

Reclaiming Sexual Deviance as Sexual Liberty:
A Study of Attitudes, Behaviors, and Testosterone

By

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Abstract

The present paper examines discrepancies between the current heteronormative sexual script and participants' self-reported sexual liberality, emphasizing sexual variation as a natural part of human sexuality. Associations between salivary testosterone (T) levels and sexual liberality were examined to address a potential biological indicator of sexual variations. Participants were recruited from the University of Michigan subject pool and the community; 27 women and 20 men qualified for study analyses. Information on participants' health and background, sexual attitudes, and sexual behaviors were gathered along with saliva samples for assays. Findings showed positive correlations between scores on the Sexual Attitudes Survey (SAS) and Sexual Behaviors Survey (SBS), indicating a positive association between liberal sexual attitudes and potential sexual behaviors. For women with sexual experience, number of partners was positively correlated with SBS scores, but not SAS scores. For men with sexual experience, number of partners was correlated with SAS scores, but not SBS scores. Women showed a trend for higher SBS scores than men. T showed no correlations with SAS or SBS scores. The results exemplify the commonality of sexual variations that stray from the norm along with the social construction of sexual normalcy in that sexual experience, not T, was indicated as a guiding factor of sexual liberality.

Reclaiming Sexual Deviance as Sexual Liberty:

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“Sexology and sex research provide abundant detail, a welcome posture of calm, and a well-developed ability to treat sexual variety as something that exists rather than as something to be exterminated.” (Rubin, 1999, p. 155)

Theories about sexual behavior often relate to evolution or physiological sexual functioning (Buss, Larsen, Westen, & Semmelroth, 1992; Andersson, 1986), however few studies have empirically examined the spectrum of sexual variation and how this spectrum contributes to society’s view of sexuality. Specifically, the current view of sexuality is made up of two categories, (a) ‘normal’ sexual behavior and (b) behaviors outside of the norm, with sexual variations that fall outside the social sexual norm labeled as “deviant”. Most research on sexual deviance focuses on criminalized behaviors that are perceived as physically or psychologically threatening (e.g., rape, pedophilia, exhibitionism) because they are associated with the nonconsensual harm of individuals and are strongly considered socially unacceptable. Often, these behaviors are explored in terms of causes and cures, frequently involving the study of testosterone (T) levels and the effects of medications that lower T (Thibaut, Cordier, & Kuhn, 1996; Krueger & Kaplan, 2002; Studer, Aylwin, & Reddon, 2005; Cooper & Cooper, 1972). Such studies position T as a physiological indicator of deviant sexual behavior, providing further reason to categorize people who engage in these behaviors as outside of the norm. It is important to note, however, the existence of sexual variations that fall outside of social sexual norms that entail the mutual consent of the individuals involved (e.g. casual sex, non-monogamous sex, sex between same-sex partners, sadomasochism, and group sex), exemplifying how some sexual behaviors are often also considered deviant even though they are harmless to the involved parties.

Few studies focus on these harmless variations despite the political and social repercussions that result from debates about sexual normalcy, therefore combining these behaviors under the same umbrella of deviance as criminalized sexual behaviors even though they exist within a non-criminal population. In particular, few studies focus on T links with harmless sexual variations, implicating T as a driver of the harmless sexual behaviors along with criminalized sexual behaviors. As T-sexuality links are relatively mixed in non-criminalized samples (Carani, Granata, Bancroft, & Marrama, 1995; Sherwin, Gelfand, and Brender, 1985; Shifren et al, 2006; Braunstein, 2005; Simon, 2005; Tuiten, 2000), it seems important to study sexual variation in a non-clinical population to better understand associations between T and patterns of harmless sexual deviance. As such, the present research aims to address the existence of harmless “deviances” in our society that have historically been a source of social-political struggle (which are henceforth labeled sexual variations), clarifying the discrepancies between the expected sexual norms and reality of human sexual behavior. The present research also aims to better elucidate associations between baseline T levels and sexual variation to gain further information on the physiology of sexual deviances, potentially adding to the understanding of the biological basis of current sexual norms. Sexual variations *unlinked* to T could highlight the social construction of these concepts, rather than their being rooted in physiology. The social construction of “deviance” would illuminate the invalidity of a biologically-based sexual norm by suggesting that the rejection of sexual deviants is based on social values rather than physiological human differences. In all, this research explores associations between variations in sexual attitudes, behaviors, and testosterone (T) to gather information about social and physiological factors that could reveal important insight to the existence of human sexual variation.

Background

Culture governs the most personal dimensions of sexual pleasure, identity, and practice through prohibition, regulation, and embracing one or a set of tastes as though they were universally shared (Warner, 2000). From the culturally determined ideas about sexuality rises a sexual norm, where variations from the norm become “deviant”, even when taking place between consenting partners. Individuals whose behavior stands high on the hierarchy of acceptable sexual behavior are rewarded with certified mental health, respectability, legality, social and physical mobility, institutional support, and material benefits, while those whose behaviors are labeled deviant are subjected to a presumption of mental illness, disreputability, criminality, restricted social and physical mobility, loss of institutional support, and economic sanctions (Rubin, 1999). This stigmatization of harmless deviant sexual behaviors has historically been a part of the social sphere, recorded by well-known social taboos and implementations of political law (Simon & Gagnon, 1986). Stone Age religious laws condemned people who engaged in behaviors like autoeroticism, extramarital sex, sodomy, and masturbation (Warner, 2000). The Obscene Publications Act of 1857 in England enacted bans on sexual material, condemning books like *Lady Chatterly’s Lover* because of the explicit material and implicit glorification of unconventional sex. The case *Bowers v. Hardwick* (1986) ruled against sodomy as a sexual act, with Chief Justice Warren Burger noting that, “decisions of individuals relating to homosexual conduct have been subject to state intervention throughout the history of Western civilization” (from Warner, 2000). These historical laws suggest not only the enforcement of a sexual norm in our society, but also the fact that people still engage in sexually deviant acts despite society’s attempts to discourage them. Because the existence of deviance has

been so common throughout history, the question arises as to the reasons why certain behaviors have been characterized as deviant in the first place.

Although sexuality is often seen as a result of evolution and biology (Buss et al., 1992), it is important to note the social influences guiding societal sexual norms. According to Rubin (1999), sexual norms come from the belief that there is one best way to have sex, and that everyone should have sex that way. Hence, the “best” way is promoted as the “normal” way, creating a standard for how people are supposed to have sex. In other words, most people mistake their personal sexual preferences for a system of universal preferences that will or should work for everyone, and deem these personal-cum-universal preferences as moral and consistent with nature and health (Rubin, 1999; Warner, 2000). Because of these beliefs, society’s first instinct is to think of sexual dissidents as immoral, criminal, or pathological, despite the fact that ideas about sexual relations are not universal, and that people can exhibit different understandings of nature and health (Warner, 2000). One could therefore argue that many sexual acts are labeled deviant not because they are actually abnormal, but because they conflict with those subjective beliefs that establish the sexual norm of a culture. This implies that our norms are based on the notion of a single ideal sexuality, rather than a realistic view that encompasses the broad spectrum of human sexual behavior.

The notion of the social construction of sexual normality is especially illuminated when considering the continuous fluctuation in the social acceptance of sexual variations, such that many behaviors once seen as deviant or disgusting have become common-place. For example, sodomy was illegal in fifteen states until *Lawrence v. Texas* (2003) declared the laws unconstitutional, reflecting a change in the social acceptance of an act that was previously categorized as deviant by law. The flexibility of sexual norms suggests the potential for future

shifts in definitions of sexual normalcy, and has a number of interesting implications concerning harmless deviancies and their role in perceptions of human sexuality.

Implications

The persistence of sexual variations firstly suggests that acts and desires labeled “deviant” have some stability or permanence, as they have prevailed through laws and social taboos. Secondly, the persistence of deviance suggests that the existence of a strict sexual norm means an unremitting social struggle for sexual rights and the resulting oppression of harmless individuals. Most importantly, it suggests that the societal sexual norm is not necessarily a reflection of what is “normal”. So, if the societal norm is not rooted in what people actually do, what constitutes “normal” human sexuality and what does this mean about our current sexual standards?

Overall it seems most likely that many deviant desires and acts are in fact normal variations on a spectrum, continuously fluctuating in their levels of social acceptance. It is important for society to recognize that variation is a fundamental property of all life (Roughgarden, 2004), from the simplest biological organisms to the most complex human social formations (Roughgarden, 2004; Rubin, 1999). The fluidity of social acceptance towards sexuality and the inevitability of sexual variation suggest that current sexual standards are inaccurate reflections of “actual” sexual normalcy, and that these standards are in fact based on socially constructed beliefs. This implies that the only way to avoid social struggle based on sexual norms is to re-construct ideas of sexual normalcy, re-claiming views of “deviancy” as normal variations on the realistic spectrum of human sexuality. As T levels have been implicated in various aspects of sexuality, it is important to address potential roles of T in the human

sexuality spectrum to encompass the possible physiological aspects of sexual variation that may contribute to the construction of sexual normalcy.

Research Plan and Development

This research proposes to develop a more pluralistic sexual ethics by examining harmless sexual variations that contrast social standards via sexual attitudes, behaviors, and testosterone (T), all of which have implications in for sexuality. Sexual attitudes represent beliefs about sexuality, behaviors reflect sexual actions, and T occupies a cultural location as the innate contributor to sexual differences. By comparing how these factors interrelate, this study aims to explore sexual variation from both a social and physiological perspective. Firstly, as the word liberality is associated with resistance to conformity and tradition (Schwartz, 1992), variations in sexual behavior will from now on be referred to as sexual liberality. This change has been instigated to disregard the stigma associated with the term “deviance”, and instead associate variations in sexual behavior with resistance to social conventionality.

In order to present a clear outline of what is socially considered normal vs. abnormal, the basics of the current hetero-normative sexual script are summarized as such: Women are expected to be uninterested in sex outside of relationships, protective of their sexual “honor”, and interested in sex in relationships only to please the man involved (Byers, 1996). This script is specific to women, because while women are expected to be conservative in their sexuality and take steps to avoid sexual encounters, men are encouraged exert control over sexual situations and encouraged to have sexual experiences with many female partners (LaPlante, McCormick, & Brannigan, 1980).

The current societal norm for “appropriate” sex constitutes that sexualities that are ‘good’, ‘normal’, and ‘natural’ should ideally be heterosexual, marital, monogamous, reproductive, and

non-commercial. They should be coupled, relational, and occur at home. They should not involve pornography, fetish objects, sex toys of any sort, or gender/sex roles that deviate from gender/sex birth assignment (i.e. men behave as males; women as females; both in relation to the other). Any sex that violates these rules is considered abnormal and therefore deviant (Rubin, 1999). Deviant sex may be homosexual, unmarried, promiscuous, non-procreative, or commercial. It may be masturbatory or take place at orgies, may be casual, and may take place in 'public'. It may involve the use of pornography, fetish objects, sex toys, or unusual gender/sex roles (Rubin, 1999).

Attitudes, behaviors, and T were explored in order to encompass a comprehensive view of sexual liberality that includes both social and physiological factors. Attitudes were studied as a part of sexual liberality because the current sexual standard is constituted by beliefs (Rubin, 1995). As such, it was relevant to examine personal beliefs to assess whether or not they strayed from the established sexual norm, i.e., whether or not they were more sexually liberal. In general, reported attitudes usually somewhat reflect the societal sexual standard (Zabin, Hirsch, Smith, & Hardy, 1984; Luckey & Nass, 1969), suggesting that variation from this standard is a good indicator of sexual liberality. Willingness to engage in liberal sexual behaviors was also examined in order to address participants' openness to behaviors that do not fit the sexual norms. Likelihood of behavior was asked rather than past behavior because it was possible that participants had never engaged in the mentioned activities, despite having those sexual desires. Using the mentioned sexual script, items in the questionnaire addressed behaviors regarding homosexual acts, casual sex, group sex, public sex, the use of pornography and sex toys, and non-traditional gender/sex roles in order to gauge the levels to which participants would engage in liberal sexual behavior. Importantly, along with being informative, addressing both attitudes

and behaviors can be methodologically advantageous, as past findings have shown that having individuals address specific attitudes increases the probability of reducing a response bias and reporting actual behavior. This is exemplified in studies like that of Johnson (1970), who found that reports of extramarital behavior increased after asked to endorse justifications for extramarital sex. Other studies show that permissive attitudes and comfort with unconventional sexual behavior correlate with higher numbers of sexual partners (Zuckerman, Tushup & Finner, 1976; Rempel & Serafini, 1995), and comfort with personal sexuality is correlated with sexual acts that push the boundaries of social convention (Rempel & Baumgartner, 2003). As the present study took place in a location where authority and power are negotiated (e.g. a scientific laboratory), there was the potential for participant perception of researcher expectations. As studies show the tendency for a response bias towards answers that are socially desirable (Furham, 1986; Ganster, et al., 1983; Randall & Fernandes, 1991), it was plausible that participants would report information regarding their sexual liberality that conforms to the expectations set by the sexual norm. Therefore, it was potentially methodologically advantageous to address sexual attitudes before behaviors, as this may have reduced a response bias that would produce inaccurate results.

Testosterone (T) was chosen as an aspect of this study because a variety of research has shown that T is implicated in sexuality, potentially promoting assumptions about the roles of physiology in sexual variation. Often, higher T levels are associated with higher sexual interest and desire, due to findings discussing T administration in hypogonadal, menopausal women, and women with hypoactive sexual desire disorder (HSDD) (Salmimies, Kockott, Pirke, Vogt, & Schill, 1982; O'Carroll & Bancroft, 1984; Davis, et al., 2006). As sexual desire and interest are often associated with higher instances of sexual liberality (Wentland, Herold, Desmarais, &

Milhausen, 2009; Sloggett, 1996), it seems plausible that higher levels of T could be associated with sexual liberality. It is important to note, however, that natural or endogenous T-links with sexual desire are unclear, as studies often refer to T administration or reduction rather than natural fluctuations (Carani et al., 1995; Sherwin, Gelfand, and Brender, 1985; Shifren et al, 2006; Braunstein, 2005; Simon, 2005; Tuiten, 2000). In studies that do refer to natural fluctuations in T, there is still no simplistic association between T and sexual desire. For example, studies have shown both significant and non-significant T associations with solitary desire and no correlations with dyadic desire (van Anders, Hamilton, Schmidt, & Watson, 2007; van Anders & Dunn, 2009). As such, it seems important to examine potential associations between T and sexual liberality, in order to address the conflicting suggestions of past research that T is an innate indicator of sexual variation.

Furthermore, the study of T is especially relevant due to past research that often associates T with paraphilias, promoting the idea that baseline T levels could be an indicator of sexual variation. For example, when discussing the treatment of paraphilias, anti-androgens resulting in reductions or blockades of T are often used to reduce instances of sexual “deviance” (Thibaut, Cordier, & Kuhn, 1996; Krueger & Kaplan, 2002; Studer, Aylwin, & Reddon, 2005; Cooper & Cooper, 1972), suggesting that higher levels of T promote sexual deviancy. Research on T-deviancy links is mixed, however, as studies have also shown both negative and no correlations between certain sexual variations and T (Bradford & MacLean, 1984; Bain et al., 1988). Importantly, most of these studies involve participants who have been convicted of sexual offenses, biasing T-deviancy research towards a clinical perspective that usually includes confounds of criminality. Research based solely on a population of convicted sexual offenders contributes to the idea that sexual variations, including sexual liberality, are all of the same kind,

and contribute to the same harms. As no research has been done relating T to sexual variation within non-clinical populations, this study aimed to examine T links with harmless sexual variations in order to address non-offensive sexual behaviors within a healthy population.

Method

Participants

Participants were recruited through posters and internet advertisements in Ann Arbor, MI as well as through the Introductory Psychology Subject Pool at the University of Michigan-Ann Arbor, receiving \$10 or class credit depending on their recruitment source. Recruitment was aimed at healthy individuals between 18 and 40 years of age. The Institutional Review Board (IRB) approved this research.

Participants were informed of the sexual nature of this study from the description of involvement requirements, which indicated that there would be potential questions on background, health, social variables, and personal sexuality. Participants were also informed before taking part in the study of the requirement to produce saliva samples.

Participants ($n=52$) included 29 women (mean age = 19.38 years, $SD = 1.50$ years) and 23 men (mean age = 21.52, $SD = 6.63$). Of the women, 11 were using hormonal contraceptives. All participants self-identified their own sexual orientation. The majority ($n=28$) of women identified as heterosexual/straight with one woman identifying as bisexual. Similarly, the majority of men ($n=22$) identified as heterosexual/straight, with one man self-identifying as gay. Participants varied by relationship status: single ($n=29$), dating ($n=5$), and in a committed relationship ($n=18$). Participants were mostly students ($n=47$) although many worked part-time jobs as well. Occupations included: statistician, tutor, research assistant, worker in radio and television, food service worker, media assistant, and newspaper employee. Participants self-

identified ethnicity: the majority identified as Caucasian/white ($n=35$), seven identified as Asian, two as African-American, one as Hispanic, one as Korean, one as Chinese, one as Persian-American, one as American, one as German-French-Canadian-American, one as English-Scottish-Irish-Hungarian-Serbian, and there was one non-responder.

Materials

Health and background questionnaire. This questionnaire contained items aimed to gather information about participants' health and background, sexual activity, and possible confounds with hormonal measurements. Participants were given the option to indicate that they had never been sexually active, and those who indicated having had sexual experience were asked about number of sexual partners. For the purpose of this study, sexual experience is defined as whether or not the participant indicated having been sexually active in their lifetime.

Sexual attitudes and behaviors scales. The original Sexual Attitudes Scale (SAS) (Hendrick & Hendrick, 1987) consisted of 43 items exploring attitudes towards four factors of sexuality: permissiveness, sexual practices, communion, and instrumentality. 25 of these items (see Appendix A for a list of these items) were used in the study questionnaire, removing other items because they did not specifically address casual sex, adventurism, or masturbation, which are the main categories of sexual liberality in our study. Participants were given the prompt: *Please rate your response as honestly as you can. There are no right or wrong answers, and your answers will be completely confidential.* Participants were asked to rate their response on a 5-pt scale from '1' = 'Strongly Disagree' to '5' = 'Strongly Agree' as this scale was used in the original version. The items used in our questionnaire were meant to explore various attitudes towards sexuality, with individuals rating higher levels of agreement on items representing higher sexual liberality.

The Sexual Arousal Assessment (SAA) was developed by Rempel & Serafini (1995) to explore the spectrum of activities that people find sexually arousing, with the intention to understand the factors contributing to people's experiences of sexual desire and arousal. In order to address the behavioral aspect of sexual liberality, 28 items (see Appendix B for a list of items) were drawn from The SAA to create the Sexual Behaviors Scale (SBS). The following prompt was shown for each item: *If given the opportunity, what is the likelihood that you would engage in the sexual activities mentioned below? Please answer as honestly as you can. Your answers are completely confidential.* The other items in the SAA were excluded because they did not address a specific sex act (e.g. You wear sexually erotic clothing in order to excite your partner). Participants were asked to characterize their likelihood of activity engagement via a 7-pt scale from '1' = 'Very Unlikely' to '7' = 'Very Likely'. Likelihood was chosen for the rating scale because it is possible that participants had not yet had the opportunity to engage in certain sexual activities, despite wanting to exhibit such behaviors. The items used in the SBS were meant to explore a variety of sexual activities, with individuals rating higher levels of likelihood representing higher levels of sexual liberality.

Relationships and sexuality questionnaire. This questionnaire contained questions about participants' relationships and sexual experience, focusing on past, present, and anticipated future patterns. For the purpose of this questionnaire, sexual activity or sex was defined as including passionate kissing or touching, oral sex, vaginal sex, anal sex, and masturbation, and excluding activities like light kisses on the cheek and friendly hugging. Committed relationships were defined as relationships with another person that are romantic and usually sexual, involving a commitment on the part of both partners to be together for some time (e.g., boy/girlfriends, long-term relationships, marriage, cohabitating, common-law, etc.). Dating

relationships are defined as casual relationships with another person that may be sexual, and are 'romantic', involving activities like going to the movies or on other dates. Sexual encounters are defined as sexual interactions with another person that do not include a longer-term connection (e.g., one night stands, booty calls, friends with benefits, etc.), with no intentions of dating or being with the person beyond the sexual encounter. Flirting interactions are defined as verbal and/or physical interactions that have some degree of potential romantic/sexual playfulness or interest (e.g., telling someone they are cute or sexy, touching a person's arm or back, smiling to see if they smile back, standing near someone to get their interest, etc.) These questions aimed to gather more specific information about participants' various interests and experiences in regards to relationships and sexuality, however information from this questionnaire was not used in this study.

Saliva samples. Participants provided saliva samples by spitting into 17 mL polystyrene tubes after rinsing their mouths with water. Samples were frozen until assay. T was assayed at The University of Michigan. Inter-assay CV for T was 18.42% for low T, 10.98% for medium T, and 8.19% for high T, and intra-assay CV was 12.83% for low T and 3.16% for high T. There was one woman and one man whose T levels were unavailable and were therefore excluded from analyses with T.

Procedure

Participants attended a laboratory session between 12pm and 7pm, during which they signed a paper consent form. After consenting, participants used a computer in a separate, solitary room to complete the first portion of the questionnaire, including the health and background questionnaire, 25 items from the SAA (Rempel & Serafini, 1995), the SBS (developed from 28 items in the SAS by Hendrick & Hendrick, 1987), and a baseline saliva

sample (Saliva Sample 1). The SAS and the SBS were combined into one condition called the Sexual Survey, which was randomly assigned out of three possible conditions. The other two conditions included either a relationship or neutral survey; however neither is being used for the purpose of this study. Participants were then prompted by the questionnaire to look at a picture book for 15 minutes, after which the survey advanced to the second portion. Once the 15-minute period had passed, the questionnaire advanced to the next section, prompting participants to begin Saliva Sample 2. The waiting period and Saliva Sample 2 were included in order to examine research questions unrelated to the current report. While providing Saliva Sample 2, participants answered the Relationships and Sexuality Questionnaire to provide data that encompasses a better understanding of each participant's personal perspective. As shown by van Anders & Watson (2006), there are seasonal rhythms in hormones in both men and women, with T highest in the fall and lowest in the spring. As such, seasonality may be important to note, although seasonal rhythms should not confound the analyses. Participants were tested between September and November 2010. Research has shown that menstrual cycle phase does not need to be controlled in studies with T unless cycle phase is of interest (Dabbs and de La Rue, 1991); therefore women were tested at all levels of their menstrual cycle.

Analyses. Participants who were using medications that affected hormones or sexual function were excluded from the dataset ($n=5$), leaving 47 participants for analyses (Women: $n = 27$; Men: $n = 20$). Because T differs strongly by gender, the analyses were conducted separately for women and men, except when analyzing gender differences.

Analyses were conducted with PASW Statistics 18.0. First, Cronbach's alphas were computed to ensure the reliability of the SAS and SBS used in the study. Also, Pearson's correlations between the two scales were performed in order to examine potential links between

reported sexual attitudes and behaviors. Baseline T levels were then correlated with SAS scores and SBS scores in order to assess potential general links. Next, using the range of scores on each of these scales, participants were split into three groups in order to categorize those with low liberality, high liberality, and those whose scores fell in the middle. This was done separately for each scale as the range differed between Attitude scores and Behavior scores. T levels were compared between groups to see if there were differences between those with low liberality, medium liberality, and high liberality. Analyses were then performed to assess differences in sexual attitudes and behaviors between women and men.

Results

Cronbach's alphas were computed separately for the SAS and SBS and both were shown to have high reliability between items. The SAS consisted of 25 items ($\alpha = .914$) and the Behaviors SBS consisted of 28 items ($\alpha = .911$). Cronbach alphas were also computed separately for women (SAS: $\alpha = .928$; SBS: $\alpha = .933$) and men (SAS: $\alpha = .904$; SBS: $\alpha = .848$) to ensure that reliability was consistent between genders.

SAS and SBS Correlations

Women. Scores on the SAS and the SBS were significantly positively correlated for women, $r = .71$, $p < .05$, although the correlation was not as strong (but still significant) when controlling for number of sexual partners and whether or not the participant had sexual experience, *partial* $r = .59$, $p < .05$. Because controlling for number of sexual partners and sexual experience elicited a slightly lower correlation, these factors were further explored. Interestingly, in women who had sexual experience, the number of sexual partners was found to be significantly correlated with SBS scores, $r = .68$, $p < .05$, but not with SAS scores, $r = .33$, $p = .18$. When examining differences in sexual experience (women who had previously been

sexually active vs. women who had never been sexually active), those with experience were shown to have scored significantly higher on the SAS ($M = 78.37$, $SD = 17.39$) than their sexually inexperienced counter-parts ($M = 63.25$, $SD = 10.90$), $t(25) = -2.27$, $p < .05$. Although non-significant, experienced women also showed a trend for higher SBS scores ($M = 95.42$, $SD = 28.72$) than women who had never been sexually active ($M = 74.25$, $SD = 27.36$), $t(25) = -1.77$, $p = .09$.

Men. Scores on the SAS and SBS were also significantly correlated for men, $r = .68$, $p < .05$, and did not change when controlling for either number of sexual partners and sexual experience, *partial* $r = .69$, $p < .05$. In order to compare results with the women, participants with no sexual experience were then screened out ($n=8$) to examine potential associations between number of partners and SAS/SBS scores. For men, number of partners was significantly correlated with SAS scores, $r = .80$, $p < .05$, but not with SBS scores, $r = .38$, $p = .25$.

Those who had been screened out for having no sexual experience were then re-included to examine potential differences in SAS/SBS scores based on sexual experience. Men with previous experience showed a trend for higher scores on the SAS ($M = 81.33$, $SD = 9.88$) than those who had never been sexually active ($M = 67.13$, $SD = 19.33$), $t(9.47) = -1.92$, $p = .09$, but showed no significant difference in SBS scores, $t(18) = -.50$, $p = .63$.

Gender Differences

Number of sexual partners. As number of sexual partners was shown to influence the correlation between SAS scores and SBS scores, a t-test was performed to assess any differences between men and women. There was no significant difference for number of sexual partners, $t(43) = .515$, $p = .61$, between men ($M = 3.00$, $SD = 6.91$) and women ($M = 2.23$, $SD = 2.79$),

even when screening out participants who had never been sexually active, $t(27) = .901, p = .376$; Men ($M = 5.18, SD = 8.58$); Women ($M = 3.22, SD = 2.84$).

Attitudes and behaviors scores. Using a t-test, men ($M = 75.65, SD = 15.66$) and women ($M = 73.89, SD = 17.05$) showed no significant differences in their SAS scores, $t(45) = .362, p = .719$. When comparing SBS scores, there was a trend towards a difference between men ($M = 75.85, SD = 20.56$) and women ($M = 89.15, SD = 29.49$), $t(45) = -1.73, p = .09$, suggesting that women trended towards higher average scores on the SBS than men. To explore this further, a t-test was performed on the SBS items between gender/sex. Women were found to score significantly higher than men on 5 of the SBS items (see Table 1).

Testosterone, Sexual Attitudes, and Sexual Behaviors

Women. There was no correlation between baseline T levels and SAS scores, $r = -.22, p = .29$. The correlation did not become significant when controlling for age, time, BMI, and nicotine use. There was also no correlation between baseline T levels and SBS scores, $r = -.026, p = .90$, even when including the mentioned controls.

Men. There was no correlation between baseline T levels and SAS scores, $r = -.13, p = .60$. The correlation did not become significant when controlling for age, time of day, BMI, or nicotine use. There was also no correlation between baseline T levels and SBS scores, $r = -.11, p = .66$, and significance did not emerge when including the same controls.

Low, Medium, and High Liberality Groups

In order to examine the proportions of women and men who rated themselves as more or less liberal in the studied population, and to see whether differences in T existed between participants with low, medium, or high liberality, participants were divided into three groups: Group 1= low liberality, Group 2 = medium liberality, and Group 3 = high liberality. Participants

characterized as having low liberality rated themselves in the lowest third of the range of scores, while those characterized as having high liberality rated themselves in the top third of the range of scores.

Women. SAS scores ranged from 53.0 to 115.0 ($M = 73.89$). Women who scored lower than 73.66 were grouped as having low liberality (1), while women who scored higher than 94.34 were grouped as having high liberality (3). Women whose scores fell in between 73.66 and 94.34 were grouped as having a medium level of liberality (2). To ensure that these groups differed significantly in their SAS scores, an ANOVA was performed. As predicted, the groups were significantly different, $F(2, 24) = 101.87, p < .05$. Group 1 ($M = 62.19, SD = 5.86$) scored significantly lower than Group 2 ($M = 80.67, SD = 2.87$) and Group 2 scored significantly lower than Group 3 ($M = 103.20, SD = 7.76$). The population was found to be skewed; 16/27 women (over half) fell into Group 1. There were no significant differences in baseline T levels between groups, $F(2, 23) = 1.40, p = .27$.

SBS scores ranged from 28.00 to 157.00 ($M = 89.15$). Women who scored lower than 71.00 were grouped as having low liberality (1), while women who scored higher than 114.00 were grouped as having high liberality (3). Women whose scores fell between 71.00 and 114.00 were grouped as having medium liberality (2). By performing an ANOVA, these groups were found to be significantly different from one another, $F(2, 24) = 34.70, p < .05$, suggesting that the average score for Group 1 ($M = 55.86, SD = 14.24$) was significantly lower than Group 2 ($M = 90.53, SD = 15.96$), and that Group 2 scored significantly lower than Group 3 ($M = 131.60, SD = 16.01$). Group 2 contained the largest number (15/27) of participants. There were no significant differences in baseline T levels between groups, $F(2, 23) = 1.31, p = .29$.

Men. SAS scores ranged from 40.00 to 105.00 ($M = 75.65$). Men who scored lower than 61.66 were grouped as having low liberality (1), while men who scored higher than 83.34 were grouped as having high liberality (3). Men whose scores fell in between 61.66 and 83.34 were grouped as having a medium level of liberality (2). To ensure that these groups differed significantly in their SAS scores, an ANOVA was performed. As predicted, the groups were significantly different, $F(2, 17) = 33.59, p < .05$. Group 1 ($M = 46.00, SD = 7.21$) scored significantly lower than Group 2 ($M = 77.00, SD = 7.12$) and Group 2 scored significantly lower than Group 3 ($M = 90.20, SD = 8.35$). Group 2 contained the largest number of participants (12/20). There were no significant differences in baseline T levels between groups, $F(2, 16) = .74, p = .49$.

SBS scores ranged from 34.00 to 119.00 ($M = 75.85$). Men who rated themselves lower than 62.33 were grouped as having low liberality (1), while men who scored higher than 90.67 were grouped as having high liberality (3). Men whose scores fell between 62.33 and 90.67 were grouped as having medium liberality (2). By performing an ANOVA, these groups were found to be significantly different from one another, $F(2, 17) = 38.41, p < .05$, suggesting that the average score for Group 1 ($M = 53.00, SD = 10.79$) was significantly lower than Group 2 ($M = 77.90, SD = 7.45$), and that Group 2 scored significantly lower than Group 3 ($M = 105.00, SD = 11.17$). Group 2 contained the largest number of participants (10/20). There were no significant differences in baseline T levels between groups, $F(2, 16) = .10, p = .90$.

Discussion

In the present study, I examined sexual liberality within and between gender/sex by assessing links between sexual attitudes, sexual behaviors, T, and potential influencing factors like number of sexual partners and sexual experience. I firstly explored associations between

SAS and SBS scores, number of sexual partners, and sexual experience, examining differences by gender/sex in regards to sexual liberality. Results showed the existence of sexual liberality within a non-clinical population as evidenced by a range of scores on the SAS and SBS, indicating that such attitudes and behaviors prevail despite sexual norms. T-sexual liberality links were also examined to explore the breadth to which T indicates certain aspects of sexuality, addressing assumptions that T levels are biological indicators of sexual variations. The results challenge assumptions that sexual liberals are innately different in their T levels than those who more closely conform to the sexual standard, overall adding to research that supports the idea that sexual “normalcy” is socially constructed. As such, the present research suggests the need for a re-evaluation of sexual norms, including sexual variation as a natural part of human sexuality.

Some of the findings merit specific attention. Firstly, the creation of liberality groups showed interesting results in regards to sexual liberality. For both SAS and SBS scores for men, the majority of the population fell into Group 2. As the lowest scores on each of these scales represent closer alignment with the sexual norms, Group 2 reflects those with a medium level of sexual liberality. As such, these results suggest that the majority of men in this study strayed from the norm, emphasizing a common existence of liberal sexual behavior. Interestingly, the majority of women fell into Group 1 for SAS scores and Group 2 for SBS scores. These results imply that the majority of women hold relatively conservative sexual attitudes, but moderately more liberal perceptions of their potential sexual behaviors. These findings imply that despite reporting more conservative attitudes, women still exhibit potential for variation in their actual behavior.

As expected, SAS scores and SBS scores were highly correlated, indicating that people who hold more liberal sexual attitudes are more likely to believe that they would engage in liberal behaviors. The correlation stayed strong even when analyzed separately by gender/sex and controlled controlling for number of partners and sexual experience. Interestingly, we did find some differences between genders/sexes in SAS and SBS scores based on number of partners and whether or not the participants had previous sexual experience. For women, number of sexual partners was not associated with sexual attitudes (SAS scores) but was with willingness to engage in liberal sexual behaviors (SBS scores). Men showed an opposite effect, eliciting a significant correlation between number of partners and sexual attitudes (SAS scores) but not with willingness to engage in liberal sexual behaviors (SBS scores). Considering that men and women showed no significant differences in number of partners, even when screening out those who had never been sexually active, these results have interesting implications about the social differences in liberality reports between women and men.

As mentioned previously, women are expected to be uninterested in sex outside of relationships, protective of their sexual “honor”, and interested in sex in relationships only to please the man involved (Byers, 1996), placing women who have higher numbers of sexual partners outside the norm. Those who act outside of this script risk stigmatization, and therefore may conform to the female stereotype in order to avoid social rejection (Rudman & Fairchild, 2004), potentially explaining why women with higher numbers of sexual partners did not report different attitudes than those who have had only one or two partners. Past research shows that women tend to report higher levels of conservatism relative to men (Hendrick, Hendrick, Slapion-Foote, & Foote, 1985; Jurich & Jurich, 1974), sometimes despite incongruent sexual behavior (Zabin, et al., 1984). In other words, it could be possible that women report their

attitudes to be in line with the sexual standard, despite the fact that they do not behaviorally conform to these ideals. This is further implicated by the positive correlation between number of partners and SBS scores, suggesting that when prompted to assess real potential situations, their behavioral perceptions are more in line with their actual liberal behaviors. It is important to note, however, that women who had no sexual experience scored significantly lower on the SAS and exhibited a trend to score lower on the SBS than their sexually experienced counter-parts. This suggests that perhaps those who had actually engaged in sexual activity held more liberal attitudes in the first place, and that these attitudes did not change as their number of sexual partners increased.

According to the sexual standard, men are generally socially encouraged to have sexual experiences (McCormick, 1979), enforcing a lack of stigmatization in regards to more liberal sexuality. Research enforces this theory, showing that men are generally more permissive in their sexual attitudes than women (Zuckerman, Tushup, & Finner, 1976; Hendrick, et al., 1985; Jurich & Jurich, 1974). This could explain the positive correlation between number of partners and SAS scores, indicating that men's sexual attitudes are socially allowed to reflect their experiences and vice versa. This theory is supported by the trend for sexually experienced men to report higher scores on the SAS than their sexually inexperienced counter-parts, supporting findings showing that men's sexual schemas are guided by sexual experience (Andersen, Cyranowski, & Espindle, 1999). Unlike women, however, men's number of sexual partners was not correlated with SBS scores, suggesting that their willingness to engage in sexually liberal behaviors was not associated with the number of partners they have had.

Surprisingly, the results did not mirror the findings in older studies that showed tendencies for men to be more sexually permissive than women (Zuckerman, Tushup, & Finner,

1976; Hendrick, et al., 1985; Jurich & Jurich, 1974). On average, men and women exhibited similar scores on the SAS, suggesting that their attitudes towards sexuality were equally liberal. I theorize that differences in SAS scores would have emerged with a larger, more sexually experienced sample, as the number of participants was relatively small and pulled from a freshmen-level psychology course. However, women trended towards higher scores on the SBS, suggesting higher levels of willingness to engage in more liberal sexual behaviors. These findings are interesting because women are generally expected *not* to be interested in sex, let alone sexual behaviors outside of the sexual norm. These differences between gender/sex could possibly be attributed to a greater fluidity in sexual preferences for women (Baumeister, 2000; Peplau, 2001; Peplau & Garnets, 2000) although these findings generally refer to fluidity in same-sex preferences.

Another potential explanation for women's trend to score higher on the SBS emerged when examining the items that showed significant mean differences between gender/sex. The items for which women scored significantly higher than men are as follows:

1. You have a spontaneous sexual encounter with your partner in an unusual place (e.g., beach, kitchen, hallway, swimming pool).
2. You are tied up and blindfolded by a partner who teases and toys with you sexually before satisfying you.
3. You are spanked or punished as part of a sexual encounter.
4. Your partner caresses, touches, and stimulates your buttocks and anus.
5. You enjoy using sex toys during masturbation.

The five listed items are the only items for which the participant is asked their willingness to engage in a behavior in which they do not have complete control over the sexual

pleasure (See Appendix B for complete list of items). Item 1 suggests a spontaneous encounter, indicating the potential for either partner to initiate sexual activity, Items 2-4 indicate receiving sexual pleasure rather than giving it, and Item 5 indicates the assistance of sex toys for solitary pleasure. It is recognized that Item 5 also reflects a behavior that is stereotypically feminine, potentially eliciting the differing scores for men and women for this statement. However, as the sexual standard exerts that men should be in control of sexual situations (Komarovsky, 2004; Hill, Rubin, & Peplau, 1976), it is not surprising that men would rate themselves as less likely relative to women to engage in behaviors where they do not have control. Past research supports the notion of men taking control of sexual situations more so than women (Brownmiller, 1975; LaPlante, McCormick, & Brannigan, 1980), exemplifying fulfillment of the sexual script for men. It is important to note, however, that this same sexual script dictates that women should avoid engaging in sexual activity, acting as the permissive, non-initiative gender. If the sexual script were completely dictating the responses in this study, women would be expected to have scored on average lower than men for the items specifically indicating having sexual control (see Table 1), as women are socially expected to be less sexually assertive as men (Byers, 1996); however this was not the case in the data. Nonetheless, other studies show similar results in regards to women's acceptance of dominant roles, suggesting that women who hold more liberal attitudes towards their sexuality may feel freer to experiment with fantasies in which the women had power and control over their sex partners (Yost & Zurbriggen, 2006). In general, as low scores on the SAS and SBS indicated more sexual conservativeness, it seems reasonable to assume that sexual liberality exists within a healthy population as there was a wide range in scores across participants.

Many people assume that hormone levels are innate, biological indicators of social differences, especially T because of past research associating it with sexual desire and paraphilias (Salmimies et al., 1982; Sherwin, Gelfand, and Brender, 1985; Braunstein, 2005; Simon, 2005; Thibaut, Cordier, & Kuhn, 1996; Krueger & Kaplan, 2002; Studer, Aylwin, & Reddon, 2005; Cooper & Cooper, 1972). However all of these studies involve clinical populations experiencing some kind of problem, generally hypo- or hyper-sexuality. As such, people could attribute a variation in sexual preferences to T, even though the T association is unclear in non-clinical populations. The present study set out to clarify T links with varying levels of sexual liberality in a healthy non-clinical population, and found no correlations. T was not associated with SAS or SBS scores in either men or women, suggesting that T does not act as the innate driver of sexual variation. Furthermore, baseline T levels were not significantly different between low, medium, and high liberality groups, challenging assumptions that particular levels of T are related to differences in sexual liberality. These results indicate that sexual variation is instead constructed socially in relation to sexual standards, as deemed by the gender/sex differences in SAS and SBS scores mentioned previously and the fact that sexual experience did predict differences in attitudes and behaviors.

Although the findings in this study have interesting implications, it is important to note the relatively small sample size and lack of diversity in the studied population. Future research should try to expand population size and include a broader, more diverse sample in order to encompass a more comprehensive scope of information on sexual variations. Future studies might benefit from studying a population with more sexual experience and self-reported high liberality in order to assess better comparisons between sexual conservatives and liberals. It would also be more possible to gather information on past sexual behaviors with a more

experienced sample, as this study only looked at perceptions of participants' behaviors. Furthermore, it is unclear as to the level of arousal participants felt by each item on the SBS, indicating that scores could be based on perceived willingness to engage in these behaviors, rather than the likelihood that participants would *actually* do the mentioned acts if given the chance. As for implications with T, it would be interesting to explore hormonal effects of *engaging* in sexual liberality, as some studies have shown changes in T relative to social context (van Anders et al., 2007; Rupp & Wallen, 2007; Graham & Desjardins, 1980; Lopez, Hay, & Conklin, 2009). For example, T increases in women who are bound and receiving stimulation (Sagarin, Cutler, Cutler, Lawler-Sagarin, & Matuszewich, 2009) and in men the morning after having sex with unfamiliar partners (Hirschenhauser, Frigerio, Grammer, & Magnusson, 2002). These findings suggest that engagement and arousal may elicit significant changes in T, indicating that T-sexual liberality links may depend on social context. This theory is supported by findings showing fluctuations on T based on sexual thoughts (Goldey & van Anders, in press), indicating that the prompts may have to involve personal engagement (ex. imagined scenarios) rather than perceived behaviors in order to see changes in T.

Overall, the findings of this study shed light onto conceptualizations of sexual constructs related to normalcy, deviation, variation, and liberality. Participants fell within a range of scores, indicating the existence of some variation from heteronormative sexual norms. These findings are consistent with the theory that despite society's attempts to enforce a strict sexual script, many people's attitudes and potential behaviors stray from this norm, indicating a spectrum of sexual variations within the population. As these variations are not attributable to differences in baseline T levels, these findings support a theory of the social construction of the sexual norm,

indicating the potential for the re-evaluation of normal human sexuality that includes a wider range of sexual behaviors.

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Table 1

Means of Items with Significant SBS Score Differences for Females and Males

	Gender		<i>t</i>	<i>df</i>
	Females	Males		
You have a spontaneous sexual encounter with your partner in an unusual place.	5.56 (1.76)	4.25 (2.27)	-2.14*	45
You are tied up and blindfolded by a partner who teases and toys with you sexually before satisfying you.	4.59 (2.10)	3.00 (2.13)	-2.56*	45
You are spanked or punished as part of a sexual encounter.	3.33 (.43)	1.01 (.225)	-3.16*	45
Your partner caresses, touches, and stimulates your buttocks and anus.	3.81 (2.06)	2.35 (1.95)	-2.47*	45
You enjoy using sex toys during masturbation.	4.07 (2.11)	1.85 (1.57)	-3.97***	45

Note. * = $p < .05$, *** = $p < .001$. Standard Deviations appear in parentheses below means.

Appendix A

Sexual Attitudes Scale (SAS) Items

1. I do not need to be committed to a person to have sex with him/her.
2. Casual sex is acceptable.
3. I would like to have sex with many partners.
4. One-night stands are sometimes very enjoyable.
5. It is okay to have ongoing sexual relationships with more than one person at a time.
6. Sex for its own sake is perfectly alright.
7. I would feel comfortable having intercourse in the presence of other people.
8. Prostitution should be accepted by society.
9. Masturbation is alright.
10. I think it would be very entertaining to look at hardcore pornography.
11. Engaging in group sex is an entertaining idea.
12. The thought of engaging in unusual sex practices is highly arousing.
13. Touching my genitals would be an arousing experience.
14. The thought of having long-term sexual relations with more than one sex partner is not disgusting to me.
15. I love the idea of having an orgasm.
16. Premarital sex is okay.
17. Sex without love is perfectly fine.
18. People do not need to be friends before having sex.
19. Using sex toys during lovemaking is normal.

20. It would not annoy me if I found out one my friends was homosexual.
21. I would not be embarrassed if people knew I performed oral sex.
22. Homosexual thoughts are not worrying to me.
23. Porn is not nauseating to me.
24. I enjoy daydreaming about sex.
25. I would be fine watching a member of the same sex masturbate.

Appendix B

Sexual Behavior Scale (SBS) Items

1. You perform sexual activities that you know others would consider "dirty" or "forbidden".
2. You have a spontaneous sexual encounter with your partner in an unusual place (e.g., beach, kitchen, hallway, swimming pool)
3. You engage in sexual activities with a partner where there is a risk you might get caught (e.g., in a dimly lit restaurant, a public beach, a public park).
4. You and your partner have a long, leisurely session of extended foreplay and love-making.
5. You and your partner attend a gathering or party where the activity for the evening involves open sexual relations with the other people present.
6. You are dominant and totally in control of the sexual encounter (i.e., you are the master; your partner is obedient to your every wish and he or she is completely devoted to your sexual pleasure).
7. You and your partner watch or read sexually explicit films or books as part of your sexual encounter.
8. You masturbate to orgasm while your partner watches.
9. You engage in an erotic encounter that combines sex and food (e.g., your partner sensuously feeds you strawberries dipped in chocolate).
10. You view a live sex show where people engage in sexual activities in front of an audience.

11. You are tied up and blindfolded by a partner who teases and toys with you sexually before satisfying you.
12. Your partner watches while you engage in sexual activities with another person.
13. You watch your partner while he or she engages in sexual activities with another person.
14. You punish or spank a partner as part of a sexual encounter.
15. You are a performer in a live sex show. The audience is appreciative of the performance and becomes wildly sexually aroused.
16. You and a partner have anal intercourse.
17. You are spanked or punished as part of a sexual encounter.
18. Your partner and his/her same-sex friend are involved with you in a three-person sexual encounter.
19. You and a partner engage in raunchy, rough, purely physical sex that includes "talking dirty".
20. You watch two women engage in sexual activities.
21. You watch your sexual partner masturbate to orgasm.
22. You watch yourself and a partner engaging in sexual activities (e.g., you watch a videotaped replay or you observe the actions in a mirror).
23. You watch two men engage in sexual activities.
24. You caress, touch, and stimulate your partner's buttocks and anus.
25. You and your partner act out a fantasy by adopting different roles (e.g., cowboy and cowgirl, nurse and patient, teacher and student, etc.).
26. Your partner caresses, touches, and stimulates your buttocks and anus.

27. You and your same-sex friend are involved with an opposite-sex partner in a three-person sexual encounter.
28. You enjoy using sex toys during masturbation.