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GRADUATE PROGRAM

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UNIFORMED SERVICES UNIVERSITY, SCHOOL OF MEDICINE GRADUATE PROGRAMS
Graduate Education Office (A 1045), 4301 Jones Bridge Road, Bethesda, MD 20814

DISSERTATION APPROVAL
FOR THE DOCTORAL DISSERTATION
IN THE MEDICAL AND CLINICAL PSYCHOLOGY
GRADUATE PROGRAM

Title of Dissertation: "Sexual Functioning During Menopause: Schemas, Hormones, and Race"

Name of Candidate: Robert Clark
Doctor of Philosophy Degree
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TITLE PAGE

TITLE: "Sexual Functioning During Menopause:
Schemas, Hormones, and Race"

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Sexual Functioning During Menopause: Schemas, Hormones, and Race

by

Robert D. Clark

Dissertation submitted to the faculty of the

Department of Medical and Clinical Psychology

Graduate Program of the Uniformed Services University

of the Health Sciences in partial fulfillment

of the requirements for the degree of

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ABSTRACT

Background. The endocrine changes during menopause may leave some women vulnerable to developing sexual problems, which can decrease sexual satisfaction, quality of romantic relationships, and quality of life. Sexual self-schemas (SSS), cognitive structures that are associated with sexual functioning, have not systematically been examined in women going through menopause. Similarly, SSS have not been examined between racial groups as well as how any variation in SSS between racial groups may differentially impact female sexual functioning during menopause.

Purpose. The present project had four aims that were examined among African American (AA) and Caucasian (CA) menopausal women. The first Aim was to examine the psychometric properties (e.g., Cronbach's alphas, intercorrelations, convergent validity) of the Sexual Self-Schema Scale (SSSS). The second Aim was to examine whether negative and positive SSS were differentially associated with sexual problems and whether these associations differed between AA and CA women. Because there are significant hormone changes during menopause that may impact sexual functioning, the third Aim of the study was to examine the association of sex hormones with sexual problems. The last aim was to examine the relationships between sexuality and menopause based cognitive structures.

Methods. CA (*n* = 113) and AA (*n* = 78) women transitioning through menopause with no major medical or psychological disorders completed questionnaires about mood, sexual functioning and sexual attitudes, menopause, and demographics. A subsample (*n* = 40 AA, *n* = 20 CA) completed a blood draw

for examination of estradiol and testosterone using enzyme-linked immunosorbent assay (ELISA) assays.

Results. The Cronbach's alphas of the SSSS and its subscales were in the questionable to good range (0.64-0.84). The intercorrelations and convergent validity with the Sexual Opinion Survey were good. SSS were related to overall reported sexual problems ($\lambda(6,146) = 2.201$, $p = 0.046$) as well as specific reported sexual problems in arousal ($F = 4.786$, $p = 0.030$) and orgasm ($F = 4.044$, $p = 0.046$). There were racial differences in the relationship between SSS and reported sexual lubrication such that SSS status (positive vs. negative) affected this sexual problem more so in CA women as compared to AA women. There were no relationships between the sex hormones estradiol ($\lambda(6,30) = 2.068$, $p = 0.087$) and testosterone ($\lambda(6,30) = 1.177$, $p = 0.345$) and sexual problems. SSS were positively correlated with attitudes towards menopause (ATM) and negatively correlated with dysfunctional sexual beliefs (DSB). DSB and ATM were negatively correlated. Depressive and anxiety symptoms were negatively correlated with SSS and ATM, and positively correlated with DSB.

Discussion. The results provide preliminary evidence that the SSSS can be validly used with CA and AA menopausal women; however, future studies should factor analyze the SSSS in order to provide an adequate understanding of how SSS may vary among groups of women. Additionally, SSS may be associated with sexual problems after accounting other important variables. CA women's sexual functioning, particularly sexual lubrication, appeared to be more related to schema status as compared to AA women's sexual functioning. Results also

suggest there may be an overarching negative cognitive structure that is related to sexual problems. Further research into the cross-cultural applicability of SSS is needed to examine whether this concept can be used to understand and predict sexual problems among women from different racial/cultural/ethnic groups across the lifespan.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

ACRONYMS

Term	Acronym
African American	AA
Attitudes Towards Menopause	ATM
Body Mass Index	BMI
Caucasian	CA
Dysfunctional Sexual Beliefs	DSB
Dysfunctional Sexual Belief Questionnaire	DSBQ
Female Sexual Functioning Index	FSFI
Final Menstrual Period	FMP
Follicle Stimulating Hormone	FSH
Hormone Replacement Therapies	HRT
Human Performance Laboratory	HPL
Hypoactive Sexual Desire Disorder	HSDD
Leutenizing Hormone	LH
Life Events Checklist	LEC
Menopause Attitude Scale	MAS
Multigroup Ethnic Identity Measure – Revised	MEIM-R
Perceptions of Menopause	POM
Sexual Dysfunctional Beliefs Questionnaire	SDBQ
Sexual Opinion Survey	SOS
Sexual Self-Schemas	SSS
Sexual Self-Schema Scale	SSSS
Socioeconomic Status	SES
Stages of Reproductive Aging Workshop	STRAW
Uniformed Services University of the Health Sciences	USUHS
United States	US
Zung Self-Report Anxiety Scale	SAS
Zung Self-Report Depression Scale	SDS

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INTRODUCTION

Numerous biological (i.e., hormone levels, health status), psychosocial (i.e., upbringing, relationship status), and psychological (i.e., depression, anxiety) factors influence sexual functioning. One area of ongoing research examines how individuals cognitively and emotionally process incoming sexual information. Sexual self-schemas (SSS), or schemas about one's own sexuality, have been examined as potential cognitive structures that may be associated with the development and/or maintenance of sexual problems. SSS assist in integrating sexual stimuli, giving sexual stimuli emotional meaning, and generating behavioral and affective responses during sexual situations.

Negative SSS are involved in the development of sexual problems among premenopausal, Caucasian women as well as gynecological cancer survivors (Andersen & Cyranowski, 1994; Andersen, Woods, & Copeland, 1997; Andersen, Woods, & Cyranowski, 1994); however, further research is needed to understand whether this concept can be applied to various populations. For example, decreases in estrogen and testosterone during menopause place aging women at increased risk for developing certain sexual problems such as decreased sexual desire, vaginal irritation and pain after intercourse, and vaginal atrophy (Addis et al., 2006; Dennerstein, Lehert, & Burger, 2005; R. Hayes & Dennerstein, 2005). Because the majority of older women report that being sexually active is important to them, examining whether SSS are associated with their sexual problems may prove useful in developing and improving

psychosocial treatments for menopausal sexual problems (Lindau et al., 2007; The National Institute on Aging, 1998).

In addition, the SSS literature lacks an understanding of cultural, racial, and ethnic variability of SSS and how such variability may differentially affect sexual problems. During the socialization process, every group transfers certain beliefs to the next generation. It is proposed that differing cultural, racial, and ethnic beliefs about sexuality, especially sexuality during menopause, may impact the development of SSS, how sexual stimuli are processed and what sexual feelings and behaviors are expressed, and the outcomes of sexual events.

The overarching purpose of this project was to examine the relationship between SSS and sexual problems during menopause. In order to ensure that the construct of SSS can be applied to various groups of menopausal women, the psychometric properties of the Sexual Self-Schema Scale (SSSS) in African American (AA) and Caucasian (CA) menopausal women were analyzed. Because menopause is associated with hormonal changes that can influence sexual functioning (Dennerstein & Hayes, 2005; Dennerstein, Randolph, Taffe, Dudley, & Burger, 2002; Soules, et al., 2001), another aim of this project was to examine the extent to which sex hormones, specifically estradiol and testosterone, are associated with sexual problems. Finally, because cognitive structures (i.e., schemas, beliefs, and attitudes) of a certain emotional valence (i.e., positive vs. negative) may cluster together, further influencing sexual

functioning, the relationships between SSS, dysfunctional sexual beliefs (DSB), and attitudes towards menopause (ATM) also were examined.

BACKGROUND

I. Sexual Problems

a. Defining Sexual Problems

The International Statistical Classification of Diseases and Related Health Problems (ICD-10) (World Health Organization, 1992) defines sexual dysfunctions as "the various ways in which an individual is unable to participate in a sexual relationship as he or she would wish." The Diagnostic and Statistical Manual for Mental Disorders (DSM-IV-TR) criteria for a diagnosis of a sexual dysfunction (herein termed sexual problem) include marked distress or interpersonal difficulties from difficulties in desire or "the psychophysiological changes that characterize the sexual response cycle (p. 535) (American Psychiatric Association, 2000)." Sexual problems arise when one of linear processes in the sexual response cycle (i.e., desire → arousal → plateau → orgasm) (Masters & Johnson, 1968) becomes interrupted or if sexual pain is present. The key component of all the definitions of sexual problems is the notion of distress or interpersonal difficulty. Individuals are viewed as experiencing a sexual problem only if they or their partners are distressed by their sexual functioning.

b. Organic vs. Psychogenic Sexual Problems

Figure 1 shows that sexual functioning is multi-determined and complex as many factors can cause and/or maintain sexual problems. Regardless of the origins, when sexual problems arise, they often cause significant decreases in relationship satisfaction, sexual satisfaction, and quality of life (Dennerstein,

Anderson-Hunt, & Dudley, 2002; Laumann, Paik, & Rosen, 1999). Generally, the causes of sexual problems are divided into organic and psychogenic causes. To diagnose a purely psychological sexual problem, all organic causes (e.g., hormone alterations, diabetes, nerve damage, medications, etc.) must be ruled out by a comprehensive medical exam. If medical conditions or substance use along with psychological factors impact sexual problems, then sexual problems are considered to arise from combined factors (i.e., both organic and psychogenic causes). Purely organic sexual problems are difficult to diagnose because various psychological states, such as depression and anxiety, often are associated with the majority of sexual problems regardless of whether the cause (i.e., organic and/or psychogenic). Therefore, it is recognized that a combination of various organic, psychogenic, relationship, social, and demographic factors may impact the development and maintenance of sexual problems (Figure 1). In order to provide effective treatment for sexual problems, some researchers strongly urge practitioners to account for an individual's medical and psychosocial history including upbringing, trauma, interpersonal relationship(s), and cultural and religious views to fully understand the development and maintenance of sexual problems (Basson et al., 2003).

c. Summary

Sexual functioning is complex (Figure 1). When sexual problems occur, they can disrupt quality of life, relationship satisfaction, and sexual satisfaction. A better understanding of the factors involved in the development and maintenance

of sexual problems is necessary to assist in designing effective preventative measures and treatments.

II. Information Processing of Sexual Stimuli

One area of ongoing research examines how individuals cognitively and emotionally process incoming sexual information. Cognitive structures such as schemas, beliefs, and attitudes influence sexuality related behaviors, cognitions, and emotions. In order to provide culturally appropriate care, further research must examine how sexuality related cognitive structures are influenced by sociocultural factors and how such factors may differentially affect sexual functioning across cultural, racial, and ethnic groups.

Individuals create cognitive structures to help them manage incoming information, such as sexual stimuli, in an efficient manner. The basic level of cognitive structures includes beliefs and attitudes, whereas deeper cognitive structures include what cognitive psychologists have termed schemas or schemata (Markus, 1977; Stotland & Canon, 1972). These cognitive structures are important to the sexual response because they determine what sexual stimuli are emotionally and physically stimulating. They also assist with making decisions about sexual activities.

a. Schemas

Individuals can only cognitively and emotionally process a certain amount of incoming information efficiently and accurately. To assist with information processing, individuals create cognitive structures, termed schemas (i.e., constructs related to core beliefs, stereotypes, scripts, and archetypes) (A. T.

Beck, 1963; Markus, 1977). Schemas are cognitive representations, shortcuts, or generalizations that allow individuals to perceive and understand their environments, and are involved in regulating cognition, affect, and behavior (Markus & Zajonc, 1985). Schemas are formed from sociocultural views, past experiences, parents and peers, and a variety of other factors. Additionally, some theorists have postulated that schema formation may be linked to early attachment experiences (Bowlby, 1969).

Schemas are thought to form at a young age and represent deeply held beliefs about oneself, others, and the world. These beliefs are “so fundamental and deep that they [individuals] often do not articulate them even to themselves” and are viewed as “absolute truths, just the way things ‘are’ (p. 15)” (J. S. Beck, 1995). Schemas are activated by the current context yet also use previous learning, socialization, past experiences, and emotions into a complex network of information. When activated, schemas are used to determine behavior, emotions, and thoughts during a specific event such that individuals take in information about their environments, apply schemas to help make choices in emotions and behaviors, and then refine schemas based on outcomes.

b. Sexual Self-Schemas (SSS)

In order to organize one’s behavior in a particular fashion, individuals often create schemas that are specific to themselves, termed self-schemas (Markus, 1977). “Self-schemata are cognitive generalizations about the self, derived from past experience, that organize and guide the processing of the self-related information contained in an individual’s social experience (p. 63) (Markus, 1977).”

With respect to sexuality, individuals develop sexual self-schemas (SSS) that are specific to their own sexuality (Andersen & Cyranowski, 1994). SSS may be important to how aging women view their own sexuality, especially during menopause, a period of life that may negatively impact sexual functioning. SSS partially determine what stimuli are sexually arousing, emotional meaning given to sexual stimuli, and sexual affective and behavioral repertoires. Andersen and Cyranowski (1994) state that SSS,

> "should not only serve as a quick representation of one's sexual history but also function as a point of origin for information – judgments decisions, inferences, predictions, and behaviors – about the current and future sexual self (p. 1079)."

When examining the construct of SSS and developing the Sexual Self-Schema Scale (SSSS), Anderson and Cyranowski (1994) performed a series of factor analyses, validation, and reliability studies using predominantly Caucasian college student samples (mean ages ~20). After settling on 50 trait adjectives for the scale (26 scale adjectives and 24 filler adjectives), a factor analysis yielded two positive SSS and one negative SSS. The two positive SSS were termed inclination to experience passionate-romantic emotions (Factor 1 or Passionate-romantic [P-R]) and openness to sexual experience (Factor 2 or Open-Direct [O-D]) and, and the negative SSS was termed embarrassment or conservatism (Factor 3 or Conservatism [Cons]).

In order to examine the validity of the SSS, the authors compared women with positive and negative SSS on a variety of sexuality based outcomes. They found that the positive SSS groups reported more liberal attitudes towards sexuality, higher levels of arousal, lower levels of self-consciousness during

sexual experiences, and a wider range of sexual activities and partners. Conversely, the negatives SSS group reported being unromantic, having greater embarrassment and self-consciousness, and having lower confidence during sexual activities.

Finally, in order to understand the role of SSS in the sexual behaviors of women, Anderson and Cyranowski (1994) compared four groups of SSS: positive, negative, aschematic (i.e., lacking a sexual schema framework), and co-schematic (i.e., possessed parts of both positive and negative SSS). The positive SSS groups had the greatest number of sexual partners, number of sexual activities, and sexual arousal as compared to the other groups. The negative SSS, aschematic, and co-schematic women had significantly lower sexual arousability as compared to the positive SSS women. The aschematic group demonstrated the lowest rate of passionate love, whereas the co-schematic group had the highest. Therefore, positive SSS are associated with better sexual experiences and fewer sexual problems, whereas the negative SSS is associated with poor sexual experiences and a greater number of sexual problems.

c. Information Processing & SSS

The way that cognitive structures (i.e., schemas, attitudes, and beliefs) influence sexual responding can be explained in terms of an information processing perspective. Figure 2 shows that from an information processing perspective, individuals respond to sexual stimuli by proceeding through two stages: appraisal and response generation (Janssen, Everaerd, Spiering, &

Janssen, 2000). This model displays that sexual stimuli are perceived, encoded, and integrated to give them meaning during the appraisal stage. Combining Barlow's (1986) model of sexual functioning, the information processing model, and SSS, Figures 3 and 4 show that exposure to sexual stimuli activates pre-existing SSS, which then helps individuals make decisions about sexual events (Barlow, 1986). When cognitively processing the sexual stimuli, individuals integrate sexual stimuli with SSS, including information from previous sexual events and the current context, which then aids individuals in providing emotional responses, attending to sexual cues, and determining sexual behaviors.

Figure 4 demonstrates that SSS becomes activated when individuals are approached with a sexual situation. SSS determine what emotions and behaviors are experienced and expressed during the current sexual event. Responses (i.e., behavioral, emotional, and physiological) are based on the type of meaning given to the sexual stimuli (i.e., response generation in Figure 2). Of note, response generation takes place within the context of physical, social, and psychological health, including factors such as hormones, depressive symptoms, relationship status, relationship satisfaction, and other factors.

Figure 3 shows that attention and sexual arousal often increase when the sexual stimuli have positive emotional meaning and decrease when the sexual stimuli have negative emotional meaning. Therefore, individuals entering sexual situations with positive SSS may be more likely to attribute positive emotional meaning to sexual stimuli that are in their repertoires (Figure 3). Positive SSS should increase affect and attention to the sexual stimuli if the sexual stimuli are

pleasing, which, in turn, should increase subjective and physiological sexual arousal resulting in a positive sexual experience.

Conversely, individuals entering sexual situations with negative SSS may be more likely to attribute negative emotional meaning to the sexual stimuli regardless of whether the stimuli are part of their repertoires; therefore, negative SSS may interfere with the “full activation of the sexual response” (i.e., attention to the stimuli, changes in affect, and changes in subjective and physiological arousal; Figure 4) resulting in a negative sexual experience (p. 173) (Kuffel & Heiman, 2006).

According to Janssen et al. (2000), the outcomes, specifically subjective and physiological sexual arousal, feed back into how sexual stimuli will be processed and what affective, physiological, and behavioral responses will be expressed in the future. That is, the outcome of the sexual situation may redefine and/or reinforce the pre-existing SSS (Figures 3 & 4). A positive sexual experience will be integrated into the pre-existing positive SSS, consequently reinforcing it. The interference with the sexual response should result in a negative sexual experience, which may leave individuals with negative SSS vulnerable to developing sexual problems and further reinforcing their negative SSS (i.e., creating a self-fulfilling prophecy). Additionally, because negative schemas are very difficult to change, individuals with negative SSS may discount positive sexual experiences leaving the original negative SSS intact rather than refining it in a more positive manner. It is worth noting that appraisal and activation of SSS are automatic and occur rapidly, meaning that individuals rarely

attend to and often are unaware of the activation and redefining of emotional and cognitive structures.

In order to understand the information processing model and SSS on affect, mood, and subjective and physiological sexual arousal, Kuffel and Heiman (2006) acutely altered SSS before exposure to sexual stimuli. Sexually functional women aged 21-49 years were asked to adopt both positive and negative SSS as they viewed two different erotic videos. Women that adopted a positive SSS "demonstrated significantly greater subjective sexual arousal, vaginal response, and positive affect" as compared to those women that adopted a negative SSS, suggesting the negative SSS may partially contribute to the formation and maintenance of sexual problems (Kuffel & Heiman, 2006, p. 1). Therefore, it appears that the cognitive processing of sexual stimuli not only relies on the context and memories, but also on the sexual beliefs and schemas women have *during* a sexual situation. Overall, SSS activated during sexual scenarios influence the outcome of the event, which will feedback to potentially alter the SSS for use in future sexual events.

d. Negative SSS & Sexual Problems

Schemas are a natural part of cognitive development, but they can become "dysfunctional" or maladaptive to the point where they shape "dysfunctional" or maladaptive cognitions, emotions, and behaviors (Padesky, 1994). As in Beck's theory of depression, schemas can become ineffective at assisting with information processing, which can lead to a disruption in cognition, affect, and behavior (A. T. Beck, 1963, 1967). Because schemas and behaviors

are bidirectional, maladaptive schemas can become stronger over time making them more resistant to change, creating self-fulfilling prophecies. Negative schemas often are difficult to change even when contradictory evidence is presented, commonly seen in individuals with mood and anxiety disorders (Barlow, 2001).

Individuals who develop negative (i.e., maladaptive) SSS and other negative sexual beliefs are more likely to experience sexual problems (Andersen & Cyranowski, 1994; Andersen, Woods, & Copeland, 1997; Andersen, Woods, & Cyranowski, 1994; Nobre & Pinto-Gouveia, 2006, 2008b, 2009). For instance, it is well established that gynecological cancer treatment can negatively affect female sexual functioning (Andersen, Anderson, & deProsse, 1989; Bergmark, Avall-Lundqvist, Dickman, Henningsohn, & Steineck, 1999; Stead, 2004). Andersen, Woods, and Copeland (1997) and Andersen, Woods, and Cyranowski (1994) examined the sexual functioning and SSS of gynecological cancer survivors and healthy controls. The authors found that even after accounting for current sexual behavior, menopause status, and extent of disease (for cancer survivors), SSS were associated with sexual behavior and sexual responsiveness in both groups. That is, although gynecological cancer survivors reported more sexual problems, both gynecological cancer survivors and healthy women with negative SSS reported more sexual problems as compared to women with positive SSS.

Similar to SSS, dysfunctional sexual beliefs (DSB), or believing myths about sexuality, may be associated with sexual problems (Nobre & Pinto-

Gouveia, 2006, 2008b, 2009). Nobre and Pinto-Gouveia (2006) found that men and women with a DSM-IV diagnosis of sexual dysfunction endorsed more DSB when compared to individuals without sexual problems. Specifically, female sexual problems were positively related to believing age-related sexual beliefs (e.g., sexual pleasure and desire decrease with age) and body image beliefs (e.g., physical attractiveness is positively related to sexual satisfaction). These researchers also found that women with sexual problems often activate negative schemas and have thoughts of failure when approached with sexual situations (Nobre & Pinto-Gouveia, 2008b). They noted that women with low sexual desire and arousal seemed to hold sexually conservative beliefs, whereas women with orgasm difficulties held negative beliefs about body image (Nobre & Pinto-Gouveia, 2008b). They suggested that individuals with sexual problems often hold beliefs and schemas that are associated with inability to fulfill a sexual task and attribute the sexual problem as an “internal, stable, and global” sense of self frequently seen in individuals with mood and anxiety disorders, which is why sexual problems may be more common in these populations (Nobre & Pinto-Gouveia, 2009).

Additionally, the cognitive structures about sexuality that form during early developmental stages may have consequences on later sexual functioning. Individuals with negative past sexual relationships and/or previous sexual problems (i.e., sexual pain, low sexual desire) may be more likely to develop negative SSS as compared to individuals who have not experienced such life events because of negative associations with sexuality. For example, there is

some evidence that negative childhood sexual events may increase the risk of developing a negative SSS (Meston, Rellini, & Heiman, 2006) whereas there is other evidence that does not support this association (Andersen & Cyranowski, 1994). The potential relationship between negative childhood sexual events and negative SSS may partially explain why this population has higher rates of sexual problems as compared to women who have not experienced such events (Loeb et al., 2002; Sarwer, Crawford, & Durlak, 1997; Sarwer & Durlak, 1996).

Maladaptive or negative schemas and beliefs about sexuality can influence sexual functioning. Oftentimes, negative cognitions may cause individuals to emotionally disengage from sexual activities. Once emotionally disengaged, full activation of the sexual response cycle is attenuated, often leaving the sexual encounter unsatisfying and reinforcing the maladaptive cognitions and creating self-fulfilling prophecies (Figure 3).

e. Summary

Schemas and beliefs are cognitive structures that aid individuals in evaluating and responding to their surroundings. Such cognitive structures are influenced by many factors including learning, culture, past experiences, and current behaviors. Specific to sexuality, sexual self-schemas or SSS represent the who, what, where, when, and how of one's sexuality. Should these views be negative, they may be associated with the development, severity, and maintenance of sexual problems. This concept may be used in predicting and treating sexual problems during a variety of transitions that impact sexual

functioning such as puberty, childbirth, marriage/partnering/divorce, aging, and menopause.

Because SSS usually has been examined in premenopausal, predominantly Caucasian samples, it is unclear whether this concept can be applied to other populations. The growth of the aging population has sparked increased interest in the sexual functioning of aging individuals, which is particularly important for aging women because the menopause process places them at increased risk for developing certain health concerns including sexual problems. Additionally, it is unclear whether SSS can be applied to minority (e.g., racial, sexual, ethnic) populations. Like the overall population, racial and ethnic minority populations in the US are increasing, including aging individuals. Therefore, it is vital to examine sociocultural views of health and disease as it applies to sexual functioning to improve care as these individuals age.

III. Aging & Sexuality

a. Growth of the Aging Population

The phrase “the graying of America” is used to indicate that the number of older individuals (> 45 years old) within the United States (US) is drastically increasing. The US Census Bureau estimated that there are 110 million individuals (~37% of the population) above the age of 45 (US Census Bureau, 2007). Thirty-seven million of these individuals are above the age of 65, with half of these individuals being older than 75. Table 1 shows the predicted growth in the US population until 2050. the number of older individuals (> 45 years old) is expected to double by the year 2050 as the baby boomer generation (i.e.,

individuals born between 1946 and 1964, and lived through the “sexual revolution”) approaches middle and late adulthood (Table 1) (US Census Bureau, 2008). That is, the population of older individuals will reach a substantial number (~47% of the population) in 40 years and these individuals will need their health and mental health needs effectively met, including prevention and treatment of their sexual problems.

Table 1 also displays that the number of racial and ethnic minorities in the US is predicted to increase in the next 40 years. African and Asian American populations are expected to double, whereas the number of individuals of Hispanic origin is expected to triple by 2050 (US Census Bureau, 2008). Given these increases in minority populations, it is expected that the number of older individuals within these racial groups also will drastically increase. As these individuals age, they will need culturally appropriate prevention and treatment options for their concerns, including their sexual problems, which can only be developed by understanding sociocultural and personal views of health and disease.

b. The Aging Woman

Women compose 57% of the US population above 65 years of age, have a life expectancy of around 78 years, and tend to live approximately five years longer than men (Heron et al., 2009; US Census Bureau, 2007). There are racial differences in life expectancy of women in the US such that the life expectancy is 80-81 years for Caucasian women and 76 years for African American women (Heron et al., 2009) with Asian American women having the longest life

expectancy at about 85-86 years (The Office of Minority Health, 2009). Therefore, barring any major diseases or accidents, the majority of US women can spend approximately one-third to one-half of their lives in some stage of menopause or in post-menopause, a life process that may put them at risk for developing many health conditions including sexual problems.

c. Sexuality among the Aging

The frequency of sexual activity declines throughout the lifespan often because of medical concerns, sexual problems, lack of a partner or relationship concerns, lower sexual desire, stress, and other factors (AARP, 2005; Heiman, 2002; Lindau, et al., 2007). Sex often becomes a lower priority because of these other concerns and, as a consequence, the frequency decreases over time (Gott & Hinchliff, 2003). Despite the decrease in sexual activity frequency, 26-48% of individuals over the age of 60 in the US report that they are sexually active in that they have engaged in some form of sexual activity with a partner approximately 6-12 times in the past year (Lindau et al., 2007; The National Institute on Aging, 1998). In addition, approximately 50% of older individuals have sexual thoughts or fantasies at least once a week (AARP, 2005).

There is a gender gap in the rates of sexual activity and sexual fantasy of older adults. Older men are more than two times as likely as older women to have sexual fantasies at least once a week. Older men also are more likely to engage in sexual activity (AARP, 2005; Lindau et al., 2007; The National Institute on Aging, 1998). Partially influencing this gap is the fact that women tend to live longer than men and the availability of opposite-sex partners for heterosexual

women decreases as they age. Consequently, 61% of women above the age of 60 have *not* had sex in the past 12 months whereas 62% of men older than 60 have (The National Institute on Aging, 1998). These data are similar among individuals older than 70 years of age (18% of women, 41% of men) (Lindau et al., 2007). Some researchers have found that 79% of women aged 42-52 years had engaged in sexual activity in the past 6 months (Cain et al., 2003).

This gender gap is not as apparent among individuals with sexual partners such that 77% of women and 82% of men with available sexual partners reported being sexually active (The National Institute on Aging, 1998). Other researchers have found that about 70% of partnered women aged 41-68 years are sexually active (Hess et al., 2009). That is, 70-80% of older adults who have an available partner have engaged in some type of sexual activity in the past 6-12 months.

Not only do older adults report being sexually active, but 79% of older men and 66% of older women report that having an active sex life is important to them (The National Institute on Aging, 1998), even if they feel that sex is of lower importance than other life demands (Gott & Hinchliff, 2003). Other researchers found that approximately 77% of mid-life women believe that sex was moderately to extremely important (Cain, et al., 2003). Unfortunately, unpartnered older individuals often view sex as less important as compared to partnered individuals (Gott & Hinchliff, 2003). Additionally, many older individuals report being at least somewhat satisfied with their sex lives. Compared to men (42%), women (65%) report being more sexually satisfied, such that older men report that they would like more frequent sex (AARP, 2005; The National Institute on Aging, 1998). Of

equal importance is that despite decreased sexual activity frequency, 40-60% of older individuals report either no change in or increased physical and emotional satisfaction with their sex lives since their 40's (The National Institute on Aging, 1998). Additionally, distress with sexual problems of aging women was inversely related to age (Graziottin & Leiblum, 2005; Sarrel & Whitehead, 1985) because they often feel fewer male and societal pressures on their sexuality (Hinchliff & Gott, 2008).

Sexual satisfaction of aging women also varies by racial group. Self-reported sexual satisfaction of middle-aged women ages 40-69 also was positively associated with being African American (Addis et al., 2006) and African American aging women often view sexual functioning throughout the lifespan as more important as compared to Caucasian women (Cain et al., 2003). Therefore, although there are gender and racial differences in how aging individuals navigate their changing sexual functioning, the majority of older adults want and seek active sex lives.

d. Summary

The number of aging individuals, including racial minorities, is increasing and will continue to increase as the baby-boomers age and these individuals continue to desire and engage in sexual activities. Women compose at almost 60% of the population over 45 years old and will spend ½ to ¼ of their lives during and after menopause, a period of life that can impact female sexual functioning. Consequently, aging women will need appropriate care for their sexual functioning, including an understanding of how they process sexual

information, the relationship between sexual functioning and menopause, and sociocultural views of menopause and sexuality.

IV. Menopause

Of particular interest to the sexual functioning of aging women is the *process* of menopause. The endocrine changes that occur during and after menopause increase the risk of certain health conditions such as heart disease, but also may elicit changes in sexual functioning, mood, and other symptoms. Although menopause may not significantly change the lives of some women (Avis, Assmann, Kravitz, Ganz, & Ory, 2004; Frey, 1981; Mishra & Kuh, 2006), others report that menopause significantly affects their quality of life (Blumel et al., 2000). Because of the changes in sex hormones, menopause can directly affect the sexual functioning of aging women, but also can indirectly affect sexual functioning through increased risk of cardiovascular diseases, increased changes in mood, and potential changes in intimate relationship quality (Soules et al., 2001). Therefore, how women view sexuality and menopause may have a significant impact on their sexual functioning throughout the menopause process.

a. Female Reproductive Cycle

The natural female reproductive cycle has been classified into stages (i.e., reproductive, menopause transition, and postmenopause) based on generalized changes in menstrual cycles and endocrine patterns. As shown in Figure 5, the most widely accepted staging system of the female reproductive cycle was formulated by The Stages of Reproductive Aging Workshop (STRAW) and includes reproductive changes from the onset of menses until death (Soules, et

al., 2001). The STRAW stages do not include menstrual abnormalities such as premature ovarian failure and chemically or surgically induced menopause, but they provide researchers and health providers with a basis for understanding and studying natural menarche, menses, and menopause.

b. Menopause Definition

Menopause (i.e., the menopause transition), by definition, is a change in reproductive status based on changes in reproductive hormones including estradiol (i.e., estrogen), progesterone, follicle stimulating hormone (FSH), leuteinizing hormone (LH), and testosterone (Soules, et al., 2001). Figure 5 depicts that natural menopause is classified into 4 stages; two stages before and two stages after the final menstrual period (FMP). The two stages before the FMP, termed early and late perimenopause, are delineated by the beginning of menstrual cycle changes such as missed menstrual cycles or menstrual cycle intervals of greater than 60 days. Additionally, endocrine alterations in FSH, estradiol, progesterone, testosterone, and LH occur. As the FMP approaches menstrual cycles become increasingly intermittent and vasomotor symptoms, or hot flashes and sweating, increase in number and become more severe. Menopause “ends” when there is 12 months of amenorrhea after the FMP, reflecting a significant decrease in ovarian hormones. Postmenopause, early and late, is the rest of life without menses and reproductive capability.

c. Beginning of the Menopause Transition

There is no average age for the beginning of the menopause transition, but the menopause transition usually ‘begins’ in the late 30’s/early 40’s. Some

menopause symptoms such as changes in menstrual cycle, mild hot flashes, night sweats, and fat gain may appear in the early to mid 40's (Soules, et al., 2001). The reasons for the broad age range are numerous. First, and most importantly, menopause is a *process* and cannot be classified as a single event. Second, there are many factors including diet, genetics, relationship status, and smoking status which can affect the menopause process. Third, the number of oocytes (i.e., eggs) is extremely variable between women and some women may begin menopause earlier if they have depleted their oocytes. Fourth, researchers often use different, non-comparable methods to calculate the average age that menopause 'begins.' Finally, it is unclear how oral contraceptives and hormone replacement therapies (HRT) affects the stages. In addition, whether or not women using such hormones should be included in formulating the staging system remains to be determined.

There are many factors involved in determining when menopause 'begins.' A good predictor of menopause onset and the types of menopause symptoms a woman will experience is her mother's menopause (Staropoli, Flaws, Bush, & Moulton, 1998). Barring any major influencing factors, such as chemotherapy, oophorectomy, or smoking, many women have a menopausal process (i.e., beginning, symptoms, duration, and end) that is similar to their mothers'. Smoking is related to decreases in the beginning age of menopause, whereas having children and oral contraception use are related to a later age of menopause (Gold et al., 2001; Gold et al., 2006; Hardy, Kuh, & Wadsworth, 2000; Kato et al., 1998; Palmer, Rosenberg, Wise, Horton, & Adams-Campbell,

2003). The age at which menarche begins may also affect the age of the start of menopause (Frisch, 1987). Although the age of menarche has declined over the past 100 years and there are racial differences in the age of menarche, the age at which menarche begins does not seem to be related to the age of the beginning of menopause (Anderson & Must, 2005; Butts & Seifer, 2010; Nichols et al., 2006; Palmer, et al., 2003; Sammel, Freeman, Liu, Lin, & Guo, 2009; van Noord, Dubas, Dorland, Boersma, & te Velde, 1997). Nichols et al (2006) even found a slight decrease in menarche age with an increase in menopause age, consequently demonstrating an increase in the number of reproductive years.

In relation to the relationship between race and age of menopause, some evidence suggests that AA women enter menopause earlier than CA women (Bromberger et al., 1997; Sammel, et al., 2009); however, race alone is not associated with entering into the later stages of menopause (i.e., the 'end' of menopause) (Sammel, et al., 2009). Other researchers found that both groups of women enter menopause around the same time (Gold, et al., 2001; Palmer, et al., 2003). There is some evidence that the earlier menopause in AA women may be more related to smoking than to race alone (Palmer, et al., 2003). Additionally, although AA women tend to have a greater Body Mass Index (BMI), lower education level, and SES, these factors have been inconsistently associated with the age of the start of menopause (Freeman et al., 2007; Gold, et al., 2001; Gold, et al., 2006; Hardy, et al., 2000; Sammel, et al., 2009). Overall, it probably is not race alone that accounts for differences in the start of menopause, but rather ethnic differences in smoking, oral contraceptive use, and number of children;

however, little research has been performed comparing the biological changes of menopausal women from various racial groups.

d. End of Menopause

The FMP usually occurs between the ages of 48-52 with a median age of just above 51 (American College of Obstetricians and Gynecologists, 2003; Gold et al., 2000; Kato, et al., 1998), yet some women may not fully 'end' the menopause transition until around 60 years old (Soules, et al., 2001). According to the STRAW model, menopause 'ends' after 12 months of amenorrhea (i.e., 12 months after the FMP); however, there are many times when the end of menopause is unclear. Some women may have menstrual cycles that can be sporadic throughout menopause and be unsure of the FMP or the number of months after it. In terms of ethnic differences, AA women often reach the FMP earlier than CA women, which may be related to body mass, smoking, and stress (Bromberger, et al., 1997; Butts & Seifer, 2010).

e. Summary

Defining menopause is difficult because of individual variability as well as the variability in timing, duration, and course of menopausal symptoms. An important aspect of the definition of menopause is that it is an individual *process* and not a single event. Generally, menopause 'begins' when endocrine changes lead to changes in menstrual cycles and begin to produce other menopause symptoms, such as vasomotor symptoms, which usually occurs in the late 30's/early 40's. The predominant changes that occur during menopause are endocrine related with decreases in androgens, specifically testosterone,

estrogens, in particular estradiol, and progesterone, and increases in FSH and LH. The *process* of menopause is complete after 12 months of amenorrhea, meaning that menopause 'ends' around 51, but can last longer for some women. Factors such as smoking status, number of children, and use of hormonal birth control appear to be associated with the menopause transition, whereas factors such as race, BMI, SES, and income seem to be inconsistently associated with the menopause transition.

V. Sexual Problems of Menopausal Women

a. Epidemiology

Sexual problems are a common concern for many individuals; however, rates of sexual frequency decrease and rates of certain sexual problems increase for both men and women throughout the lifespan (R. Hayes & Dennerstein, 2005; Laumann et al., 2006; Laumann, et al., 1999; Lindau, et al., 2007). For aging women, the physiological changes associated with menopause place them at increased risk for developing sexual problems (Valadares et al., 2008). Whereas younger women report more difficulty with orgasm (West, Vinikoor, & Zolnoun, 2004), aging women report that vaginal atrophy and problems with lubrication, pain, and sexual desire are their most common sexual problems (Addis, et al., 2006; Avis et al., 2009; Dennerstein & Hayes, 2005; R. Hayes & Dennerstein, 2005; Hisasue et al., 2005; Laumann, et al., 1999; Nicolosi et al., 2004; Safarinejad, 2006) (for a review of female sexual problems see West, Vinikoor, & Zolnoun, 2004). The ability to achieve orgasm either remains constant or slightly decreases during menopause, but the number of orgasms

tends to decrease partly because of the development of other sexual problems in both partners and decreases in sexual intercourse frequency (Addis, et al., 2006; Nicolosi, et al., 2004; The National Institute on Aging, 1998). Overall, some researchers have noted that over 95% will report at least one decrement in sexual functioning among aging women (Novi & Book, 2009), whereas approximately 40% of women older than 40 years of age will go on to report at least one consistent sexual problem (Lindau, et al., 2007).

b. Racial Variations

Although many aging women report experiencing at least one sexual problem during and after menopause, rates of these sexual problems vary across racial groups (Gold, et al., 2000; Laumann, et al., 1999; Nusbaum, Braxton, & Strayhorn, 2005). The current research project focuses on ethnic comparisons of Caucasian and African American menopausal women, but various examples including a wide range of racial groups are presented to highlight the differences in menopausal sexual problems across races.

Menopausal non-US citizen Japanese and Chinese women aged 40-55 years and living in the US report significantly fewer menopause symptoms as compared to Hispanic, Caucasian, and African American women (Gold, et al., 2000). Additionally, African American women describe having less urine leakage and sleep difficulties, and more vasomotor symptoms and vaginal dryness as compared to Caucasian women (Gold, et al., 2000). Additionally, some evidence suggests that female sexual problems may be associated with being an African American woman (Laumann, et al., 1999), whereas other researchers found that

African American women report fewer sexual problems during menopause (Nusbaum, et al., 2005). Hispanic women often state that they have more urine leakage and vaginal dryness as compared to non-Hispanic women (Gold, et al., 2000). African American women reported having sex more frequently during the menopause transition as compared to Caucasian, Japanese American, and Chinese American women (Cain, et al., 2003). In addition, Caucasian women report more sleep difficulties as compared to all other races (Gold, et al., 2000), which can indirectly affect sexual problems by decreasing desire and decreasing motivation to engage in sexual activities. Overall, there are racial differences in the sexual problems experienced and/or reported by women transitioning through menopause.

c. Factors Related to Menopause Sexual Functioning

Menopause is an individual *process* that depends on numerous factors that can affect the course of the menopause experience including the impact of such factors have on sexual functioning. As demonstrated in Figure 3, factors that influence menopause, similar to factors that impact sexual functioning, can be biological, context-dependent, and/or psychosocial (Graziottin & Leiblum, 2005). Additionally, these factors can be predisposing, precipitating, and maintaining factors. It often is recognized that many of these factors can be in more than one category depending on the context. With respect to menopausal sexual problems, predisposing factors are factors that place women at risk for developing sexual problems, or any menopause symptoms, before they actually have any sexual problems. Precipitating factors are factors that directly impact

the current sexual problem. With respect to menopause and sexual problems, endocrine changes usually are a large precipitating factor. As precipitating factors begin the sexual problem, maintaining factors “prolong or intensify” the sexual problem (p. 135) (Graziottin & Leiblum, 2005).

Biological

The changes in sex hormones during the menopausal transition can drastically affect the sexual functioning of aging women. During the menopause process, LH and FSH increase, and estradiol, androgens, and progesterone decrease; however, these changes occur at different times and rates (Soules, et al., 2001). These endocrine changes have a multisystemic effect by impacting the cardiovascular, muscular, neurological, and immune functions. Although there are many endocrine changes, the decreases in estrogen and androgens generally have the greatest hormonal effect on menopausal symptoms, especially sexual problems (Patel, Brown, & Bachmann, 2006; Soules, et al., 2001).

The increases and eventual plateau of FSH and LH, especially in FSH, in women going through menopause are the predominant markers for menopausal “status” and for the eventual cessation of menstrual cycles. Greater FSH levels significantly negatively related to testosterone and estradiol levels, as well as being associated with when women enter into the menopause transition (Sammel, et al., 2009). Premenopausal women usually have serum FSH levels between 1.5-17.7 IU/L, depending on the menstrual phase, which increases to 23-116 IU/L after menopause (D. A. Fisher & Carlton, 2005).

Testosterone and other androgens serve many functions in men and women. These hormones not only have roles in cognition, bone metabolism, and feelings of well-being, but also may be partly responsible for sex drive and orgasm. In women, androgens slowly decline after the age of 25. Before menopause, most of the decline in androgens is from decreased output from the adrenal cortex. During and after menopause, the decline in androgens results from a combination of decreased output from the adrenal cortex and the ovaries. Therefore, during menopause there is even greater decline in androgens which partially contributes to the decline in sex drive of menopausal women (Patel, et al., 2006). For instance, total serum testosterone has a range of 15-70 ng/dL (150-700 pg/mL) for premenopausal women, which decreases to about 5-51 ng/dL (50-510 pg/mL) after menopause (D. A. Fisher & Carlton, 2005).

Estrogens, particularly estradiol, are necessary to maintain vaginal vasocongestion, blood vessel elasticity, and bone and muscle density. The decline in estrogens during menopause is linked with decreases in bone loss (i.e., osteoporosis); increases in adipose mass; increased risk of cardiovascular disease (arteriosclerosis, dyslipidemia), changes in mood (depression, irritability), urogenital problems (incontinence, urinary tract infections), and sexual problems (vaginal atrophy, pain, limited sexual arousal) (Milsom, 2006). Average estradiol levels in pre-menopausal women range from 65 to 137 pg/mL, which can decrease to under 10 pg/mL by postmenopause (Novi & Book, 2009). Other sources state that serum estradiol ranges from 20-750 pg/mL, depending on the

phase of the menstrual cycle for premenopausal women, but can decrease to less than 20 pg/mL (D. A. Fisher & Carlton, 2005).

In a review of the literature, Butts and Seifer (2009) noted inconsistencies in racial differences in hormone fluctuations during the menopause transition, which may partially account for the different menopausal experiences for women of various racial groups. For instance, there is some evidence that FSH levels are greater in AA women as compared to CA women which may cause them to enter the menopause transition sooner (Cooper, Baird, & Darden, 2001; Randolph et al., 2003), whereas other researchers did not find any differences in FSH between the groups (Freeman et al., 2005; Manson, Sammel, Freeman, & Grisso, 2001). Additionally, some findings indicate that estradiol levels may be higher in AA women in comparison to CA women during menopause (Freeman, et al., 2005; Manson, et al., 2001), but others do not (Cooper, et al., 2001; Randolph, et al., 2003). There also are conflicting results for testosterone: Randolph et al (2003) found that AA women had greater testosterone as compared to CA women, but Manson et al. (2001) found no differences in testosterone between the groups. For all of these studies, BMI was negatively related to FSH and estradiol (Cooper, et al., 2001; Freeman, et al., 2005; Manson, et al., 2001; Randolph, et al., 2003), and positively associated with testosterone (Manson, et al., 2001). Overall, race alone does not appear to impact differences in sex hormones during the menopause transition but these potential differences in hormones seem to be related more to body mass and other factors such as smoking status.

Hormone & Sexual Arousal: In an attempt to understand and treat female sexual problems during menopause, much of the research has focused on HRT to help replace the decreasing estradiol, testosterone, and progesterone (Patel, et al., 2006). Upwards of 57 million menopausal and post-menopausal women are prescribed HRT each year (Hersh, Stefanick, & Stafford, 2004) and it is believed that by replacing or normalizing menopausal hormone fluctuations, that many of the symptoms, especially sexual problems, will be less bothersome. Unfortunately, there is no current comprehensive model of the relationships between sex hormones, sexual desire, and sexual functioning in women, especially in menopausal women. For example, there have been inconsistent findings concerning the majority of hormones on sexual desire/arousal/activity in women, and the majority of these studies have been performed on premenopausal women.

The relationship between hormone levels and sexual arousal remains to be elucidated. Some studies indicate that prolactin is positively correlated with self-reported sexual arousal (Heiman, Rowland, Hatch, & Gladue, 1991) whereas testosterone is negatively correlated with vaginal vasocongestion (Heiman, et al., 1991). In contrast, other studies demonstrate increases in testosterone, LH, and prolactin during sexual arousal and orgasm (Dabbs & Mohammed, 1992; Exton et al., 1999). Interestingly, although testosterone increases during both cuddling and intercourse in premenopausal women, cuddling increases testosterone to a greater extent (van Anders, Hamilton, Schmidt, & Watson, 2007). Women also demonstrate increases in oxytocin during masturbation and orgasm, which may

be involved with pair bonding and relationship satisfaction (Carmichael et al., 1987). Surprisingly, estradiol levels often do not increase for premenopausal women during sexual arousal/activity (Exton, et al., 1999). It appears that testosterone and prolactin are necessary during acute female sexual arousal and may have a role in relationship quality, whereas although estrogen may be necessary for the overall functioning of female genitalia, it may not exert a large effect during acute sexual desire/arousal.

Hormones & Sexual Problems: Although estrogens appear to minimally affect sexual desire/arousal, sexual difficulties during menopause are more closely related to declining estrogen levels than to androgens or other hormones (Dennerstein, Randolph, et al., 2002). The decline in estrogen decreases the quantity of blood flow throughout the body and to the vagina, which decreases the “hot flush” phenomenon (Masters & Johnson, 1968), erogenous zone sensitivity, lubrication, and sensations of sexual arousal that occur during sexual activity. Additionally, vaginal atrophy, or the thinning of the lining of the uterine and vaginal walls because of the decline in estrogen, occurs in virtually all women who pass through menopause (Farage & Maibach, 2006; Laan & van Lunsen, 1997; Patel, et al., 2006). Because of limited blood flow to the genitals, the cells in the vagina atrophy and the walls are more apt to become irritated during penetrative sexual activity. Vaginal pH also rises, consequently increasing the chances of developing urinary tract infections and yeast infections (Farage & Maibach, 2006).

Overall, testosterone may have a role in female sexual desire whereas the decline in estrogen during menopause also reduces sensations of being sexually aroused, increases vaginal pH, and increases vaginal atrophy. Increases in vaginal pH can increase the possibility of developing yeast infections, whereas vaginal atrophy increases lubrication difficulties which subsequently can lead to irritation and potential dyspareunia (i.e., pain during or after vaginal penetration). Having these difficulties may cause women to withdraw from sexual activity, potentially exacerbating their sexual problems because their reproductive system is not being used. Additionally, beliefs about sex may become increasingly negative given that sex becomes associated with pain or another sexual problem.

Psychosocial & Demographic Factors

The changes that occur during and after menopause also occur in a psychosocial context (Figure 3). For some women, the effect of menopause symptoms may drastically decrease self-esteem, relationship quality, and quality of life as well as interest and willingness to engage in sexual activity. Symptoms such as irritability, depression, urogenital symptoms, bloating, restless legs, weight gain, flatulence, and headaches (Farage & Maibach, 2006; Huang, Luft, Grady, & Kuppermann, 2010; Milsom, 2006) may leave some women feeling unattractive and/or uninterested in sex. Additionally, sleep often is limited because of restless legs, incontinence, and vasomotor symptoms (i.e., hot flashes, sweating), potentially further decreasing mood and sexual desire.

There is an inverse relationship between self-reported health status and sexual problems (Dennerstein, Dudley, & Guthrie, 2003). Additionally, preventable health factors such as alcohol use, a greater BMI, and smoking have positive relationships with sexual problems. Sexual problems during menopause also have negative relationships with education level, social support, exercise frequency, environment (i.e., rural vs. urban), and socioeconomic states (SES) (Gold, et al., 2000; Hawton, Gath, & Day, 1994; Hess, et al., 2009; Malacara et al., 2002; Obermeyer, Reher, & Saliba, 2007). Other factors that affect menopause and the development of sexual problems include chemically (radiation) or surgically (oophorectomy) induced menopause and fertility loss (Soules, et al., 2001).

There also may be changes in relationship status and satisfaction that occur during the menopause process. Middle-aged (age 40-59) women are more likely to be separated as compared to older women (age 60-79) (Howard, O'Neill, & Travers, 2006), consequently leaving them without partners. Women without partners engage in less sexual activity than those with partners or those who recently gained a new partner (Dennerstein, et al., 2005). Additionally, for women who are partnered, their male partners also may be faced with sexual problems, such as erectile dysfunction, and other health problems that may negatively impact the sexuality of the couple (Addis, et al., 2006; Dennerstein, et al., 2005; Howard, et al., 2006). For most women, including older women, there is a positive relationship between feelings for partner and sexual functioning. The greater satisfaction from the relationship, including sexual relationships, the less

likely women are to report having a sexual problem(s) (Dennerstein, et al., 2005; Hartmann, Philippsohn, Heiser, & Ruffer-Hesse, 2004; Hawton, et al., 1994; R. D. Hayes et al., 2008).

One consistent finding is that premenopausal sexual functioning and frequency often is associated with menopausal and postmenopausal sexual problems. The old adage “if you don’t use it, you lose it” has been applied to menopausal sexuality and is empirically supported (Dennerstein, et al., 2005). That is, women who report moderate sexual activity frequency, greater sexual satisfaction, and decreased sexual problems before menopause are less likely to report sexual problems during and after menopause.

This finding may partially be influenced by how women view their sexuality and partially influenced by physiology. As with many physiological systems, if the reproductive system is moderately used, then it may be more likely to function at a healthy level. Additionally, women who view their sexuality as an important aspect of their lives may be more likely to want to engage in sexual activity, which oftentimes increases sexual satisfaction and decreases sexual problems, even during menopause. Conversely, women who may internalize negative “cultural, ethnic, and religious messages about sexuality” may be at risk for developing negative views of sexuality and menopause, and subsequent sexual problems (p. 135) (Graziottin & Leiblum, 2005). Beliefs that the sexual problem will not get better, negative perceptions of menopause, loss of sexual confidence or performance anxiety, and inadequate care of sexual health problems could predispose to and maintain sexual problems.

d. Summary

There are many factors that influence the development and/or maintenance of female sexual problems during and after menopause (Figure 6). Although sexual problems are common for many aging women during and after menopause, there are racial differences in the rates of sexual problems. These differential rates in sexual problems among racial groups of menopausal women may partially be related to health as indexed by factors such as BMI, smoking status, and hormone fluctuations. However, they also appear to be dependent on psychosocial factors such as relationship quality, previous sexual activity level, SES, exercise, and attitudes towards menopause and sexuality. Therefore, in order to develop interventions to increase quality of life for women who are struggling with menopausal sexual problems, we must first understand how these women process sexual stimuli cognitively and emotionally during the menopause transition.

VI. SSS, Aging, & Menopause

Sociocultural influences may have a large impact not only on the rates of sexual problems during aging, but also the reporting and distress of sexual problems. Many aging women may develop sexual concerns, but how they adapt to these potential sexual concerns before they become difficult sexual problems is an important aspect to the prevention and treatment of sexual problems. Given that culture's influence on the daily lives of individuals is wide-spread, "how the body is lived in and used" by individuals will influence symptom experience of

any health outcome, including menopause and sexuality (Kaufert in Obermeyer & Sievert, 2007, p. 665).

Socialization to a specific group (e.g., culture, race, ethnicity, religion, etc.) provides children culturally appropriate behaviors and thoughts, including attitudes towards sexuality and menopause. Consequently, social spheres influence how women view sexuality (i.e., their SSS), which in turn may be associated with the type, frequency, and severity of sexual problems during menopause. After repeated messages about sexuality and menopause from parents, peers, and sociocultural sources, some women may begin to believe these views, forming self-fulfilling prophecies, which become integrated into their SSS and schemas about menopause. These cognitive structures may be significantly important to how aging women process sexual information, and may differentially affect who develops sexual problems during and after menopause. Therefore, women who developed negative SSS as partially influenced by cultural socialization before entering menopause may be at risk for further reinforcing their negative SSS and developing and/or maintaining sexual problems by behaving in ways that lead them to have negative sexual encounters.

Given that menopause is so strongly tied to female sexuality, how one views menopause and sexuality may be related to menopause symptoms and sexuality during and after menopause. For instance, a woman approaching menopause who has been socialized by her sociocultural spheres to believe that menopause signals not only the end of her ability to reproduce, but the end of the

enjoyment of sex may hold the SSS, “Menopause is the end of my sex life. I might as well stop being sexual now.” This type of thinking ultimately will become self-fulfilling in that she eventually will believe this thought, develop a maladaptive SSS, behave in a way to reinforce the SSS, and become more prone to experiencing a sexual problem(s). Once the sexual problem begins, it reinforces the belief that women have sexual problems during menopause and further provides evidence to withdraw from sexual encounters (Figures 3 & 4). Conversely, a menopausal woman with positive views of menopause and sexuality may think, “I can’t get pregnant, so I can really enjoy sex now” or “Menopause may affect my sexual functioning, but I can learn to adapt to still enjoy sex.” These women still may develop sexual problems, but may be able to effectively manage them by expanding their sexual repertoires with new positions, techniques (e.g., mutual masturbation instead of penetrative sex), and tools (e.g., vaginal lubricant).

a. SSS Development & Socialization

SSS Development. Anderson and Cyranowski (1994) mentioned there are many factors involved in SSS formation. They stated that from a developmental-learning perspective, individuals are reinforced or punished for certain stimulus-response patterns. For instance, individuals may be threatened with punishment or losing key attachment figures if they were found to be engaging in “inappropriate” sexual behaviors such as masturbation, whereas other individuals in other groups may be reinforced (or at least not punished) for displaying sexual behaviors such as masturbation. The types of punishment and reinforcement

impact how one views sexuality as well as the sexual behaviors one will engage in and the types of emotions one experiences during sexual activities.

Modeling, cultural/racial/parental views, religious views, and identification with others (Bandura, 1977; Miller & Dollard, 1941) also may be involved in the development of SSS. Children may identify with the sexuality of adult and peer individuals, and, as such, may model their own sexuality after those individuals. Biological factors such as puberty also may be involved in SSS formation. When puberty arrives, sexual and attachment histories become amplified as individuals seek out romantic relationships. Adolescents with specific sexual attitudes may seek out peers with similar attitudes, and as a consequence develop sexual repertoires similar to those peers. SSS also develops from previous sexual experiences and romantic relationships. Women with positive SSS stated that they had been in a loving relationship in the past, whereas women with negative SSS did not report such relationships (Andersen & Cyranowski, 1994). Overall, socialization to social norms based on culture, racial group, parents, religion, or peers may impact the formation of SSS.

Socialization – Ethnicity vs. Race. Ethnicity is a grouping of individuals based on certain characteristics, often genealogical or ancestral whereas racial differences in the US often have been associated with physical characteristics such as skin color. The US Census Bureau places ethnicity into two categories, Hispanic and non-Hispanic, and race is divided into multiple categories including White (i.e., Caucasian), Black or African American, American Indian or Alaska Native, Asian Indian, Chinese, Native Hawaiian, and other (Grieco & Cassidy,

2001). Despite these categories, the American Anthropological Association (1997) state that both race and ethnicity are social constructs that categorize individuals by physical and behavioral characteristics rather than scientific or biological differences. They also state that race, ethnicity, and ancestry are overlapping concepts that account for social and cultural aspects (American Anthropological Association, 1997). Therefore, despite racial categories based on physical characteristics, these categories also contain within them cultural, social, religious, and ideological backgrounds.

Racial groups exist in a system of “shared values and concepts among people that often speak the same language and live within proximity to each other (p. 4) (Brislin, 2000)” and are passed from generation to generation by socializing children to cultural standards. Such standards often operate in a hierarchical system: macro-level (e.g., historical changes and events), subcultural (e.g., demographic, cultural, and ethnic factors), and interpersonal (i.e., immediate family, peers) (DeLamater, 1987, 1989). Although it may be difficult to make generalizations between generations and between cultural, racial, and ethnic groups, even groups that are close in proximity or origin, generalizations within a such groups tend to be representative of the majority (Brislin, 2000). Overall, racial group and cultural group are separate, but slightly overlapping constructs. There is an assumption that cultural characteristics are passed down as being part of a specific racial group; however, this assumption may not be true for every individual that is a part of that racial group.

Socialization & Sexuality. Socialization, coupled with past experiences and the current context, assists in developing personal world views, including views on sexuality. There is an assumption that “every society regulates the sexuality of its members (p. 17) (DeLamater, 1987; Sprecher, Harris, & Meyers, 2008)”, and consequently has an effect on the development of SSS. Attempts to understand culturally determined sexual attitudes and behaviors date back to the Kinsey studies (Kinsey, Pomeroy, & Martin, 1948; Kinsey, Pomeroy, Martin, & Gebhard, 1953). However, how these attitudes, beliefs, and schemas, determine sexuality, SSS, and sexual functioning is a relatively new area of investigation in need of further exploration, especially among US racial minorities.

Few comparisons of African American (AA) and Caucasian (CA) sexuality have been performed, with most of the research focused on young peoples’ attitudes towards sexuality to prevent sexually transmitted infections or qualitative measures such as focus groups as well as anthropological and sociological research. What is known is that younger AA women often engage in intercourse earlier, engage in sex with riskier sexual partners, and are more at risk for sexually transmitted infections as compared to their CA counterparts (Cavazos-Rehg et al., 2009; Tillerson, 2008); however, these studies examined sexual behaviors not attitudes, beliefs, and schemas about sexuality. Additionally, the sexuality of African Americans often is placed into categories (e.g., Jezebel, mammy), which often are put upon AA women by societal influences rather than being a part of their own views about sexuality. Therefore,

there is little information about how middle age women, especially minority women, view their own sexuality.

Wilson (1986, p. 34) noted that African Americans “view sexuality as a natural and positive part of life”, which also may be true for Caucasian women, although they may take a more medicalized approach to sexuality. Although there is little research directly examining this belief, research from other fields may be helpful. Among breast cancer survivors, AA women reported a smaller repertoire of sexual behaviors as compared to CA women, meaning that they may be less likely to endorse engaging in oral/anal sex and masturbation, yet were less likely to say that breast cancer and breast cancer treatment negatively affected their sex lives (Cain, et al., 2003; Wyatt et al., 1998). Conversely, CA breast cancer survivors were more likely to report that breast cancer negatively affected their sex lives (Wyatt, et al., 1998).

Expressions and generalizations of AA womanhood often have been placed into a small number groups (Parmer & Gordon, 2007; Wilson, 1986). In contrasting views, AA women are “viewed as self-sufficient, independent and resourceful” (Stack, 1974) or “socialized to accept a traditional female role (Gurin & Gaylord, 1976)” (p. 109) (Sterk-Elifson, 1994). Some authors suggest that AAgirls are taught to be strong, to have strong family bonds, and to be independent (Wilson, 1986). Additionally, there are images of AA women who speak their minds and have strong self-worth (Parmer & Gordon, 2007). Conversely, generalizations of AA women categorize them as being seductive, submissive to partners, and at risk for contracting sexually transmitted infections

(e.g., Jezebel), whereas others may be seen as obese, masculine, and asexual (e.g., mammy, Aunt Jemima). Some researchers have suggested that AA women's sexuality may be tied to their sex role and that they make take an active role in communicating about sex and initiating sex (Wyatt, 1990). Worth noting is that the sexuality of AA women seems to evolve as they age such that they report less interest in sex, but feel increasingly empowered over their sexuality (Sterk-Elifson, 1994).

Although the following studies examined parental attitudes towards pre-marital, research on adolescent sexuality can be used as a proxy to examine how middle aged, AA women may view sexuality. For instance, AA mothers who speak to their daughters about sex often refer to sex as a natural part of life, but that they should take precautions to remain healthy (i.e., not contract a sexually transmitted infection) and to not get pregnant (Aronowitz, Todd, Agbeshie, & Rennells, 2007). Mothers also would attempt to bolster their daughters' self-esteem to decrease the likelihood of engaging in risky sexual behaviors (Aronowitz, et al., 2007). Additionally, even though they did not discuss sex with their parents, AA grandparents taking care of their grandchildren viewed talking about sex as a positive experience, yet felt ill-prepared to do so (Cornelius, LeGrand, & Jemmott, 2009). In addition, AA parents often hold more conservative beliefs about adolescent sexual activity and abortion, but were more likely to endorse that schools should provide sexual health care to adolescents (Horner, Kolasa, Irons, & Wilson, 1994). Finally, parents who had more pride in

their heritage as African Americans often were more likely to discuss a variety of health topics with their children, including sexuality (Wills et al., 2007).

Overall, attitudes towards sexuality of women in middle age, especially minority women, are relatively unknown. Although there is no direct evidence, it appears as though AA women were placed into certain categories based on societal views, which may have been influenced by views of AA sexuality during slavery in the US. In general, both AA and CA women view sexuality as a natural part of life and place high importance on it. For the purposes of this project, it appears as though AA female sexuality becomes more empowered during the aging process although they are less likely to endorse a variety of sexual behaviors as compared to CA women. Additionally, given that AA women are thought of as the matriarchs of the AA family, it may be assumed that they view sexuality as a natural, positive part of life, but may become less of a priority, but still important, as they care for their families. Therefore, their attitudes towards marital and adult sexuality may be slightly more positive as compared to CA even though they engage in a smaller repertoire of sexual behaviors.

Socialization & Attitudes towards Menopause. Because menopause is heavily associated with female sexuality and sexual functioning, attitudes towards menopause also may associated with the SSS and sexual functioning of menopausal women. Menopause is considered a “biocultural” process, meaning that “culture is conceived as layered over an invariant biological base (p. 507) (Beyene, 1986; Melby, Lock, & Kaufert, 2005). Therefore, socialization to a specific socioculture group affects the experience of menopause and

menopausal symptoms, including sexual problems. The experience of menopause is known to vary depending on country, race, ethnicity, and culture, as well as other important factors (for a review see Melby et al., 2005). In general, most women report neutral to positive views towards menopause; however; women from different racial groups and cultures report differential attitudes towards menopause (Im, Lee, Chee, Dormire, & Brown, 2010; Sommer et al., 1999).

There are some common themes about how women feel about going through menopause (Goberna, Frances, Pauli, Barluenga, & Gascon, 2009). For example, some women view menopause as a time to reassert themselves, including their sexuality, whereas others are “burdened” by the biological changes. Still others see menopause as a time where they will have to adapt their sexuality but that it can continue to be a valuable part of their lives. Finally, some women choose to cease or reduce sexual activities because of changes in psychosocial factors such as ill parents/partner, live-in family, or other stressors.

AA women often report the most positive views towards menopause as compared to other racial groups, but still view menopause as a significant life change (Huffman, Myers, Tingle, & Bond, 2005; Sampselle, Harris, Harlow, & Sowers, 2002; Sommer, et al., 1999). They were less likely to endorse the expectation of being irritable or depressed, were more likely to report a sense of freedom with the end of menstruation, and less likely to report a sense of regret (Sommer, et al., 1999). Additionally, AA women generally report that menopause is a natural part of life and, although it is unpleasant, they experienced limited

distress concerning their menopausal symptoms (Holmes-Rovner et al., 1996; Huffman, et al., 2005; Padonu, Holmes-Rovner, Rothert, Schmitt, & Kroll, 1996). The majority of AA women are likely to want to treat the symptoms of menopause through natural means rather than through medical means and are more likely to receive information from family and friends about menopause as compared to CA menopausal women (Holmes-Rovner, et al., 1996; Huffman, et al., 2005; Pham, Grisso, & Freeman, 1997; Rousseau & McCool, 1997; Sampselle, et al., 2002).

Like AA women, CA women feel independent and free at the thought of ending menses (Sommer et al., 1999); however they are more likely to view menopause as a medical condition rather than a natural part of life and try to control it (Im, et al., 2010; Pham, et al., 1997). CA women may view menopause as another marker in the aging process where they diverge from societal views of youthful beauty (Sampselle et al., 2002). They also are more likely to rely on medical professionals and written sources of information to help with their menopause symptoms and speak about menopause openly as compared to AA women (Im, et al., 2010; Pham, et al., 1997).

b. Summary

Menopause appears to be a neutral to positive experience for most women, but there are some racial, country, and cultural differences in attitudes toward menopause. These sociocultural differences may partially be involved with the development of SSS and the varying rates across racial groups of sexual problems and menopause symptoms.

VII. Self-Fulfilling Prophecies

Self-fulfilling prophecies are predictions that usually come true because the individual, either directly or indirectly, makes it so. This concept combines cultural socialization with information processing theory. As noted earlier, sociocultural views are propagated from generation to generation through numerous outlets. Whether these views are positive, neutral, or negative, all individuals internalize parts of these views throughout development. That is, repeated messages may influence the formation of schemas, beliefs, and attitudes, which later may influence information processing and decision making. In some cases, individuals take on the characteristics of these beliefs, consequently behaving in ways to make these beliefs come true (i.e., self-fulfilling prophecies).

In relation to menopause, Matthews (1992) suggested that expected menopausal symptoms somewhat are associated with actual symptoms. Women who expected to have vasomotor symptoms had increased rates of depressive symptoms, women who believed menopause would benefit them had increased rates of social support, and "women who expected that information and positive expectations about menopause would facilitated a good experience during menopause had lower levels of depressive symptoms and fewer symptoms (p. 5) (Matthews, 1992)." An example of a self-fulfilling prophecy is that Chinese and Turkish women who viewed menopause more negatively also have more menopause related complaints (Shea, 2006; Uncu, Alper, Ozdemir, Bilgel, & Uncu, 2007). Matthews (2000, p. 5) suggested that "women who expect negative

consequences of menopause may be behaving in such a way that at least in part contributes to the development or maintenance of symptoms" leading to a self-fulfilling prophecy. In a review of the literature Ayers and colleagues (2009) found that, in general, negative attitudes towards menopause were involved with more menopause symptoms (B. Ayers, Forshaw, & Hunter, 2010). Therefore, women with negative schemas about sexuality may be at risk for developing sexual problems during the menopause transition.

RATIONALE

The US population, including racial minorities, is getting older and sexual problems are a common occurrence for many aging individuals, especially aging women. The endocrine, relationship status, and sociocultural changes that occur during menopause can negatively impact the health of aging women and increase the chances of them developing certain sexual problems. Because there are racial differences in the types and severity of sexual problems of women transitioning through menopause, it is of central importance how psychosocial factors may impact sexual functioning during this time of life.

As depicted in Figure 3, one potential influence on the sexual functioning of menopausal women is how sexual stimuli are cognitively and emotionally processed. To make information processing of incoming sexual information efficient, most individuals create cognitive structures such as beliefs, attitudes, and schemas. Specific to sexuality, individuals create sexual self-schemas (SSS) that give sexual stimuli emotional meaning as well as determine current and future sexual behavior. SSS may become internalized and may be involved in the development and maintenance of sexual problems by creating self-fulfilling prophecies.

Like many cognitive structures, it is proposed that socialization impacts the development of SSS, which, in turn, influences sexual functioning. Socialization to a specific racial group may partially account for the development of racial-specific SSS and differing rates of sexual problems between racial groups. Unfortunately, the majority of the research examining female SSS has

been conducted with pre-menopausal women, predominantly Caucasian university students, and on cancer survivors.

Female SSS have not been examined among women going through menopause, a population prone to developing certain sexual problems. Similar to women going through gynecological cancer treatment, menopausal women must manage the physiological and psychosocial changes that may affect sexual functioning. It is likely that women with negative SSS before entering menopause may be more at risk for developing sexual problems and for demonstrating decreases in sexual satisfaction as compared to women with positive SSS. In addition, SSS has not yet been specifically examined in racial minority populations, which would be beneficial because of increasing aging racial minority populations. In order to create and/or improve prevention measures and treatments it is necessary to understand how various cultures understand views of health and disease as they relate to sexual functioning.

In their original study, Anderson and Cyranowski (1994) found that positive and negative SSS generalized to two samples of predominantly Caucasian women aged 38-76 years (n = 14) and 25-46 years (n = 31). In later work that focused on gynecological cancer and SSS, participants' ages ranged from 24-75 with a mean age of 49 (Andersen, et al., 1997; Andersen, et al., 1994). However, these participants had gynecological cancer in the past, were currently undergoing cancer treatment or had in the past, or were postmenopausal, either surgically or naturally (Andersen, et al., 1997; Andersen, et al., 1994). This work provides a foundation for understanding the association

of SSS and sexual functioning; however, it needs to be replicated and the utility of SSS in other populations need to be examined. Because of the risk of developing certain sexual problems during menopause, it is important to examine whether SSS are related to sexual problems of “healthy” menopausal women.

Researchers have not systematically examined differences in the SSS across Caucasian (CA) and African American (AA) women (Andersen, 2008). An aim of this project was to examine the psychometric properties of the Sexual Self-Schema Scale (SSSS) among AA women in more detail among menopausal women. It is possible that during development, women internalize the sociocultural views of sexuality, menopause, and what it means to be (or not to be) a sexual woman during menopause, which then may be involved in the development of SSS and subsequent sexual functioning. It was proposed that differing cultural views of sexuality may be integrated into SSS, consequently being one influence on the varying rates of sexual problems among various racial groups. Therefore, it is unknown whether the construct of SSS, as originally developed, is applicable to non-Caucasian cultures/races given that various cultures view different parts of sexuality as positive and negative. The majority of the studies that have used the SSSS contained 80% or more CA samples and it would be worthwhile to understand whether this construct is useful in other populations, and specifically minority menopausal women (Andersen & Cyranowski, 1994; Andersen, et al., 1997; Andersen, et al., 1994). Along with examining SSS among menopausal women, this project will begin to examine

cross-cultural differences in SSS by focusing on comparisons between AA and CA women.

PURPOSE & SIGNIFICANCE

The primary purpose of this project was to investigate whether Sexual Self-Schemas (SSS) were associated with the sexual problems of African American (AA) and Caucasian (CA) women going through menopause. To ensure that SSS are a valid construct in AA menopausal women, the psychometric properties of the Sexual Self-Schema Scale (SSSS) first were examined (Andersen & Cyranowski, 1994). There are limited racial differences data about the potential associations sexuality related cognitive structures and sexual functioning. This project compared two racial groups of menopausal women, specifically African Americans and Caucasians. Because certain cognitive structures may cluster together based on their emotional valence (positive vs. negative), this project also investigated the interrelationships between SSS, dysfunctional sexual beliefs, and attitudes towards menopause. Additionally, because decreasing sex hormones often are noted as causing sexual problems during menopause, another purpose of this project was to examine the association of testosterone and estradiol to sexual problems of women in menopause.

The *long-term goal* of this work was to identify psychosocial, behavioral, and physiological factors that potentially can be modified to reduce the impact of sexual problems of women going through menopause. This information could be used by health professionals to educate women on how their beliefs and attitudes may influence potential and current sexual problems. Preventive measures also could be aimed at pre- and perimenopausal women to help

reduce the severity and number of sexual problems. With further research and extensive psychosexual interviews, health professionals may be better able to predict the types/severity of sexual problems of menopausal women from various racial groups, consequently providing culturally appropriate treatment and improving treatment outcomes. Given the scarcity of psychosocial treatments for menopausal symptoms, this information may prove useful in formulating empirically based psychosocial treatments that target negative sexual beliefs and sexual self-schemas to improve their sexual functioning.

Additionally, an investigation of the potential racial differences between AA and CA women in menopause was planned to highlight the importance of considering such differences in understanding whether there are racial-specific sexual problems and sexual arousal responses that need to be addressed in prevention and treatment. This project represents an early step in examining potential racial differences, which may be useful in future research to understand the sexual functioning of various racial, ethinic, and cultural groups. The rationale for this proposal was that insufficient data exist comparing how racial groups conceptualize sexuality and menopause. Differing schema may be one mechanism explaining differential rates of sexual problems, which are influenced by decreasing estrogen and testosterone during menopause.

SPECIFIC AIMS & HYPOTHESES

This study had four aims.

Aim 1: Examine the psychometric properties of the Sexual Self-Schema Scale (SSSS) in African American and Caucasian menopausal women.

The first aim of this project was to examine the psychometric properties of the Sexual Self-Schema Scale (SSSS) (Andersen & Cyranowski, 1994) in African American (AA) and Caucasian (CA) menopausal women. This scale has predominantly been used with pre-menopausal CA women and women with a history of gynecological cancer treatment. This aim was addressed by examining the internal consistency in the form of Cronbach's alpha and intercorrelations between the three factors and the total score of the SSSS. Additionally, the convergent validity of this scale was examined using the Sexual Opinion Survey (SOS) as comparison scale. This aim was examined using the entire sample (n = 191) to see whether the SSSS is valid to use with menopausal women. Additionally, statistical analyses were repeated for each racial group separately to determine whether the SSSS is valid measure to use among AA menopausal women.

Hypothesis 1 – Psychometric Properties of the SSSS. The psychometric properties (e.g., Cronbach's alphas, intercorrelations, convergent validity) of the SSSS will be acceptable to good ranges for the entire sample as well as for both AA and CA menopausal women.

Aim 2: Determine whether Sexual Self-Schemas (SSS) were differentially associated with reported sexual problems in AA and CA menopausal women.

The second aim of this project was to examine the association between Sexual Self-Schemas (SSS) and self-reported sexual problems across AA and CA menopausal women. It was hypothesized that AA women may be exposed to more positive views of sexuality as compared to CA women during racial socialization. Therefore, AA women were expected to have more positive SSS as compared to CA women and, consequently fewer sexual problems.

Hypothesis 2 – SSS & Sexual Problems

Hypothesis 2a. Women with negative SSS were expected to report more sexual problems as compared to women with positive SSS.

Hypothesis 2b. Self-reported SSS was expected to be negatively associated with reported sexual problems.

Hypothesis 2c. The predicted relationship in hypothesis 2b was expected to be associated with race because AA women were expected to be exposed to more positive views about sexuality and menopause as compared to CA women.

Aim 3: Determine whether sex hormones were associated with reported sexual problems in menopausal women.

The third aim of this study was to determine whether sex hormones, in particular estradiol and testosterone, were associated with self-reported sexual problems. Although decreasing estrogen levels seem to have a larger role in the

development of sexual problems among menopausal women (Dennerstein, Randolph, et al., 2002), both estrogen and testosterone appear to be important to sexual functioning. Racial differences were not examined because racial differences in hormone profiles were not expected

Hypothesis 3 – Hormones & Reported Sexual Problems.

Hypothesis 3. Levels of estradiol and testosterone would be negatively related to reported sexual problems such that greater levels of these hormones would be related to a fewer number of self-reported sexual problems.

Aim 4: Examine the relationship between sexual self-schemas (SSS), attitudes towards menopause (ATM), & dysfunctional sexual beliefs (DSB).

The fourth aim of this project was to examine the relationships between sexual self-schemas (SSS), dysfunctional sexual beliefs (DSB), and attitudes towards menopause (ATM). It was hypothesized that negative and positive cognitive structures cluster together with similar valence cognitive structures, which might further exacerbate the development and maintenance of sexual problems during menopause.

Hypothesis 4 – SSS, ATM, & DSB

Hypothesis 4. SSS would be negatively associated with DSB and positively associated with ATM. Additionally, DSB and ATM would be negatively correlated.

RESEARCH DESIGN & METHODOLOGY

I. Recruitment Strategy

Participants were recruited using numerous methods. Advertisements for the study can be found in Appendix A. Paper advertisements (Appendix A) were placed in the Washington Express, a local newspaper. Fliers (Appendix A) advertising the study were placed in several locations around USUHS and Montgomery County. Additionally, advertisements were posted on online bulletin boards across the US (http://www.craigslist.org) and online message boards geared toward menopause (e.g., http://www.minniepauz.com). Local groups such as the Glorifying Our Spiritual and Physical Existence for Life (G.O.S.P.E.L.) program in Montgomery County Maryland, the National Institutes of Health newsletter (the NIH Record), USU Center for Health Disparities (USUCHD), and sexuality based professional organizations [Community-Academic Consortium for Research on Alternate Sexualities (CARAS)] were approached about recruiting from their communities. USUCHD and CARAS placed the advertisement online and in their paper newsletters. The NIH Record included the advertisement in their newsletter.

II. Participant Screening

Potential participants enrolled in the study in a variety of ways.

1) Some potential participants completed the screening questionnaire (Appendix B) if they clicked a hyperlink that was posted online on a variety of online bulletin and message boards. This screening questionnaire then was reviewed by the PI or study staff to determine eligibility to participate.

Potential participants were contacted through email or phone about whether or not they qualified to participate in the study and whether or not they were still interested in participating.

2) Potential participants who called the PI/study staff were provided a brief verbal summary of the study. Women who were still interested in participating were screened verbally over the phone using the screening form (Appendix B).
3) Other potential participants emailed the PI or study staff. These potential participants then were contacted either by phone or emailed back information about the study. If contacted by phone, potential participants still interested in participating were phone screened for eligibility (see # 2 above). If contacted by email, potential participants were provided a hyperlink to the online screening questionnaire, which was subsequently reviewed by the PI or study staff (see # 1 above).

III. Inclusion/Exclusion Criteria

To be included in the study, participants must have been female, African American or Caucasian, 40-60 years old, perimenopausal or menopausal, English speaking with at least an 8th grade reading level, and in a relationship with a partner. There is evidence that demonstrates that the menopausal process may “begin” late 30’s/early 40’s (perimenopause). Although many women will have their FMP around age 51, some women may not “end” the menopause transition until around 60 year old (Soules, et al., 2001). Reading level was based on self-reported education level. Participants also must have been in a

relationship with a partner for two reasons. First, participants in a relationship have a partner available, even if they may not be engaging in sexual activity with that partner. Not having a partner decreases the frequency of sexual activity (Howard, et al., 2006; The National Institute on Aging, 1998) and consequently, participants without partners may appear to over-report having sexual problems because of the lack of a partner. Second, screening and including participants based on whether they engaged in sexual activity in the past month may skew the data towards fewer sexual problems.

Several exclusion criteria also applied. Participants who were taking hormones, specifically hormone replacement therapy or hormonal birth control, or had an oophorerctomy (i.e., one or both ovaries removed) were excluded. Additionally, women who were pregnant, nursing, or wished to become pregnant were excluded. These situations may interfere with endocrine functioning and may skew hormonal measurements. Participants endorsing a history of cardiovascular diseases including stroke, myocardial infarction, heart disease, and uncontrolled hypertension were excluded because these cardiovascular diseases have the potential to disrupt blood flow to the vagina, consequently causing organic sexual dysfunction. Participants with a history of endocrine diseases including thyroid or pituitary abnormalities and type 1 or 2 diabetes also were excluded because these diseases disrupt endocrine function and may skew hormonal measurements. Participants with current psychological concerns including severe depression, bipolar disorder, schizophrenia, and substance dependence were excluded because such psychological disorders may interrupt

sexual arousal and increase the chances of developing a sexual problem above the sexual problems that may develop from endocrine changes during menopause.

A full list of inclusion and exclusion criteria is shown below:

Inclusion criteria:
- Adult female aged 40-60
- In perimenopause or menopause
- African American or Caucasian
- In a relationship
- English speaking
- 8th grade reading level

Exclusion criteria:
- Current use of hormone replacement therapy or hormonal birth control
- Oophorectomy (one or both ovaries removed)
- Pregnant, nursing, or wishing to become pregnant
- History of major medical conditions including
    - Cardiovascular – Stroke, myocardial infarction, heart disease, uncontrolled hypertension
    - Endocrine – Thyroid or pituitary abnormalities, type 1 or 2 diabetes
- Current major psychological disorders
    - Severe depression, bipolar disorder, schizophrenia, substance dependence

IV. Informed Consent

Online Consent

Potential participants who answered the questionnaires online were able to download and view the informed consent statement in Adobe® Acrobat Reader® PDF formation (Appendix C). Participants were asked to review and acknowledge that they reviewed the informed consent statement prior to completing the online survey. The online informed consent statement informed potential participants that all their information was confidential and their participation was completely voluntary. Clicking the “Yes, I consent” box on the online consent form was interpreted as consent to participate in the study and the

participant began the online survey. Clicking the “No, I do not consent” box on the online consent form redirected potential participants away from the online survey and thanked them for their interest.

Laboratory Consent

The PI reviewed the informed consent statement (Appendix D) with each participant who decided to complete the paper version of the questionnaires and/or the blood draw portion of the study, regardless of whether they already consented to the online portion of the study. If participants agreed to participate, then they read, signed, and initialed the informed consent form, and a witness signed and reviewed the form. When participants consented in the laboratory, they could have placed limitations on the use of their blood sample by selecting options provided in informed consent (see consent form in Appendix D for limitations on blood samples). Participants were informed that they could contact the PI to change their option for use of their blood sample or withdraw their samples from storage at any time. Participants were provided a paper copy of the informed consent statement.

V. Procedure

Participants completed a battery of self-report measures that can be found in Appendix E and F, either online or in person, including a demographic and medical history form, psychological self-report measures (Zung Self-Report Depression Scale, Zung Self-Report Anxiety Scale), measures specific to menopause (Menopause Bothersomeness, Menopause Attitude Scale), measures specific to ethnic identity (Multigroup Ethnic Identity Measure),

measures specific to potential negative life events (Life Events Checklist), and measures specific to sexual functioning, schemas, and beliefs (Female Sexual Functioning Index, Sexual Self-Schema Scale, Sexual Dysfunctional Beliefs Questionnaire, Sexual Opinion Survey, Sexual Excitation/Inhibition Scales). This survey took approximately 45-60 minutes to complete. Ten dollar ($10) compensation was added to the study protocol for completion of ONLY the survey portion to increase recruitment during the later stages of the study.

Participants who lived in the Washington DC metro area also could complete the questionnaires on paper and/or provide a 20mL blood sample at USUHS in the Human Performance Laboratory (HPL), which used hormone analyses of estradiol (i.e., estrogen) and testosterone. After completing the survey (45-60 minutes either online or on paper) and providing a blood sample (20-30 minutes), participants were debriefed about the purposes of the study, thanked for their participation, asked if they had any questions, and compensated $40 for completing BOTH parts of the study: the survey and the blood draw.

Because many menopausal women may have or may develop sexual problems, all participants were provided a paper (laboratory) or PDF (online) copy of mental health, sexual health, and urological resources after completing the study (Appendix H).

Blood Sampling

Participants had a 21-gauge needle inserted into the antecubital vein of the forearm by a trained phlebotomist. The phlebotomist recorded the unique participant identification number, time/date, arm of venipuncture, and any notes

(i.e., complications). Blood samples of 20mL from each participant were collected in two test tubes containing a small amount of ethylenediaminetetraacetic acid (EDTA), an anticoagulant. Plasma samples were harvested from the blood samples after a 15-min centrifugation at 3000g. Plasma samples were stored in at -80^{o}C until hormone determination.

Hormonal Measures

Estradiol and testosterone were measured using commercially available Enzyme-Linked ImmunoSorbent Assay (ELISA) kits (Calbiotech, Spring Valley, CA). These assays are based on a chemiluminescent visualization method and are read at 450 nm with a plate reader. Each sample was analyzed in duplicate.

VI. Self-Report Measures

Demographic Information

Demographics & Medical History

Participants completed a demographic and medical history form (Appendix E) including questions on age, ethnicity, educational background, employment status, annual household income, self-reported health status, and smoking, alcohol, and exercise habits. Participants also were asked about their relationship status, recent change in partner status, number of children, and self-reported menopausal status,. In addition, questions about medical history, including previous and current medical and psychiatric illnesses, were included.

Measures of Depressive and Anxiety Symptoms

Zung Self-Rated Depression Scale (SDS)

Because sexual dysfunctions and depression often co-occur (Laurent & Simons, 2009), the Zung Self-Rated Depression Scale (SDS) was used to assess depressive symptomology. The SDS has 20 items, 10 positive items and 10 negative items, that are rated by participants on a scale from 1 (*a little of the time*) to 4 (*most of the time*) (Zung, 1965) (Appendix F). Items assess various affective, cognitive, behavioral, and physiological aspects of depression. Scores range from 20-80 with lower scores equaling fewer depressive symptoms. Normal depression ranges from 20-49, mild depression from 50-59, moderate depression from 60-74, and severe depression from 70-80.

Split-half reliability is good (r = 0.94) (Zung, 1965) and Cronbach's alpha is good (α = 0.79) (Knight, Waal-Manning, & Spears, 1983). The SDS has good convergent validity with the Minnesota Multiphasic Personality Inventory Depression Scale (MMPI-D) (r = 0.65) and the Hamilton Rating Scale for Depression (Ham-D) (range r = 0.68–0.76) (Biggs, Wylie, & Ziegler, 1978). The SDS also correlates well (r = 0.76) with the Beck Depression Inventory (BDI) (A. T. Beck, Steer, & Garbin, 1988). The SDS sufficiently discriminates between depressed and non-depressed individuals (Maes, De Ruyter, Claes, & Suy, 1988). The SDS also has been validated in many cultures (Naughton & Wiklund, 1993).

Zung Self-Rated Anxiety Scale (SAS)

Because sexual dysfunctions and anxiety often co-occur (Laurent & Simons, 2009), the Zung Self-Rated Anxiety Scale (SAS) was used to assess anxiety symptomology. The SAS has 20 items, 10 positive items and 10 negative

items, that are rated by participants on a scale from 1 (*a little of the time*) to 4 (*most of the time*) (Zung, 1971) (Appendix F). Items assess various affective, cognitive, behavioral, and physiological aspects of anxiety. Scores range from 20-80 with lower scores equaling lower anxiety. Normal anxiety ranges from 20-44, mild to moderate anxiety from 45-59, marked to severe anxiety from 60-74, and extreme anxiety from 75-80. Internal consistency of the SAS is good (r = 0.71) (Zung, 1971). This scale also demonstrated good internal consistency in various Nigerian populations (r range = 0.69-0.81) (Jegede, 1977) and has been translated into several languages.

Measures of Sexual Functioning, Schemas, and Beliefs

Sexual Self-Schema Scale for Women (SSSS)

To assess SSS, the Sexual Self-Schema Scale for Women (SSSS), a 26 trait adjective and 24 filler adjective list that are rated by participants on a scale from 0 (*Not at all descriptive of me*) to 6 (*Very descriptive of me*), was used (Andersen & Cyranowski, 1994) (Appendix F). Internal consistency of the scale is 0.75 and test-retest reliability demonstrates stability with 0.89 after two weeks and 0.88 after two months. This scale also is relatively unaffected by social desirability or negative affect (Andersen & Cyranowski, 1994).

There are three dimensions of SSS for women: passionate-romantic [P-R], open-direct [O-D], and conservativism [Cons] (Andersen & Cyranowski, 1994). Both the [P-R] and [O-D] schemas were classified as positive SSS, whereas the [Cons] schema was classified as a negative SSS. Women also can be classified as aschematic, women who have none of the schemas, or co-schematic, women

who have components of two more of the schemas. Aschematic and co-schematic groups were not formed in this study

For the purposes of this study, SSS scores ranged from -42 to 102, with more positive scores representing positive SSS and more negative scores representing negative SSS. For each participant, responses were summed to yield three separate SSS ([P-R] or Factor 1, [O-D] or Factor 2, [Cons] or Factor 3). A total score was calculated by adding the two positive SSS scores together and subtracting the negative SSS score.

Female Sexual Function Index (FSFI)

The Female Sexual Function Index (FSFI) is a 19-item self report questionnaire that was used to assess six domains (desire, arousal, lubrication, orgasm, satisfaction, pain) of sexual functioning (R. Rosen et al., 2000) (Appendix F). All items are added together to get a full scale score, which range from 2 to 36, with higher numbers representing high risk of sexual problems. A score of 0 in a single domain means that a participant has not engaged in sexual activity in the past month. A score of ≤ 26 is considered at risk for developing a sexual problem and scores between 5 and 6 on individual domains suggests that there may be a specific sexual problem.

The internal consistency of the total FSFI score and the individual domains are good (Cronbach's α range 0.82-0.98) (R. Rosen, et al., 2000; Wiegel, Meston, & Rosen, 2005). Test-retest reliability for the FSFI is high for all domains (r = 0.79-0.86) and also high for the total score (r = 0.88). The FSFI has been normed on women with female sexual dysfunctions (FSD) and does well to

differentiate between women with and without sexual dysfunctions (Meston & Derogatis, 2002; Wiegel, et al., 2005). The FSFI also is significantly associated with improvement of female sexual problems after treatment (A. Rellini & C. Meston, 2006).

Meyer-Bahlburg & Dolezal (2007) noted that 0 responses on FSFI questions greatly bias the total sexual dysfunction as well as the domains towards the dysfunctional pole. To alleviate some of the concerns formed by this bias, they suggested making five modifications to the FSFI. First, place item 16 as item 1. Second, add a 0 category to item 15. Third, tell participants to skip the rest of the questions after item 4. Fourth, treat all 0 responses as missing values and to analyze 0 responses separately. For the purposes of this study, the FSFI has been modified according to their recommendations (Meyer-Bahlburg & Dolezal, 2007). Women with a 0 score was compared to the rest of the sample on a demographic and self-report data. They were included in all analyses that do not require the FSFI as a dependent variable.

Sexual Dysfunctional Beliefs Questionnaire (SDBQ)

The Sexual Dysfunctional Beliefs Questionnaire (SDBQ) consists of 40-items and was used to assess sexual stereotypes and beliefs (Nobre & Pinto-Gouveia, 2006) (Appendix F). There are two versions (male and female) based on specific gendered sexual beliefs. Participants were given the female version and asked whether 40 adjective items describe them on a 1 (*completely disagree*) to 5 (*completely agree*) scale. There are six sexual domains for the female version. 1) Sexual conservatism relates to the idea that sexual intercourse is the

predominant aspect of human sexuality, with any other sexual behaviors viewed as sinful. 2) Sexual desire and pleasure as a sin reflects the notion that sex predominately is a male activity and women must not act on their sexual urges. 3) Age related beliefs revolve around sexual desire, sexual activity, and orgasm decreasing as one ages, especially after menopause. 4) Body image beliefs are centered on the idea that body image is a central aspect of a woman's sexuality. 5) Affect primacy items are reverse scored and states that the central aspect of human sexuality is the love and intimacy between partners. 6) The idea that procreation is the goal of all sexual activities and that motherhood activities are one of the most important sources of female pleasure constitutes the motherhood primacy. Higher scores on the total score or each subscale represent higher levels of dysfunctional sexual beliefs. In this study, a total score was used, as well as subscale scores for all subscales except motherhood primacy.

The female version of the SDBQ has good test-retest reliability (r = 0.80) and internal consistency (Cronbach's α = 0.81). There was a moderate inverse relationship (r = -0.32) with [O-D] of the SSSS and the SDBQ. Additionally, the [Cons] factor of the SDBQ correlated with the [O-D] (r = -0.46, p < 0.01) and [Cons] (r = 0.31, p < 0.01) factors of the SSSS (Nobre & Pinto-Gouveia, 2006). The total score on the FSFI had correlations with the sexual conservatism (r = -0.31, p < 0.01), sex as a sin (r = -0.32, p < 0.01), age related beliefs (r = -0.33, p < 0.01), and body image beliefs (r = -0.24, p < 0.01) subscales.

Sexual Opinion Survey (SOS)

The Sexual Opinion Survey (SOS) was used to assess opinions about various aspects of sexuality including masturbation, use of pornography, and intercourse (W. A. Fisher, Byrne, White, & Kelley, 1988; Gilbert & Gamache, 1984; White, Fisher, Byrne, & Kingma, 1977) (Appendix F). The SOS consists of 21 items using a 7-point Likert scale with answers ranging from 1 (*strongly agree*) to 7 (*strongly disagree*). Overall scores can range from 0 to 147 and be used to classify an individual's overall sexual schema as erotophobic (0) or erotophilic (126). The SOS has good internal consistency and a split-half reliability of 0.84. There are three main factors: open sexual display, homoeroticism, and sexual variety.

In general, women often report lower scores on the SOS as compared to men; however, this scale has been used cross culturally with good results (W. A. Fisher, et al., 1988). The survey is widely used as a measure emotional response to erotic stimuli. The SOS contains a subscale score for an opinion about pornography with scores ranging from 0 (erotophobic) to 42 (erotophilic). Because various ethnic groups have different sexual attitudes, this measure was added to better assess if a participant's general attitude toward sexuality and was used in the original study evaluating the reliability and validity of the SSSS (Andersen & Cyranowski, 1994).

Measures of Menopause

Perceptions of Menopause (POM)

Perceptions of menopause were assessed using three scales. The Menopause Attitude Scale (MAS) is a measure that uses the semantic differential

model (Bowles, 1986) (Appendix F). Participants were asked to rate themselves using a 7-point Likert Scale on 20 bipolar adjectives as they transition through menopause. Scores range from 20 to 140 with higher scores indicating more positive attitudes towards menopause. Factor analyses of the MAS revealed one overarching factor that accounted for 44% of the variance and represented the evaluation of menopause. The MAS has good test-retest reliability (r = 0.87) as well as good reliability with premenopausal, menopausal, and postmenopausal women. Although scores may be skewed for younger women (age 18-46), they are not skewed for women older than 46 years. The MAS also has good convergent validity with the Attitudes Towards Menopause Scale (ATM; Cronbach's α = 0.80) (Neugarten, Wood, Kraines, & Loomis, 1963) and good discriminant validity with the Attitudes Towards Old People Scale (Cronbach's α = 0.90) (Kogan, 1961).

The Perceptions of Menopause (POM) scale is a 21-item scale that asks about women's views towards menopause on a 5-item Likert Scale ranging from 1 (*Strongly Agree*) to 5 (*Strongly Disagree*) (Schmitt et al., 1991) (Appendix F). The Menopause Symptom Bothersomeness Scale asks women how bothersome they find 56 symptoms of menopause including vasomotor symptoms, weight gain, sleeping disturbance, depression, swelling, mood swings, headache, fatigue, tender breasts, vaginal dryness, irregular periods (Schmitt, et al., 1991) (Appendix F). The items use a 4-point scale: 1 (*Does not bother me at all*), 2 (*Bothers me a little*), 3 (*Bothers me somewhat*), and 4 (*Bothers me a great deal*).

Higher scores indicate higher levels of symptom bothersomeness. The reliability and validity of these two scales are unknown.

Measures of Life Events

Life Events Checklist (LEC)

The Life Events Checklist (LEC) has 16 items used to assess exposure to potentially negative life events such as natural disasters, unwanted adult and childhood sexual experiences, and serious injury harm to oneself or someone close. Participants are asked to rate each potentially negative life event as "It happened to you", "Witnessed it," "Learned about it," "Not sure," and "Doesn't Apply." The LEC demonstrated good test-retest reliability ($r = 0.82$, $p < 0.001$), and significant correlations with the Traumatic Life Events Questionnaire (TLEQ) (Kubany et al., 2000), Post Traumatic Stress Disorder (PTSD) Checklist (PCL), Beck Anxiety Inventory (BAI), Beck Depression Inventory (BDI), and the Clinician Administered PTSD Scale (CAPS) (Gray, Litz, Hsu, & Lombardo, 2004).

This scale was added because negative life events, especially unwanted sexual events during childhood, have a significant role in the development of sexual problems for many individuals. For instance, men and women with various forms of PTSD report greater levels of sexual problems as compared to individuals with no combat trauma (S. Ayers, Eagle, & Waring, 2006; Cosgrove et al., 2002; Letourneau, Schewe, & Frueh, 1997). Women that have experienced early childhood sexual events often develop negative SSS which may attenuate physiological sexual responded (vaginal photoplethysmography) and lessen sexual satisfaction (Leon, Chedraui, Hidalgo, & Ortiz, 2007; Meston, et al., 2006;

Najman, Dunne, Purdie, Boyle, & Coxeter, 2005; Reissing, Binik, Khalife, Cohen, & Amsel, 2003; A. H. Rellini & C. M. Meston, 2006). Additionally, women who have experienced negative intimate partner events also may be more likely to develop sexual problems, which may be related to their schemas about being intimate and sexual with a partner (Coker, 2007).

Measures of Ethnic Identity

Multigroup Ethnic Identity Measure – Revised (MEIM-R)

The Multigroup Ethnic Identity Measure (MEIM-R) was used to assess ethnic identity, or the feeling of belonging to one's ethnic group, across various ethnic groups (Phinney, 1992; Phinney & Ong, 2006; Phinney & Ong, 2007) (Appendix F). The MEIM-R is a 6-item, 4-point Likert Scale with scores ranging from 1 (strongly disagree) to 4 (strongly agree). Overall scores range from 6 to 24, with higher scores denoting increased ethnic identity. There are two main factors for the MEIM-R: commitment and exploration. The MEIM-R has reliability coefficient for the overall measure of .90. Cronbach's alphas were 0.83 for the exploration factor and .89 for the commitment factor.

In the current project, it was hypothesized that cultural variations in socialization to views of sexuality would significantly influence the development of sexual self-schemas. The relative degree to which an individual accepts or rejects the values, beliefs, and norms traditionally held by their ethnic group is believed to impact the internalization of cultural views of sexuality and menopause. Because empirical evidence has demonstrated that African American and Caucasian women have different views of sexuality, resulting from

their divergent cultural and ethnic identification, this scale was added to examine the effect of identity on sexual self-schemas and views towards menopause.

VII. Power Calculation

All power analyses were performed with the N-Query power calculation software package with the assistance of Dr. Cara Olsen, a biostatistician at USUHS, and Joyce Hsiao, a statistician for the USU Center for Health Disparities.

SSS, Race, & Sexual Problems. To examine the potential association between SSS and sexual problems, a proposed sample size of 280 participants (140 AA & 140 CA) was sufficient for power of 80% with a Type I error of .05 (two-tailed). Previous published findings (Wiegel, et al., 2005) were used to estimate effect sizes ($r = 0.44$, $r^2 = 0.19$) on samples of women with and without a sexual dysfunction. Based off Wiegel et al (2005), we expected a medium effect size. A sample size of 90 per group (180 total) was found to be sufficient. However, there were no previous published effect sizes for the interaction between SSSS and ethnicity, so we expected a small to medium effect size (r^2 = 0.2-0.3) for this interaction, which added 50 individuals to each group, totaling 140 per racial group. A post-hoc power and sample size analysis was performed on the existing data from 191 participants based on the R squared values for the Race variable in the linear regressions of Aim 2. A minimum of another 200 (100 AA, 100 CA; total = 400) participants (with full FSFI data) would have to be recruited to achieve good power for the Race X SSSS interaction and its potential association with sexual functioning.

Sex Hormones & Sexual Problems. To examine the potential effects of sex hormones estradiol and testosterone on sexual problems, a proposed sample size of 80 participants (40 AA & 40 CA) was sufficient for power of 80% with a Type I error of 0.05 (two-tailed). Previous published findings (Turna et al., 2005) were used to estimate the Pearson moment-product correlation coefficient (r = 0.47, r^2 = 0.22) of testosterone and the FSFI on a sample of women with and without sexual dysfunction. Based off this research, we expected a medium effect size. A sample size of 30 per group (60 total) was found to be sufficient. However, there were no previous published effect sizes for the relationship between estradiol and the FSFI, so we expected a small to medium effect size (r^2 = 0.20-0.30) for this interaction, which added 10 individuals to each group, for a total of 80 participants with 40 from each racial group. A post-hoc power and sample size analysis was performed on the existing data from 60 participants (20 CA, 40 CA). Based on the R squared that was calculated between hormones and sexual problems for Aim 3, it was calculated that a minimum of another 60 participants (20 AA, 40 CA; total = 120) would be needed to potentially see an association between sex hormones sexual problems with good power.

The dissertation committee decided that it was acceptable to cease participant recruitment at the current sample size (N = 191) for two reasons. First, a number of the analyses were significant. Second, the number of participants needed to achieve good power on some of the analyses (i.e., hormones and sexual problems) would exceed the capabilities of financial funding for this project.

VIII. Overview of Analytic Strategy by Specific Aim

Categorical variables with more than two levels were dummy coded. Health status was divided into two groups (poor-fair, good-excellent). Income was separated into three groups (< 30k, 30-60k, 60k+). Education was divided into four groups (high school diploma or less, some college, bachelors/associates degree, graduate degree). Marital status was divided into four groups (single, married, living together, divorced/separated/widowed).

Analytic Strategy for Aim 1: Psychometric Properties of the SSSS

The first aim of this project was to examine the psychometric properties of the Sexual Self-Schema Scale (SSSS) (Andersen & Cyranowski, 1994) in AA and CA menopausal women. The purpose was to determine the internal consistency of the SSSS, the construct validity the SSSS, and the convergent validity using a scale that measures a similar concept (i.e., SOS).

Hypothesis 1. It was hypothesized that the psychometric properties (Cronbach's alpha, intercorrelations, convergent validity) of the SSSS would be in the acceptable to good range.

Internal Consistency. Cronbach's alphas were computed for the total sample and separately for each racial group for the total score and the three subscales of the SSSS. Cut off scores for Cronbach's alphas were as followed: ≥ 0.90 – Excellent, ≥ 0.80 – Good, ≥ 0.70 – Acceptable, ≥ 0.60 – Questionable, ≥ 0.50 – Poor, and < 0.50 – Unacceptable (George & Mallery, 2003).

Intercorrelations. Pearson product moment correlations between the three factors and the total score of the SSSS were computed for the entire sample and each racial group separately.

Convergent Validity. Pearson product moment correlations were used to compute the convergent validity of the factors with the Sexual Opinion Survey (SOS) (W. A. Fisher, et al., 1988; Gilbert & Gamache, 1984; White, et al., 1977), which was repeated separately for each racial group. The SOS measures a similar aspect of sexuality related beliefs as the SSSS, which is why it was chosen to examine the convergent validity of the SSSS.

Analytic Strategy for Aim 2: SSS, Race, & Reported Sexual Problems

The second aim of this project was to examine to what extent SSS were associated with sexual problems of menopausal women as well as to examine potential racial differences in the extent to which SSS were associated with sexual problems.

Hypothesis 2. Separate hierarchical linear regressions were used with the total score and the six domains scores on the FSFI as the dependent variables. Women reporting no sexual activity in the past month were excluded from all analyses using the FSFI Desire subscale. Five steps were tested using the following Steps; Step 1: demographics (age, self-reported health, income, educational achievement), Step 2: marital status, Step 3: covariates (depressive symptoms & anxiety symptoms), Step 4: SSS, and Step 5: race.

Demographic variables and covariates were chosen because research consistently has found that these variables influence the menopause process,

especially sexual problems (Dennerstein, Randolph, et al., 2002; Gallicchio, Schilling, Miller, Zacur, & Flaws, 2007; Laumann, et al., 2006). For instance, increasing age is associated with increasing sexual problems among both men and women. Additionally, health, income, and educational achievement and sexual problems often have positive relationships with sexual functioning. There is conflicting evidence to the impact of marital status on sexual functioning. Some researchers have found fewer sexual problems among married women (R. C. Rosen, Taylor, Leiblum, & Bachmann, 1993), whereas other have found less desire, arousal, and pleasure among married women (Avis et al., 2005). Regardless, marital status seemingly has an effect on sexual functioning, which is why it was included in the model. As mentioned earlier, both depressive and anxiety symptoms, like many psychological concerns, can affect sexual functioning by impairing an individual's ability to attend to both internal and external sexual stimuli.

The steps in the hierarchical linear regressions:

- Step 1 (demographics): age, self-reported health, income, education
- Step 2 (marital status): marital status
- Step 3 (covariates): depressive symptoms (SDS), anxiety symptoms (SAS)
- Step 4 (beliefs): sexual self-schemas (SSSS)
- Step 5 (race): race, race x SSSS

This aim also was examined using a Multivariate Analysis of Covariance (MANCOVA) to examine the effects of all the covariates (age, self-reported

health, marital status, income, education), independent variables (SSS), and fixed factors (race) on the various aspects of sexual functioning using the FSFI total and subscale scores as the dependent variables. A MANCOVA was chosen for two reasons. First, the FSFI subscales are highly correlated, suggesting a MANCOVA might provide a better understanding of the relationships between the independent variables and sexual functioning. Additionally, this analysis reduces the effect of Type I error that is inherent in doing multiple analyses, such as the multiple hierarchical linear regressions noted above.

Analytic Strategy for Aim 3: Hormones & Reported Sexual Problems

The third aim of this study was to examine the association of estradiol and testosterone with sexual functioning. Racial differences were not examined because groups were not expected to differ on hormone levels.

Hypothesis 3. Separate hierarchical linear regressions were used to predict the FSFI total score and the FSFI domains scores. Women reporting no sexual activity in the past month were excluded from all analyses using the FSFI Desire subscale. The following variables were tested in a four Step model; Step 1: demographics (age, self-reported health, income, educational achievement), Step 2: marital status, Step 3: covariates (depressive symptoms & anxiety symptoms), Step 4: hormones (estradiol, testosterone).

The steps in the hierarchical linear regressions:

- Step 1 (demographics): age, self-reported health, income, education
- Step 2 (marital status): marital status

- Step 3 (covariates): depressive symptoms (SDS), anxiety symptoms (SAS)
- Step 4 (hormone): estradiol, testosterone

This hypothesis also was examined using Multivariate Analysis of Covariance (MANCOVA) to examine the effects of all the covariates (age, self-reported health, marital status, income, education, depressive/anxiety symptoms) and independent variables (estradiol, testosterone) on the total and subscales of the FSFI. A MANCOVA was chosen for two reasons. First, the FSFI subscales are highly correlated, suggesting a MANCOVA might provide a better understanding of the relationships between the independent variables and sexual functioning. Additionally, this analysis reduces the effect of Type I error that is inherent in doing multiple analyses, such as the multiple hierarchical linear regressions noted above.

Analytic Strategy for Aim 4: Relationships between SSS, ATM, & DSB

The fourth aim examined the relationships between SSS, ATM, and DSB.

Hypothesis 4. An examination of the correlations between the three scales (SSSS, MAS, & SDBQ) was performed. Pearson product-moment (total score on SSS) was used. To examine this aim across AA and CA, Pearson product-moment correlations were performed separately for each race (AA, CA) and compared. Additionally, the relationships with depressive (SDS) and anxiety (SAS) symptoms also were included as they often are related to sexual functioning and may have a role in the overall cognitive structures that influence sexual functioning.

RESULTS

Sample Size. Data were collected from 196 participants (116 CA, 80 AA). Four participants (2 CA, 2 AA) did not agree to participate in the online survey and were not included in the original sample. Of these 196 participants, five participants were excluded from analyses making the final sample size 191 menopausal women (113 CA, 78 AA). Reasons for exclusions included inconsistency in responding, outlying data, and not meeting inclusion/exclusion criteria. Three participants (2 CA, 1 AA) were excluded because they seemingly did not answer the online questionnaires in a truthful manner as they simply clicked the same answer to the majority of questions. One participant (CA) was excluded because her estradiol and testosterone were significantly elevated (> 2 SD above the mean of both hormones: 711.03 pg/mL estradiol; 2820.20 pg/mL testosterone). One participant (AA) was excluded because she reported having multiple sclerosis, a severe systemic medical condition, which can negatively impact sexual functioning.

Demographics. Participant demographic characteristics are presented in Table 2. The average age of participants was 47.83 (SD = 4.22) years old. There were no age differences by racial group ($t(189) = 0.088$, $p = 0.903$). There were significant differences by racial groups on relationship status ($\chi^2(7) = 24.684$, $p = 0.001$), education ($\chi^2(6) = 23.771$, $p = 0.001$), and income ($\chi^2(6) = 27.595$, $p < 0.001$). For each group, “married” was the most frequent option chosen for both groups; however, as depicted in Table 2, the majority of CA women were married whereas approximately one third of AA women were married. Table 2 shows that

CA women reported obtaining a higher level of education as compared to AA women, specifically in the areas of college and graduate level degrees. CA women also reported making an income in the $60k+ per year range. AA women were more likely to report making under $40k a year with a significant number of participants making under $20k (Table 2). The majority of women were employed full time and there were no differences in employment status ($\chi^2(3) = 1.284$, $p = 0.733$) between AA and CA women. In terms of child bearing, most women reported being pregnant approximately three times and giving birth to two children. Any significant differences in demographics (income, education, marital status) were entered in analyses as covariates to account for their variance (as noted above in Statistical Analysis section).

Physical & Mental Health Concerns. Although the majority of women reported being in good to excellent health (88%) (Table 2), a total of 19 participants reported health concerns that were taken into consideration before conducting analyses. Including these participants in the data set increases variability and subsequently decreases internal validity, but provides a more ecologically valid sample of CA and AA middle aged, menopausal women who are in sexual relationships.

Two participants (2 AA) reported being HIV positive. People aged 40-60 years old and AAs are highly represented in the number of HIV/AIDS cases in Washington DC (Department of Health, 2009). Approximately 4.7% of AAs have HIV/AIDS versus 3% of the rest of the population having HIV/AIDS. Additionally, 91% of all women infected with HIV/AIDS in Washington DC are AA, with most

individuals being aged 30-60 years old. There is evidence that HIV-infected women enter menopause earlier than women without HIV; however, there often are other major confounders involved in the samples such as smoking, low SES, and drug use (Kojic, Wang, & Cu-Uvin, 2007; Santoro, Fan, Maslow, & Schoenbaum, 2009). At this point, it is unclear how HIV/AIDS and its treatments affect the menopause process and vice versa. Therefore, these participants were included in the data set given that HIV can be well managed with medication, the rates of infection are high in the Washington DC area, and that the relationship between HIV and menopause is unclear.

One participant (AA) reported having herpes. Approximately 45 million individuals 12 years of age and older are infected with either Herpes Simplex Virus Type 1 or Herpes Simplex Virus Type 2 (i.e., most common form of genital herpes) (Center for Disease Control, 2010b). Herpes is less common among older adults but more common among women and AAs (Center for Disease Control, 2010a). This participant remained in the data set because of high rates of herpes in the general population, that it often is well managed through medication, and individuals often can have adequate sexual relationships with this virus.

Four participants (4 CA) reported having Hepatitis with the most common form in this data set being Hepatitis C. These four participants were included in the data set for a number of reasons. First, although Hepatitis C is spread through blood to blood contact, it has a low sexual transmission rate (Center for Disease Control, 2009a). Second, the number of people infected with Hepatitis C

is around 3.2 million, with many not knowing they have the disease (Center for Disease Control, 2009a). Therefore, it is possible that other individuals in this study may be unaware if they had Hepatitis C and excluding these four participants does not add benefit to statistical analyses. The participants who did not clarify the type of Hepatitis also were included because this sexually transmitted infection often can be well managed through medication and precautions can be taken to ensure safe sex (Center for Disease Control, 2009b).

Four participants reported one of the following on the demographic form: rape (AA), trauma (CA), childhood sexual abuse (CA), or PTSD (AA). These women reported mild depressive (range 35-47) and anxiety (range 26-47) symptoms. Additionally, 55 other women (~29%) reported some other form of sexual assault on the LEC, specifically rape, attempted rape, or made to perform any type of sexual act through force or threat of harm.

Approximately 1 in 4 women are victims of sexual assault (World Health Organization, 2003) worldwide and 1 in 6 will be sexually assaulted in the US (16%) (Rape, 2010). These percentages are similar percentages (29%) as the current sample, suggesting that the LEC accurately measured negative life events. In this study, AA women reported more instances of sexual assault (39%) as compared to CA women (22%). Although CA women are more likely to report being sexually assaulted, minority women are more likely to be attacked (RAINN, 2010).

Although common reactions of sexual assault are depression and anxiety, the total LEC score (M = 3.791, SD = 2.446) was not related to depressive ($r(163) = 0.11$, $p = 0.165$) or anxiety ($r(163) = 0.12$, $p = 0.139$) symptoms. Additionally, there was no difference between racial groups on total LEC score ($t(161) = 0.608$, $p = 0.544$). Given that there was no association between negative life events and depressive and anxiety symptoms, along with the reported prevalence of being involved in sexual assault being similar to national data, the four participants who reported some form of sexual assault remained in the data set.

Based on the SDS, six participants (4 CA, 2 AA) were classified as moderately depressed (scores range 60-65). None of these participants provided blood samples or reported severe depressive symptoms (> 74 on the SDS). However, five participants marked *most of the time* for Question 19 on the SDS, which provides the prompt “I feel that others would be better off if I were dead.” As noted in the methods section, all participants were provided a list of resources which included a suicide hotline.

Based on the SAS, three participants (1 CA, 2 AA) were classified as having marked anxiety (score range 61-65). Two (1 CA, 1 AA) of these participants provided blood samples. No participant reported severe anxiety symptoms (> 74 on the SAS). These participants were included in the data set because they did not report severe depressive or anxiety symptoms as noted in the inclusion/exclusion criteria.

Many of the depressive/anxiety symptoms reported by these women may have been related to menopause and not specifically a depressive/anxiety disorder. These 19 participants with physical and mental health concerns were compared with the rest of the sample on demographic and self-report questionnaires. As to be expected, these participants scored higher on depressive ($t(19.984) = 2.820$, $p = 0.011$) and anxiety symptomatology ($t(19.840) = 2.942$, $p = 0.008$), but demonstrated no other significant differences in demographic or self-report questionnaires.

FSFI. Sixteen participants (8 CA, 8 AA) reported on the FSFI that they had not engaged in any sexual activity in the past two weeks. Seven (3 CA, 4 AA) of these woman provided blood samples. There were no differences between these women and the rest of the sample for age, race, employment status, relationship status, or the majority of other demographic variables. There also were no differences between this group and the rest of the sample for depressive and anxiety symptomatology, ATM, menopause symptoms, SSS, DSB, negative life events, hormone levels, and sexual opinions. As to be expected, this group reported lower Desire (M = 5.29, SD = 1.12, vs. M = 3.60, SD = 1.36, $t(189) = 4.810$, $p < 0.001$) as compared to women who had engaged in sexual activity in the past two weeks. Because there were few differences between groups, the women who did not engage in sexual intercourse within the previous six weeks were included in the statistical analyses but with modifications. All of these women were included in Study Aim 1 (i.e., psychometric properties of the SSSS) and Study Aim 4 (i.e., relationships between SSS, ATM, and DSB). Because they

only had a FSFI Desire score, these participants were excluded from some analyses addressing Aims 2 and 3, which used the other FSFI scores as dependent variables.

Self-Report Measures. The means and standard deviations for the total sample as well as each racial group for the self-report measures are presented in Table 3. As shown in table 3, depressive and anxiety symptoms were in the normal-mild range (SDS range 23-65; SAS range 20-65) and did not differ between racial groups (SDS, $t(189) = 1.100$, $p = 0.273$; SAS, $t(188) = 0.942$, $p = 0.348$).

SSS ranged from 17 to 102 with a mean of 62.89 (SD = 17.55) (Table 3). The original validation study reported an overall SSSS mean of 60.47 (SD = 14.15), a Factor 1 [P-R] mean of 47.44 (SD = 6.45), a Factor 2 [O-D] mean of 36.26 (SD = 14.15), and a Factor 3 [Cons] mean of 23.22 (SD = 5.91) (Andersen & Cyranowski, 1994) using predominantly premenopausal, mostly Caucasian samples. Although no SSS scores were negative in this study, there were a variety of scores indicating some women held more conservative or negative SSS (closer to 17) and other women having more positive SSS (closer to 102). Additionally, there was a trend for AA women to report more positive SSS ($F(1,187) = 3.240$, $p = 0.073$). This result was predominantly accounted for by trends for AA women to have greater Factor 1 [P-R] ($F(1,187) = 3.020$, $p = 0.084$) and Factor 2 [O-D] ($F(1,187) = 3.523$, $p = 0.062$) scores on the SSSS. There was no difference between racial groups on Factor 3 [Cons] subscale ($F(1,187) = 0.028$, $p = 0.867$).

FSFI subscale and total scores were examined to assess reports of specific and general sexual problems. As shown in Table 3, the mean FSFI subscale scores were less than 5 indicating few women had specific sexual problems. However, some participants reported one or more significant sexual problems (FSFI score of ≥ 5) (desire, n = 35; arousal, n = 17; lubrication, n = 15; orgasm; n = 25; pain, n = 6; satisfaction, n = 23). The mean for the FSFI scale for the entire sample was below 26 indicating that participants were not dealing with significant sexual problems; however, 20 women had FSFI scores ≥ 26, indicating that they had significant overall sexual problems.

Scores on the SDBQ (a measure of DSB) ranged from 36 to 106. The mean of the SDBQ was 59.08 (SD = 16.06). AA women reported a greater number of DSB (F(1,171) = 2.274, p = 0.024) accounted for by greater scores on the SDBQ conservative subscale (F(1,171) = 23.153, p < 0.001) (Table 3).

The mean of the SOS was 78.02 (SD = 20.40) with AA women reporting more erotophobic attitudes as compared to CA women (t(186) = 2.148, p = 0.033) (Table 3) further adding to the evidence that AA women have more conservative sexual beliefs. Table 3 also shows that mean of ATM was 79.67 (SD = 20.40) and that AA reported more positive ATM as compared to CA women (t(131.424) = 2.437, p = 0.016).

Study Aim 1: Psychometric Properties of the SSSS

Hypothesis 1, which stated that psychometric properties (e.g., Cronbach's alphas, intercorrelations, convergent validity) of the SSSS would be acceptable to good, was confirmed.

Cronbach's alpha. The SSSS Cronbach's alphas for the entire sample and for each racial group are presented in Table 4. The Cronbach's alpha for the entire SSSS was acceptable (α = 0.77). Cronbach's alpha for Factors 1 [P-R] (α = 0.84) and 2 [O-D] (α = 0.80) were good. The alpha for Factor 3 [Cons] (α = 0.64) was questionable. These results are similar to the results found in the original study (Andersen & Cyranowski, 1994). As depicted in Table 4, the Cronbach's alphas for each racial group remained similar to the overall sample, providing evidence that this scale is valid to use with both AA and CA menopausal women.

Intercorrelations. For the entire sample, Factor 1 [P-R] was significantly positively correlated with Factor 2 [O-D] ($r(190) = 0.43$, $p < 0.001$), but not significantly correlated with Factor 3 [Cons] ($r(190) = 0.01$, $p = 0.877$). Factor 2 [O-D] and Factor 3 [Cons] were significantly negatively correlated ($r(190) = -0.19$, $p = 0.011$). As was expected, SSSS total was positively related with Factor 1 [P-R] ($r(189) = 0.76$, $p < 0.001$) and Factor 2 [O-D] ($r(189) = 0.80$, $p < 0.001$), and negatively related with Factor 3 [Cons] ($r(190) = -0.50$, $p < 0.001$). Therefore, for the entire sample, the subscales and the total of the SSSS were significantly correlated with each other with the exception of Factors 1 [P-R] and 3 [O-D]. Again, these results are similar to the original validation study conducted by Andersen and Cyranowski (1994).

For the CA women, Factor 1 [P-R] was significantly positively correlated with Factor 2 [O-D] ($r(113) = 0.37$, $p < 0.001$), but not significantly correlated with Factor 3 [Cons] ($r(113) = -0.02$, $p = 0.815$). Factor 2 [O-D] and Factor 3 [Cons]

were significantly negatively correlated ($r(113) = -0.31$, $p = 0.001$) in CA women. SSSS total was significantly positively related to Factors 1 [P-R] ($r(113) = 0.74$, $p < 0.001$) and 2 [O-D] ($r(113) = 0.80$, $p < 0.001$), and negatively correlated with Factor 3 [Cons] ($r(113) = -0.55$, $p < 0.001$) for CA women. These correlations are similar to the results from the total sample.

For the AA women, Factor 1 [P-R] was significantly positively correlated with Factor 2 [O-D] ($r(77) = 0.48$, $p < 0.001$), but not significantly correlated with Factor 3 [Cons] ($r(76) = -0.04$, $p = 0.707$). Factor 2 [O-D] and Factor 3 [Cons] were not significantly negatively correlated ($r(77) = -0.06$, $p = 0.628$) in AA women, which was different from the results found in the total sample as well as in CA women. Like the total sample, SSSS total was significantly positively related to Factors 1 [P-R] ($r(76) = 0.77$, $p < 0.001$) and 2 [O-D] ($r(76) = 0.80$, $p < 0.001$) and negatively correlated with Factor 3 [Cons] ($r(76) = -0.45$, $p < 0.001$) in AA women.

Convergent Validity: The total score on the SOS was significantly positively correlated with the total score of the SSSS ($r(188) = 0.23$, $p = 0.001$) as well as Factor 1 [P-R] ($r(187) = 0.18$, $p = 0.013$) and Factor 2 [O-D] ($r(188) = 0.17$, $p = 0.018$) of the SSSS suggesting that both scales measure similar aspects of human sexuality. There was a trend for the total score of the SOS to be negatively correlated with Factor 3 [Cons] ($r(187) = -0.12$, $p = 0.099$) of the SSS.

As to be expected, the positive subscale of the SOS was significantly positively correlated with the total SSSS score ($r(188) = 0.20$, $p = 0.006$) and

Factor 1 [P-R] (r(189) = 0.15, p = 0.043). There were trends for the SOS to be positively correlated with Factor 2 [O-D] (r(189) = 0.13, p = 0.058) and negatively correlated with Factor 3 [Cons] (r(189) = -0.13, p = 0.077).

In line with predictions, the negative subscale of the SOS was significantly negatively correlated with the total score (r(188) = -0.21, p = 0.003), Factor 1 [P-R] (r(189) = -0.18, p = 0.012), and Factor 2 [O-D] (r(189) = -0.17, p = 0.017) of the SSSS. Contrary to prediction, the negative SOS subscale was not significantly positively correlated with Factor 3 [Cons] (r(189) = 0.08, p = 0.302) of the SSSS.

Study Aim 2: SSS, Reported Sexual Problems, & Race

Hypothesis 2a: Positive vs. Negative SSS. The hypothesis that women with negative SSS would report more sexual problems as compared to women with positive SSS was confirmed. Table 5 shows the comparison of women with negative SSS and positive SSS on sexual functioning (FSFI) and dysfunctional sexual beliefs (SDBQ).

SSS were dichotomized into positive (n = 94) and negative (n = 96) by a median split (median = 61). There were no significant differences in the number of women from each racial group classified into a specific SSS. Overall, women with negative SSS reported more total reported sexual problems especially with Desire, Arousal, Orgasm, Pain, and Satisfaction, as well as more total DSB, especially in relation to Conservative, Age, Sin, Affection, and Body sexuality related beliefs (Table 5). These results provide evidence that negative cognitive

structures (i.e., negative SSS) are associated with worse sexual functioning in menopausal women.

Hypotheses 2b & 2c: Hierarchical Linear Regressions. Hypothesis 2b, which predicted that SSS would be associated with sexual problems, was partially confirmed. Additionally, Hypothesis 2c, which predicted that the relationship predicated in Hypothesis 2b would be different between the two racial groups (i.e., AA & CA), was partially confirmed.

Table 6 shows the hierarchical linear regression models using age, income, education, and self reported current health (Step 1), marital status (Step 2), depressive and anxiety symptoms (Step 3), SSSS (Step 4), and racial group (Step 5) as predicators of sexual functioning (FSFI). All □'s presented are from the full model with all five steps included.

As show in Table 6, Step 1 (age, income, education, health status) only was associated with sexual Desire. The only significant predictor of sexual Desire from Step 1 was education such that educational attainment category "some college" was associated with fewer sexual problems compared to the women who reported other educational attainment (□ = -0.724, t = 2.137, p = 0.034).

After accounting for demographic variables (age, income, education, health), marital status was associated with sexual problems in Desire, Arousal, Lubrication, and Total sexual problems (Table 6). Additionally, there was a trend for marital status to be associated with sexual Satisfaction (Table 6). Specifically, being single or separated/divorced/widowed was associated with fewer problems with sexual Desire (single: □ = -0.765, t = 2.249, p = 0.026;

separated/divorced/widowed: □ = -0.709, *t* = 2.385, *p* = 0.018), Lubrication (single: □ = -0.765, *t* = 2.249, *p* = 0.026; separated/divorced/widowed: □ = -0.709, *t* = 2.385, *p* = 0.018), and Satisfaction (single: □ = -0.741, *t* = 2.154, *p* = 0.033; separated/divorced/widowed: □ = -0.837, *t* = 2.185, *p* = 0.030) problems. Being separated/divorced/widowed was associated with fewer Arousal (□ = -0.805, *t* = 2.661, *p* = 0.009) and Total (□ = -3.465, *t* = 2.440, *p* = 0.016) sexual problems.

As expected, after accounting for demographics and marital status, depressive and anxiety symptoms were associated with all of the FSFI subscales as well as the total FSFI. Depressive symptoms were the primary variable positively associated with sexual problems (all significant positive β's for all subscales and total FSFI). Interesting, although not significant with any sexual problems, a greater number anxiety symptoms were associated with fewer sexual problems (all non-significant negative □'s for all subscales and total FSFI).

After accounting for demographics, marital status, and depressive/anxiety symptoms, SSS were significantly negatively associated sexual problems in Arousal (□ = -0.038, *t* = 2.661, *p* = 0.036 l), Orgasm (□ = -0.041, *t* = 2.008, *p* = 0.046), and Total sexual problems (□ = -0.149, *t* = 2.440, *p* = 0.080). Although the overall models were not significant, SSS also were negatively associated with sexual problems in Desire (□ = -0.040, *t* = 2.275, *p* = 0.024) and close to significant in Lubrication (□ = -0.033, *t* = 1.842, *p* = 0.067). These results suggest that more positive SSS are related to fewer Arousal, Orgasm, and Total sexual

problems (Table 6). Additionally, the non-significant positive □'s also provide evidence that more positive SSS may be associated with fewer sexual problems in the other sexual problem areas (Desire, Lubrication, Pain, Satisfaction).

As shown in Table 6, race and the race x SSS interaction variables were not significantly associated with any sexual problems using hierarchical linear regression.

Hypotheses 2b & 2c: MANCOVA. To reduce Type I error and because the FSFI subscales were significantly correlated, a MANCOVA was performed to examine the effects of the independent variables (current health, age, income, education, marital status depressive & anxiety symptoms, SSS, race, race x SSS) on the dependent variables (all the FSFI scales). The univariate results of this MANCOVA are presented in Table 7.

Age, current health, income, education, marital status, and anxiety symptoms were not significantly related to sexual problems. As expected, depressive symptoms ($\lambda(6,146) = 3.903$, $p = 0.001$), SSS ($\lambda(6,146) = 2.201$, $p = 0.046$), and Race ($\lambda(6,146) = 2.215$, $p = 0.045$) were significantly related to sexual problems. There was a trend for the Race x SSS interaction ($\lambda(6,146) = 146$, $p = 0.054$) to be related to sexual problems, suggesting there were racial differences in the association between SSS and sexual problems.

Univariate analyses on these four significant results are presented in Table 7. Specifically, depressive symptoms were positively associated with all sexual problems. SSS were positively associated with sexual problems in Arousal, Orgasm, and Total sexual problems. There also were trends for SSS to

be related to Desire and Lubrication problems. The race and race X SSS variables were involved with Lubrication sexual problems suggesting racial differences among this sexual problem. This result was similar to the hierarchical linear regression analyses.

In order to understand the racial differences, SSS were dichotomized positive and negative schemas using the same median split as mentioned earlier. The MANCOVA was repeated with a specific focus on Lubrication. Figure 7 (Lubrication) depicts how SSS was differentially associated with the Lubrication problems of AA and CA women. It appears as though SSS had a larger influence on CA levels Lubrication (Figure 7) as compared to AA women. CA women with positive SSS reported significantly fewer sexual Lubrication problems compared to their negative SSS counterparts; however, schema status appeared to minimally affect the sexual Lubrication of AA women.

Although there were no significant differences between racial groups on other sexual problems, a review of the other sexual problems demonstrated that the schema status of CA women appeared to affect their sexual functioning such that CA women with negative SSS seemingly reported more sexual problems in various areas as compared to CA women with positive SSS. Conversely, AA women's sexual problems appeared minimally affected by SSS status. However, the results from this study do not fully support this racial difference and further research is needed in this area.

Study Aim 3: Hormones & Reported Sexual Problems

Hypothesis 3 stated that the sex hormones estradiol and testosterone would be negatively associated with reported sexual problems. As to be expected, age was significantly negatively correlated with estradiol ($r(60) = -0.39$, $p = 0.002$) and testosterone ($r(60) = -0.31$, $p = 0.018$) suggesting a decrease in these hormones during aging.

Table 8 shows the hierarchical linear regressions that examined whether estradiol and testosterone were associated with sexual problems. Of note, the sample sizes in Table 8 are smaller than the sample sizes in Table 6, which changes the associations between Step 1 (age, health status, income, education), Step 2 (marital status), and Step 3 (depressive and anxiety symptoms) on the dependent variables (FSFI).

There were trends for Step 1 (age, income, education) to be related to sexual Desire and Pain (Table 8). After accounting for demographic variables, marital status (Step 2) was not associated with any sexual problems using hierarchical linear regression. Accounting for the variance in Steps 1 and 2, there were trends for depressive and anxiety symptoms to be associated with Desire and Arousal, and depressive/anxiety symptoms also were significantly related to Orgasm, Pain, and Total sexual problems. These results were predominantly from the significant positive associations between depressive symptoms and sexual problems.

As shown in Table 8, and contrary to prediction, sex hormones were not related to sexual functioning after accounting for demographics (Step 1), marital status (Step 2), and depressive/anxiety symptoms (Step 3) using hierarchical

linear regressions. Additionally, although current health was associated with sexual functioning ($\lambda(6,30) = 3.083$, $p = 0.018$, $\eta^2 = 0.845$) using MANCOVA, sex hormones were not associated with sexual functioning (estradiol $\lambda(6,30) = 2.068$, $p = 0.087$, $\eta^2 = 0.651$; testosterone $\lambda(6,30) = 1.177$, $p = 0.345$, $\eta^2 = 0.389$) in this analysis. In addition, hormone levels were not correlated with any specific sexual problem or total sexual problems (r range: -0.14 (lubrication) to 0.18 (orgasm); p range: 0.21 (orgasm) to 0.96 (desire)).

Study Aim 4: SSS, ATM, & DSB

The relationships between SSS, ATM, DSB, depressive symptoms, and anxiety symptoms are depicted in Table 9. In agreement with hypotheses, ATM (as measured by the MAS) was significantly positively correlated with SSS (as measured by the SSSS). Additionally, SSS were significantly negatively correlated with DSB (as measured by the SDBQ). As expected, depressive and anxiety symptoms were negatively correlated with ATM and SSS, and were significantly positively related to DSB.

Table 9 also depicts the correlations between ATM, SSS, DSB, depressive symptoms, and anxiety symptoms for CA and AA women separately. For CA women, there was a trend for SSS and ATM approached being positively related. ATM and DSB were significantly negatively related for CA women. AA women demonstrated a significant positive correlation between ATM and SSS, but no significant relationship between ATM and DSB. As expected, depressive and anxiety symptoms were significantly negatively correlated with ATM and SSS, and were significantly positively correlated with DSB for both groups. The

relationship between ATM and SSS (z = 1.543, p = 0.061) appeared stronger in AA women. The negative relationships between ATM and depressive (z = 1.546, p = 0.061) and anxiety (z = 1.581, p = 0.057) symptoms also seemed stronger in AA women as compared to CA women.

DISCUSSION

This study was based on the supposition that sexual self-schemas (SSS) are associated with sexual functioning, such that negative schemas are positively related with sexual problems. These negative schemas might become exacerbated during menopause, a major life transition that may be detrimental to female sexual functioning in some women. SSS develop in a sociocultural backdrop where the rules for appropriate sexual behavior are culturally sanctioned; however, little is known about whether these sociocultural differences impact the sexual functioning of various racial groups. Therefore, this study examined whether African American (AA) and Caucasian (CA) women's beliefs and attitudes about sexuality and menopause may differentially affect their sexual functioning. Most work to date on sexuality based cognitive structures has had limited focus on the variety of sexuality related beliefs or has had racially homogenous samples (Andersen, et al., 1997; Andersen, et al., 1994; Lewis, 2004; Nobre & Pinto-Gouveia, 2006, 2008a, 2008b, 2009).

Sexual self-schemas help assimilate and accommodate new information based on sexual experiences and life changes and, therefore, develop and change over the course of a woman's lifetime. For some women, the physiological and psychosocial changes associated with menopause may require redefinition of these cognitive processes, as depicted in Figure 4. As shown in Figure 3, positive sexual self-schemas may help women attribute positive sexual meaning to sexual stimuli, resulting in positive sexual experiences. Conversely, negative sexual self-schemas may discourage attribution of positive sexual

meaning to sexual stimuli, resulting in negative sexual experiences (Figure 3). These experiences then feed back into the original schema, changing it for use with future sexual events. Negative attitudes towards menopause, particularly as they relate to sexuality, also may be activated during the menopause transition, further exacerbating negative sexual self-schemas and sexual functioning. Overall, women with negative sexual self-schemas and negative attitudes towards menopause may be at even greater risk of experiencing sexual problems in middle and late adulthood.

The overarching objective of this project was to examine whether SSS of AA and CA women were associated with the sexual functioning of women transitioning through menopause and whether such associations differed by racial group. Figure and Table 11 depict summaries of the results of this study. Figure 8 shows that SSS were associated with overall sexual problems as well as specific sexual problems including arousal and orgasm (denoted by the thin black arrow; Aim 2). Additionally, sex hormones were not related to sexual functioning (as denoted by the broken arrow; Aim 3). Finally, and as expected sexual self-schemas, menopause attitudes, dysfunctional sexual beliefs, and psychological distress (depressive and anxious symptoms) would associated with each other in the expected directions (denoted by the circle; Aim 4). Although not a study aim, depressive symptoms were highly associated with all sexual problems (denoted by the thick black arrow).

Aim1: Validity of the Sexual Self-Schema Scale (SSSS).

The Sexual Self-Schema Scale (SSS) has been used and validated with predominately Caucasian, premenopausal women (Andersen & Cyranowski, 1994). This scale was used with menopausal women, but these women also had a history of gynecological cancer (Andersen, et al., 1997; Andersen, et al., 1994). Therefore, it was first important to examine the validity and utility of this scale amongst the groups of women in the present study, AA and CA women transitioning through menopause. The validity of this scale was essential in interpreting results regarding the proposed associations between SSS and sexual functioning, the primary aim of this project.

The internal consistency (i.e., Cronbach's alphas), intercorrelations, and convergent validity of the SSSS suggest that it is a valid measure that can be used with menopausal women as well as AA menopausal women. The Cronbach's alphas for the SSSS and its subscales ranged from an acceptable 0.62 (Factor 3 [Cons] SSS) to a good 0.84 (Factor 1 [P-R] SSS) (Table 4) and are similar to the statistics computed in the original study (Andersen & Cyranowski, 1994). The correlations between the SSSS subscales and the total SSSS score were good and similar to the original validation study (Andersen & Cyranowski, 1994). The majority of correlations between the SSSS and the Sexual Opinion Survey (SOS) were significant, suggesting that the SSSS is measuring a similar construct as the SOS and replicating Anderson and Cyranowski's results (1994).

The validity statistics of the project provide evidence that this scale most likely measures the concept of SSS in AA and CA menopausal women as

originally formulated by Andersen & Cyranowski (1994). However, despite these good validity statistics, subsequent analyses demonstrated some racial differences that might suggest that the concept of SSS, as originally devised, might need further study and potentially be reformulated before being used with AA women.

Aim2: Sexual Self-Schemas, Reported Sexual Problems, & Race

The primary objective of this study was to examine the relationship between SSS and sexual problems among AA and CA menopausal women, when accounting for other important variables (i.e., age, depressive and anxiety symptoms, self-reported health status, income, education, marital status). Women with negative SSS reported more sexual problems than women with positive SSS. Additionally, SSS were significantly positively associated with overall sexual problems as well as specific sexual problems in arousal, orgasm, and total sexual problems in AA and CA menopausal women. Although not significant, there were trends for SSS to be associated with sexual desire and lubrication problems. As such, schemas appear to be independent factors impacting the sexual functioning of women going through menopause after accounting for factors that often are highly related to sexual functioning (i.e., income, education, age, health status, marital status) (Figure 8). Women with positive SSS may respond more flexibly to menopause related changes in sexual functioning as compared to women with negative SSS (Andersen & Cyranowski, 1994) and subsequently develop and/or maintain fewer sexual problems.

Specific Sexual Problems. Schemas were positively related to earlier (i.e., arousal) and later (i.e., orgasm) parts of the response cycle (Masters & Johnson, 1968). It may be that the statistically significant positive relationships between schemas and orgasm problems would appear given that schemas were highly positively related to arousal, and, to a lesser extent, desire. As demonstrated in Figure 3, SSS may be more associated with the earlier stages of the sexual response cycle (i.e., arousal). As a consequence of these relationships, the later stages (i.e., orgasm) become impaired. In this circumstance, a woman with negative SSS may have attenuated sexual arousal while engaging in sexual activity. This attenuated sexual arousal would limit orgasm, producing a negative sexual experience, and further reinforcing the negative schema (Figures 3 & 4). Moreover, this negative sexual experience could decrease relationship and sexual satisfaction, which is reflected in the significant relationship between schemas and sexual satisfaction.

It also could be possible that schemas have an independent function in the various sexual domains (i.e., arousal, orgasm). For example, a woman with negative SSS may be able to achieve adequate arousal to initiate sexual activity. A specific negative SSS related to orgasm may become activated during sexual events, consequently impairing the ability to orgasm (Figures 3 & 4). For some women, the negative schema may be more associated with achieving orgasm rather than becoming adequately aroused. This interpretation allows for the possible of not only an overarching cognitive schema, but also specific cognitive

schemas related to certain parts of sexual functioning such as achieving orgasm or having a satisfied sexual relationship.

There were inconclusive results with respect to the associations between schemas and sexual desire and lubrication problems. There were non-significant trends in both the hierarchical linear regressions and the MANCOVA analyses for the association between SSS and sexual desire. Additionally, there was a trend for the relationship between SSS and sexual lubrication in the hierarchical linear regression analysis, but a significant relationship or trend between these variables in the MANCOVA analysis. Given that there may be some relationship between schemas and sexual desire and lubrication, it may be that women with negative SSS prepare for the worst in sexual activities and emotional/sexual intimacy, creating a self-fulfilling prophecy.

Figures 3 and 4 display that overall sexual desire might be labeled as poor when repeated negative sexual experiences occur and women do not 'desire' to engage in negative sexual experiences. This interpretation has been well accepted among men reporting sexual dysfunction (Sbrocco & Barlow, 1996). Women with positive SSS may approach sexual desire differently than their negative SSS counterparts. Because they may better adapt to changes in sexual functioning, they perceive their sexual functioning as "different" but not necessary label it as "bad." As a consequence, their desire remains good because they are adapting and having pleasurable sexual experiences.

Lubrication may become impaired as a consequence of the positive relationships found between schemas and the earlier stages of the sexual

response cycle (i.e., arousal). As shown in Figure 3, women with negative schemas who have difficulty with sexual arousal may be more apt to have lubrication problems because of attenuated physiological and subjective sexual arousal. Overall, this study provides evidence that there may be relationships between SSS and sexual satisfaction and lubrication, but further exploration into their relationships may be necessary.

Sexual pain was not related to schemas, but was related to depressive/anxiety symptoms, as were all of the other sexual problems (see depressive symptoms section below). The association between depressive/anxiety symptoms and sexual pain is a common occurrence among all age groups of women (Landry & Bergeron, 2010; Poleshuck et al., 2009; ter Kuile, Weijenborg, & Spinhoven, 2010; Yangin, Sozer, Sengun, & Kukulu, 2008). Sexual pain often causes individuals to withdraw from sexual situations, which decreases relationship quality and may increase depressive symptoms. Conversely, depressive symptoms and major depressive disorder often are associated with difficulties in emotional attachment as well as sexual desire and arousal. As discussed earlier, depressive symptoms may attenuate sexual arousal, which can subsequently decrease sexual lubrication. Lubrication difficulties can influence the development of sexual pain. Should a woman develop sexual pain, anxiety can develop as she begins to expect sexual pain, creating a vicious cycle of anxiety and sexual pain (Landry & Bergeron, 2010; ter Kuile, et al., 2010).

Aim 2: Racial Differences in SSS and Reported Sexual Problems. It was predicted that AA women would be socialized to have more positive schemas given the assumption that their sociocultural views of sexuality often are more positive than CA women. There were trends for AA women to have higher SSS scores on the overall SSS as well as the two positive SSSS subscales, Passionate-Romantic [P-R] and Open-Direct [O-D], as compared to CA women. Additionally, there was a significant racial difference in the associations between SSS and sexual lubrication.

As shown in Figure 7, CA women with a negative SSS reported more decrements in sexual lubrication as compared to positive CA counterparts. Therefore, schema status seems to have had a large effect on the lubrication of CA women, whereas the sexual lubrication of AA women may only be less related to schema status (positive vs. negative). Figure 7 highlights that CA women with negative sexual schemas reported more lubrication problems than CA women with positive sexual schemas. No significant differences appeared between AA and CA women on other sexual problems; however, a review of the other sexual problems revealed a pattern, although non-significantly, that was similar to what was found with lubrication. Therefore, further exploration should examine whether this result is a true difference in the relationship between SSS and lubrication, or whether the construct of SSS might need to be slightly reconceptualized in AA women.

To help account for these racial differences, an examination of the individual items of the Sexual Self-Schema Scale (SSSS) was performed. AA

women had greater scores on items such as experienced, direct, straightforward, outspoken, and passionate. They also had greater scores on items such as cautious and conservative. AA women also reported more DSB, particularly in the area of conservative beliefs. Additionally, they endorsed engaging in sexual behaviors such as masturbation, unusual sex practices, using erotica, and multiple long term sexual partners less frequently than CA women. These differing cognitive structures may partially be accounted for by differences in socialization to acceptable sexual attitudes and behaviors within these racial groups.

These results support the idea that although AA women may be more cautious and conservative with their sexual attitudes, they may take a more positive approach to sexuality when sexual situations are deemed appropriate by their culture (e.g., within marriage or long term relationships, specific sexual behaviors). Given these racial differences, the concept of SSS as originally formulated by Andersen & Cyranowski (1994) may need to be defined differently for certain cultural and racial groups (see Future Directions section). It is possible that SSS may not be fully applicable to AA women in its current form.

Overall, schema status appears to have a greater relationship to sexual functioning among CA women. It may be that AA women hold conservative sexual beliefs that are independent of how they view their own sexuality. Both positive schemas (i.e., [P-R] and [O-D]) were associated with a larger repertoire of sexual behaviors in the original validation study (Andersen & Cyranowski, 1994). However, compared to CA women, AA women reported more positive

schemas and smaller repertoire of sexual behaviors, which coincides with their conservative sexual beliefs. Therefore, the sexual functioning of AA menopausal women may be more context dependant than their CA counterparts. For instance, they may approach their sexuality in a more positive way within a specific context (e.g., marriage, long-term relationship, specific sexual activities) and apply sexual self-schemas less broadly to the sexual activities within that context. Therefore, schema status (positive vs. negative) may exert a larger influence a limited affect on the sexual functioning of CA women as compared to AA women, suggesting the concept of SSS might be defined differently in AA women.

Another consideration is that CA women were more likely to be married as compared to AA women. Although SSS were negatively associated with sexual problems above other important factors, it could be that differences in demographics (i.e., age, marital status, income, education) impacted results. For instance, being single or not in a relationship was associated with fewer sexual problems. Additionally, AA reported being single more frequently than CA women. Not being in a relationship may increase the novelty of sexual behaviors and, therefore, decrease the probably of developing sexual problems. Conversely, married women may be more likely to report and notice sexual problems because of the readily available access to a partner. Therefore, CA in this study may have been more likely to notice sexual problems as they occurred in the context of their marriages.

Despite this possibility, SSS was significantly negatively related to certain sexual problems above demographic variables, providing evidence of its potential independent association with sexual problems; however, interpretations of the racial differences must be made with caution.

Aim 3: Hormones & Sexual Problems

Given that menopause is characterized by changes in sex hormones that may affect sexual functioning, it would seem that the relationship between sexual functioning and sex hormones would be important to understanding the sexual functioning of menopausal women. Therefore, another objective of this study was to examine the potential association between sexual functioning and sex hormones, specifically estradiol and testosterone. The hormonal changes (e.g., decreases in estrogen and testosterone) during menopause may directly and indirectly affect the sexual functioning of menopausal women. Contrary to predictions, estradiol and testosterone were not related to sexual functioning in this sample; however, the relationship between estradiol and sexual problems was close to significant (p = 0.081).

The evidence-base regarding the association between sex hormones and sexual functioning is conflicting. Some researchers have found that these hormones may not be associated with sexual functioning among premenopausal women (Exton, et al., 1999), but this relationship may also hold for menopausal women (Dennerstein, et al., 2005). However, other researchers have found that declining estradiol levels play a significantly larger role in the sexual functioning

of menopausal women as compared to declining testosterone levels (Dennerstein, Randolph, et al., 2002).

Contrary to the previously mentioned study (Dennerstein, Randolph, et al., 2002), more recent research using radioimmunological assays (RIA) provided evidence that free testosterone is positively associated with sexual functioning during menopause, but only during the earlier part of the menopause transition (Nappi et al., 2010). Furthermore, Nappi et al (2010) did not find any association between estradiol or dehydroepiandrosterone (DHEA), a hormonal precursor to testosterone and estradiol. Additionally, transdermal hormone replacement therapy using testosterone only for low sexual desire seems to be effective at improving sexual functioning of naturally menopausal women (Panay et al.). Given that the current study recruited women throughout the menopause transition, the design of the study may have made it difficult to actually find an association between sex hormones and sexual functioning if one exists (see limitations section below).

In summary, the results of this study, as well as evidence from other studies, demonstrate the complex nature of sexual functioning. Sex hormones have some role in regulating sexual desire, arousal, lubrication, orgasm, and satisfaction (Heiman, et al., 1991). However, researchers are unable to fully understand hormonal impact on sexual functioning, particularly among menopausal women. There probably are individual differences in the impact of sex hormones on sexual thoughts, emotions, and behaviors. Because of the hormonal changes during menopause, many of which can be rapid, the impact of

sex hormones on the sexual functioning of women transitioning through menopause can be highly variable. This variability may not have been adequately examined with the current study design.

Aim 4: Relationships between sexual schema, menopause attitudes, sexual beliefs, and psychological distress

The goal of examining these cognitive constructs together was to understand whether there was an overarching cognitive structure that might impact the sexual functioning of menopausal women. Figure 8 shows the overlap between ATM, SSS, DSB, and anxiety and depression symptoms. In line with predictions, ATM was negatively related to DSB and positively related to SSS. This result held for both racial groups with one exception; ATM and DSB were not related in AA women. This racial difference may be a by-product of AA women having significantly more positive ATM and more negative DSB (particularly conservative DSB) as compared to CA women. Another possibility is that AA women's view of menopause may not be associated with beliefs about sexuality, an interpretation that is supported the racial differences found in the relationships between SSS and sexual functioning. For instance, it may be that CA women are socialized to associate menopause with decreasing sexual functioning. However, AA may not hold this belief and view menopause as a natural period of life that is separate from their sexual lives. Additionally, menopause and postmenopause might be a time when women, especially AA women, are free to enjoy sexuality without the possibility of pregnancy

This study also highlights the positive association between sexual problems and depressive/anxiety symptoms. In this study, as depicted in Figure 8, depressive symptoms were associated with impaired sexual functioning across all sexual domains, a finding that is supported by numerous studies (Freeman, et al., 2007; R. D. Hayes, et al., 2008; Laurent & Simons, 2009; Nappi, et al., 2010). Additionally, anxiety might be associated with some sexual problems, specifically in the areas of desire and arousal, which also has been supported by research (Barlow, 1986; Beaber & Werner, 2009; Laurent & Simons, 2009) (Figure 8).

The associations found in Aim 4 may be bidirectional. For instance, depressive thinking can have a negative effect on sexual arousal. Depressive and anxiety related cognitions can decrease attention to sexual stimuli, which, as depicted in Figure 3, can decrease subjective and physiological sexual arousal and increase the possibility of developing a sexual problem (Barlow, 1986). A negative sexual event (i.e., lack of an orgasm, pain) could feed back into the negative depressive/anxious thinking, consequently creating a negative cycle of depressive/anxiety symptoms and poor sexual functioning. The immediate effects of depressive thinking on sexual functioning were clearly evident in Kuffel and Heiman (2006). Women in this study who were asked to adopt a depressive schema demonstrated lower subjective and physiological sexual responses as compared to women who did not adopt such a schema.

In general, this study provides evidence that cognitive structures of similar valence (positive vs. negative) may group together: depressive and anxiety

symptoms were significantly negatively related to both ATM and SSS, and significantly positively related to DSB. Should grouping of negative cognitive structures occur, they may exacerbate negative sexual events into long-standing sexual problems. Once developed, sexual problems reinforce the negative cognitive structures, consequently maintaining the sexual problems.

IX. Study Strengths

This study adds not only to the literature on female sexual functioning, but also adds the literature on African American sexuality. Research on both female sexuality and the sexuality of racial/cultural minorities is limited. As such, this study helps to help define and raise new questions about gendered, generational, racial/cultural sexual beliefs, expressions, and health.

In order to assist with preventing and treating menopausal sexual problems, we must first understand the psychosocial milieu for which they occur. Part of this study was designed to examine how beliefs about sexuality are associated with sexual functioning during a life transition (i.e., menopause) that is known to negatively affect sexual functioning. Given that this study used menopausal women as compared to the college students used in the original study, we can formulate questions about how SSS may change over time and after specific life events. This study helped to formulate questions about how generational attitudes might affect female sexual functioning, but also whether attitudes might change over time to differentially affect sexual functioning.

This study is one of the first to attempt to examine racial variability of sexual self-schemas and whether such schemas might be associated with sexual

functioning among racial groups. Lewis (2004) noted that the research on African American sexuality should focus on sexual pleasure as well as racial and cultural aspects of sexuality, rather than simply on sexually transmitted infection prevention/treatment. This study furthers the idea that cross cultural beliefs and attitudes sexuality may be associated with sexual functioning.

Additionally, although the age and health ranges of the study population were small, this study used ecologically broad sample of AA and CA menopausal women by including women throughout the country as well as women from varied backgrounds with respect to illness, negative life experiences, and socioeconomic status.

X. Limitations & Future Directions

Overall limitations. The findings of the present study should be taken in the context of limitations including, but not limited to: a) the numerous factors associated with sexual functioning, b) the cross-sectional, correlation design, c) the self-reported nature menopause transition, d) definition of racial group, and e) Type I error from multiple comparisons.

Other Factors Associated with Sexual Functioning & Menopause

As shown in Figures 1 and 2, sexual functioning is multi-determined by past, present, and future biological, psychological, and social factors. Therefore, SSS are not the only factors that are associated with sexual functioning. Current relationship factors, medical concerns, and other social and psychological factors also have roles in the development and maintenance of sexual problems, especially in women (Basson, 2004). However, there is evidence that sexual self-

schemas and other sexual beliefs may have a direct relationship with sexual functioning (Andersen & Cyranowski, 1994; Andersen, et al., 1997; Andersen, et al., 1994; Kuffel & Heiman, 2006; Nobre & Pinto-Gouveia, 2006, 2008a, 2008b, 2009). Like sexual functioning, menopause is an individual *process* that also is affected by many factors such as pregnancies, smoking, diet, genetics, and beliefs about menopause (as reviewed earlier in the Background). Some of the variables (e.g., age, health status, income, marital status, education and depressive/anxiety symptoms) potentially associated with SSS, sexual functioning, and/or menopause were accounted for in this project; however, there are more variables that bidirectionally interact in a complex manner to affect the sexual functioning of the individual.

We attempted to statistically control for some of the many variables that may impact sexual functioning. For instance, age and health status were entered into analyses; however, these variables had such a small range that any effect on sexual functioning may not have been significant in this study. Although other variables (income, marital status, education) were statistically accounted for, they were significantly different between AA and CA women and could have indirectly influenced results.

Study Design

First, this project implemented a correlational, cross-sectional design, which limits conclusions about causation. There probably are bidirectional relationships between schemas, menopause attitudes, and sexual functioning. Kuffel and Heiman's (2006) experiment demonstrated that altering sexuality

related beliefs in women with no sexual problems does impact immediate sexual arousal, providing evidence that sexual beliefs directly impact sexual functioning. However, the converse has not been tested such that negative sexual events worsen sexual schemas as depicted in Figures 3 & 4.

Second, the small sample size and timing of participant blood draws may have limited the findings for the relationship between sex hormones and sexual problems found in this study. The sample size for the blood draw portion was 60 participants, which decreased to 50 participants after entering all covariates and independent variables. This small sample size limited the chances of finding significant results as well as statistical power.

Blood draws were performed between the hours of 7am-5pm; therefore, the time at which blood draws were completed varied and may have influenced results. There is inconclusive data on the diurnal fluctuations of testosterone and estradiol, especially in menopausal women (Davison & Bell, 2006). Therefore, it was assumed that blood sampling could occur at any time throughout the day. The single blood draw used in this study may not be representative of the hormonal changes in menopausal women. Hormone levels can change more rapidly among menopausal women and it is unclear whether there is an overall pattern of hormone changes among women. Taking multiple blood samples over time would provide information about how changes in hormones change over time and how such changes might affect sexual functioning; however, multiple blood samples is not only expensive but also can be a burden on participants. In addition, individual differences in hormone profiles may have impacted results.

Type I Error

This study employed statistical techniques that necessitated the use of multiple independent variables and multiple comparisons. As such, it is likely that some of the significant effects could have occurred by chance. Although statistically controlling for Type I error can decrease the possibility of misinterpreting statistical results, it also decreases power and increases Type II error. The limited power found even in some significant relationships demonstrates the need for an increased sample size. The high number of variables entered in analyses decreases power, which can be rectified by either increasing sample size or having a true strong relationship between the variables.

Because this study was exploratory, Type I error was not statistically controlled for, providing associations that may warrant further study. For instance, the patterns of results suggest that SSS may be associated with specific sexual problems; however, further study may elaborate whether these associations continue to hold or whether SSS can be applied to all types of sexual problems. Additionally, there were some racial differences in the associations between sexual problems, providing some evidence that SSS either may vary between racial groups or impact the sexual functioning of racial groups differently.

Definition of Menopause

Participants were asked to self-define themselves as being in the menopause transition. The STRAW staging system, based on whether they had

a menstrual cycle in the past year, was used to classify them. (Soules, et al., 2001); However, this question may inadvertently allow participants into the study who just had their FMP but were unaware of that it was their last menstrual period. Some authors (Johnston et al., 2006), including the STRAW authors (Soules, et al., 2001), argue that menopause status should be based on self-reported current bleeding patterns, history of bleeding patterns, and hormones. Unfortunately, the majority these variables were not accounted in this study. Accounting for these variables as well multiple hormone levels including estradiol, testosterone, leutinizing hormone, and FSH may provide researchers a better understanding of where women are in the menopause transition

Definition of Race

Although race often is self-defined, the cultural background of a specific racial group can only be assumed. We attempted to address this issue by using a measure of racial identity. CA women in this study reported significantly greater racial identity (M = 14.40, SD = 3.66 vs. M = 11.18, SD = 3.45, $t(185) = 5.938$, $p < 0.001$) as well as a commitment (M = 6.63, SD = 1.99 vs. M = 5.17, SD = 1.71, $t(181) = 5.145$, $p < 0.001$) to explore (M = 7.75, SD = 2.21 vs. M = 5.96, *SD* = 2.17, $t(185) = 5.476$, $p < 0.001$) their racial identity. Previous researchers found AA report greater racial identity as compared to other racial groups in adolescents (Utsey, Chae, Brown, & Kelly, 2002). The result in the current study may indicate that AA women in this study may have been acculturated to US culture, which most likely would have been mainstream CA US culture in their generation. Unfortunately, a measure of culture or acculturation was not

included; however, it is acknowledged that acculturation and cultural variation in peer influence may change the development of SSS. Although there are individual differences, generalizations about how racial culture across an racial group often can be made (Brislin, 2000). The purpose of this study was not to examine what racial differences or similarities influence SSS, but whether such factors are related to the relationship between SSS and sexual problems in various cultural and/or racial groups.

Future Directions

The results of this study provide guidance for future directions for research examining human sexuality, and more specifically female sexuality during menopause and from a cultural standpoint.

First, expanding the concept of sexual self-schemas (SSS) for use with other groups of women should be highly considered. There is a paucity of data concerning the sexual attitudes of racial minorities in the US; therefore, a large-scale, multi-racial examination of SSS and ATM would be helpful in understanding various sexual attitudes of women, especially as how it relates to menopause or any other change in life that might affect sexual functioning. Exploratory (EFT) and/or full factor analyses on the Sexual Self-Schema Scale using racial/culturally diverse women would provide evidence about what populations the construct of sexual self-schemas can be applied. It may be that SSS must be redefined or reconceptualized in various populations, yet only future research can help inform us of this type of information. Additionally, adjectives may be deleted or added to the scale to make it more culturally

appropriate. Once there is a better understanding of the variety of schemas among women, a further examination of how such attitudes may be differentially related to sexual functioning also should be performed. These data would help to create culturally competent prevention and treatment programs.

Second, an examination of how sexuality and menopause based cognitive structures change over time would provide valuable information to the area of female sexuality and assist health providers in tailoring interventions. Categorizing women into cohorts based on menopause status (i.e., peri-menopause, menopause, postmenopause) to demonstrate how SSS and ATM may change over time would be important for targeting such cognitions in treatment for women in different stages of life. A disadvantage of using age cohort research would be that it will not provide evidence on how women from a certain generation change over time. Although it would be difficult, a longitudinal study should be performed to determine how these cognitive structures change over time as well as what factors are associated with changes. Adding generational information about sexual self-schemas to the racial information as outlined above would provide a clearer understanding of how these factors may interact to influence the sexual functioning of women over time.

Third, manipulation of SSS and ATM in a laboratory setting, such as what was performed by Kuffel and Heiman (2006), would be another important direction for this area of research. As shown in Figure 3, the proposed mediators between schemas and sexual functioning are subjective and physiological sexual responses, neither of which was measured in this study. The proposed

experiment would help to determine whether these cognitive structures affect immediate sexual desire, arousal, and lubrication of menopausal women. For example, groups of premenopausal, menopausal, and postmenopausal women could be assigned to adopt a positive or negative SSS while watching an erotic film. Alternatively, women with pre-existing negative and positive schemas could be monitored during and after watching an erotic film. Measurements could include subjective sexual arousal, physiological arousal (e.g., vaginal plethysmography or labial temperature, blood pressure, heart rate), and blood or salivary hormones. These data would add the mediation link between schemas and sexual functioning as outlined in Figures 3 and 4. Additionally, other groups of women could be asked to adopt a positive vs. negative ATM to examine its potential affect on sexual arousal. This experiment could be repeated with various racial/cultural groups using a variety of SSS and ATM scripts adapted to generalized racial/cultural schemas and attitudes towards menopause. Allowing women participating in this experiment to systematically choose the SSS/ATM representing positive and negative SSS/ATM would provide further external validity to the experiment.

Fourth, randomized controlled trials focused on treating menopausal sexual problems could target depression, anxiety, schemas, and attitudes about menopause and sexuality. Such clinical trials could provide group sessions for individuals or couples on ways to combat negative cognitive structures and/or behavioral strategies to adapt to the changes in sexual functioning during menopause. This research should include a wait-list control for comparison.

Measurements about how cognitive structures and sexual behavior change over time because of the intervention should be taken at various time points. This type of research could elucidate whether intervening at the cognitive and/or behavioral level impacts sexuality and menopause related cognitive structures, as well as improve the treatment options for menopausal women. For instance, Adler et al (2006) found that a cognitive behavioral intervention which provided psychoeducation, skills training, and group discussion improved the sexual problems of women going through menopause (Alder et al., 2006).

XI. Clinical Implications

This study provides evidence that negative sexual self-schemas and other negative cognitive structures (i.e., depressive and anxiety symptoms, attitudes towards menopause, and dysfunctional sexual beliefs) are associated with sexual problems. It seems plausible that these structures contribute to the development and maintenance of sexual problems in Caucasian and, potentially to a lesser extent, African American menopausal women. As displayed in Figures 3 and 4, cognitions and behaviors that maintain the negative sexual self-schema feedback loop could be assessed and targeted in clinical interventions.

Assessing factors such as SSS, ATM, and depressive/anxiety symptoms of menopausal women by health professionals may add to the clinical picture when treating menopausal sexual problems. Specifically, using the Sexual Self-Schema Scale, particularly with CA women, would allow health professionals to assess negative schema that might influence their sexual functioning. The SSSS also could be modified and used to improve assessment of sexual schemas

among racial minorities (see Future Directions). In addition, all women approaching menopause should be screened for depressive and, to a lesser extent, anxiety symptomatology as they were highly related to sexual problems.

Understanding the cognitive structures that may impact sexual problems provides an avenue for prevention and treatment (see Future Directions section). The significant positive correlations between depressive and anxiety symptoms, ATM, SSS, and sexual problems suggest that improving negative cognitions through cognitive behavioral treatment, for example, may improve sexual problems. Cognitive techniques such as Socratic questioning and cognitive restructuring could be used to target and potential change negative sexuality related cognitions as well as anxiety and depressive related cognitions. Given that schemas are changed through life experiences (Figures 3 & 4), health professionals could focus on behavioral techniques such as increasing pleasurable and satisfying sexual activities to assist women in adapting to changes in sexual functioning during menopause. For instance, women and/or couples could allow extra time for sexual arousal and lubrication (i.e., engaging in foreplay longer) as a way to avoid sexual irritation or pain.

Given some of the racial differences in sexual schemas, employing cognitive or behavioral techniques targeting menopausal symptoms may be more helpful in CA women. However, finding ways to improve depressive symptoms (e.g., cognitive behavioral therapy, medication) and negative sexual events should be beneficial across racial groups. These techniques can be employed by a variety of health professionals (e.g., gynecologists, psychologists) to target

negative cognitive and behavioral patterns to improve sexual problems that develop during and after the menopause transition. Overall, these results suggest that more research is needed to understand the cognitions and behaviors that maintain the negative sexual self-schemas and that cultural competence of health providers is necessary to provide adequate care for women transitioning through menopause.

CONCLUSIONS

Sexual self-schemas, or one's view of one's own sexuality, were associated with certain parts of the sexual functioning of menopausal AA and CA women, especially in arousal, orgasm, and total sexual problems. This result held even when accounting for other variables that are associated with sexual functioning (i.e., age, current health, depressive/anxiety symptoms, income, education, marital status). Racial differences emerged for some sexual problems, specifically lubrication. Therefore, although the Sexual Self-Schema Scale (SSSS) was found to be a valid measure of sexual schemas in CA and AA menopausal women, further exploration into the construct equivalence is needed. Schema status (positive vs. negative) appeared not to affect the sexual functioning of AA women as much as it affected the sexual functioning of CA in this specific sexual domain (Figure 7). Contrary to predictions, sex hormones were not associated with sexual functioning in this study (Figure 8), which may be a byproduct of the research design. There is evidence that hormones such as estradiol and testosterone are involved with sexual functioning changes in menopause, but how they are involved is an area of ongoing research. Finally, ATM, SSS, DSB, and depressive and anxiety symptoms were related, which provides some evidence of an overarching cognitive structure that combines together based on valence (i.e., positive vs. negative).

This study highlights the relationships between cognitive structures such as attitudes towards menopause, sexual self-schemas, dysfunctional sexual beliefs, depressive and anxiety symptoms with sexual functioning. Cognitive

structures such as SSS and depression can impact how individuals view the world and sexual stimuli. Negative cognitive structures associated with sexual functioning may negatively impact how menopausal women, especially CA women, approach sexual situations, consequently leaving them vulnerable to developing sexual problems. Because of the bidirectional nature of behaviors and cognitions, negative sexual outcomes often reinforce the negative cognitive structures in a feedback loop (Figures 3 & 4), consequently maintaining sexual problems.

Preparing women with the necessary tools to cognitively, emotionally, and behaviorally adapt their sexuality throughout and after the menopause transition may help prevent the development or reduce the severity of sexual problems during menopause. Additionally, culturally appropriate care must be used as women from various racial/cultural backgrounds may attribute different meanings to sexuality and menopause. Measuring and potentially targeting these cognitive structures for menopausal women during routine gynecological care or psychological treatment (i.e., couples or individual psychotherapy) may be helpful at improving sexual satisfaction and reducing sexual problems.

FIGURES AND TABLES

Table 1. Projected population of the United States: 2010 to 2050.

Population	2010	2020	2030	2040	2050
Total Population	310,233	341,387	373,504	405,655	439,010
Population > 45 years	127,039	145,892	165,341	187,734	206,679
By Race					
One Race					
White	246,630	266,275	286,109	305,247	324,800
Black	39,909	44,389	48,728	52,868	56,944
AIAN	3,188	3,759	4,313	4,875	5,462
Asian	14,415	18,756	23,586	28,836	34,399
NHPI	592	734	885	1,048	1,222
Two or More Races	5,499	7,474	9,883	12,781	16,183
By Ethnicity					
Non-Hispanic	260,507	275,022	287,573	297,432	306,218
Hispanic	49,726	66,365	85,931	108,223	132,792

Population represented in thousands.
AIAN: American Indian/Alaskan Native, NHPI: Native Hawaiian/Pacific Islander
Source: US Census Bureau, 2008, *US Projections by Age, Sex, Race, and Hispanic Origin: 2010 to 2050*.

Table 2. Demographic Characteristics.

Variable	CA (n = 113)	AA (n = 78)	Total (N = 191)	*t* or χ^2	*p*
Age (years) [M (SD)]	47.85 (4.15)	47.79 (4.34)	47.83 (4.22)	0.088	0.930
Marital Status (%)				24.684	0.001
Married	56.6	32.1	46.6		
Living together	17.7	24.4	20.4		
Separated/Divorced	14.2	23.1	17.5		
Widowed	0.9	0.0	0.5		
Widowed/Divorced Remarried	4.4	1.3	3.1		
Single, never married	6.2	19.2	11.5		
Education (%)				23.771	0.001
Less than HS degree	0.0	5.1	2.1		
HS degree	8.0	15.4	11.1		
Some college	23.2	42.3	31.1		
Associates/Bachelors degree	51.8	28.2	42.1		
Graduate/professional	17.0	9.0	13.7		
Income (%)				27.595	<0.001
Under 20k	3.6	23.4	11.7		
20-30k	5.4	11.7	8.0		
30-40k	8.1	15.6	11.2		
40-50k	9.9	7.8	9.0		
50-60k	9.0	6.5	8.0		
60-70k	13.5	7.8	11.2		
70k+	50.5	27.3	41.0		
Employment (%)				1.284	0.733
Full time	52.8	46.5	46.9		
Part time	22.2	29.6	23.4		
Retired	2.8	2.6	2.6		
Unemployed	22.2	21.1	20.3		
Child-bearing [M (SD)]					
Pregnancies	2.9 (2.4)	3.3 (2.4)	2.8 (2.4)	2.070	0.040
Births	1.7 (1.2)	2.1 (1.6)	1.9 (1.4)	1.661	0.098
Current Health (%)				2.365	0.500
Excellent	34.5	26.9	31.6		
Good	54.9	57.7	56.3		
Fair	9.7	14.3	11.6		
Bad	0.9	0.0	0.5		

Table 3. Self-Report Characteristics and Hormone Levels.

Self-Report Measure [M (SD)]	CA (n = 113)	AA (n = 78)	Total (N = 191)	*t* or *F*	*p*
Depressive symptoms (SDS)†	39.61 (9.57)	41.12 (8.94)	40.23 (9.32)	1.100	0.276
Anxiety symptoms (SAS)†	36.50 (8.75)	37.75 (9.25)	37.00 (8.95)	0.942	0.348
Sexual Self-Schema (SSSS)†	60.02 (16.95)	64.68 (18.15)	61.89 (17.55)	3.240	0.073
Factor 1 [P-R]	41.54 (9.37)	44.23 (10.04)	42.63 (9.72)	3.020	0.084
Factor 2 [O-D]	36.82 (8.03)	39.37 (9.18)	37.85 (8.59)	3.523	0.062
Factor 3 [Cons]	18.34 (6.63)	18.82 (7.21)	18.52 (6.85)	0.028	0.867
Sexual Functioning (FSFI)					
Desire†	3.89 (1.36)	3.54 (1.48)	3.75 (1.42)	3.948	0.049
Arousal	3.14 (1.45)	2.96 (1.29)	3.07 (1.39)	0.439	0.508
Lubrication	2.67 (1.43)	2.54 (1.36)	2.62 (1.40)	0.392	0.532
Pain	2.02 (1.19)	2.15 (1.34)	2.07 (1.25)	0.415	0.520
Satisfaction	3.15 (1.49)	3.06 (1.49)	3.11 (1.49)	0.097	0.756
Orgasm	2.76 (1.51)	2.84 (1.61)	2.79 (1.49)	0.153	0.696
Total	17.53 (6.61)	16.98 (6.68)	17.31 (6.62)	0.282	0.596
Dysfunctional Sexual Beliefs (SDBQ)†					
Conservative	13.95 (5.23)	17.78 (5.66)	15.51 (5.72)	23.153	<0.001
Age	9.34 (3.36)	9.38 (3.37)	9.54 (3.35)	0.005	0.943
Sin	7.80 (3.91)	8.65 (3.47)	8.15 (3.75)	2.402	0.123
Body	5.53 (2.40)	6.06 (2.62)	5.75 (2.50)	2.093	0.150
Affection	12.45 (2.20)	12.25 (2.84)	12.37 (2.48)	0.287	0.593
Total*	56.91 (15.96)	62.22 (15.77)	59.08 (16.06)	5.148	0.024
Sexual Opinion Survey (SOS)†	80.76 (21.19)	74.06 (20.83)	78.02 (21.25)	2.148	0.033
Attitudes Towards Menopause (MAS)†	76.58 (17.45)	84.22 (23.46)	79.67 (20.40)	2.437	0.016
Hormones†	(*n* = 20)	(*n* = 40)	(*N* = 60)		
Estradiol (pg/mL)	21.28 (14.35)	27.50 (20.88)	25.43 (19.06)	1.196	0.237
Testosterone (pg/mL)	221.08 (117.17)	227.29 (157.83)	225.22 (144.55)	0.155	0.877

† includes the 16 women who have not engaged in sexual activity in the past two weeks.

Table 4: Cronbach's Alphas for the Sexual Self-Schema Scale (SSSS).

	CA	AA	Total Sample
Total SSSS	0.74	0.79	0.77
Factor 1 [P-R]	0.85	0.83	0.84
Factor 2 [O-D]	0.79	0.82	0.80
Factor 3 [Cons]	0.68	0.62	0.64

Table 5. Comparison of Women with Positive and Negative SSS on Sexual Functioning (FSFI) and DSB.

Scale	SSS	n	M	SD	*F*	Sig.
Female Sexual Functioning Index (FSFI)						
Desire†	Negative	96	4.02	1.40	8.668	0.004
	Positive	94	3.44	1.37		
Arousal	Negative	88	3.39	1.44	10.867	0.001
	Positive	87	2.75	1.27		
Orgasm	Negative	88	3.15	1.68	9.965	0.002
	Positive	87	2.44	1.32		
Lubrication	Negative	87	2.80	1.44	2.750	0.099
	Positive	87	2.45	1.33		
Pain	Negative	87	2.30	1.28	6.031	0.015
	Positive	86	1.84	1.20		
Satisfaction	Negative	88	3.39	1.51	7.200	0.008
	Positive	86	2.82	1.40		
Total	Negative	87	19.00	6.71	12.160	0.001
	Positive	86	15.60	6.11		
Sexual Dysfunctional Beliefs Questionnaire (SDBQ)†						
Conservative	Negative	96	16.54	6.18	6.491	0.012
	Positive	94	14.46	5.05		
Age	Negative	96	10.14	3.51	11.377	0.001
	Positive	94	8.54	3.01		
Sin	Negative	96	8.98	4.64	9.584	0.002
	Positive	94	7.32	2.31		
Affection	Negative	96	12.80	2.63	5.823	0.017
	Positive	94	11.95	2.25		
Body	Negative	96	6.23	2.92	7.867	0.005
	Positive	94	5.23	1.86		
Total	Negative	96	62.88	18.44	11.420	0.001
	Positive	94	55.20	12.21		

† includes the 16 women who have not engaged in sexual activity in the past two weeks.

Table 6: Hierarchical Linear Regression Models
SSS & Reported Sexual Problems (FSFI).

	R	R^2	F Change	df	Sig.
Desire[†]					
Step 1. age, health, income, education	0.278	0.077	2.111	7,176	0.045
Step 2. marital status	0.361	0.130	3.504	3,173	0.017
Step 3. depressive/anxiety symptoms	0.470	0.221	10.000	2,171	<0.001
Step 4. SSS	0.478	0.228	1.477	1,170	0.226
Step 5. race, race x SSS	0.496	0.246	2.031	2,168	0.134
Arousal					
Step 1. age, health, income, education	0.243	0.059	1.442	7,161	0.192
Step 2. marital status	0.341	0.116	3.398	3,158	0.019
Step 3. depressive/anxiety symptoms	0.486	0.236	12.260	2,156	<0.001
Step 4. SSS	0.507	0.257	4.280	1,155	0.040
Step 5. race, race x SSS	0.517	0.268	1.165	2,153	0.315
Orgasm					
Step 1. age, health, income, education	0.188	0.035	0.839	7,161	0.557
Step 2. marital status	0.227	0.052	0.907	3,158	0.439
Step 3. depressive/anxiety symptoms	0.422	0.178	12.048	2,156	<0.001
Step 4. SSS	0.476	0.226	9.603	1,155	0.002
Step 5. race, race x SSS	0.485	0.235	0.915	2,153	0.403
Satisfaction					
Step 1. age, health, income, education	0.237	0.056	1.380	7,162	0.217
Step 2. marital status	0.313	0.098	2.465	3,159	0.064
Step 3. depressive/anxiety symptoms	0.391	0.153	5.093	2,157	0.007
Step 4. SSS	0.402	0.162	1.566	1,156	0.213
Step 5. race, race x SSS	0.403	0.162	0.073	2,154	0.930
Pain					
Step 1. age, health, income, education	0.158	0.025	0.583	7,159	0.769
Step 2. marital status	0.196	0.038	0.720	3,156	0.541
Step 3. depressive/anxiety symptoms	0.400	0.160	11.160	2,154	<0.001
Step 4. SSS	0.406	0.165	0.903	1,153	0.344
Step 5. race, race x SSS	0.416	0.173	0.773	2,151	0.464

[†] includes the 16 women who have not engaged in sexual activity in the past two weeks.

Table 6: Hierarchical Linear Regression Models
SSS & Reported Sexual Problems (FSFI) (*cont*).

	R	R^2	F Change	df	Sig.
Lubrication					
Step 1. age, health, income, education	0.185	0.034	0.813	7,160	0.578
Step 2. marital status	0.293	0.086	2.956	3,157	0.034
Step 3. depressive/anxiety symptoms	0.479	0.229	14.417	2,155	<0.001
Step 4. SSS	0.480	0.230	0.210	1,154	0.648
Step 5. race, race x SSS	0.503	0.253	2.252	2,152	0.109
Total					
Step 1. age, health, income, education	0.232	0.054	1.293	7,159	0.257
Step 2. marital status	0.322	0.103	2.874	3,156	0.038
Step 3. depressive/anxiety symptoms	0.524	0.274	18.113	2,154	<0.001
Step 4. SSS	0.542	0.293	4.136	1,153	0.044
Step 5. race, race x SSS	0.548	0.300	0.724	2,151	0.486

Table 7: Univariate Analyses
SSS & Sexual Problems (FSFI).

	F	Sig	η^2
Depressive Symptoms			
Desire	12.410	0.001	0.938
Arousal	15.167	<0.001	0.972
Lubrication	14.227	<0.001	0.963
Pain	14.492	<0.001	0.966
Satisfaction	9.245	0.003	0.817
Orgasm	8.300	0.005	0.856
Total			
SSS			
Desire	3.770	0.054	0.488
Arousal	4.786	0.030	0.585
Lubrication	3.322	0.070	0.441
Pain	0.056	0.812	0.056
Satisfaction	0.048	0.826	0.055
Orgasm	4.044	0.046	0.515
Total	3.112	0.080	0.418
Race			
Desire	2.786	0.097	0.382
Arousal	1.877	0.173	0.275
Lubrication	4.109	0.044	0.522
Pain	0.792	0.375	0.143
Satisfaction	0.101	0.751	0.062
Orgasm	0.479	0.490	0.106
Total	0.977	0.325	0.166
Race x SSS			
Desire	2.187	0.141	0.312
Arousal	2.388	0.124	0.336
Lubrication	4.429	0.037	0.552
Pain	0.373	0.542	0.093
Satisfaction	0.090	0.764	0.060
Orgasm	1.008	0.317	0.169
Total	1.302	0.256	0.205

η^2 = eta squared, a measure of effect size.

Table 8: Hierarchical Linear Regression Models
Sex Hormones & Sexual Problems (FSFI).

	R	R^2	F Change	df	Sig.
Desire[†]					
Step 1. age, health, income, education	0.483	0.234	2.177	7,50	0.052
Step 2. marital status	0.507	0.257	0.500	3,47	0.684
Step 3. depressive/anxiety symptoms	0.579	0.336	2.653	2,45	0.081
Step 4. estradiol, testosterone	0.602	0.362	0.898	2,43	0.415
Arousal					
Step 1. age, health, income, education	0.300	0.090	0.607	7,43	0.747
Step 2. marital status	0.314	0.099	0.132	3,40	0.940
Step 3. depressive/anxiety symptoms	0.453	0.205	2.537	2,38	0.092
Step 4. estradiol, testosterone	0.467	0.218	0.300	2,36	0.743
Orgasm					
Step 1. age, health, income, education	0.320	0.102	0.699	7,43	0.673
Step 2. marital status	0.359	0.129	0.415	3,40	0.743
Step 3. depressive/anxiety symptoms	0.513	0.264	3.466	2,38	0.041
Step 4. estradiol, testosterone	0.546	0.298	0.886	2,36	0.421
Satisfaction					
Step 1. age, health, income, education	0.389	0.151	1.093	7,43	0.385
Step 2. marital status	0.419	0.176	0.402	3,40	0.752
Step 3. depressive/anxiety symptoms	0.499	0.249	1.860	2,38	0.170
Step 4. estradiol, testosterone	0.506	0.256	0.160	2,36	0.853
Pain					
Step 1. age, health, income, education	0.505	0.255	2.054	7,42	0.070
Step 2. marital status	0.508	0.258	0.054	3,39	0.983
Step 3. depressive/anxiety symptoms	0.657	0.431	5.639	2,37	0.007
Step 4. estradiol, testosterone	0.666	0.444	0.397	2,35	0.675
Lubrication					
Step 1. age, health, income, education	0.436	0.190	1.412	7,42	0.226
Step 2. marital status	0.514	0.264	1.303	3,39	0.287
Step 3. depressive/anxiety symptoms	0.547	0.299	0.909	2,37	0.412
Step 4. estradiol, testosterone	0.551	0.304	0.127	2,35	0.881
Total					
Step 1. age, health, income, education	0.389	0.151	1.068	7,42	0.400
Step 2. marital status	0.410	0.168	0.261	3,39	0.853
Step 3. depressive/anxiety symptoms	0.565	0.320	4.123	2,37	0.024
Step 4. estradiol, testosterone	0.586	0.343	0.622	2,35	0.543

[†] includes women who have not engaged in sexual activity in the past two weeks.

Table 9. Correlations between ATM (MAS), SSS (SSSS), DSB (SDBQ), & Depressive(SDS)/Anxiety (SAS) symptoms.

		1	2	3	4
Total	1. ATM				
(*N* = 190)	2. Depressive Symptoms	-0.493*			
	3. Anxiety Symptoms	-0.483*	0.788*		
	4. SSS	0.290*	-0.283*	-0.237*	
	5. DSB	-0.132**	0.362*	0.340*	-0.297*
CA	1. ATM				
(*n* = 113)	2. Depressive Symptoms	-0.451*			
	3. Anxiety Symptoms	-0.425*	0.805*		
	4. SSS	0.170**	-0.270*	-0.200*	
	5. DSB	-0.231*	0.386*	0.394*	-0.339*
AA	1. ATM				
(*n* = 77)	2. Depressive Symptoms	-0.616*			
	3. Anxiety Symptoms	-0.599*	0.765*		
	4. SSS	0.170*	-0.270*	-0.200*	
	5. DSB	-0.097	0.305*	0.251*	-0.306*

* $p < 0.05$, ** $p = 0.07$

Table 10. Summary of Findings.

Hypotheses		**Outcome**
Hypothesis 1:	acceptable to good psychometric properties	Confirmed with the exception of Factor 3 [Cons]
Hypothesis 2a:	women with negative SSS would report more sexual problems than women with positive SSS	Confirmed
Hypothesis 2b:	SSS would be positively associated with sexual problems	Partially Confirmed
Hypothesis 2c:	the proposed association between SSS and sexual problems also would different between racial groups	Partially Confirmed
Hypothesis 3:	the sex hormones estradiol and testosterone would be negatively associated with sexual problems	Not Confirmed
Hypothesis 4:	attitudes towards menopause, dysfunctional sexual beliefs, and SSS would be correlated to each other in the expected directions depressive and anxiety symptoms would be correlated with these factors (ATM, DSB, SSS) in the expected directions	Confirmed

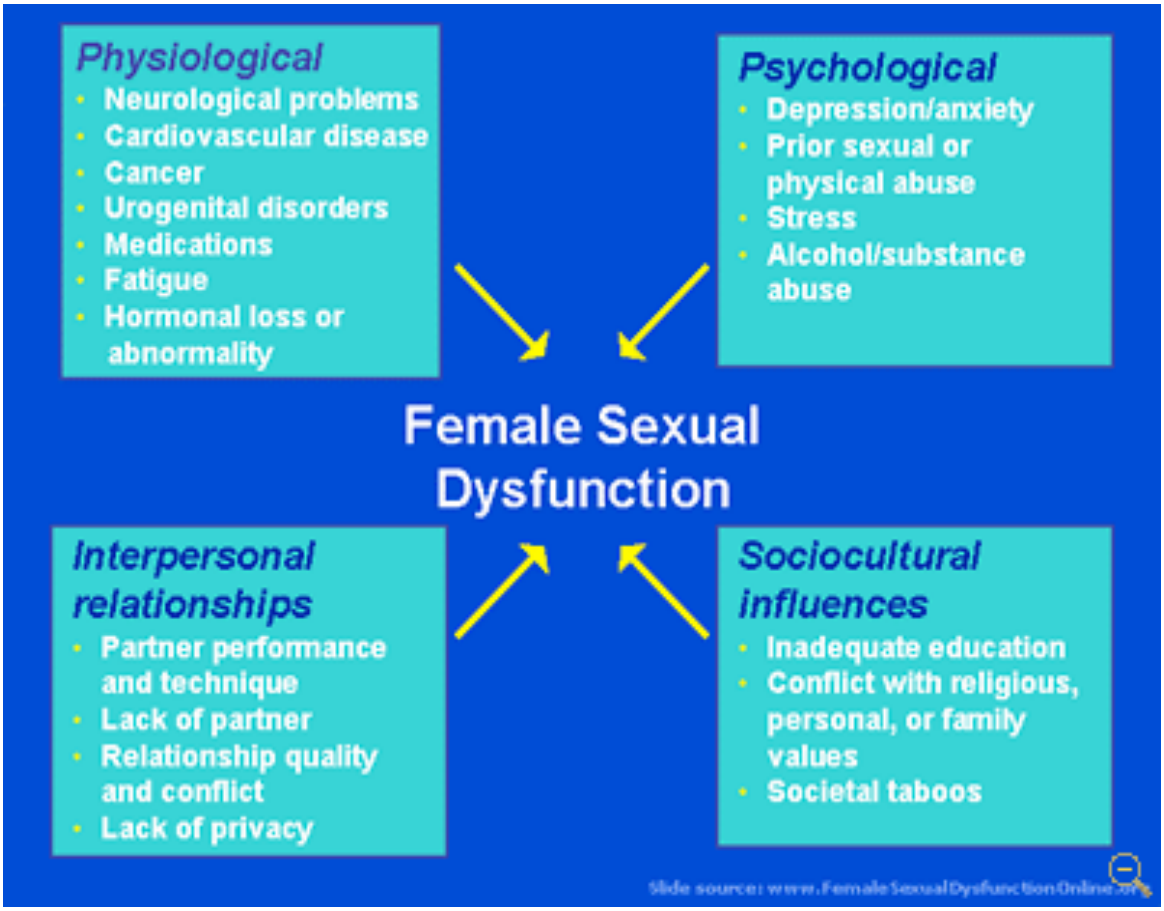

Figure 1. Factors that may influence sexuality. Although this model cannot account for all factors, it does give a general idea of how many different factors affect sexual functioning.
Source: www.femalesexualdysfunctiononline.com

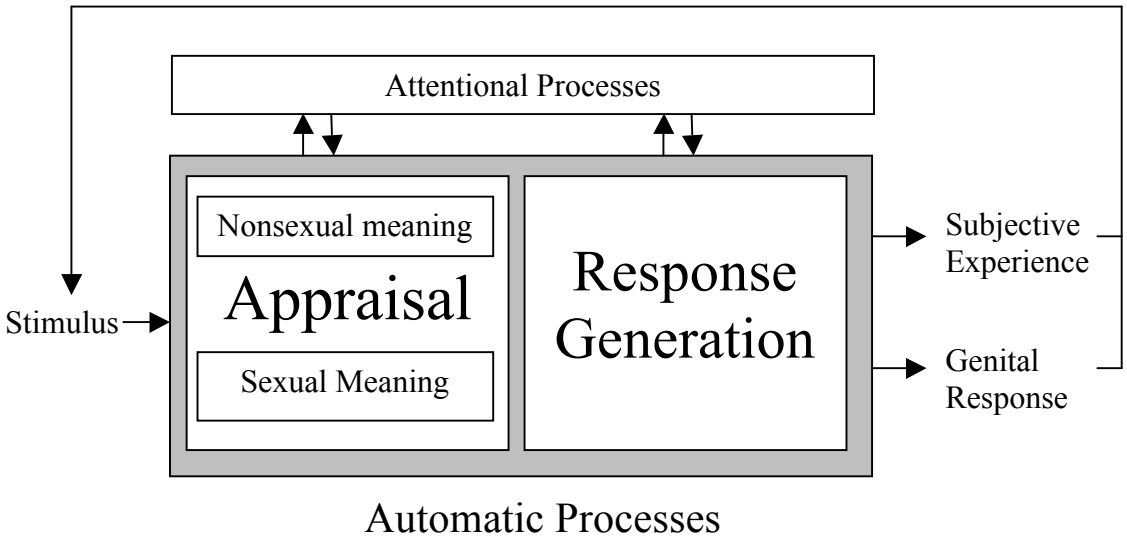

Figure 2. An information processing model of sexual arousal from Janssen, Everaerd, Spiering, & Janssen (2000).

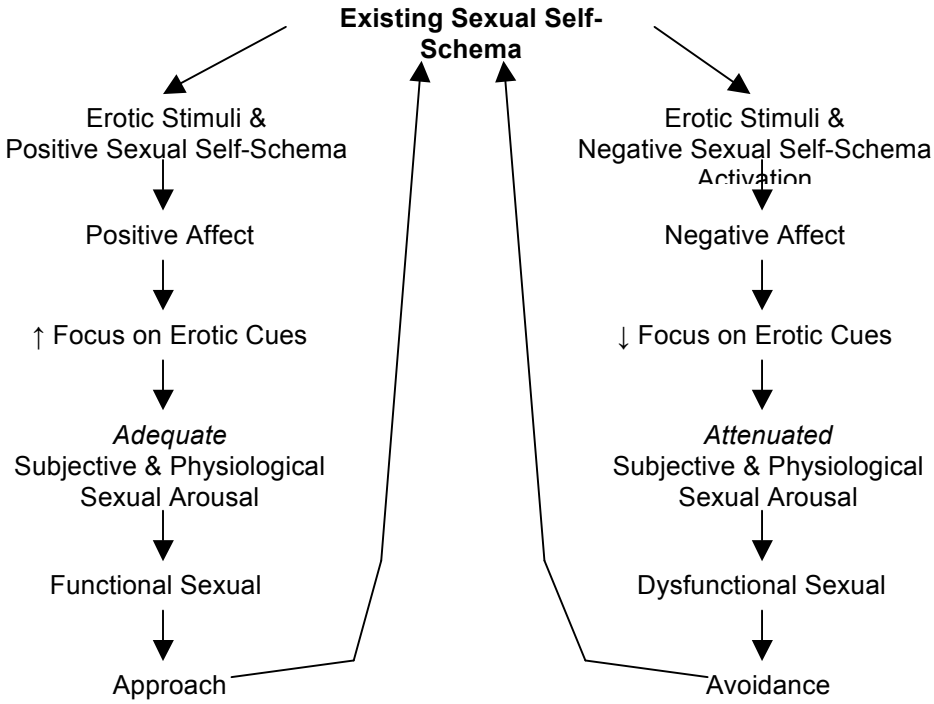

Figure 3. Model of how women respond to sexual situations based on their existing SSS. Based on Barlow's (1986) "Working Model" of sexual dysfunction.

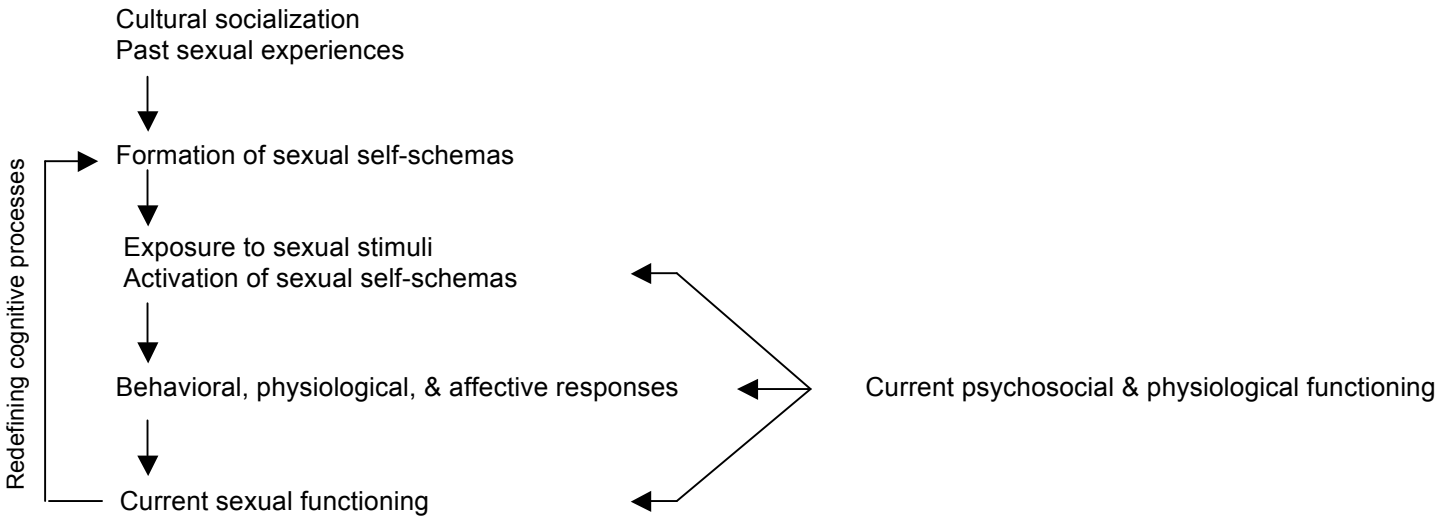

Figure 4. Model of the development, activation, and redefinition of sexual self-schemas.

The STRAW staging system.

Final Menstrual Period (FMP)

Stages:	-5	-4	-3	-2	-1	0	+1	+2
Terminology:	Reproductive			Menopausal Transition			Postmenopause	
	Early	Peak	Late	Early	Late*		Early*	Late
				Perimenopause				
Duration of Stage:	variable			variable		ⓐ 1 yr	ⓑ 4 yrs	until demise
Menstrual Cycles:	variable to regular	regular		variable cycle length *(>7 days different from normal)*	≥2 skipped cycles and an interval of amenorrhea *(≥60 days)*	*Amen x 12 mos*	none	
Endocrine:	normal FSH		↑ FSH	↑ FSH			↑ FSH	

**Stages most likely to be characterized by vasomotor symptoms* ↑ = *elevated*

Soules. Executive Summary of STRAW. Fertil Steril 2001.

Figure 5. The STRAW staging system for female reproductive functioning and natural menopause (Soules et al., 2001).

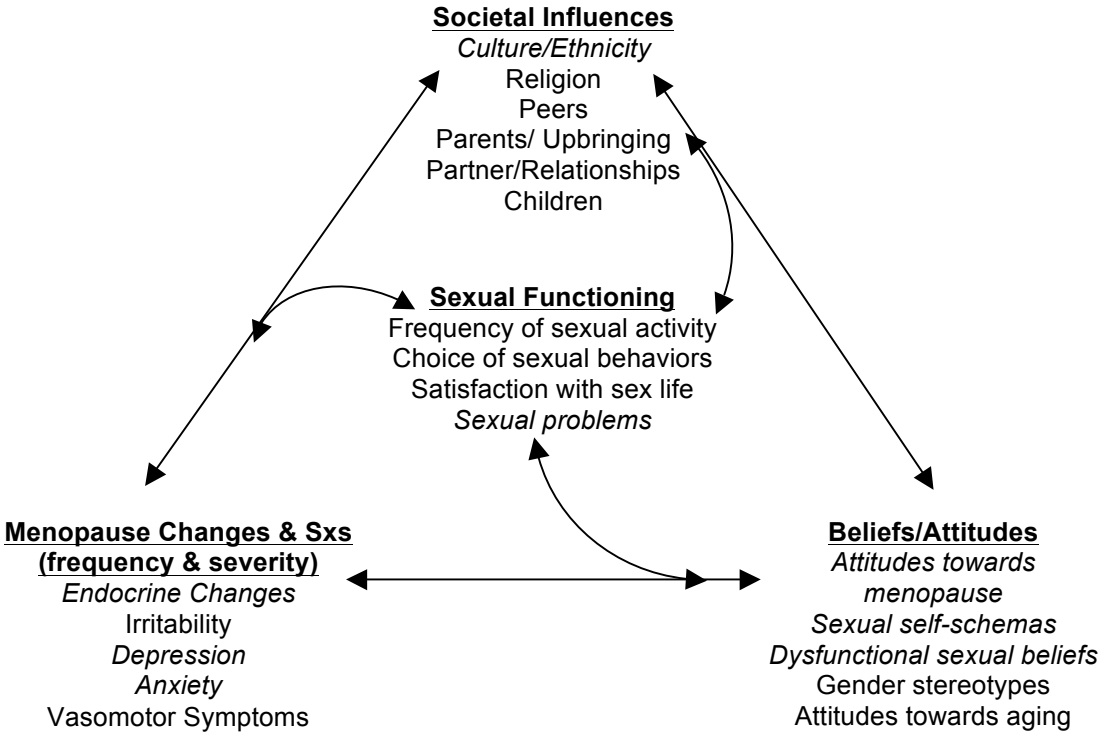

Figure 6. Factors that may influence sexuality during menopause. Although this model cannot account for all factors, it does give a general idea of how many different factors affect the sexuality of women in menopause.
Italics represent variables measured in this study.

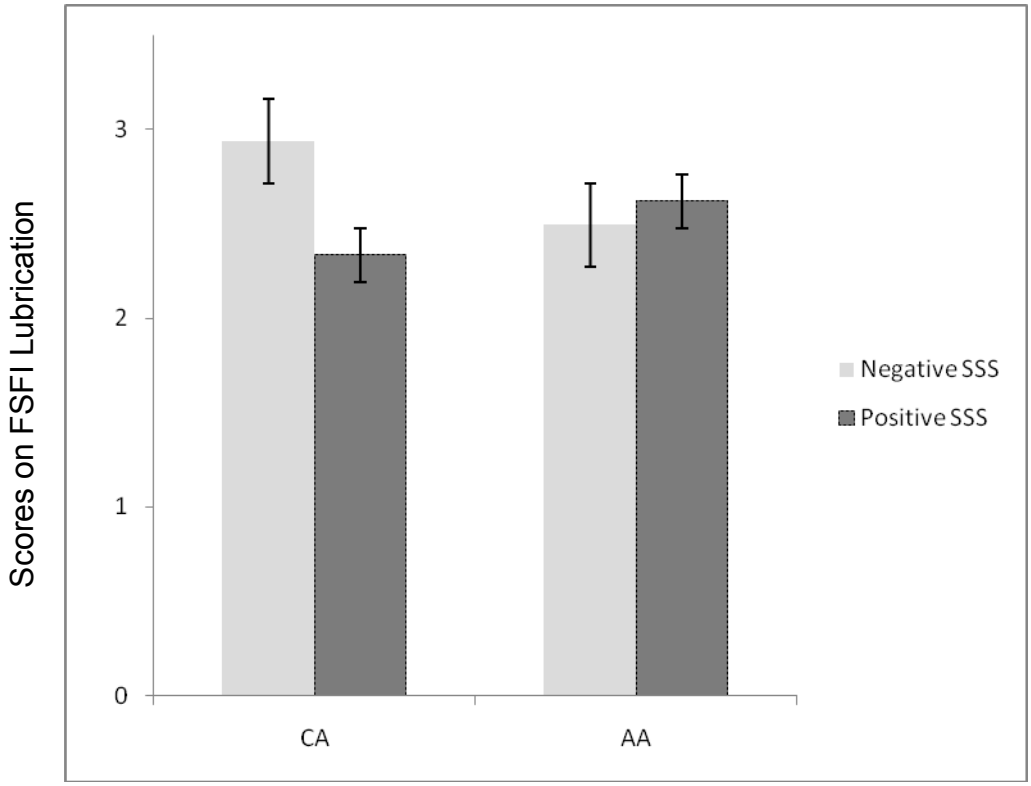

Figure 7. FSFI Lubrication Scores by Racial Group and SSSS Category.

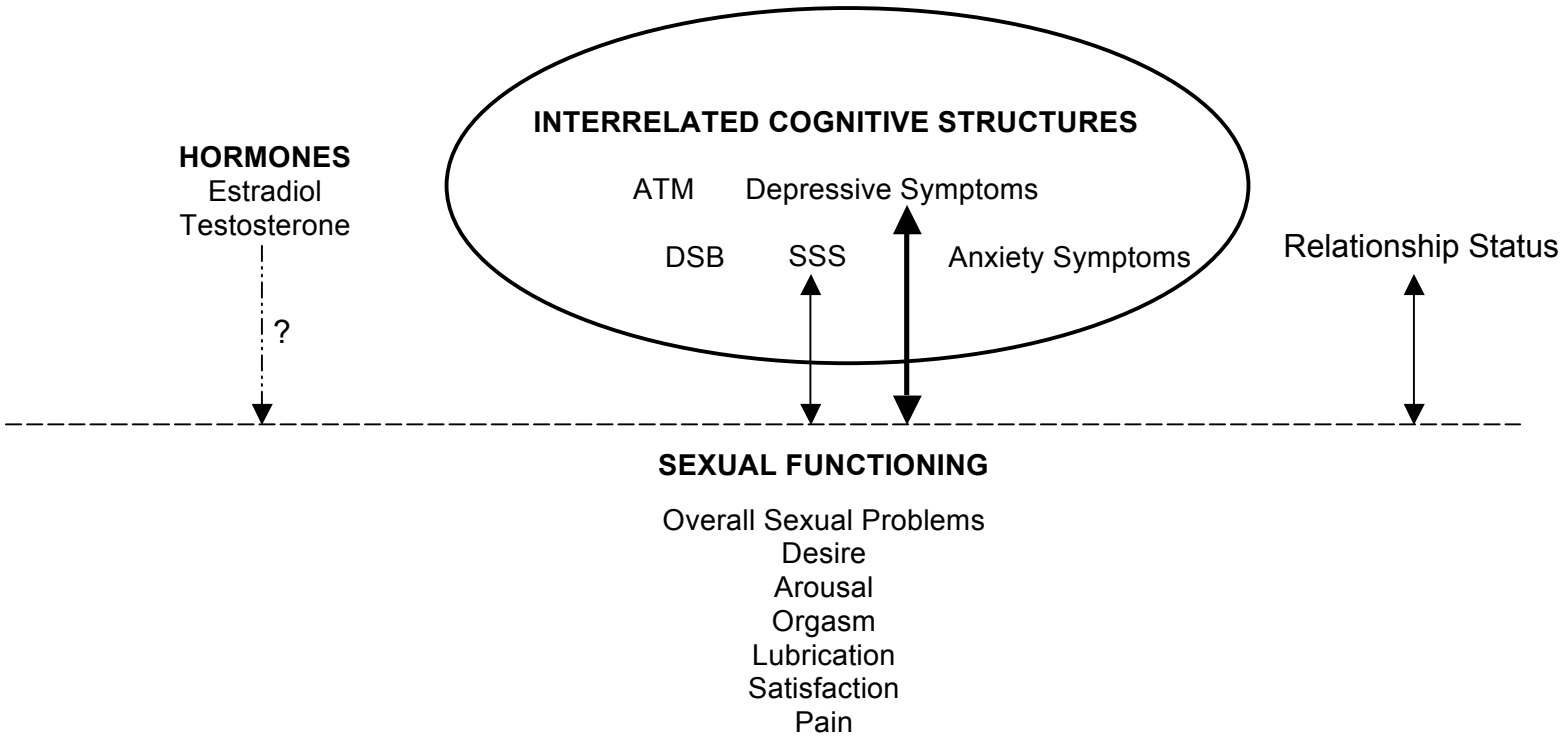

Figure 8. Sexual Functioning during Menopause. SSS, depressive symptoms, and relationship status were associated with certain aspects of sexual functioning in AA and CA menopausal women. Cognitive structures (oval) were correlated with each other in expected directions. Hormones were not associated with sexual functioning.

APPENDICES

Appendix A: Advertisements

General Print/Online

Seeking Volunteers for Online Study Addressing Menopause and Sexuality
What are some of the issues that affect sexuality during menopause? African American and Caucasian women are needed for a study addressing questions about menopause. Participants must be women between the ages of 40 and 60, experiencing menopause, English speaking, currently not taking hormone replacement therapy (HRT) or on hormonal birth control, in a relationship with a sexual partner, and without major medical or mental health problems. Participation requires completing an online or paper survey. Some volunteers who live in the Washington, DC metropolitan area may also be eligible to participate in a substudy that involves a small blood draw. Participants in the blood draw substudy may be compensated. For more information, please contact Robert Clark, MS, at 301-295-9666 or at menopausestudy1@gmail.com. This research study is sponsored by the Uniformed Services University, Department of Medical and Clinical Psychology, in Bethesda, Maryland.

NIH Record Advertisement

Menopause Study

African American and Caucasian women age 40-60 are needed for a research study addressing questions about menopause. Participation requires completing an online or paper survey. Some volunteers who live in the Washington, DC metropolitan area may also be eligible to participate in a substudy that involves a small blood draw. Participants may be compensated. To see if you qualify or for more information, please contact Robert Clark MS, at menopausestudy1@gmail.com or 301-295-9666.

Appendix A: Advertisements

Print/Online Advertisement (DC Area)

Research Study on Menopause - $$

Participation requires completing an online or paper survey. Some volunteers who live in the Washington, DC metropolitan area may also be eligible to participate in a substudy that involves a small blood draw. You may receive compensation.

To see if you qualify for this study, click:
https://www.surveymonkey.com/s.aspx?sm=VcP8PJrCyVoqmjAp9o3BJw_3d_3d

To qualify, you must be
- Adult female aged 40-60
- In peri-menopause or menopause
- Currently in a relationship with a sexual partner
- African American or Caucasian
- English speaking

You are not eligible if you
- Currently use hormone replacement therapy (HRT) or hormonal birth control
- Had one or both ovaries removed
- Are pregnant, nursing, or wanting to become pregnant
- Have a history of major medical conditions such as stroke or heart attack
- Have a current severe psychological disorder such as bipolar disorder or schizophrenia

You also contact Robert Clark, MS, at 301-295-9666 or at menopausestudy1@gmail.com to provide you with more information.

This research study is sponsored by the Uniformed Services University, Department of Medical and Clinical Psychology, in Bethesda, Maryland.

Appendix A: Advertisements

Alternate print/online advertisement for Online/Craigslist (outside of DC area)

Research Study on Menopause - $$

Participants may be compensated for completion of an online survey.

To see if you qualify for this study, click:
https://www.surveymonkey.com/s.aspx?sm=VcP8PJrCyVoqmjAp9o3BJw_3d_3d

To qualify, you must be
- Adult female aged 40-60
- In peri-menopause or menopause
- Currently in a relationship with a sexual partner
- African American or Caucasian
- English speaking

You are not eligible if you
- Currently use hormone replacement therapy (HRT) or hormonal birth control
- Had one or both ovaries removed
- Are pregnant, nursing, or wanting to become pregnant
- Have a history of major medical conditions such as stroke or heart attack
- Have a current severe psychological disorder such as bipolar disorder or schizophrenia

You also contact Robert Clark, MS, at 301-295-9666 or at menopausestudy1@gmail.com to provide you with more information.

This research study is sponsored by the Uniformed Services University, Department of Medical and Clinical Psychology, in Bethesda, Maryland.

Appendix A: Advertisements

Washington Express Newspaper Advertisement

MENOPAUSAL WOMEN

African American and Caucasian women age 40-60 are needed for a research study addressing questions about menopause.

To see if you qualify or to get more information, please contact

Robert Clark, M.S.
301-295-9666
menopausestudy1@gmail.com

Participants may be compensated.

This research study is sponsored by the Uniformed Services University, Department of Medical and Clinical Psychology, in Bethesda, Maryland

Appendix A: Advertisements

Menopause Study

African American and Caucasian women in menopause (ages 40-60) are sought for a research study on menopause that requires:

(1) Completing an online survey
(2) Some participants may also be asked to provide a small blood sample at the Uniformed Services University in Bethesda, Maryland

Contact Robert Clark, M.S. at 301-295-9666
Menopausestudy1@gmail.com

Participants may receive compensation.

Menopausestudy1@gmail.com **301-295-9666**	Menopausestudy1@gmail.com **301-295-9666**	Menopausestudy1@gmail.com **301-295-9666**	Menopausestudy1@gmail.com **301-295-9666**	Menopausestudy1@gmail.com **301-295-9666**	Menopausestudy1@gmail.com **301-295-9666**	Menopausestudy1@gmail.com **301-295-9666**	Menopausestudy1@gmail.com **301-295-9666**	Menopausestudy1@gmail.com **301-295-9666**	Menopausestudy1@gmail.com **301-295-9666**	Menopausestudy1@gmail.com **301-295-9666**

Appendix A: Advertisements

Menopause Study

African American women in menopause (ages 40-60) are sought for a research study on menopause that requires:

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Appendix A: Advertisements

Menopause Study

African American and Caucasian women in menopause (ages 40-60)

Volunteers needed to complete an online survey for a research study on menopause

Contact Robert Clark, M.S. at 301-295-9666
Menopausestudy1@gmail.com

Participants may receive compensation.

Menopausestudy1@gmail.com **301-295-9666**	Menopausestudy1@gmail.com **301-295-9666**	Menopausestudy1@gmail.com **301-295-9666**	Menopausestudy1@gmail.com **301-295-9666**	Menopausestudy1@gmail.com **301-295-9666**	Menopausestudy1@gmail.com **301-295-9666**	Menopausestudy1@gmail.com **301-295-9666**	Menopausestudy1@gmail.com **301-295-9666**	Menopausestudy1@gmail.com **301-295-9666**	Menopausestudy1@gmail.com **301-295-9666**	Menopausestudy1@gmail.com **301-295-9666**

Appendix B: Screening Script and Screening Form

Hello, my name is _____. I am calling you back regarding the menopause study. Do you have about 10-15 minutes to go through the screening process right now?

If no: "When can I call you back?"
If yes: *go on*

I'd like to tell you a few things about the study first and then I'll be glad to answer any questions that you might have, OK? The study is being run by a senior graduate student who has a Master's Degree in Clinical Psychology. This study is designed to compare women with different views on menopause and sexuality on several different outcomes.

There are two studies in this project.

Study 1 entails completing questionnaires about mood, menopause, and sexual functioning, which should take about 1 hour. If you choose to participate, you can complete an online survey or come to the Uniformed Services University to complete paper surveys. Some of these questions may be difficult to answer because they are personal in nature and may be difficult to answer. You may choose not to answer any questions that make you feel uncomfortable. You may be paid $10 if you complete only the survey.

If you live in the Washington DC area and you are available to come to the Uniformed Services University, Study 2 entails collecting a small amount of blood for hormone analyses which should take less than 30 minutes. You may be paid $40 if you complete the survey and provide a blood sample.

Do either of these studies sound like something you would be interested in?
If no: "Thank you for your interest."

If you do decide to participate and then choose to discontinue your participation in the study, you may feel free to leave at any time without consequence. Your participation in this study is entirely voluntary, confidential, and private.

We are located at the Uniformed Services University, which is near the National Naval Medical Center and across the street from NIH in Bethesda, Maryland.

Ok, now I will need to ask you some questions to see if you meet criteria for the study. Some of these questions may be sensitive in nature since we are interested in sexual attitudes and behaviors. "

Appendix B: Screening Script and Screening Form

COMPLETE PHONE SCREEN.

If the caller does not meet requirements: "I am sorry, but you do not meet the requirements for this study. This doesn't mean that there is something wrong with you, it simply means that we are looking at very specific things. It is very important for research purposes that our participants as similar to each other as possible. Thank you for you interest."

If caller meets requirements: "Do you have any questions? I am pleased to inform you that you meet the requirements for this study.

- *If choose to do the survey online:* You will be emailed a link and a unique username for the study shortly.

- *If choose to do the paper survey:* We can schedule your appointment now if you have time. When you come in for your appointment, we would like you to come to USUHS to participate. The room is located in Building B. You can park in the school's underground parking garage for free. Due to heightened security, you must bring a picture ID with you in order to get on base. We will also need to add your name to the visitors list. When you arrive, simply show the guard at the gate your ID and state your name. (*Collect name and schedule an appointment*)

- *If choose to do blood draw study:* We can schedule your appointment now if you have time. When you come in for your appointment, we would like you to come to USUHS to participate. The room is located in Building B. You can park in the school's underground parking garage for free. Due to heightened security, you must bring a picture ID with you in order to get on base. We will also need to add your name to the visitors list. When you arrive, simply show the guard at the gate your ID and state your name. (*Collect name and schedule an appointment*)

Thank you in advance for your participation."

Appendix B: Screening Script and Screening Form

You are being asked to be in a research study entitled, "*Functioning during Menopause: Beliefs, Hormones, and Ethnicity*" at the Uniformed Services University (USU), Bethesda, Maryland. This study is being run by a senior graduate student who has a Master's Degree in Clinical Psychology and is designed to compare women with different views on menopause and sexuality on several different outcomes.

The purpose of the online screening is to determine whether you are eligible to participate in this study. This screening is confidential and will take approximately 5 minutes to complete. Some of the questions in the screening questionnaire may be of personal nature and may be difficult to answer. You may choose not to answer any questions that make you feel uncomfortable, however, this may prevent you from being able to participate in the study. *This questionnaire is to determine study eligibility only and will not collect any identifying information about you*. If you do not meet the criteria for study participation, or do not volunteer to participate in the study, the answers you provide in this screening survey will be destroyed.

1. Age _____
   If < 40 or > 60 years old, exclude from study

2. What is your ethnicity? _____
   If not African American or Caucasian, exclude from study

3. Are you in a relationship with a sexual partner? YES NO
   If no, exclude from study

4. Have you been told by a physician that you currently have:
   A. Hypertension YES NO
      If yes → Is your hypertension controlled? YES NO
   B. Heart Disease/Problems YES NO
   C. High Blood Sugar/Diabetes YES NO
   D. Major Medical Problems (such as stroke) YES NO
   F. Pituitary abnormalities YES NO
   If yes to A (if not controlled), B, C, D, or E, exclude from study.

5. Are you currently diagnosed with any of the following:
   A. Schizophrenia YES NO
   B. Bipolar Disorder YES NO
   C. Severe Major Depression YES NO
   D. Alcohol or Drug addiction YES NO
   E. Other Major Psychological/Psychiatric Problem YES NO
   If yes to A, B, C, D, or E, exclude from study

6. Have you had one or both ovaries removed? YES NO
   If yes, exclude from study

Appendix B: Screening Script and Screening Form

7. In the past 12 months have you had at least one menstrual cycle?
   If no, exclude from study YES NO

8. Have you had or do you currently have any menopause symptoms?
   YES NO

9. Are you currently on any hormone replacement therapies? YES NO
   If yes, exclude from study

10. Are you currently taking any oral contraception? YES NO
    If yes, exclude from study

11. Are you currently pregnant, nursing, or wish to become pregnant?
    If yes, exclude from study YES NO

Interviewer: _____

Date/Time: _____

Qualified: Y N

Participant name (if qualified): _____

Participant contact info (if qualified): _____

Appendix C: Informed Consent for Online Portion

Department of Medical and Clinical Psychology

INFORMED CONSENT STATEMENT

Functioning during Menopause: Beliefs, Hormones, and Ethnicity (Online Survey)

Principal Investigator: Robert Clark, M.S.

INTRODUCTION

You are being asked to participate in a research study at the Uniformed Services University of the Health Sciences (USUHS). This research study is designed to explore factors that may influence sexual problems women can experience during menopause. First, we are examining how women's thoughts about their sexuality may affect sexual problems during menopause. Second, because different ethnicities may have different views of sexuality, we also are examining whether there are ethnic differences may influence women's response to menopause.

In order to participate in this research study, you must be a woman between age 40 and 60, have begun menopause, be in a relationship with a partner, and be African-American (black) or Caucasian (white). You must speak and read English well enough to understand the research study procedures and answer written questions. You should not participate in this research study if you are pregnant, nursing, or wanting to become pregnant; if you are currently taking hormones (for example, estrogen, testosterone, or progesterone for hormone replacement therapy or birth control); if one or both of your ovaries have been surgically removed (oophorectomy); or if you have had major medical problems such as a stroke, heart disease, heart attack, untreated high blood pressure, drug addiction, or are currently suffering or being treated for a serious physical or mental illness (such as depression, bipolar disorder, substance abuse, and schizophrenia).

Participation in the research study is completely voluntary. Some of the questions you will be asked to answer are very personal in nature and may be difficult to answer. If you agree to participate, please select "Yes, I agree to participate in this research study" at the end of this informed consent document. By selecting "Yes, I agree to participate in this research study," you indicate that you have read the explanation of this research study on this form. The procedures have been reviewed and all your questions have been answered. You understand the nature of the study and volunteer to allow your data to be used in this study.

STUDY PROCEDURES

This research study has two parts: a survey and a blood draw substudy. In the first part, approximately 280 volunteers from across the United States will complete an online (internet) or paper survey. The survey questionnaires will ask questions about medical history, personal background such as education and income, and heath related habits such

Appendix C: Informed Consent for Online Portion

as smoking, exercise, and alcohol use. The survey also asks a number of personal questions about physical and mental health, attitudes about sexuality, perceptions of menopause, life experiences that may influence attitudes toward sexuality, as well as questions addressing culture and ethnicity. The survey portion of the study should take approximately 60-90 minutes to complete. You are invited to complete the survey portion of the study today. If you live in or close to the Washington DC metropolitan area, you also may volunteer to participate in a blood draw substudy. In this part of the study, a group of approximately 80 volunteers who are located in the Washington DC metropolitan area will provide a small blood sample (20 mL or about 2 tablespoons). The blood sample will be taken by a trained phlebotomist using a small needle and two vacuum tubes in the Human Performance Laboratory at the Uniformed Services University. This blood sample will provide information about hormone levels, specifically estrogen and testosterone, in your blood that will be analyzed in combination with information from the survey.

The information you provide(d) in the survey will be analyzed to address several questions regarding menopause and sexual problems. These questions include assessments of factors that may contribute to differences sexual problems, whether there are differences in sexual health that may be related to perceptions of sexuality and cultural background, and of the accuracy and consistency of specific sections of the questionnaire itself. The information you provide through the survey may help us better understand about menopause and sexual problems in women.

POSSIBLE RISKS OR DISCOMFORTS FROM BEING IN THIS RESEARCH STUDY

Completing the questionnaires may make some participants upset. Also, some participants may become more aware of their own personal feelings and beliefs by answering some of the questions. You will be provided with an electronic listing of health and mental resources at the end of the survey should you desire to contact them.

BENEFITS

The research study is designed for research purposes only and not intended to directly benefit you. Your participation may help us gain a better understanding of how women's perspectives on sexuality and cultural factors may influence sexual functioning during menopause.

COMPENSATION

You may be paid a $10 (check or cash) for completing only the questionnaires. We will be collecting names and addresses to mail out compensation once you complete the questionnaires.

Appendix C: Informed Consent for Online Portion

If you decide to complete the questionnaires along with the blood draw portion (in Bethesda, MD), you may be paid a total of a $40 (check) for completing both parts of the study, which will be paid after completion of the blood draw.

You do not have to provide your name and address should you decide you do not want to be compensated. You will not be paid additional compensation for travel or other expenses associated with the study.

Military

If you are active duty military and wish to be compensated for your participation, you must either certify that you have approval from your supervisor (online survey) OR complete the form "Statement of Approval for Participation in Research" given to you by the study staff (paper survey). You must perform the test during off duty hours (7:00 AM – 4:00 PM are duty hours for USU Uniformed Personnel).

Federal Civilian

If you are a federal employee and wish to be compensated for your participation, you must either certify that you have approval from your supervisor (online survey) OR complete the form "Statement of Approval for Participation in Research" given to you by the study staff (paper survey). You must perform the test during off duty hours. You may also need to complete an outside activity request with your employer.

ALTERNATIVES

You may choose not to participate in this study.

AMOUNT OF TIME FOR YOU TO COMPLETE THIS STUDY

The total time required to complete the survey should not exceed 90 minutes.

APPROXIMATE NUMBER OF PEOPLE TAKING PART IN THIS STUDY

Approximately 280 volunteers are expected to participate in the survey portion of this study.

PRIVACY AND CONFIDENTIALITY

Confidentiality of your information will be maintained to the extent possible under existing regulations and laws. Your name will not appear in any published paper or presentation related to this study. To enhance the privacy of your information, your information will be coded in such a way that it cannot be linked to you. All data will be entered into an electronic database in which individual responses are identified only through a coded system. After verification of the database information, paper copies of all materials containing identifiers will be shredded. Electronic data files with information about you will be password protected and access to these files will be

Appendix C: Informed Consent for Online Portion

restricted to members of the study staff. If you are a military member, please be advised that under Federal Law, a military member's confidentiality cannot be strictly guaranteed.

In addition to the study staff, files from this study may be reviewed by members of the Uniformed Services University of the Health Sciences Institutional Review Board (USUHS IRB), which provides oversight for protection of human research subjects.

PARTICIPATION

Your participation in this research study project is voluntary. Refusal to participate will involve no penalty or loss of benefits to which you are otherwise entitled. If you decide to participate, you may withdraw or discontinue at any time for any reason, without penalty and with no effect on current or future care and services. Some of the questions in the questionnaires may be of personal nature and may be difficult to answer. You may elect not to respond to questions asked of you during your participation.

USE OF YOUR INFORMATION

The information you provide will be used in this research study. We ask that you indicate your preference regarding future use of your information below. You may choose to restrict use of your information to this research study only. In that case, the information you provide will be maintained for use by Robert Clark until this research study is complete and then destroyed. You may also choose to allow your information to be used in any approved research project conducted by Robert Clark or other scientists. Any future research use of your information and sample would be approved by the USUHS IRB. If the information you provide is used in the future, it would be done only for research purposes and in a way that will protect your identity and privacy.

IF YOU HAVE ADDITIONAL QUESTIONS OR CONCERNS

Should you have any questions at any time about the research study you may contact the principal investigator, Robert Clark, M.S., Department of Medical & Clinical Psychology, USUHS, Bethesda, MD 20814-4799, at 301-295-9666, or email: rclark@usuhs.mil.

You may also contact Tracy Sbrocco, Ph.D., Clinical Psychologist, Uniformed Services University of the Health Sciences, 4301 Jones Bridge Rd., Bethesda MD 20814-4799, Ph: 301-295-9674, Fax: 301-295-3034, email: tsbrocco@usuhs.mil. Dr. Sbrocco serves as a scientific advisor on this project and can also answer questions regarding resources that may be available to you if you would like to consult with a health care professional.

Appendix C: Informed Consent for Online Portion

RECOURSE IN THE EVENT OF INJURY

The survey portion of this study should not entail any physical or mental risk beyond those risks described above. We do not expect complications to occur.

If at anytime you believe you have suffered an injury or illness as a result of participating in this research project, contact the Director of Human Subject Protections Program at the Uniformed Services University of the Health Sciences, Bethesda, Maryland 20814-4799 at (301) 295-9534. This office can review the matter with you. They can provide information about your rights as a research volunteer. They may also 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.

Please indicate your preference regarding use of your survey information:

____ The survey information that I provide in this study may be used for any scientific purpose involving an approved research project.

____ The survey information that I provide in this study may be used for this project only.

Please indicate your preference regarding being contacted by Robert Clark for future studies

____ I may be contacted by the Principal Investigator, Robert Clark, regarding future research studies.

____ Please do not contact me regarding future research studies.

Blood draw substudy
If you live within 40 miles of the Washington DC area and would like to volunteer for the blood draw substudy of this research, please indicate so below. We will contact you with more information. Participants in the blood draw substudy may receive monetary compensation for their time.

____ Please contact me regarding the blood draw substudy.

E-mail: _____

Date: _____

Appendix C: Informed Consent for Online Portion

AFFIRMATION OF CONSENT

I state that I have received or downloaded a copy of this informed consent statement and that I read and understand the information contained within it. I would like to volunteer for the study and complete the survey. I also understand I may withdraw my information from this study at anytime by contacting the Principal Investigator. I understand that I may contact the Principal Investigator and others described in this form if I have any questions in the future.

____ Yes, I agree to participate in this study.

____ No, I do not agree to participate in this study.

Appendix C: Informed Consent for Online Portion

Department of Medical and Clinical Psychology

INFORMED CONSENT STATEMENT

Functioning during Menopause: Beliefs, Hormones, and Ethnicity
Principal Investigator: Robert Clark, M.S.

INTRODUCTION

You are being asked to participate in a research study at the Uniformed Services University of the Health Sciences (USUHS). This research study is designed to explore factors that may influence sexual problems women can experience during menopause. First, we are examining how women's thoughts about their sexuality may affect sexual problems during menopause. Second, because different ethnicities may have different views of sexuality, we also are examining whether there are ethnic differences may influence women's response to menopause.

In order to participate in this research study, you must be a woman between age 40 and 60, have begun menopause, be in a relationship with a partner, and be African-American (black) or Caucasian (white). You must speak and read English well enough to understand the research study procedures and answer written questions. You should not participate in this research study if you are pregnant, nursing, or wanting to become pregnant; if you are currently taking hormones (for example, estrogen, testosterone, or progesterone for hormone replacement therapy or birth control); if one or both of your ovaries have been surgically removed (oophorectomy); or if you have had major medical problems such as a stroke, heart disease, heart attack, untreated high blood pressure, drug addiction, or are currently suffering or being treated for a serious physical or mental illness (such as depression, bipolar disorder, substance abuse, and schizophrenia).

Participation in the research study is completely voluntary and some of the questions you will be asked to answer are very personal and may be difficult to answer. If you wish to participate, we will ask you to complete and sign this informed consent document after we have explained the research study purpose and procedures and answered any questions you may have.

STUDY PROCEDURES

This research study has two parts: a survey and a blood draw substudy. In the first part, approximately 280 volunteers from across the United States will complete an online (internet) or paper survey. The survey questionnaires will ask questions about medical history, personal background such as education and income, and heath related habits such as smoking, exercise, and alcohol use. The survey also asks a number of personal questions about physical and mental health, attitudes about sexuality, perceptions of menopause, life experiences that may influence attitudes toward sexuality, as well as questions addressing culture and ethnicity. The survey portion of the study should take

approximately 60-90 minutes to complete. You are invited to complete the survey portion of the research study today.

You may have already completed the first part of the research study involving the survey online, and if so you do not need to take it again. If you have not completed the survey, you will be asked to do so today (either online or with paper copies) after completing the informed consent document.

In the second part of the research study, a group of approximately 80 volunteers who are located in the Washington DC metropolitan area will provide a small blood sample (20 mL or about 2 tablespoons). The blood sample will be taken by a trained phlebotomist using a small needle and two vacuum tubes in the Human Performance Laboratory at the Uniformed Services University. This blood sample will provide information about hormone levels, specifically estrogen and testosterone, in your blood that will be analyzed in combination with information from the survey.

The information you provide(d) in the survey will be analyzed to address several questions regarding menopause and sexual problems. These questions include assessments of factors that may contribute to differences sexual problems, whether there are differences in sexual health that may be related to perceptions of sexuality and cultural background, and of the accuracy and consistency of specific sections of the questionnaire itself. The information you provide through the survey may help us better understand about menopause and sexual problems in women.

POSSIBLE RISKS OR DISCOMFORTS FROM BEING IN THIS STUDY

Completing the questionnaires may make some participants upset. Also, some participants may become more aware of their own personal feelings and beliefs by answering some of the questions. You will be provided with an electronic listing of health and mental resources at the end of the survey should you desire to contact them.

There should be no risk of physical injury from participation in this study other than those associated with any blood draw, which include some discomfort and bruising and/or brief pain at the site of the blood draw. In addition, there is a slight risk of infection and fainting. Such effects are typically of short duration and resolve without any need for medical care. An assistant with appropriate medical training (MD, RN, or EMT) will be present in the event that medical attention is required due to the blood draw.

BENEFITS

The research study is designed for research purposes only and not intended to directly benefit you. Your participation may help us gain a better understanding of how women's perspectives on sexuality and cultural factors may influence sexual functioning during menopause.

Appendix C: Informed Consent for Online Portion

COMPENSATION

You may be paid $10 (check, or cash) for completing ONLY the questionnaires. We may collect your name and address to provide compensation once you complete the questionnaires.

If you decide to complete the blood draw portion along with the questionnaires, you may be paid a total of $40 (check) for completing BOTH parts of the study, which will be paid after completion of the blood draw. We may collect your name, address, and social security number to provide compensation if you complete both parts of the study. You do not have to provide your name, address, or social security number should you decide you do not want to be compensated. You will not be paid additional compensation for travel or other expenses associated with the study.

Military

If you are active duty military and wish to be compensated for your participation, you must complete the form "Statement of Approval for Participation in Research" given to you by the study staff and must perform the test during off duty hours. (7:00 AM – 4:00 PM are duty hours for USU Uniformed Personnel).

Federal Civilian

If you are a federal employee and wish to be compensated for your participation, you must complete the form "Statement of Approval for Participation in Research" given to you by the study staff and must perform the test during off duty hours. You may also need to complete an outside activity request with your employer.

ALTERNATIVES

You may choose not to participate in this research study.

AMOUNT OF TIME FOR YOU TO COMPLETE THIS RESEARCH STUDY

The blood draw portion of this research study should take less than 30 minutes to complete, including review of the research study and this informed consent document, and the blood draw itself. If you complete the survey at the same time as the blood draw, the total time required may be up to two hours.

APPROXIMATE NUMBER OF PEOPLE TAKING PART IN THIS RESEARCH STUDY

There will be approximately 80 volunteers in this blood draw substudy. Overall, approximately 280 volunteers are expected to participate in the survey portion of this research study.

Appendix C: Informed Consent for Online Portion

PRIVACY AND CONFIDENTIALITY

Confidentiality of your information will be maintained to the extent possible under existing regulations and laws. Your name will not appear in any published paper or presentation related to this research study. To enhance the privacy of your information, your information will be coded in such a way that it cannot be linked to you. All data will be entered into an electronic database in which individual responses are identified only through a coded system. After verification of the database information, paper copies of all materials containing identifiers will be shredded. Electronic data files with information about you will be password protected and access to these files will be restricted to members of the study staff. If you are a military member, please be advised that under Federal Law, a military member's confidentiality cannot be strictly guaranteed.

Your blood samples will be coded with the same code as your survey information. Blood samples will be stored in a restricted access, locked freezer for five years, depending on how you wish your blood to be used. After five years any remaining blood samples will be destroyed.

In order to pay you for your participation, we will need to collect your name, social security number, current address, and phone number. Your social security number will be used for this purpose only, and records with your social security number will be kept confidential in a locked file cabinet. These files will be destroyed upon completion of the research study.

In addition to the study staff, files from this research study may be reviewed by members of the Uniformed Services University of the Health Sciences Institutional Review Board (USUHS IRB), which provides oversight for protection of human research subjects.

PARTICIPATION

Your participation in this research study is voluntary. Refusal to participate will involve no penalty or loss of benefits to which you are otherwise entitled. If you decide to participate, you may withdraw or discontinue at any time for any reason, without penalty and with no effect on current or future care and services. Some of the questions in the questionnaires may be of personal nature and may be difficult to answer. You may elect not to respond to questions asked of you during your participation.

USE OF YOUR INFORMATION AND BLOOD SAMPLE

The information and blood sample you provide will be used in this study. We ask that you indicate your preference regarding future use of your information and blood sample below. You may choose to restrict use of your information and sample to this study only. In that case, your information and samples will be maintained for use by Robert Clark until this research study is complete and then destroyed. You may also choose to allow your information and blood sample to be used in any approved research project

conducted by Robert Clark or other scientists. Any future research use of your information and sample would be approved by the USUHS IRB. If your information or sample is used in the future, it would be done only for research purposes and in a way that will protect your identity and privacy.

IF YOU HAVE ADDITIONAL QUESTIONS OR CONCERNS

Should you have any questions at any time about the research study you may contact the principal investigator, Robert Clark, M.S., Department of Medical & Clinical Psychology, USUHS, Bethesda, MD 20814-4799, at 301-295-9666, or email: rclark@usuhs.mil.

You may also contact Tracy Sbrocco, Ph.D., Clinical Psychologist, Uniformed Services University of the Health Sciences, 4301 Jones Bridge Rd., Bethesda MD 20814-4799, Ph: 301-295-9674, Fax: 301-295-3034, email: tsbrocco@usuhs.mil. Dr. Sbrocco serves as a scientific advisor on this project and can also answer questions regarding resources that may be available to you if you would like to consult with a health care professional.

RECOURSE IN THE EVENT OF INJURY

This research study should not entail any physical or mental risk beyond those described above. We do not expect complications to occur.

If at anytime you believe you have suffered an injury or illness as a result of participating in this research project, contact the Director of Human Subject Protections Program at the Uniformed Services University of the Health Sciences, Bethesda, Maryland 20814-4799 at (301) 295-9534. This office can review the matter with you. They can provide information about your rights as a research volunteer. They may also 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.

Appendix C: Informed Consent for Online Portion

CONSENT: Your signature on the following page indicates that you consent to participate in this research study as described above. You have read this consent form and understand the procedures to be used in this study and the possible risks, inconveniences, and/or discomforts that may be involved. If you have any questions they have been answered satisfactorily. You understand that you participation if completely voluntary and you may withdraw your data and/or blood sample at any time.

Please initial below to indicate your preference regarding use of your survey information and blood sample:

____ My blood may be used for any scientific purposes involving this or any other approved research project.

____ My blood may be used for this research only.

Please initial below to indicate your preference regarding being contacted by Robert Clark for future studies:

____ I may be contacted by the Principal Investigator, Robert Clark, regarding future research studies.

____ Please do not contact me regarding future research studies.

SIGNATURES

By signing this informed consent, you agree that the research study has been explained to you and that you understand the research study. You are signing that you agree to take part in this research study but you may withdraw your consent to participate at any time without prejudice to future contacts with the USUHS. You are also signing that the use of your blood has been reviewed and all of your questions have been answered. You will be provided a copy of this consent form.

I certify that I have received a copy of this consent form and that the research study has been explained to me. My questions have been answered and I understand that I may contact the Principle Investigator or any Research Team Member described in this form if I have any questions in the future.

Appendix C: Informed Consent for Online Portion

PARTICIPANT
Printed name: _____

Address: _____

Telephone: _____

Email: _____

Date: _____

Signature: _____

WITNESS
Printed name: _____

Date: _____

Signature: _____

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

Principal Investigator: _____

Date: _____

Appendix E: Demographic & Medical History Form

DEMOGRAPHIC AND MEDICAL HISTORY FORM

The following questions ask you to give some background information about yourself. This information will help us to understand and interpret the study's results. The information will be kept completely confidential. Please answer each question to the best of your ability. If you feel more than one answer describes you, please choose the most accurate on how you would define yourself.

Demographics

1. Age ____
2. What is your employment status? (please check ONE)
   _____ Full-time _____ Part-time
   _____ Retired _____ Currently not employed
   _____ Other _____

   Occupation _____

3. What is your relationship status? (please check ONE)
   _____ Married _____ Separated
   _____ Divorced _____ Widowed
   _____ Single, Never Married _____ Living together, Not married

Have you had a relationship status change (gain or loss of partner) in the past 12 months?
YES NO
If yes, please describe _____

4. How would you classify your ethnicity and race? (Please answer BOTH parts)
   Ethnicity
   _____ Hispanic
   _____ Not of Hispanic Origin

   Race
   _____ Caucasian _____ Black or African American
   _____ Asian or Pacific Islander _____ American Indian or Alaskan Native
5. What is the highest grade or class you completed in school? (please check ONE)
   _____ Less than 12th grade
   _____ High school graduate or GED
   _____ Some college education
   _____ Associates degree, community college, or technical college (2 year degree)
   _____ Bachelor's degree or nursing degree (4 year degree)
   _____ Master's degree or R.N.
   _____ Doctorate (Ph.D., Ed.D., etc) or Medical degree (M.D.)

Appendix E: Demographic & Medical History Form

6. What is your household income before taxes? (please check ONE)
   _____ Under $20,000
   _____ $20,000-29,999
   _____ $30,000-39,999
   _____ $40,000-49,999
   _____ $50,000-59,999
   _____ $60,000-69,999
   _____ Above $70,000

7. How many people live in your household including yourself?
   _____

8. What is your religious preference?
   _____ Jewish
   _____ Protestant Christian
   _____ Catholic
   _____ Muslim
   _____ Hindu
   _____ Other _____

9. Do you feel that your religious beliefs impact your sexuality?
   _____ Yes
   _____ Sometimes
   _____ No

Appendix E: Demographic & Medical History Form

Medical & Psychiatric History

1. Do you receive regular medical care from a physician or clinic? YES NO

2. Are you regularly evaluated by an urologist or gynecologist? YES NO

3. Have you ever been told you had or currently have any of the following medical conditions?
   a. Heart disease YES NO
   b. High blood pressure YES NO
   c. Diabetes or high blood sugar YES NO
   d. Cancer YES NO
   e. Stroke YES NO
   f. High cholesterol YES NO
   g. Hormone problem YES NO
   h. Kidney disease YES NO
   i. Spinal cord, neck or head injury YES NO
   j. Back problem YES NO
   k. Alcoholism YES NO
   l. Drug addiction YES NO
   m. Major depression YES NO

4. Have you had any other disease(s)? YES NO
   If so, what _____

5. Have you ever received any previous psychiatric or psychological evaluation or treatment? YES NO

   If yes, complete the following:

Year	Reason	Medication Used
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

Appendix E: Demographic & Medical History Form

Review of Your Current Health

1. Do you currently have any of the following?

a. Fainting/blackout spells	YES	NO
b. Convulsions	YES	NO
c. Paralysis	YES	NO
d. Dizziness	YES	NO
e. Chest pain	YES	NO
f. Suicidal thoughts	YES	NO
g. Unusual excessive thirst	YES	NO
h. Indigestion, gas, heartburn	YES	NO
i. Stomach pain or ulcer	YES	NO
j. Vomiting	YES	NO

Please describe or explain any of the positive answers above

_____
_____
_____
_____
_____

2. How would you rate your current health?
   _____ Excellent
   _____ Good
   _____ Fair
   _____ Bad
   _____ Terrible

Appendix E: Demographic & Medical History Form

3. Are you in the habit of using any of the following?
    a. Coffee
        i. Amount (cups/day)_____
    b. Cigarettes
        i. Amount (cigarettes/day) _____
    c. Alcohol
        i. Amount (amount/week)_____
    d. Vitamins
        i. Type _____
    e. Herbal supplements
        i. Type _____

4. Do you currently use hormonal birth control? YES NO
    If so, what kind?
    _____ Oral contraceptive
    _____ Patch
    _____ Shot (Depo-Provera, etc)
    _____ Vaginal ring
    _____ Hormone implants
    _____ Other _____

5. How many times have you been pregnant? _____

6. How many children have you given birth to? _____

7. Do you currently use hormone replacement therapy? YES NO

8. When was your last menstrual cycle (in weeks)? _____

9. Are you currently on any medication? YES NO

If yes, Name	Dose	Used for?

Appendix E: Demographic & Medical History Form

Menopause Treatments

1. If you have had menopause symptoms, what type(s) of treatment have you tried in the past?

	No	Yes	When	How successful/helpful? (Please rate from 0-5, 0=no change, 5=Very helpful) Please describe
Testosterone				
Estrogen				
Progesterone				
Other hormone replacement (Specify):				
Dietary Supplements, including vitamins (Specify):				
Other medication(s) (Specify):				
Diet (Specify):				
Self-help books/videos				
Creams/Ointments				
Psychological Treatment (Sex, Marital, or Individual Therapy) (Specify):				

Appendix E: Demographic & Medical History Form

Other (Specify):				

Appendix F: Self-Report Questionnaires

SDS

Listed below are 20 statements. Please read each one carefully and decide how much of the statement describes how you have been feeling **during the past week**. Click the appropriate number for each statement.

	None or a little bit of the time	**Some of the time**	**A good part of the time**	**Most of the time**
1. I feel down-hearted and blue.	1	2	3	4
2. Morning is when I feel the best.	1	2	3	4
3. I have crying spells or feel like it.	1	2	3	4
4. I have trouble sleeping at night.	1	2	3	4
5. I eat as much as I used to.	1	2	3	4
6. I still enjoy sex.	1	2	3	4
7. I notice that I am losing weight.	1	2	3	4
8. I have trouble with constipation.	1	2	3	4
9. My heart beats faster than usual.	1	2	3	4
10. I get tired for no reason.	1	2	3	4
11. My mind is as clear as it used to be.	1	2	3	4
12. I find it easy to do the things I used to.	1	2	3	4
13. I am restless and can't keep still.	1	2	3	4
14. I feel hopeful about the future.	1	2	3	4
15. I am more irritable than usual.	1	2	3	4
16. I find it easy to make decisions.	1	2	3	4
17. I feel that I am useful and needed.	1	2	3	4
18. My life is pretty full.	1	2	3	4
19. I feel that others would be better off if I were dead.	1	2	3	4
20. I still enjoy the things I used to do.	1	2	3	4

Appendix F: Self-Report Questionnaires

SAS

Listed below are 20 statements. Please read each one carefully and decide how much of the statement describes how you have been feeling **during the past week**. Click the appropriate number for each statement.

	None or a little bit of the time	**Some of the time**	**A good part of the time**	**Most of the time**
1. I feel more nervous and anxious than usual.	1	2	3	4
2. I feel afraid for no reason at all.	1	2	3	4
3. I get upset easily or feel panicky.	1	2	3	4
4. I feel like I'm falling apart and going to pieces.	1	2	3	4
5. I feel that everything is all right and nothing bad will happen.	1	2	3	4
6. My arms and legs shake and tremble.	1	2	3	4
7. I am bothered by headaches, neck and back pains.	1	2	3	4
8. I feel weak and get tired easily.	1	2	3	4
9. I feel calm and can sit still easily.	1	2	3	4
10. I can feel my heart beating fast.	1	2	3	4
11. I am bothered by dizzy spells.	1	2	3	4
12. I have fainting spells or feel like it.	1	2	3	4
13. I can breathe in and out easily.	1	2	3	4
14. I get feelings of numbness and tingling in my fingers, toes.	1	2	3	4
15. I am bothered by stomach aches or indigestion.	1	2	3	4
16. I have to empty my bladder often.	1	2	3	4
17. My hands are usually warm and dry.	1	2	3	4
18. My face gets hot and blushes.	1	2	3	4
19. I fall asleep easily and get a good night's rest.	1	2	3	4
20. I have nightmares.	1	2	3	4

Appendix F: Self-Report Questionnaires

MAS

INSTRUCTIONS: The following sets of adjectives describe feelings some women may experience during menopause. There are no right or wrong answers, only your own opinion. You are asked to indicate the degree to which you think the sets of adjectives are related to feelings a woman may experience during menopause.

FOR EXAMPLE

If you think that feelings a woman has during menopause are extremely related to one end of the scale, you might place your check mark as follows:

DURING MENOPAUSE A WOMAN FEELS

Good :__X__:_____:_____:_____:_____:_____:_____:_____: Bad

If you think that feelings a woman has during menopause are quite related to one end of the scale, you might place your check mark as follows:

DURING MENOPAUSE A WOMAN FEELS

Good :_____:_____:_____:_____:_____:_____:__X__:_____: Bad

If you think that feelings a woman has during menopause are slightly related to one end of the scale, you might place your check mark as follows:

DURING MENOPAUSE A WOMAN FEELS

Good :_____:_____:__X__:_____:_____:_____:_____:_____: Bad

If you think feelings a woman has during menopause are related to both ends equally, place your check mark in the middle space.

DURING MENOPAUSE A WOMAN FEELS

Good :_____:_____:_____:__X__:_____:_____:_____:_____: Bad

Appendix F: Self-Report Questionnaires

DURING MENOPAUSE A WOMAN FEELS

Important	:____:____:____:____:____:____:____:____:	Unimportant
Passive	:____:____:____:____:____:____:____:____:	Active
Clean	:____:____:____:____:____:____:____:____:	Dirty
Fresh	:____:____:____:____:____:____:____:____:	Stale
Dumb	:____:____:____:____:____:____:____:____:	Intelligent
Sharp	:____:____:____:____:____:____:____:____:	Dull
Unsure	:____:____:____:____:____:____:____:____:	Confident
Worthless	:____:____:____:____:____:____:____:____:	Valuable
High	:____:____:____:____:____:____:____:____:	Low
Strong	:____:____:____:____:____:____:____:____:	Weak
Unattractive	:____:____:____:____:____:____:____:____:	Attractive
Pessimistic	:____:____:____:____:____:____:____:____:	Optimistic
Full	:____:____:____:____:____:____:____:____:	Empty
Pleasant	:____:____:____:____:____:____:____:____:	Unpleasant
Ugly	:____:____:____:____:____:____:____:____:	Beautiful
Needed	:____:____:____:____:____:____:____:____:	Unneeded
Useful	:____:____:____:____:____:____:____:____:	Useless
Interesting	:____:____:____:____:____:____:____:____:	Boring
Unsuccessful	:____:____:____:____:____:____:____:____:	Successful
Alive	:____:____:____:____:____:____:____:____:	Dead

Appendix F: Self-Report Questionnaires

PoM

The following questions ask about menopause.

1. How many months ago was your last menstrual period?
   _____ I still have regular periods
   _____ Less than 3 months ago
   _____ 3-12 months ago
   _____ 12 or more months ago

2. Do you currently consider yourself to be experiencing menopausal symptoms?
   _____ Yes
   _____ No
   _____ Not sure

3. In your opinion, which of the following responses best describes your mother's menopausal experience?
   _____ No difficulties
   _____ Some difficulties
   _____ Serious difficulties
   _____ Not sure

When I experience menopause, I feel that (please check one)

4. _____ My sex life will be/is more satisfying.
   _____ My sex life will be/is relatively the same.
   _____ My sex life will be/is less satisfying.

5. _____ My sleep patterns will get/are better.
   _____ My sleep patterns will remain/are relatively the same.
   _____ My sleep patterns will get/are worse.

6. _____ Participating in social activities will be/is much more enjoyable.
   _____ Participating in social activities will be/is no more or less enjoyable.
   _____ Participating in social activities will be/is much less enjoyable.

7. _____ It will be/is much easier for me to do the things that I normally do during the day.
   _____ There will be/is little change in how I do the things that I normally do during the day.
   _____ It will be/is much harder for me to do the things that I normally do during the day.

Appendix F: Self-Report Questionnaires

Every woman experiences menopause differently. We are interested in finding out what your perceptions are about menopause. In the questions that follow, please check the response that most represents how you feel about each statement.

	Strongly Disagree	**Disagree**	**Neutral**	**Agree**	**Strongly Agree**
1. Menopause has been/will be an unpleasant experience for me.	1	2	3	4	5
2. The thought of menopause is disturbing to me.	1	2	3	4	5
3. On the whole, I expect to feel better after menopause than I did before menopause.	1	2	3	4	5
4. I welcome menopause.	1	2	3	4	5
5. Menopausal symptoms that I might have can be helped.	1	2	3	4	5
6. Hormones are necessary for the management of menopausal symptoms.	1	2	3	4	5
7. There are things I can do to feel good during menopause other than going to a health care provider.	1	2	3	4	5
8. I expect to (do) experience physical trouble during menopause.	1	2	3	4	5
9. I expect to (do) experience emotional trouble during menopause.	1	2	3	4	5
10. Menopause will bring/has brought many changes to my life.	1	2	3	4	5
11. There is little than an individual can do to control the symptoms of menopause.	1	2	3	4	5
12. I have been/will be able to experience menopause without many problems.	1	2	3	4	5
13. Menopause causes problems no matter what you do.	1	2	3	4	5
14. Menopause will/did make me sick often.	1	2	3	4	5
15. Menopause probably will not/did not have a negative effect on me.	1	2	3	4	5
16. I believe that I can control menopausal symptoms.	1	2	3	4	5
17. Taking hormones for menopause symptoms can make me feel better.	1	2	3	4	5

Appendix F: Self-Report Questionnaires

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
18. Special diets and foods may help control some of the symptoms of menopause.	1	2	3	4	5
19. Women are more tired than usual during menopause.	1	2	3	4	5
20. Menopause is something I just have to put up with.	1	2	3	4	5
21. Menopause is associated with mood changes.	1	2	3	4	5

Appendix F: Self-Report Questionnaires

MENOPAUSE SYMPTOM CHECK LIST

Listed on the next few pages are a number of symptoms which sometimes occur in women as they go through menopause. Please read the list and indicate which of these symptoms you have experienced or are experiencing. We are interested in knowing only about those symptoms which you feel are caused by menopause or which you feel are directly related to menopause. For each symptoms you have experienced indicate how bothersome that symptom has been or currently is for you, from "Does (Did) not bother me" to "Bothers(ed) me a lot."

If you have NOT experienced the symptoms, then please leave it blank.

Question: How much does/has _____ bother/bothered you?

	Not at all	**A little**	**Somewhat**	**A lot**
1. Weight gain (over 10 pounds)	0	1	2	3
2. Difficulty sleeping	0	1	2	3
3. Crying spells	0	1	2	3
4. Low work performance	0	1	2	3
5. Muscle stiffness or aches	0	1	2	3
6. Forgetfulness	0	1	2	3
7. Confusion	0	1	2	3
8. Need for naps	0	1	2	3
9. Headaches	0	1	2	3
10. Skin disorders	0	1	2	3
11. Loneliness	0	1	2	3
12. Menstrual cramps	0	1	2	3
13. Dizziness or faintness	0	1	2	3
14. Desire to avoid social activities	0	1	2	3
15. Anxiety	0	1	2	3
16. Backaches	0	1	2	3
17. Cold sweats (perspiration)	0	1	2	3
18. Poor judgment	0	1	2	3
19. Fatigue and tiredness	0	1	2	3
20. Nausea or vomiting	0	1	2	3
21. Restlessness	0	1	2	3
22. Hot flashes or flushes	0	1	2	3
23. Difficulty in concentration	0	1	2	3
24. Painful or tender breasts	0	1	2	3
25. Swelling or fluid retention	0	1	2	3
26. Accident prone	0	1	2	3
27. Irritability	0	1	2	3
28. Mood swings	0	1	2	3
29. Depression	0	1	2	3

Appendix F: Self-Report Questionnaires

	Not at all	A little	Somewhat	A lot
30. Decreased mental efficacy	0	1	2	3
31. Decreased motor coordination	0	1	2	3
32. Tension or nervousness	0	1	2	3
33. Tingling sensations, numbness	0	1	2	3
34. Palpitations – heart pounding	0	1	2	3
35. Unwanted growth hair	0	1	2	3
36. Irregular periods, bleeding	0	1	2	3
37. Changes in eating habits	0	1	2	3
38. Heavy menstrual flow (flooding)	0	1	2	3
39. Less affectionate	0	1	2	3
40. Excitable	0	1	2	3
41. Unusual bursts of energy, activity	0	1	2	3
42. Feeling of suffocation	0	1	2	3
43. Chest pains	0	1	2	3
44. Ringing in the ears	0	1	2	3
45. Blind spots or fuzzy vision	0	1	2	3
46. Sexual desire increased	0	1	2	3
47. Sexual desire decreased	0	1	2	3
48. Lack of energy	0	1	2	3
49. Lack of confidence	0	1	2	3
50. Difficulty making decisions	0	1	2	3
51. Painful intercourse	0	1	2	3
52. Vaginal infections	0	1	2	3
53. Vaginal dryness	0	1	2	3
54. Painful urination	0	1	2	3
55. Having to urinate more often	0	1	2	3
56. Feeling of crawling on the skin	0	1	2	3

Appendix F: Self-Report Questionnaires

SSSS

Describe Yourself

Directions: Below is a listing of 50 adjectives. For each word, consider whether or not the term describes you. Each adjectives is to be rated on a scale ranging from 0 = *not at all descriptive of me* to 6 = *very much descriptive of me*. Choose a number of each adjective to indicate how accurately the adjective describes you. There are no right or wrong answers. Please be thoughtful and honest.

Question: To what extent does the term _____ describe me?

Rating Scale:

Not at all descriptive	0	1	2	3	4	5	6	Very Descriptive

1. Generous	_____	26. Disagreeable	_____
2. Uninhibited	_____	27. Serious	_____
3. Cautious	_____	28. Prudent	_____
4. Helpful	_____	29. Humorous	_____
5. Loving	_____	30. Sensible	_____
6. Open-minded	_____	31. Embarrassed	_____
7. Shallow	_____	32. Outspoken	_____
8. Timid	_____	33. Level-headed	_____
9. Frank	_____	34. Responsible	_____
10. Clean-cut	_____	35. Romantic	_____
11. Stimulating	_____	36. Polite	_____
12. Unpleasant	_____	37. Sympathetic	_____
13. Experienced	_____	38. Conservative	_____
14. Short-tempered	_____	39. Passionate	_____
15. Irresponsible	_____	40. Wise	_____
16. Direct	_____	41. Inexperienced	_____
17. Logical	_____	42. Stingy	_____
18. Broad minded	_____	43. Superficial	_____
19. Kind	_____	44. Warm	_____
20. Arousable	_____	45. Unromantic	_____
21. Practical	_____	46. Good-natured	_____
22. Self-conscious	_____	47. Rude	_____
23. Dull	_____	48. Revealing	_____
24. Straightforward	_____	49. Bossy	_____
25. Casual	_____	50. Feeling	_____

Appendix F: Self-Report Questionnaires

FSFI

Directions: Please circle the response that most describes YOU. There are no right or wrong answers. Please read the questions carefully and be thoughtful and honest.

Question	Response Options
1) Over the past 4 weeks, how **satisfied** have you been with your overall sexual life?	5 = Very satisfied 4 = Moderately satisfied 3 = About equally satisfied and dissatisfied 2 = Moderately dissatisfied 1 = Very dissatisfied
2) Over the past 4 weeks, how **often** did you feel sexual desire or interest	5 = Almost always or always 4 = Most times (more than half the time) 3 = Sometimes (about half the time) 2 = A few times (less than half the time) 1 = Almost never or never
3) Over the past 4 weeks, how would you rate your **level** (degree) of sexual desire or interest?	5 = Very high 4 = High 3 = Moderate 2 = Low 1 = Very low or none at all
4) Over the past 4 weeks, did you engage in sexual activity of any kind with a partner and/or by yourself (masturbation)?	0 = No sexual activity with partner or self 3 = Sexual activity with partner and self 2 = Sexual activity by self only 1 = Sexual activity with a partner only
If no to Question 4, why have you not attempted intercourse?	4 = Partner sexual problem 3 = Own sexual problem 2 = Not interested in sex 1 = No opportunity
If no to Question 4, please SKIP the rest of THIS questionnaire and go to the next questionnaire.	**If no to Question 4, please SKIP the rest of THIS questionnaire and go to the next questionnaire.**

Appendix F: Self-Report Questionnaires

5) Over the past 4 weeks, how **often** did you feel sexually aroused ("turned on") during sexual activity or intercourse?	0 = No sexual activity 5 = Almost always or always 4 = Most times (more than half the time) 3 = Sometimes (about half the time) 2 = A few times (less than half the time) 1 = Almost never or never
6) Over the past 4 weeks, how would you rate your **level** of sexual arousal ("turn on") during sexual activity or intercourse?	0 = No sexual activity 5 = Very high 4 = High 3 = Moderate 2 = Low 1 = Very low or none at all
7) Over the past 4 weeks, how **confident** were you about becoming sexually aroused during sexual activity or intercourse?	0 = No sexual activity 5 = Very high confidence 4 = High confidence 3 = Moderate confidence 2 = Low confidence 1 = Very low or no confidence
8) Over the past 4 weeks, how **often** have you been satisfied with your arousal (excitement) during sexual activity or intercourse?	0 = No sexual activity 5 = Almost always or always 4 = Most times (more than half the time) 3 = Sometimes (about half the time) 2 = A few times (less than half the time) 1 = Almost never or never
9) Over the past 4 weeks, how **often** did you become lubricated ("wet") during sexual activity or intercourse?	0 = No sexual activity 5 = Almost always or always 4 = Most times (more than half the time) 3 = Sometimes (about half the time) 2 = A few times (less than half the time) 1 = Almost never or never
10) Over the past 4 weeks, how **difficult** was it to become lubricated ("wet") during sexual activity or intercourse?	0 = No sexual activity 5 = Extremely difficult or impossible 4 = Very difficult 3 = Difficult 2 = Slightly difficult 1 = Not difficult

Appendix F: Self-Report Questionnaires

11) Over the past 4 weeks, how often did you **maintain** your lubrication ("wetness") until completion of sexual activity or intercourse?	0 = No sexual activity 5 = Almost always or always 4 = Most times (more than half the time) 3 = Sometimes (about half the time) 2 = A few times (less than half the time) 1 = Almost never or never
12) Over the past 4 weeks, how **difficult** was it to maintain your lubrication ("wetness") until completion of sexual activity or intercourse?	0 = No sexual activity 5 = Extremely difficult or impossible 4 = Very difficult 3 = Difficult 2 = Slightly difficult 1 = Not difficult
13) Over the past 4 weeks, when you had sexual stimulation or intercourse, how **often** did you reach orgasm (climax)?	0 = No sexual activity 5 = Almost always or always 4 = Most times (more than half the time) 3 = Sometimes (about half the time) 2 = A few times (less than half the time) 1 = Almost never or never
14) Over the past 4 weeks, when you had sexual stimulation or intercourse, how **difficult was it for you to** reach orgasm (climax)?	0 = No sexual activity 5 = Extremely difficult or impossible 4 = Very difficult 3 = Difficult 2 = Slightly difficult 1 = Not difficult
15) Over the past 4 weeks, how **satisfied** were you with your ability to reach orgasm (climax) during sexual activity or intercourse?	0 = No sexual activity 5 = Very satisfied 4 = Moderately satisfied 3 = About equally satisfied and dissatisfied 2 = Moderately dissatisfied 1 = Very dissatisfied
16) Over the past 4 weeks, how **satisfied** have you been with the amount of emotional closeness during sexual activity between you and your partner?	0 = No sexual activity 5 = Very satisfied 4 = Moderately satisfied 3 = About equally satisfied and dissatisfied 2 = Moderately dissatisfied 1 = Very dissatisfied

Appendix F: Self-Report Questionnaires

17) Over the past 4 weeks, how **satisfied** have you been with your sexual relationship with your partner?	0 = No sexual activity 5 = Very satisfied 4 = Moderately satisfied 3 = About equally satisfied and dissatisfied 2 = Moderately dissatisfied 1 = Very dissatisfied
18) Over the past 4 weeks, how **often** did you experience discomfort or pain during vaginal penetration?	0 = Did not attempt vaginal penetration 5 = Almost always or always 4 = Most times (more than half the time) 3 = Sometimes (about half the time) 2 = A few times (less than half the time) 1 = Almost never or never
19) Over the past 4 weeks, how **often** did you experience discomfort or pain following vaginal penetration?	0 = Did not attempt vaginal penetration 5 = Almost always or always 4 = Most times (more than half the time) 3 = Sometimes (about half the time) 2 = A few times (less than half the time) 1 = Almost never or never
20) Over the past 4 weeks, how would you rate your **level** (degree) of discomfort or pain during or following vaginal penetration?	0 = Did not attempt vaginal penetration 5 = Very high 4 = High 3 = Moderate 2 = Low 1 = Very low or none at all

Appendix F: Self-Report Questionnaires

SDBQ

The list presented below contains statements related to sexuality. Please read each statement carefully and circle the number in the right hand column which corresponds to the extent to which you agree or disagree with each statement (circle only one option per statement: from 1— completely disagree to 5—completely disagree). There are no wrong or right answers, but it is very important that you be honest and that you answer all items.

	Completely Disagree	**Disagree**	**Neutral**	**Agree**	**Completely Agree**
1. Love and affection from a partner are necessary for good sex.	1	2	3	4	5
2. Masturbation is wrong and sinful.	1	2	3	4	5
3. The most important component of sex is mutual affection.	1	2	3	4	5
4. The best gift a woman could bring to marriage is her virginity.	1	2	3	4	5
5. After menopause women lose their sexual desire.	1	2	3	4	5
6. Women who have sexual fantasies are perverted.	1	2	3	4	5
7. Masturbation is not a proper activity for respectable women.	1	2	3	4	5
8. After menopause women can't reach orgasm.	1	2	3	4	5
9. There are a variety of ways of getting pleasure and reaching orgasm.	1	2	3	4	5
10. Women who are not physically attractive can't be sexually satisfied.	1	2	3	4	5
11. In the bedroom the man is the boss.	1	2	3	4	5
12. A good mother can't be sexually active.	1	2	3	4	5
13. Reaching climax/orgasm is acceptable for men but not for women.	1	2	3	4	5
14. Sexual activity must be initiated by a man.	1	2	3	4	5
15. Sex is dirty and sinful.	1	2	3	4	5
16. Simultaneous orgasm for two partners is essential for a satisfying sexual encounter.	1	2	3	4	5
17. Orgasm is possible on by vaginal intercourse.	1	2	3	4	5
18. The goal of sex is for men to be satisfied.	1	2	3	4	5

Appendix F: Self-Report Questionnaires

	Completely Disagree	Disagree	Neutral	Agree	Completely Agree
19. A successfully professional career implies control of sexual behavior.	1	2	3	4	5
20. As women age, the pleasure they get from sex decreases.	1	2	3	4	5
21. Men only pay attention to young, attractive women.	1	2	3	4	5
22. Sex is a beautiful and pure activity.	1	2	3	4	5
23. Sex without love is like food without flavor.	1	2	3	4	5
24. As long as both partners consent, anything goes.	1	2	3	4	5
25. Any woman who initiates sexual activity is immoral.	1	2	3	4	5
26. Sex is meant only for procreation.	1	2	3	4	5
27. Sexual intercourse during menstruation can cause health problems.	1	2	3	4	5
28. Oral sex is one of the biggest perversions.	1	2	3	4	5
29. If women let themselves go sexually they are totally under men's control.	1	2	3	4	5
30. Being nice and smiling at men can be dangerous.	1	2	3	4	5
31. The most wonderful emotions that a woman can experience are maternal.	1	2	3	4	5
32. Anal sex is a perverted activity.	1	2	3	4	5
33. In the bedroom, the woman is the boss.	1	2	3	4	5
34. Sex should only happen if the man initiates.	1	2	3	4	5
35. There is just one acceptable way of having sex (missionary position).	1	2	3	4	5
36. Experiencing pleasure during sexual activity is not acceptable in a virtuous woman.	1	2	3	4	5
37. A good mother must control her sexual urges.	1	2	3	4	5
38. An ugly woman is not capable of sexually satisfying her partner.	1	2	3	4	5

Appendix F: Self-Report Questionnaires

	Completely Disagree	Disagree	Neutral	Agree	Completely Agree
39. A woman who only derives sexual pleasure through clitoral stimulation is sick.	1	2	3	4	5
40. Pure girls don't engage in sexual activity.	1	2	3	4	5

Appendix F: Self-Report Questionnaires

SOS

Please respond to each item as honestly as you can. There are no right or wrong answers.

		Strongly Agree			Neutral			Strongly Disagree
1.	I think it would be very entertaining to look at hard-core erotica.	1	2	3	4	5	6	7
2.	Erotica is obviously filthy and people should not try to describe it as anything else.	1	2	3	4	5	6	7
3.	Swimming in the nude with someone of the opposite sex would be an exciting experience.	1	2	3	4	5	6	7
4.	Masturbating can be an exciting experience.	1	2	3	4	5	6	7
5.	If I found that a close friend of mine was a homosexual, it would annoy me.	1	2	3	4	5	6	7
6.	If people thought that I was interested in oral sex, I would be embarrassed.	1	2	3	4	5	6	7
7.	Engaging in group sex is an entertaining idea.	1	2	3	4	5	6	7
8.	I personally find that thinking about engaging in sexual intercourse is arousing.	1	2	3	4	5	6	7
9.	Seeing an erotic movie would be sexually arousing to me.	1	2	3	4	5	6	7
10.	Thoughts that I may have homosexual tendencies would not worry me at all.	1	2	3	4	5	6	7
11.	The idea of being physically attracted to members of the same sex is not depressing.	1	2	3	4	5	6	7
12.	Almost all erotic material is nauseating.	1	2	3	4	5	6	7
13.	It would be emotionally upsetting to me to see someone exposing themselves publicly.	1	2	3	4	5	6	7
14.	Watching a stripper of the opposite sex would not be very exciting.	1	2	3	4	5	6	7
15.	I would not enjoy seeing an erotic movie.	1	2	3	4	5	6	7
16.	When I think about showing pictures of someone of the same sex as myself masturbating, it nauseates me.	1	2	3	4	5	6	7

Appendix F: Self-Report Questionnaires

	Strongly Agree			Neutral			Strongly Disagree
17. The thought of engaging in highly unusual sex practices is highly arousing.	1	2	3	4	5	6	7
18. Manipulating my genitals would probably be an arousing experience.	1	2	3	4	5	6	7
19. I do not enjoy daydreaming about sexual matters.	1	2	3	4	5	6	7
20. I am not curious about explicit erotica.	1	2	3	4	5	6	7
21. The thought of having long-term sexual relations with more than one sex partner is not disgusting to me.	1	2	3	4	5	6	7

Appendix F: Self-Report Questionnaires

MEIM-R

In this country, people come from many different countries and cultures, and there are many different words to describe the different backgrounds or ethnic groups that people come from. Some examples of the names of ethnic groups are Hispanic or Latino, Black or African American, Asian American, Chinese, Filipino, American Indian, Mexican American, Caucasian or White, Italian American, and many others. These questions are about your ethnicity or your ethnic group and how you feel about it or react to it.

Please fill in: In terms of ethnic group, I consider myself to be _____

Use the numbers below to indicate how much you agree or disagree with each statement.

	Strongly Agree	**Agree**	**Disagree**	**Strongly Agree**
1. I have spent time trying to find out more about my ethnic group, such as its history, traditions, and customs.	4	3	2	1
2. I have a strong sense of belonging to my own ethnic group.	4	3	2	1
3. I understand pretty well what my ethnic group membership means to me.	4	3	2	1
4. I have often done things that will help me understand my ethnic background better.	4	3	2	1
5. I have often talked to other people in order to learn more about my ethnic group.	4	3	2	1
6. I feel a strong attachment towards my own ethnic group	4	3	2	1

7. My ethnicity is _____
   (1) Asian or Asian American, including Chinese, Japanese, and others
   (2) Black or African American
   (3) Hispanic or Latino, including Mexican American, Central American, and others
   (4) White, Caucasian, Anglo, European American; not Hispanic
   (5) American Indian/Native American
   (6) Mixed; Parents are from two different groups
   (7) Other (write in): _____

8. My father's ethnicity is (use numbers above) _____
9. My mother's ethnicity is (use numbers above) _____

Appendix F: Self-Report Questionnaires

Life Events Checklist

Listed below are a number of difficult or stressful things that sometimes happen to people. For each event check one or more of the boxes to the right indicating that: a) it *happened to you* personally, b) you *witnessed it* happen to someone else, c) you *learned about it* happening to someone close to you, d) you're *not sure* if it fits, or e) it *doesn't apply* to you.

Be sure to consider your entire life (growing up as well as adulthood) as you go through the list of events.

Event	Happened to me	Witnessed it	Learned about it	Not sure	Doesn't apply
1. Natural Disaster (for example, flood, hurricane, tornado, earthquake)					
2. Fire or explosion					
3. Transportation accident (for example, car accident, boat accident, train wreck, plane crash)					
4. Serious accident at work, home or during recreational activity					
5. Exposure to toxic substance (for example, dangerous chemicals, radiation)					
6. Physical assault (for example, being attacked, hit slapped, kicked, beaten up)					
7. Assault with a weapon (for example, being shot, stabbed, threatened with a knife, gun, bomb)					
8. Sexual assault (rape, attempted rape, made to perform any type of sexual act through force or threat of harm)					
9. Other unwanted or uncomfortable sexual experience					
10. Captivity (for example, being kidnapped, abducted, held hostage, prisoner of war)					
11. Combat or exposure to a war-zone (in the military or as a civilian)					
12. Life-threatening illness or injury					
13. Severe human suffering					
14. Sudden, violent death (for example, homicide, suicide)					
15. Sudden, unexpected death of someone close to you					
16. Serious injury, harm, or death you caused to someone else					
17. Any other very stressful event or experience					

Appendix G: Payment Form
(used only for Grant Funded payment for Laboratory Portion)

Name _____

Address _____

City _____ State _____ Zip _____

Home Phone _____ Alt. Phone _____

Email _____

Social Security Number (required for payment) _____-_____-_____

Appendix H: Resources for All Participants

RESOURCES

All participants are being given this resource sheet in case you or someone you may know can seek support services if interested.

Name	**Phone**	**Website**
Psychological Services		
American Psychological Association	800-964-2000	http://www.apa.org
Maryland Psychological Association	301-596-3999	http://www.marylandpsychology.org
Sexuality Based Services		
American Association for Sex Educators, Counselors, and Therapists	804-752-0026	http://www.aasect.org
Women's Health during Menopause		
National Women's Health Information Center	800-994-9662	http://www.womenshealth.org
National Institute on Aging	800-222-2225	http://www.nia.nih.gov
Hormone Foundation	800-467-6663	http://www.hormone.org
American College of Obstetricians and Gynecologists	202-638-5577	http://www.acog.org
Suicide Resources		
National hotline	800-273-TALK 800-273-8255	http://www.suicidepreventionlifeline.org
Hopeline	800-SUICIDE 800-784-2433	http://www.hopeline.com
Montgomery County hotline	240-777-4000	
PG County Hotline	301-864-7130	

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