brock & Bochinski, 2001).

Modification of Risk Factors.

Using a cohort of 593 men, aged 40 to 70, from the MMAS who were free from moderate or severe erectile dysfunction at baseline, Derby, Mohr, Goldstein, et. al., (2000) analyzed the impact of risk factor modification on ED. Factors studied included smoking, alcohol use, obesity, and sedentary life style. The majority of the men in this sample exhibited healthy behaviors both at baseline and follow-up nine years later. At follow-up, half the smokers had quit, and half the heavy drinkers had reduced alcohol intake. Eighteen percent of the 87 obese men had lost weight, and 55% of the 173 sedentary men reported engaging in moderate to intense exercise. The overall incidence of ED in this group at follow-up was 17%. Men who were obese at baseline had a higher incidence of ED, regardless of follow-up status. Conversely, men who were physically active at follow-up had a lower incidence of ED, regardless of baseline activity level. Changes in drinking or smoking behavior did not have an impact on ED risk. In other words, middle-age may be too late to reverse the damage done to erectile function by years of overeating, drinking, and/or smoking. However, exercise appears to have a beneficial effect on ED risk, regardless of when it is initiated. Sedentary men may be able to reduce their risk of ED by becoming involved in regular physical activity. The dose-response relationship

between exercise and decreased risk for ED approached statistical significance (Derby, Mohr, Goldstein, Feldman, Johannes & McKinlay, 2000).

Non-Specific Medical Treatments

Several non-specific medical treatments exist for erectile dysfunction, despite the cause. Essentially, any of these treatments can be used for an individual, once he and his physician have weighed the cost, risk, benefits and side effects (O'Keefe & Hunt, 1995).

Vacuum Constriction Devices. Many patients with erectile dysfunction may be candidates for vacuum therapy, as this treatment is highly effective, regardless of the etiology of erectile dysfunction. A vacuum constriction device employs an airtight plastic tube that is placed over the penis (Figure 7). Most devices employ a small hose and hand pump or electric pump to remove air from the tube. The vacuum created inside the device helps the corpora cavernosa engorge with blood, subsequently creating an erection. Blood is kept in the penis by the placement of a flexible rubber constriction ring at the base of the shaft. The ring maintains the erection during intercourse. Partner involvement in training with these devices may be important for successful outcome, especially in establishing a mutually satisfying level of sexual activity. A meta-analysis of the literature involving vacuum devices as treatment for erectile dysfunction found that 1470 out of 1943 patients (or nearly 76%) were able to successfully return to intercourse, 655 of 859 patients (or 76%) were satisfied with the use of the device, and 162 of 218 of the patients' partners (or 74%) were satisfied with the devices. The meta-analysis also found a treatment drop out rate of approximately 25% (Montague, Barada, Belker, Levine, Nadig, Roehrborn, Sharlip, & Bennett, 1996).

Direct Delivery of Vasoactive Agents. Vasoactive agents can be introduced into the penis by injection or transurethral delivery. While these drugs used to be the main treatment option for ED, oral medications have moved them to second line therapy (Shabsigh, 2001). Vasoactive drugs act by relaxing smooth muscle cells of blood vessels and cavernous bodies, increasing blood flow to the penis. An erection usually begins within a few minutes after introduction of

the drug and can last between 30 and 60 minutes. The drugs commonly used in this method of treatment are papaverine hydrochloride, phentolamine, alprostadil, and prostaglandin E_1 (PGE_1). These treatments are effective for most cases of erectile dysfunction, regardless of etiology. However, individuals who suffer from vascular ED are not good candidates for this method of pharmacotherapy (Montorsi, Guazzoni, Rigatti, & Pozza, 1995).

The most serious side effects associated with all of these drugs are priaprism, pain, bleeding at the injection site, and scarring. However, many men find these side effects not worth the trouble. Purvis, Egdetveit, & Christiansen (1999) surveyed 1116 men who had elected to use some form of injectable therapy for ED between the years 1995-97. The men indicated that injectable therapy produced erections lasting 30 to 60 minutes, with the vast majority of erections being suitable for sexual intercourse. Approximately 40% of respondents indicated they quit using the drugs within the first six months of the program. The dropouts were unrelated to age and showed only a small relationship to the type of drug. The major reasons for drop out or dissatisfaction with the treatment were inadequate penile rigidity, expense, penile discomfort, and the lack of spontaneity it necessitated. However, 87% of the men still using the injectable drugs reported they were satisfied with the therapy (Purvis, Egdetveit, & Christiansen, 1999).

*Oral Medications: Phosphodiesterase 5 Inhibitors***.** Recent advancements in pharmacotherapy for erectile dysfunction dominate the news and popular culture. Upon its premiere, headlines portrayed sildenafil citrate (Viagra), as the ultimate answer to male arousal problems. Despite early press reports of a few Viagra-related deaths, most patients tolerate the drug relatively well (Hackett & Gingell, 1999). However, the drug is contraindicated for patients with ischemic heart disease or patients who use long-acting nitrates (Kloner, 2000). Clinical trials have demonstrated the drug's efficacy over placebo (Goldstein, Lue, Padma-Nathan, Rosen, Steers, and Wicker, 1998). Sildenafil's mechanism of action is to block phosphodiesterase 5 (PDE 5) from inactivating cGMP in the smooth muscle of the arterioles and corporal bodies, permitting smooth muscle relaxation. Once the smooth muscle relaxes, blood flows into the cavernosal

spaces, increasing intracavernosal pressure and penile erection. Onset of erection occurs within ten to 40 minutes after taking the drug. Viagra remains active in the bloodstream for up to four hours (Boolell, Gepi-Attee, Gingell and Allen, 1996).

In clinical trials on patients with organic, psychogenic and mixed erectile dysfunction, Goldstein and colleagues found that between 56% and 84% of patients responded to the sildenafil. Response increased with the amount of drug administered. The product information for sildenafil mentions that 21 randomized, double-blind, placebo controlled studies of up to 6 months duration have been completed (Goldstein, et al, 1998). Common side effects are flushing, indigestion and headache.

Oral Medications: Vardenafil and Tadalafil. The second generation of PDE5 inhibiting drugs has recently come out on the US market. Vardenafil and tadalafil are similar to sildenafil in their pharmacology, but carry the benefit of additional research and refinement of their chemical properties. Vardenafil (known as Levitra®) is similar to sildenafil in absorption (40 to 55 minutes) and elimination (approximately four hours) (Padma-Nathan & Giuliano, 2001). Vardenafil completed Phase 3 clinical trials and has been shown to be more effective than placebo in patients with a variety of ED etiologies (Pryor, 2002). Tadalafil, known by the trade name of Cialis®, has also undergone a multi-center clinical investigation. A major strength of this drug is that it has 10 to 10,000 times more selectivity for PDE5 than sildenafil (Porst, 2001). There are numerous forms of PDE that metabolize cGMP in the body. However, PDE5 is the primary form found in the smooth muscles that surround the arterioles and corporal bodies of the penis. Sildenafil is not as specific for PDE5 as tadalafil, and also inhibits PDE6. As PDE6 is an actor in the blood vessels of the retina, some users of sildenafil reported visual changes (a blue hue). This side effect is not currently being reported in tadalafil clinical trials (Padma-Nathan and Giuliano, 2001). Tadalafil has a much longer half-life than sildenafil (greater than 17 hours), and -- in some reports -- has allowed men to obtain an erection up to 28 hours after ingestion of the drug (Padma-Nathan and Giuliano, 2001). Cialis was originally scheduled to be released in the US in 2002, but the FDA requested additional follow-up studies due to the

drug's longer half-life. Tadalafil and vardenafil have both been shown to be significantly more effective than placebo in treating ED in a sample of men with varying severities of ED and Type 1 or 2 diabetes (Jack, 2001; Pryor, 2002).

PDE5 inhibitors have drawbacks, despite their efficacy over placebo: First, they do not help everyone. A minority of clinical participants (ranging from 10 to 25 percent depending on the trial) do not experience improved erections or successful intercourse. In addition, Goldstein et al. (1998) found that patients diagnosed with mixed erectile dysfunction (organic plus psychogenic) did not have a higher frequency of penetration when taking sildenafil. Second, PDE5 inhibitors are contraindicated for men taking organic nitrates, including nitroglycerin, longer acting nitrates, and amyl nitrate. Use of PDE5 inhibitors in combination with nitrates causes potentially dangerous hypotension, and on rare occasion death. Third, drugs make the patient substance-dependent for sexual intercourse. Finally, drugs do not address the psychosocial problems that often accompany erectile dysfunction. The marital stress and depression that initiated or contributed to the ED cannot be adequately addressed by simply restoring sexual functioning.

Oral Medications: Apomorphine. Another new drug under evaluation for the treatment of erectile dysfunction is apomorphine, known commercially as Uprima. Apomorphine works on the central nervous system to cause erections, instead of the end organ. Essentially, apomorphine is a dopamine agonist that stimulates the medial preoptic area of the hypothalamus, which has been shown to play a central role in integrating sexual input from central and peripheral stimuli (Meisel and Sachs, 1994). Originally, apomorphine's pro-sexual side effects were discovered through its use with Parkinson's patients. Prior to the most recent formulation, apomorphine was not considered useful due to the nausea it quickly induced. However, a sublingual form of the drug has been developed which allows for therapeutic doses to accumulate in the body within 15 minutes, with fewer side effects (Dula, Keating, Siami, Edmonds, O'Neil, and Buttler, 2000). Recently completed clinical trials of the drug found that a significantly higher percentage of patients (48% to 56%) achieved and maintained an erection

sufficient enough for intercourse than those taking placebo (35%). While nausea was still experienced by patients at higher dosage levels, it tended to disappear after four weeks of use. Another side effect encountered was fainting. However, all patients had spontaneous, rapid recovery (Dula, et al, 2000). This drug may someday prove to be a useful alternative for those cardiac patients on nitrate-based drugs who cannot take sildenafil. However, Uprima® is not yet approved for prescription in the US. The drug was pulled from FDA review in June of 2000, due to several incidents of fainting and low blood pressure.

Oral Medications: Yohimbine. Yohimbine is derived from the bark of the yohimbine tree. The US Food and Drug Administration grandfathered it into the market for use without testing in 1976. Yohimbine is a centrally acting drug that increases sympathetic drives by blocking alpha-2 adrenoceptors in the brain. This has the net effect of decreasing smooth muscle tone and increasing blood flow into the penis. While very inexpensive, yohimbine is noted for a variety of stimulant-like side effects, including elevated blood pressure, heart rate, angina, anxiety, dizziness and nausea. Effectiveness of yohimbine has been in debate. Success rates (measured as return of complete or partial erections) in other studies have ranged from 33 to 62% (Montorsi, 1995; Susset, Tessier, and Wincze, 1989; Reid, Surridge & Morales, 1987). However, a recent meta-analysis of seven yohimbine trials showed that the drug was significantly more effective than placebo, and that serious side effects were infrequent (Ernst & Pittler, 1998). Yohimbine can be purchased over the counter and by prescription. Over the counter remedies are not subject to the same federal scrutiny as prescriptions and may not be of consistent quality. The American Urological Association does not recommend yohimbine for ED (Sadovsky & Custis, 2001). However, the combination of yohimbine and L-arginine was recently evaluated in a randomized, double-blind clinical study in Europe. Men with mild to moderate ED who were given the yohimbine/L-arginine combination reported significantly greater erections than with yohimbine alone or placebo (Lebret, Herve, Gorny, Worcel, & Botto, 2002). A trial evaluating this drug combination was underway in the latter part of 2002 at the National Institutes of Health.

Penile Prostheses. Penile prostheses can be surgically implanted in the corporal cavernosa of the penis. There are three types: the semirigid, malleable, and inflatable prostheses (Figure 9). The semirigid rod remains the same size but may be bent either up or down, as needed. The malleable implants are rods that can be bent or straightened. Inflatable prostheses remain flaccid until a pump located in the scrotum moves fluid from a retropubic reservoir into the prosthetic penile cylinders. Despite the pain of surgery, these devices have a reportedly high rate of patient satisfaction. Most prostheses can be expected to last from seven to ten years. Most failures can be fixed to give five to 10 more years of function. (Greiner and Weigel, 1996). The effectiveness, complications, and acceptability vary among the three types of prostheses, with the main problems being mechanical failure, infection, and erosions. (NIH, 1993). There is a risk for re-operation with all prostheses. The inflatable prostheses may provide a more physiologically natural appearance, but they have a higher rate of failure requiring surgery. Many turn to prostheses only after more conservative therapies have failed.

Summary of Biological Factors. Current medical research has taken several different approaches in the treatment of erectile dysfunction. Of late, the treatment receiving the most publicity involves the PDE5 inhibitors. This is likely due to the great attention that sildenafil citrate (Viagra) has received in popular culture. This trend is likely to progress as the different chemical pathways to successful erection are discovered and analyzed. Tadalafil, vardenafil and their successors are likely to receive similar attention. Tadalafil's twenty-eight hour effectiveness has already garnered a great deal of media attention.

ED and Primary Care

As managed care continues to take hold in the US, it is likely to become the primary source for erectile dysfunction treatment, if it has not already become so. While very little data is available on the number of visits and related financial impact of ED patients in primary care, there are some indicators that ED is treated foremost by non-specialists. In May of 1999, 57% of all US prescriptions for Viagra® were written by primary care providers. The rest were written

by urologists (20%) and non-urological specialists (23%)(Shabsigh, Alexandre, Nielsen, Fitzpatrick, & Melchior, 1999). Sadovsky (2000) advocates that screening for ED in primary care is an effective method for identifying more serious underlying health problems: 15% of "healthy" men who present for ED have abnormal glucose tolerance tests, and 60% have abnormal cholesterol and/or atherosclerosis of the penile arteries. In fact, erectile dysfunction may actually be the first noticeable symptom of several latent health problems (Sadovsky, 2000). Quick, simple assessment instruments such as the Sexual Heath Inventory for Men (Cappelleri, 1999; Figure 2) and the International Index of Erectile Functioning (Rosen, et. al., 1997; Appendix J) have been shown to accurately discriminate between sexually functional and dysfunctional men. When handed out ahead of time, such measures can also "break the ice" and facilitate better communication about an awkward topic.

In the past, it was thought that the embarrassment that many men experienced with this problem, and the failure of providers and patients to speak candidly about arousal difficulties contributed to an underdiagnosis of erectile dysfunction (NIH, 1992). Prior to the advent of highly publicized oral medications for ED, less than 5% of men sought treatment for it (Slag, Morley, and Elson, 1983). However, the availability of sildenafil citrate (Viagra®), the sales campaign by the drug's manufacturer, and related attention by popular culture may have negated this assumption. A recent poll of 500 adults 25 years of age or older found that 85% would like to discuss sexual problems with their physician. However, just over two thirds of respondents thought their physicians would dismiss their concerns or become embarrassed by their questions (Marwick, 1999).

Primary care may have indeed become the de facto location for most ED consultations. However, study has shown that those suffering from erectile dysfunction actually have a combination of physiologic and psychogenic risk factors that initiate or maintain the disorder (Buvat, Buvat-Herbaut, Lemaire, Marcolin and Quittelier, 1990; Melman and Gingell, 1999). While many simple cases of ED might be successfully treated in primary care, more complex cases need assessment and treatment input from multiple disciplines. Exactly how to

differentiate the simple cases from the more complex has yet to be the focus of any kind of study. Instruments such as the IIEF and the SHIM do not address the cognitive constructs or relationship issues that complicate treatment. In addition, few patients may be interested in more than a pill and a "quick fix" to an embarrassing problem. As primary care providers are under great pressure to see more patients in less time, physicians may see ED as a "quality of life" issue and bypass the issue completely (Sadovsky, 2001). There is a great need for a psychological companion to the IIEF. However, such an instrument has yet to be designed. What's more, psychotherapy for erectile dysfunction has yet to show empirically that it is a valid alternative or is in some way more advantageous than pharmacotherapy (O'Donohue, Swingen, Dopke, & Regev, 1999). As of this writing, there are no known drug versus psychotherapy clinical trials underway for ED. However, there are scores of clinical trials underway for new ED drugs (sildenafil, vardenafil, tadalafil, apomorphine, yohimbine/L-arginine, etc.). As it currently stands, psychotherapy may be in danger of becoming irrelevant as a treatment option for ED in the managed care model.

Psychophysiological Assessment for Erectile Dysfunction

The following section provides information on best practices for erectile dysfunction assessments. Patients who present for ED should undergo a thorough physical examination. Wincze and Carey (2001) suggest that a complete medical history should be incorporated into any ED screening interview. Self-report forms should also be used that ask patients for detailed medical information. In addition to this history, appropriate medical tests and a psychophysiological evaluation should be completed.

Psychophysiology studies allow the clinician to draw conclusions and make decisions about erectile functioning based on data that typically is not available in the primary care setting. The two methods most commonly used for ED are nocturnal penile tumescence (NPT) and daytime arousal studies. At night, primarily during REM sleep, men have spontaneous erections. Sleep erections are a hormone-dependent phenomenon that are believed to be

indicative of the potential for the penis to become rigid without psychological stressor influence (Althof & Seftel, 1995). Patients can be monitored for NPT in either in a sleep laboratory or with portable equipment at the patient's home. While nocturnal penile tumescence testing is not routinely used, it may be helpful for patients who report a complete absence of erections or when a primary psychogenic origin is suspected. While various methods and devices are available for the evaluation, their current clinical usefulness is hampered by the absence of a robust data set for baseline comparisons and problems with prior studies. (NIH, 1993). The RigiScan® device (Dacomed Corp, Minneapolis, MN) is commonly used in clinical studies and specialty clinics (Figure 10). The RigiScan has been proven a useful measuring device for detecting the changes in tumescence associated with NPT (Kaneko, Mizunaga, Yachiku, Yamaguchi, and Omata, 1996; Benet, Rehman , Holcomb, and Melman, 1996). The device consists of two strain gauges, one placed around the base of the penis, the other around the tip of the penis proximal to the coronal sulcus. The loops are attached to a logging unit the patient wears on the thigh. Changes in tumescence are monitored throughout the night. The data can be downloaded and printed in graphical and numerical form (Levine and Elterman, 2001).

Daytime arousal studies employ objective measuring methods to analyze the patient's response to erotic stimuli (Libman, Fichten, Creti, Weinstein, Amsel & Brender, 1989). Wincze and colleagues (1988) found that by exposing dysfunctional men to erotic stimuli an erectile response could be obtained, despite the fact that the men had previously reported an inability to get an erection. Most clinics are not currently equipped for such a procedure. Wincze and Carey (1991) used a mercury in rubber strain gauge to monitor the response of men to short, erotic video tapes. A posttest interview is typically used to help understand the patient's cognitive process during arousal. Answers to questions regarding the patient's focus, emotions and concentration help give a clearer understanding of problematic cognitions. In addition, information about the patient's change in penile circumference, pattern of arousal, and physical response to types of erotica can be obtained.

Psychological Factors

Our understanding of the psychological components of erectile dysfunction has logically changed with our understanding of psychology in general. Each psychological orientation that has developed during this century and the last has produced its own description of ED etiology, assessment and treatment. While the majority of recent research deals largely with the cognitive behavioral aspects of this disorder, it is helpful to briefly review the history of psychological thought surrounding ED.

Historical Overview of the Psychology of Erectile Dysfunction.

In the first half of the century, psychoanalytic concepts governed the treatment of erectile dysfunction. Problematic sexual functioning was explained by discrete, unresolved unconscious conflicts that occurred during specific developmental periods (LoPiccolo, 1992). Precursors for sexual dysfunction were hypothesized to occur during early childhood. Treatment for sexual dysfunction took many years and employed the classic Freudian techniques of free association, dream analysis, and interpretation of unconscious motives. Couples therapy was not usually employed, as most sexual problems were viewed as conflicts within the individual. While many lengthy and detailed case histories were published, little empirical research was conducted (Segraves and Althof, 1998).

With the advent of behaviorism in the 1950s, the Freudian view of sexual dysfunction was replaced with the idea that poor sexual performance stemmed from learned anxiety (Wolpe, 1958). As such, treatment efforts employed classical conditioning theory to extinguish the anxiety or performance demands that interrupted normal sexual functioning (LoPiccolo & LoPiccolo, 1978). Systematic desensitization was used to gradually eliminate the anxiety provoking features of sexual behavior (Wolpe, 1958). Like psychoanalysis, behavior therapy focused mainly on the individual and rarely employed a relationship-based approach (Segraves and Althof, 1998).

Masters and Johnson substantially changed sex therapy in 1970 with the publication of *Human Sexual Inadequacy*. They believed that poor sexual functioning stemmed from performance anxiety, fear, mental detachment from sexual activity, and poor sexual education. Kaplan (1977) extended this line of thinking by including low desire and partner-demand characteristics as another sources of sexual anxiety. Treatment for sexual dysfunction now involved techniques to reduce anxiety during sex. Masters and Johnson (1970) used a ban on intercourse and employment of sensate focus to re-engage the individual with the pleasurable aspects of sexual behavior. These techniques were demonstrated to relieve the patient of the sexual "duties" that inspired the fear of future sexual failure and the resultant dysfunctional sex. While Masters and Johnson's work was criticized for methodological problems and non-replicable outcomes, their approach greatly revolutionized how clinicians approached sex therapy.

The current era started in the mid-1980s and integrates psychology and biology as important co-contributors to sexual dysfunction. In addition, with the development of cognitive-behavioral approaches, there has been an increased focus on cognitions as causative and maintenance factors in sexual dysfunction (LoPiccolo, 1992; Pryde, 1989). However, with the advent of so many medical treatments and the diminishing number of outcome studies for psychologically-based treatments, Schover and Leiblum (1994) suggest that psychological sex therapy has stagnated during this period. In a critical review of psychotherapy for male sexual dysfunction, O'Donohue and colleagues (1999) found little empirical support for psychotherapy as an effective intervention. O'Donohue, et al, found numerous methodological problems, clinically insignificant effect sizes, lack of compelling follow-up data, and a paucity of treatment manuals for replication.

That being said, psychologically-based interventions for erectile dysfunction are not without hope. Psychological treatments may, in the long run, turn out to be more cost effective, less intrusive, and have fewer health risks than medically based treatments. In addition, the lack of empirically sound data may actually be the result of poor research design and not the fault of

inadequate treatment. What's more, psychological factors have been clearly demonstrated to be important in the development of sexual dysfunction (NIH, 1993; Catalan, Hawton & Day, 1990). Medical interventions do not typically address these factors (Schover & Leiblum, 1994; Tiefer, 1994). Finally, too few studies have been conducted to determine whether medical interventions, psychological interventions, or some combination of the two are most effective. Concluding that one holds more promise than the other is still premature (O'Donohue, Swingen, Dopke & Regev, 1999). Some sex therapists use a synergistic approach and combine medical and psychological interventions. McCarthy (1998) advocates the use of Viagra® in cognitive behavioral therapy for ED. Berman and Berman (2000) suggest that therapists should work together with physicians to make comprehensive diagnoses and establish guidelines for intervention.

Current Psychological Theory of Erectile Dysfunction.

Psychological theory of erectile dysfunction has its roots in Masters and Johnson's (1970) model of sexual response. Barlow (1986, 1988) further developed this model to include cognitive and behavioral aspects, demonstrating that anxiety not only inhibits arousal but also facilitates it. In 1996, Sbrocco and Barlow revisited the model and theorized how anxiety works to initiate and maintain erectile dysfunction. The current model of erectile dysfunction and support for its tenets will be discussed below.

Masters and Johnson: Sexual Response Cycle and Therapy. For the purposes of this paper, the most important idea to arise from Masters and Johnson's work is the concept of performance anxiety and its impact on sexual functioning. While Masters and Johnson (1970) acknowledged the contribution of historical factors in the etiology of primary (lifelong) and secondary (acquired) erectile dysfunction, their interventions focused on the more immediate problems facing the male. Prominent among these troubles were fear of performance, mental detachment from sex, and problems in the relationship. Masters and Johnson proposed that dysfunction was maintained by the male's preoccupation with obtaining an erection and fear of failing to do so. This concern makes the male become a "spectator" to his sexual relations, rather

than an active participant. This distractibility interferes with the physical and psychological stimulation needed for heightened sexual arousal and spontaneous erection. Negative reactions by the partner typically exacerbate this interference. Should the partner fail to provide adequate stimulation or reaction to the male's sexual advances, further anxiety can develop. The sum of these behaviors and cognitions is to cause detumescence in the male. This cycle further increases distress and continued flaccidity.

Masters and Johnson's (1970) treatment prescribed educational presentations, therapy discussions, and home exercises for the couple. These interventions were designed to alleviate sexual performance concerns, dispel misconceptions about sex, and introduce or enhance adaptive verbal and nonverbal communication. Once the male successfully redirected his attention from fears of sexual performance to the experience of sexual sensations, erectile functioning was theorized to return. Kolodny (1981) published outcome data from approximately 20 years of research at the Masters and Johnson Institute. Sixty-seven percent of men (n = 51) with lifelong erectile dysfunction responded successfully to treatment, while 78% of men (n = 501) with acquired ED responded successfully. These results included 2 or 5-year follow-up data. Treatment outcome studies by others report success rates between 35 and 90 percent (Avasthi, Basu, Kulhara & Banerjee, 1994; Hawton, Catalan, and Fagg, 1992; Takefman & Brender, 1984; Kolodny, 1981; Ansari, 1976). Other research documents suggests that a sizeable percentage of men (between 14 and 30 percent) will recover from erectile dysfunction due to psychological factors without any form of intervention (Virag, et al., 1994; Segraves, et al., 1982, 1985).

Masters and Johnson's work laid the foundation for anxiety's role as a sexual inhibitor. However, this widely accepted belief was incorporated into treatment strategies without a thorough understanding of the interaction between anxiety and sex. Over the last twenty years, other researchers have found evidence that this relationship is much more complex than initially hypothesized. It appears that anxiety itself is not the primary factor is initiating or maintaining sexual dysfunction. Rather, it is the distraction that anxiety produces in perceptual

and attentional processes that interfere with normal sexual functioning (Cranston-Cuebas & Barlow, 1990).

Barlow's Models of Male Sexual Arousal and Response. Current cognitive behavioral theory of erectile dysfunction grew out of Barlow's (1986) analysis of how anxiety interacts with cognitions during the arousal process. Advancements in research led Sbrocco and Barlow (1996) to revisit this model of sexual functioning. Essentially, this model integrates a number of research findings that have found response differences between sexually functional and dysfunctional men. A summary of the research supporting this model follows.

1. Experimental induction of anxiety often facilitates sexual responding in sexually functional individuals. Anxiety facilitating sexual arousal has been observed outside the laboratory in paraphilia. Exhibitionism and sexual masochism by definition rely on anxiety about being caught or humiliation and pain, respectively (Beck & Barlow, 1984; Baumeister, 1997). A number of experiments have demonstrated that the physiological component of anxiety, operationalized in a number of different ways, facilitated or had no effect on sexual arousal in functional men. In dysfunctional men, however, the physiological effects of anxiety were found to be associated with a decrease in sexual responding. (Wolchick, et al., 1980; Lange, Wincze, Qwiek, Feldman, and Hughes, 1981; Barlow, Sakheim and Beck, 1983; Beck, Barlow, Sakheim and Abrahamson, 1987).

2. Performance demand facilitates responding among functional men and inhibits responding in dysfunctional men. This hypothesis is based largely on research that found functional men capable of voluntarily controlling their erections, attending to or ignoring erotic stimuli as directed (Bancroft & Matthews, 1971; Laws & Rubin, 1969; Henson & Rubin, 1971; Mavissakalian, Blanchard, Abel & Barlow, 1975; Mahoney & Strassberg, 1991). Dysfunctionals can also suppress their erections in the presence of erotic stimuli (Beck, Barlow & Sakheim, 1982). However, a difference between the two groups was identified: Functionals were able to report cognitive strategies they used to control their erections. Dysfunctional men, however,

evidenced little awareness that they had been successful, nor could they report the strategies they had used.

Performance demands are the cognitive aspects of anxiety under conditions in which individuals believe they are challenged to achieve some standard. As might be expected, functional men were found to respond favorably or become even more aroused when placed in experimental high-demand conditions (Farkas, Sine, & Evans, 1979; Lang, et al., 1981). Dysfunctional men evidenced lower levels of tumescence during high-demand relative to the low demand condition (Heiman & Rowland, 1983). When attentional focus is manipulated along with performance demand, functionals and dysfunctionals once again demonstrate different patterns of responding. Essentially, functional men are aroused by pressure to respond sexually when attending to high partner arousal. Dysfunctional men found this kind of situation to be non-arousing (Beck, Barlow, Sakheim, 1983; Abrahamson, Barlow, Beck, Sakheim, and Kelly, 1985). While these studies did not address thought content, a more recent study found that dysfunctional men experience more negative internal thoughts and deprecatory self-statements in response to erotica (Bach, Sbrocco, Weisberg, Weiner, & Barlow, 1993). This finding is a plausible explanation for the failure of dysfunctional men to become aroused when presented with high partner sexual arousal conditions.

3. Distraction from erotic cues decreases arousal in functionals and has no significant effect on arousal among dysfunctionals. Studies on distraction and sexual arousal have found that as participants increased their attention to a distracting task, their remaining attention on the erotic stimuli diminished. As a result, distraction brought about decrements in sexual arousal (Geer & Fuhr, 1976; Farkas, et al., 1979; J.G. Beck, et al.,1987). Further research found that dysfunctionals showed no significant change in responding when distracted—they still failed to obtain erections (Abrahamson, Barlow, Sakheim, et al., 1985). This finding suggests that exchanging one distraction (negative self focus) for another (an experimental operationalization of distraction) makes little difference for dysfunctionals. However, Wesiberg and colleagues (1994)

found that when equally distracted by non-sexual stimuli, functionals and dysfunctionals perform similarly: tumescence suffers.

4. Dysfunctionals evidence greater negative affect pre- and post-exposure to erotica. Why don't dysfunctionals focus on sexually arousing stimuli? Several studies have looked to affect as a possible factor. Mitchell et al. (1992) manipulated affect with music. Participants in the "positive affect" condition demonstrated greater tumescence than those participants in the "negative affect" condition. Meisler and Carey (1991) attempted a similar experiment. However, they did not find a difference in tumescence between elated and depressed groups. However, they did find a trend toward decreased responding initially and longer time until maximum arousal following a depressive mood induction. When researchers use self-report measures to assess affect, dysfunctionals evidence higher levels of dysphoria both pre- and post-exposure to erotica (Abrahamson, Barlow, Sakheim, et al., 1985; Abrahamson, et al., 1989; Beck & Barlow, 1986a, 1986b; Heiman & Rowland, 1983).

Sbrocco and Barlow (1996) have integrated these findings into a self-regulatory model of sexual responding. This model presupposes that a complex system of feedback control regulates sexual arousal. That is, anxiety is a three-response system with cognitive, affective and physiological components that can all be assessed and manipulated (Barlow, 1988). As such, cognitive interference, enhanced by anxious physiological arousal, elicits sexual dysfunction.

In this model, men use reference points to adjust forthcoming behavior. Most of these reference points consist of personal goals, beliefs, and intentions that are both near and long term. As men engage in tasks, they monitor their progress by referencing their internal standards. On occasion, men adjust their behavior as needed to reach desired goals and meet self-expectations. Usually, this feedback control runs smoothly. However, in the case of erectile dysfunction, problems may arise when men miss their reference points. An uninterested partner or fatigue can cause conflict between what a man expects should happen with his body and what actually occurs. Anxiety may arise as a result of this discrepancy, warning the man to adjust his behavior. As a result, the man may shift position, use more erotic imagery, or take

whatever steps he feels necessary to close the gap between experienced arousal and desired arousal. Barlow and Sbrocco (1996) contend that functional men have no problem bridging this arousal gap. In dysfunctional men, most erectile problems arise when four cognitive factors combine to inhibit the man's ability to adjust. These factors primarily consist of counterproductive schematic content and skill deficits. Secondary factors include negative outcome expectancies and task disengagement or avoidance.

In the context of sexual functioning, schematic content essentially pertains to the man's view of sexuality and implications for the self that influence thoughts, affect, and behavior (Barlow and Sbrocco, 1996). Sexual self-schemas are often unrealistic and inaccurate. For example, some men believe that they should be capable of rapid and sequential orgasms. Others believe that sexually successful men can maintain an erection indefinitely. Both functional and dysfunctional men may ascribe to distorted self-schemas. However, for dysfunctional men, the schemas are intensely personalized and relevant. What's more, dysfunctional men tend to define their sexual problems as inherent features of their identity.

A recent study demonstrates the cognitive distinctions posited by Barlow and Sbrocco (1996). Nobre and Gouveia (2000) developed a self-report survey they administered in Spain to a community sample of 102 sexually functional men and a group of 29 men who sought treatment for ED at a university hospital. The survey assessed how self-reports of sexual behavior were impacted by an individual's sexual attitudes, automatic thoughts, and affective response during sexual intercourse. Participants were asked to rate a series of 23 sexual attitudes on a 5-point Likert scale. Participants were then asked to endorse the automatic thoughts they experienced because of a particular sexual attitude, describe subsequent affect when those automatic thoughts were activated, and report the effects of those thoughts and feelings on their own physiology and sexual functioning. Consistent with the Sbrocco and Barlow model, Nobre and Gouveia found significant differences in schematic content between functional and dysfunctional men. In the sexual attitudes domain, dysfunctional men were more likely to agree with attitudes of a distinctly macho theme (real men should be

immediately erect, frequently intimate, able to satisfy under all circumstances, and remain emotionally distant), attitudes about satisfying women (women will leave/stop loving/cheat on dysfunctional men), and attitudes about the consequences of sexual failure (catastrophization, public derision, and unhappiness). Dysfunctional men also endorsed significantly more automatic thoughts relating to performance demand and failure anticipation than functionals. Not surprisingly, dysfunctional men reported feeling significantly more negative feelings during sexual activity than controls. While no statistical differences were noted in how both groups evaluated their subsequent physiological responses, dysfunctional men's responses were more closely associated with performance demands and failure anticipation. Functional men's physiological response was more closely associated with erotic thoughts. In sum, this study offers empirical support to the concept that one's sexual function is closely tied to one's attitudes, thoughts and feelings during sexual behavior.

Differences in schematic content are believed to develop from one's learning and prior experiences with sex. Erotophobia -- the fear of sexual intimacy -- has been associated with later sexual difficulties (Byrne and Schulte, 1990). Erotophobia tends to be more prevalent in individuals who have been brought up with religious or cultural taboos about sex that influenced their cognitive development. In addition, dysfunctional men tend to believe more myths about sex than functionals (Baker and deSilva, 1989). Schemas are resistant to change: few men readily assimilate new or accurate information into their sexual schemas once developed (Sbrocco and Barlow, 1996).

Skill deficits, another primary factor in sexual cognitive regulation, may prevent a dysfunctional male from effective attitude or behavior adjustment during sexual intimacy. A man's limited repertoire or beliefs about "proper" sexual practice may proscribe adaptive sexual responses. Consequently, these men may find themselves limited to sexual behaviors that prevent them from reaching full arousal. Some skill differences between functionals and dysfunctionals have been noted in the lab (J.G. Beck, et al, 1982). Sbrocco and Barlow (1996) noted that specific research in this area is lacking. However, they found indirect support for a

skill deficit contention: the focus of sex therapy involves helping clients modify their beliefs about sex and teaching behaviors that facilitate sexual excitement. In fact, almost every psychotherapeutic intervention for erectile dysfunction from Masters and Johnson up through the latest cognitive behavioral treatment has at least one component meant to augment a man's collection of sexual skills (Zilbergeld, 1999).

A secondary factor in maladaptive sexual cognition is negative outcome expectancy. Essentially, men who are unable to adjust their behavior for successful sexual intercourse begin to predict failure. Once a performance demand is placed on a dysfunctional male, his ability to become aroused is negatively influenced by his expectation that "nothing" will happen. In addition, this problem is compounded by the dysfunctional man's tendency to focus his attention on his inability to achieve an erection. Recollections of past sexual failures are typically activated as the opportunity for sexual behavior approaches. As mentioned previously, this focus on negative outcome expectancy was empirically demonstrated by Nobre & Gouveia (2000). Dysfunctional men in that study were significantly more likely than functional men to be focused on failure anticipation. Improper focus on a dysfunctional performance history keeps the man from appreciating the erotic cues before him. Therefore, a dysfunctional man is incapable of making the corrective behavior adjustments that functionals typically do.

Three studies have found that the manipulation of expectancies can greatly affect sexual response. These three recent studies used a false-feedback paradigm to provide the strongest evidence to date that manipulating expectancies can greatly affect male sexual response (i.e., Cranston-Cuebas, Barlow, Mitchell, & Athanasiou, 1993; Bach, Brown, & Barlow, 1999; Stone, Sbrocco & Lewis, 1999). In a within-subjects design employed by Cranston-Cuebas and colleagues (1993), ten functional and ten dysfunctional male participants viewed erotic films following the ingestion of each of three placebo pills. Participants were given an inert substance and told it would enhance, detract, or not affect their erection. Surprisingly, functional individuals exhibited a reverse placebo response, responding with increased tumescence to the

detraction manipulation. Tumescence in the detraction condition was greater than responding in the enhancement or control conditions for which there were no differences. Dysfunctional individuals, however, responded with a direct placebo effect exhibiting decreased tumescence to the detraction condition. Tumescence did not differ in the enhancement and control conditions. Arousal during the detraction condition was lower than tumescence in the enhancement and control condition. Despite differences in tumescence, there were no differences in subjective arousal across the three conditions for both functionals and dysfunctionals. In addition, a majority of the participants (7 of the functionals, 6 of the dysfunctionals) believed the "active" pills had no effect on their erectile response. Functionals believed the enhancement and detraction pills had 8% and 13.5% control, respectively, over their tumescence. Dysfunctional participants reported 9% control for enhancement and 24% control for detraction.

In the second study, Bach, Brown, and Barlow (1999) provided false negative tumescence feedback or no-feedback to sexually functional college men. False negative feedback participants were told over an intercom immediately following an erotic film, "Are you finding it difficult to become aroused? … The information that we are getting on our computer is not what we would typically see for someone who is feeling very aroused. Let me see if I can print out the results from that last film and I will explain them to you." Upon entering the room, the investigator showed the participant a false printout of his response as well as a scoring sheet that indicated the response was below that of the average participant. The investigator then said, "This is not a problem. It happens from time to time. However, we do know, from having done many of these assessments, that if someone does not become aroused during either the first or the second film, it is very unlikely that he will become aroused during the third film. Why don't we go ahead and finish the assessment anyway. I will answer any questions that you have afterwards."

Results indicated that while there were no significant changes in the no-feedback group, the false negative feedback manipulation lowered the level of efficacy expectancies and led to a

significant decline in penile tumescence. The false negative feedback in this study was designed to significantly decrease expectancies and was evidently effective in doing so. The authors describe the negative feedback as "harsh" (Bach, 1997, as cited in Stone, 1999). A more subtle feedback manipulation would not be expected to negatively impact the sexual response of a normally functioning male. The feedback was presented to the participants between the second and third films they viewed and was evidently effective in lowering their confidence and outcome expectancies. Despite its effects on physiological arousal, false feedback did not lead to a significant decline in subjective arousal or an increase in negative affect.

Also applying a misattribution paradigm, Stone, Sbrocco, and Lewis (1999) used false feedback on penile tumescence to produce a discrepancy between expected and actual performance among sexually functional and dysfunctional men. The primary hypothesis was that discrepancies induced experimentally between participants' confidence and expectations of sexual performance and their "actual" performance could influence participants' subsequent tumescence and cognitive set. Participant's "actual" performance was experimentally manipulated through the use of a false "erection score" shown during the viewing of an erotic video clip. Men's erections were monitored through the use of a penile plethysmograph. Participants were given a range of possible erection scores and asked to predict their score, confidence and erection size prior to viewing erotica. Scores were inflated, deflated, or matched with participants' predictions according to their experimental condition.

Given the tenets of the Sbrocco and Barlow model (1996), we would expect that men's sexual performance and expectancies are directly tied to their sexual schemas. Positive outcome expectancy and confidence should predict satisfactory sexual functioning. Negative outcome expectancy and low confidence should predict poor sexual performance. Functional men who are given greater than expected feedback should show little change in tumescence or cognitive set. These men expect to perform well, and positive feedback will only serve as confirmation of their expectations. Functional men who are given negative feedback should interpret this discrepancy as a challenge and attempt to increase their erections, as they would when

presented with such a challenge in normal sexual relations. We would also predict that dysfunctional men act similarly. Positive feedback should increase confidence and enhance outcome expectancies, producing a condition different from their typical sexual experience. As such, dysfunctional men should show improved sexual functioning when given positive feedback. However, negative feedback should not influence a dysfunctional man's cognitions or behavior. For dysfunctional men, negative feedback should serve as confirmation of their negative outcome expectancy and low confidence. If performing consistently with the model, these men should disengage from the task at hand and show little response to erotic stimuli.

Surprisingly, the results of the Stone, Sbrocco and Lewis study (1999) were contradictory to the Sbrocco and Barlow (1996) model-based hypotheses described above. Functional men did not see the positive feedback as confirmation of their expected functional performance. Rather, functional men were surprised by the discrepancy between their performance and the greater than expected erection score. Consequently, these men became distracted by this discrepancy and experienced a decrease in tumescence. This occurred despite the men's positive expectations and increased confidence. Functional men who received negative feedback did not perceive it as a challenge to overcome. Rather, these participants were also distracted by the discrepancy between their expected and "actual" performance and experienced a decrease in tumescence as well. These participants also reported a decrease in outcome expectancy, confidence and arousal. Overall, the findings of this study suggest that confidence and outcome expectancy, regardless of functioning history and sexual schema, is quite friable in functional men. This might explain how dysfunction begins in normal, healthy men.

For dysfunctional men, the results were equally as surprising. Positive feedback did improve dysfunctional participants' outcome expectancy and confidence, but did not produce an enhancement in erectile functioning. According to the model, these men's tumescence should have followed the improvements in their cognitive set. While negative feedback lowered dysfunctional men's outcome expectancy, these men did not experience the predicted change in

tumescence. This may be explained partially by the fact that these men did not report a change in confidence during the experimental manipulation.

The findings of this study suggest that the model posited by Sbrocco and Barlow (1996) be slightly amended. Sbrocco and Barlow contend that positive outcome expectancy and confidence predict functional performance. However, Stone (1999), as described above, found that this was not necessarily the case. Functional and dysfunctional men who become distracted by discrepancies in performance reduce attention to erotic cues and experience decreased tumescence. Discrepancies can cause tumescence to suffer despite the overall positive or negative connotations of that discrepancy.

The results of these studies illustrate two important steps in behavioral regulation: discrepancy monitoring and outcome expectancies. Applying a self-regulatory model to these results, it appears that functionals would only seek to reduce discrepancy in the condition where they feel challenged. That is, they have essentially been provided with feedback that they will not be aroused enough or are currently not aroused enough and they then use their skills to reduce this anticipated or current discrepancy. It is here they notice or have their attention focused on the potential for a discrepancy. In response to this challenge, they should regulate their behavior, that is, they should increase tumescence. One possible medium by which increased tumescence might occur is by changing attentional focus. Functionals have the skills, positive outcome expectancies, and confidence to effect this change. However, the functional men in the Stone (1999) study did not meet the challenge with increased tumescence. Instead, functional men became distracted by the discrepancy between their perceived performance and their experimentally manipulated performance. This surprising feedback decreased penile tumescence in both positive and negative feedback conditions. Because the feedback persisted throughout the experiment, functional men had no opportunity to refocus their attention on erotic cues or even "ignore" their false erection score. The score was shown in close proximity to the erotic action on the video. They may not have been given adequate opportunity to ignore the distraction and respond to the challenge. In a natural setting, functional men can alter their

focus away from the challenge or non-erotic cue. If that non-erotic cue were a decrease in tumescence, functional men are able to look away from their penis and concentrate on other erotic stimuli. In the Stone (1999) experiment, men were continually reminded with their erection score that their functioning was not what they expected. The ability of the functional individual to change erotic focus, or flexibly apply their attention, appears to be one key to overcoming challenges presented in the environment. Given the opportunity to concentrate longer on erotic cues and desensitize to the false erection score, these functional men might have been able to recover their erections.

Dysfunctional men may likewise lack an ability to "ignore" distracting environmental cues. However, dysfunctional men also bring their negative outcome expectancy and poor confidence to sexual situations as well. In this way, dysfunctional men may have a double burden to overcome when trying to perform sexually. Cognitive and environmental distractions combine to make sexual functioning a threatening situation, and thus a near impossibility. As Stone (1999) demonstrated, the environmental distraction may even be "good news", e.g. evidence that they are performing better than expected. This may explain why the technique of sensate focus is so helpful with psychogenically based ED: sensate focus helps shift the attentional focus of the man to only those erotic cues present in the environment (Masters, Johnson and Kolodny, 1986). Once a man is able to narrow his concentration in this way, cognitive and environmental distractions melt away, producing a spontaneous erection. Once again, this ability to shift attentional focus – attentional flexibility -- appears to be a critical factor in male sexual functioning.

Knowing about attentional flexibility helps clarify our understanding of subject performance in the Cranston-Cuebas , et al, (1993) study. For dysfunctional men, the detraction pill likely magnified their typical response process, characterized by an increased salience in negative outcome expectancies and decreased confidence in their ability to perform. Dysfunctional men's lack of attentional flexibility in this condition factored only in their focus on their negative sexual schemas. The authors presented no persistent environmental

distractions. The detraction pill did not challenge dysfunctionals as it did the functionals. Rather, this condition threatened them in that it represented confirmation of the status quo -- that is -- their negative expectancies about their poor sexual performance. Therefore they had little reason to even try to respond. In fact, they may not have been task engaged at all. An enhancement manipulation would only increase tumescence if dysfunctional individuals changed their outcome expectancies: they would have to believe a change could occur given their negative past, and also believe they had the skills to respond to erotic cues. Functional men may have overcome the challenge of the detraction pill in part because there were no persistently distracting environmental cues. Attention could be closely focused on the erotic imagery presented them, allowing them to overcome the challenge to their functioning. The saliency and the nuisance of the non-erotic cue presented by the detraction pill were not sufficient to distract functional men from becoming aroused.

We now know that simply changing outcome expectancies is insufficient to break the negative feedback cycle experienced by dysfunctional men. Many men with ED experience improvement in functioning when skills and core cognitions are initially modified. However, this phenomenon likely represents the temporary "cure" sometimes experienced by individuals at the start of treatment. This "new hope" offered by treatment may be sufficient to at least temporarily limit the distracting influences of poor prior functioning, maladaptive schemas and negative environmental cues. Lasting treatment gains will not be possible if modifications to expectancies and the ability to focus are not incorporated into the individual's sexual behavior.

The Bach, Brown, and Barlow (1999) study furthered our understanding of these processes by providing functional participants particularly salient ("harsh") false feedback about their erections between films, which undoubtedly had a greater impact on confidence, expectations and attention than merely providing an erection-detracting pill. It is likely that the negative feedback was salient enough to last through the film and act as a distractor as well. The negative feedback may have become much more of a threat than a challenge. Consequently, functional men experienced a decrease in functioning and expectancies.

Closely associated with negative outcome expectancies is the idea that men will disengage completely from negative sexual experiences. Carver and Scheier (1988) found that task disengagement is a natural response for individuals who doubt their ability to perform and expect failure. As a result, dysfunctionals avoid in engaging in a behavior for which they have "no chance" and negative expectancies.

Overt withdrawal and avoidance have received little attention in the literature. Operationalizing overt withdrawal as ceasing task engagement, Sbrocco and Barlow (1996) examined participants' retrospective reports of ceasing to try to obtain an erection, that is, "quitting," when they lost their erection during partner-related sexual behavior. Ninety percent of men seeking help for erectile dysfunction reported they quit. Interestingly, men were fairly equally distributed in their reported response to quitting. Approximately half ceased sexual behavior altogether while the others reported focusing on pleasuring their partner to climax. However, no data are available on functionals' response to difficulty. Interestingly, when Weisberg, Sbrocco, & Barlow, (1994) asked functional and dysfunctional men to either fantasize about a successful or unsuccessful sexual situation, all of the dysfunctional men refused to participate in the unsuccessful fantasy, while none of the functionals objected. In fact, functionals reportedly became equally aroused to fantasies incorporating erectile difficulty. The implication being, dysfunctionals avoid engaging in a behavior they perceive is futile. In fact, a primary treatment component for erectile dysfunction is to teach men to lose their erection and regain it (e.g., Zilbergeld, 1992). Data from Barlow's lab suggest dysfunctional individuals attempt intercourse less frequently, controlling for partner availability (Sbrocco & Barlow, 1996). In addition, retrospective report suggests frequency of sexual activity by dysfunctionals before the development of the dysfunction is similar to functionals' frequency of sexual activity.

Summary of Psychological Factors. Recent research suggests that the historical role of anxiety in sexual dysfunction needs to be reconceptualized. It appears that it is not anxiety *per se* that is responsible for initiating or maintaining sexual difficulties in most cases; rather it is the alterations in perceptual and attentional processes that occur in sexually dysfunctional men.

LoPiccolo (1992) has also commented on the role of "meta-performance anxiety," or the cognitive distraction that typically occurs when sexually dysfunctional individuals fail to become aroused in a sexual situation. Similarly, Apfelbaum (1988, 1989) has noted that anxiety about lack of arousal, or "response anxiety", is a frequent concomitant of sexual dysfunction in both genders. The major focus of treatment, according to Apfelbaum, should be on the elimination of performance demands or the "need to be sexual", that frequently underlies sexual desire or arousal difficulties. Once these distractors have been minimized, the individual is free to rediscover their sexuality.

Sociocultural Factors in Etiology of ED

Culture typically sets the parameters and expectations for what is considered to be normal sexual performance. Typically, these norms are passed along informally via depictions in the media, by authoritative influence (parents, religion, etc.), and by peer influence. Gagnon (1990) proposed that each of us function in society by following a personal script. Our "scriptwriters" are those social and cultural influences that have guided and molded our lives. For example, children taught that sex is a good and natural part of life typically have less vulnerability to developing sexual dysfunction later on in life. Unfortunately, there seem to be few realistic models for sexual behavior in our culture. Rather, we appear to be influenced most by the two extreme views most prevalent in society. On one side, the hedonistic attitudes pervasive in the media and popular culture suggest that anything sexual is acceptable, people are purely sexual beings, and there few consequences for sexual behavior (and even those consequences are "curable"). On the other side, religious and more conservative influences implicate that all things sexual are illegal, immoral or dangerous. Few influences occupy the middle ground.

Zilbergeld (1999) has summarized a number of sexual myths for male sexual functioning prevalent in Western culture. These myths include ideas that men must "perform" during sex, all touching should lead to sex, men are always ready for sex, sex is centered around a hard

penis and how its used, and that there is a pill to fix whatever sexual problems you may have. Baker and DeSilva (1988) used an earlier version of Zilbergeld's myths to develop a questionnaire for sexually functional and dysfunctional men. Dysfunctional men showed significantly greater belief in the myths than did sexually functional men.

Men who have developed negative attitudes or had negative experiences with sex tend to develop sexual responses consistent with their beliefs. This cognitive set, largely influenced in childhood by family members and other authority figures, has been referred to as erotophobia (Byrne & Schulte, 1990). Erotophobia has been demonstrated to be a predictor of sexual dysfunction later in life. For others, sexual cues may take on a negative aspect after a perceived traumatic event such as rape, sexual abuse, or some sexual disappointment. This negative affect toward sex may put the individual into a dysfunctional sexual pattern (Barlow & Durand).

Biopsychosocial Factors

As previously implicated, ED is viewed as one possible outcome when one or more physiologic, psychological or social factors operate to impede sexual functioning. Evidence from each of the preceding sections implicates that normal sexual functioning occurs when the individual is in relatively good physical and mental health. A biopsychosocial model of erectile functioning suggests that healthy individuals have the ability to sexually function because their minds and bodies support such an ability. Erectile dysfunction results when the mind and/or body can no longer support normal function. When a physical and/or psychological etiology for case of ED is identified, functioning can be chemically restored in many cases. Physical problems suggest their own mechanism of action for what is occurring inside the body. For example, men with poorly controlled diabetes or heart disease are believed to suffer from ED because the endothelial tissues in these men no longer provide a rich source of nitric oxide, (Anderson and Mulhall, 2001).

When physical problems have been ruled out, what underlying biological process is activated by the mind to impede sexual function? Masters and Johnson (1970), Barlow (1986, 1996), and others have shown that anxiety plays a key role in the manifestation of ED due to psychological factors, but the biochemical process by which anxiety prevents normal sexual function has yet to be clearly established. However, there is some research to suggest what might be occurring in these cases. Indeed, two complimentary processes may contribute to the resilience of sexually functional men: social facilitation and the body's physiologic response to challenge. First, social facilitation refers to the performance enhancement and impairment effects engendered by the presence of others as observers or an audience. Zajonc (1965) and many other researchers over the past 35 years have suggested that the presence of others increases generalized drive or arousal. Arousal subsequently tends to increase dominant responses, resulting in enhancement of simple or well-learned tasks but impairment of unlearned or complex tasks. For sexually functional men, obtaining an erection when exposed to sexual stimuli is a well-learned task. Despite less than erotic conditions or perceived challenges to arousal, functional men are likely to obtain erections because of their history of functional sexual performance. In contrast, sexually dysfunctional men are likely to experience the less helpful effects of social facilitation. In their case, sexual functioning is not a dominant response. Consistent with the Barlow and Sbrocco (1996) model of sexual functioning, these men lack the skills and cognitive set for functional performance. When they are put to "the test," a dysfunctional man's most likely response is a flaccid penis.

A second factor that may contribute to sexually functional performance under challenge is the body's physiologic response. Blascovich, Mendes, Hunter & Salomon (1999) developed a biopsychosocial model of social facilitation in which they suggest that the differences in socially facilitated performance are mediated by the body's responses to challenge and threat, respectively. The authors define challenge as a condition wherein the individual experiences sufficient resources to meet situational demands. Threat occurs when the individual experiences insufficient resources to meet demands. The authors constructed their model using

experimentation and measurement of cognitive and physiologic changes in the body due to non-metabolically demanding performance situations. Interestingly, the authors found that the body's physiologic response to threat is different than its response to challenge. During challenge, sympathetic neural stimulation of the myocardium enhances cardiac performance, particularly in contractility. At the same time, adrenal medullary release of epinephrine causes vasodilatation, resulting in declines in systemic vascular resistance. This pattern typically produces little or no changes in blood pressure. During threat, sympathetic stimulation similarly enhances cardiac performance. However, pituitary-adrenal cortical activity inhibits the adrenal medullary generated release of epinephrine. Consequently, increased cardiac performance occurs but without decreases in systemic vascular resistance. Consequently, threat conditions cause an increase in blood pressure.

To propose an extension of the Blascovich, et. al., (1999) model into sexual function, functional men may be able to obtain erections under challenge because the physiology of the body in such a condition supports the production of an erection. In contrast, sexually dysfunctional men who are threatened by sexual activity may find it more difficult to obtain an erection because the physiology of threat is inconsistent with sexual responding. However, it may be simplistic to assume that the physiology of sexual functioning responds in exactly the same way to challenge and threat as the cardiovascular system. Since both sympathetic and parasympathetic neural channels influence male erectile functioning, sexual functioning may or may not be sensitive to the physiologic changes experienced under challenge and threat. However, given that relaxation of tonically closed arteries and erectile structures are a key factor in the erection process, it stands to reason that a condition in the body that prevents systemic dilation might inhibit erection.

Should the biological mechanism that prevents the relaxation of smooth muscle surrounding the penile arteries and erectile bodies during times of threat be identified, it would be of great use in furthering the biopsychosocial model of sexual dysfunction. However, current scientific evidence suggests how this may occur. In regards to a

challenge response, it is well known that epinephrine from the adrenal medulla is the vasodilator involved in cardiovascular reactivity (Blascovich, et. al., 1999). Erections, on the other hand, are neurogencially regulated by adrenergic mechanisms (norepinephrine), cholinergic mechanisms (acetylcholine), and a nonadrenergic, nonchlorinergic system (nitrous oxide [NO] and vasoactive intenstinal polypeptide [VIP]) (Rehman & Melman, 2001). During times of threat, sympathetic tone in the body increases and overcomes the parasympathetic stimulation required for sexual arousal. Along the sympathetic chemical pathway (Figure 6), contraction of the erectile bodies is maintained by norepinephrine (NE) released by activation of alpha-adrenergic receptors. NE released from sympathetic fibers within cavernous nerves and the dorsal nerve of the penis prevents erection.

This then suggests that in order for erection to occur, sympathetic tone maintaining tonically contracted smooth muscle must be outweighed by the biochemical process mediated by NO in the parasympathetic chemical pathway. Under conditions of threat, it may be that parasympathetic tone becomes diminished such that there is insufficient NO to begin or maintain the erection process. Under conditions of challenge, it appears that no such parasympathetic inhibition takes place, or sympathetic tone is sufficiently reduced to allow for the inhibition of Rho kinase, which in turns sets in motion smooth muscle relaxation and erection.

The recent advances in the biopsychosocial model of social facilitation suggest that there may be a new line of erectile dysfunction research – one that better relates changes in cognition to physiologic and chemical changes within the body. Blascovich (personal communication, December 9, 2002) suggests that sexually functional and dysfunctional men might be differentiated by measurements of cardiovascular reactivity and biochemical messengers while giving a speech about a sexual fantasy. One would hypothesize that functional men would find such a task challenging, while dysfunctional men might find it threatening. The measurements taken during the experiment could then be matched to known physiologic profiles of challenge

and threat from other experiments. Essentially, this kind of experiment might ultimately yield a physiologically based method to measure erotophobia and erotophilia. Currently, only self-report measures are available to better understand an individual's sexual schema. Of course, the benefits of such a testing procedure do not stop there. Additional psychophysiological measurements could be taken to better understand the body's response profile to challenge and threat in sexual situations. Ultimately, antecedent cognitions could be linked to erectile dysfunction, via a biochemically and physiologically detailed model. This, in turn, may further our understanding of why PDE-5 inhibitors still have a ten to fifteen percent failure rate in men with erectile dysfunction due to psychological factors.

Cranston-Cuebas, Barlow, Mitchell, & Athanasiou's (1993) findings from the "erection detraction pill" study clearly support this concept of challenge and threat: functional men saw the detraction pill as a challenge, assessed their abilities to meet that challenge, and became sexually aroused. Dysfuntional men saw the pill condition as a threat and were not able to become sexually aroused. Bach, Brown, and Barlow's (1999) use of harsh negative feedback was sufficient to make sexually functional men concerned about their abilities to become aroused. This situation was probably interpreted by the men as threatening to their sexual abilities, and reduced their ability to become aroused.

The Sbrocco and Barlow (1996) model of sexual functioning continues to explain a great deal of functional and dysfunctional behavior. However, Galbreath (2002) and Stone (1999) provide evidence that the model needs to be updated to reflect the impact of unexpected feedback on sexual functioning (Figure 12). Using a false-feedback paradigm similar to Stone (1999), Galbreath (2002) quantified performance demand in terms of impact on outcome expectancy and confidence. Two age-matched groups of sexually functional men were asked to view erotic videos while having their erections measured with a plethysmograph. One group of men was shown an inflated erection score (positive feedback), while the other group was given no feedback. While both groups of men showed a significant decrease from baseline on both cognitive measures, they were still able to sexually function during a second film. The current

model would not necessarily predict this. Rather, the current model suggests that the individual makes a qualitative estimation of the threat presented by the instant sexual situation (Figure 11). If the situation presents no threat, then functional performance would result. If the situation is a threat or challenge, then outcome expectancy and confidence are assessed. Depending upon the nature of the assessment, focus on either a positive or negative outcome predicts functional or dysfunctional performance, respectively. However, Galbreath (2002) indicates that functional men are able to make significant downward shifts in expectations and confidence, but still function sexually. This resilience in the face of adversity is not fully addressed by the model. The socially facilitative effects of the experimental setting and the physiologic profile of the body's challenge response have been proffered as possible complimentary factors that contribute to resilience. Evidence of resilience in turn suggests some measurable threshold of expectancy and confidence under which even normal men cannot function. Identification of that threshold may ultimately yield a pathway by which normal men develop sexual dysfunction. Once the pathway to dysfunction is better understood, better interventions and prevention measures can be developed and incorporated into sexual therapies.

PART III: SPECIFIC AIMS

Purpose of This Study

The purpose of the present study is to replicate and extend the paradigm employed by Stone (1999) and Galbreath (2002) in order to examine the differential effects of false feedback on the penile tumescence and cognitive set in sexually functional and dysfunctional men. In addition, the present research examines whether extending stimulus time will allow sexually functional and dysfunctional men to "recover"; that is, to increase tumescence by attending to erotic cues after experiencing a discrepancy. As before, the paradigm is intended to manipulate the experience of sexually functional and dysfunctional men within a laboratory context to produce a discrepancy between expected and "actual" sexual performance. This involves

providing participants with false feedback concerning the size of their erections while they view an erotic videotape. By examining men's outcome expectancy, confidence, and penile tumescence, the path toward functional or dysfunctional performance can be experimentally followed.

This line of research has significant treatment implications. For example, it would be useful for psychotherapists to know the specific cognitions and processes that need to be targeted for cognitive restructuring in order to improve sexual response. Any such enhancement to psychotherapy of ED could potentially reduce the dependence of this subset of patients upon pharmacotherapy. Psychogenic ED often has its roots in relationship problems that pharmacotherapy and the other medical therapies alone cannot address (Zilbergeld, 1999). This is reflected in research that shows discontinuation rates for any of the available medial treatments for ED, including sildenafil, have been found to range from 50% to 60% (Althhof, 2002). If ED due to psychogenic factors is effectively treated with a scientifically-proven form of psychotherapy, use of PDE5 inhibitors or other medical interventions may be reduced or become superfluous for this population of patients.

Hypotheses

Based on the model proposed by Sbrocco and Barlow (1996), sexually functional men differ from sexually dysfunctional men on key cognitive domains. Thus, primary analyses of the study hypotheses were conducted for functional and dysfunctional men separately.

The following hypotheses are posited:

(1) False positive feedback differentially modifies cognitive set and subsequent penile tumescence in sexually functional and dysfunctional men. Stone (1999) found that functional men experienced a decrease in sexual performance when exposed to information that they were performing better than expected. This distraction from erotic cues caused by unexpected performance or "surprise" prevented men from focusing

their full attention on arousal. The rationale for these expected findings are provided in greater detail below.

(A) Cognitive Set

i. Functionals. For sexually functional men, it is expected that false positive feedback will distract the participants from the erotic stimuli. The score presented to them will be greater than their predicted score by four points. As their purported performance continues to surpass their expectations, attention to the erotica is expected to wane. A decrease in tumescence (described below) is hypothesized to occur. Despite the decrease in tumescence, the men will accept the erection score and increase their predicted score and predicted erection sizes for Film 3. Confidence ratings will also increase.

ii. Dysfunctional Men. For sexually dysfunctional men, it is expected that false positive feedback will distract the participants from the erotic stimuli. The score presented to them will be greater than their predicted score by four points. As their purported performance continues to surpass their expectations, attention to the erotica is expected to wane. A decrease in tumescence (described below) is hypothesized to occur. Sexually dysfunctional men, because of their lower confidence and expectancies, expect sexual failure. Detumescence, despite receiving inflated feedback, will be seen as confirmation of their negative outcome expectancy. Dysfunctional men will show a decrease in predicted erection score and predicted erection size for Film 3. Predicted confidence in future performance will also be significantly reduced.

(B) Tumescence

i. Functional Men. For sexually functional men, penile tumescence in the positive feedback condition will, on average, be less than the no feedback

condition. Participants receiving false feedback will focus more on the discrepancy between performance and expectation and less on the erotic stimuli. While the men receiving feedback may at first make gains in tumescence that match controls, the differences between the two groups should become more pronounced as exposure to the false score continues. This difference should become evident in lower average and maximal tumescence measurements for the feedback group when compared to controls. Functional men as a group will show greater tumescence than dysfunctional men.

ii. Dysfunctional Men. For sexually dysfunctional men, penile tumescence in the positive feedback condition will, on average, be less than dysfunctionals in the no feedback condition. Due to the distraction caused by the inflated erection score, experimental participants will focus more on the discrepancy between performance and expectation and less on the erotic stimuli. While the men receiving feedback may at first make gains in tumescence that match controls, the differences between the two groups should become more pronounced as exposure to the false score continues. This difference should become evident in lower average and maximal tumescence measurements for the feedback group when compared to controls. Dysfunctional men as a group will show less tumescence than functional men.

(2) Additional exposure time to the erotic film is associated with a return of penile tumescence in sexually functional men. Sexually functional men are able to overcome distraction and restore tumescence during sex by adjusting their focus of attention and staying on task. However, in order regain erections, men need to have enough time to redirect their attention. In Stone (1999), functional men receiving false feedback were limited to a five-minute video clip. These men experienced a decrease in erectile

functioning due to the distraction caused by the feedback score. Five minutes may not have allowed sufficient time for the men to refocus their attention on the erotic stimuli and regain tumescence. In the present study, sexually functional men will be presented with a ten-minute erotic video clip -- twice the length of that presented in the previous study (Stone, 1999).

(A) Functional men.

i. Feedback. At the outset of Film 2, functional men receiving feedback will become surprised by the inflated erection score and show an initial decrease in tumescence. Once the men cease being surprised by the score's inflation, functional men will regain tumescence. By the end of the film, no significant difference in average penile tumescence will be seen between the functional feedback groups. Thus, an interaction between film duration and feedback condition is hypothesized, such that the functional feedback groups will differ in tumescence only during the first half of Film 2.

ii. No Feedback. Men in the no feedback condition will not be distracted by feedback. Therefore, their sexual response will act as a control for the men receiving positive feedback. At the outset of Film 2, men in the no feedback condition will have larger erections than men in the feedback condition, whereas by the end of the film, no significant difference in average penile tumescence will be seen between the feedback groups. Thus, an interaction between film duration and feedback condition is hypothesized, such that functional feedback groups will differ in tumescence only during the first half of Film 2.

(B) Dysfunctional Men.

i. Feedback. At the outset of Film 2, men receiving feedback will be surprised by the inflated erection score and show an initial decrease in tumescence. Sexually dysfunctional men will interpret the decrease in tumescence as confirmation of their negative outcome expectancy. Consequently,

the dysfunctional men are expected to disengage from task and show continued diminished tumescence as compared to controls. By the end of Film 2, men in the feedback condition will have significantly smaller erections on average than men in the no feedback group, and no interaction between film duration and feedback condition is postulated.

ii. No Feedback. Men in the no feedback condition will not be distracted by feedback. Therefore, their sexual response will act as a control for the dysfunctional men receiving positive feedback. Throughout Film 2, men in this condition will have significantly larger erections than men in the feedback condition, and no interaction between the film duration and feedback condition is postulated.

PART IV: RESEARCH DESIGN AND METHODOLOGY

Participants

A total of 85 men between the ages of 21 and 60 were recruited via local newspaper advertisements. Each was paid $40 for their participation in this study. A copy of the advertisement is in Appendix B. Participants identified their sexual orientation as heterosexual. Participants were free of major psychological disturbances as determined by semi-structured interview and self-report measures. All participants were required to give signed consent to view explicit sexual materials and allow their erections to be monitored by plethysmograph.

A total of seven men were excluded from the study. Two sexually functional men and two of the sexually dysfunctional men were excluded because they could not be matched into one of the feedback groups with an age-similar participant. Three sexually dysfunctional men were excluded due to equipment failures during one or both of the video clips.

The final sample of sexually dysfunctional men consisted of 39 eligible participants. All subjects received a primary diagnosis of Male Erectile Disorder. Demographic data for the men are detailed in table 15. Six men reported having used medication, specifically Viagra®, for their erectile dysfunction. All six men rated the drug has having had some effect on sexual functioning (3 or higher, on a scale of 0 to 5), with four men indicating it had a significant effect (rating of 5). Men using medication were reminded to not take or use the drug in anticipation of the assessment. The men were randomly assigned – based on their age -- to one of the feedback groups. Four medication users were ultimately assigned to the no feedback group, and two were assigned to the positive feedback group. After data collection in the study had been completed, each of the six men's erection predictions were compared to their respective group means for the three predictions made in the study. Of the six, only one man in the no feedback group made his predictions one standard deviation lower than his group's mean. The other five men were within one standard deviation of their group's mean predictions. Despite the one man's lower expectancy, he was included in the final sample. No statistical controls were

implemented to account for this man's lower responses, as he alone was unlikely to make a significant impact on the overall group scores.

The final sample of sexually functional men consisted of 37 eligible participants. Sexually functional men were free of sexual disorders, as determined by semi-structured interview and self-report measures. Demographic data for the men are listed in table 15. All participants were randomly assigned based on age to 1 of 2 experimental groups (positive feedback or no feedback) following a phone screen. Of the 39 sexually dysfunctional men, 21 received positive feedback and 18 received no feedback. Of the 37 sexually functional men, 19 received positive feedback and 18 received no feedback.

MEASURES

Clinician Rated

1. **Phone Screen.** Potential participants were interviewed over the phone using a Phone Screen Form (Appendix C). This semi-structured interview was designed to gather general information regarding demographics and medical, sexual, and psychiatric history. Volunteers not meeting inclusion criteria were excluded from this study. A portion of the screen specifically asked each participant if they were willing to watch erotic videotapes while their erections were measured, and if they become sexually aroused to erotic videotapes. Men who indicated they would not like to view the videotapes or could not become aroused to such stimuli were eliminated from the study.

2. **Sexual Dysfunction Interview.** To assess sexual functioning, participants were administered the Sexual Dysfunction Interview-revised (SDI; Sbrocco, Weisberg, and Barlow, 1995; Appendix E). The interview usually lasts approximately one hour and consists of a thorough assessment of the participant's sexual history, experiences, attitudes, and difficulties. The instrument assists the interviewer in making a DSM-IV diagnosis of a sexual dysfunction.

3. **Structured Clinical Interview for Axis I DSM-IV Disorders**. Participants were screened for major mood disorders, anxiety disorders, and psychiatric disorders using the

screening section of the Structured Clinical Interview for Axis I DSM-IV Disorders – Patient Edition (SCID; First, Spitzer, Gibbon, & Williams, 1994; Appendix F). Follow-up questions were asked of participants who responded positively (indicating potential psychopathology) during the screening questions. Participants were excluded from this study if they met criteria for a current Axis I disorder.

4. **Psychogenic Rating Scale**. Dysfunctional participants were given a "psychogenic" rating on a scale from 0 - 5 (0 = psychogenic factors do not appear to be involved, and 5 = psychogenic factors are clearly involved). Participants also completed a medical information form. Only men who reported the absence of medical problems and the presence of reflexogenic erections were included in the study. A psychogenic rating of 4 or 5 was necessary for inclusion as a sexually dysfunctional participant. The rating scale is attached as Appendix T.

Physiological

1. **Penile Circumference.** Each participant was asked to privately measure the circumference of his flaccid penis at mid-shaft. This was accomplished by wrapping a strip of paper around the penis, and marking with a pencil the point at which the paper made a complete loop. The interviewer then obtained a measurement of the distance marked on the paper strip in millimeters.

2. **Penile Plethysmograph.** Changes in penile tumescence (circumference) during the two films were measured using a D.M. Davis, Inc., Stretchistor mercury-in-rubber strain gauge, designed to be worn on the mid-shaft of the penis. A photograph of the mercury-in-rubber strain gauge is shown in Figure 13. The device consists of a hollow rubber tube filled with mercury. The tube is sealed at the ends with platinum electrodes that are themselves submerged in the mercury. The electrodes attach to a bridge circuit that allows for connection to a polygraph. Changes in penile circumference cause the rubber gauge to stretch or contract, altering the cross-sectional area of the column of mercury within the tube. The electrical resistance of the mercury inside the tube varies directly with its cross-sectional area. These

changes in resistance are reflective of the changes in the circumference of the penis. Once calibrated correctly, changes in the electrical resistance in the mercury can be output on a polygraph in physical units of measurement (in this case millimeters).

In order to avoid errors in measurement and capture the full range of the participants' erectile responding, strain gauges were selected for each patient that were at least 5-10mm smaller than the circumference of the participant's flaccid penis. Changes in penile tumescence were recorded by way of a Grass Instruments Dual Mercury Gauge Adapter (Model F-70DMGAC; pre-amplifier). The pre-amplifier output was channeled into a Grass Instruments 78G polysomnograph equipped with a 7P122H amplifier and a 7DAK driver amplifier. Tumescence responses were recorded on polygraph chart-paper, which moved at a speed of 50mm/sec. The polygraph was calibrated prior to each evaluation in order to yield a linear equivalent for changes in penile circumference. A plexiglass calibration cone with standard circumferences corresponding to the various sizes of strain gauges was used to estimate the linearity of output. This calibration prior to the testing of each participant ensured that changes in erection, quantified as millimeters of penile circumference, corresponded to equivalent pen deflections on the polygraph chart-paper. The strain gauge was calibrated for a range of 40mm, with the flaccid measurement as the minimum circumference. The use of the mercury-in-rubber strain gauge to measure changes in penile tumescence has been shown to be a reliable and valid measure of erectile functioning (Laws, 1977; Farkas, Evans, Sine, Eifert, Wittlieb, & Vogelmann-Sine, 1979; Earls, Quinsey, & Castonguay, 1987).

Self-Report

1. **Medical Information Form**. Participants completed a medical history questionnaire (Appendix G). This instrument was created specifically for this study. The form was mailed to the participants prior to the intake interview. The completed form was reviewed with them during the interview.

a. **Dysfunctional Men:** Special attention was given to the portion of the medical information form that requested information on prior medical interventions for erectile dysfunction. Men who indicated prior interventions were asked to list which specific interventions they had tried, when they tried them, and rate the results from 0 (no change/not helpful) to 5 (very helpful). Men with prescriptions of sildenafil citrate, alprostadil, and similar drugs or over the counter remedies were reminded not to take these drugs prior to the assessment. This information was added to the demographic analysis of participants to determine if the two groups of sexually dysfunctional men were different from each other in terms of remedies attempted. Men who regularly use a medical intervention for sexual arousal may sometimes become psychologically dependent upon the intervention. Consequently, medication users may have overall lower expectancies about their sexual performance than other dysfunctional participants. Initial expectancies in this study are assessed with the Erection Prediction Questionnaire (Appendix L, described below). Average Film 1 prediction scores for dysfunctional men who used medical interventions were compared to the average scores from other dysfunctional men. If the men had shown a group tendency to downshift their predictions, these dysfunctionals' Film 1 scores would have been covaried during planned within-groups comparisons.

b. **Sexually Functional Men**: Men who indicated they were currently using a medical intervention for erectile dysfunction were eliminated from the study.

2. **Beck Depression Inventory**. Depression was screened using the Beck Depression Inventory (BDI; Beck, 1978; Appendix H). The BDI is a 21 item, self report measure that has been found to detect depression as effectively as longer and more costly structured interviews. The inventory is self-administered and takes from 5 to 10 minutes to complete. Respondents rate the intensity of each of the 21 symptoms on a scale from 0 to 3. The total possible range of scores extends from a low of 0 to a high of 63. Average internal consistency as established by meta-analysis has been determined to be .86. Test-retest reliability has ranged between .48 to .86, depending on the

group being tested and testing interval. (Groth-Marnat, 1997) Depression is highly correlated with erectile dysfunction. Consequently, participants were also screened for depression with the appropriate diagnostic questions from the SCID. Respondents who scored higher than 17 were eliminated from the study.

3. **Beck Anxiety Inventory**. Anxiety symptoms were screened using the Beck Anxiety Inventory (BAI; Beck, 1990, 1987; Appendix I). The BAI consists of 21 anxiety symptoms, with respondents being asked to indicate the extent to which they were bothered by each item "during the past week, including today." Responses are scored on a 0-3 scale ranging from "not at all" to "severely", giving a score range of 0 to 63. Beck and Steer (1990) recommend that scores of 0 to 9 points be interpreted as normal anxiety, 10 to 18 as mild-moderate, 19 to 29 as moderate-severe, and 30 to 63 as severe anxiety. The BAI is more a measure of state, rather than trait anxiety. Excellent internal consistency (Cronback's alpha = .92) and good test-retest correlation (r = .75) at one week have been demonstrated in the literature (Groth-Marnat, 1997). Respondents that scored higher than 18 points were eliminated from the study.

4. **International Index of Erectile Functioning**. The International Index of Erectile Function is a 15 item, self-administered scale useful as one evaluation strategy in a comprehensive assessment of erectile dysfunction. Scores on the IIEF range from 5 to 75. The scale has been normed cross-culturally, is psychometrically sound with high reliability and validity, and demonstrates sensitivity and specificity for the assessment of, and detecting changes in erectile functioning in patients with erectile dysfunction. Sexually dysfunctional men took this measure as a self-assessment of their current erectile functioning. Internal consistency for the entire scale is very high (Cronbach's alpha = .90). Test-retest reliability is relatively high for the erectile function domain (r = .84). Discriminant validity has been demonstrated by accurately differentiating between ED patients and non-clinical control groups. Convergent validity was established by comparing clinical participant ratings with independent clinician ratings. The IIEF was also shown to be independent from social desirability and marital adjustment influences. (Rosen, 1997; Appendix J). The ED subscale of the IIEF, also referred to as the

Sexual Health Inventory for Men (SHIM, Rosen, 1997) is a five question brief screen for erectile dysfunction. Scores lower than 22 (out of a total of 25) indicate a 93% chance of erectile dysfunction.

5. **The Sexual Opinion Survey**. The Sexual Opinion Survey is a 26 item, Likert-type questionnaire with 7 point scales ranging from strongly agree to strongly disagree. Good internal consistency has been reported for the survey, with split-half reliability equal to 0.84. The survey is widely used in sexuality clinics and research settings as a measure of emotional response to erotic stimuli. Overall scores can be used to classify an individual's overall sexual schema as erotophobic or erotophilic. The survey contains seven questions that target the respondent's opinion about pornography (Gilbert & Gamache, 1984). The pornography subscale ranges in scores from 0 to 42, with 0 indicating an erotophobic opinion of pornography, and 42 indicating an erotophilic opinion. This measure was added to better assess if a participant's general approval or disapproval of erotic films could be a factor influencing his sexual responding during assessment. (Appendix U).

6. **Confidence and Expectancy Ratings**

a. **Erection Prediction Questionnaire**. All participants were asked to make 2 visual analog scale ratings prior to viewing each film. They rated the maximum size erection they thought they could achieve during the upcoming film, and they rated how confident they were in their prediction **(**Appendix L). All participants were administered this questionnaire immediately prior to viewing film 1. Participants in the no feedback conditions also took this questionnaire prior to film 2 and (imaginary) film 3. Possible scores on this and the other visual analog scales discussed below ranged from 0 to 150, and are based on the overall measurement of the line to be marked (in millimeters).

b. **Erection Score Prediction Questionnaire**. Prior to the second and (imaginary) third film, participants in the positive feedback group also predicted their maximum erection score (from 0 to 24), and made visual analog scale ratings of confidence in achieving that score and expected erection size. The erection score they were asked to predict had to be a whole number.

Participants were told the average score for most people viewing similar erotic films was 12 (possible range from 0 to 24). In reality, there are no actual erection scores and the average score was a fictitious number. Participants also predicted the maximum erection they thought they would achieve during the upcoming film, and overall confidence in their predictions (Appendix M).

7. **Subjective Response Measures**

a. **Sexual Arousal Questionnaire**. After each film, participants' subjective responses to the film and their experiences were assessed using 10 visual analog scales (see Appendix N). In addition, the participants also completed a thought listing, reporting thoughts they had during the film. This questionnaire was given to all participants immediately after viewing the first videotape segment. The questionnaire was also given to the no-feedback participants immediately after viewing the second videotape segment.

b. **Sexual Arousal and Feedback Questionnaire**. The positive feedback participants were also asked to complete a Sexual Arousal and Feedback Questionnaire following the second film segment **(**Appendix O). Twelve visual analog scale ratings were added to the Sexual Arousal Questionnaire to assess reaction to the erection score. Participants were asked to record various aspects of viewing the score, perceived accuracy of the erection score, how surprised the participant was by the erection score, and how much he tried to change the erection score.

Timeline of Measures

Table 2 indicates the order of instruments and other information collected during the study. Table 3 lists the order of instruments collected during the physiological assessment.

PROCEDURE

Screening Procedure

1. Phone Screen

The interviews and physiological assessments were conducted by Major Nathan Galbreath, MFS, MS, under the supervision of Tracy Sbrocco, Ph.D. (a clinical psychologist and associate professor in the Department of Medical and Clinical Psychology), and Evelyn Lewis, M.D., Department of Family Medicine. Participants screened over the telephone (Phone Screen Forms; Appendix C) were excluded if they reported current emotional problems, current substance abuse, history of heart disease (myocardial infarction, angina, atherosclerosis), hypertension (currently treated by medication or untreated BP greater than 150mm systolic or 90 diastolic), history of renal disease, or diabetes. Participants who reported they were not heterosexual were also excluded from the study.

Prior to asking the screening questions, the study was described in detail to potential participants. Participants who indicated interest in participation were screened as described above. Participants meeting the inclusion criteria were scheduled for an intake interview and physiological measurement session.

2. Intake Interview

All participants were escorted to a sound attenuated chamber upon arrival at the USU campus. At the start of the intake interview, informed consent was obtained for participation in the study (Appendix D). After signing consent, participants were screened for DSM-IV diagnoses with a number of investigator-administered and self-report instruments. To assess sexual functioning, the participants were administered the Sexual Dysfunction Interview-revised (SDI; Sbrocco, Weisberg, and Barlow, 1995: Appendix E).

Current symptoms of depression and anxiety were assessed using the Beck Depression Inventory (Appendix H) and Beck Anxiety Inventory (Appendix I), respectively. Participants were further screened for major mood disorders, anxiety disorders, and psychiatric disorders using the screening section of the Structured Clinical Interview for Axis I DSM-IV Disorders – Patient Edition (SCID; First, Spitzer, Gibbon, & Williams, 1994; Appendix F). Participants meeting criteria for a current major affective disorder were excluded from the study.

Physiological Assessment

1. Positive Feedback Group. The investigator began the physiological assessment process by re-explaining the experimental procedure to the participant. The participants in the feedback group were told they would view a series of short erotic videotape segments while their erections were measured. After participants completed activities for film 1, they were told about the erection score and asked to predict their score prior to viewing film 2. See Appendix K for the exact wording provided to the participants.

2. No-feedback Group. Participants assigned to the control (no feedback) group were told they would view a series of short erotic videotape segments while their erections were measured. Participants were asked to predict their erection size and rated their confidence prior to each film, but were not shown an erection score. See Appendix K for the exact wording provided to the participants.

The participant was then instructed how to measure the circumference of the mid-shaft of his penis with a strip of paper. The investigator left the room while the participant pushed down his pants and took this measurement. The participant was instructed to notify the investigator via intercom when he was dressed and ready. The investigator returned to the chamber and asked the participant to wait while the investigator calibrated the experimental equipment. The investigator then took the strip of paper used to measure the participant's flaccid penis back to the control room. After taking a measurement from the paper in millimeters, he selected a mercury-in-rubber strain gauge that was at least 5-10mm smaller than the flaccid circumference measurement. The investigator then calibrated the polygraph to the strain gauge using a calibration cone. Having completed calibration, he returned to the sound chamber and provided the participant with the strain gauge. The participant was instructed how to attach the strain gauge. The investigator left the room while the participant disrobed from the waist down, attached the strain gauge, and sat on a paper-covered reclining chair. The investigator returned to visually check that the device was properly attached, without any

twists in the mercury-filled rubber tube. If the strain gauge was not properly in place, the investigator asked the participant to adjust it correctly. The participant was then asked to place a sheet of paper across his lap to prevent the participant from seeing or touching his penis. The participant then completed the first Erection Prediction Questionnaire on a clipboard. The participant was told that an erotic videotape would begin on the monitor. The participant was instructed to imagine himself involved in the activity that he saw on tape, and was asked not to move the paper covering his lap or touch his genitals. After asking if the participant had any questions, the investigator dimmed the lights and left the room. The investigator operated the polygraph and VCR from the adjacent control room, and monitored the participant via intercom. Changes in penile circumference were measured on polygraph chart paper during the five-minute erotic videotape.

Following the first film, the investigator returned to the assessment room and turned on the lights. Participants were asked to complete the first Sexual Arousal Questionnaire. After completing the instrument, participants were provided instructions according to their randomly-assigned experimental group:

1. Positive Feedback Group. Participants were asked to complete an Erection Score Prediction Questionnaire. See Appendix M for the exact instructions provided to participants.
2. No Feedback Group. Control participants were told "In a few minutes you will view another sexually explicit videotape while we collect the same measurements." Participants completed another Erection Prediction Questionnaire prior to viewing the second film.

The investigator then answered any questions posed by the participant, dimmed the lights and returned to the control room.

After ensuring that the participant's penile circumference returned to baseline flaccidity, the investigator started the second erotic videotape on the VCR. If the readout from the polygraph indicated that the participant's penile circumference had not returned to baseline

levels, a return-to-baseline procedure was employed. This strategy consisted of asking the participant to count backward by 7s from 100. However, this procedure was used only twice as participants typically spent 5-10 minutes completing questionnaires between films.

While the second videotape was played, an erection score was displayed for the positive feedback participants. Each of these participants started out with an erection score of 0. The investigator closely followed changes in the participant's penile circumference via the polygraph and assigned erection scores as circumference varied throughout the film. When the participants in the inflated feedback group reached their maximum tumescence (as assessed by Film 1), the score shown to them on the TV monitor was 4 points higher than they predicted on the Erection Score Prediction Questionnaire. The erection scores shown were only even numbers, given the limited range of stored memory on the video display apparatus. Participants who did not reach maximum erection during the second film were shown their predicted erection score plus 4 points one minute after the point they reached maximum erection during the previous film. Men in the no feedback group were not provided an erection score and were allowed to watch film 2 as they did film 1. Both groups were shown the same ten-minute erotic videotape clip.

Following the second film, the investigator returned to the sound chamber, turned on the lights, and handed the no feedback participants a second Sexual Arousal Questionnaire. The positive feedback group received the Sexual Arousal and Feedback Questionnaire. The investigator left the room while participants completed the questionnaires.

After participants indicated they have finished, the investigator returned to the room, handed participants assigned to the positive feedback group another Erection Score Prediction Questionnaire, and asked them to complete it. No feedback group participants completed a third Erection Prediction Questionnaire. After all participants accomplished their respective prediction questionnaires, they were told there were no more films or measurements. Participants were instructed to remove the strain gauge and get dressed while the investigator was out of the room.

Debriefing Session

Participants were then debriefed by the investigator. Participants were told the purpose of the study, how the results of the study were to be used, and – if in the positive feedback group -- that they were given false feedback and why (Debriefing Form; Appendix P).

Participants were debriefed based on the following possible scenarios:

1. Increase in tumescence from baseline: Participants were told that receiving false feedback resulted in an increase in tumescence because they had the skills and confidence to make adaptations to overcome discrepancies. This was what the study predicted. Discrepancies were not expected to impact the confidence and expectancies of sexually functional men in their ability to achieve and maintain erections.

2. No change in tumescence from baseline: Participants were told that receiving false feedback had no impact on their tumescence because they had the skills and confidence to make adaptations to overcome discrepancies. This was what the study predicted. Discrepancies were not expected to impact the confidence and expectancies of sexually functional men in their ability to achieve and maintain erections.

3. Decrease in tumescence from baseline: Participants were told that receiving false feedback resulted in a decrease in tumescence because when they were shown that they were more aroused than they thought they were, they became distracted by the score. They probably identified a reason for the discrepancy, such as wondering why they were doing better than they predicted. Participants were asked to give examples of similar occurrences in the past. The participants were told that no permanent or lasting effects were expected. It was pointed out that they overcame past discrepancies between expected and actual arousal. It was further emphasized that the situation was not an actual sexual situation because they only viewed a film. Many normally functioning men are unable to get fully aroused while viewing the movies in such an environment. For most men, the conditions have to be just right for full sexual arousal. Finally, it was explained to the participants that they responded exactly in the manner

we tried to make them respond. Their response to receiving discrepant information about arousal was to become distracted from the erotic video – a perfectly normal response.

Participants were then invited to comment on their experience and ask any questions about the experiment they might have had. Participants were also reminded that they could call the investigator at the number listed on the take-home copy of their consent form if they wanted more information.

Following debriefing, the investigator paid the participants. The re-useable mercury-in-rubber strain gauges were sterilized after each use in accordance with manufacturer recommendations (D.M. Davis, 2000). Paper items were disposed of appropriately.

Apparatus

The physiological assessment was conducted in a 7′ x 10′ sound attenuated chamber at USUHS (in room B1004). The only objects in the room were a vinyl upholstered recliner chair, a 27″ television on a stand placed 5′ in front of the recliner, a chair for the interviewer, and a table next to the recliner. On the table on sat a wireless intercom (turned on in "hands free" mode; the other intercom was in the adjacent control room) and a white noise generator (which was turned on during the assessment to reduce outside noise). The walls and ceiling were painted white and the carpet was brown. The walls were left bare in order to minimize distractions. In the wall behind the recliner was a 2′ x 3′ see-through mirror. Most of the mirror was blocked with a curtain inside the control room, however the interviewer could observe the back of the participant and the television monitor.

The mercury-in-rubber strain gauge was attached to a wire lead that was inserted through a hole in the wall beneath the two-way mirror and into the polygraph in the control room. The television in the sound chamber was attached to a VCR in the control room. The cable connecting the VCR passed through the hole in the wall as well. Erection scores were displayed as a 5″ white number in the lower right corner of the television screen. The scores were generated by a Sima Screenwriter Video Movie Character Generator in the control room

and composited into the erotic video clip being sent from the VCR to the television. The investigator in the control room displayed the erection score by selecting numbers stored in the video display device (12 numbers were stored, even numbers 0 through 22).

Stimulus Material

One five-minute erotic videotape segment and one ten-minute erotic videotape segment containing similar sexual activity (foreplay and intercourse) were shown. The films were matched in similarity to those used in other studies of male sexual arousal (e.g., Abrahamson, et al., 1985; Barlow, Sakheim & Beck, 1983; Beck, et al., 1987; Cranston-Cuebas, et al., 1993; Jones, Bruce & Barlow, 1986; Stone, 1999). They depicted adults engaging in consensual heterosexual sex and did not contain any violence. The five-minute Film 1 was previously used in Stone (1999). The second, ten-minute film was carefully matched to Film 1 in age of the actors, type of sexual activity depicted, order of sexual activity depicted, and production quality. The second film was used in Galbreath (2002).

Data Sampling and Analysis

Groups were initially compared on demographic variables to ensure that there were no significant differences between the positive feedback and no feedback groups. ANOVAs, t-tests and chi-squares were used for the demographic comparisons. Two major sets of analyses were conducted corresponding to the two study hypotheses. The general analytic model is described below. Analyses of variance/covariance were followed up with planned comparisons.

Analysis One

(A) Cognitive Set:

i. Effect of feedback on predicted erection scores and predicted erection size.

Dysfunctionals and Functionals. Erection Score. To examine the effect of feedback on expectancy ratings, a 2 x 2 repeated measures ANOVA was conducted. Predicted erection score

was used as the dependent measure, time (Film 2 vs. Film 3) was the within subjects factor, and sexual functioning group was the between subjects factor. In addition, a one-way ANCOVA (by group) was conducted, covarying predicted erection score (0-24) made by the positive feedback groups prior to Film 2. The dependent variable was predicted erection score made prior to imaginary Film 3. It is expected that positive feedback will result in increased predicted erection scores for sexually functional men. However, sexually functional men are expected to predict smaller erection scores after experiencing positive feedback with decreased tumescence (as described below).

Predicted erection size. To examine the effect of feedback on predicted erection size, a 3 x 2 x 2 repeated measures ANOVA was conducted. The predicted erection size made before each of the three films was the dependent variable. Film number (Film 1, 2 and 3) was used as the within-subjects factor. Sexual functioning group (functional vs. dysfunctional) and feedback (positive vs. no feedback) were the between subjects factors. In addition, a 2 (group) x 2 (feedback) ANCOVA was conducted, covarying predicted erections size ratings (0-150) made prior to Film 2. The dependent variable was predicted erection size ratings made following Film 2 (prior to imaginary Film 3). It was expected that positive feedback would result in increased erection size predictions for sexually functional men, and decreased erection size predictions for dysfunctional men.

ii. Effect of feedback on confidence in predictions. To examine the effect of positive feedback on confidence ratings, a repeated measures 3 x 2 x 2 ANOVA was conducted with confidence ratings made before each of the three films as the within-subjects factor, and sexual functioning group (functional vs. dysfunctional) and feedback (positive vs. no feedback) as the between subjects factors. In addition, a 2 (group) x 2 (feedback) ANCOVA was conducted, covarying predicted confidence ratings made prior to Film 2. The dependent variable was confidence in erection score and size ratings made prior to imaginary Film 3. Planned comparisons will be made between functionals' and dysfunctionals' confidence ratings made prior to imaginary Film 3 in each feedback condition. It was expected that sexually functional

men would increase their confidence ratings after receiving positive feedback. Dysfunctional men were expected to decrease their confidence ratings.

iii. Effect of feedback on subjective responses during film. Two questionnaires (Sexual Arousal Questionnaire and Sexual Arousal and Feedback Questionnaire) were designed to measure a number of subjective variables pertaining to the viewing of each film clip. Immediately following Film 1, all participants recorded their responses on the 10 visual analog scales in the Sexual Arousal Questionnaire. After viewing Film 2, the no feedback participants again completed the Sexual Arousal Questionnaire (SAQ). However, the positive feedback participants completed the Sexual Arousal and Feedback Questionnaire, which consisted of the same 10 visual analog scales in the SAQ, plus 12 scales pertaining to receiving the erection score (Sexual Arousal and Feedback Questionnaire). To examine the effect of feedback condition on subjective responses, paired-sample t-tests were conducted, by sexual functioning group, to examine changes in responses from Film 1 to Film 2 for each feedback condition. In addition, a 2 (group) x 2 (feedback) ANCOVA was conducted, covarying subjective ratings made following Film 1. The dependent variable was one of the ten subjective ratings made following Film 2. Comparisons were made to examine differences between functionals and dysfunctionals in subjective ratings made after Film 2 for each feedback condition.

Within-groups, paired-samples t-tests were conducted to examine changes in responses from Film 1 to Film 2 for each feedback condition. For dysfunctional men, it is expected that the following cognitive domains will *decrease* from Film 1 to Film 2 as a result of receiving positive feedback: arousal, confidence during the film, perceived size of erection, attention to the film, and control over erection. The following cognitive domains are expected to increase as a result of the positive feedback: anxiety, attention to the participant's body, negative-type thinking, and thought interference. No change is expected between Film 1 and Film 2 in these cognitive variables for functional subjects receiving positive feedback. For functional men the following cognitive domains are expected to increase as a result of positive feedback: arousal, confidence during the film, perceived size of erection, attention to the film, and control over erection. The

following domains will decrease for functional men: anxiety, attention to the participant's body, negative-type thinking, and thought interference.

For functional and dysfunctional men, an independent measures t-test was conducted for the 12 subjective responses related to seeing the erection score during Film 2. Stone (1999) found that functional men who received positive feedback believed they had significantly greater control over their erection score than did the dysfunctional men who received positive feedback. Stone found no other significant differences between functional and dysfunctional men on the 12 additional ratings associated with viewing a positively inflated erection score. While the model would predict that a dysfunctional man might be more surprised about positive feedback than a functional man, Stone did not find this to be the case. However, in that study, functional men that received positive and negative feedback were significantly more surprised than controls. Dysfunctional men did not show similar levels of surprise. Stone found no significant differences on variables about the erection score between functional and dysfunctional men. However, it is expected that functional men will show significantly more surprise about seeing the inflated score than controls. In order to test Stone's findings, it is therefore hypothesized that functional men will show more surprise then dysfunctional men.

(B) Effect of feedback on tumescence.

Each participant's raw data expressed in changes in millimeters of penile tumescence was reduced to mean millimeters of change by subtracting the first second of penile response from subsequent seconds for each film. For example, if participant A started a film at 2mm over his baseline, each following time segment's value (x) was computed as (x-2). (The vast majority of participants started each film at their baseline measurement.) Penile responses for each participant are then divided into 50 time segments/epochs of 6 seconds for film 1. A similar procedure is followed for film 2, except responses are divided into 100 epochs due to the second film's ten-minute length. The time segments/epochs are then collapsed into one overall mean for each participant per film. Paired sample t-tests were used to examine mean tumescence changes from Film 1 to Film 2 for each feedback condition within each group.

Separate repeated measures 2 x 2 x 2 ANOVAs were conducted with average change in tumescence and maximum change in tumescence as dependent variables. In each test, time (Film 1 and 2) was the within subjects factor, and feedback (positive vs. none) and sexual functioning group (functional vs. dysfunctional) were the between subjects factors. It was expected that the sexually functional and dysfunctional men in the positive feedback condition would be distracted by the feedback and demonstrate significantly smaller average and maximal erections than men in the no feedback condition.

Analysis Two

Effect of additional exposure time on tumescence

Consistent with prior research (Sbrocco and Barlow, 1996 and Stone, 1999), inflated feedback should initially surprise all men receiving positive feedback. Consequently, men receiving feedback should show decreased penile tumescence as compared to men in the matched no feedback conditions during the initial portion of Film 2, regardless of functional status. For functional men, the difference between the two feedback groups should dissipate with continued exposure to erotic stimuli. By the end of Film 2, average tumescence should not be significantly different between the positive and no feedback groups. This therefore suggests that interaction between feedback condition and film halves. For dysfunctional men, it is expected that men receiving positive feedback will show decreased tumescence throughout the film as compared to dysfunctional controls. Consequently, no interaction is hypothesized for dysfunctional men.

In order to compare changes in tumescence at regular intervals during Film 2, the 100 epochs were collapsed into ten intervals, representing the ten-minute duration of the film. An average tumescence score was calculated for each minute of film for each group. A repeated measures ANOVA was conducted with average tumescence per minute as the dependent variable, time (1 through 10 minutes) as thewithin subjects factor, and feedback group and

sexual functioning as the between subjects variables. Average tumescence will not increase during the second half of Film 2.

In order to compare changes in tumescence at regular intervals during Film 2, the 100 epochs were collapsed into ten intervals, representing the ten-minute duration of the film. An average tumescence score was calculated for each minute of film for each group. A repeated measures 10 x 2 ANOVA was conducted separately for each sexual functioning group, with time as the within subjects factor, and feedback group as the between subjects factor. The dependent variable was average change in penile tumescence at each minute in the film.

Sample Size and Power Considerations

This study is a replication and extension of Stone (1999). Consequently, data collected during that study was analyzed post hoc for power and effect size information.

Hypothesis 1: False positive feedback differentially modifies cognitive set and subsequent penile tumescence in sexually functional and dysfunctional men. In this hypothesis we are seeking to detect a between groups (functional vs. dysfunctional) difference in tumescence (as measured during Film 2), a between groups difference in erection score prediction (measured prior to imaginary Film 3), and a between groups difference in prediction confidence (measured prior to imaginary Film 3). An analysis of Stone's (1999) data revealed observed power for corresponding hypotheses ranged between of 0.78 and 0.83. Using G•Power (Buchner, et. al., 1997), effect sizes were calculated post hoc as ranging between .26 and .33. For the present study, an effect size of .3 was selected. Setting $\alpha = .05$ and power at .75, an effect size of .3 indicates that a total sample size of 80 men (two groups of 40) is sufficient to detect an effect, given that there is one.

Hypothesis 2: Additional exposure time to the erotic film is associated with restoration of penile tumescence in sexually functional men. A review of the literature disclosed no studies with similar hypotheses from which to estimate an appropriate effect size. Since Stone (1999) used stimulus materials of equal lengths (5 minutes), an estimate from his work could not be

derived. The Sbrocco and Barlow (1996) model of sexual functioning suggests that the ability to refocus on erotic cues is a capability that men suffering from erectile dysfunction have lost. Consequently, the differential ability to recover one's erection once detumescence occurs is likely to be pronounced. However, given that the effect sizes observed in Stone (1999) were medium sized at best, an effect size of .3 was selected. Setting $\alpha = .05$ and power at .75, an effect size of .3 indicates that a total sample size of 80 men (two groups of 40) is sufficient to detect an effect, given that there is one.

No adjustment in alpha level will be made for the study's primary hypotheses listed above. However, for unplanned comparisons, an alpha level of .01 will be used to avoid the increased probability of Type I error associated with multiple statistical comparisons.

PART V: RESULTS

Demographics: Two by two (group x feedback condition) ANOVAs were conducted for age, body mass index, and flaccid penile circumference. There were no significant main effects or interactions (Table 15). The groups also did not differ significantly on their attitudes toward explicit pornography, as measured by the pornography subscale of the Sexual Opinion Scale (Appendix U). Chi-square analyses revealed no differences between the sexual functioning groups in ethnicity, relationship status, level of education, occupation, or number of overweight participants (BMI > 30). However, the dysfunctional group (41%) had significantly more smokers than the functional group (14%), $\chi^2(1) = 6.84$, $p = .009$. While not statistically significant, there was a trend towards difference in occupational status. The sexually functional group tended to have more full time employees, and fewer unemployed, retired or part-time employees than the sexually dysfunctional group, $\chi^2(1) = 3.79$, $p = .051$.

Sexually dysfunctional participants' self-ratings of overall sexual functioning and erectile functioning were compared using scores from the IIEF and the erectile dysfunction subscale from the IIEF, respectively (Table 15). An independent measures t-test revealed no significant differences between feedback groups on these measures. The two dysfunctional groups were also not different on the average amount of time participants had experienced ED symptoms.

A portion of men in each sexual functioning group showed minimal erectile response to the erotic films. A review of the scientific literature disclosed no relevant research that clearly established how much tumescence is needed for a response to be considered 'valid.' A review of the distribution of means for Film 1 and Film 2 did not suggest a cutoff for valid responses as well. Nonetheless, an average change in tumescence of three millimeters or less was selected as a starting point from which to analyze the characteristics of responders vs. nonresponders. Using 3mm as the cut point, the dysfunctional group was not statistically different from the functional group in the number of nonresponders (Table 15). Men in each sexual functioning

group that did not tumesce in Film 1 and Film 2 were compared to the remainder of the group from which they were selected. Dysfunctional and functional nonresponders did not differ significantly from their respective groups on measures of age, flaccid circumference, attitudes toward pornography (SOS-Porn), or average body mass index. Dysfunctional nonresponders did not differ from dysfunctional responders on IIEF score, IIEF-ED score or number of years with erectile dysfunction symptoms. Responders and nonresponders could not be compared on categorical variables due to smaller than expected frequencies in some cells. In addition, positive feedback versus no feedback was response status in either dysfunctional or functional men.

Data Reduction: Each participant's raw data expressed in changes in millimeters of penile tumescence was reduced to mean millimeters of change by subtracting the first second of penile response from subsequent seconds for each film. Penile responses for each participant were then divided into 50 time segments/epochs of 6 seconds for film 1. A similar procedure was followed for film 2, except responses were divided into 100 epochs due to the second film's ten-minute length. The time segments/epochs were then collapsed into one overall mean for each participant per film.

Using a 2 x 2 group by feedback ANOVA, the groups were compared for significant differences on average and maximum tumescence measurements on Film 1 (baseline). The tests revealed an interaction: functional men in the no feedback group tended to have larger average changes in tumescence at baseline than men in the other groups ($F(3, 72) = 3.842$, $p = .054$), and had significantly different measurements of maximal tumescence ($F(3, 72) = 4.119$, $p = .046$). A search for outliers in the functional/no feedback group revealed that one man in that group had significantly larger measurements than all other subjects in average tumescence and maximal tumescence across both films. With this participant eliminated from the no feedback group, the interactions detected before were no longer statistically significant on baseline measurements of average change in tumescence, $F(3, 72) = 2.933$, $p = .091$, and maximal tumescence, $F(3, 72) = 3.307$, $p = .073$. To ensure consistency throughout the analyses, the participant was also

eliminated from all following analyses. Follow up chi-square and ANOVA tests on demographic variables revealed that elimination of the participant did not produce significant differences on those variables between the two groups. The previously noted statistical trend in employment status differences between the functioning groups also became less pronounced without the outlier, $\chi^2(1) = 3.540$, $p = .06$.

Analysis of Hypothesis One

(A) Cognitive Set:

i. Effect of feedback on predicted erection scores and predicted erection size.

Dysfunctionals and Functionals: Erection Score. To examine the effect of feedback on expectancy ratings, a 2 x 2 repeated measures ANOVA was conducted. Predicted erection score was used as the dependent measure, time (Film 2 vs. Film 3) was the within subjects factor, and sexual functioning group was the between subjects factor. As predicted, a significant main effect was discovered for time. That is, collapsing across sexual functioning groups, participants predicted significantly higher scores for imaginary Film 3 ($M = 12.7$, $SD = 4.4$) after receiving inflated feedback during Film 2 ($M = 11.2$, $SD = 4.4$), $F(1, 38) = 7.10$, $p = .011$ (Table 5).

An independent samples t-test was conducted to compare erection score predictions (0 to 24) at baseline (Film 2). Contrary to expectations, a statistical trend was identified for dysfunctional men ($M = 12.4$, $SD = 4.7$) to make larger baseline score predictions than the functional men ($M = 10.0$, $SD = 3.9$), $t(38) = 1.80$, $p = .081$ (Table 5). Due to their hypothesized negative outcome expectancies, sexually dysfunctional men had been expected to make comparatively smaller score predictions than the functionals. Instead, the dysfunctionals tended to predict the larger scores during Film 2.

To examine the effects of receiving false feedback on erection score predictions, a one-way ANCOVA by functioning group was conducted, with the erection score predicted prior to imaginary Film 3 as the dependent variable and the Film 2 predicted erection score as the covariate. Again, contrary to expectations, no differences were noted between the sexual

functioning groups (Table 6). It had been hypothesized that sexually functional men would demonstrate greater outcome expectancy after positive feedback by forecasting significantly larger erection scores. Remarkably, after controlling for Film 2 predictions, sexually functional men (M = 12.7, SE = .77) and sexually dysfunctional men (M = 12.7, SE = .74) believed they would see the same erection score during Film 3.

Dysfunctionals and Functionals: Predicted erection size. To examine the effect of feedback on predicted erection size, a 3 x 2 x 2 repeated measures ANOVA was conducted. The predicted erection size made before each of the three films was the dependent variable. Film number (time) was used as the within-subjects factor. Sexual functioning group (functional vs. dysfunctional) and feedback (positive vs. no feedback) were the between subjects factors. A significant main effect for time was identified F (2, 146) = 24.31, $p < .001$. Collapsing across sexual functioning and feedback groups, the largest erection size prediction scores occurred during film one (M = 99.6, SD = 36), but size predictions decreased prior to film two (M = 80.8, SD = 33.5), and decreased again prior to film three (M = 76.3, SD = 37.3). Post hoc comparisons of all participants' erection predictions showed that the decrease between the Film 1 (baseline) average and the Film 2 average was statistically significant, t (74) = 5.38, $p < .001$, but the decrease between the Film 2 and imaginary Film 3 averages was not (Table 5).

Contrary to hypotheses, no statistically significant effects for sexual functioning group, feedback condition or associated interactions were identified. However, a statistical trend for sexual functioning group was noted: Collapsing across the three films and feedback conditions, sexually functional men (M = 92.3, SE = 5.0) tended to make larger predictions about their erection size than the sexually dysfunctional men (M = 79.1, SE = 4.8), F (1, 71) = 3.93, p = .051. This trend was consistent with the theoretical contention that sexually functional men have greater expectancies about their sexual performance than sexually dysfunctional men. Post hoc tests revealed a significant difference between functional men (M = 110.5, SD = 32.2) and dysfunctional men (M = 90, SD = 36) at Film 1, t (73) = -2.64, p = .01. Functional men made significantly larger erection size predictions at baseline than did the dysfunctional men.

However, this difference between sexual functioning groups disappeared at Film 2 and Film 3 (Table 5). The lack of difference between the sexual functioning groups in the two latter films is not as predicted. Sexually functional men had been expected to continue making significantly larger predictions than dysfunctional men prior to the second and third films.

To examine the effects of receiving false feedback on predicted erection size, a 2 x 2 ANCOVA (functioning group by feedback) was conducted on predicted erection size (0-150) made prior to imaginary Film 3, covarying the predicted erection size made before Film 2. Contrary to expectations, no main effect for either factor or interaction was identified (Table 6). After controlling for predictions made prior to Film 2, sexually functional men receiving positive feedback had been expected to predict larger erections during Film 3 than their sexually dysfunctional cohorts. This was not the case, as predictions across all four groups of men were quite similar.

Dysfunctionals. Using film number as the repeated measure, paired sample t-tests were conducted on predictions of the erection score taken prior to Film 2 and imaginary Film 3. There were no significant differences in the score between films. Men receiving positive feedback were expected to have decreased their predictions of the erection score as a result of having experienced positive feedback and decreased tumescence. This was not the case for dysfunctional men, as no effect for time was detected between Film 2 and 3 (Table 5). In addition, sexually dysfunctional men did not decrease predictions of erection size after receiving positive feedback as had been hypothesized.

Functionals. Using film number (time) as the repeated measure, paired samples t-tests were conducted on the predicted erection scores taken prior to Film 2 and imaginary Film 3. As predicted, sexually functional men who received positive feedback significantly increased their predicted erection score from Film 2 (M = 10.0, SD = 3.9) to Film 3 (M = 11.8, SD = 4.3, t (18) = -2.99, p = .008). However, contrary to expectations, men receiving positive feedback did not significantly increase their predicted erection size (Table 5).

It had been expected that men receiving positive feedback would make larger predictions about future behavior than controls, however no main effect for feedback was detected. Ironically, functional men in the no feedback group (M = 96.8, SD = 33.9) tended to make greater erection size predictions than men in the positive feedback group (M = 78.6, SD = 29.5) prior to Film 2, t (34) = -1.73, p = .092 (Table 5). While not statistically significant nor a statistical trend, this apparent difference persisted to Film 3, as well. These results were opposite of what had been predicted. The positive feedback group should have had larger average erection size predictions.

ii. Effect of feedback on confidence in predictions. To examine the effect of positive feedback on confidence ratings, a 3 x 2 x 2 repeated measures ANOVA was conducted. Film number (time) was used as the within-subjects factor. The confidence rating made before each of the three films was the dependent variable. Sexual functioning group (functional vs. dysfunctional) and feedback (positive vs. no feedback) were the between subjects factors. A significant main effect for time was identified F (2, 142) = 7.78, p = .001 (Table 5). Collapsing across sexual functioning and feedback groups, the largest confidence score occurred during film one (M = 93.6, SD = 36), but confidence decreased prior to film two (M = 78.8, SD = 29.0), and then slightly increased prior to film three (M = 81.1, SD = 32.8). Post hoc comparisons of confidence ratings showed that the decrease between the Film 1 (baseline) average and the Film 2 average was statistically significant, t (74) = 3.82, $p < .001$, but the difference between the Film 2 and imaginary Film 3 averages was not (Table 5). Contrary to hypotheses, no statistically significant effects for sexual functioning group, feedback condition or associated interactions were identified.

To further examine the effect of feedback on confidence, a 2 x 2 ANCOVA (functioning group by feedback group) was conducted, covarying the confidence rating (0-150) made prior to Film 2. The dependent variable was the confidence rating made prior to imaginary Film 3. Contrary to expectations, no main effect for either factor or interaction was identified (Table 6). It had been expected that positive feedback would result in decreased confidence ratings for

sexually dysfunctional men. As expected, no difference was detected for sexually functional men.

iii. Effect of feedback on subjective measures. Two questionnaires (Sexual Arousal Questionnaire and Sexual Arousal and Feedback Questionnaire) were designed to measure a number of subjective variables pertaining to the viewing of each film clip. Immediately following Film 1, all participants recorded their responses on the 10 visual analog scales in the Sexual Arousal Questionnaire. After viewing Film 2, the no feedback participants again completed the Sexual Arousal Questionnaire (SAQ). However, the positive feedback participants completed the Sexual Arousal and Feedback Questionnaire, which consisted of the same 10 visual analog scales in the SAQ, plus 12 scales pertaining to receiving the erection score.

Dysfunctionals. An independent samples t-test was conducted by feedback group for the ten subjective ratings made after viewing Film 1 (baseline). No significant differences were identified. To examine the effect of feedback condition on subjective responses, paired-sample t-tests were conducted to examine changes in responses from Film 1 to Film 2 for each feedback condition (Tables 10 and 11). Contrary to predictions, dysfunctional men who received positive feedback increased their subjective ratings of arousal (Film 1 $M = 62$, $SD = 38$, vs. Film 2 $M = 79$, $SD = 33$; t (20) = -2.18, $p = .041$) and perceived erection size (Film 1 $M = 49$, $SD = 42$, vs. Film 2 $M = 66$, $SD = 42$; t (20) = -2.13, $p = .045$). As predicted, dysfunctional men in the no feedback condition did not make significant changes in subjective ratings between Film 1 and 2. However, an interesting trend was identified: Men in the no feedback condition on average tended to decrease their ratings on item 10, "Mark on the line how similar your response was during this lab experience compared to actual sexual situations," (Film 1 $M = 70$, $SD = 49$, vs. Film 2 $M = 50$, $SD = 41$; t (17) = 2.00, $p = .061$). Apparently, some of the 'no feedback' men began to question the ecological validity of the experiment. Contrary to the study's hypotheses, no other variables in the positive feedback group showed significant changes from Film 1 to Film 2. It had been expected that the following cognitive domains would have *decreased* from Film 1 to

Film 2 as a result of receiving the positive feedback and decreased tumescence: confidence during the film, attention to the film, and control over erection. The following cognitive domains had been expected to increase as a result of the positive feedback and decreased tumescence: anxiety, attention to the participant's body, negative-type thinking, and thought interference.

Functionals. An independent samples t-test was conducted by feedback group for each of the ten subjective ratings made after viewing Film 1 (baseline). Functional men tended to differ by feedback group on their initial rating of confidence (Positive $M = 62$, $SD = 40$, vs. No Feedback $M = 84$, $SD = 35$; t (34) = -1.72, $p = .095$). However, no significant differences were found between groups at baseline. To examine the effect of feedback condition on subjective responses, paired-sample t-tests were conducted to examine changes in responses from Film 1 to Film 2 for each feedback condition (Tables 10 and 11). As predicted, functional men who received positive feedback increased their subjective ratings of perceived erection size (Film 1 $M = 56$, $SD = 47$, vs. Film 2 $M = 76$, $SD = 44$; t (18) = -2.18, $p = .048$). Contrary to the study's hypotheses, men receiving positive feedback during Film 2 did not make significant changes to the nine other subjective variables. Unexpectedly, men in the no feedback condition felt a significant decrease in anxiety during Film 2 (Film 1 $M = 54$, $SD = 38$, vs. Film 2 $M = 41$, $SD = 34$; t (16) = 2.51, $p = .023$). However, men in the no feedback condition showed no other significant changes in the nine subjective variables between Film 1 and 2 (Tables 10 and 11).

Functionals and Dysfunctionals. To better compare Film 2 subjective ratings across all four groups, a one-way ANCOVA was conducted for each of the ten subjective variables rated for Film 2, while covarying the respective subjective rating made following Film 1 (Table 12). After controlling for Film 1 responses, men in the positive feedback condition ($M = 76$, $SE = 5.3$) rated their erection sizes significantly larger than men in the no feedback condition ($M = 59$, $SE = 5.6$, F (1, 74) = 4.65, p = .03). It was also discovered that men in the positive feedback condition ($M = 69$, $SE = 5.7$) rated their response during Film 2 as more similar to their response in actual sexual

situations than men in the no feedback condition ($M = 53$, $SE = 6.0$, F (1, 74) = 3.98, p = .05). No other significant main effects for functioning group, feedback or interactions were found.

For functional and dysfunctional men, an independent measures t-test was conducted for the 12 subjective responses related to seeing the erection score during Film 2. Stone (1999) found that functional men who received positive feedback believed they had significantly greater control over their erection score than did the dysfunctional men who received positive feedback. Stone found no other significant differences between functional and dysfunctional men on the 12 additional ratings associated with viewing a positively inflated erection score. While the model would predict that a dysfunctional man might be more surprised about positive feedback than a functional man, Stone did not find this to be the case. However, in that study, functional men who received positive and negative feedback were significantly more surprised than functional men receiving neutral feedback. Dysfunctional men did not show similar levels of surprise. It was expected that functional and dysfunctional men in the present study would show no significant differences on these variables as well. Contrary to predictions, dysfunctional men receiving positive feedback ($M = 85$, $SD = 39$) were significantly more surprised about the inflated erection score than functional men ($M = 58$, $SD = 37$, t (38) = 2.27, p = .029) (Table 13).

(B) Effect of feedback on tumescence.

Each participant's raw data expressed in changes in millimeters of penile tumescence was reduced to mean millimeters of change by subtracting the first second of penile response from subsequent seconds for each film. For example, if participant A started a film at 2mm over his baseline, each following time segment's value (x) was computed as (x-2) (The vast majority of participants started each film at their baseline measurement). Penile responses for each participant are then divided into 50 time segments/epochs of 6 seconds for film 1. A similar procedure is followed for film 2, except responses are divided into 100 epochs due to the second film's ten-minute length. The time segments/epochs are then collapsed into one overall mean for each participant per film.

A repeated measures, 2 x 2 x 2 ANOVA was conducted with average change in tumescence as the dependent variable. Time (Film 1 vs. Film 2) was used as the within subjects factor. Feedback (positive vs. none) and sexual functioning group (functional vs. dysfunctional) were the between subjects factors. No main effect was found for film, feedback or functioning group, nor were there any significant interactions. However, an interaction with a trend toward significance was found between group and feedback, F (1, 71) = 3.85, p = .054 (Table 7). Collapsing across film, functional men who received positive feedback had smaller average erections across films than men who received no feedback. In contrast, sexually dysfunctional men who received positive feedback had unexpectedly *larger* average erections than their cohorts who received no feedback. Contrary to expectations, no main effect or interaction was identified when Film 1 scores were covaried in a 2 x 2 (functioning group by feedback) ANCOVA of Film 2 average tumescence scores (Table 8). It had been expected that the men in the positive feedback condition would be distracted by the feedback and demonstrate significantly smaller erections than men in the no feedback condition.

A repeated measures 2 x 2 x 2 ANOVA was conducted with maximum change in tumescence as the dependent variable. Time (Film 1 vs. Film 2) was the repeated measure, and feedback (positive vs. none) and sexual functioning group (functional vs. dysfunctional) were the between subjects factors. No significant main effect was found for film, feedback, or functioning group, nor were there any significant interactions of factors. However, an interaction with a trend toward significance was noted between group and feedback, F (1, 71) = 3.32, p = .073. Similar to the pattern found in average change in tumescence, sexually dysfunctional men receiving feedback tended to have larger maximal changes in erections than controls. In contrast, sexually functional men receiving positive feedback tended to have smaller maximal erections than controls (Table 7). This was unexpected, as all men receiving positive feedback were hypothesized to become distracted by the false feedback and experience decreased tumescence.

Contrary to expectations, no main effect or interaction was identified when Film 1 maximum tumescence scores were covaried in a 2 x 2 (functioning group by feedback) ANCOVA of Film 2 scores (Table 8). It had been expected that the men in the positive feedback condition would experience significantly smaller erections than men in the no feedback condition.

Analysis Two

Effect of additional exposure time on tumescence

Consistent with prior research (Sbrocco and Barlow, 1996 and Stone, 1999), inflated feedback should initially surprise all men receiving positive feedback. Consequently, men receiving feedback should show decreased penile tumescence as compared to men in the matched no feedback conditions during the initial portion of Film 2, regardless of functional status. For functional men, the difference between the two feedback groups should dissipate with continued exposure to erotic stimuli. By the end of Film 2, average tumescence should not be significantly different between the positive and no feedback groups. This therefore suggests that interaction between feedback condition and film halves. For dysfunctional men, it is expected that men receiving positive feedback will show decreased tumescence throughout the film as compared to dysfunctional controls. Consequently, no interaction is hypothesized for dysfunctional men.

Functionals. In order to compare changes in tumescence at regular intervals during Film 2, the 100 epochs were collapsed into ten intervals, representing the ten-minute duration of the film. An average tumescence score was calculated for each minute of film for each feedback group. A repeated measures, 10 x 2 ANOVA was conducted separately for each sexual functioning group, with time as the within subjects factor, and feedback group as the between subjects factor. The dependent variable was average change in penile tumescence. A significant effect for time was revealed. As expected, both feedback groups experienced significantly larger

erections as the film progressed, F (9, 306) = 13.93, $p < .001$ (Table 9). However, no main effect for group or interaction was observed.

Because an *a priori* difference between feedback groups was hypothesized at the outset of Film 2, independent samples t tests were conducted at minutes one through five. The tests failed to disclose significant differences in erection size between feedback groups any of the time points. However, differences that showed a trend toward significance ($p < .10$) were found at minute 2 (Positive, M = 7.0, SD = 7.9 vs. No Feedback, M = 13.1, SD = 11.9; t (35) = -1.81, p = .079), minute 3 (Positive, M = 9.3, SD = 9.2 vs. No Feedback, M = 14.9, SD = 9.8; t (35) = -1.77, p = .086), and minute 4 (Positive, M = 9.5, SD = 10.2 vs. No Feedback, M = 15.3, SD = 10.1; t (35) = -1.71, p = .097) (Table 9). The statistical trends appeared where it was hypothesized they might – at the outset of the film when men receiving feedback were trying to interpret the false feedback.

Dysfunctionals. The same procedure as described above for was repeated for sexually dysfunctional men. After reducing the average tumescence data by epoch into minute averages, a repeated measures, 10 x 2 ANOVA was conducted using the minute averages as the dependent variable. Time (1 through 10 minutes) was the within subjects factor, and feedback group was the between subjects factor. Again, a main effect for time was detected, F (9, 333) = 6.84, $p < .001$. Collapsing across feedback group, dysfunctional men experienced larger erections as the film progressed. A significant linear interaction was also detected, F (1, 37) = 8.48, p = .006. That is, the slope of each group's best fitting straight line drawn through the cell means at each time point are statistically different. The function that best describes the positive feedback group's responses had a significantly steeper slope compared to that of the no feedback group. The men receiving positive feedback got larger erections as time progressed, while the men in the no feedback group experienced smaller, steady changes over time that neither increased or decreased significantly.

Planned comparisons were also conducted to examine restoration of tumescence following five minutes of initial feedback. Among dysfunctional men a significant interaction

was found between feedback condition and the first five minutes versus the last five minutes of the film, F (1, 37) = 8.48, p= .006. This interaction indicated that dysfunctional men had *larger* average tumescence changes in the positive feedback condition, as compared to the no feedback condition in the last half of the film.

Post hoc, independent samples t-tests revealed two significant differences and a difference with a trend towards significance at minute 7 (Positive, M = 14.2, SD = 11.6 vs. No Feedback, M = 7.6, SD = 7.5; t (37) = 2.06, p = .046), minute 8 (Positive, M = 14.7, SD = 11.6 vs. No Feedback, M = 7.5, SD = 7.8; t (37) = 2.18, p = .036), and minute 9 (Positive, M = 12.0, SD = 11.4 vs. No Feedback, M = 6.2, SD = 7.4; t (37) = 1.83, p = .075), respectively (Table 9). These unexpected differences came at the *end* of the film. In addition, the positive feedback group was the group with the higher averages, instead of the no feedback group. It was predicted that the dysfunctional men receiving feedback would have experienced smaller erections throughout the film. In contrast, dysfunctional men receiving feedback actually had larger erections compared to controls at the end of the Film 2. Thus, the effect of positive feedback in dysfunctional men may change with prolonged exposure to erotic stimuli.

PART VI: DISCUSSION

This study investigated the impact of false physiological feedback on penile tumescence and performance expectancies in sexually functional and dysfunctional men. The study proposed that men with erectile dysfunction and men with no sexual problems process feedback about sexual performance differently. According to Barlow and Sbrocco (1996), these differences are believed to arise from disparate learning histories, skill levels, expectations, and desires to engage in sexual tasks. Overall, the study found limited support for the contention that there are some cognitive and behavioral differences between sexually functional and dysfunctional men.

As predicted, false positive feedback increased the expectancy of sexually functional men, as operationalized by the erection score. Men receiving the feedback during Film 2 significantly increased their estimate of the maximum score they expected to see during a third, imaginary film segment (Table 5). This suggests that the functional men believed the deception of the experiment and upwardly adjusted their expectations about the score accordingly. However, the functional/positive feedback group showed no change in confidence or predicted erection size for the 'upcoming' Film 3, which is not as predicted. This may have been partly based on the fact that the men in this group did not experience a significant change in tumescence from Film 1 to Film 2 (Table 7) as measured by plethysmograph. However, the men *believed* they had significantly larger erections during Film 2. This is evidenced by a significant increase from Film 1 to Film 2 on subjective ratings of erection size (Table 10 and 11). After controlling for Film 1 responses, it was further found that all men who received positive feedback during Film 2 rated their subjective erection size significantly larger than did men in the no feedback groups (Table 12). It is possible that the sexually functional men may have believed they were as aroused as possible, given the experimental environment. They therefore did not increase their erection size predictions for a third film.

Conceptually, it may have been unrealistic to expect functional men to estimate larger erection sizes. In fact, Stone (1999) found that functional men receiving positive feedback did

not increase their predicted erection size for imaginary Film 3, either. Instead, Stone's men increased their erection scores and their confidence after receiving positive feedback. Taken together, the findings of the present study and Stone (1999) suggest that, in functional men, positive feedback can increase expectancies about forthcoming sexual tasks, without impacting expectations of tumescence or confidence. A functional man's sexual schema allows him to incorporate positive feedback from a sexual experience and predict positive outcomes for future sexual encounters. Confidence about future sexual performance may not be significantly increased by a positive sexual experience, but positive experiences confirm functional men's beliefs about their abilities and allow them to expect that upcoming sexual encounters will be as good, if not better.

In contrast, sexually dysfunctional men who received positive feedback showed no changes in expectancy and confidence. It had been proposed that these men would show decrements in erection score, erection size and confidence predictions, despite receiving positive feedback. These hypotheses were based on a contention that, as compared to sexually functional men, dysfunctional men differentially process feedback about sexual performance. Dysfunctional men were expected to initially note the surprising "success" communicated by the inflated erection score. However, the surprising –yet distracting -- feedback was also expected to produce detumescence. Sexually dysfunctional men were not expected to effectively shift their attention back to the erotic stimuli and restore erectile functioning. Ultimately, the detumescence would be seen as confirmation of their negative outcome expectancy. Expectations of, and confidence in future performance were expected to suffer. Instead, the present study found that positive feedback had little impact on expectancies and confidence in sexually dysfunctional men. No significant changes in predictions of erection score, erection size or confidence were noted between Film 2 and imaginary Film 3 (Table 5). However, a pattern of responding similar to that found in the functional group was discovered. Sexually dysfunctional men receiving positive feedback believed their erections were significantly larger

in Film 2 than in Film 1, and after controlling for Film 1 responses, they also rated their erections significantly larger than the no feedback controls (Table 12).

Inflated feedback positively influenced the subjective experience of dysfunctional men. These men did not respond as hypothesized by decreasing predictions on measures of expectancy and confidence. This in part may be explained by the absence of significant detumescence in this group during Film 2 as measured by plethysmograph. On average, sexually dysfunctional men receiving feedback did not show a significant average change in tumescence from Film 2 to Film 1 (Table 7). However, the dysfunctional men believed they actually had better sexual performance during Film 2. As the men did not fail in a sexual task, their expectancy and confidence did not diminish. However, sexually dysfunctional men still did not sufficiently believe the positive feedback to increase their expectancy and confidence. This finding supports the model's contention that sexually functional and dysfunctional men process information about their sexual performance differently. However, exactly why the dysfunctional men failed to believe the feedback is not clear. Stone's (1999) group of dysfunctional men receiving positive feedback sufficiently believed the false score to significantly increase erection score predictions and confidence from Film 2 to imaginary Film 3. While the primary differences between the present study and Stone (1999) will be discussed in greater detail later, the fundamental difference lays in the length of Film 2. Stone's dysfunctional positive feedback group was only exposed to 5 minutes of erotica, while the corresponding group of men in the present study received ten minutes of exposure. The present group may have had little faith that they could "do it again" for the imaginary third film. In fact, the dysfunctional men were significantly more surprised about their score than the functional men receiving positive feedback (Table 13). As such, they may have been hesitant to increase pre-Film 3 predictions of erection score, erection size and confidence, despite doing better than they expected.

There are also indications that men in the dysfunctional group may have initially overestimated their capabilities in the experimental setting. Film 2 erection score predictions

made by the dysfunctional group tended to be higher than scores predicted by the functional group (Table 5). While this trend towards difference did not meet statistical significance, it suggests that dysfunctional men in this study may have had unrealistic expectations about their capabilities. From a theoretical perspective, unrealistic expectations reflect the cognitive distortions and limited skill set believed to be central to psychogenically influenced erectile dysfunction. However, the trend towards difference disappears by Film 3. In fact, after controlling for Film 2 predictions, Film 3 erection score predictions made by all men receiving positive feedback were remarkably similar (Table 6). The similarity in erection scores between groups suggests that the dysfunctional group's expectations became more aligned with the functional men's expectations. A significant change may not have been observed between films because the dysfunctional men inflated their scores at Film 2, which motivated them to make smaller changes at Film 3. Ultimately, this may be evidence that sexually dysfunctional men in this study learned from experience and reassessed their capabilities more realistically on the final measure.

Contrary to expectations, neither the functional nor the dysfunctional feedback groups experienced a significant change in average or maximal tumescence from Film 1 to Film 2. It had been predicted that positive feedback would cause a significant decrease in tumescence, similar to what was discovered by Stone (1999). Instead, only the dysfunctional group showed a nonsignificant trend towards difference in maximal tumescence over controls during Film 2 (Table 7). Ironically, the trend noted was actually opposite of predictions: Sexually dysfunctional men tended to have larger maximal tumescence than matched controls, t (38) = 1.69, p = .099. However, after controlling for Film 1 tumescence measurements, this trend disappears (Table 8). In fact, there are no significant differences between any of the feedback groups on average and maximal tumescence. All four groups of men differ by four millimeters or less on either measurement.

The study found limited support for the differential response of sexually functional and dysfunctional men in the restoration of tumescence. Sexually functional men were initially

hypothesized to become erect, detumesce after noting the feedback received was inflated, and then refocus on erotic cues to restore tumescence. Unfortunately no significant differences in average tumescence were found between the positive and no feedback groups at any time point during Film 2 (Table 9). However, trends in the data suggest a pattern of responding produced by false feedback that does not fit what was described hypothetically. Should the trend in the data reflect reality, it appears that feedback may detract from tumescence immediately (Figure 15). Trends towards a significant difference in responding between functional feedback groups were found at minutes 2, 3 and 4. After the fourth minute, differences between groups no longer reflect the trend towards difference. Thus, functional men may indeed be able to restore tumescence by refocusing on erotic stimuli. However, it could also mean that the functional men habituated to the stimulus of the false score. While a neutral score condition may have been able to more clearly identify which of these explanations is more likely, Stone (1999) essentially found that the neutral and no feedback situations essentially communicated no information. Regardless of whether they refocused on erotic stimuli or habituated to the erection score, sexually functional men appeared to have restored tumescence such that their sexual response looked more like the no feedback group by the end of Film 2.

However, a third explanation for the functionals' pattern of responding is possible. There could be a between groups difference in how quickly the men tumesced in response to sexual stimuli, despite random assignment of participants. For functional men, a minute-by-minute average for Film 1 was computed in the same fashion as was done for Film 2. Independent samples t-tests were computed at each minute, using feedback group as the independent variable and average change in tumescence as the dependent variable. Due to the number of unplanned comparisons involved, alpha level was adjusted to $p < .01$. As table 14 and figure 18 demonstrate, a trend towards a significant difference was found at minute 2 and minute 3 of Film 1. This trend was the same response pattern seen at minutes 2, 3, and 4 in Film 2. Essentially, it appears that men in the control condition tumesced in response to the sexual stimuli at a greater rate than men in the experimental group across both films. Unfortunately,

the observed between groups trend towards difference in each film introduces sufficient error to minimize any conclusion drawn about feedback and the restoration of tumescence by sexually functional men. The apparent difference in response, taken with the absence of a significant interaction between film duration and feedback group, suggests that sexually functional men did not experience detumescence subsequent to viewing the inflated feedback. Consequently, functional men in the positive feedback group did not need to restore tumescence as much as they needed to "catch up" with the men in the no feedback group.

Sexually dysfunctional men's response during Film 2 was the most surprising discovery of the present study. Originally, men with erectile dysfunction were hypothesized to experience decreased tumescence after receiving positive feedback. This detumescence was expected to occur due to the surprising feedback communicated by false score. Once these men lost their erections, they were believed to lack the ability to regain erections; they would be too distracted by negative cognitions and outcome expectancy to refocus on the erotic cues in the video. In contrast, sexually dysfunctional men receiving positive feedback achieved significantly larger changes in average tumescence than controls in the second half of Film 2, at minutes 7 and 8. A trend towards a significance difference was seen at minute 9. In fact, figure 17 demonstrates that the dysfunctional/positive feedback group responded quite similarly to the normal positive feedback group. Post hoc comparisons detected no significant differences in average change in tumescence in Film 2 between the two positive feedback groups. In contrast, the sexually dysfunctional men in the no feedback condition do not become as aroused as the sexually functional men throughout Film 2. A significant sexual functioning group by time interaction is present, such that significant differences ($p < .01$) in average change in tumescence occur between the two no feedback groups at minutes 7, 8 and 9. Trends toward a significant difference appear at minutes 3, 4, 5, 6 and 10 (Figure 17). Therefore, it can be argued that dysfunctional men, as a result of receiving inflated feedback, responded like functional men. Instead of interfering with sexual arousal, positive feedback appears to have facilitated, or even perhaps 'restored' sexual functioning in dysfunctional men during Film 2.

Based on what was discovered with the functional men, could it be that there is an unexpected difference in speed of sexual response between feedback groups for dysfunctional men as well? Evidence suggests this is not the case. Figure 18 and table 14 show no significant differences in sexual response during Film 1, the baseline condition. While the positive feedback group appears to have larger changes in average tumescence than the no feedback group, these differences do not approach statistical significance.

Explanations for why positive feedback facilitates sexual functioning in dysfunctional men and why it might retard sexual response in normal men do not fit easily with Stone (1999). Based on his findings, Stone suggested a change in the model posited by Sbrocco and Barlow (1996). As illustrated in Figure 12, Stone amended the model to account for the differences in responding based on a mediating factor of surprise. Essentially, Stone's functional men reported that they were surprised by the inflated erection score and showed decrements in average change in tumescence as compared to controls. Because these men endorsed that receiving the score was distracting, Stone surmised that surprise was cognitively different than distraction. Similar to Stone's study, dysfunctional men in the present study who received positive feedback were significantly more surprised about their score than functional men (Table 13). However, dysfunctional men's erectile response in this study did not show an average decrease in sexual responding like the previous study. In fact, dysfunctional men who received positive feedback responded no differently than the normal men throughout Film 2 (Figure 17). Therefore, it does not appear that positive feedback has the same effect on sexual functioning for men with erectile dysfunction. In fact, it could be argued that positive feedback had a "restorative" effect for dysfunctional men, which is consistent with the original Sbrocco and Barlow (1996) model. As illustrated in Figure 11, sexually dysfunctional men receiving positive feedback experienced no threat to their sexual ability. In fact, the men received information that they were doing better than they predicted. The positive feedback may have worked synergistically with the erotic stimuli to allow the dysfunctional men to either feel no threat to sexual performance, or allowed them to more efficiently focus on positive outcome expectancy.

After such a reinforcing experience, sexually dysfunctional men would be theoretically expected to increase their erection score predictions, erection size predictions, and confidence for imaginary Film 3. Unfortunately, this was not the case. However, score predictions made by the positive feedback/dysfunctional group actually did increase from Film 2 to Film 3, but not by a significant amount. Post hoc analysis shows that observed power is low (.21) in this condition. The partial Eta squared was just .07, which means that the effect of the false feedback by itself accounted for only 7% of the overall (effect+error) variance. In the positive feedback/functional group, observed power is much greater (.81) and the effect size a bit more robust ($\eta_p^2 = .33$). It appears that some other as yet unidentified factor(s) may be keeping the dysfunctional men from increasing their expectancy. As these men endorsed significantly more surprise about their erection score than the functional men, it could be argued that the novelty of having a "successful" sexual situation may have influenced their decision not to significantly increase their expectancy and confidence about imaginary Film 3 performance. It may also be that performance demand of the experiment impeded men from increasing their expectancy as well. Dysfunctional men, who typically expect negative outcomes to sexual situations, may not have been sufficiently motivated by a single positive experience to expect success during a third film. In addition, the men may have been unsure about being able to sustain erections during another ten-minute film. Unfortunately, no other questions about expectancy or confidence were asked outside of the three contained in the Erection Score Prediction Questionnaire.

Evidence of the experiment's performance demand can be found in the participants' expectancy predictions and confidence ratings. While the hypotheses of this experiment were not particularly concerned with the observation of performance demand, it is interesting to note that predictions of tumescence and confidence taken prior to Film 2 were much lower than predictions taken prior to Film 1. Taken as a whole, participants reported a significant reductions in predicted erection size, $t\ (74) = 5.38$, $p < .001$, and confidence, $t\ (74) = 3.82$, $p < .001$, from pre-Film 1 to pre-Film 2. Clearly, the men adjusted their predictions and confidence once they developed an understanding of what the study involved, how they were expected to

interact with the stimuli presented them, and how well they could perform in the experimental context. Predictions made prior to imaginary Film 3 were similarly low for all participants as compared to those predictions made prior to Film 1.

The differences in expectancy and confidence can be understood in terms of the model of male sexual functioning (Sbrocco & Barlow, 1996). The model posits that sexual functioning is based on a series of expectations about sexual performance, and how those expectations compare to appraisals of performance made by the individual engaging in sexual activity. The first appraisal made by all participants involves their perception about the experiment in general. The Sbrocco & Barlow (1996) model addresses this primary appraisal in Stage 1 (Figure 11). Presumably, the participants formulated an impression about the situation and about their ability to perform sexually in the laboratory context prior to volunteering. The men subsequently agreed to participate and watch erotic videotapes while being instrumentally monitored.

Functional participants were only admitted to the study if free from psychopathology and sexual dysfunction. Due to the screening process, it is likely that these men came to the experiment sexually functional with erotophilic schemas. Sexually dysfunctional men were similarly free from psychopathology, but were expected to have developed negative expectancy about the experiment due to their histories of erectile dysfunction. The initial appraisal of the men's performance is reflected in their predictions of erection size and confidence for Film 1. While watching the first erotic film and being instrumentally monitored, the participants adjusted their expectations about future performance based on observations they made about their sexual response and the experiment itself during the film.

As a whole, participants found the situation to be more challenging than originally predicted, which is reflected in the significant downward change in erection size predictions and confidence made prior to Film 2. Men in the positive feedback conditions, who were told they would not only have their erections monitored but scored as well, experienced an additional challenge to sexual function. As stated before, this appraisal of challenge is reflected

in the more conservative erection size predictions and confidence ratings made by the participants as a whole prior to Film 2. While maximal and average change in tumescence during Film 2 showed no change over Film 1, cognitive appraisals -- as measured by the erection score and/or subjective ratings -- improved after receiving positive feedback. Stage 3 of the sexual functioning model addresses successful adjustment to performance demands and predicts functional performance and sustained engagement in the erotic task. The Sbrocco and Barlow (1996) model is largely supported by the fact that the dysfunctional and functional groups performed statistically the same after receiving positive feedback. The ability to obtain erections despite significantly decreased confidence and substantially decreased expectancy suggests that these participants were somewhat adaptable in their sexual functioning. Perhaps this adaptability is one of the factors that keeps functional men "functional." The model predicts that positive sexual experiences can help dysfunctional men function more normally. Support for the model was found when dysfunctional participants receiving positive feedback responded much like the normal participants during Film 2. The positive feedback allowed dysfunctional men to better engage the sexual task and experience comparatively functional performance.

Limitations

While this study was designed as an extension of Stone (1999), there are a number of differences between the two experiments. At the time the present study was proposed, it was thought that certain measures and procedures that Stone used could be eliminated, based on his findings that the items had little impact on the tested hypotheses. Dropped from the present study was a measure of attention to the erotic films. Scores from the "Film Quizzes" in the prior study failed to correlate with tumescence, and no significant difference in film score was found between feedback groups. Ultimately, Stone (1999) concluded that the film quiz might not have been an adequate measure of attention to the film. Also dropped from the present study was a measure of heart rate.

Heart rate readings were taken by Stone, but not included in his study's results. Significant time and hassle were saved by not having to attach and remove the Holter monitor from each subject. However, it is not clear what impact wearing the monitor may or may not have had on participants. Certainly, the ecological validity of the present study was improved, as most men do not become involved in sexual tasks while wearing such an apparatus. The Holter monitor was much more intrusive than the plethysmograph, as the men could see the Holter and associated wires on their bare chests. In comparison, the plethysmograph was hidden beneath a piece of paper on the lap of the wearer, out of view. Stone (1999) noted no complaints from participants about the Holters, so it is uncertain how their presence or absence contributed to the findings of either study.

Stone (1999) recruited most of his dysfunctional men from a single referring urologist. Most dysfunctional men recruited into the study had been thoroughly evaluated by a clinician and screened for medical factors that might influence erectile functioning. In the spring of 2003 when this study began recruitment, confidentiality restrictions associated with the Health Insurance Portability and Accountability Act of 1996 (HIPAA) were placed on medical care providers. Consequently, those urologists or their respective staffs contacted for participation in the present study refused to refer patients. Several urology clinics cited privacy concerns as the prime rationale for declining to participate in the research. Consequently, most dysfunctional men for the present study were recruited from newspaper ads placed in Washington, D.C. metropolitan newspapers, weeklies, and organizational bulletins. As these dysfunctional men could not be screened clinically, only men who reported they were free from illness were recruited into the study. While this was fully consistent with the proposed recruitment procedures, it may have created a selection bias that impacted the current findings. As noted previously, only five of 39 dysfunctional men reported any kind of urological evaluation and/or treatment for erectile dysfunction. Theoretically, Stone's dysfunctional men may have been qualitatively different from the present group of dysfunctional men because those men had decided to seek treatment for ED. It is possible that those men may have lived longer with

their problems, experienced a greater number of negative experiences, and disengaged from sexual behavior before seeking treatment. The present group of dysfunctional men may have not considered their ED serious enough to yet require medical treatment. Exactly how the differing recruitment strategies might have influenced the expectancies and confidence of men entering the studies is not exactly clear. One technique used to better capture the experience of sexually dysfunctional men in the current research was to add the International Index of Erectile Functioning. The self-report instrument includes a measure of confidence about future erectile functioning that can be used in forthcoming studies that build on the present research. Future studies should also seriously consider the involvement of a urologist who will agree to refer patients for participation.

The present study is part of on-going programmatic research at the Uniformed Services University's Department of Medical and Clinical Psychology. A decision was made before the start of the present study to limit the number of feedback conditions to positive feedback and no feedback. This was done largely due to limited financial resources, limited personnel and the existence of prior data. One of the present study's biggest limitations is that it lacks a "neutral" feedback condition. A neutral feedback group would have received the erection score they predicted immediately prior to Film 2. Having this group would allow a more definitive understanding of how attentional factors influence erectile functioning. Without the neutral group, it can be argued that receiving a score on the monitor is in and of itself distracting enough to cause detumescence. Therefore, the findings of this study may be confounded by a nonspecific distracting stimuli. While this may indeed be the case, Stone (1999) found that functional men in the neutral feedback group did not experience a decrease in tumescence between Film 1 and Film 2. In addition, neither the functionals nor the dysfunctionals in the neutral group experienced a statistically significant change in cognitive set by being exposed to the score they predicted. In contrast, both groups of men in the positive and negative feedback levels reported significant changes in erection score predictions, as well as some changes in erection size prediction and confidence. Therefore, Stone's findings (1999) support a notion that

a neutral stimulus is not inherently distracting. Rather, it is the information that the stimulus conveys that produces the distraction. A great effort has been made to minimize the differences between Stone (1999), Galbreath (2002), and the present study. Most of the functional men recruited for the present study were recruited for Galbreath (2002), which included only positive and no feedback conditions. While the addition of a neutral stimulus group would have provided more information specific to the present research, past research indicated that the absence of feedback does not alter tumescence or cognitive responses, and thus is likely to function as an equally valid control as a neutral condition.

In retrospect, a more parsimonious hypothesis for sexually dysfunctional men receiving positive feedback may have been more appropriate. The originally proposed hypothesis was contingent upon a significant decrease in sexual functioning during Film 2, brought about by an attention shift away from erotic cues to the false feedback. In reality, the quantitative decrease in sexual functioning did not occur as expected. A close review of Stone's (1999) findings disclosed that sexually dysfunctional men responded to positive feedback by making significant increases in erection score and confidence. From a scientific standpoint, it may have been better to develop a hypothesis that more closely followed the findings of Stone (1999). However, the combined effect of diminished tumescence and additional exposure time to erotic cues on the cognitions of dysfunctional men was heretofore an unstudied phenomenon. The study's current hypothesis largely reflects the dearth of data on this topic.

Average change in tumescence and maximal tumescence do not appear to be the best measures available to capture the sexual response of men to erotic stimuli and feedback. Essentially, a summary average does not capture the pattern of response over time that a minute-by-minute average does. The response over time became a critical issue when it was discovered that normal men in the positive feedback condition became aroused more slowly than cohorts in the no feedback condition. Theoretically, maximal tumescence was included as a variable to reflect more variation than average change in tumescence, as higher scores suggest greater arousal. However, as false feedback appeared to have little effect on maximal

tumescence, the variable does not appear to be sufficiently sensitive to change. One summary score that might be more sensitive to change was used by Weisberg, et. al. (2001). Men were allowed to masturbate to what they considered to be a full erection. Subsequent measurements were interpreted as the percent of full erection obtained. A percentage score provides a more individualized measure of sexual responding and gives a more meaningful assessment of the participant's response. Average change in tumescence provides little readily understandable data about how sufficiently aroused the participants were. Weisberg (2001) found that such a measure was sufficiently responsive to experimental manipulation.

Another limitation of the current research is its ecological validity. Becoming sexually aroused by watching a video in a laboratory is quite unlike trying to engage an actual partner in sexual activity. However, it can be argued that having a feedback score is analogous to having a responsive partner. While a partner does not numerically rate sexual performance in vivo, a partner's responses to a man's sexual advances and behaviors is very much "feedback." As such, the pressure to achieve a particular score in the experimental setting is quite similar to wanting to please a partner. The score and the responses of a partner essentially provide similar kinds of information.

Many participants reported that they could have achieved better erections with some sort of manual stimulation. In fact, some sexual studies have included manual stimulation in the form of a device that is attached to the penis and provides a standardized level of vibration. Unfortunately, the device described in the literature by Janssen, Everaerd, Lunsen, Van, and Oerlemans (1994b) was not readily available for purchase in the United States at the time the study was designed and proposed. Future research may find such additional stimulation heightens sexual response, especially during extended video clips like that employed in the present study.

Future Directions

The findings of the present study are not only helpful for furthering erectile dysfunction research, but also hold great promise for providers in primary care. As indicated before, some physicians have begun to use the symptoms of erectile dysfunction as a screening method for more serious underlying health problems (diabetes, atherosclerosis, hyperlipidemia, etc.). However, the managed care model does not lend itself to an in depth diagnosis and differentiation of psychogenic and biologic factors that may contribute to a patient's erectile dysfunction. In fact, Sadovsky (2001) suggests that most all cases of ED have psychologic and biologic factors that work together to produce the symptoms experienced by the patient. As physicians prescribe drugs like Viagra®, they could bolster the drugs' effects by providing information that addresses the psychological issues that influence ED. Physicians, psychologists, nurses or audiovisual media made available in the primary care setting could advise the patient on techniques to heighten his sexual arousal and maximize the effect of the prescribed drug. Research along these lines has already demonstrated the efficacy of such psychoeducation. Atiemo, Szostak, and Sklar (2003) found that approximately 40% of Viagra® non-responders referred to urologists from primary care could be salvaged with reeducation about how and when to take the drug. Men were shown a brief video depicting couples properly using Viagra®, and provided a drug safety/instruction sheet that emphasized the need for sexual stimulation and foreplay. The present research could easily be incorporated into a similar intervention for men seeking ED treatment in primary care.

For example, the present research has emphasized the importance of attentional factors in sexual arousal. Psychoeducational interventions could acknowledge that most men who have experienced ED become distracted by worry or other non-erotic thoughts. Simply informing the patient that he could increase the chances of obtaining an erection by concentrating on erotic stimuli may be an important step in overcoming the psychological factors underlying the patient's ED. Psychology may be able to reinstate its relevance in sex therapy by developing short, focused interventions designed for delivery by primary care providers. Such

interventions should be derived from key components of Sbrocco and Barlow (1996) model and constructed so that they may be delivered and understood in less than fifteen minutes.

This experiment provides tacit support for cognitive and behavioral interventions that provide dysfunctional men with a chance to experience encouraging sexual encounters. Sensate focus and psychoeducation are examples of such interventions. Should the findings of this study be supported by future research, ethically designed daytime arousal studies with a positive feedback component may one day be considered an equally helpful treatment option. Such treatment options would be especially important with clients that do not have an available sexual partner.

In conclusion, the present study found limited support for the hypothesis that false physiological feedback differentially modifies cognitive set and penile tumescence in sexually functional and dysfunctional men. Sexually functional men responded to positive feedback by significantly increasing their expectancy associated with the feedback itself. Predicted tumescence and ratings of confidence appeared to operate beyond the influence of a false feedback score. However, the men receiving feedback also believed they experienced subjectively larger erections than controls that watched the same film. Sexually dysfunctional men also believed they had larger erections after receiving feedback, and were more surprised by the false feedback score than the functional men. However, sexually dysfunctional men did not significantly increase their expectancies or confidence.

The study also found limited support for the idea that additional exposure time to erotica can restore tumescence. Neither group experienced a decrease in average tumescence as was hypothesized. Consequently, there was no loss of tumescence to be "restored." An unexpected between-groups difference in speed of sexual response made findings for functional men largely uninterpretable. However, inflated feedback appeared to have "restorative" effects for dysfunctional men, as they showed no difference from normals on measures of erectile response. Dysfunctional controls that did not receive the positive feedback demonstrated

significantly smaller changes in tumescence throughout the experimental manipulation than functional controls. The therapeutic effect of the positive feedback on dysfunctional men was quite unexpected. This finding, if replicated, may have potential as a basis for a new intervention in the treatment of erectile dysfunction.

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FIGURES

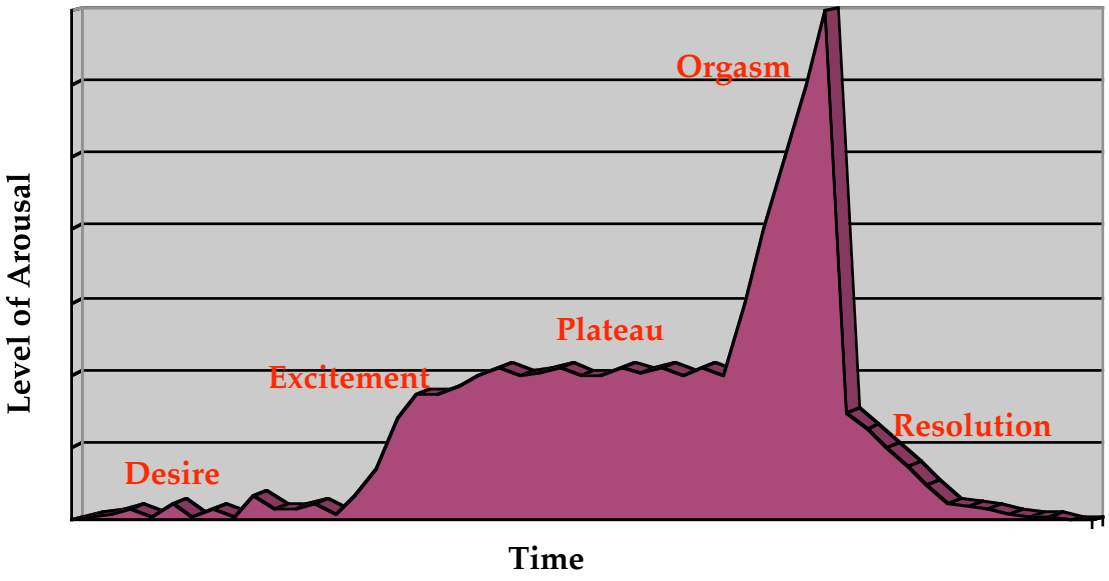


Figure 1. Graphic representation of the stages of sexual arousal

SHIM QUESTIONNAIRE	AA	Caucasian	T test	*p*
Item 1: Rate your confidence to get and keep an erection.	2.12±1.07	2.13±1.07	.086	>.05
Item 2: How often were your erections hard enough for penetration (entering your partner)?	2.19±1.37	2.21±1.46	.098	>.05
Item 3: How often were you able to maintain your erection after you had penetrated (entered) your partner?	2.16±1.42	2.00±1.40	.811	>.05
Item 4: How difficult was it to maintain your erection to completion of intercourse?	2.38±1.58	2.16±1.51	.97	>.05
Item 5: When you attempted sexual intercourse, how often was it satisfactory for you?	2.35±1.46	2.18±1.56	.754	>.05
Total SHIM Score	11.19±6.05	10.76±6.25	.496	>.05

Figure 2. Questions and Data collected from Sexual Health Inventory for Men. From "Symptom Severity of Erectile Dysfunction between Black and White Men," by F. Conde, C. Bennett, T. Keller, C. Myles, & J. Lo, 2002, *Communicating Nursing Research, 35* (p. 324). NOTE: Possible scores range from 1 to 5 on a Likert scale.

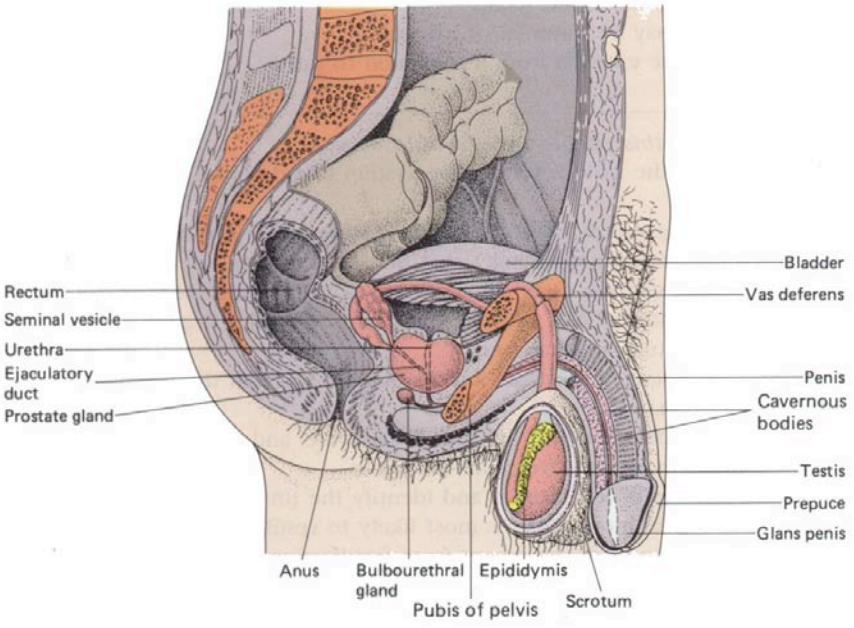


Figure 3. Midsagittal view of male pelvic region. From "Reproduction," by Eldra Pearl Solomon, 1992, *Introduction to Human Anatomy and Physiology* (p. 248), Philadelphia, PA: W. B. Saunders Company.

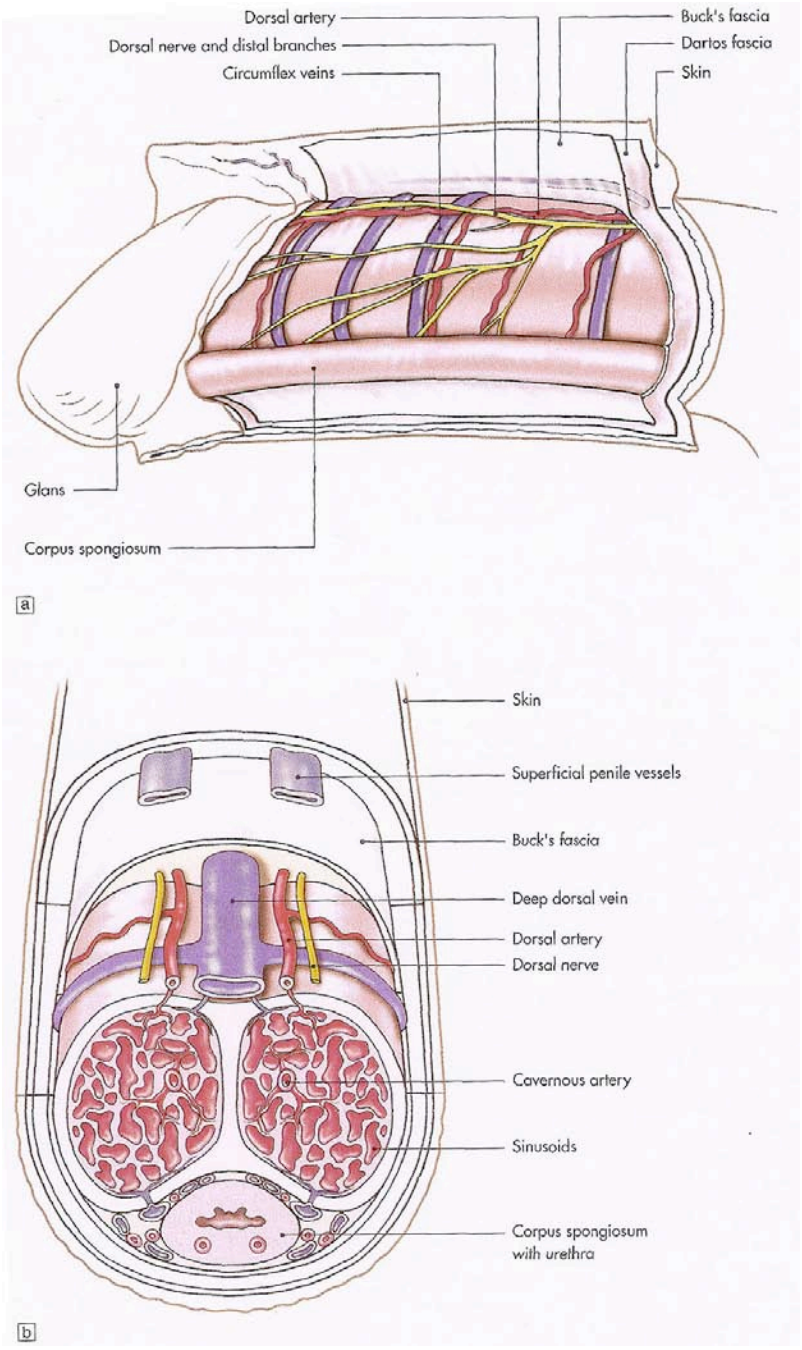


Figure 4. (a) Fascial layers of penis; (b) Cross section of penis. From "Anatomy" by Culley Carson, Roger Kirby, & Irwin Goldstein, 1999, *Textbook of Erectile Dysfunction* (p. 26), Chapel Hill, NC: Isis Medical Media.

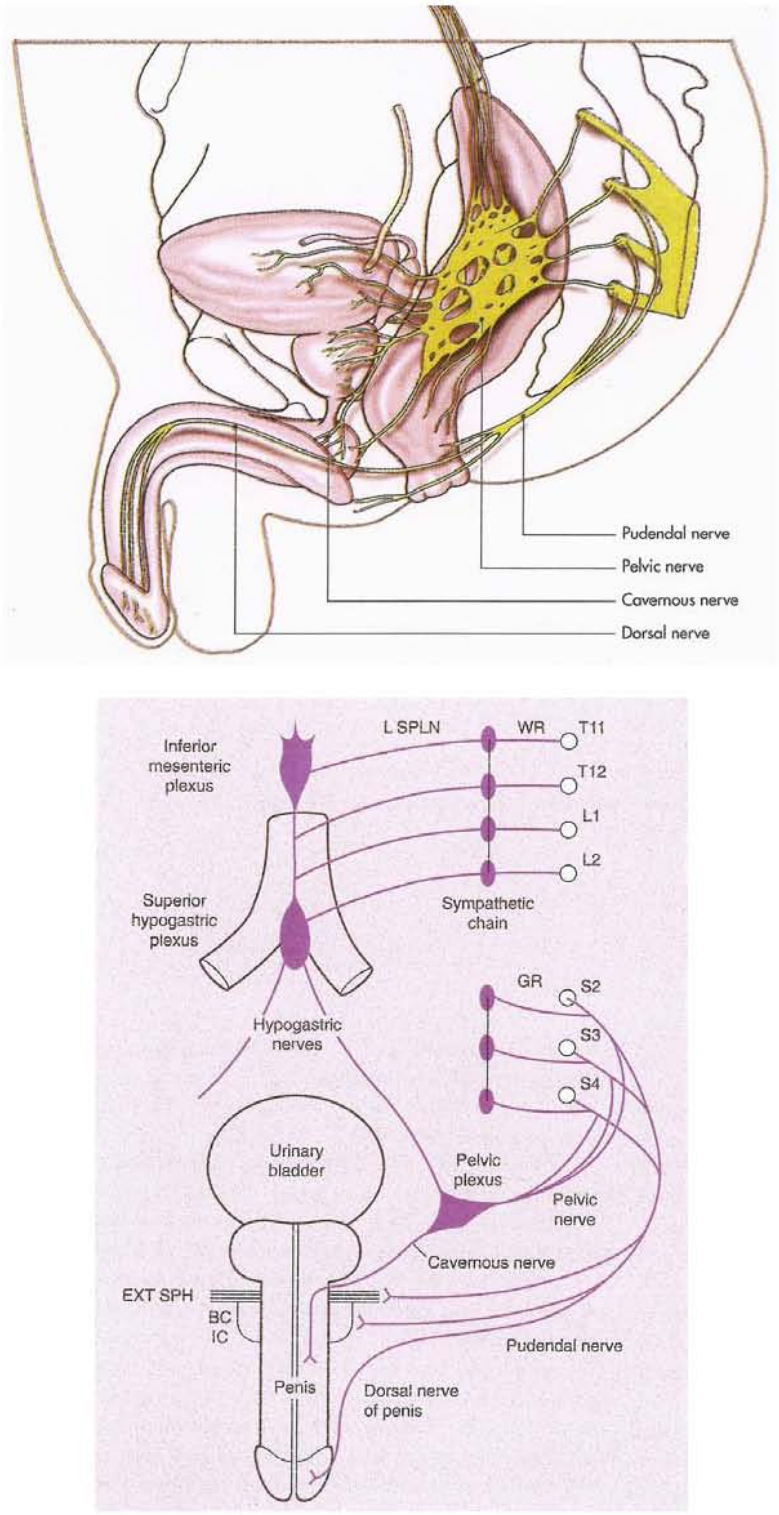


Figure 5. Somatic and autonomic innervation of the penis. From "Anatomy" by Culley Carson, Roger Kirby, & Irwin Goldstein, 1999, *Textbook of Erectile Dysfunction* (pp. 24 & 60), Chapel Hill, NC: Isis Medical Media.

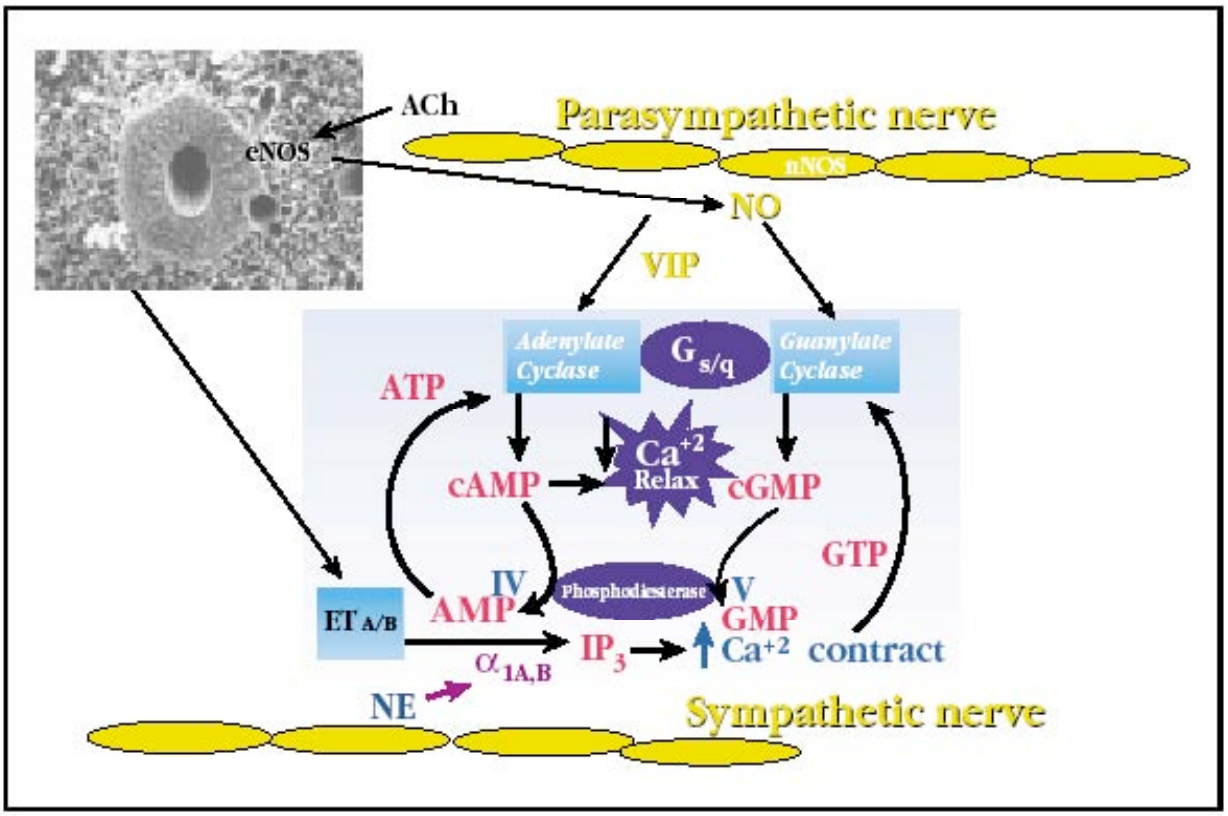


Figure 6. Pharmacomechanical mechanisms influencing cavernous muscle tone. From "Pharmacologic Treatment of Erectile Dysfunction," by William Steers, 2002, *Reviews in Urology, 4,* (p. S18)

Figure 7. Vacuum constriction device. From "Erecaid Esteem" by Timm Medical (2002) [On-line]. Available: http://www.timmmedical.com/erecaid/index.htm.

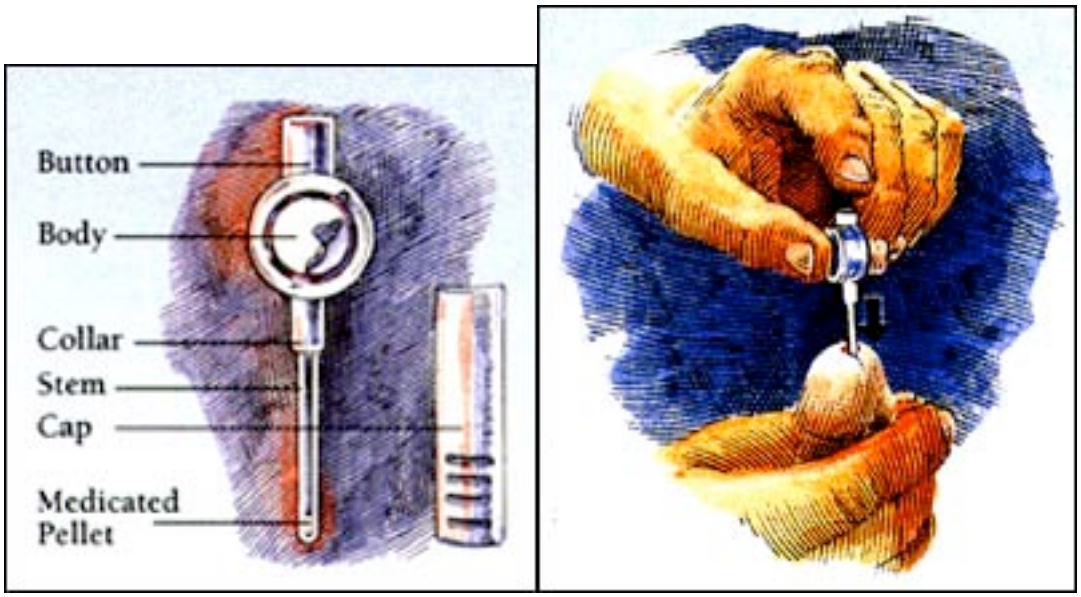


Figure 8. Intraurethral applicator for MUSE (alprostadil) drug administration. From "Treating impotence with MUSE" by VIVUS Corporation (2002) [On-line], Available: http://www.vivus. com/frames/products/restore.shtm

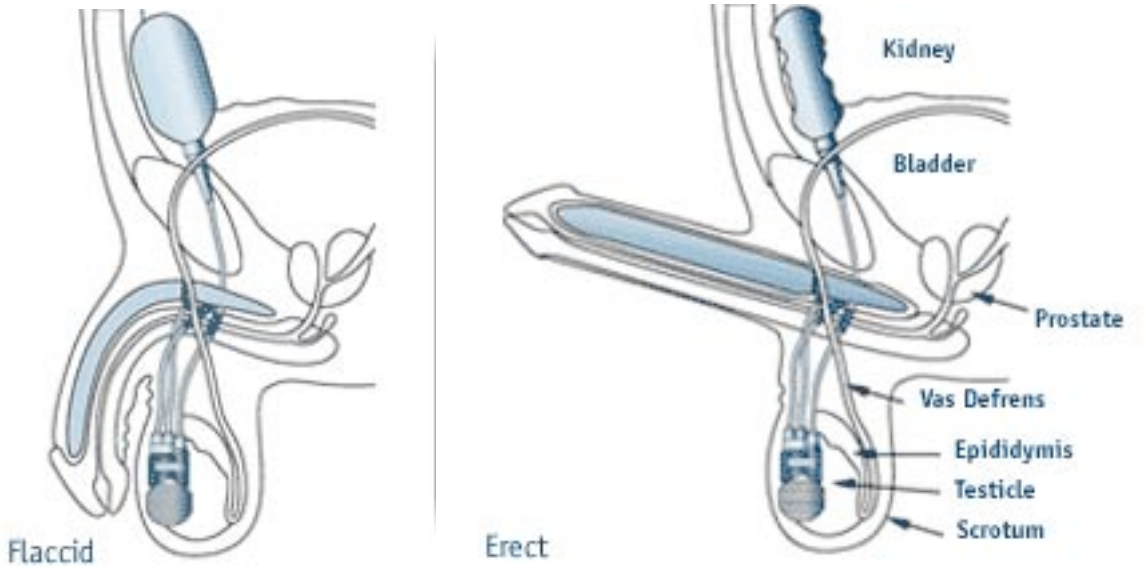


Figure 9. Inflatable penile implant. From "Patient Guide for Alpha I Inflatable Penile Implant" by Mentor Corporation (2002) [On-line]. Available: http://www.mentorcorp.com/ed/ed_pg_intro.htm

Figure 10. Rigiscan device. From "The Kinsey Institute Today,"1997, *Research and Creative Activity, 20,* [On-line], Available: http: www.indiana.edu/~rcapub/v20n2/

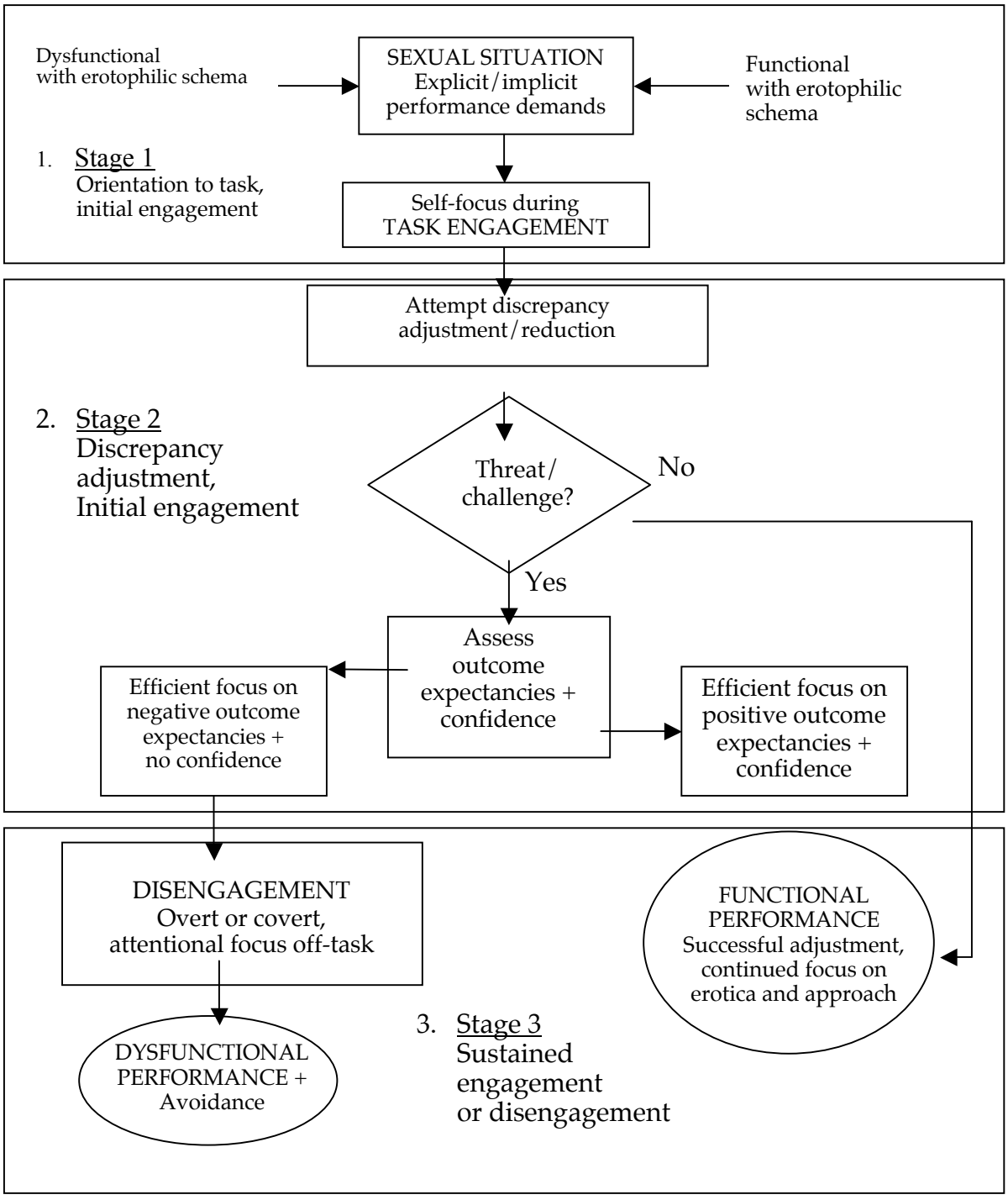


Figure 11. A model of sexual dysfunction: implications for examining attentional processes. From "Conceptualizing the Cognitive Component of Sexual Arousal: Implications for Sexuality Research and Treatment," by T. Sbrocco, and D. H. Barlow, 1996, in P. Sulkouskis (Ed.), *Frontiers of Cognitive Therapy*, p. 440, Guilford.

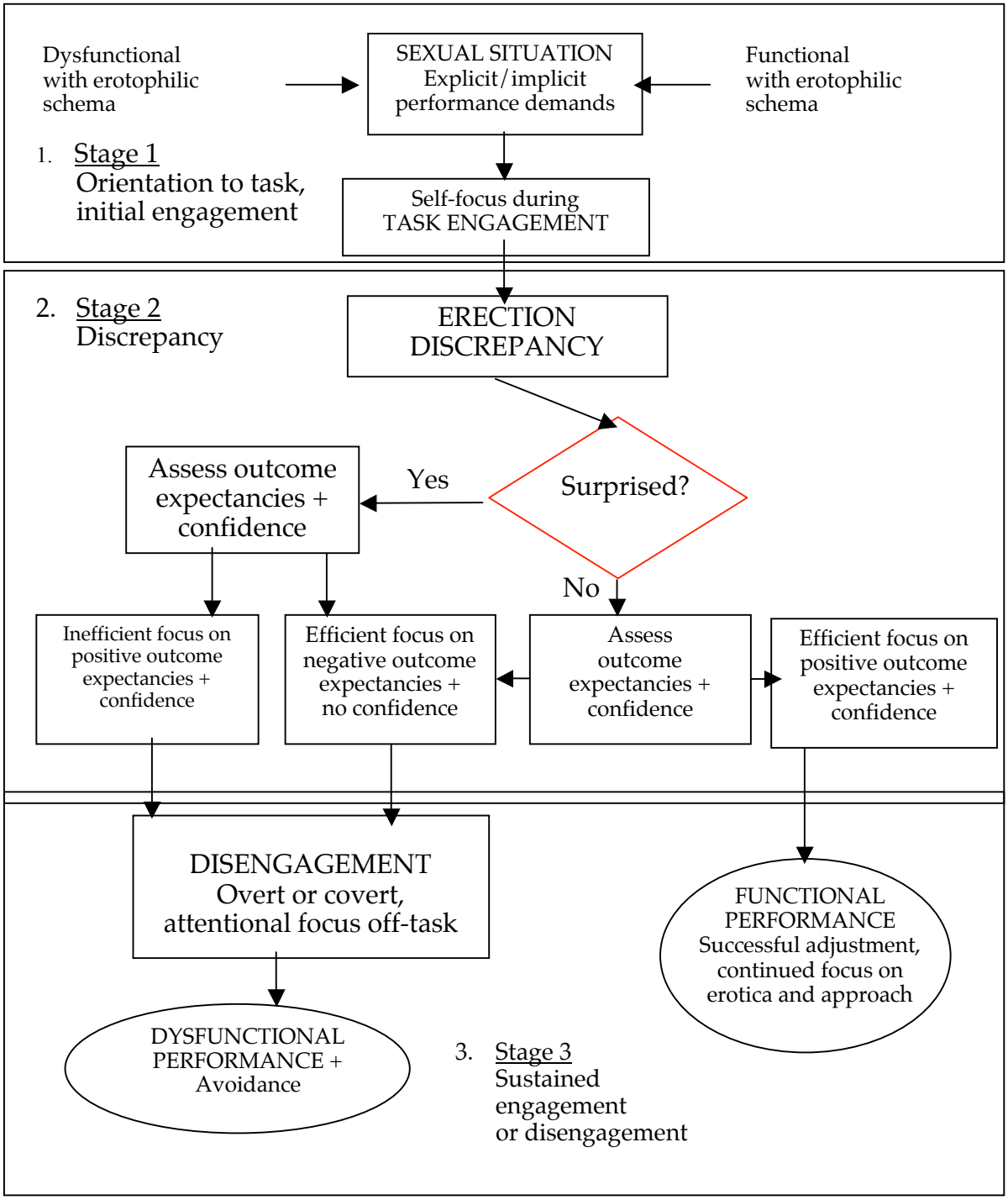


Figure 12. A revised model of sexual dysfunction: implications for examining attentional processes. From "The Effects of false physiological feedback on sexual arousal in sexually dysfunctional and functional males," by J. M. Stone, 1999, Unpublished doctoral dissertation, Uniformed Services University.

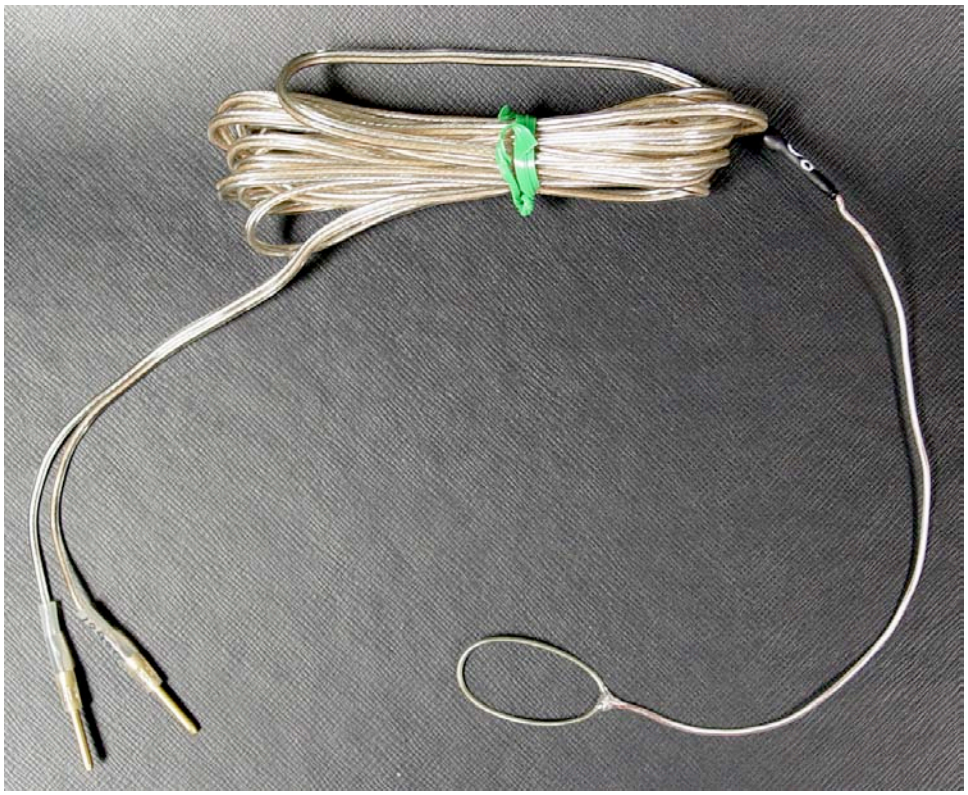


Figure 13. Photo of mercury-in-rubber strain gauge.

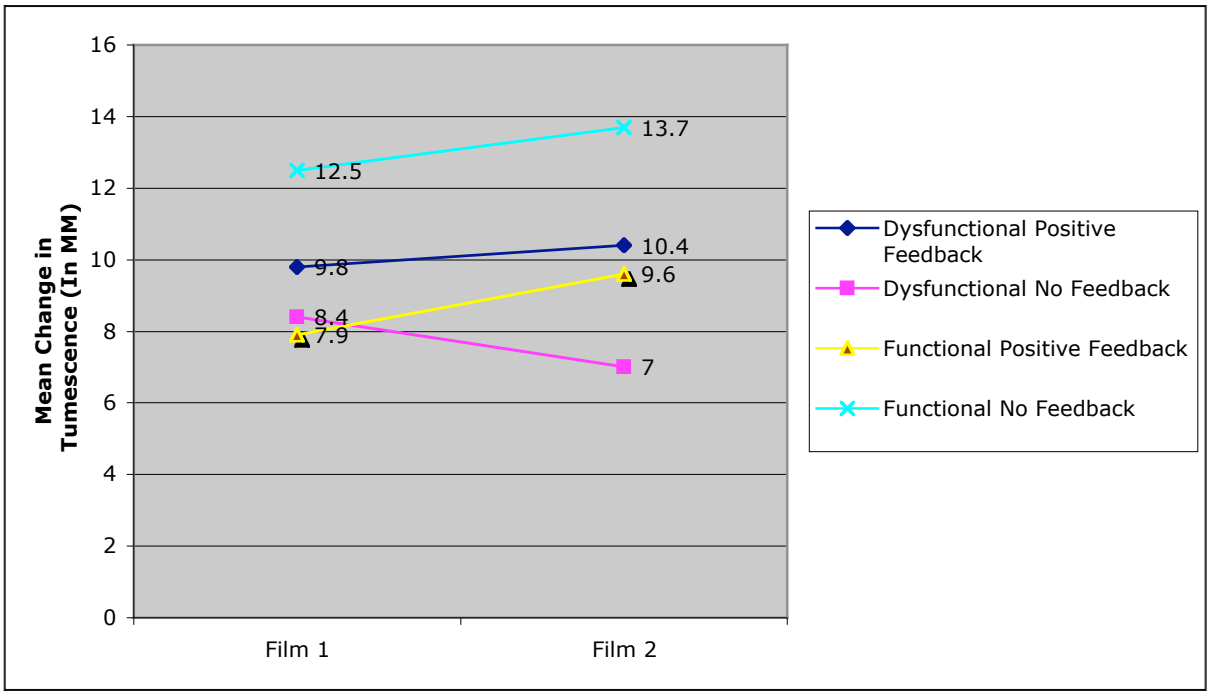


Figure 14. Mean change in tumescence by group during Film 1 and Film 2

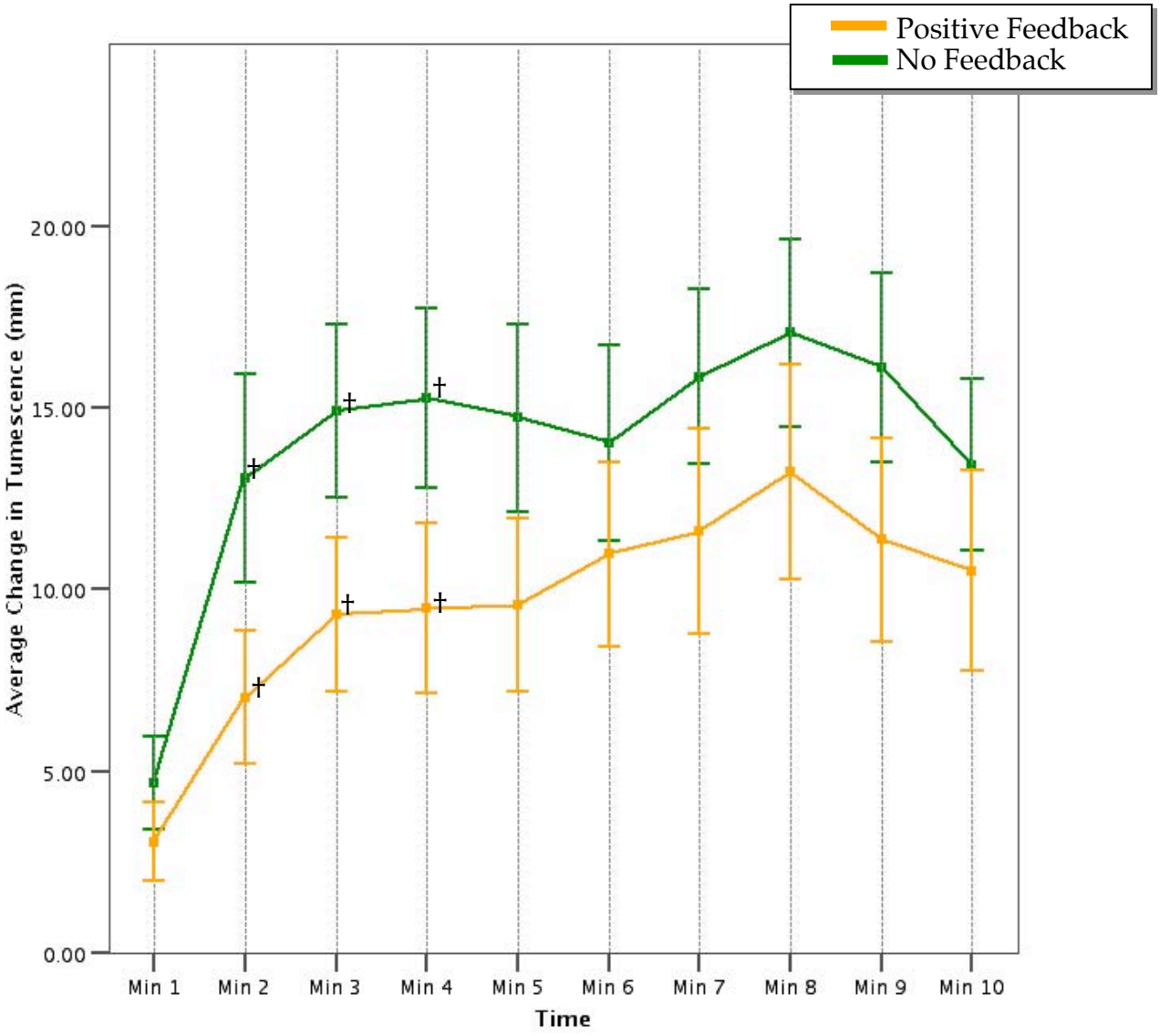


Figure 15. Sexually functional men – Minute by minute mean change in tumescence in Film 2

† Marked time points indicate a trend towards statistically significant difference ($p < .10$)

Error bars indicate standard error of the mean

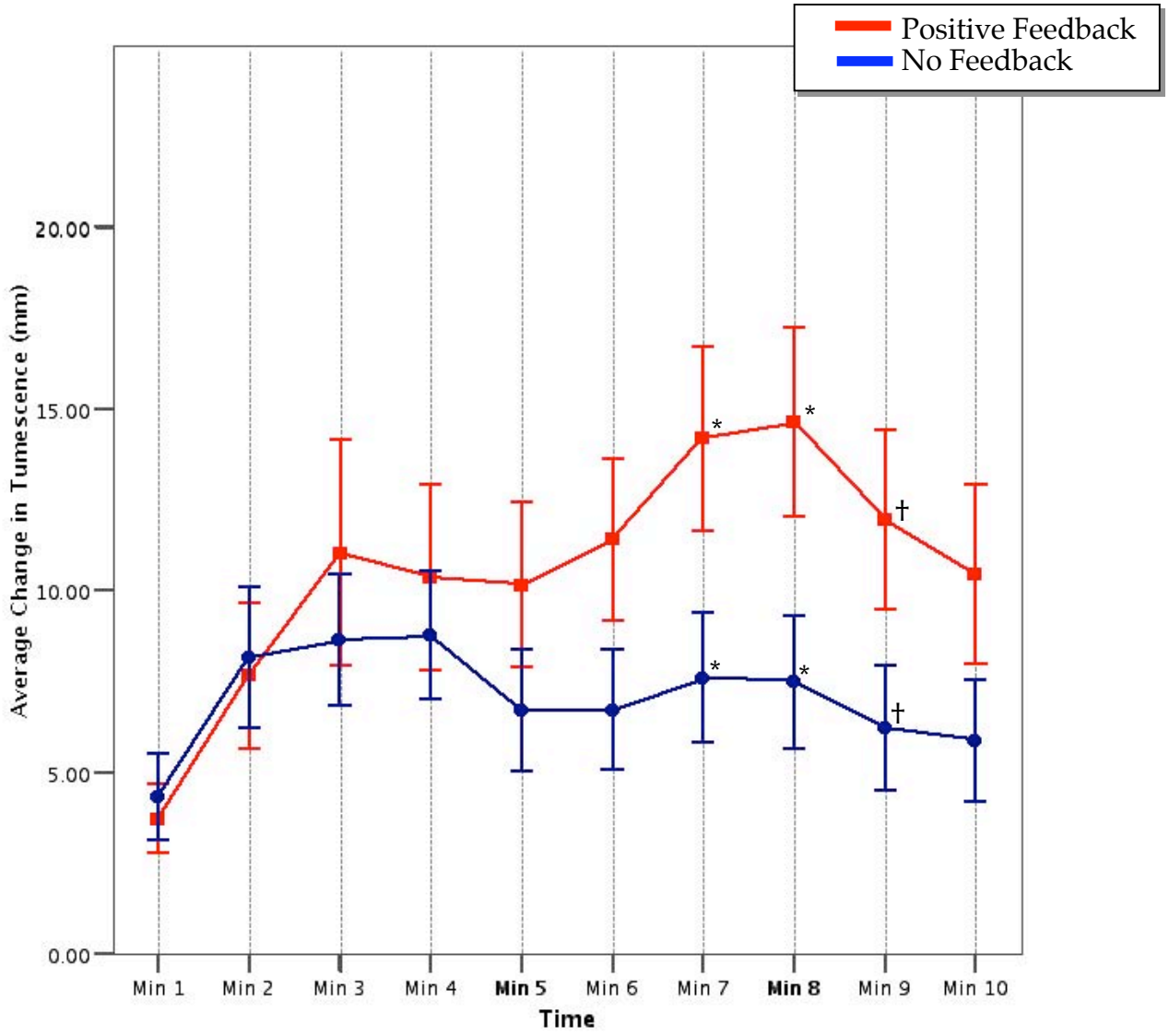


Figure 16. Sexually dysfunctional men – Minute by minute mean change in tumescence in Film 2

*Marked time points indicate a statistically significant difference ($p < .05$)

† Marked time points indicate a trend towards statistically significant difference ($p < .10$)

Error bars indicate standard error of the mean

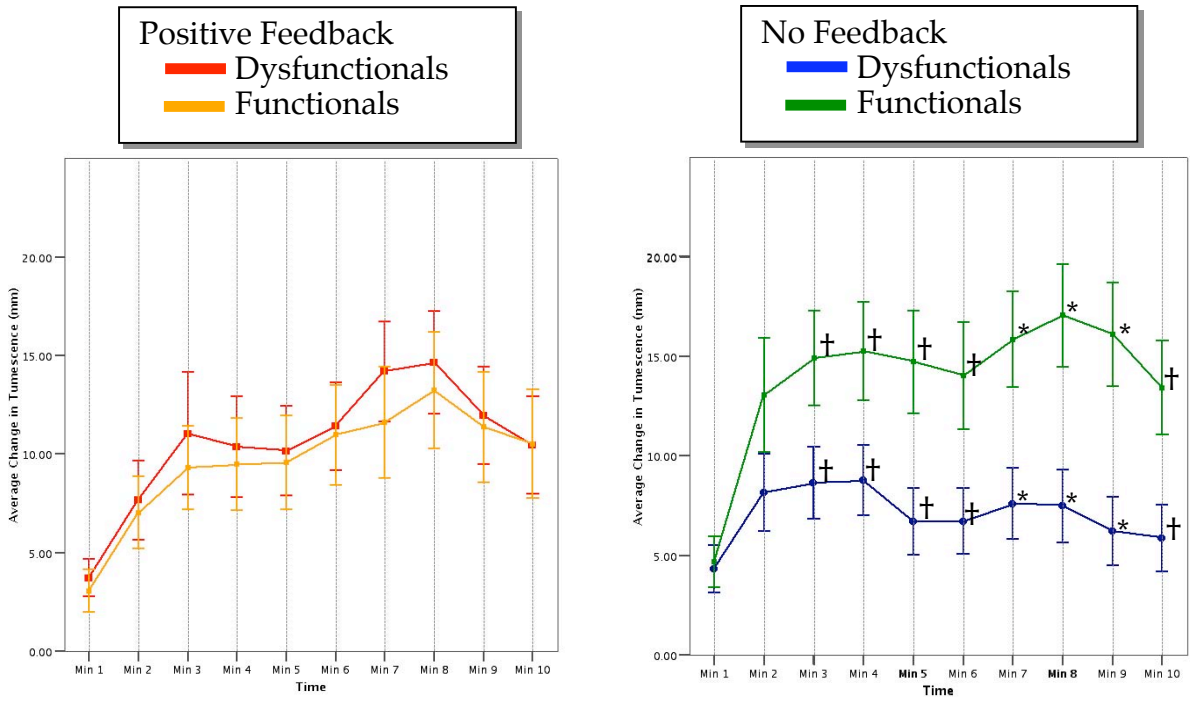


Figure 17. Minute by minute mean change in tumescence in Film 2 by feedback group

*Marked time points indicate a statistically significant difference ($p < .01$)

† Marked time points indicate a trend towards statistically significant difference ($p < .05$)

Error bars indicate standard error of the mean

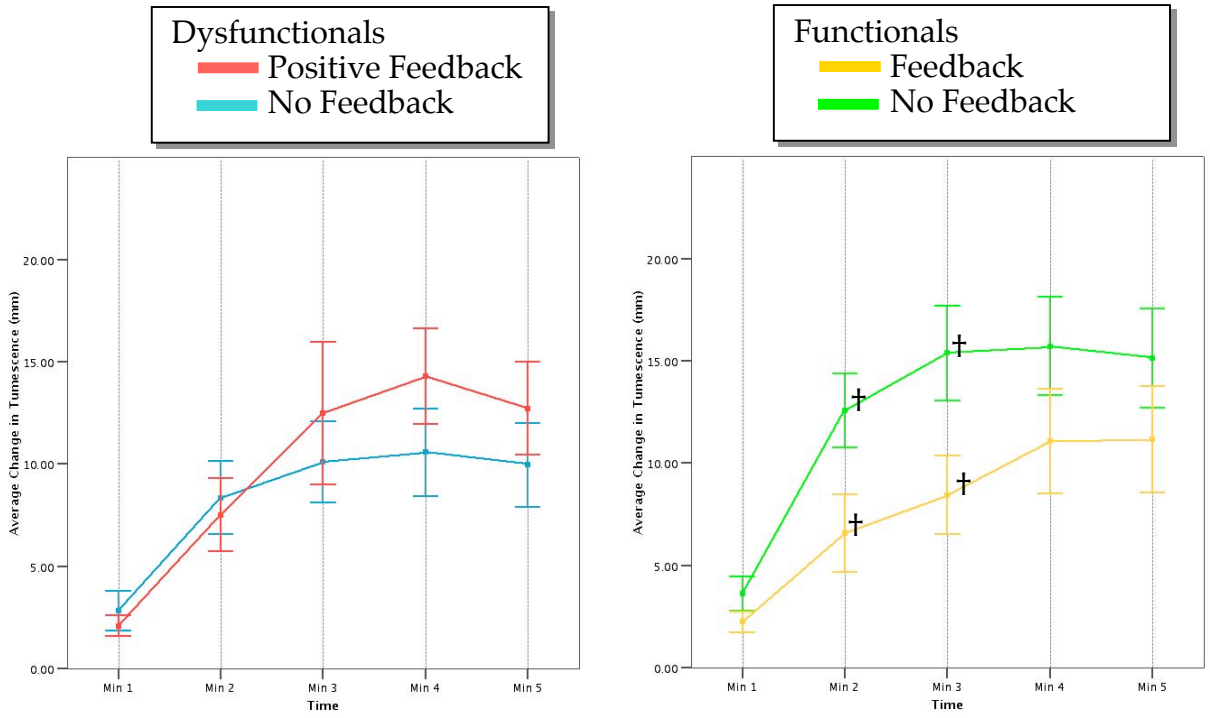


Figure 18. Minute by minute mean change in tumescence in Film 1 by sexual functioning group.

Note: Film 1 was a baseline measure. No feedback was given to any of the groups during Film 1.

† Marked time points indicate a trend towards statistically significant difference ($p < .05$)

Error bars indicate standard error of the mean

TABLES

Table 1

Zilbergeld's (1999) Myths of Male Sexuality

1. We're liberated folks who are very comfortable with sex.
2. A real man isn't into sissy stuff life feelings and communicating.
3. All touching is sexual or should lead to sex.
4. A man is always interested in and always ready for sex.
5. A real man performs in sex.
6. Sex is centered on a hard penis and what's done with it.
7. If your penis isn't up to snuff, we have a pill that will take care of everything.
8. Sex equals intercourse.
9. A man should be able to make the earth move for his partner, or at the very least knock her socks off.
10. Good sex is spontaneous, with no planning and no talking.

Note. From The New Male Sexuality by B. Zilbergeld, 1999, New York: Bantam.

Table 2

Timeline of Information Collected During the Study

Phone Screen	**Intake Interview**	**Physiological Assessment***	**Debriefing Session**	**Follow-up Phonecall**
Phone Screen Form	Informed Consent Form	SEE BELOW		
	SDI			
	SCID			
	Medical Information Form			
	BDI			
	BAI			
	IIEF			
	SOS			
	Authorization for Exchange of Information			

Table 3

Information Collected During the Physiological Assessment

Pre-Film 1	Film 1	Post-Film 1	Pre-Film 2	Film 2	Post-Film 2	Pre-Film 3
Flaccid Penile Circumfer-ence Measurement	Penile Tumescence	Sexual Arousal Questionnaire	Erection Score Prediction Questionnaire (feedback)	Penile Tumescence	Sexual Arousal and Feedback Questionnaire (feedback)	Erection Score Prediction Questionnaire (feedback)
Erection Prediction Questionnaire			Erection Prediction Questionnaire (no-feedback)		Sexual Arousal Questionnaire (no-feedback)	Erection Prediction Questionnaire (no-feedback)

Table 4

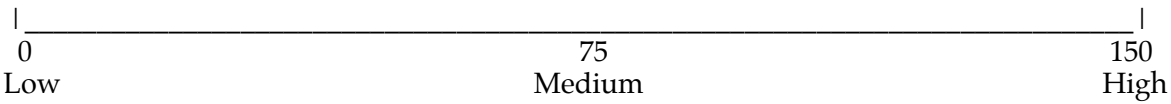
Statistical Power Analysis (Based on Stone [1999])

Factor Name	Number of levels	Cases per level	Effect size F	Power	F Adjusted for covariates	Power adjusted for covariates
Feedback (Positive and None)	Levels = 2	40	0.3	0.75		
Functional Status (Normal and Dysfunctional)	Levels = 2	40	0.3	0.75		
ANCOVA Feedback x Functional Status	Df = 3		0.20	0.36	0.33	0.80
	Within cell SD = 1.00, Variance = 1.00 Number covariates = 1, R-squared adjusted for covariates = 0.042 Cases per cell = 20, Total N of cases = 80 Alpha (2-tailed) = 0.05 Power computations: Non-central F					

Table 5

Expectancy and Confidence Ratings

		Pre-FILM 1 Questionnaires		Pre-FILM 2 Questionnaires			Pre-FILM 3 Questionnaires		
		Erection Prediction (0 – 150) (*SD*)	Confidence (0 – 150) (*SD*)	Erection Prediction (0 – 150) (*SD*)	Confidence (0 – 150) (*SD*)	Score Prediction (0 – 24) (*SD*)	Erection Prediction (0 – 150) (*SD*)	Confidence (0 – 150) (*SD*)	Score Prediction (0 – 24) (*SD*)
Dysfunctionals	Positive	91 (*34*)	87 (*38*)	75 (*27*)	75 (*19*)	12.4 (*4.7*)[b]	73 (*28*)	74 (*29*)	13.5 (*4.4*)
	None	88 (*39*)	86 (*38*)	75 (*41*)	81 (*34*)		73 (*44*)	85 (*41*)	
	Total	**90 (*36*)**[d]	**87 (*37*)**	**75 (*34*)**	**78 (*27*)**		**73 (*36*)**	**79 (*35*)**	
Functionals	Positive	107 (*33*)	99 (*26*)	79 (*30*)[e]	71 (*33*)[g]	10.0(*3.9*)[b,h]	73 (*39*)	79 (*31*)	11.8 (*4.3*)[h]
	None	114 (*31*)	103 (*27*)	97 (*34*)[e]	89 (*28*)[g]		88 (*39*)	87 (*30*)	
	TOTAL	**111 (*32*)**[d]	**101 (*26*)**	**87 (*33*)**	**80 (*32*)**		**80 (*39*)**	**83 (*31*)**	
	GRAND TOTAL	**100 (*36*)**[c]	**94 (*33*)**[f]	**81 (*33*)**[c]	**79 (*29*)**[f]	**11.2 (*4.4*)**[a]	**76 (*37*)**	**81 (*33*)**	**12.7 (*4.4*)**[a]



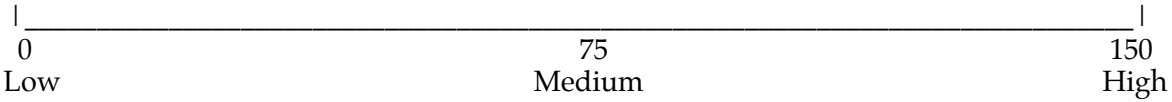
Film Score Range:
0 to 24, with 12 offered as "average"

[a, c, d, f, h] Matching superscripts indicate a statistically significant difference ($p \leq .01$)
[b, e, g] Matching superscripts indicate a trend towards statistically significant difference ($p \leq .10$)

Table 6

Pre-Film 3 Expectancy and Confidence Ratings (Controlled for Pre-FILM 2)

		Pre-FILM 3 Questionnaires		
		Erection Prediction (0 – 150) (*SE*)	Confidence (0 – 150) (*SE*)	Score Prediction (0 – 24) (*SE*)
Dysfunctionals	Positive	77 (*5.6*)	76 (*6.4*)	12.7 (*.74*)
	None	78 (*6.1*)	84 (*6.9*)	-
Functionals	Positive	75 (*5.9*)	83 (*6.7*)	12.7 (*.77*)
	None	74 (*6.4*)	82 (*7.2*)	-



Film Score Range:
0 to 24, with 12 offered as "average"

Table 7

Mean change in Average Tumescence and Maximal Tumescence Between Films (in millimeters)

		FILM 1		FILM 2	
	Feedback Condition	Average Tumescence (*SD*)	Maximal Tumescence (*SD*)	Average Tumescence (*SD*)	Maximal Tumescence (*SD*)
Dysfunctionals					
	Positive	9.8 (*8.6*)	17.4 (*11.3*)	10.4 (*9.1*)	18.5 (*12.1*) [b]
	None	8.4 (*7.1*)	13.8 (9.6)	7.0 (*6.7*)	12.8 (*7.5*) [b]
	Total	**9.2 (*7.8*)**	**15.7 (*10.5*)**	**8.8 (*8.2*)**	**15.9 (*10.5*)**
Functionals					
	Positive	7.9 (*7.5*) [a]	15.3 (*12.6*)	9.6 (*9.4*)	18.3 (*12.8*)
	None	12.5 (*6.9*) [a]	20.6 (*8.3*)	13.7 (*8.8*)	20.5 (*9.9*)
	Total	**10.1 (*7.5*)**	**17.8 (*11.0*)**	**11.6 (*9.3*)**	**19.3 (*11.4*)**
	GRAND TOTAL	**9.6 (*7.6*)**	**16.7 (*10.7*)**	**10.1 (*8.8*)**	**17.5 (*11.0*)**

[a, b,] Matching superscripts indicate a trend towards a statistically significant difference ($p < .10$)

Table 8

Average Tumescence and Maximal Tumescence for Film 2 (Controlled for Film 1) (in millimeters)

	FILM 2	
	Average Tumescence (*SE*)	Maximal Tumescence (*SE*)
Dysfunctionals		
Positive	10 (*1.4*)	18 (*1.7*)
None	8 (*1.5*)	15 (*1.8*)
Functionals		
Positive	11 (*1.4*)	19 (*1.8*)
None	11 (*1.5*)	18 (*1.9*)

Table 9

a. Film 2 Minute-by-Minute Change in Average Tumescence by Sexual Functioning Group (In Millimeters)

	1 *(SD)*	2 *(SD)*	3 *(SD)*	4 *(SD)*	5 *(SD)*	6 *(SD)*	7 *(SD)*	8 *(SD)*	9 *(SD)*	10 *(SD)*
Dysfunctionals										
Positive	3.7 (*4.3*)	7.7 (*9.2*)	11.1 (*14.3*)	10.4 (*11.7*)	10.2 (*10.4*)	11.4 (*10.2*)	14.2[c] (*11.6*)	14.7[d] (*11.6*)	12.0[e] (*11.4*)	10.4 (*11.3*)
None	4.3 (*4.2*)	8.2 (*8.3*)	8.6 (*7.7*)	8.8 (*7.5*)	6.7 (*7.1*)	6.7 (*7.1*)	7.6[c] (*7.5*)	7.5[d] (*7.8*)	6.2 [e] (*7.4*)	5.9 (*7.1*)
Total	**4.0[a] (*4.6*)**	**7.9 (*8.7*)**	**9.9 (*11.6*)**	**9.6 (*9.9*)**	**8.6 (*9.1*)**	**9.3 (*9.1*)**	**11.2 (*10.4*)**	**11.3 (*10.7*)**	**9.3 (*10.0*)**	**8.3[a] (*9.7*)**
Functionals										
Positive	3.1 (*4.6*)	7.0[f] (*7.9*)	9.3 [g] (*9.2*)	9.5[h] (*10.2*)	9.6 (*10.4*)	11.0 (*11.1*)	11.6 (*12.3*)	13.2 (*12.9*)	11.4 (*12.1*)	10.5 (*12.0*)
None	4.7 (*5.2*)	13.1[f] (*11.9*)	14.9 [g] (9.8)	15.3[h] (*10.1*)	14.7 (*10.6*)	14.0 (*11.0*)	15.8 (*9.9*)	17.1 (*10.7*)	16.1 (*10.7*)	13.4 (*11.6*)
Total	**3.8[b] (*4.9*)**	**9.9 (*10.3*)**	**12.0 (*9.8*)**	**9.6 (*9.9*)**	**12.0 (*10.7*)**	**12.4 (*11.0*)**	**13.6 (*11.3*)**	**15.0 (*11.9*)**	**13.6 (*11.6*)**	**11.9[b] (*10.9*)**

[a, b] Matching superscripts indicate a statistically significant difference ($p < .001$)
[c, d] Matching superscripts indicate a statistically significant difference ($p < .05$)
[e, f, g, h] Matching superscripts indicate a trend towards statistically significant difference ($p < .10$)

b. Film 2 Minute-by-Minute Change in Average Tumescence by Feedback Group (In Millimeters)

	1 (SD)	2 (SD)	3 (SD)	4 (SD)	5 (SD)	6 (SD)	7 (SD)	8 (SD)	9 (SD)	10 (SD)
Positive Feedback										
Dysfunctionals	3.7 (4.3)	7.7 (9.2)	11.1 (14.3)	10.4 (11.7)	10.2 (10.4)	11.4 (10.2)	14.2 (11.6)	14.7 (11.6)	12.0 (11.4)	10.4 (11.3)
Functionals	3.1 (4.6)	7.0 (7.9)	9.3 (9.2)	9.5 (10.2)	9.6 (10.4)	11.0 (11.1)	11.6 (12.3)	13.2 (12.9)	11.4 (12.1)	10.5 (12.0)
No Feedback										
Dysfunctionals	4.3 (4.2)	8.2 (8.3)	8.6 (7.7)	8.8 (7.5)	6.7 (7.1)	6.7 (7.1)	7.6 (7.5)	7.5 (7.8)	6.2 (7.4)	5.9 (7.1)
Functionals	4.7 (5.2)	13.1 (11.9)	14.9 (9.8)	15.3 (10.1)	14.7 (10.6)	14.0 (11.0)	15.8 (9.9)	17.1 (10.7)	16.1 (10.7)	13.4 (11.6)

[a, b] Matching superscripts indicate a statistically significant difference ($p < .05$)
[c] Matching superscripts indicate a trend towards statistically significant difference ($p < .10$)

Table 10

Post-Film 1 Questionnaire (All Subjects)

		Arousal (0 – 150) (*SD*)	Anxiety (0 – 150) (*SD*)	Confidence (0 – 150) (*SD*)	Size of Erection (0 – 150) (*SD*)	Attention to Film (0 – 150) (*SD*)	Attention to Body (0 – 150) (*SD*)	Control of Erection (0 – 150) (*SD*)	Negative Thoughts (0 – 150) (*SD*)	Thought Interference (0 – 150) (*SD*)	Similar to Reality (0 – 150) (*SD*)
Dysfunctionals	Positive	62 (*38*)*	47 (*45*)	41 (*38*)	49 (*42*)*	116 (*25*)	87 (*35*)	34 (*31*)	32 (*41*)	37 (*41*)	78 (*42*)
	None	70 (*34*)	41 (*32*)	54 (*38*)	58 (*45*)	114 (*24*)	81 (*39*)	46 (*38*)	34 (*38*)	46 (*38*)	70 (*49*)†
	Total	**66 (*36*)**	**45 (*39*)**	**47 (*38*)**	**53 (*43*)**	**115 (*24*)**	**84 (*37*)**	**39 (*35*)**	**33 (*39*)**	**41 (*39*)**	**74 (*45*)**
Functionals	Positive	61 (*36*)	49 (*35*)	62[a] (*40*)	56 (*47*)*	97 (*29*)	77 (*30*)	52 (*28*)	28 (*25*)	45 (*39*)	47 (*31*)
	None	80 (*31*)	54 (*38*)*	84 [a] (*35*)	80 (*46*)	103 (*24*)	90 (*34*)	64 (*41*)	28 (*19*)	54 (*37*)	68 (*45*)
	TOTAL	**70 (*35*)**	**51 (*36*)**	**72 (*39*)**	**67 (*47*)**	**100 (*26*)**	**83 (*32*)**	**58 (*35*)**	**28 (22)**	**49 (*38*)**	**57 (*39*)**

*Statistically significant difference ($p < .05$) between Film 1 and 2.
†Trend for statistical significance difference ($p < .10$) between Film 1 and 2

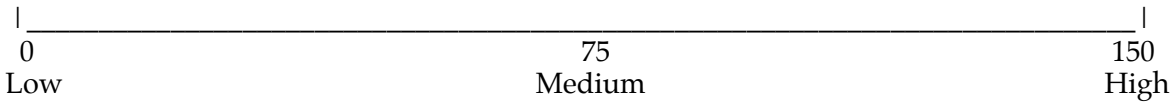


Table 11

Post-Film 2 Questionnaire (All Subjects)

		Arousal (0 – 150) (*SD*)	Anxiety (0 – 150) (*SD*)	Confidence (0 – 150) (*SD*)	Size of Erection (0 – 150) (*SD*)	Attention to Film (0 – 150) (*SD*)	Attention to Body (0 – 150) (*SD*)	Control of Erection (0 – 150) (*SD*)	Negative Thoughts (0 – 150) (*SD*)	Thought Interference (0 – 150) (*SD*)	Similar to Reality (0 – 150) (*SD*)
Dysfunctionals	Positive	79 (*33*)*	53 (*41*)	51 (*39*)	66 (*42*)*	108 (*34*)	96 (*21*)	45 (*38*)	34 (*29*)	44 (*44*)	78 (*40*)
	None	74 (*43*)	41 (*28*)	50 (*43*)	55 (*42*)	99 (*35*)	86 (*43*)	44 (*40*)	43 (*38*)	51 (*39*)	50 (*41*)†
	Total	**77 (*37*)**	**47 (*36*)**	**51 (*40*)**	**61 (*42*)**	**104 (*34*)**	**92 (*33*)**	**44 (*39*)**	**38 (*33*)**	**47 (*41*)**	**65 (*43*)**
Functionals	Positive	76 (*43*)	42 (*32*)	75 (*40*)	76 (*44*)*	99 (*36*)	85 (*35*)	59 (*40*)	31 (*28*)	51 (*44*)	57 (*45*)
	None	83 (*38*)	41 (*34*)*	81 (*40*)	76 (*47*)	91 (*32*)	79 (*39*)	67 (*46*)	30 (*26*)	43 (*34*)	59 (*44*)
	TOTAL	**79 (41)**	**41 (*33*)**	**78 (40)**	**76 (*45*)**	**95 (*34*)**	**82 (*36*)**	**63 (*42*)**	**31 (*26*)**	**48 (*39*)**	**58 (*43*)**

*Statistically significant difference ($p < .05$) between Film 1 and 2.
†Trend for statistical significance difference ($p < .10$) between Film 1 and 2

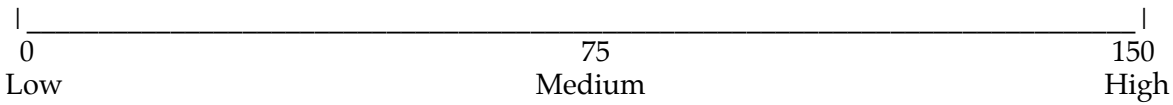
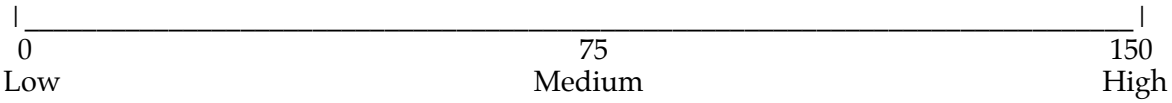


Table 12

Post-Film 2 Questionnaire (All Subjects) – Controlled for Post Film 1 Responses

		Arousal (0 – 150) (*SE*)	Anxiety (0 – 150) (*SE*)	Confidence (0 – 150) (*SE*)	Size of Erection (0 – 150) (*SE*)	Attention to Film (0 – 150) (*SE*)	Attention to Body (0 – 150) (*SE*)	Control of Erection (0 – 150) (*SE*)	Negative Thoughts (0 – 150) (*SE*)	Thought Interference (0 – 150) (*SE*)	Similar to Reality (0 – 150) (*SE*)
Dysfunctionals	Positive	82 (*7.2*)	53 (*6.1*)	62 (*7.2*)	73 [a] (*7.2*)	103 (*7.0*)	95 (*7.0*)	56 (*6.7*)	33 (*5.9*)	48 (*8.3*)	71[a] (*7.9*)
	None	73 (*7.8*)	45 (*6.6*)	54 (*7.6*)	56 [b] (*7.8*)	97 (*7.5*)	88 (*7.5*)	46 (*7.1*)	41 (*6.4*)	50 (*8.9*)	47[b] (*8.5*)
Functionals	Positive	80 (*7.6*)	41 (*6.4*)	74 (*7.4*)	79 [a] (*7.6*)	105 (*7.4*)	88 (*7.4*)	56 (*6.9*)	33 (*6.2*)	51 (*8.6*)	68 [a] (*8.5*)
	None	75 (*8.1*)	38 (*6.8*)	65 (*8.1*)	63 [b](*8.2*)	94 (*7.7*)	76 (*7.8*)	54 (*7.5*)	31 (*6.5*)	40 (*9.2*)	58 [b] (*8.7*)



Note: Means in the same column that do not share superscripts differ at ($p < .05$)

Table 13

Additional Post-Film 2 Questionnaire (Feedback Subjects)

	Score Distraction (0–150) (*SD*)	Score Arousal (0–150) (*SD*)	Score Anxiety (0-150) (*SD*)	Score Confidence (0-150) (*SD*)	Score Erection Maint. (0-150) (*SD*)	Score Attention to Film (0-150) (*SD*)	Score Attention to Body (0-150) (*SD*)	Score Control over Erection (0-150) (*SD*)	Score Accuracy (0-150) (*SD*)	Control over Score (0-150) (*SD*)	Tried to Change Score (0-150) (*SD*)	Score Surprise (0-150) (*SD*)
Dysfunctionals												
Positive	60 (*36*)	71 (*31*)	78 (*34*)	76 (*32*)	73 (*29*)	76 (*30*)	97 (*26*)	72 (*24*)	82 (*38*)	38 (*39*)	73 (*49*)	85[a] (*39*)
Functionals												
Positive	52 (*46*)	76 (*29*)	78 (32)	70 (*26*)	68 (*28*)	64 (*26*)	87 (*26*)	68 (*22*)	71 (*29*)	44 (*29*)	59 (*42*)	58[a] (*37*)

[a] Matching superscripts indicate a statistically significant difference ($p < .05$)

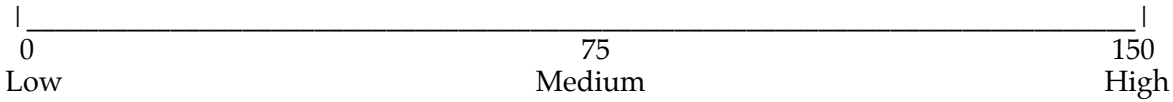


Table 14

Film 1 Minute-by-Minute Change in Average Tumescence by Group (In Millimeters)

	1 *(SD)*	2 *(SD)*	3 *(SD)*	4 *(SD)*	5 *(SD)*
Dysfunctionals					
Positive	2.1 (*2.3*)	7.5 (*8.2*)	12.5 (*15.9*)	14.3 (*10.8*)	12.7 (*10.3*)
None	2.8 (*4.1*)	8.4 (*7.6*)	10.1 (8.4)	10.6 (*9.1*)	10.0 (*8.7*)
Functionals					
Positive	2.2 (*2.2*)	6.6 (*8.2*) [a]	8.5 (*8.3*) [b]	11.1 (*11.1*)	11.2 (*11.3*)
None	3.6 (*3.4*)	12.3 (*7.4*) [a]	15.4 (9.5) [b]	15.7 (*9.9*)	15.1 (*10.0*)

[a, b] Matching superscripts indicate a trend towards statistically significant difference ($p < .05$)

Table 15

Sample Demographics

Variable	Dysfunctionals		Functionals	
	Positive Feedback	**No Feedback**	**Positive Feedback**	**No Feedback**
N	21	18	19	17
Age (SD)	42.8 (9.9)	46.6 (8.3)	42.4 (7.9)	42.7 (9.5)
Race	44% Caucasian 46% African-Amer 10% Other		60% Caucasian 30% African-Amer 10% Other	
Relationship Status	33% Single 44% Married 23% Divorced		35% Single 51% Married 14% Divorced	
Education Level	44% High School 31% College 26% Graduate		33% High School 28% College 39% Graduate	
Employment Status	64% Full Time † 36% Not Full Time		83% Full Time † 17% Not Full Time	
Flaccid Circumference	96.5 (10.5)	96.2 (12.6)	96.0 (5.9)	93.2 (9.2)
Film 1 Avg Chg in Tum. SOS Porn (SD)	9.8 (8.6) 11.8 (7.0)	8.4 (7.1) 13.7 (7.5)	7.9 (7.5) 12.6 (8.5)	12.5 (6.9) 11.1 (5.9)
Non-Responders (< 3mm Avg Chg)	26% in Film 1 26% in Film 2		28% in Film 1 31% in Film 2	
Smokers	41%*		14%*	
Average BMI (SD)	26.4 (3.7)	26.6 (3.4)	27.0 (3.0)	26.1 (4.0)
Overweight	18%		14%	
IIEF Score (SD)	45.8 (13.9)	45.6 (12.2)		
IIEF-ED Score (SD)	17.8 (5.6)	18.1 (18.2)		
Number of Men with Hx of Viagra Use	2	4		
Years with ED (SD)	4.4 (6.7)	5.9 (7.4)		

* Statistically significant difference ($p < .05$)
† Trend towards statistically significant difference ($p < .10$)
Note: Items listed only in Dysfunctionals and Functionals columns pertain to those sexual functioning groups as a whole.

APPENDICES

Appendix A

Participant Recruitment and Selection

Participant Recruitment and Selection

Participant Recruitment

(1) Referral Sources: Referral of dysfunctional participants will come from local urologists. A recruitment letter will be mailed to urologists in the greater metropolitan area (Appendix R). The letter describes the purpose of the study, the type of participants being sought, participant payment of $40 and the availability of free assessment. These participants will have received a physician's assessment of their sexual functioning prior to participating in the proposed experiment. Participants will sign a release of information in order to obtain information from the referring provider. This release can be found in Appendix S. Dysfunctional participants will differ from functional participants only in that they will be diagnosed with DSM-IV Male Erectile Disorder, Due to Psychological Factors, as determined by the referring physician, Major Galbreath, Dr. Sbrocco, and Dr. Lewis. A report detailing the assessment results of each dysfunctional participant will be sent to their referral source following their participation in the study.

Sexually functional men will be recruited from the local area through newspaper advertisements (See Appendix B). These participants will be paid $40 for their participation in the study (intake interview, physiological assessment, and accomplishing questionnaires). Past data indicate that normal volunteers for studies of sexual behavior obtained in this manner do not differ from the population at large in prevalence of excessive "liberality" of views of sexual behavior or in the prevalence of excessive anxiety or inhibitions concerning sex (Thorne, 1966; Udry & Morris, 1967).

(2) Initial Phone Contact: When a prospective participant initially calls the lab, Maj Nate Galbreath will explain the study and conduct a phone screen. When the lab's procedures are explained to a functional volunteer participant, the following are included:

(a) The purpose of the study.

(b) Mention and explanation of physiological measurement (penile tumescence). Explanations are made using appropriate language.

(c) Confidentiality: It is explained to the participant that all information collected during the studies is coded and that his name will not appear on any records.

(d) It is explained to the caller that there are restrictions placed upon us regarding who we can use as participants. Therefore, it is necessary to do an initial screening interview, lasting approximately one hour. For dysfunctional participants, it is explained that this interview is a time when we can gather information regarding the nature of their problems as well.

(e) It is explained to the caller that the interview and assessment are conducted by Major Galbreath, a doctoral student in clinical psychology, who is supervised by a clinical psychologist.

(f) The sexually functional participant will be paid $40 for participating in the study (to include intake interview, physiological measurements, and questionnaires).

(g) Any questions raised by the caller are answered.

(h) If the caller is still interested in volunteering, the phone screen form is completed (See Appendix C).

(i) If the caller meets the inclusion criteria, a 2 hour session is scheduled.

Participant Selection

(1) The sexually "functional" group will be comprised of 18-60 year old males who report a history of adequate sexual functioning (adequate sexual arousal, orgasm with intercourse, and a subjective sense of arousal), as well as not meeting the diagnostic criteria for Male Erectile Disorder (DSM-IV). Participants also must meet the screening criteria (see Screening Criteria below).

(2) The sexually "dysfunctional" group will be comprised of 18-60 year old males who have been referred for a sexual problem, who meet the diagnostic criteria for Male Erectile Disorder (DSM-IV), and meet all of the screening criteria (see Screening Criteria below).

Screening Criteria. All participants will be clinically and physically screened during a one hour initial screening session. The following is a description of the methods and criteria for determination of participant eligibility:

(1) Presence of psychopathology: Current contact with a psychotherapist for treatment of emotional or behavioral disturbance, other than an erectile problem for dysfunctional participants, and/or history of past psychiatric hospitalization will be sufficient to exclude a participant from participation in the proposed studies. A careful assessment of the participant's current life situation also will be made during the clinical interview and any participant who meets DSM-IV criteria for emotional or behavioral disorder will be excluded from participation in this study. The screening section of the

SCID, which assists in making DSM-IV diagnoses, is an efficacious assessment tool for this purpose. The interviewer will also review results from the Beck Depression Inventory and the Beck Anxiety Inventory.

(2) Emotional distress at the prospect of viewing explicit sexual material: Each participant's experience with erotic literature will be assessed; this includes past emotional reactions to viewing explicit sexual material and/or anticipation of having such an emotional reaction. Any participant expressing this type of concern will be excluded from participation in the proposed study.

(3) Assessment of sexual functioning: The participant is interviewed using a semi-structured interview (Sexual Dysfunction Interview-revised, attached). The interview usually lasts approximately one hour and consists of a thorough assessment of the participant's sexual history, experiences, attitudes, and difficulties. Following completion of this interview and the above-described psychiatric screening, the dysfunctional participant is given a "psychogenic" rating on a 0-5 (0 = psychogenic factors do not appear to be involved, and 5 = psychogenic factors are definitely involved and appear to be the causative and/or maintaining factor in the dysfunction). A rating of 4 or 5 is necessary for inclusion as a sexually dysfunctional participant. In addition, the participant's answers to the International Index of Sexual Functioning will be considered in this assessment.

(4) Physical assessment: The Medical Information Form asks the participant questions concerning physical health. Only men who reported that they were free from major medical problems and experienced reflexogenic erections were included in the study.

(5) In summary, the general screening criteria are:

(a) Age: 18 - 60

(b) No major psychological disturbance

(c) A psychogenic rating of 4 or 5 for clinical participants

(d) Consent to view explicit sexual materials

(e) No major medical problems and reflexogenic erections

3. <u>Other Considerations in Participant Selection</u>

(1) Treatment will not be a direct objective of any part of this proposal and participants will be so informed. However, when appropriate, participants will be provided referrals.

(2) These specific issues mentioned above are not the only questions related to participant selection. The usual considerations regarding research with human participants will be implemented in the proposed study. These include the following:

(a) Informing participants of all factors influencing their willingness to participate in the studies.

(b) The explanation of any descriptions with the restoration of the relationship between the investigator and the participant following completion of the studies.

(c) Clarification for the participant of his constant freedom to decline participation in the studies at any time without fear of prejudice.

(d) Confidentiality of the results. Records and data from participants in these studies will be filed separately (kept in a locked filing cabinet) and will be inaccessible to anyone except the personnel on this project.

(e) Detection and removal of any unwanted consequences of the study following completion.

(f) It is emphasized to the dysfunctional (clinical) participants that their clinical assessment will be conducted in the context of a research program.

(g) All participants are told in advance that a thorough debriefing interview will follow the experimental session.

Appendix B

Newspaper Advertisement for Recruitment

of Participants

Newspaper Advertisement for Recruitment of Participants

Men Needed in Lab Study of Sexual Arousal

University study seeks healthy men, ages 18-60, for 3-hr laboratory assessment. The purpose of the study is to gain a better understanding of factors that affect sexual functioning. We are looking for 2 types of volunteers: men with erection problems and men without sexual problems. If you are interested, call Nate Galbreath (301) 295-1788. Participants will be compensated.

(25-word advertisement)

Men Needed in Sexual Arousal Study
University seeks men with & without erection problems to assess factors affecting arousal. Nate Galbreath (301) 295-1788. Participants compensated.

Appendix C

Phone Screen Form

PHONE SCREEN – CONTROLS

INTRODUCTION (READ TO CALLER)

"Based on experimental data collected over the past decade, men who have erection problems are known to differ from men who don't in several areas. One of these important areas includes how feedback about their sexual performance affects erection size. The purpose of this study is to determine how the performance of sexually functional and dysfunctional men is affected by receiving feedback about their erection size while viewing sexually explicit videotapes. Sexually functional and dysfunctional men meeting certain criteria will be asked to participate in a sexual functioning study.

The study will consist of three phases. During the first phase, we will be collecting information on your physical health, sexual functioning, and psychological health. This phase will take approximately one hour to complete. The second phase will also take approximately one hour to complete and involves the physiological assessment of your erection while viewing sexually explicit videotapes. You will be asked to wear a thin rubber tube around your penis to collect information about your erection while you view erotic movies in the privacy of a small room in one of our laboratories. During the second phase, you will also be filling out questionnaires asking you about your sexual performance and making predictions about your performance. During the third phase you will be explained the results of your participation in the study. This phase will take approximately 30 minutes. The interview and physiological assessment are conducted by doctoral students in clinical psychology who are supervised by a licensed clinical psychologist. All information collected during the study is coded and your name will not appear on any records. You will be paid $40 for your participation in the three phases of the study. Do you have any questions? If you are interested in participating in this study I now need to ask you a series of questions to determine if you are the type of person we are looking for: Are you interested?" (If yes, get the following information. If no, thank the caller and discontinue the screening.)

DATE _____

NAME _____

ADDRESS _____

_____

1. HOME PHONE _____
2. WORK PHONE _____
3. AGE _____
4. RACE _____
5. HEIGHT _____
6. WEIGHT _____
7. DO YOU SMOKE? YES NO
8. WHAT IS YOUR MARITAL STATUS? _____
9. ARE YOU EMPLOYED? YES NO
10. ARE YOU IN THE MILITARY OR A MILITARY DEPENDENT? YES NO
11. HAVE YOU EVER BEEN TOLD BY A PHYSICIAN THAT YOU HAD:

    A. HEART DISEASE YES NO
    B. HIGH BLOOD PRESSURE YES NO

C. KIDNEY DISEASE YES NO
D. DIABETES YES NO
E. SEXUAL PROBLEMS YES NO
F. PROSTATE PROBLEMS YES NO
G. BACK INJURY YES NO

12. ARE YOU CURRENTLY ON ANY MEDICATION? YES NO

IF YES, WHAT ARE YOU TAKING? _____

13. DO YOU HAVE ANY PROBLEMS WITH YOUR SEXUAL FUNCTIONING?

YES NO

SPECIFICALLY, DO YOU HAVE ANY PROBLEMS:

OBTAINING ERECTIONS? YES NO

MAINTAINING/KEEPING ERECTIONS YES NO

EJACULATING/CUMMING TOO QUICKLY? YES NO

HAVE YOU EVER HAD ANY PROBLEMS WITH YOUR SEXUAL FUNCTIONING? YES NO

HAVE YOU EVER HAD ANY PROBLEMS:

OBTAINING ERECTIONS? YES NO

MAINTAINING/KEEPING ERECTIONS YES NO

EJACULATING/CUMMING TOO QUICKLY? YES NO

14. ARE YOU HETEROSEXUAL? YES NO

15. HAVE YOU EVER RECEIVED MENTAL HEALTH COUNSELING? YES NO

IF YES, CAN YOU TELL ME ABOUT THAT?

_____

16. WOULD YOU BE ABLE TO COME IN FOR A 3 HOUR SESSION AS PART OF THIS STUDY? YES NO

17. WOULD YOU BE WILLING TO ANSWER QUESTIONS ABOUT YOUR PHYSICAL AND MENTAL HEALTH AND YOUR SEXUAL FUNCTIONING? YES NO

18. a. WOULD YOU BE WILLING TO WATCH EROTIC VIDEOTAPES WHILE WE MEASURE YOUR ERECTION? YES NO

b. DO USUALLY BECOME SEXUALLY AROUSED TO EROTIC VIDEOTAPES? YES NO

19. WHEN CAN YOU COME IN FOR A 3 HOUR SESSION FOR YOUR PARTICIPATION IN THIS STUDY?

DATE _____ TIME _____

PHONE SCREEN - PATIENT REFERRALS

DATE _____

NAME _____

ADDRESS _____

_____

1. HOME PHONE _____
2. WORK PHONE _____
3. AGE _____
4. RACE _____
5. HEIGHT _____
6. WEIGHT _____
7. DO YOU SMOKE? YES NO
8. WHAT IS YOUR MARITAL STATUS?
   _____
9. DO YOU HAVE A REGULAR PARTNER? YES NO
10. ARE YOU EMPLOYED? YES NO
11. ARE YOU IN THE MILITARY OR A MILITARY DEPENDENT? YES NO
12. WHO REFERRED YOU TO THIS STUDY?

    NAME _____

    ADDRESS _____

    PHONE _____
13. HAVE YOU EVER BEEN TOLD BY A PHYSICIAN THAT YOU HAD:

A. HEART DISEASE	YES NO
B. HIGH BLOOD PRESSURE	YES NO
C. KIDNEY DISEASE	YES NO
D. DIABETES	YES NO
E. PROSTATE PROBLEMS	YES NO
F. BACK INJURY	YES NO

14. ARE YOU CURRENTLY ON ANY MEDICATION? YES NO

    IF YES, WHAT ARE YOU TAKING? _____
15. DO YOU HAVE ANY PROBLEMS WITH YOUR SEXUAL FUNCTIONING? YES NO

16. SPECIFICALLY, DO YOU HAVE ANY PROBLEMS:

OBTAINING ERECTIONS? YES NO WHEN BEGAN? _____

MAINTAINING/KEEPING ERECTIONS YES NO WHEN BEGAN? _____

EJACULATING/CUMMING TOO QUICKLY? YES NO WHEN BEGAN? _____

17. HAVE YOU EVER HAD ANY PROBLEMS:

OBTAINING ERECTIONS? YES NO WHEN? _____

MAINTAINING/KEEPING ERECTIONS YES NO WHEN? _____

EJACULATING/CUMMING TOO QUICKLY? YES NO WHEN? _____

18. SOMETIMES PEOPLE HAVE HAD A VARIETY OF TESTS TO EVALUATE THEIR SEXUAL FUNCTIONING. HAVE YOU EVER HAD ANY?
BLOOD TESTS? YES NO

TEST OF HORMONE LEVELS? YES NO

MEASUREMENT OF BLOOD FLOW IN YOUR PENIS (DOPPLER STUDIES)? YES NO

19. HAS YOUR DOCTOR TRIED ANY MEDICATION? YES NO

IF YES, WHAT? _____

20. HAS YOUR DOCTOR INJECTED YOUR PENIS? YES NO

IF YES, WITH WHAT? _____

21. ARE YOU HETEROSEXUAL? YES NO

22. HAVE YOU EVER RECEIVED MENTAL HEALTH COUNSELING? YES NO

IF YES, CAN YOU TELL ME ABOUT THAT? _____

23. RATIONALE: WE PROVIDE PSYCHOPHYSIOLOGICAL ASSESSMENTS OF SEXUAL FUNCTIONING. THIS MEANS WE TAKE VERY DETAILED INFORMATION ABOUT YOUR SEXUAL AND PSYCHOLOGICAL FUNCTIONING AND MEASURE YOUR ABILITY TO GET AN ERECTION WHILE VIEWING AN EROTIC VIDEOTAPE. THIS TAKES APPROXIMATELY 3 HOURS.

a. WOULD YOU BE WILLING TO WATCH EROTIC VIDEOTAPES WHILE WE MEASURE YOUR ERECTION? YES NO

b. DO USUALLY BECOME SEXUALLY AROUSED TO EROTIC VIDEOTAPES? YES NO

BECAUSE THIS IS A RESEARCH STUDY, WE DO NOT CHARGE FOR THESE ASSESSMENTS AND TESTS. AT THE END OF THE ASSESSMENT WE PROVIDE YOU WITH THE RESULTS OF YOUR ASSESSMENT AND GIVE YOUR DOCTOR A REPORT. IN ADDITION, YOU WILL BE PAID $40 FOR YOUR TIME.

24. WHEN CAN YOU COME IN FOR A 3 HOUR ASSESSMENT?

DATE _____ TIME _____

Appendix D

Informed Consent Form

Informed Consent Form
Research Study
Form C *(Controls)*

Title of Project: Effect of Physiological Feedback on Penile Tumescence
Principal Investigator: Major Nathan Galbreath, M.F.S., M.S.

Name of Volunteer: _____
(Please Print)

TO PERSONS WHO AGREE TO PARTICIPATE IN THIS STUDY:

You are being asked to take part in a research study. Before you decide to be a part of this research study, you need to understand the risks and benefits so that you can make an informed decision. This is known as informed consent.
This consent form provides information about the research study which has been explained to you. Once you understand the study and the tests it requires, you will be asked to sign this form if you want to take part in the study. Your participation is voluntary. This means that you are free to choose if you will take part in the study.
If, during the course of the study you should have any questions about the study, your participation in it or about your rights as a research subject, you may contact:

a. Major Nathan Galbreath, M.F.S., M.S., at 301-295-1788 (Principal Investigator)
Department of Medical & Clinical Psychology, USUHS, Bethesda, MD 20814-4799
b. Tracy Sbrocco, Ph.D. at 301-295-9674 (Graduate Research Advisor)
Department of Medical & Clinical Psychology, USUHS, Bethesda, MD 20814-4799

THE PURPOSE OF THIS STUDY

The Department of Medical and Clinical Psychology of The Uniformed Services University of the Health Sciences is carrying out a research study to find out what effect getting feedback about men's erections has on their ability to maintain the erections. Problems with erections are common, affecting approximately 10% of the male population. Great strides have been made in the treatment of psychologically-based erection problems, yet little is known about how it can best be treated. This is because of a limited understanding of the cause and maintenance of the problem. It is now known that erection difficulties are normal in the sense that they are commonly experienced. Yet only a percentage of men develop a problem significant enough to require treatment. Based on experimental data collected over the past decade, dysfunctional men and functional men are known to differ in several areas. Two of these important areas include how feedback about their sexual performance affects their continued and future performance, and where their attention is focused during sexual performance. The first purpose of this study is to determine how the performance of sexually functional and dysfunctional men is affected by receiving physiological (body-based) feedback about their erections while viewing erotic videotapes. The tapes involve consensual heterosexual sex and do not involve violence of any type. The second purpose of this study is to determine where the attention of sexually functional and dysfunctional men is focused when they receive erection feedback while viewing erotic videotapes. This study is being conducted by Major Nathan Galbreath, MFS, MS, a doctoral level graduate student in the Department of Medical and Clinical Psychology.

DESCRIPTION OF THIS STUDY
Your participation in the study will take approximately two and half hours. The session is divided into three separate phases.

____ Initials
_____ Date

Phase 1 - Initial Information Collection (1 Hour)
Phase 2 – Physiological Assessment (1 Hour)
Phase 3 – Post Session (30 min)

Phase 1. Initial Information Collection (1 hour)

During the first phase, you will be interviewed about your physical, sexual, and psychological history. The interviewer will use a standard format so that each participant will be asked the same questions. You will also be asked to complete a number of self-report measures that ask you about your medical history, and your sexual and psychosocial functioning.

Phase 2. Physiological Assessment (1 hour)

The second phase will also take approximately one hour to complete and involves a physiological assessment of your erection. Your erection will be monitored while you view an erotic videotape. You will be asked to partially undress, sit in a recliner, and place a strain gauge on your penis. A strain gauge is a small rubber tube that is placed around the shaft of your penis. It measures changes in penis size by having an electric current pass through it. The strain gauge is attached to a polygraph machine that receives and prints the information. You will not feel the electric current and the procedure is not dangerous.
After the monitoring equipment is in place, you will be asked to watch three short videotapes showing a man and woman having sex. We will monitor your erection during the videotapes . Before and after each video segment we will ask you to make some ratings about such things as how aroused and how nervous you are. During the video, some men will receive feedback on their erection. We know men use all kinds of information to evaluate their performance such as how big their erection appears to be and how aroused their partner is. In this study, some participants will see an erection score on the video screen. The erection score is based on the size of your erection. We are interested in finding out how this information affects sexual responding and confidence and predictions about future sexual performance. Some participants will not be shown their erection score. This way we can compare the results of men who see their erection score with men who do not. The men who do not see their score will be chosen at random. You will be randomly assigned (similar to the flip of a coin) to one of the groups. Your chances of being assigned to each group are equal. The interviewer will inform you what group you are in.
All material and equipment that comes in contact with participants is either sterilized or disposed of after use.

Phase 3. Post-Session (30 min)
At the end of the videotape sessions (after you get dressed) the interviewer will meet with you and describe and explain your results from Phase 2. Any questions or concerns you have will be discussed. This phase will take approximately 30 minutes to complete. The interviewer will also call you in a week to see if you have any additional questions.

THIS STUDY IS BEING DONE PRIMARILY FOR THE PURPOSES OF RESEARCH

POSSIBLE RISKS OR DISCOMFORTS FROM BEING IN THIS STUDY

a. The risks associated with this study are minor. You may find that the interviews and the physiological assessment may make you uncomfortable. You will be asked detailed questions about your sexual functioning and activities. You will also be asked to partially undress and put a strain gauge on your penis while viewing erotic videotapes. You will NOT be forced to do anything you do not want to do. You may decline to participate at any time and/or withdraw your participation at any time.

b. You may feel upset or distressed if your erection score or your erection is lower than you predicted or expected. The interviewer will meet with you following the physiological assessment to address any

____ Initials
_____ Date

concerns you may have. Your results will be presented and discussed with you. Your questions and concerns will be addressed.

c. You will probably experience sexual arousal during the physiological assessment phase of the study. This response is normal and expected. Questions and concerns you may have about your response will be addressed during the post session.

d. The study involves a small time commitment that you may find inconvenient. You will be asked to come to the university for one 2 1/2 hour appointment.

POSSIBLE BENEFITS OF BEING IN THIS STUDY
Possible benefits to you from being in this study include...

a.You may learn information about your sexual functioning that is helpful to you.

b. You will be providing information that will be helpful in expanding scientific knowledge about sexual behavior. The results of this study will help us gain a better understanding of how physiologic feedback affects sexual functioning. The results will also tell us how the attention of sexually functional men compares to sexually dysfunctional men.

ALTERNATE PROCEDURES THAT MAY BE ADVANTAGEOUS

You may obtain similar psychological and physiological assessments elsewhere and we can provide you with a community referral.

COMPENSATION
There are no costs to you for participating in this study. You will be compensated $40 for participation in all phases of this study. Payments will be made after completing the study.

COMPENSATION TO YOU IF INJURED AND LIMITS TO YOUR MEDICAL CARE

This study should not entail any physical or mental risk beyond those described above. We do not expect complications to occur, but if, for any reason, you feel that continuing this study would constitute a hardship for you, we will end your participation in the study.

In the event of a medical emergency while participating in this study, you will receive emergency treatment in the facility you are in or a nearby Department of Defense (military) medical facility (hospital or clinic). Emergency treatment/care will be provided even if you are not eligible to receive such care at a military medical facility. Care will be continued until the medical doctor treating you decides that you are out of immediate danger. If you are not entitled to care in a military facility, you may be transferred to a private civilian hospital. The attending doctor or member of the hospital staff will go over the transfer decision with you before it happens. The military will bill your health insurance for health care you receive which is not part of the study. You will not be personally billed and you WILL NOT be expected to pay for medical care at our hospitals.

In case you need additional care following discharge from the military hospital or clinic, a military health care professional will decide whether your need for care is directly related to being in the study. If your need for care is related to the study, the military may offer you limited health care at its medical facilities. If you believe the government or one of the government's employees (such as a military doctor) has injured you, a claim for damages (money) against the federal government (including the military) may be filed under the Federal Torts Claims Act. If you would like to file a claim please contact the University's Office of General Counsel and request the filing forms.

____ Initials
_____ Date

If at any time you believe you have suffered an injury or illness as a result of participating in this research project, you should contact the Office of Research at the Uniformed Services University of the Health Sciences, Bethesda, Maryland 20814-4799 at (301) 295-3303. This office can review the matter with you, can provide information about your rights as a subject, and may be able to identify resources available to you. Information about judicial avenues of compensation is available from the University's General Counsel at (301) 295-3028.

PRIVACY AND CONFIDENTIALITY:

All information you provide as part of this study will be confidential and will be protected to the fullest extent provided by law. Information that you provide and other records related to this study will be kept private, accessible only to those persons directly involved in conducting this study and members of the Uniformed Services University of the Health Sciences Institutional Review Board (IRB), which provides oversight for protection of human research volunteers. All questionnaires, forms and charts will be kept in a restricted access, locked cabinet while not in use. However, if you are a military member, please be advised that under Federal Law, a military member's confidentiality cannot be strictly guaranteed. To enhance the privacy of the answers you provide, data from questionnaires will be entered into a database in which individual responses are not identified. After verification of the database information, paper copies of the questionnaires containing identifiers will be shredded.

WHAT WILL HAPPEN IF YOU DECIDE TO STOP TAKING PART IN THIS STUDY

You may decide to stop this study at any time. Your care and relations with the faculty, staff and administration at USUHS will not be changed in any way if you decide to stop the study. You should let the investigator in charge of the study know if you decide to stop the study.

APPROXIMATE NUMBER OF PEOPLE TAKING PART IN THIS STUDY

This study is a single-center study because only this university will be participating in the study. There will be up to 80 men taking part in this study.

RESULTS OF RESEARCH
The results of the research will be provided to you if you so desire, at the termination of this research project.

QUESTIONS

If you have any questions at any time about the study you may contact the principal investigator, Major Nathan Galbreath, at the Department of Medical and Clinical Psychology, Uniformed Services University, at (301) 295-1788. If you have questions about your rights as a research subject, you should call the Director, Human Research Protections Program, in The Office of Research at the Uniformed Services University of the Health Sciences (301) 295-3303. This person is your representative and has no connection to the investigators conducting this study.

STATEMENT AND SIGNATURE OF VOLUNTEER

____ Initials
_____ Date

I have read this consent form and I understand the procedures to be used in this study and the possible risks, inconveniences, and/or discomforts that may be involved. All of my questions have been answered. I freely and voluntarily choose to participate. I understand I may withdraw at any time. My signature also indicates that I have received a copy of this consent form for my information.

Signature of Volunteer: _____

Printed Name of Volunteer: _____

Date: _____

STATEMENT AND SIGNATURE OF INVESTIGATOR

I certify that the research study has been explained to the above individual, by me or my research staff, and that the individual understands the nature and purpose, the possible risks and benefits associated with taking part in this research study. Any questions have been raised, have been answered.

Signature of Witness: _____

Signature of Investigator: _____

Printed Name, Rank, and Title of Investigator: _____Date:_____

____ Initials
_____ Date

Informed Consent Form
Research Study
(Form D) *(Dysfunctionals)*

Title of Project: Effect of Physiological Feedback on Penile Tumescence
Principal Investigator: Major Nathan Galbreath, MFS, MS

Name of Volunteer: _____
(Please Print)

TO PERSONS WHO AGREE TO PARTICIPATE IN THIS STUDY:

You are being asked to take part in a research study. Before you decide to be a part of this research study, you need to understand the risks and benefits so that you can make an informed decision. This is known as informed consent.
This consent form provides information about the research study which has been explained to you. Once you understand the study and the tests it requires, you will be asked to sign this form if you want to take part in the study. Your participation is voluntary. This means that you are free to choose if you will take part in the study.
If, during the course of the study you should have any questions about the study, your participation in it or about your rights as a research subject, you may contact:

a. Major Nathan Galbreath, MFS, MS, at 301-295-1788 (Principal Investigator)
Department of Medical & Clinical Psychology, USUHS, Bethesda, MD 20814-4799
b. Tracy Sbrocco, Ph.D., at 301-295-9674 (Graduate Research Advisor)
Department of Medical & Clinical Psychology, USUHS, Bethesda, MD 20814-4799

THE PURPOSE OF THIS STUDY

The Department of Medical and Clinical Psychology of The Uniformed Services University of the Health Sciences is carrying out a research study to find out what effect getting feedback about men's erections has on their ability to maintain the erections. Problems with erections are common, affecting approximately 10% of the male population. Great strides have been made in the treatment of psychologically-based erection problems, yet little is known about how it can best be treated. This is because of a limited understanding of the cause and maintenance of the problem. It is now known that erection difficulties are normal in the sense that they are commonly experienced. Yet only a percentage of men develop a problem significant enough to require treatment. Based on experimental data collected over the past decade, dysfunctional men and functional men are known to differ in several areas. Two of these important areas include how feedback about their sexual performance affects their continued and future performance, and where their attention is focused during sexual performance. The first purpose of this study is to determine how the performance of sexually functional and dysfunctional men is affected by receiving physiological (body-based) feedback about their erections while viewing erotic videotapes. The tapes involve consensual heterosexual sex and do not involve violence of any type. The second purpose of this study is to determine where the attention of sexually functional and dysfunctional men is focused when they receive erection feedback while viewing erotic videotapes. This study is being conducted by Major Nathan Galbreath, a doctoral level graduate student in the Department of Medical and Clinical Psychology.

DESCRIPTION OF THIS STUDY
Your participation in the study will take approximately two and half hours. The session is divided into three separate phases.

Initials _____
Date _____

Phase 1 - Initial Information Collection (1 Hour)
Phase 2 – Physiological Assessment (1 Hour)
Phase 3 – Post Session (30 min)

Phase 1. Initial Information Collection (1 hour)

During the first phase, you will be interviewed about your physical, sexual, and psychological history. The interviewer will use a standard format so that each participant will be asked the same questions. You will also be asked to complete a number of self-report measures that ask you about your medical history, and your sexual and psychosocial functioning.

Phase 2. Physiological Assessment (1 hour)

The second phase will also take approximately one hour to complete and involves a physiological assessment of your erection. Your erection will be monitored while you view an erotic videotape. You will be asked to partially undress, sit in a recliner, and place a strain gauge on your penis. A strain gauge is a small rubber tube that is placed around the shaft of your penis. It measures changes in penis size by having an electric current pass through it. The strain gauge is attached to a polygraph machine that receives and prints the information. You will not feel the electric current and the procedure is not dangerous.
After the monitoring equipment is in place, you will be asked to watch three short videotapes showing a man and woman having sex. We will monitor your erection during the videotapes. Before and after each video segment we will ask you to make some ratings about such things as how aroused and how nervous you are. During the video, some men will receive feedback on their erection. We know men use all kinds of information to evaluate their performance such as how big their erection appears to be and how aroused their partner is. In this study, some participants will see an erection score on the video screen. The erection score is based on the size of your erection. We are interested in finding out how this information affects sexual responding and confidence and predictions about future sexual performance. Some participants will not be shown their erection score. This way we can compare the results of men who see their erection score with men who do not. The men who do not see their score will be chosen at random. You will be randomly assigned (similar to the flip of a coin) to one of the groups. Your chances of being assigned to each group are equal. The interviewer will inform you what group you are in.
All material and equipment that comes in contact with participants is either sterilized or disposed of after use.

Phase 3. Post-Session (30 min)
At the end of the videotape sessions (after you get dressed) the interviewer will meet with you and describe and explain your results from Phase 2. Any questions or concerns you have will be discussed. This phase will take approximately 30 minutes to complete. The interviewer will also call you in a week to see if you have any additional questions.

<u>THIS STUDY IS BEING DONE PRIMARILY FOR THE PURPOSES OF RESEARCH</u>

The results will be explained to you and a written copy will be provided to your referring physician. This information may be helpful in gaining a better understanding of your problem

POSSIBLE RISKS OR DISCOMFORTS FROM BEING IN THIS STUDY

a. The risks associated with this study are minor. You may find that the interviews and the physiological assessment may make you uncomfortable. You will be asked detailed questions about your sexual

Initials _____
Date _____

functioning and activities. You will also be asked to partially undress and put a strain gauge on your penis while viewing erotic videotapes. You will NOT be forced to do anything you do not want to do. You may decline to participate at any time and/or withdraw your participation at any time.

b. You may feel upset or distressed if your erection score or your erection is lower than you predicted or expected. The interviewer will meet with you following the physiological assessment to address any concerns you may have. Your results will be presented and discussed with you. Your questions and concerns will be addressed.

c. You will probably experience sexual arousal during the physiological assessment phase of the study. This response is normal and expected. Questions and concerns you may have about your response will be addressed during the post session.

d. The study involves a small time commitment that you may find inconvenient. You will be asked to come to the university for one 2 -3 hour appointment.

POSSIBLE BENEFITS OF BEING IN THIS STUDY
Possible benefits to you from being in this study include...

a. You may learn information about your sexual functioning that is helpful to you.

b. You will receive an extensive psychophysiological assessment of your sexual functioning. This information will be explained to you.

c. If you choose, a report will be provided to your referring physician. This information may be helpful to your physician in recommending treatment for your difficulties.

Please indicate below, by checking one option, if you would like to receive information about your psychophysiological assessment:

(Check only one.)

____ I do not want to receive my study screening results.

____ I want my study screening results to be shared with just me.

____ I want the study screening results shared with me and with my referring physician. I understand that Major Galbreath, the study principal investigator, will be available to discuss the results with my referring physician as needed.

d. You will be providing information that will be helpful in expanding scientific knowledge about sexual behavior. The results of this study will help us gain a better understanding of how physiologic feedback affects sexual functioning. The results will also tell us how the attention of sexually functional men compares to sexually dysfunctional men.

ALTERNATE PROCEDURES THAT MAY BE ADVANTAGEOUS

You may obtain similar psychological and physiological assessments elsewhere. Should you decide not to participate in the study, we will still provide you with a psychophysiological assessment of your sexual functioning, a written report will be sent to your referring physician. If, on the other hand, you would prefer a referral for assessment and/or treatment, a community referral will be provided.

Initials _____
Date _____

COMPENSATION
There are no costs to you for participating in this study. You will be compensated $40 for participation in all phases of this study. Payments will be made after completing the study.

COMPENSATION TO YOU IF INJURED AND LIMITS TO YOUR MEDICAL CARE

This study should not entail any physical or mental risk beyond those described above. We do not expect complications to occur, but if, for any reason, you feel that continuing this study would constitute a hardship for you, we will end your participation in the study.

In the event of a medical emergency while participating in this study, you will receive emergency treatment in the facility you are in or a nearby Department of Defense (military) medical facility (hospital or clinic). Emergency treatment/care will be provided even if you are not eligible to receive such care at a military medical facility. Care will be continued until the medical doctor treating you decides that you are out of immediate danger. If you are not entitled to care in a military facility, you may be transferred to a private civilian hospital. The attending doctor or member of the hospital staff will go over the transfer decision with you before it happens. The military will bill your health insurance for health care you receive which is not part of the study. You will not be personally billed and you WILL NOT be expected to pay for medical care at our hospitals.

In case you need additional care following discharge from the military hospital or clinic, a military health care professional will decide whether your need for care is directly related to being in the study. If your need for care is related to the study, the military may offer you limited health care at its medical facilities. If you believe the government or one of the government's employees (such as a military doctor) has injured you, a claim for damages (money) against the federal government (including the military) may be filed under the Federal Torts Claims Act. If you would like to file a claim please contact the University's Office of General Counsel and request the filing forms.

If at any time you believe you have suffered an injury or illness as a result of participating in this research project, you should contact the Office of Research at the Uniformed Services University of the Health Sciences, Bethesda, Maryland 20814-4799 at (301) 295-3303. This office can review the matter with you, can provide information about your rights as a subject, and may be able to identify resources available to you. Information about judicial avenues of compensation is available from the University's General Counsel at (301) 295-3028.

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WHAT WILL HAPPEN IF YOU DECIDE TO STOP TAKING PART IN THIS STUDY

You may decide to stop this study at any time. Your care and relations with the faculty, staff and administration at USUHS will not be changed in any way if you decide to stop the study. You should let the investigator in charge of the study know if you decide to stop the study.

Initials _____
Date _____

APPROXIMATE NUMBER OF PEOPLE TAKING PART IN THIS STUDY

This study is a single-center study because only this university will be participating in the study. There will be up to 80 men taking part in this study.

RESULTS OF RESEARCH
The results of the research will be provided to you if you so desire, at the termination of this research project.

QUESTIONS

If you have any questions at any time about the study you may contact the principal investigator, Major Nathan Galbreath, at the Department of Medical and Clinical Psychology, Uniformed Services University, at (301) 295-9674. If you have questions about your rights as a research subject, you should call the Director of Research Programs, in The Office of Research at the Uniformed Services University of the Health Sciences (301) 295-3303. This person is your representative and has no connection to the investigators conducting this study.

STATEMENT AND SIGNATURE OF VOLUNTEER

I have read this consent form and I understand the procedures to be used in this study and the possible risks, inconveniences, and/or discomforts that may be involved. All of my questions have been answered. I freely and voluntarily choose to participate. I understand I may withdraw at any time. My signature also indicates that I have received a copy of this consent form for my information.

Signature of Volunteer: _____

Printed Name of Volunteer: _____

Date: _____

STATEMENT AND SIGNATURE OF INVESTIGATOR

I certify that the research study has been explained to the above individual, by me or my research staff, and that the individual understands the nature and purpose, the possible risks and benefits associated with taking part in this research study. Any questions have been raised, have been answered.

Signature of Witness: _____

Signature of Investigator:

_____

Printed Name, Rank, and Title of Investigator: _____
Date: _____

Initials _____
Date _____

Appendix E

Sexual Dysfunction Interview

SEXUAL DYSFUNCTION INTERVIEW-revised

◆◆◆

Tracy Sbrocco, Ph.D., Risa Weisberg, B.A.,
and
David H. Barlow, Ph.D.

Albany, NY: 1995

◆◆◆

SEXUAL DYSFUNCTION INVENTORY

Client Name:

Address:

Home Ph:

Work Ph:

Referral Source:

Address:

Release of Information Obtained? **Yes** **No**

Date referral received:

I. Life Situation

Let me begin by getting some basic information:

1. DOB/Age

2. Ethnicity
   1 = Caucasian, Non-Hispanic
   2 = Black, Non-Hispanic
   3 = Hispanic
   4 = Asian
   5 = Other

3. Current Relationship Status
   1 = Never Married
   2 = Divorced
   3 = Separated
   4 = Widowed
   5 = Married
   6 = Living Together

4. Duration of Marital/Relationship Status (# of years)
   99= Missing or Not Applicable

5. Years of Education
   a. Less than High School Degree
   b. High School Degree
   c. Partial College
   d. College Degree
   e. Graduate or Professional School

6. Occupation (Present or Previous)

1 = High Level Executive, Professional (M.D., Ph.D., Attorney)
2 = Business Manager, Lesser Professional (Nurse, Teacher, Social Worker)
3 = Administrator, minor professional [legal secretary, small business owner (e.g. bakery, clothing)]
4 = Clerical or sales worker, technician

5 = Skilled manual employee
6 = Machine operator, semi-skilled employee
7=Unskilled Employee (laborer, messenger)

7. Employment Status
1 = Retired
2 = Full-Time
3 = Part-Time
4 = Disabled
5 = Unemployed

8. Length of time at current job _____

II. Presenting Problem(s)
I know about your sexual problem(s) from what you said on the phone/what your M.D. said, etc.
Is that correct?

I will get back to your sexual functioning, but first I would like to ask you some questions pertaining to your overall psychological functioning. Many of the questions may not apply to you and some will.

Psychiatric Diagnostic Interview, revised (PDI-R)

Begin with **Alcoholism,** come back to Organic Brain Syndrome only if it seems necessary at the end of the interview.

Pay close attention to signs and symptoms of **Major Depression.** MDE can have a profound affect on sexual functioning. When in doubt, continue questioning.

Diagnoses: NONE

FREQUENCY OF SEXUAL BEHAVIOR

1. How often to you engage in intercourse with your/a partner?

2. What is your ideal frequency of intercourse?

3. How often do you engage in mutual cuddling/stimulation without intercourse?

4. I'd like to ask you some questions about masturbation/self-stimulation. I want to assure you that we consider it to be a normal, healthy activity. We are aware that not everybody feels this way...
How often do you engage in self-stimulation/masturbation?

SEXUAL DYSFUNCTIONS

I. SEXUAL DESIRE DISORDERS

A. Hypoactive Sexual Desire Disorder

1. How would you describe your interest in sex?

a. (If client describes problems) Has your interest changed or is your current interest pretty typical for you?

b. How long have you felt this way?

c. If change occurred, What was associated with or caused this change? i. personal stress/emotional problems ii. illness iii. marital problems iv. partner stress/emotional problems v. partner illness vi. sexual problem vii. medication

2. Do you have sexual fantasies

a. during intercourse? YES NO % time

b. during masturbation? YES NO % time

c. at other times? YES NO % time

3. Do you always feel this way or are there times or situations when you have a strong interest/desire in sex?
If client **is currently depressed (or has another Axis I) disorder OR **If the client has a medical problem(s) that may be related to his/her sexual functioning: ASK 0. 4. otherwise SKIP to 5.

4. Was **your interest/desire in sex low before your problem(s)** with _____ began?

5. Have you ever **been sexually abused,** raped, or **had a very** negative experience associated with sex?

If yes, what affect did this experience have on your sexual behavior?

a. avoid all/most sexual behavior
b. relationship difficulties; trust
c. pain
d. OTHER

SEXUAL AVERSION DISORDER

6. Do you avoid engaging in sexual behavior with your/a partner?

7. If in a relationship: Who usually intiates sexual activity in your relationship?

8. Do you experience anxiety or worry when you think about engaging in sexual behavior with your/a partner?

If yes, what types of things do you say to yourself?

-performance self statements
-failure self statements

-concern about pleasing partner
-concern/worry about sexually transmitted diseases
-more general cognitive interference

9. **Do you fear engaging in sex?**

****If client is currently depressed** (or has **another Axis I such as I OCD disorder)** I or **If the client has a medical problem(s) that may be related to **his/her sexual functioning: (ASK** Q.10)

10. Did you avoid/fear sex before your problems with began?

DX:

Hypoactive Sexual Desire Disorder

Sexual Aversion Disorder
Specify: psychogenic only psychogenic and biogenic (biogenic only record on Axis III) lifelong or acquired, generalized or situational

II. MALE ERECTILE DISORDER

1. Do you have problems attaining/getting an erection?

2. Do you have problems maintaining/keeping an erection?

3. When did these problems begin? month and year

a. Did the problem come on gradually?

b. Is there a specific event associated with the start of the difficulty?

i. personal stress/emotional problems
ii. illness iii. marital problems
iv. partner stress/emotional problems
v. partner illness
vi. drinking/alcohol
vii. medication
viii. loss of partner

Classify event - Medical or Psychological

4. What percentage of the time is this a problem?

5. Using a 1 to 100 scale, where 1 is no erection and 100 is the best erection You've ever had ...

a. What percent of an erection do you **typically** obtain? _____

b. What percent describes the best erection you can get?_____

6. Do you have a problem with erections during foreplay?

7. Do you have a problem with erections when attempting penetration?

8. Are you able to penetrate?

What percent of the time? _____

9. Do you have problems maintaining your erection, that is, do you lose your erection?

What do you do when you lose your erection? a. quit/give up b. try to get it back - successful or not?

l0. Do you have problems obtaining or maintaining an erection during masturbation?

**If individual describes problems obtaining or maintaining an erection:

11. Do you notice your ability to get an erection depends on the situation?

Partner
Masturbation vs Partner
Stress
Fatigue/Tired

12. Do you have morning erections?

13. Do you ejaculate with intercourse? with stimulation by partner? with self-stimulation?

Subjective pleasure/excitement:

14. How do you feel during sexual activity?

15. Do you experience an orgasm?

Dx:

Male Erectile Disorder

Onset

Specify: psychogenic only, psychogenic, and biogenic (biogenic only record on Axis III)

lifelong or acquired generalized or situational

III. ORGASM DISORDER

1. Do you ever have problems reaching orgasm during sexual behavior?

If yes, Does this difficulty occur with

a. masturbation
b. intercourse
c. foreplay/partner stimulation

2. Does it seem like you are aroused before experiencing this difficulty?

3. When did this difficulty begin?

Is onset associated with events such as

a. Relationship change or length of relationship

b. Change in the pattern of sexual behavior (for example, being used to multiple partners and now has one partner)

c. Stress

d. Medical problem

Dx:

Inhibited Male Orgasm Onset

Specify: psychogenic only **psychogenic and biogenic (biogenic only record on Axis III)**

lifelong or acquired generalized or situational

IV. PREMATURE EJACULATION

1. Do you ever experience problems ejaculating/coming before you are ready to?

Percent of the time:_____

2. Do you consider this a problems?

If client describes a problems ASK q.3, otherwise SKIP to DYSPAREUNIA

3. When did this begin?

4. If client indicates he does not ejaculate, inquire about prostate surgery.

5. Do you sometimes ejaculate before penetration, when you do not want to?

Does this occur after stimulation or is thinking about sex enough?

6. Do you ejaculate immediately after penetrating or in a shorter time than you wish?

Estimate the length of time _____

7. How long before you ejaculate during masturbation?

8. Do you have problems controlling your erections, that is having erections when you do not want to generally because it is embarrassing?

9. Do you notice that changes in the situation make a difference, for example:

a. partner attractiveness b. novelty of the situation c. length of time since last sexual experience or ejaculation d. oral sex e. what other factors influence latency to ejaculation (increase or decrease)?

10. Have you tried any of the following to delay ejaculation:

a. alcohol percent of time used

b. drugs

c. numbing cremes/ointments

d. thinking of un-arousing things

e. withdrawal/ceasing stimulation

DX:

Premature Ejaculation

Onset

Specify: psychogenic only psychogenic and biogenic (biogenic only record on Axis III)

lifelong or acquired generalized or situational

V. DYSPAREUNIA

1. Do you ever experience pain associated with sexual activity?

2. Does this occur before, during, after sexual activity?

Describe problem:

3. When did this problem begin?

4. Does this occur across all situations?

5. Assess whether this is due to lack of partner's **lubrication or** difficulty penetrating due to vaginismus.

DX:

Dyspareunia Onset

Specify: psychogenic only psychogenic and biogenic (biogenic only record on Axis III)

lifelong or acquired generalized or situational

COMMENTS:

Appendix F

Semi-Structured Clinical Interview for Axis I DSM-IV Disorders

Screening Questions

SCID Screening Questions

Have you ever been a patient in a psychiatric hospital? YES NO
What was that for?

Have you had any other problems in the last month? YES NO

What's your mood been like?

Now I want to ask you some more specific questions about problems you may have had.

1 = unequivocal no
2 = unsure or subthreshold
3 = unequivocal yes

1. Have you ever had a period when you were feeling depressed or down most of the day nearly every day?
1 2 3

2. Did something terrible ever happen to you that kept coming back to you in some way, like in dreams, flashbacks or thoughts you couldn't get rid of – like you could have died or been seriously hurt?
1 2 3

3a. Was there ever a period in your life when you drank too much? 1 2 3
3b. IF NO TO ABOVE: Has alcohol ever caused problems for you? 1 2 3
3c. IF NO TO BOTH ABOVE: Has anyone objected to your drinking? 1 2 3

4. Have you ever used street drugs? 1 2 3

5. Have you ever gotten "hooked" on a prescribed medicine or taken a lot more of it than you were supposed to? 1 2 3

6. Have you ever had a panic attack, when you suddenly felt frightened, anxious or extremely uncomfortable? 1 2 3

7. Were you ever afraid of going out of the house alone, being in crowds, standing in a line, or traveling on buses or trains? 1 2 3

8. Is there anything that you have been afraid to do or felt uncomfortable doing in front of people, like speaking, eating or writing? 1 2 3

9. Are there any other things that you have been especially afraid of, like flying, heights, seeing blood, closed places, or certain kinds of animals or insects?
1 2 3

10. Have you ever been bothered by thoughts that didn't make any sense and kept coming back to you even when you tried not to have them? 1 2 3

11. Was there ever anything that you had to do over and over again and couldn't resist doing, like washing your hads again and again, or checking something several times to make sure you'd done it right? 1 2 3

12. In the last six months, have you been particularly nervous or anxious? 1 2 3

13. Have you ever had a time when you weighed much less than other people thought you ought to weigh? 1 2 3

14. Have you ever had eating binges during which you felt that your eating was out of control? 1 2 3

15a. Over the last several years, what has your physical health been like?

15b. How often have you had to go to the doctor because you were not feeling well? (what for?)

IF YES: Was the doctor always able to find out what was wrong, or were there times when the doctor said there was nothing wrong but you were still convinced that something was wrong?

15c. Do you worry much about your physical health? Does your doctor think you worry too much?

15d. some people are very bo0thered by the way they look. Is this a problem for you? 1 2 3

NOW I'M GOING TO ASK YOU ABOUT SOME UNUSUAL EXPERIENCES THAT PEOPLE SOMETIMES HAVE.

16a. Did it ever seem that people were taling about you or taking special notice of you? 1 2 3

16b. What about receiving special messages from the TV, radio, or newspaper, or from the way things were arranged around you? 1 2 3

16c. What about anyone going out of the way to give you a hard time, or trying to hurt you? 1 2 3

16d. Did you ever feel that you were especially important in some way, or that you had special powers to do things that other people couldn't do? 1 2 3

16e. Did you ever feel that something was terribly wrong with you physically even though your doctor said nothing was wrong? 1 2 3

16f. Did you ever feel that you had committed a crime or done something terrible for which you should be punished? 1 2 3

17. Did you ever hear things that other people couldn't hear such as noises, or the voices of other people talking? 1 2 3

18. Did you ever have visions or see things that other people couldn't see (were you awake at the time)? 1 2 3

19. What about strange sensations in your body or on your skin? 1 2 3

20 What about smelling things that other people couldn't smell? 1 2 3

Appendix G

Medical Information Form

MEDICAL INFORMATION FORM

A. **Identifying Data:**

Name: _____ Home phone: ( ) _____

Address: _____ Marital Status: _____

_____Date of Birth: _____

Occupation: _____ Work phone: ( )_____

Married ____Yes

Single, never married ____Yes

Divorced ____Yes

Widowed ____Yes

____ American Indian and Alaska Native (A person having origins in any if the original peoples of North and South America (including Central America)

_____ Asian – A person having origins in any of the original peoples of the Far East, southeast Asia, or the Indian Subcontinent including, e.g., Cambodia, china, India, Japan, Korea, Malaysia, Pakistan, the Philippine Islands, Thailand, and Vietnam.

_____ Black or African American – A person having origins in any of the black racial groups of Africa.

_____ Hispanic or Latino – A person of Cuban, Mexican, Puerto Rican, south or Central American, or other Spanish culture or origin, regardless of race

_____ Native Hawaiian or Other Pacific Islander – a person having origin in any of the original peoples of Hawaii, Guam, Samoa, or other Pacific Islands (Micronesia, Tahiti, etc).

_____ Whites – a person having origins in any of the original peoples of Europe, the Middle East, or North Africa.

B. **1. Do you receive regular medical care from a physician or clinic?** o No o Yes

If yes, please provide the following information:

Name of Physician or Clinic: _____

2. Have you been evaluated by a urologist? o No o Yes

If yes, please provide the following information:

Name of Physician or Clinic: _____

3. Have you ever had to be hospitalized? o No o Yes If yes, complete the following:

Year	Doctor's Name	Name of Hospital	Reason
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

4. Have you ever had surgery, or been advised to have surgery? o No o Yes If yes, complete the following:

Year	Doctor's Name	Name of Hospital	Name of Operation or Procedure
_____	_____	_____	_____
_____	_____	_____	_____

_____ _____ _____ _____

C. Personal Medical History:

1. Have you ever been told you had any of the following medical conditions?

	NO	YES	When/Explain	If yes, are you currently being treated or followed for these problems
Heart Disease				
High Blood Pressure				
Diabetes or High Blood Sugar				
Cancer				
Thyroid Disease				
Depression				
Alcoholism				
High Cholesterol				
Low Testosterone				
Other Hormone Problem				
Prostate problem, prostatitis, etc.				
Anxiety or Stress				
Spinal cord, neck or head injury				
Back problems				
Drug Addiction				
Gall Bladder Problems				
Digestive Disease				
Kidney Disease				
Peptic Ulcers (stomach ulcers)				
Colitis				
Meningitis or Encephalitis				
Tuberculosis				
Stroke				
Rheumatic Fever				
Asthma				
Birth Defects				
Gout				

(a) Have you ever had any other disease? o No o Yes If yes, explain:

_____

_____

_____

(b) What is your current weight?_____ lbs. __estimate __actual

(c) What is the most you have ever weighed? _____ lbs. When? _____

(d) Have you recently lost or gained any weight? o No o Yes

(e) Can you explain any recent weight loss or gain? _____

_____

2. Have you recently had any of the following tests?

	No	Yes	When	Results
Physical Exam				
Blood Tests				
Hormone Levels				
Electrocardiogram (EKG)				
Blood Flow in penis (Doppler Study)				
Penis Injection (Papaverine)				
Nocturnal penile tumescence				
Other				

3. Are you in the habit of using any of the following?

	Amount Currently Using	Most Ever Used	When Stopped Using
Coffee (cups/day)			
Cigarettes (packs/day)			
Alcohol (amount and types of alcohol used daily)			
Vitamins			
Sleeping Pills			
Aspirin			
Laxatives			
Diet Pills			

4. Are you currently on any medication? o No oYes
If yes, please give name and dosage: _____
_____

5. Have you ever used any of the following medications for your mood, nerves, sleep, pain, or energy level?

(Circle the ones used.)

	No	Yes	When/How Long	How Much/Reason
Dilantin, Tegretol, L-Dopa, Cogentin, Artane				
Medication for anxiety , stress or nerves (Xanax, Valium, Librium, Serax, Dalmane. Tranxene, Ativan, etc.)				
Medication for depression (Prozac, Wellbutrin, Elavil, etc.)				
Lithium				
Thorazine, Mellaril, Stelazine, Navane, Haldol, Prolixin Injection, Loxitane, Moban, Serentil				
Phenobarbital, Seconal, Tuinal, Other barbiturates				
Amphetamines, Ritalin, Other stimulants				
Codeine, Methadone, Percodan, Dilaudid, Talwin, Darvon, Demerol, other prescription pain killers				
Other				

6. What type(s) of treatment have you tried for your sexual difficulties?

	No	Yes	When	How successful/helpful? (Please rate from 0-5, 0=no change, 5= Very helpful) Please describe
Testosterone Injections				

Testosterone Patch				
Other hormone Replacement (Specify):				
Vacuum Pump (ErecAid)				
Penis Injection (Papaverine)				
MUSE				
Medication(s) (Specify):				
Surgery or Penile Implant				
Self-help books/videos				
Creams/Ointments				
Psychological Treatment (Sex Therapy, Marital Therapy)				
Other (Please Specify):				

D. Personal Psychiatric History:

1. Have you ever received any previous psychiatric or psychological evaluation or treatment?

o No o Yes If yes, complete the following:

Year	Reason	Medication Used (if any)
_____	_____	_____
_____	_____	_____
_____	_____	_____

2. Have you ever attempted suicide in the past? o No o Yes

If yes, complete the following:

Year	How did you attempt suicide?	What happened?
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

E. Review of Your Current Health:

1. Do you have? or **Have you ever had?**	**No**	**Yes**		**No**	**Yes**
Lumps anywhere			Unusual excessive thirst		
Double vision or poor vision			Urine problems, blood in urine		
Difficulty hearing			Indigestion, gas, heartburn		

Fainting spells, blackout spells			Stomach pain or stomach ulcer		
Hernia			Groin or Penis Injury		
Sexually Transmitted Disease/HIV			Joint pain		
Convulsion			Diarrhea		
Paralysis			Constipation		
Dizziness			Vomiting, vomiting blood		
Headaches			Blood in stool		
Thyroid problem, goiter			Change in appetite or eating habits		
Skin problem			Trouble sleeping		
Cough or wheeze			Sexual problems		
Chest pain			Weight loss or weight gain		
Spitting up blood			Depression		
Shortness of breath at night or with exercise			Problems with memory, thinking, concentration		
Palpitation or heart fluttering			Suicidal thoughts		
Swelling of hands or feet			Weakness or tiredness		
Visual hallucinations			Other		

Please describe or explain any of the positive answers above

_____

_____

_____

Appendix H

Beck Depression Inventory

BDI-I

ID Code:_____

On this questionnaire are groups of statements. Please read each group of statements carefully. Then pick out the one statement in each group which best describes the way you have been feeling the PAST WEEK, INCLUDING TODAY. Circle the number beside the statement you picked. If several statements in the group seem to apply equally well, circle each one. Be sure to read all the statements in each group before making your choice.

1. 0 I do not feel sad.
   1 I feel sad.
   2 I am sad all the time and can't snap out of it.
   3 I am so sad or unhappy that I can't stand it.

2. 0 I am not particularly discouraged about the future.
   1 I feel discouraged about the future.
   2 I feel I have nothing to look forward to.
   3 I feel that the future is hopeless and that things cannot improve.

3. 0 I do not feel like a failure.
   1 I feel I have failed more than the average person.
   2 As I look back on my life, all I can see is a lot of failures.
   3 I feel I am a complete failure as a person.

4. 0 I get as much satisfaction out of things as I used to.
   1 I don't enjoy things the way I used to.
   2 I don't get real satisfaction out of anything anymore.
   3 I am dissatisfied or bored with everything.

5. 0 I don't feel particularly guilty.
   1 I feel guilty a good part of the time.
   2 I feel quite guilty most of the time.
   3 I feel guilty all of the time.

6. 0 I don't feel I am being punished.
   1 I feel I may be punished.
   2 I expect to be punished.
   3 I feel I am being punished.

7. 0 I don't feel disappointed in myself.
   1 I am disappointed in myself.
   2 I am disgusted with myself.
   3 I hate myself.

8. 0 I don't feel I am worse than anybody else.
   1 I am critical of myself for my weaknesses or mistakes.
   2 I blame myself all the time for my faults.
   3 I blame myself for everything bad that happens.

9. 0 I don't have any thoughts of killing myself.
   1 I have thoughts of killing myself, but I would not carry them out.
   2 I would like to kill myself.
   3 I would kill myself if I had the chance.

10. 0 I don't cry any more than usual.
    1 I cry more now than I used to.
    2 I cry all the time now.
    3 I used to be able to cry, but now I can't even cry even though I want to.

11. 0 I am no more irritated by things than I ever am.
1 I am slightly more irritated now than usual.
2 I am quite annoyed or irritated a good deal of the time.
3 I feel irritated all the time now.

12. 0 I have not lost interest in other people.
1 I am less interested in other people than I used to be.
2 I have lost most of my interest in other people.
3 I have lost all of my interest in other people.

13. 0 I make decisions about as well as I ever could.
1 I put off making decisions more than I used to.
2 I have greater difficulty in making decisions than before.
3 I can't make decisions at all anymore.

14. 0 I don't feel that I look any worse than I used to.
1 I am worried that I am looking old or unattractive.
2 I feel that there are permanent changes in my appearance that make me look unattractive.
3 I believe that I look ugly.

15. 0 I can work about as well as before.
1 It takes an extra effort to get started at doing something.
2 I have to push myself very hard to do anything.
3 I can't do any work at all.

16. 0 I can sleep as well as usual.
1 I don't sleep as well as I used to.
2 I wake up 1-2 hours earlier than usual and find it hard to get back to sleep.
3 I wake up several hours earlier than I used to and cannot get back to sleep.

17. 0 I don't get tired more than usual.
1 I get tired more easily than I used to.
2 I get tired from doing almost anything.
3 I am too tired to do anything.

18. 0 My appetite is no worse than usual.
1 My appetite is not as good as it used to be.
2 My appetite is much worse now.
3 I have no appetite at all anymore.

19. 0 I haven't lost much weight, if any, lately.
1 I have lost more than five pounds. I am trying to lose weight ____ Yes ____ No
2 I have lost more than ten pounds.
3 I have lost more than fifteen pounds.

20 0 I am no more worried about my health than usual.
1 I am worried about physical problems such as aches or pains, or upset stomach, or constipation.
2 I am very worried about physical problems and it's hard to think of much else.
3 I am so worried about my physical problems that I cannot think about anything else.

21. 0 I have not noticed any recent change in my interest in sex.
1 I am less interested in sex than I used to be.
2 I am much less interested in sex now.
3 I have lost interest in sex completely.

Appendix I

Beck Anxiety Inventory

Beck Anxiety Inventory

Below is a list of common symptoms of anxiety. Please carefully read each item in the list. Indicate how much you have been bothered by that symptom during the past month, including today, by circling the number in the corresponding space in the column next to each symptom.

	Not At All	Mildly but it didn't bother me much.	Moderately - it wasn't pleasant at times	Severely – it bothered me a lot
Numbness or tingling	0	1	2	3
Feeling hot	0	1	2	3
Wobbliness in legs	0	1	2	3
Unable to relax	0	1	2	3
Fear of worst happening	0	1	2	3
Dizzy or lightheaded	0	1	2	3
Heart pounding/racing	0	1	2	3
Unsteady	0	1	2	3
Terrified or afraid	0	1	2	3
Nervous	0	1	2	3
Feeling of choking	0	1	2	3
Hands trembling	0	1	2	3
Shaky / unsteady	0	1	2	3
Fear of losing control	0	1	2	3
Difficulty in breathing	0	1	2	3
Fear of dying	0	1	2	3
Scared	0	1	2	3
Indigestion	0	1	2	3
Faint / lightheaded	0	1	2	3
Face flushed	0	1	2	3
Hot/cold sweats	0	1	2	3

Appendix J

International Index of Erectile Functioning

IIEF-15

Over the last four weeks…

1. How often were you able to get an erection during sexual activity?	0 = No sexual activity 1 = Almost never/never 2 = A few times (much less than half the time) 3 = Sometimes (about half the time) 4 = Most times (much more than half the time) 5 = Almost always/always
2. When you had erections with sexual stimulation, how often were your erections hard enough for penetration?	0 = No sexual activity 1 = Almost never/never 2 = A few times (much less than half the time) 3 = Sometimes (about half the time) 4 = Most times (much more than half the time) 5 = Almost always/always
3. When you attempted sexual intercourse, how often were you able to penetrate (enter) your partner?	0 = Did not attempt intercourse 1 = Almost never/never 2 = A few times (much less than half the time) 3 = Sometimes (about half the time) 4 = Most times (much more than half the time) 5 = Almost always/always
4. During sexual intercourse, <u>how often</u> were you able to maintain your erection after you had penetrated (entered) your partner?	0 = Did not attempt intercourse 1 = Almost never/never 2 = A few times (much less than half the time) 3 = Sometimes (about half the time) 4 = Most times (much more than half the time) 5 = Almost always/always
5. During sexual intercourse, <u>how difficult</u> was it to maintain your erection to completion of intercourse?	0 = Did not attempt intercourse 1 = Extremely difficult 2 = Very difficult 3 = Difficult 4 = Slightly difficult 5 = Not difficult
6. How many times have you attempted sexual intercourse?	0 = No attempts 1 = One to two attempts 2 = Three to four attempts 3 = Five to six attempts 4 = Seven to ten attempts 5 = Eleven+ attempts
7. When you attempted sexual intercourse, how often was it satisfactory for you?	0 = Did not attempt intercourse 1 = Almost never/never 2 = A few times (much less than half the time) 3 = Sometimes (about half the time) 4 = Most times (much more than half the time) 5 = Almost always/always
8. How much have you enjoyed sexual intercourse?	0 = No intercourse 1 = No enjoyment 2 = Not very enjoyable 3 = Fairly enjoyable 4 = Highly enjoyable 5 = Very highly enjoyable

9. When you had sexual stimulation or intercourse, how often did you ejaculate?	0 = No sexual stimulation/intercourse 1 = Almost never/never 2 = A few times (much less than half the time) 3 = Sometimes (about half the time) 4 = Most times (much more than half the time) 5 = Almost always/always
10. When you had sexual stimulation or intercourse, how often did you have the feeling of orgasm or climax?	0 = No sexual stimulation/intercourse 1 = Almost never/never 2 = A few times (much less than half the time) 3 = Sometimes (about half the time) 4 = Most times (much more than half the time) 5 = Almost always/always
11. How often have you felt sexual desire?	1 = Almost never/never 2 = A few times (much less than half the time) 3 = Sometimes (about half the time) 4 = Most times (much more than half the time) 5 = Almost always/always
12. How would you rate your level of sexual desire?	1 = Very low/none at all 2 = Low 3 = Moderate 4 = High 5 = Very high
13. How satisfied have you been with your overall sex life?	1 = Very dissatisfied 2 = Moderately dissatisfied 3 = About equally satisfied and dissatisfied 4 = Moderately satisfied 5 = Very satisfied
14. How satisfied have you been with your sexual relationship with your partner?	1 = Very dissatisfied 2 = Moderately dissatisfied 3 = About equally satisfied and dissatisfied 4 = Moderately satisfied 5 = Very satisfied
15. How do you rate your confidence that you could get and keep an erection?	1 = Very low 2 = Low 3 = Moderate 4 = High 5 = Very high

Appendix K

Procedure for Physiological Assessment

Procedure for Physiological Assessment

Feedback Groups

When the participant was ready for the physiological assessment, the experimenter began by re-explaining the procedure to him. The participants randomly assigned to the experimental feedback group were given the following explanation for the assessment: "We know that current sexual performance influences men's abilities to continue responding and to make predictions about future sexual performance. Men constantly evaluate how they are performing during sex, and their level of responding as compared to their expectations affects their confidence. Men use all kinds of information to evaluate their performance, such as how big their erection appears to be and the response of their partner. In this experiment, we provide an erection score on a monitor to let you know how big your erection is to help you evaluate your performance. The erection score is based on a number of factors such as size, rigidity, temperature, and blood flow. We are interested in finding out how knowing this information affects men's sexual responding, confidence, and predictions about future performance.

"You will watch a series of short videotapes showing a man and woman having sex while we collect all the information we need for your erection score from the strain gauge around your penis. You will not be shown your erection score during the first five-minute session but you will see it during the following sessions. The erection score will be 'real time' meaning that it reflects your score at that exact time and will be displayed continuously throughout those entire five-minute sessions. In addition, you will be asked to predict what maximum score you think you can achieve prior to each session and how much confidence you have in that prediction. An average erection score for a man watching similar erotic videotapes is 12. Possible erection scores range from 0 to 24.

"Do you have any questions before we proceed?" The participant was told he may elect not to participate at any time without repercussions.

No-feedback Group

Participants randomly assigned to the control (no-feedback) group were explained the following about the study: "We know that current sexual performance influences men's abilities to continue responding and to make predictions about future sexual performance. Men constantly evaluate how they are performing during sex, and their level of responding as compared to their expectations affects their confidence. Men use all kinds of information to evaluate their performance, such as how big their erection appears to be and the response of their partner. In this experiment, we provide an erection score on a monitor to let you know how big your erection is to help you evaluate your performance. The erection score is based on a number of factors such as size, rigidity, temperature, and blood flow. We are interested in finding out how knowing their erection score affects men's sexual responding, confidence, and predictions about future performance.

"You will watch a series of short videotapes showing a man and woman having sex while we collect all the information we need for your erection score from the strain gauge around your penis. However, you have been randomly assigned to a group that will not be shown your erection score while

you watch the erotic videotapes. This way we can compare the results of men who see their erection score with men who don't.

"Do you have any questions before we proceed?" The participant was told he may elect not to participate at any time without repercussions.

All Participants

The participant was then escorted to the sound attenuated chamber where he was instructed how to measure the circumference of the mid-shaft of his penis with a paper strip. The experimenter left the room while the participant disrobed from the waist down and took this measurement. The participant was instructed to call the experimenter, who was in the adjacent control room, via an intercom when he was ready and had his clothes back on. The experimenter returned and retrieved the paper strip with the measurement. The participant was then asked to wait while the equipment was callibrated. The experimenter returned to the control room with the strip of paper used to measure the participant's flaccid penis. He measured the distance of the penile circumference in mm with a ruler and selected a mercury-in-rubber strain gauge that was at least 5-10mm smaller than the flaccid circumference. The experimenter calibrated the polygraph to the strain gauge using a calibration cone. He returned to the sound chamber and provided the participant with the strain gauge. The participant was instructed how to attach the strain gauge around the mid-shaft of his penis. The experimenter left the room while the participant disrobed from the waist down, attached the strain gauge, and sat on the paper-covered reclining chair. The experimenter returned to visually check to make sure the device was properly attached (i.e., around the mid-shaft of the penis and without twists) and placed a sheet of paper across the participant's lap to prevent him from seeing or touching his penis. If the strain gauge was not properly in place, the experimenter re-explained how to place the device and asked the participant to adjust it correctly. Once the gauge was in place, the participant completed the Erection Prediction Questionnaire on a clipboard. The participant was then told that an erotic videotape would begin on the monitor and continue for a few minutes. He was instructed to imagine himself involved in the activity which he saw and was asked not to move the paper covering his lap or touch his genitals. After asking if he had any questions, the lights were dimmed and the experimenter left the room. The experimenter operated the equipment (polygraph and VCR) from the adjacent control room and monitored the participant via intercom. Penile circumference was measured on polygraph chart paper during the five-minute erotic videotape.

Following the first film offset, the experimenter returned to the assessment room and raised the lights. He handed the participant a pencil and clipboard containing the Sexual Arousal Questionnaire. Once the participant completed the instrument, the experimenter handed the participant assigned to an experimental group an Erection Score Prediction Questionnaire and told the participant "In a few minutes you will view another sexually explicit videotape while we measure your sexual responding. Only this time we will show you in the corner of the video screen your "real time" erection score. Remember, your erection score is based on a number of factors including size, rigidity, temperature, and blood flow. An average erection score for a man watching a similar erotic videotape is 12. Possible scores range from 0 to 24. Write down on the Erection Score Prediction Questionnaire the maximum score you

think you can achieve when you watch the next videotape and mark the level of confidence you have in that prediction and the maximum size erection you think you will achieve." Control participants were told "In a few minutes you will view another sexually explicit videotape while we collect the same measurements." All participants were reminded to imagine being involved in the activities in the film and not to touch themselves. All participants were asked to complete a questionnaire asking them to rate on a visual analog scale the maximum size erection they thought they could achieve during the film they were about to watch, and how confident they were in that prediction. The experimenter asked the participant if he had any questions and after answering them, dimmed the lights and returned to the control room. After the participant's penile circumference returned to baseline flaccidity, the second erotic videotape was started on the VCR. If the readout from the genital measure did not return to baseline levels, a return-to-baseline procedure was employed to bring the participant to his basal level. This strategy consisted of asking the participant to count backward by 7s from 100. However, this procedure was rarely necessary given that the participant spent 5-10 minutes completing questionnaires between films. While the videotape was played, an erection score was displayed for the experimental participants. Each participant in a feedback group started out with an erection score of 0 and the number increased with incremental increases in penile circumference:

1. Positive Feedback Group. When the participants in the inflated feedback group reached their maximum erection, their meters reflected scores 4 points higher than they predicted. The erection scores were only even numbers, given the limited range of stored memory on the video display apparatus. Participants who did not reach maximum erection during the second film were shown their predicted erection score plus 4 points one minute after the point they reached maximum erection during the previous film.

2. No Feedback Group. No score was presented.

Following the second film offset, the experimenter returned to the sound chamber, raised the lights, and handed the control (no-feedback) participant a Sexual Arousal Questionnaire. Experimental groups received the Sexual Arousal and Feedback Questionnaire. The experimenter then handed the participant assigned to a feedback group an Erection Score Prediction Questionnaire and told the participant "In a few minutes you will view another sexually explicit videotape while we measure your sexual responding. Again we will show you in the corner of the video screen your "real time" erection score. Remember, your erection score is based on a number of factors including size, rigidity, temperature, and blood flow. An average erection score for a man watching an erotic videotape is 12 and possible scores range from 0 to 24. Write down on the Erection Score Prediction Questionnaire the maximum score you think you can achieve when you watch the next videotape and mark the level of confidence you have in that prediction and the maximum size erection you think you will achieve." No-feedback participants completed an Erection Prediction Questionnaire asking them to rate on visual analog scales the maximum size erection they thought they could achieve during the next film and how confident they were in that prediction. After all participants accomplished their respective prediction questionnaires, they were told there were no more films or measurements and were instructed to remove the strain gauge and get dressed while the experimenter was out of the room.

Appendix L

Erection Prediction Questionnaire

Film Number:_____ Subject:_____

Erection Prediction Questionnaire

1. Mark on the line the maximum size erection you think you can achieve during the film you're about to watch:

|_____|

no erection half erection full erection

2. Mark on the line how confident you are that you can achieve the size of erection you predicted:

|_____|

no confidence medium confidence maximum confidence

Appendix M

Erection Score Prediction Questionnaire

Film Number:_____ Subject:_____

Erection Score Prediction Questionnaire

We know that current sexual performance influences men's abilities to continue responding and to make predictions about future sexual performance. Men constantly evaluate how they are performing during sex, and their level of responding as compared to their expectations affects their confidence. Men use all kinds of information to evaluate their performance, such as how big their erection appears to be and the response of their partner. In the following assessment, as information to help you evaluate your performance, an erection score will be provided for you on a monitor. The erection score is based on a number of important sexual factors such as penile circumference, length, volume, pulse, temperature, hardness, and blood flow. Most of this information is unavailable to men while they are engaged in sexual activity. We are interested in finding out how knowing this information affects men's sexual responding, confidence, and predictions about future performance. You will watch a videotape showing a man and woman having sex while we collect all the information we need for your erection score from the strain gauge around your penis. The erection score will be "real time" meaning that it reflects your score at that exact time and will be displayed continuously throughout the entire session. At this time we would like you to predict what score you think you can achieve while you view the following erotic videotape. An average erection score for a man watching similar erotic videotapes is 12. Possible scores range from 0 to 24.

1. Maximum erection score I will achieve: _____

2. Mark on the line how confident you are that you can achieve the score you just predicted:

|_____|

no confidence medium confidence maximum confidence

3. Mark on the line the maximum size erection you think you can achieve during the film you're about to watch:

|_____|

no erection half erection full erection

Appendix N

Sexual Arousal Questionnaire

Film Number:_____ Subject:_____

Sexual Arousal Questionnaire

1. Mark on the line how sexually aroused you felt during the film you just watched:

|_____|

no arousal medium arousal maximum arousal

2. Mark on the line how anxious, tense, or nervous you felt during the film you just watched:

|_____|

no anxiety medium anxiety maximum anxiety

3. Mark on the line how much confidence you had in your ability to maintain an erection during the film you just watched:

|_____|

no confidence medium confidence maximum confidence

4. Mark on the line the maximum size of your erection during the film you just watched:

|_____|

no erection half erection full erection

5. Mark on the line your level of attention to the <u>film</u> you just watched:

|_____|

no attention medium attention maximum attention

6. Mark on the line your level of attention to <u>your body</u> during the film you just watched:

|_____|

no attention medium attention maximum attention

7. Mark on the line how much control you had over your erection:

|_____|

no control medium control maximum control

Mark on the line how many negative-type thoughts you had during the film you just watched:

|_____|

no negative thoughts lots of negative thoughts

8. Mark on the line how much your thoughts interfered with your ability to maintain your erection:

|_____|

no interference medium interference maximum interference

9. Mark on the line how similar your response was (for example: erection, thoughts, arousal) during this lab experience compared to actual sexual situations:

|_____|

not at all similar very similar

10. List the thoughts you had during the film you just watched:

1. _____

2. _____

3. _____

4. _____

5. _____

6. _____

7. _____

8. _____

9. _____

10. _____

11. _____

Appendix O

Sexual Arousal and Feedback Questionnaire

Subject: _____

Sexual Arousal and Feedback Questionnaire
(After Second Film)

1. Mark on the line how sexually aroused you felt during the film you just watched:

|_____|

no arousal medium arousal maximum arousal

2. Mark on the line how anxious, tense, or nervous you felt during the film you just watched:

|_____|

no anxiety medium anxiety maximum anxiety

3. Mark on the line how much confidence you had in your ability to maintain an erection during the film you just watched:

|_____|

no confidence medium confidence maximum confidence

4. Mark on the line the maximum size of your erection during the film you just watched:

|_____|

no erection half erection full erection

5. Mark on the line your level of attention to the <u>film</u> you just watched:

|_____|

no attention medium attention maximum attention

6. Mark on the line your level of attention to <u>your body</u> during the film you just watched:

|_____|

no attention medium attention maximum attention

7. Mark on the line how much control you had over your erection:

|_____|

no control medium control maximum control

8. Mark on the line how many negative-type thoughts you had during the film you just watched:

|_____|

no negative thoughts lots of negative thoughts

9. Mark on the line how much your thoughts interfered with your ability to maintain your erection:

|_____|

no interference medium interference maximum interference

10. Mark on the line how similar your response was (for example: erection, thoughts, arousal) during this lab experience compared to actual sexual situations:

|_____|

not at all similar very similar

11. Mark on the line how distracting the erection score was:

|_____|

no distraction medium distraction maximum distraction

12. Mark on the line the effect that the erection score had on your level of arousal:

|_____|_____|

decreased arousal no effect increased arousal

13. Mark on the line the effect that the erection score had on your level of anxiety, tension, or nervousness:

|_____|_____|

decreased anxiety no effect increased anxiety

14. Mark on the line the effect that the erection score had on your level of confidence in achieving and maintaining an erection:

|_____|_____|

decreased confidence no effect increased confidence

15. Mark on the line the effect that the erection score had on your ability to maintain an erection:

|_____|_____|

decreased ability no effect increased ability

16. Mark on the line the effect that the erection score had on your attention to the film:

|_____|_____|

decreased attention no effect increased attention

17. Mark on the line the effect that the erection score had on your attention to <u>your body</u>:

|_____|_____|

decreased attention no effect increased attention

18. Mark on the line the effect that the erection score had on your level of control over your erection:

|_____|_____|

decreased control no effect increased control

19. Mark on the line how accurate the erection score was:

|_____|_____|

underestimated accurate overestimated

20. Mark on the line how much control you had over your erection score:

|_____|

no control medium control maximum control

21. Mark on the line how much you tried to change your erection score:

|_____|

no effort medium effort maximum effort

22. Mark on the line how surprised you were by your erection score:

|_____|

no surprise medium surprise maximum surprise

23. List the thoughts you had during the film you just watched:

1. _____

2. _____

3. _____

4. _____

5. _____

6. _____

7. _____

8. _____

9. _____

10. _____

11. _____

12. _____

13. _____

Appendix P

Debriefing Form

Debriefing Form

(TO BE READ TO PARTICIPANTS)

Before we finish, I'd like to explain to you a little about the session you just completed. Remember, the purpose of this study is to see how men respond to feedback about their sexual performance. We want to see how men respond to feedback that their erections are bigger or smaller than they expect them to be (if not in the no-feedback group). That's why we gave you an erection score and measured your erection. What we didn't tell you before is that your erection score had nothing to do with your performance. Your score was based on the group you were in, not your erection. You were assigned to the group that was given an inflated erection score. Men in this study are either given feedback about the size of their erections or no information at all. The fact that you were given an inflated erection score has nothing to do with your performance.

This is the only thing we didn't tell you about. We did this because we are studying what different types of feedback do to men's erections. We think some men will get bigger erections when they are given feedback that their erections are small while other men will get smaller erections. We also think some men will get bigger erections when they are told that their erections are big while other men will get smaller erections.

Your response to the erection feedback was (describe what occurred). Your response was:

1. (consistent with what we thought would happen), or
2. (different than what we thought would happen). (As long as appropriate, normalize the response appropriately. Example: indicate that many other participants have had such a reaction, the setting could be interpreted as intimidating or artificial, or the erotic stimuli are not universally appealing; if not appropriate, discuss findings with participant).

We aren't in the habit of deceiving people, but we needed to give you this type of feedback to conduct our study. Other studies have shown that men adjust their erections in different ways based on their belief about their erection size. We couldn't think of any other way of studying this problem.

We are also comparing the results for men who have no sexual problems with men who have sexual problems. And by asking you to take the test quizzing you on what you remember from the last film, we can determine when people are and aren't paying attention to the film and how their attention corresponds to the size of their erections. The results of this study will contribute to the growing body of knowledge concerning the development of sexual problems and how they can be treated.

We don't expect that any decreases in your erection during this study will effect future sexual performance. Remember, the conditions you faced during this study were artificial and were intended to change your erection and confidence. You may or may not experience similar conditions in the future.

To repeat what I explained earlier, your erection score (if you were in a feedback group) actually had nothing to do with your performance and was based entirely on the group you were randomly assigned to. You had no control over your erection score. Furthermore, there really was no erection score because the strain gauge you had on your penis only measured the circumference of your penis. Do you understand what I just explained? YES _____ NO _____

(If NO, explain above in simpler language). Do you want to ask me any questions about this study? (Write down questions if YES):

_____

Before you leave, I want to stress how important it is that you don't tell anyone else that you know is going to be a subject about this experiment. If people know the erection score is not real, our whole project is blown. Do you understand?

_____

We will call you in a week, as we do with all of the participants in this study, to find out how you are doing and if you have any additional questions for us. In the meantime, if you have any questions about the study please feel free to call us. You can call me at 301-295-1788 or Dr. Sbrocco at 301-295-9674. Those phone numbers are available also on your copy of the consent form that you signed.

Thank you for your participation.

Appendix Q

Follow-up Phone Call Form

Subject: _____

Follow Up Phone Call Form

(READ TO SUBJECT OVER THE PHONE)

It's been a week since you participated in our study. As promised, I'm calling to see if you have any questions for us.

If the subject is not at home, then a message will be left on any answering machine.

"Hello, this is Major Galbreath from the Uniformed Services University. As promised, I'm calling to see if you have any questions about your participation in our study. If you do, please call 301-295-1788, and I'll be happy to answer any questions. Thanks again for participating"

_____ Message left on _____ Initials: _____

_____ Spoke to subject in person on_____

(Note any questions, concerns, or problems raised by the subject):

_____

_____

_____

_____

_____

_____

_____

_____

Thanks again for participating in our study. Feel free to call us any time you have questions.

Appendix R

Letter to Urologists

(On USUHS Letterhead)

SEXUAL ASSESSMENT PROGRAM
DEPARTMENT OF MEDICAL AND CLINICAL PSYCHOLOGY
UNIFORMED SERVICES UNIVERSITY OF THE HEALTH SCIENCES
4301 JONES BRIDGE ROAD
BETHESDA, MD 20814
301-295-1788

Dear Urologist,

We are recruiting patients (aged 18-60) with Erectile Dysfunction of psychological origin for a study examining how attention affects sexual arousal.

As part of the study, men complete a psychophysiological evaluation, which includes a daytime arousal study using a plethysmograph and a detailed psychosocial history. Volunteers receive $40 for their time (approximately 2 -3 hours) and a copy of the evaluation for their medical records, if they so desire. Free psychological treatment, for individual and couples, is available on a limited basis.

If you are able, we request your support in advertising this study to your patients. Enclosed are flyers for distribution to potential patients. The study is approved by the Uniformed Services Institutional Review Board and informed consent is obtained from all study participants. If you have any questions, please contact Major Nate Galbreath, MFS 301-295-1788 or Dr. Tracy Sbrocco at 301-295-1788.

I thank you in advance for your time.

Sincerely,

Tracy Sbrocco, PhD
Associate Professor
Dept of Medical and Clinical Psychology
(301)295-9674
Tsbrocco@usuhs.mil

Enclosures: Study Flyers

WANTED: Sexually Dysfunctional and Functional Men
Men Needed in Lab Study of Factors Impacting Sexual Arousal

A university based Sexuality Research and Treatment Program in Bethesda, MD seeks healthy men, 18-60, to participate in a 2 to 3 hour, non-invasive laboratory assessment. The purpose of the study is to gain a better understanding of factors that affect sexual functioning. We are looking for 2 types of volunteers: men with erection problems and men without sexual problems. There is no charge for the assessment and participants will receive assessment results and compensation for participating. The assessment includes a daytime arousal assessment and an interview.

If you are interested or would like more information please call **Nate Galbreath at (301) 295-1788.**

MAJOR NATE GALBREATH, MFS, M.S.
Uniformed Services University of the Health Sciences
Dept. Medical & Clinical Psychology
4301 Jones Bridge Road
Bethesda, MD 20814-4799
(301) 295-1788
ngalbreath@usuhs.mil

Appendix S

Authorization for

Exchange of Information

SEXUALITY ASSESSMENT AND TREATMENT PROGRAM
Tracy Sbrocco, Ph.D., Director
Uniformed Services University of the Health Sciences
Department of Medical and Clinical Psychology
4301 Jones Bridge Road
Bethesda, Maryland 20814-4799
301-295-3270

AUTHORIZATION FOR EXCHANGE OF INFORMATION

I hereby authorize the Sexuality Assessment and Treatment Program and

(Doctor/Agency) _____

(Address) _____

_____

to share with each other any and all information in their possession acquired in the

course of evaluation and/or treatment of _____.
(Name of Client)

You may accept a photocopy of this authorization.

DATE: _____ SIGNED: _____

WITNESS: _____

CLIENT'S NAME: _____
(Please Print)

ADDRESS: _____

_____

BIRTH DATE: _____

Last 4 of SOCIAL SECURITY #: _____

Appendix T

Psychogenic Rating Scale

Psychogenic Rating Scale

0 = Psychogenic factors do not appear to be involved (i.e., no psychogenic factors found or possible presence of one or two minor factors that have no temporal or other relationship to problem onset).

1 = Psychogenic factors are probably not significant or significance is unknown (i.e., one or more minor factors coupled with positive sexual functioning factors).

2 = Psychogenic factors might be significant (i.e., multiple minor factors, with at least one showing clear temporal or other relationship to problem onset; or presence of one major factor that doesn't clearly relate to onset coupled with numerous positive functioning factors).

3 = Psychogenic factors are probably significant or of sufficient magnitude to be important (i.e., presence of one clear major factor that doesn't directly relate to problem onset; not a significant number of positive functioning factors).

4 = Psychogenic factors are significant and probably at least a contributing factor (i.e., presence of one major or many minor factors that either don't directly relate to problem onset or are in the presence of positive functioning factors that directly lessen their impact).

5 = Psychogenic factors are definitely involved and appear to be the causative or maintaining factor in the dysfunction (i.e., presence of a clear major contributing factor with no positive sexual functioning factors that would directly lessen this; a clear relationship of the major factor to problem onset).

Appendix U

Sexual Opinion Survey

ID Number: _____

SOS

DIRECTIONS: Listed below are a number of statements describing a set of beliefs. Please read each statement and, on the 0 to 6 scale, indicate the extent to which you agree or disagree with each statement.

0	1	2	3	4	5	6
Strongly Agree						Strongly Disagree

1. I think it would be very entertaining to look at hard-core pornography.	0 1 2 3 4 5 6
2. Pornography is obviously filthy and people should not try to describe it as anything else.	0 1 2 3 4 5 6
3. Swimming in the nude with a member of the opposite sex would be an exciting experience.	0 1 2 3 4 5 6
4. Masturbation can be an exciting experience.	0 1 2 3 4 5 6
5. If I found out that a close friend of mine was a homosexual it would annoy me.	0 1 2 3 4 5 6
6. If people thought I was interested in oral sex, I would be embarrassed.	0 1 2 3 4 5 6
7. Engaging in group sex is an entertaining idea.	0 1 2 3 4 5 6
8. I personally find that thinking about engaging in sexual intercourse is arousing.	0 1 2 3 4 5 6
9. Seeing a pornographic movie would be sexually arousing to me.	0 1 2 3 4 5 6
10. Thoughts that I may have homosexual tendencies would not worry me at all.	0 1 2 3 4 5 6
11. The idea of my being physically attracted to members of the opposite sex is not depressing.	0 1 2 3 4 5 6
12. Almost all pornographic material is nauseating.	0 1 2 3 4 5 6
13. It would be emotionally upsetting to me to see someone exposing themselves publicly.	0 1 2 3 4 5 6
14. Watching a go-go dancer of the opposite sex would not be very exciting.	0 1 2 3 4 5 6
15. I would not enjoy seeing a pornographic movie.	0 1 2 3 4 5 6
16. When I think about seeing pictures showing someone of the same sex as myself masturbating it nauseates me.	0 1 2 3 4 5 6
17. The thought of engaging in unusual sex practices is highly arousing.	0 1 2 3 4 5 6
18. Manipulating my genitals would probably be an arousing experience.	0 1 2 3 4 5 6
19. I do not enjoy daydreaming about sexual matters.	0 1 2 3 4 5 6
20. I am not curious about explicit pornography.	0 1 2 3 4 5 6
21. The thought of having long-term sexual relations with more than one sex partner is not disgusting to me.	0 1 2 3 4 5 6
22. Extramarital sex inevitably leads to serious problems and great difficulty in marriage.	0 1 2 3 4 5 6
23. Mutual masturbation in a married couple is a poor substitute for intercourse.	0 1 2 3 4 5 6
24. Holding and touching my partner's body is exciting and thrilling.	0 1 2 3 4 5 6
25. Masturbation fantasies are healthy forms of sexual release.	0 1 2 3 4 5 6
26. Oral-genital sex is not within the range of normal sexuality.	0 1 2 3 4 5 6