THE IMPACT OF GENITAL SELF-IMAGE ON GYNECOLOGICAL EXAM BEHAVIORS OF COLLEGE-AGED WOMEN

A Dissertation

by

ANDREA LAINE DEMARIA

Submitted to the Office of Graduate Studies of
Texas A&M University
in partial fulfillment of the requirements for the degree of

DOCTOR OF PHILOSOPHY

May 2011

Major Subject: Health Education

The Impact of Genital Self-Image on Gynecological Exam Behaviors of College-Aged Women

THE IMPACT OF GENITAL SELF-IMAGE ON GYNECOLOGICAL EXAM BEHAVIORS OF COLLEGE-AGED WOMEN

A Dissertation

by

ANDREA LAINE DEMARIA

Submitted to the Office of Graduate Studies of
Texas A&M University
in partial fulfillment of the requirements for the degree of

DOCTOR OF PHILOSOPHY

Approved by:

Co-Chairs of Committee,	Ariane V. Hollub
	B.E. Pruitt
Committee Members,	Danny Ballard
	Bruce Thompson
	Debra Herbenick
Head of Department,	Richard Kreider

May 2011

Major Subject: Health Education

ABSTRACT

The Impact of Genital Self-Image on Gynecological Exam

Behaviors of College-Aged Women.

(May 2011)

Andrea Laine DeMaria, B.A., Purdue University; M.S., University of North Texas

Co-Chairs of Committee: Dr. Ariane V. Hollub
Dr. B.E. Pruitt

Human papillomavirus (HPV) affects at least half of all sexually active people, especially those aged 20-24 years. Gynecological exams are instrumental in cervical cancer prevention due to the early detection of abnormal cervical cells often caused by HPV. Despite the many benefits of gynecological exams, they continue to be underused. Women are often unaware of exam guidelines, procedures, and costs.

The Theory of Planned Behavior (TPB) was used to predict and explain exam behaviors. A woman's decision to seek gynecological care may be influenced by numerous factors including genital self-image, body image and sexual behaviors. The purpose of this study was to: 1) determine if the TPB explains and predicts exam behaviors; 2) assess if genital self-image, body image and sexual behaviors predict exam behaviors; and 3) evaluate the reliability and validity of data collected on the Female Genital Self-Image Scale (FGSIS) among a sample of female college students.

The study included a convenience sample of 450 women enrolled in health-related courses at a large Southern university in the US. Structural equation modeling

analyses revealed gynecological exam intention was a successful predictor of exam behaviors: X^2 (81, N = 450) = 258.49, p < .001, RMSEA = 0.07, CFI = 0.96 and NFI = 0.95. The addition of genital self-image to the TPB model yielded similar fit indices; however, the TPB alone appears to be more predictive of exam behaviors.

Predictive discriminant analysis (PDA) was used to indicate the predictor, or group of predictors, best suited to predict gynecological exam behavior. PDA results indicate the number of vaginal intercourse partners during the past 3-months was most predictive (hit rate = 68.2%).

A CFA yielded a two-factor FGSIS model: X^2 (12, N = 450) = 49.77, p < .001, RMSEA = 0.08, CFI = 0.98 and NFI = 0.97. Reliability assessments indicated very good internal consistency for the entire scale (α = 0.89), for factor one (α = 0.86) and factor two (α = 0.82).

Results have implications for the development of sexual health and women's health programs targeting factors influencing gynecological exam behaviors. Specifically, scores on the FGSIS can establish relationships between genital self-image and exam behaviors of college women.

DEDICATION

I dedicate this dissertation to my family. Although the distance from Illinois to Texas isn't quite ideal, you have stuck by me throughout my graduate degree pursuits (and my undergraduate pursuits at Purdue as well...*BOILER UP!*). Through sharing in excitement about grades, opportunities, and research, to listening to the drowning sorrows of an over-worked graduate student; you were always there to support me.

Mom and Dad—the financial support you have provided (when I needed it most) has not gone unappreciated. All the one-hundred dollars here, new tires there, minimized my financial stress (or just freed up the stress to be displaced somewhere else!). I know I may not say it enough, so *thank you—thank you* for being exceptional role models, *thank you* for the continued encouragement, and *thank you* for sharing in the excitement of this journey with me.

To my three siblings—Anthony, Mario, and Michele—you've made my trips back home an escape from this doctoral craziness. The three of you have continually encouraged me throughout my educational career and provided many outlets for enjoyment (i.e.,, a beautiful niece and handsome nephew, visits to Texas, and wonderful sweet treats). I appreciate your understanding of this process and look forward to celebrating this accomplishment with you.

Additionally, I would like to thank my extended family; especially, Aunt Deb, Uncle Mike, Uncle Albert, and Grandma for always taking interest in my latest ventures. Lastly, I would like to thank remember my Nonnie and Papa; I know they would be proud.

ACKNOWLEDGEMENTS

I would not be in the place I am, have the accomplishments I do, or retained my sanity as much as I have, without the direction, assistance, and support from the individuals I am about to recognize. It is with great gratitude that I recognize the individuals who made this education process possible.

To my committee members: Dr. Ariane Hollub, Dr. Buzz Pruitt, Dr. Danny Ballard, Dr. Bruce Thompson, and Dr. Debby Herbenick. I am appreciative of the support and guidance you have displayed over the past three years.

To my friend and co-chair, Dr. Ariane Hollub—your efforts have not gone unnoticed. You have taught me to be a researcher, writer, statistician, presenter, interviewer, and I am sure the list could go on and on. You have challenged me both intellectually and professionally. You believed in me when I had my doubts, gave me confidence when I needed to be lifted, and showcased my successes when deserved. We have made many memories, especially during our time traveling and presenting through Europe, which will never be forgotten. If you ever need more pictures drawn on napkins—you know whom to call!

To my original chair, and now co-chair, Dr. Buzz Pruitt—you're the reason why I wound up at this crazy ass school in the first place! *Thank you* for believing in me from the very beginning. I appreciate your continued guidance and unrelenting support.

To my committee member and co-lecturer, Dr. Danny Ballard—you believed in me as an instructor and welcomed me into your Women's Health classroom. I admire your commitment to service in our field, and will use your success as a model for my

own success in years to come. Additionally, *thank you* to you and the Department of Health & Kinesiology Ponder Endowment Research Grant for funding my dissertation work.

Thank you to my committee member and revered statistician, Dr. Bruce Thompson. When I asked you to join my committee (I of course waited until after my EPSY 643 presentation so you could see my rockin' good presenting skills—I got an A+), I felt as though I was asking for your hand in marriage. I appreciate all you have done for me both inside and outside the classroom. Because of you, I had exceptional statistical training, even though nobody really understands when I reference things like *rat's ass*, *matador pants*, *waking up naked in New Orleans*, or *why stepwise is the devil*.

Finally, *thank you* to Dr. Debby Herbenick, a fabulous mentor for all things *vulva*. I admire your expertise and willingness to offer your time and knowledge, all the way from Indiana University, to my work. I respect all you have done for the female sexual health field and I hope I can make as big of an impact on a future *V*-researcher as you have made on me.

To those who have helped me survive my statistics courses—especially, Dr. Bruce Hanik—my personal go-to guy. I am not sure I have said this enough, so here it goes…THANK YOU! *Thank you* for all the hours spent going over concepts, preparing for exams, discussing analyses, and letting me barge into your office whenever I couldn't *quite* figure things out on my own. I am forever in your statistical debt.

To Dr. Goodson—your belief in me as a writer has helped me realize *I am* a writer—not just a person who writes. I appreciate the many opportunities that came my

way through my involvement in P.O.W.E.R. I respect you as both a scholar and writer and am thankful I had the opportunity to work with you. Additionally, *thank you* to my fellow P.O.W.E.R. consultants for providing writing support.

Thanks to the faculty and staff of the Department of Health and Kinesiology for making this a great experience, especially Mike Tomchesson, for putting up with my many requests over the years. Mostly, for all the sports conversations we had in the halls that took my mind off of work for a bit.

To my Texas A&M friends, specifically my ladies' night crew—Melissa Boulware, Sara Fehr, Casey Snead and Brittany Rosen. I am pretty sure the mass amounts of queso from Casa Rodriguez aided in my brain functioning throughout this process. It was during those times in which much of the conceptualization of my dissertation occurred. I apologize if you ever felt slightly embarrassed from the awkward looks, glares, and stares we received due to our dinner table discussions. And to Dinah Harriger and Mary Odum (my fellow three musketeers), Ami Rothberg, and Cortney Thomsen for the great friendships which provided me with humor, laughter, and encouragement. *Thank you*.

Thank you to the staff of the Physical Education and Activity Program and Office of Health Informatics for the monetary support, especially Mrs. Amber T. Muenzenberger. Amber—t*hanks* for the many opportunities and for not yelling at me when semi-questionable articles rolled off the printer.

To my pre-Texas A&M friends: Dr. Emily Dodds, Maggie Sadler, and Shannon Sawyer. Tromper—you are one of the most intelligent women I know. Our friendship

and many memories mean the world to me. Maggie—you've been there through all the ups and downs. You've been a rock and you've been a great friend. I am so glad to be a part of your family's life. Shannon—my teacher of all things Texas! *Thank you* for understanding and encouraging my crazy education pursuits, and your exceptional editing skills and witty charm. And most of all, *thank you* for putting the honky-tonk in this girl! You are exceptionally smart and talented and I know many great things are in your near future. To the rest of my friends (Nick Ehrlich, Rachel Geesa, Katie Koselke, Ashley Lee) (I apologize, but I couldn't possibly put all of you in here)—*Thank you* for the continued support, time taken to spend time with me during my trips home, and the daily stalking of my Facebook page that helped you keep up with my latest ventures. Without your comments, encouragement, and friendship, this process would have been a lot harder.

Thanks to my friends, and the faculty and staff at the University of North Texas; especially Ashley Samson, Bekah Morrison, and Dr. Christy Greenleaf. *Thank you* for getting me to this point and for your additional assistance and encouragement throughout my time at Texas A&M.

And lastly, to the many Women's Health students I've had throughout my semesters of teaching; especially, Nadja Prcic, Noelle González, Kelsey Curry, and Nikki Jones. You have impacted my teaching style, research interests, and abilities as a mentor and friend. I know I was the one who was supposed to do the teaching, but at times, I feel as though you taught me more than I could ever have taught you. I wish each and every one of you success in your future endeavors.

TABLE OF CONTENTS

CHAPTER Page

Page

LIST OF FIGURES

Page

LIST OF TABLES

Page

CHAPTER I

INTRODUCTION

Human papillomavirus (HPV), the most common sexually transmitted infection (STI) in the United States (US), manifests itself in more than 40 strains infecting the genitals, mouths, and throats of males and females (CDC, 2010b). According to the Centers for Disease Control and Prevention (CDC), in 2009, approximately 20 million Americans were said to have HPV and another six million would become newly infected within the next year. HPV affects at least half of all sexually active people at some point, especially those aged 20-24 years (CDC, 2010b). In many cases, HPV appears to resolve on its own; however, certain strains can contribute to the development of cervical cancer if left untreated (CDC, 2010b).

Since the 1950s, the death rate from cervical cancer has dramatically declined—largely due to the invention and subsequent widespread use of, Papanicolaou (Pap) test technology. When detected early, the five-year survival rate for cervical cancer is approximately 92% (American Cancer Society, 2006). Despite the many benefits of gynecological exam procedures (e.g., early detection of abnormal cells on the cervix, detection for various genital and reproductive organ abnormalities) they continue to be underused, especially by younger women (aged 18-20 years) (Fletcher & Bryden, 2005). In part, this may be because women are often unaware of gynecological screening guidelines related to when and how often they should receive exams, procedures

---

This dissertation follows the style of the *International Journal of Sexual Health.*

performed during exams (i.e., differences between a pelvic exam and Pap test), and exam costs (Fletcher & Bryden, 2005; Breitkopf, Pearson & Breitkopf, 2005; Blake, Weber & Fletcher, 2004; Reid, 2001; Kahn et al., 1999; Burak & Meyer, 1997; Massad, Meyer & Hobbs, 1997).

According to the American Congress of Obstetricians and Gynecologists (ACOG) most women should have their first cervical cancer screening at age 21 (ACOG, 2009a). However, at the onset of puberty (approximately between the ages of 13 and 15), young women should engage in discussions surrounding reproductive health needs with their physician and receive their first gynecological examinations (ACOG, 2010). During this exam, various medical procedures may be performed based on the young woman's personal and medical history, including: a pelvic exam, clinical breast exam (CBE), vulvar examination, a Pap test or other gynecological procedures (ACOG, 2009b).

A Pap test is one of the most reliable and effective cancer screening tools for cervical cancer prevention (CDC, 2010a, CDC, 2004). Between 50 and 60% of cervical cancer diagnoses are among those who never or rarely engage in screenings (CDC, 2006). A pelvic exam, also included in a comprehensive gynecological exam, involves a manual and visual screening of a woman's reproductive anatomy in order to detect abnormalities in size and shape (NCI, 2010). Like a pelvic exam, a CBE is also typically conducted during routine gynecological care, providing an opportunity for women to engage in discussions regarding changes in their breasts, with a physician, as well as receive a manual and visual examination of their breast tissue to detect abnormalities

(ACS, 2010). These procedures are especially pivotal as they provide early detection for various abnormalities, and allow for open discussions surrounding preventative reproductive care, especially pertaining to the contraction of HPV.

Aside from the aforementioned, a woman's decision to seek gynecological care may be also be influenced by the following: genital self-image, body image, and sexual behaviors (Herbenick et al., 2011; Aldrich & Hackley, 2010; Herbenick & Reece, 2010; Burak & Meyer, 1997). Because gynecological exams are important to a woman's health, research has an obligation to identify the underlying determinants predicting and explaining a woman's decision to obtain a gynecological exam (CDC, 2010d). The Theory of Planned Behavior (TPB) (Ajzen, 1985; Ajzen, 1991), an extension of the Theory of Reasoned Action (TRA) (Ajzen & Fishbein, 1980), predicts human behavior through the following constructs: attitude, subjective norm, perceived behavioral control and intention. When applied to women's health research, this theory can describe gynecological exam behaviors of college females.

Prior studies using the TRA and TPB to analyze gynecological care (mostly through cervical cancer screening) found both attitude and subjective norm were predictive of exam intention (Sheeran & Orbell, 2000; Barling & Moore, 1996; Burnett, Steakley & Tefft, 1995). Some literature contradicts the ability of the TPB to predict intention to obtain a Pap test (Jennings-Dozier, 1999); yet, little research exists concerning contemporary assessments of the TPB's ability to predict and explain gynecological exam behaviors.

Although not a component of the TPB, genital self-image appears to have an impact on the theoretical framework for the prediction of gynecological exam behaviors. As demonstrated by past research, women may not engage in or delay regular gynecological exams due to concerns about visual examinations of their genitals and/or feelings about their genitals (Stewart & Spencer, 2002). Prior research indicates negative genital perceptions and embarrassment among women often stems from embarrassment of size, smell, taste and/or appearance (Braun, 2010; Braun, 2005, Braun & Kitzinger, 2001).

Genital-related concerns, first coined by Waltner (1986), as *genital identity*, has been assessed by numerous researchers using a variety of scales (i.e., Female Genital Self-Image Scale (FGSIS), Genital Self-Image Scale, and Genital Perceptions Scale) (Herbenick & Reece, 2010; Berman, Berman, Miles, Pollets & Powell, 2003; Reinholtz & Muehlenhard, 1995). Authors have related genital identity, self-image or perceptions to various sexual behaviors, with more positive genital perceptions associated with increased sexual experiences and enjoyment (Herbenick & Reece, 2010; Reinholtz & Muehlenhard, 1995). Findings have also shown a relationship linking women's positive body image with increased frequency of sexual behaviors, orgasm, and initiation of sex (Ackard, Kearney-Cooke & Peterson, 2000). Sexuality has been related to genital self-image (Herbenick & Reece, 2010), and body image (Ackard et al., 2000), therefore, an additional relationship may exist between body image and genital self-image (Schick, Calabrese, Rima & Zucker, 2010b).

Although genital self-image may be associated with gynecological exam behaviors, body weight and image may also be predictive. Body weight and body mass index (BMI) are strong predictors of such behaviors as adherence to medical guidelines (Adams, Smith, Wilbur & Grady, 1993; Haskew & Adams, 1989). Women who are overweight or obese are less likely to engage in gynecological-related preventative health services (Østbye, Taylor, Yancy & Krause, 2005; Fontaine, Faith, Allison & Cheskin, 1998), despite the increase in gynecological cancer diagnoses and mortality rates among this population (CDC, 2010d; Amy, Aalborg, Lyons & Keranen, 2006; Calle, Rodriguez, Walker-Thurmond & Thun, 2003; Fontaine, Heo & Allison, 2001; Allison, Fontaine, Manson, Stevens & VanItallie, 1999).

While overweight and obese females have increased cancer risks, they are less likely to engage in cervical cancer screenings, Pap tests, and breast cancer screenings (e.g., Aldrich & Hackley, 2010; Nelson, Moser, Gaffey & Waldron, 2009; Mitchell, Padwal, Chuck & Klarenbach, 2008; Calle & Thun, 2004; Fontaine et al., 2001; Wee, McCarthy, Davis & Phillips, 2000). Obese women are also more likely to find cervical cancer screenings painful, uncomfortable, or embarrassing (Wee, Phillips & McCarthy, 2005). As gynecological exams are intended to improve health outcomes, it is imperative researchers and practitioners understand and target existing barriers (Amy et al., 2006).

Sexual history is another important factor impacting cervical cancer screening and Pap test behaviors of females. Sexual behaviors of females have long been considered in ACOG's (2009b) guidelines for cervical cancer screening. Prior to the current guidelines suggesting a woman should engage in her first Pap test at age 21

(ACOG, 2009a), ACOG recommended a woman engage in her first Pap test either at age 21, or three years after her sexual debut, whichever came first (ACOG, 2009b).

Sexuality-related risk factors associated with cervical cancer include multiple sex partners, sex partners who have had multiple partners, and a history of HPV (CDC, 2010d). Women who are sexually active (either in monogamous sexual relationships or multiple-partner sexual relationships), and perceive themselves as being at risk for HPV infection and cervical cancer, are more likely to engage in cervical cancer screenings (Burak & Meyer, 1997). Sexual orientation, a component of sexuality, has also been associated with exam behaviors. Contradicting research investigating behaviors of lesbians has found both lower and higher rates of Pap tests than non-lesbians (Lindley et al., 2009; Price, Easton, Telljohann & Wallace, 1996).

Sexual activity and sexual debut behaviors during the past three years have proved to be predictive of Pap test behaviors (Saraiya, Martinez, Glaser & Kulasingam, 2009). Authors also found current use of hormonal contraceptives and previous 12 month pregnancy status to be most predictive of Pap test receipt (Saraiya et al., 2009). Most sexuality-related behaviors have long been linked to gynecological practices, yet little research has focused on the relationship between number of sexual partners (i.e., vaginal, anal, and oral) and exam behaviors of college females.

The theoretical framework of the TPB as well as the above-mentioned predictors (genital self-image, body image and sexual behaviors) are used in the current study to explain and predict gynecological exam behaviors of college women.

Purpose of the Study

The purpose of this study is to: 1) determine the Theory of Planned Behavior's ability to explain and predict gynecological exam behaviors among college women, 2) assess the extent to which genital self-image, body image and sexual behaviors predict gynecological exam behaviors of college women, and 3) assess the psychometric properties of the Female Genital Self-Image Scale (FGSIS) among a sample of college-aged women. This study seeks to understand the underlying factors determining gynecological exam behaviors of college women in order to inform intervention development targeting the importance of exam procedures and adherence to suggested exam guidelines.

Research Questions

1. Does the Theory of Planned Behavior explain and predict gynecological exam behaviors of college women?
    a. Is attitude toward gynecological exams predictive of exam intention?
    b. Does adding genital self-image as an additional predictor of intention better explain and predict gynecological exam behavior?
2. Are genital self-image, body image, and sexual behaviors predictive of gynecological exam behaviors of college women?
    a. Is genital self-image most predictive of gynecological exam behaviors?
    b. Do college women who have had multiple sexual partners engage in gynecological exams more frequently than college women who have not had multiple sex partners?

3. What are the psychometric properties of the Female Genital Self-Image Scale (FGSIS) among a sample of college-aged women?
    a. What is the underlying factor structure of the FGSIS?
    b. Does the FGSIS exhibit acceptable reliability, including internal consistency, construct validity, and predictive capacity for future gynecological exam behaviors?

CHAPTER II

USING THE THEORY OF PLANNED BEHAVIOR (TPB) TO EXPLAIN AND PREDICT GYNECOLOGICAL EXAM BEHAVIORS OF COLLEGE WOMEN

Synopsis

Despite the benefits of gynecological exams, they continue to be underused. Women are often unaware of exam guidelines, procedures, and costs. How a woman feels about her genitals may play a role in her decision to seek gynecological care. The Theory of Planned Behavior (TPB) was used to predict and explain gynecological exam behaviors of college females. The purpose of this study was to: 1) determine if the TPB explains and predicts exam behaviors, and 2) assess if adding genital self-image as an additional predictor of intention better explains and predicts exam behaviors. The sample included 450 college females enrolled in undergraduate health-related courses at a large Southern university in the US. Structural equation modeling revealed the TPB was successful in predicting and explaining gynecological exam intention and behavior of college females. The addition of genital self-image to the TPB structural equation model yielded similar fit indices; however, the TPB alone appears to be more predictive of gynecological exam behaviors among the current sample. Information from this study can be used in both medical and health education settings to aid in the understanding of barriers women face regarding gynecological exams.

Introduction

According to guidelines issued by the American Congress of Obstetricians and Gynecologists (ACOG) (2009a), it is recommended women have their first cervical cancer screening, via a Papanicolaou (Pap) test, at age 21. At the onset of puberty (approximately between the ages of 13 and 15), young females should initiate discussions regarding their reproductive health needs with a physician and receive their first gynecological examination (ACOG, 2010). At this time, a pelvic examination, clinical breast examination, vulvar examination and/or other procedures may be conducted based on the young woman's personal and medical history (ACOG, 2009b). These procedures are especially important as they provide early detection of various abnormalities. Specifically, Pap tests are important for a woman's routine health care due to their ability to detect abnormal cells on the cervix which can progress into cervical cancer (NCI, 2010).

Pap tests are one of the most reliable and effective cancer screening tests and are the most important measure in the prevention of cervical cancer (CDC, 2010a, CDC, 2004). Between 50 and 60% of cervical cancer diagnoses are among those who never or rarely engage in preventative cervical cancer screenings (CDC, 2006). A pelvic exam, also included in a comprehensive gynecological exam, involves a manual and visual screening of a woman's uterus, vagina, ovaries and other reproductive organs in order to detect abnormalities in size and shape (NCI, 2010). Like a pelvic exam, a clinical breast exam (CBE) is typically conducted during routine gynecological care. CBEs provide

women a chance to discuss changes in their breasts with a physician as well as receive a manual and visual examination of the breast tissue to detect abnormalities (ACS, 2010).

Upon puberty, it is recommended females schedule and attend annual gynecological exams, or 'well-woman' check-ups. A Pap test may or may not be part of the yearly examination procedures per the ACOG suggested cervical cancer screening guidelines (ACOG, 2009a; ACOG, 2009b). As indicated by Blake et al. (2004), if a woman misinterprets the difference between gynecological exam procedures (i.e., gynecological exam vs. Pap test), some confusion could exist regarding the ACOG (2009a) Pap test recommendations, thus leading to delayed gynecological care.

Despite the many benefits of gynecological exams, they remain underused, especially by younger women (aged 18-20 years), women who are obese, lesbians, and those without health insurance (Aldrich & Hackley, 2010; Lindley et al., 2009; Nelson, Moser, Gaffey & Waldron, 2009; Fletcher & Bryden, 2005). Women are often unaware of the gynecological screening guidelines (i.e., when and how often they should obtain exams), procedures performed during gynecological exams (i.e., the difference between a pelvic exam and Pap test), and exam costs (Fletcher & Bryden, 2005; Breitkopf, Pearson & Breitkopf, 2005; Blake et al., 2004; Reid, 2001; Kahn et al., 1999; Burak & Meyer, 1997; Massad, Meyer & Hobbs, 1997).

Regular gynecological exams benefit a woman's overall health. It is essential for healthcare providers to understand reasons why women obtain gynecological exams—especially college-aged women who are disproportionately impacted by Human papilloma virus (HPV), which is often detected during an examination (CDC, 2010a;

CDC, 2010b). Gynecological exams are quintessential for women's preventative reproductive and gynecologic health (i.e., gynecologic cancers); therefore, research identifying the underlying determinants predicting and explaining a woman's decision to obtain a gynecological exam is critical to healthcare research (CDC, 2010d). A popular theory within the behavioral sciences, The Theory of Planned Behavior (TPB) developed by Ajzen (1985), is used to predict human behavior. When applied to women's health research, this theory describes gynecological exam behaviors of college females.

The Theory of Planned Behavior (TPB) (Ajzen, 1985; Ajzen, 1991), an extension of the Theory of Reasoned Action (TRA) (Ajzen & Fishbein, 1980), predicts human behavior through the following constructs: attitude, subjective norm, perceived behavioral control and intention. A meta-analysis of health-related studies utilizing the TPB found nearly one-third of variations in behavior are explained by intention and perceived behavioral control (Godin & Kok, 1996).

Within the TPB, attitude refers to a person's overall positive or negative evaluation of performance of the behavior being studied (Ajzen, 1985). Subjective norm is a product of both normative beliefs toward a behavior and the motivation to comply with those normative beliefs. Subjective norm conceptualizes the social pressure one might face when choosing to execute a behavior. Perceived behavioral control denotes an individual's perceptions of his/her ability to carry out a specific behavior (Ajzen, 1985). This construct results from the belief that resources, factors, and opportunities, or lack thereof, can determine a person's behavioral intention and behavioral action (Ajzen, 1991). Perceived behavioral control also functions as a moderating variable between

intention and behavior. The addition of perceived behavioral control differentiates the TPB from the TRA.

Behavior refers to the observable response in a given situation with respect to a person or target (Ajzen, 1985; Ajzen & Fishbein, 1980; Fishbein & Ajzen, 1975). Within the TPB, behavior is a direct function of behavioral intention and perceived behavioral control. Intention refers to one's readiness to perform a given behavior based upon the three aforementioned constructs: attitude, subjective norm, and perceived behavioral control. According to Ajzen (1991), a strong intention is the product of positive attitude, subjective norm and perceived behavioral control. The stronger the intention, the more likely an individual is to try to perform a behavior; therefore, the more likely the behavior will be performed (Ajzen & Madden, 1986). These predicted intentions, along with perceived behavioral control, account for a large proportion of variance in human behavior (Ajzen, 1991).

Prior studies using the TRA and TPB to analyze gynecological care—mostly through cervical cancer screening—found attitude and subjective norm were predictive of intention and the theories were predictive of gynecological behaviors (Sheeran & Orbell, 2000; Barling & Moore, 1996; Burnett, Steakley & Tefft, 1995). Some contradictory literature exists regarding the ability of the TPB to predict intention to obtain a Pap test (Jennings-Dozier, 1999). Little research exists concerning contemporary assessments of the TPB's ability to predict and explain gynecological exam behaviors.

Although genital self-image is not a component of the TPB, it may have an impact on the theoretical framework for the prediction of gynecological exam behaviors. Prior research indicates positive genital perceptions of college students were indicative of higher frequency and enjoyment of sexual behaviors, especially oral-genital activity (Reinholtz & Muehlenhard, 1995). Research further suggests women may not engage in or delay regular gynecological exams due to their concerns about healthcare providers viewing their genitals (Stewart & Spencer, 2002). How a woman feels about her genitals may play a role in her decision to seek gynecological care (Herbenick et al., 2011; Herbenick & Reece, 2010). A recent study found participants who obtained gynecological exams within the past year reported a more positive perception of their genitals (Herbenick et al., 2011). Therefore, genital self-image should be considered, along with TPB, when assessing gynecological exam behavior.

Purpose of the Study

The purpose of this study was to: 1) determine if the TPB explains and predicts gynecological exam behaviors of college females, and 2) assess if adding genital self-image as an additional predictor of intention better explains and predicts gynecological exam behaviors of college females.

Methods

Data for the current study were collected in November/December 2010 from female students enrolled in health-related courses at a large Southern university in the United States (US). Participants were recruited via in-class verbal messages. A total of 450 completed paper-and-pencil surveys were collected during the last 10 minutes of

scheduled class periods. The university's Institutional Review Board approved all protocols and procedures prior to the initiation of the study.

Measures

A written survey instrument was utilized for data collection containing questions related to demographic characteristics, female genital self-image, attitude toward gynecological exams, subjective norm, perceived behavioral control, gynecological exam intention, and gynecological exam behavior.

Demographic characteristics. Demographic characteristics were obtained and examined using items related to: age, year in school, college enrollment, race/ethnicity, sexual orientation, current relationship status, current sexual relationship status, and age of first gynecological exam.

Theory of Planned Behavior (TPB)

Attitude toward gynecological exam. Six items utilizing a seven-point semantic differential scale with bipolar adjectives measured attitude toward gynecological exams. Items were framed as: 'For me, obtaining a gynecological exam is: harmful/beneficial, uncomfortable/comfortable, bad/good, worthless/valuable, painful/not painful, and unhealthy/healthy.' These six items were summed to create one score assessing the participant's total attitude toward gynecological exams. Total attitude scores ranged from 6 to 42, with higher scores indicating a more positive attitude toward the behavior.

Subjective norm. Three seven-point semantic differential scaled items assessing subjective norm were included: 'My family thinks I should obtain a gynecological exam: unlikely/likely;' 'My friends think I should obtain a gynecological exam:

unlikely/likely;' and 'The people in my life whose opinions I value would approve of me obtaining a gynecological exam: disagree/agree.' These three items were summed to create one score assessing subjective norm. Total scores ranged from 3 to 21, with higher scores indicating a more positive subjective norm.

Perceived behavioral control. Two items utilizing a seven-point semantic differential scaling method using bipolar adjective statements assessed participants' perceived behavioral control over obtaining gynecological exams. Items included: 'For me, obtaining a gynecological exam would be: not up to me/up to me, and not under my control/under my control.' These items were summed to create one perceived behavioral control score, ranging from 2 to 14, with a higher score indicating greater perceived behavioral control.

Gynecological exam intention. Intention was examined using two items on a seven-point semantic differential scale: 'I intend to obtain a gynecological exam within the next 12 months: extremely unlikely/extremely likely' and 'I intend to obtain a gynecological exam within the next 24 months: extremely unlikely/extremely likely.' Both items measuring intention were summed, resulting in a total score ranging from 2 to 14, with higher scores indicating a more positive intention to perform the behavior.

Gynecological exam behavior. Behavior was examined using two items, each having a conditional component. Participants were asked: 'Have you had a gynecological exam within the past 24 months: yes/no' and 'Have you had a gynecological exam within the past 12 months: yes/no.' For both items, participants

were able to indicate the number of exams they received during the 24 month and 12 month time period.

Female Genital Self-Image Scale (FGSIS). Female genital self-image was assessed using the FGSIS developed by Herbenick and Reece (2010). The scale measures a woman's feelings and beliefs about her genitals. The FGSIS contains 7 items on a 4-point response scale (Strongly Disagree, Disagree, Agree, Strongly Agree). Prior research has provided evidence of the scale's validity and reliability (Herbenick & Reece, 2010; Herbenick et al., 2011). As suggested by the authors, scores on the 7 items are summed—resulting in a total FGSIS score ranging from 7 to 28—with higher scores indicating a more positive genital self-image (Herbenick & Reece, 2010).

Data Analysis

Descriptive statistics were utilized to analyze demographic data. Reliability analyses were conducted on the TPB constructs and the FGSIS to assess internal consistency, using Cronbach's alpha as an indicator (Cronbach, 1951). Structural equation modeling was performed using Analysis of Moment Structures (AMOS) 17.0 statistical software package.

Results

Demographic Characteristics

The mean age of the 450 female participants was 20.60 years old (*SD* = 1.34) with a range from 18 to 24. The majority of participants were White (n = 350, 77.8%) and either senior (n = 223; 49.6%) or junior (n = 104; 23.1%) classification. Most participants identified as heterosexual/straight (n = 439, 97.6%), and in a relationship but

not living together (n = 203, 45.4%), or single and not dating (n = 136, 30.4%). Most participants were not currently sexually active (n = 235, 52.6%) or in an exclusive/monogamous sexual relationship (n = 184; 41.2%). Nearly all participants indicated having health insurance (n = 418; 93.5%). Out of the 450 participants, 280 (62.6%) reported having had a gynecological exam, with a mean age of first exam occurring at 18.08 years old (*Mdn* = 18.0; *SD* = 1.70; n = 265) and ranging from 12 to 23. Table 2.1 includes a more detailed description of all participant characteristics.

Theory of Planned Behavior (TPB)

Attitude scores ranged from 15 to 42, with a mean of 34.09 (*SD* = 5.67; n = 450) and a Cronbach's alpha coefficient of 0.80. Subjective norm scores ranged from 3 to 21, with a mean of 17.01 (*SD* = 4.35; n = 450) and a Cronbach's alpha coefficient of 0.76. Perceived behavioral control scores ranged from 2 to 14, with a mean result of 12.70 (*SD* = 2.35; n = 450) and a Cronbach's alpha coefficient of 0.95. Intention scores ranged from 2 to 14, with a mean equaling 11.52 (*SD* = 3.56; n = 450) and a Cronbach's alpha coefficient of 0.88. Gynecological exam behaviors over the past 24 from 0 to 6, with a median of 1.00 (*SD* = 1.01; n = 450). Most participants indicated either having 0 (n = 189, 42.0%), 1 (n = 103, 22.9%), or 2 (n = 140, 31.1%). Exam behaviors over the past 12 months ranged from 0 to 3 exams (*Mdn* = 0.00; *SD* = 0.59; n = 450), with the majority of participants having received either 0 (n = 230, 51.1%) or 1 (n = 203, 45.1%) exam(s) during this time period. The Cronbach's alpha coefficient for behavior was 0.85. All alpha coefficients yielded respectable or very good internal consistency (DeVellis, 2003).

Table 2.1

Participant Characteristics (*N* = 450)

Variable	n	%
Classification (n = 450)		
Senior	223	49.6
Junior	104	23.1
Sophomore	64	14.2
Freshman	48	10.7
Graduate	11	2.4
Race/ethnicity (n = 450)		
White or Caucasian	350	77.8
Hispanic or Latino	57	12.7
Asian or Asian-American	20	4.4
Black or African American	15	3.3
American Indiana or Alaskan Native	5	1.1
Other	3	0.7
Sexual Orientation (n = 450)		
Heterosexual/Straight	439	97.6
Bisexual	9	2.0
Homosexual/Gay or Lesbian	1	0.2
Other	1	0.2
Current Relationship Status (n = 447)		
In a relationship but not living together	203	45.4
Single and not dating	136	30.4
Single and dating/hanging out with someone	88	19.7
Living together but not married	16	3.6
Married and living together	2	0.4
Married but not living together	2	0.4
Current Sexual Relationship Status (n = 450)		
Not currently sexually active	235	52.6
Exclusive/Monogamous sexual relationship	184	41.2
Sexually active but not in a sexual relationship	24	5.4
Sexual relationship with several different people	4	0.9
Insurance (n = 450)		
Yes	418	93.5
No	28	6.3

Table 2.1 Continued

Variable	n	%
Unsure	1	0.2
Ever Had Gynecological Exam (n = 450)		
Yes	280	62.6
No	167	37.4

Female Genital Self-Image Scale (FGSIS)

The 7-item FGSIS resulted in a mean total score of 21.80 (*SD* = 3.61; n = 450), a range of 7 to 28 and a Cronbach's alpha coefficient of 0.89, demonstrating very good internal consistency (DeVellis, 2003). Table 2.2 provides a descriptive summary of all items.

Structural Equation Models (SEM)

Model 1 tested the validity of the TPB in predicting gynecological exam behaviors of college females (See Figure 2.1). Model 1 resulted in a X^2 (81, N = 450) = 258.49, $p < .001$ and a Root Mean Square Error of Approximation (RMSEA) of 0.07, a Comparative Fit Index (CFI) = 0.96 and a Normed Fit Index (NFI) = 0.95. The results yield acceptable, good and good model fit respectively (Fan, Thompson & Wang, 1999; Hu & Bentler, 1999, 1998; Byrne, 2001).

The TPB constructs in Model 2 were identical to those in Model 1. Model 2, however, contained an additional construct, female genital self-image (See Figure 2.2). The current model tested if the inclusion of female genital self-image as a predictor of intention to the TPB was more predictive of gynecological exam behaviors of college females. Model 2 resulted in a X^2 (196, N = 450) = 572.68, $p < .001$ and a RMSEA of 0.06, a CFI = 0.94 and a NFI = 0.91. The results yield acceptable fit in all cases (Fan, Thompson & Wang, 1999; Hu & Bentler, 1999, 1998; Byrne, 2001). Table 2.3 includes the standardized and unstandardized regression weights among the latent variables for both models and Table 2.4 provides a summary of all fit indices.

Table 2.2

Female Genital Self-Image Scale (FGSIS) (N = 450)

FGSIS Items	*M*	*SD*
1. I feel positively about my genitals.	3.23	0.58
2. I am satisfied with the appearance of my genitals.	3.17	0.63
3. I would feel comfortable letting a sexual partner look at my genitals.	2.93	0.75
4. I think my genitals smell fine.	3.07	0.63
5. I think my genitals work the way they are supposed to work.	3.34	0.57
6. I feel comfortable letting a healthcare provider examine my genitals.	3.06	0.73
7. I am not embarrassed about my genitals.	3.02	0.72

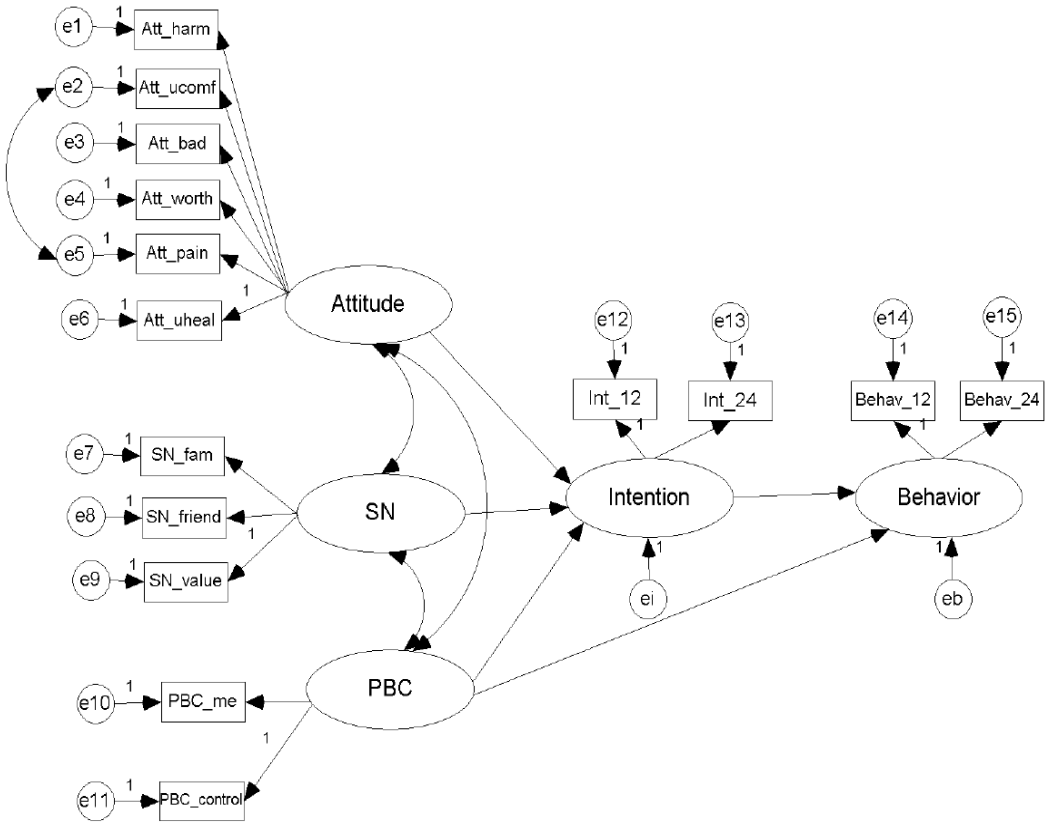


Figure 2.1: *TPB SEM Model 1*
Note: SN = Subjective Norm, PBC = Perceived Behavioral Control

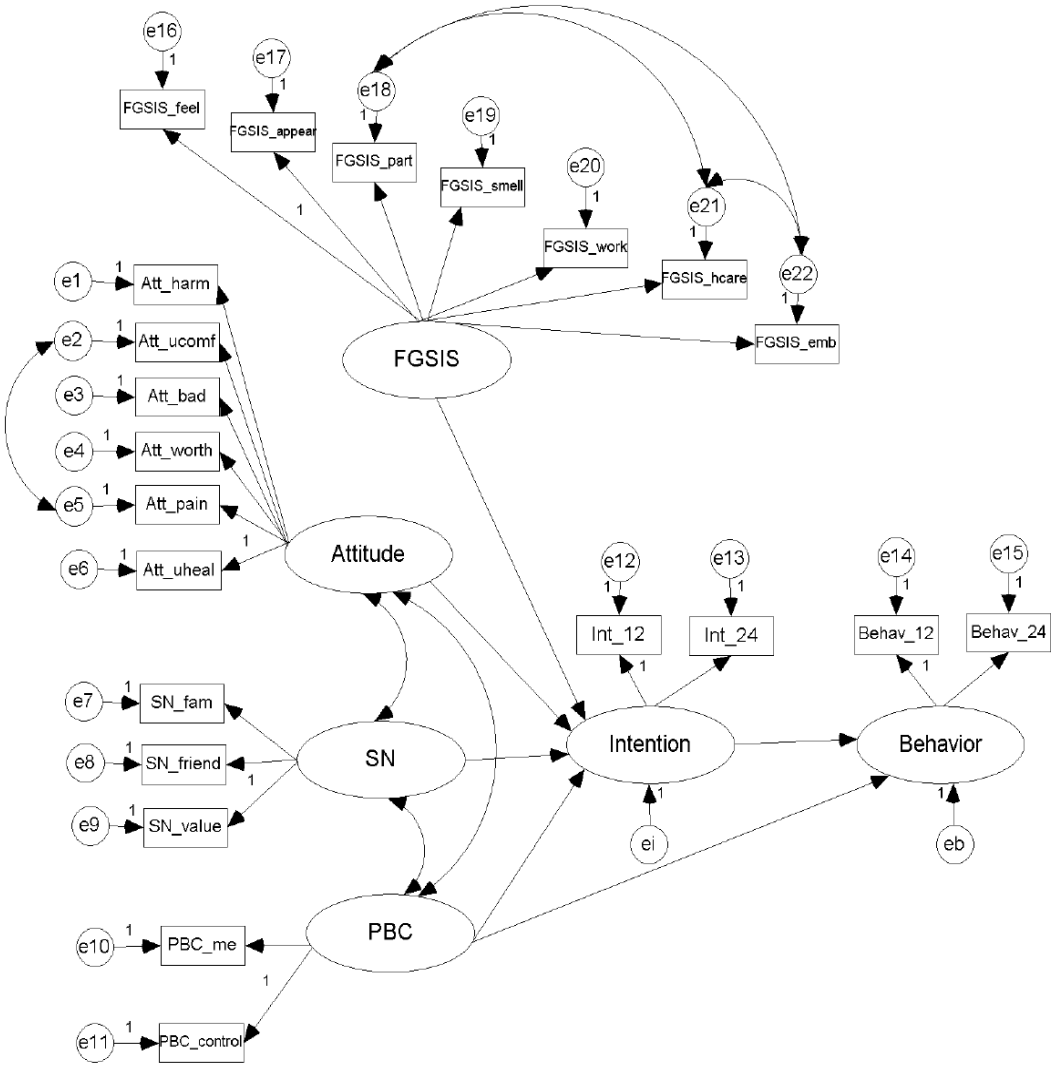


Figure 2.2: *TPB FGSIS Model 2*
Note: FGSIS = Female Genital Self-Image Scale, SN = Subjective Norm, PBC = Perceived Behavioral Control

Table 2.3

Standardized & Unstandardized Regression Weights for Model 1& Model 2 Latent Variables

	Model 1			Model 2		
Path	Standardized	Unstandardized	*SE*	Standardized	Unstandardized	*SE*
A—I	0.23	.75***	0.22	0.22	0.76***	0.22
SN—I	0.57	1.31***	0.18	0.57	1.31***	0.18
PBC—I	0.02	0.02	0.06	0.01	0.02	0.34
I—B	0.48	0.13***	0.02	0.48	0.13***	0.02
PBC—B	0.07	0.03	0.02	0.07	0.03	0.02
FGSIS—I				-0.02	-0.07	0.13

Note: A = Attitude, SN = Subjective Norm, PBC = Perceived Behavioral Control, I = Intention, B = Behavior, FGSIS = Female Genital Self-Image Scale

***$p < .001$

Table 2.4

Model 1 & Model 2 Fit Statistics

Model	X^2	RMSEA	CFI	NFI
1	258.49	0.07	0.96	0.95
2	572.68	0.06	0.94	0.91

Discussion

The current research sought to apply the TPB to predict and explain gynecological exam behaviors of college females. Structural equation modeling revealed the TPB to be a successful predictor of gynecological exam intention and behaviors of college females. Path coefficients yielded significant relationships; especially the subjective norm/intention and intention/behavior paths in both models (see Table 2.3). Intention to obtain a gynecological exam appears to be derived from attitude toward the behavior, subjective norm, and perceived behavioral control. In turn, intention has proven to predict gynecological exam behavior. Given the strong relationship between subjective norm and intention, the subjective norm component may be a potential way to increase regular gynecological exam behaviors through social acceptance. This also suggests intervention strategies for healthcare providers and practitioners should target the social constructs surrounding this behavior.

Although significant in both models, the weaker attitude—intention relationship was particularly surprising considering prior research has shown a significant, positive relationship (Sheeran & Orbell, 2000; Barling & Moore, 1996; Burnett, Steakley & Tefft, 1995). Perceived behavioral control yielded very small path coefficients within both models, and was not a significant predictor in either pathway, perceived behavioral control—intention or perceived behavioral control—behavior. Perhaps perceived behavioral control is not a necessary component to consider when predicting gynecological exam behaviors among this population.

The addition of genital self-image to the TPB structural equation model yielded similar fit indices; however, the TPB alone appears to be more predictive of gynecological exam behaviors among the current sample. Although the current study did not find the inclusion of genital self-image to increase the prediction of gynecological exam behaviors, it should still be considered when assessing a woman's intention to obtain a gynecological exam due to evidence from prior research (Herbenick, 2009; Herbenick et al., 2011; Herbenick & Reece, 2010; Stewart & Spencer, 2002).

Strengths and Limitations

The current study was not without limitations. Although results provide evidence of the TPB as adequately predicting and explaining gynecological exam behaviors, this deduction is limited to college-aged females enrolled in health-based courses. Expanding demographics to encompass all college-age females might yield different results. Although the current study found perceived behavioral control to have an insignificant effect on intention and behavior, further research should be conducted assessing this construct.

An additional limitation may have been a result of data collection procedures. In-class recruitment and data collection may have limited the responses and potentially introduced response bias due to the sensitive nature of the survey. Women who felt uncomfortable answering questions related to gynecological exam behaviors may have chosen to forgo their participation in the current study. This limits the generalizability of the findings.

Although limitations were present within the study, it also contained strengths—one strength being the measurement tool. Items were written based on a sound theoretical framework and proved to be reliable. Multiple items were used to assess a given construct. An established scale, resulting in valid and reliable measures in past research, was used to measure genital image. All items within the measurement tool were revised and reviewed by experts in both women's health and human sexuality fields.

Implications and Future Research

This theory provides information regarding mechanisms for gynecological behavior change; therefore, results from this study have numerous theoretical and practical implications. With the confirmation of the TPB's ability to explain and predict gynecological exam behaviors, researchers, program developers, and practitioners can direct their efforts toward addressing individuals' attitude toward the behavior, subjective norm, perceived behavioral control, and intention. Strong relationships between subjective norm and intention suggest intervention development should target interpersonal aspects specific to this behavior. The inclusion of genital self-image was not significant in terms of predicting intention; however, it did fit the specified model, and provided insight for its inclusion within the TPB model. Additional direct and indirect genital self-image pathways should be developed when predicting and explaining gynecological exam behaviors.

Information from this study can be used in a medical setting to assist physicians in understanding barriers women face regarding gynecological exams. Medical

professionals can gain insight into frequencies of exam behaviors and factors influencing a woman's decision to seek gynecological care. Results from this study can also be used in a health education setting as a tool to educate women about the importance of gynecological exams. Health education professionals can also use the findings to inform women about concepts influencing the decision to seek an exam, such as genital self-image and the constructs of the TPB.

Future research should examine the TPB's predictive ability among a more diverse population and should include additional components significant to the prediction of gynecological exam behaviors, such as genital self-image.

CHAPTER III

USING GENITAL SELF-IMAGE, BODY IMAGE, AND SEXUAL BEHAVIORS TO PREDICT GYNECOLOGICAL EXAM BEHAVIORS OF COLLEGE WOMEN

Synopsis

Receiving regular gynecological exams can effectively prevent cervical cancer as a result of the early detection of abnormal cervical cells often caused by human papillomavirus. Despite the benefits of gynecological exams, they continue to be underused. A woman's decision to seek gynecological care may be influenced by a number of factors. The purpose of this study was to assess the extent to which genital image, body image and sexual behaviors predict gynecological exam behaviors among a convenience sample of college women. The sample included 450 college females. Predictive discriminant analysis revealed the number of vaginal intercourse partners during the past three months was most successful in predicting gynecological exam behaviors of college women. The information gained from this study has significant theoretical and practical implications across both the medical and health fields.

Introduction

Human papillomavirus (HPV), the most common sexually transmitted infection (STI) in the United States (US), manifests itself in more than 40 strains infecting the genitals, mouths, and throats of males and females (CDC, 2010b). Approximately 20 million Americans currently have HPV and another six million will become newly infected within the next year (CDC, 2009). HPV affects at least half of all sexually active people at some point, especially those aged 20-24 years (CDC, 2010a). In many cases, HPV appears to resolve on its own; however, certain strains can contribute to the development of cervical cancer if left untreated (CDC, 2010b). Receiving regular gynecological exams, which may include a Papanicolau (Pap) test, can effectively prevent cervical cancer as a result of the early detection of abnormal cervical cells often caused by HPV (CDC, 2010f; NCI, 2010).

The American Congress of Obstetricians and Gynecologists (ACOG) recommends most women have their first cervical cancer screening at age 21, via a Pap test (2009a). At the onset of puberty (approximately between the ages of 13 and 15), young women should engage in discussions regarding reproductive health needs with their physician, and receive their first gynecological examinations (ACOG, 2010). At this time, a pelvic examination, clinical breast examination, vulvar examination and/or other procedures may be conducted based on the young woman's personal and medical history (ACOG, 2009b). These procedures are especially pivotal as they provide early detection for various gynecological abnormalities.

A Pap test is one of the most reliable and effective cancer screening tests and the most important measure for the prevention of cervical cancer (CDC, 2010a, CDC, 2004). Between 50 and 60% of cervical cancer diagnoses are among those who never or rarely engage in screenings (CDC, 2006). A pelvic exam, also included in a comprehensive gynecological exam, involves a manual and visual screening of a woman's uterus, vagina, ovaries and other reproductive organs in order to detect abnormalities in size and shape (NCI, 2010). Like a pelvic exam, a clinical breast exam (CBE) is also typically conducted during routine gynecological care. CBEs provide opportunities for women to discuss changes in their breasts with a physician, as well as receive a manual and visual examination of their breast tissue to detect abnormalities from a qualified medical professional (American Cancer Society, 2010).

Beginning around the time of puberty, it is recommended women attend annual gynecological exams, or 'well-woman' check-ups. A Pap test may or may not be part of the yearly examination procedures, especially in the case of a young woman, per the ACOG suggested cervical cancer screening guidelines (ACOG, 2009a; ACOG, 2009b). As indicated by Blake, Weber, and Fletcher (2004), if a woman misinterprets the difference between gynecological exam procedures (i.e., pelvic exam vs. Pap test), some confusion could exist regarding the ACOG (2009a) Pap test recommendations, thus leading to delayed or inconsistent gynecological care.

Women's decisions to seek gynecological care may be influenced by a number of factors including access to healthcare, knowledge regarding the behavior, body weight, sexual activity, and genital self-image (Herbenick et al., 2011; Aldrich & Hackley, 2010;

Herbenick & Reece, 2010; Burak & Meyer, 1997). Regarding the latter, research suggests women may not engage in or delay regular gynecological exams due to concerns about their healthcare providers' visual examination of their genitals (Stewart & Spencer, 2002).

Although genital self-image may be associated with gynecological care behaviors, body weight and image may also be predictive of exam behaviors. Body weight and body mass index (BMI) are strong predictors of behaviors, such as adherence to medical guidelines (Adams, Smith, Wilbur & Grady, 1993; Haskew & Adams, 1989). Women who are overweight or obese are less likely to engage in preventative health services (Østbye, Taylor, Yancy & Krause, 2005; Fontaine, Faith, Allison & Cheskin, 1998), despite the increase in gynecological cancer diagnoses and mortality rates among this population (CDC, 2010c; Amy, Aalborg, Lyons & Keranen, 2006; Calle, Rodriguez, Walker-Thurmond & Thun, 2003; Fontaine, Heo & Allison, 2001; Allison, Fontaine, Manson, Stevens & VanItallie, 1999).

While overweight and obese females have increased cancer risks, they are less likely to engage in cervical cancer screenings, Pap tests, and breast cancer screenings (e.g., Aldrich & Hackley, 2010; Nelson, Moser, Gaffey & Waldron, 2009; Mitchell, Padwal, Chuck & Klarenbach, 2008; Calle & Thun, 2004; Fontaine et al., 2001; Wee, McCarthy, Davis & Phillips, 2000). Obese women are also more likely to find cervical cancer screenings painful, uncomfortable, or embarrassing (Wee, Phillips & McCarthy, 2005). As gynecological exams are intended to improve health outcomes, it is imperative researchers and practitioners understand and target existing barriers (Amy et al., 2006).

Aside from body weight and BMI, no research, to date, has focused on the relationship between body image and comprehensive gynecological exam behaviors.

Sexual history is another important factor impacting cervical cancer screening and Pap test behaviors of females. Sexual behaviors have long been a consideration in ACOG's (2009b) guidelines for cervical cancer screening. Prior to the current guidelines suggesting a woman should engage in her first Pap test at age 21 (ACOG, 2009a), guidelines recommended a woman engage in her first Pap test at age 21, or three years after her sexual debut, whichever came first (ACOG, 2009b).

Sexuality-related risk factors associated with cervical cancer include multiple sex partners, sex partners who have had multiple partners, and a history of HPV (CDC, 2010e). Women who are sexually active, either monogamous or who have multiple partners, and perceive themselves as being at risk for HPV infection and cervical cancer, are more likely to engage in preventative health measures such as cervical cancer screenings (Burak & Meyer, 1997). Sexual orientation has also been associated with exam behaviors. Contradicting research investigating behaviors of lesbians has found both lower and higher rates of Pap tests than non-lesbians (Lindley et al., 2009; Price, Easton, Telljohann & Wallace, 1996).

An additional study found sexual activity and sexual debut behaviors during the past three years to be predictive of Pap test behaviors (Saraiya, Martinez, Glaser & Kulasingam, 2009). The same study also found current use of hormonal contraceptives and previous 12 month pregnancy status to be most predictive of Pap test receipt (Saraiya et al., 2009). Sexuality-related behaviors have long been linked to

gynecological practices, yet little research has focused on the relationship between number of sexual partners (i.e., vaginal, anal, and oral) and exam behaviors of college females.

Purpose of the Study

The purpose of this study was to assess the extent to which genital self-image, body image and sexual behaviors predict gynecological exam behaviors among a convenience sample of college women.

Methods

Data for the current study were collected from female students enrolled in health-related courses at a large Southern university in the US during November/December 2010. Participants were recruited to complete a paper-and-pencil survey via in-class verbal recruitment messages. A total of 450 completed surveys were collected during the last 10 minutes of scheduled class periods. The university's Institutional Review Board approved all protocols and procedures prior to the initiation of the study.

Measures

A paper-and-pencil survey instrument was utilized for data collection, which comprised questions related to demographic characteristics, genital self-image, body image, sexual behaviors, and gynecological exam behaviors.

Demographic characteristics. Demographic characteristics were obtained and examined using items related to: age, classification in school, college enrollment, race/ethnicity, sexual orientation, relationship status, sexual relationship status, health insurance coverage, and initial gynecological exam behaviors.

Female Genital Self-Image Scale (FGSIS). The FGSIS (Herbenick & Reece, 2010), was used to assess participants' feelings and beliefs about their genitals. The scale is comprised of 7 items on a 4-point Likert response scale (Strongly Disagree, Disagree, Agree, Strongly Agree). Prior research has found the scale to be both valid and reliable (Herbenick & Reece, 2010; Herbenick et al., 2011). Scores on all 7 items are summed—resulting in a total FGSIS score range of 7 to 28—with higher scores indicating a more positive genital self-image.

Body Parts Satisfaction Scale-Revised (BPSS-R). The BPSS (Berscheid, Walster & Bohrnstedt, 1973) measures an individual's body satisfaction by focusing on specific body parts (i.e., stomach, breasts and upper thighs) and provides a one-dimensional measure of body image. The original scale consisted of 24 items; however, a shorter, 11-item scale (BPSS-R) was used for the purposes of this study, and excluded body parts (i.e., teeth, chin) included in the original scale (Petrie, Tripp & Harvey, 2002). An additional item measuring the participant's overall satisfaction with the size and shape of her body was also included, creating 12 total items measuring body image. Participants indicated their level of satisfaction on a 6-point Likert response scale (1 = Extremely Dissatisfied to 6 = Extremely Satisfied) for each 11 items in the BPSS-R and the overall body satisfaction item. A total scale score was developed by computing a mean of all 12 responses, as suggested by Berscheid and colleagues (1973).

Sexual behaviors. Behaviors were examined through two items for each sexual behavior—vaginal intercourse, anal intercourse and oral sex. Participants were asked: 'Have you ever had vaginal intercourse?,' 'Have you ever had anal intercourse?,' and

'Have you ever had oral sex?' with yes/no response options. For all items, participants were also asked to indicate the number of partners they engaged in vaginal intercourse, anal intercourse and oral sex with over the past three months.

Gynecological exam behavior. Behavior was examined through two items. Participants were asked: 'Have you had a gynecological exam within the past 24 months?' and 'Have you had a gynecological exam within the past 12 months?' with yes/no response options. For both items, participants were also asked to indicate the number of gynecological exams they had during the past 24 month and 12 month time periods.

Data Analysis

Descriptive statistics were utilized to analyze participant characteristics. Reliability analyses were conducted on each scale to assess internal consistency, using Cronbach's alpha coefficient as an indicator of this reliability (Cronbach, 1951). Authors of the FGSIS recommend summing scale item responses to create a total scale score (Herbenick & Reece, 2010). Authors of the BPSS recommend computing a mean score for each participant (Berscheid, Walster & Bohrnstedt, 1973). Those participants with missing data on any FGSIS or BPSS-R scale items were excluded from the current analyses.

Predictive discriminant analysis (PDA) was used to indicate the predictor, or group of predictors, best-suited to predict gynecological exam behaviors of college women. Discriminant analysis is a multivariate analysis commonly used within the behavioral sciences. There are two types of discriminant analyses: descriptive (DDA)

and PDA. DDA is concerned with the description of group separation while PDA deals with the prediction of group membership (Huberty & Lowman, 1998). Unlike DDA which uses a set of two or more criterion variables, PDA utilizes one nominally- or ordinally-scaled dependent variable having two or more levels (Henington, 1994).

Although a discriminant analysis yields both DDA and PDA results, it is recommended the researcher only interpret one technique in most cases (Huberty, 1994; Huberty & Lowman, 1998). DDA is used for solely theoretical purposes while PDA can be used in both a practical and theoretical manner (Huberty & Lowman, 1998). For the purposes of this paper, PDA was utilized to predict group membership using combinations of all predictor variables to predict the most likely group membership (Buras, 1996). Hit rates are discussed as a measurement of this predictability.

Results

Demographic Characteristics

The mean age of the 450 female participants was 20.60 years (*SD* = 1.34) with a range of 18 to 24. The majority of participants were White (n = 350, 77.8%) and either senior (n = 223; 49.6%) or junior (n = 104; 23.1%) classification. Most participants identified as heterosexual/straight (n = 439, 97.6%), and in a relationship but not living together (n = 203, 45.4%), or single and not dating (n = 136, 30.4%). Most participants were either not currently sexually active (n = 235, 52.6%) or in an exclusive/monogamous sexual relationship (n = 184; 41.2%). Almost all participants indicated having health insurance (n = 418; 93.5%). Out of the 450 participants, 280 (62.6%) have had a gynecological exam, with the mean age of their first exam at 18.08

years of age (*Mdn* = 18.0; *SD* = 1.70; n = 265) with a range of 12 to 23. Table 3.1 includes a more detailed description of all participant characteristics.

Female Genital Self-Image Scale (FGSIS)

The 7-item FGSIS resulted in a mean total score of 21.80 (*SD* = 3.61; n = 450), a range of 7 to 28 and a Cronbach's alpha coefficient of 0.89, demonstrating very good internal consistency (DeVellis, 2003). Table 3.2 provides a descriptive summary of all items.

Body Parts Satisfaction Scale-Revised (BPSS-R)

The 12-item BPSS-R resulted in a mean score of 4.01 (*SD* = 0.74; n = 432), with a range of 1.17 to 5.83 and a Cronbach's alpha coefficient of 0.86, demonstrating very good internal consistency (DeVellis, 2003). Table 3.3 provides a descriptive summary of each item within the BPSS-R.

Sexual Behaviors

Of the 450 participants, 275 (61.4%) indicated they have had vaginal intercourse, 46 (10.2%) have had anal intercourse, and 307 (68.4%) have had oral sex. The number of vaginal intercourse partners over the past three months ranged from 0 to 4, with the majority of participants indicating 0 (n = 234, 52.1%) or 1 (n = 199, 44.3%) partner(s). The number of anal intercourse partners over the past three months ranged from 0 to 1, with only 19 participants (4.2%) indicating having one partner. The number of oral sex partners ranged from 0 to 6, with the majority of participants indicating 0 (n = 218, 48.6%) or 1 (n = 216, 48.1%) oral sex partner(s) during the past three months.

Table 3.1

Study Participant Characteristics (*N* = 450)

Variable	n	%
Classification (n = 450)		
Senior	223	49.6
Junior	104	23.1
Sophomore	64	14.2
Freshman	48	10.7
Graduate	11	2.4
Race/ethnicity (n = 450)		
White or Caucasian	350	77.8
Hispanic or Latino	57	12.7
Asian or Asian-American	20	4.4
Black or African American	15	3.3
American Indiana or Alaskan Native	5	1.1
Other	3	0.7
Sexual Orientation (n = 450)		
Heterosexual/Straight	439	97.6
Bisexual	9	2.0
Homosexual/Gay or Lesbian	1	0.2
Other	1	0.2
Current Relationship Status (n = 447)		
In a relationship but not living together	203	45.4
Single and not dating	136	30.4
Single and dating/hanging out with someone	88	19.7
Living together but not married	16	3.6
Married and living together	2	0.4
Married but not living together	2	0.4
Current Sexual Relationship Status (n = 450)		
Not currently sexually active	235	52.6
Exclusive/Monogamous sexual relationship	184	41.2
Sexually active but not in a sexual relationship	24	5.4
Sexual relationship with several different people	4	0.9
Insurance (n = 450)		
Yes	418	93.5
No	28	6.3

Table 3.1 Continued

Variable	n	%
Unsure	1	0.2
Ever Had Gynecological Exam (n = 450)		
Yes	280	62.6
No	167	37.4

Table 3.2

Female Genital Self-Image Scale (FGSIS) Results (N = 450)

FGSIS Items	*M*	*SD*
1. I feel positively about my genitals.	3.23	0.58
2. I am satisfied with the appearance of my genitals.	3.17	0.63
3. I would feel comfortable letting a sexual partner look at my genitals.	2.93	0.75
4. I think my genitals smell fine.	3.07	0.63
5. I think my genitals work the way they are supposed to work.	3.34	0.57
6. I feel comfortable letting a healthcare provider examine my genitals.	3.06	0.73
7. I am not embarrassed about my genitals.	3.02	0.72

Table 3.3

Body Parts Satisfaction Scale-Revised (BPSS-R) (N=450)

BPSS-R Items	n	*M*	*SD*
1. Weight	450	3.73	1.24
2. Hair	450	4.83	0.96
3. Complexion	448	4.25	1.21
4. Overall face	450	4.53	0.98
5. Arms	449	4.11	1.16
6. Stomach	450	3.31	1.25
7. Breasts	450	4.09	1.33
8. Buttocks	450	4.07	1.16
9. Hips	448	3.94	1.22
10. Upper thighs	450	3.40	1.34
11. General muscle tone	450	3.76	1.16
Overall satisfaction with the size and shape of your body	432	4.10	0.99

Gynecological Exam Behavior

The number of gynecological exams received by participants over the last twenty-four months ranged from 0 to 6, with a median of 1.00 (*SD* = 1.01; n = 450). The majority of participants engaged in 0 (n = 189, 42.0%), 1 (n = 103, 22.9%), or 2 (n = 140, 31.1%) exams over the past 24 months. Twelve month exam behaviors ranged from 0 to 3 exams (*Mdn* = 0.00; *SD* = 0.59; n = 450) with the majority of participants having received either 0 (n = 230, 51.1%) or 1 (n = 203, 45.1%) exam(s) during the past 12 months. Of the 450 participants, 37 (8.3%) reported having had an abnormal Pap result.

Predictive Discriminant Analysis (PDA)

A summary of the means and standard deviations of all predictor variables used in the PDA can be found in Table 3.4. The following variables were found to be most predictive of gynecological exam behaviors: 1) number of vaginal intercourse partners during the past three months (VI) (68.2%), 2) genital self-image paired with the number of VI partners (68.2%), 3) number of VI partners paired with anal intercourse partners during the past three months (AI) (68.2%), and 4) genital self-image, VI, and AI combined (68.2%). Hit rates yielded from the PDA indicate the number of cases correctly predicted by the classification functions, with higher hit rates being indicative of better predictive capabilities (Buras, 1996). Cross-validated hit rates yielded from the PDA are displayed in Table 3.5 and in Figure 3.1.

Discussion

Understanding the factors influencing a woman's decision to engage in regular gynecological exams is important in order for health and medical professionals to

Table 3.4

M and SD of All Predictor Variables Used within PDA

Predictor	N	*M*	*SD*
VI	449	0.53	0.62
OS	449	0.57	0.65
AI	449	0.04	0.20
FGSIS	450	21.80	3.61
BPSS	432	4.01	0.74

Note: VI = # of vaginal intercourse partners during past 3 months, OS = # of oral sex partners during past 3 months, AI = # of anal intercourse partners during past 3 months, FGSIS = Female Genital Self-Image total score, BPSS = Body Parts Satisfaction Scale-Revised average score

Table 3.5

PDA Cross-Validated Hit Rates

Variables Included	Hit Rate	Case #
VI	68.2%	3
FGSIS VI	68.2%	7
VI AI	68.2%	14
FGSIS VI AI	68.2%	20
VI OS	68.0%	13
OS	67.7%	4
VI OS AI	67.7%	25
BPSS VI	67.6%	10
FGSIS BPSS VI	67.6%	16
OS AI	67.5%	15
BPSS OS	67.4%	11
BPSS VI AI	67.4%	23
FGSIS BPSS VI AI	67.4%	27
BPSS OS AI	67.1%	24
FGSIS VI OS	66.6%	19
FGSIS OS AI	66.4%	21
FGSIS BPSS VI OS	66.4%	26
FGSIS VI OS AI	66.4%	29
BPSS VI OS	66.2%	22
BPSS VI OS AI	66.2%	30
FGSIS BPSS VIOS AI	66.2%	31
FGSIS BPSS OS AI	65.5%	28
FGSIS BPSS OS	65.2%	17
FGSIS BPSS	58.6%	6
FGSIS BPSS AI	58.0%	18
FGSIS	57.6%	1
FGSIS AI	57.3%	9
BPSS	56.6%	2
FGSIS OS	56.6%	8
BPSS AI	56.3%	12
AI	56.1%	5

Note: VI = # of vaginal intercourse partners, OS = # of oral sex partners, AI = # of anal intercourse partners, FGSIS = Female Genital Self-Image score, BPSS = Body Parts Satisfaction Scale-R score

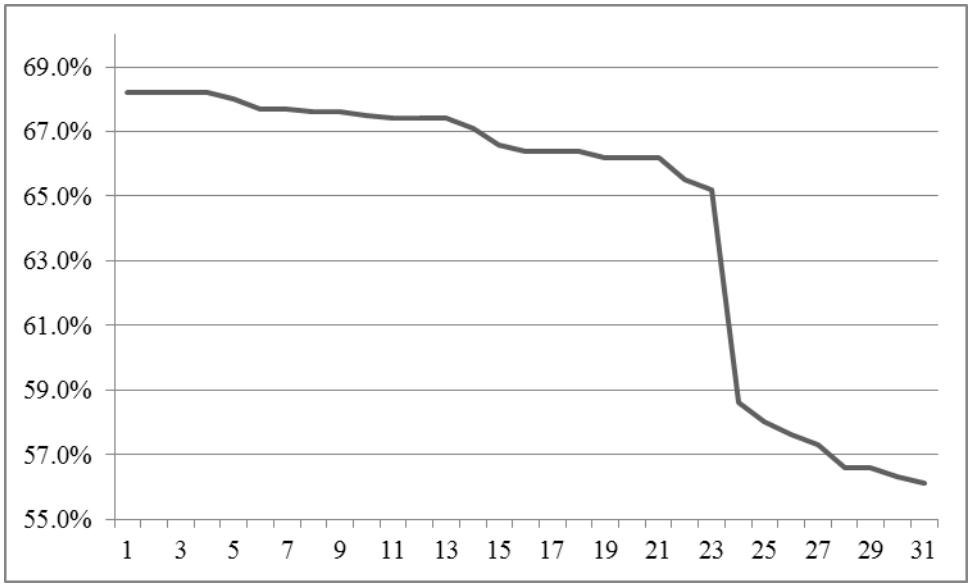


Figure 3.1: *PDA Cross-Validated Hit Rates*

address the limiting factors in this preventative health measure. In the current study, findings suggest the number of vaginal intercourse partners during the past 3-month period was the single most predictive construct used in the current study of gynecological screening behaviors. The number of vaginal intercourse partners when paired with genital self-image and the number of anal intercourse partners during the past three months was also found to be highly predictive compared to other predictors and predictor pairings. The common predictor among these hit rates is vaginal intercourse behavior; therefore, this behavior is the most predictive of gynecological examination behaviors in the current sample.

It should be noted that behavioral predictors (e.g., engaging in vaginal intercourse, engaging in oral sex) were more predictive of exam behaviors than attitude-specific predictors (e.g., genital self-image, body image). A possible confounding variable nested within intercourse behaviors, perceived risk of contraction of disease, may also assist in this behavior predicting behavior relationship. Further, women who engage in vaginal intercourse may experience medical symptoms (i.e., vulvovaginal pain, STI-related symptoms, pregnancy concerns, etc.) which initiate seeking gynecological care. These results draw attention to the risks associated with intercourse and preventative health measures surrounding gynecological care.

Among the current sample, 41.2% (n = 184) indicated being in an exclusive/monogamous sexual relationship and of those who were currently engaging in vaginal intercourse, 55.7% (n = 122) reported using a condom about half of the time to never using a condom. Therefore, it is questioned whether vaginal intercourse behavior

really is the strongest predictor, or if it is another construct, such as seeking prescriptions for hormonal contraceptive use. Prescriptions for hormonal birth control are prescribed on a yearly basis; therefore, if a woman is seeing a physician to obtain a prescription, she is likely to receive a yearly gynecological exam during that same appointment.

Gynecological exams, specifically Pap tests, are common among women who are also receiving other reproductive care such as STI screenings, prenatal care and/or hormonal contraceptive prescriptions (Saraiya et al., 2009; Castrucci et al., 2008; Stewart et al., 2001). Physician requirements for tests and procedures prior to the dissemination of hormonal contraceptives can potentially explain why some women engage in regular exams (Stewart et al., 2001). These exam requirements for contraceptives, although beneficial to a woman's preventative health, could take away from the understanding of recommended gynecological screening behaviors without proper education surrounding exam procedures and guidelines (Stewart et al., 2001). Although hormonal contraceptive use was not measured within the current study, it should be considered as a possible mediating or moderating variable between the relationship among number of vaginal intercourse partners and gynecological exam behaviors, especially considering hormonal birth control is the most common contraceptive utilized by college-aged women (Mosher & Jones, 2010).

It is also important to investigate whether women who are not currently engaging in vaginal intercourse are also not receiving regular gynecological exams. Although a woman may not be engaging in sexual activity, it is still important she obtain regular gynecological exams. Perhaps, some misunderstanding exists in the interpretation of the

recommended ACOG guidelines for first cervical cancer screening and when to obtain a gynecological exam and what is included (ACOG, 2009a). Future research should also address this concern.

Strengths and Limitations

The current study was not without limitations. Although results indicate the number of vaginal intercourse partners during the past three months is the best predictor of gynecological exam behaviors in this sample of college women, this deduction is limited to college-aged females enrolled in health-based courses at one university. Expanding data collection to women of different ages, or in different geographic areas, or to women not enrolled in college, might yield different results. Also, the inclusion of items measuring perceived risk and hormonal contraceptive use is suggested in order to derive the best possible explanation of why women engage in regular gynecological exams.

An additional limitation results from in-class recruitment and data collection. This could have limited the number of survey responses and potentially introduced response bias due to the sensitive nature of the survey. Women who felt uncomfortable answering questions related to gynecological exam behaviors, genital self-image, body image, and sexual behaviors may have chosen to not participate in the current study. This further limits the generalizability of the findings.

This study also had a number of strengths. Items were written based on a sound theoretical framework and shown to be reliable. Multiple items were used to measure each of the various constructs encompassed within the survey. Established valid and

reliable scales were used to measure genital self-image and body image. All items within the survey were revised and reviewed by individuals with expertise in women's health and human sexuality.

An additional strength of the current study was the use of PDA to determine the predictability of all possible pairings of predictors. This allowed for a more comprehensive examination of the influences of genital self-image, body image, and sexual behaviors on gynecological exam behaviors.

Implications and Future Research

The information gained from this study has significant theoretical and practical implications. Results from this study can be used in medical settings to assist physicians in understanding barriers women face regarding gynecological exams. Specifically, medical professionals can gain insight into frequencies of exam behaviors and factors influencing a woman's decision to seek gynecological care. Results from this study can also be used in a health education setting to educate women about the importance of gynecological exams. Health education professionals can also use the findings to inform women about concepts influencing the decision to seek an exam, such as sexual behaviors and genital self-image.

Future research should examine the predictability of genital self-image, body image, and sexual behaviors on gynecological exams among a more diverse population and should include additional components significant to the prediction of gynecological exam behaviors, such as hormonal contraceptive use and perceived risk.

CHAPTER IV

THE FEMALE GENITAL SELF-IMAGE SCALE (FGSIS): VALIDATION AMONG A SAMPLE OF FEMALE COLLEGE STUDENTS

Synopsis

Despite the many benefits of gynecological exam procedures, they continue to be underused; especially by younger women (aged 18-20 years). The underuse of exams among college-aged women could be due to several factors, including genital self-image. The purpose of this study was to 1) examine college women's genital self-image using the Female Genital Self-Image Scale (FGSIS), 2) assess the reliability and validity of data collected on the FGSIS among a sample of female college students, and 3) identify the predictors of gynecological exam behaviors of college women. The convenience sample included 450 college women currently enrolled at a large Southern university in the US. A Confirmatory factor analysis yielded a two-factor FGSIS model: X^2 (12, N = 450) = 49.77, $p < .001$ and a RMSEA = 0.08, a CFI = 0.98 and a NFI = 0.97. Reliability assessment results indicated very good internal consistency ($\alpha = 0.89$) for the entire scale, as well as for factor one ($\alpha = 0.86$) and factor two ($\alpha = 0.82$). Results have implications for the development of sexual health and women's health programs. Specifically, scores on the FGSIS can assist in establishing relationships between genital self-image and gynecological exam behaviors.

Introduction

Since the 1950s, the death rate from cervical cancer has dramatically declined—largely due to the invention and subsequent widespread use of, Papanicolaou (Pap) test technology. When detected early, the five-year survival rate for cervical cancer is approximately 92% (American Cancer Society, 2006). However, despite the many benefits of gynecological exam procedures (e.g., early detection of abnormal cells on the cervix, detection for various genital and reproductive organ abnormalities) they continue to be underused, especially by younger women (aged 18-20 years) (Fletcher & Bryden, 2005). In part, this may be because women are often unaware of gynecological screening guidelines related to when and how often they should receive exams, procedures performed during exams (i.e., differences between a pelvic exam and Pap test), and exam costs (Fletcher & Bryden, 2005; Breitkopf, Pearson & Breitkopf, 2005; Blake, Weber & Fletcher, 2004; Reid, 2001; Kahn et al., 1999; Burak & Meyer, 1997; Massad, Meyer & Hobbs, 1997).

According to the American Congress of Obstetricians and Gynecologists (ACOG) most women should have their first cervical cancer screening at age 21 (ACOG, 2009a). However, at the onset of puberty (approximately between the ages of 13 and 15), young women should engage in discussions surrounding reproductive health needs with their physician and receive their first gynecological examinations (ACOG, 2010). During this exam, various medical procedures may be performed based on the young woman's personal and medical history, including: a pelvic exam, clinical breast

exam (CBE), vulvar examination, a Pap test or other gynecological procedures (ACOG, 2009b).

A Pap test is one of the most reliable and effective cancer screening tools for cervical cancer prevention (CDC, 2010a, CDC, 2004). Between 50 and 60% of cervical cancer diagnoses are among those who never or rarely engage in preventative screenings (CDC, 2006). A pelvic exam, also included in a comprehensive gynecological exam, involves a manual and visual screening of a woman's reproductive anatomy in order to detect abnormalities in size and shape (NCI, 2010). Like a pelvic exam, a CBE is also typically conducted during routine gynecological care, providing an opportunity for women to engage in discussions regarding changes in their breasts with a physician, as well as receive a manual and visual examination of their breast tissue to detect abnormalities (ACS, 2010). These procedures are especially pivotal as they provide early detection for various abnormalities, and allow for open discussion surrounding preventative reproductive care, especially pertaining to the contraction of human papillomavirus (HPV)— the most common sexually transmitted infection (STI) (CDC, 2010a; CDC, 2009).

The underuse of gynecological screenings among college-aged women could be due to several factors, including a woman's feelings about her genitals. The construct of genital identity, first coined by Waltner (1986), has been assessed by numerous researchers using a variety of scales (i.e., Female Genital Self-Image Scale (FGSIS), Genital Self-Image Scale, Genital Perceptions Scale) (Herbenick & Reece, 2010; Berman, Berman, Miles, Pollets & Powell, 2003; Reinholtz & Muehlenhard, 1995).

Research has related genital identity, self-image or perceptions to various sexual behaviors, with more positive genital perceptions associated with increased sexual experiences and enjoyment (Herbenick & Reece, 2010; Reinholtz & Muehlenhard, 1995). Studies have also shown a relationship linking women's positive body image with increased frequency of sexual behaviors, orgasm, and initiation of sex (Ackard, Kearney-Cooke & Peterson, 2000). As genital self-image and sexuality are related (Herbenick & Reece, 2010), and body image and sexuality are also related (Ackard et al., 2000), an additional relationship may exist between body image and genital self-image (Schick, Calabrese, Rima & Zucker, 2010b). Research also alludes to the potential relationship between genital self-image and gynecological screening behaviors (Herbenick & Reece, 2010).

Research suggests women may delay regular gynecological exams due to concerns about their healthcare providers' visual examination of their genitals (Stewart & Spencer, 2002). Prior research indicates negative genital perceptions among women often stem from embarrassment of size, smell, taste and/or appearance (Braun, 2010; Braun, 2005, Braun & Kitzinger, 2001). Due to such negative perceptions of genitals, there has been an increase in the number of women choosing to have elective genital surgeries (Braun, 2010; Bramwell & Morland, 2009; Liao & Creighton, 2007)

The Female Genital Self-Image Scale (FGSIS), a scale measuring a woman's feelings toward her genitals, was established to capture valid and reliable data measuring genital self-image (Herbenick & Reece, 2010). After a two-stage development process, the end result was a 7-item, 4-point Likert response scale. Results found the scale to be

both valid and reliable, with one factor explaining 59.23% of the variance (Herbenick & Reece, 2010).

More recently, an abbreviated version of the FGSIS—the FGSIS-4—found women who engaged in a gynecological exam within the past year and women who engaged in a genital self-examination within the past month, had more positive genital perceptions than those who had not (Herbenick et al., 2011). Although the FGSIS-4 provides a quick, reliable, and valid measurement of genital self-image, the longer, 7-item scale was used for the purposes of the current study due to its inclusion of the item "I feel comfortable letting a healthcare provider examine my genitals" (Herbenick et al., 2011; Herbenick & Reece, 2010).

Previous research has proved the FGSIS to be a valid and reliable measure of genital self-image across a nationally representative sample of women aged 18-60 and among female in-home sex toy party facilitators (Herbenick et al., 2011; Herbenick & Reece, 2010). Given how college-aged women continue to underuse gynecological exam procedures, it is imperative to better understand the factors influencing their exam-related decisions. One way to explain this discrepancy is through using the FGSIS to determine the impact genital self-image has on screening behaviors. Further psychometric assessment of the FGSIS is needed to examine the relationship between female genital self-image and gynecological screening behaviors among college-aged women.

Purpose of the Study

The purpose of this study was to 1) examine college women's genital self-image using the Female Genital Self-Image Scale (FGSIS), 2) assess the reliability and validity of data collected on the FGSIS among a sample of female college students, and 3) identify the predictors of gynecological exam behaviors of college women.

Methods

Data for the current study were collected from female college students enrolled in health-related courses at a large Southern university in the United States (US) during November/December 2010. In-class verbal messages were used to recruit participants to complete a paper-and-pencil survey. Surveys were administered during the last 10 minutes of scheduled class periods, resulting in 450 completed surveys. The university's Institutional Review Board approved all protocols and procedures prior to the initiation of the study.

Measures

A paper-and-pencil survey instrument was utilized for data collection. In addition to the FGSIS, participants were asked to complete measures related to demographic characteristics, gynecological exam behaviors, sexual behaviors, and body image.

Demographic characteristics. Demographic characteristics were examined using items related to: age, classification in school, college enrollment, race/ethnicity, sexual orientation, relationship status, sexual relationship status, health insurance coverage, and initial gynecological exam behaviors.

Gynecological exam behavior. Gynecological exam behaviors were examined through two items. Participants were asked: 'Have you had a gynecological exam within the past 24 months?' and 'Have you had a gynecological exam within the past 12 months?' with yes/no response options. For both items, participants were also asked to indicate the number of gynecological exams they engaged in during the past 24 month and 12 month time periods.

Sexual behaviors. Vaginal intercourse and oral sex were examined through two items for each sexual behavior. Participants were asked: 'Have you ever had vaginal intercourse?' and 'Have you ever had oral sex?' with yes/no response options. For both items, participants were also asked to indicate the number of vaginal intercourse partners and oral sex partners over the past three months.

Body Parts Satisfaction Scale-Revised (BPSS-R). The BPSS (Berscheid, Walster & Bohrnstedt, 1973) provides a one-dimensional measure of body image using items focusing on specific body parts (i.e., stomach, breasts, upper thighs). The scale was originally developed using 24 items, although a shorter version, the BPSS-R which includes 11 items, which was used for the purposes of this study. The BPSS-R excludes certain body parts (i.e., teeth, chin) which are encompassed within the original scale (Petrie, Tripp & Harvey, 2002). An additional item related to overall body size and shape satisfaction was also included, creating a 12-item body satisfaction scale. A 6-point Likert response scaling method is used (1 = Extremely Dissatisfied to 6 = Extremely Satisfied) for each 12 items. The total scale score was calculated by

computing the mean of all 12 responses, as suggested by the scale's authors, with higher scores indicating more positive body image (Berscheid et al., 1973).

Female Genital Self-Image Scale (FGSIS). Scores on all 7 items were summed—resulting in a total FGSIS score ranging from 7 to 28—with higher scores indicating a more positive genital self-image. Items are measured on a 4-point Likert response scale (Strongly Disagree, Disagree, Agree, and Strongly Agree).

Data Analysis

Descriptive statistics were utilized to analyze participant characteristics. A comprehensive psychometric assessment of the FGSIS included: 1) a reliability assessment of internal consistency using Cronbach's alpha (Cronbach, 1951), 2) conducting a confirmatory factor analysis (CFA) on the FGSIS, and 3) structural equation modeling (SEM) using the FGSIS to predict gynecological exam behavior. The following statistical software packages were used to conduct the aforementioned analyses: the Statistical Package for the Social Sciences (SPSS) 17.0 and Analysis of Moment Structures (AMOS) 17.0. Specific analyses regarding the psychometric assessment are further discussed within the results section.

Results

Demographic Characteristics

Ages among the 450 female participants ranged from 18 to 24 years, with a mean age of 20.60 years (*Mdn* = 21.0; *SD* = 1.34). The majority of participants were White (n = 350, 77.8%), either senior (n = 223; 49.6%) or junior (n = 104; 23.1%) classification, identified as heterosexual/straight (n = 439, 97.6%), and indicated being in a relationship

but not living together (n = 203, 45.4%) or single and not dating (n = 136, 30.4%). Most participants were not currently sexually active (n = 235, 52.6%) or were in an exclusive/monogamous sexual relationship (n = 184; 41.2%). Most indicated currently having health insurance (n = 418; 93.5%). Of the 450 participants, 280 (62.6%) had a previous gynecological exam, with the mean age of first exam occurring at 18.08 years old (*SD* = 1.70; n = 265), with an age range of 12 to 23 years. Table 4.1 includes a detailed description of all participant characteristics.

Gynecological Exam Behavior

The number of gynecological exams received by participants over the last twenty-four months ranged from 0 to 6, with a median of 1.00 (*SD* = 1.01; n = 450). Most participants indicated either having 0 (n = 189, 42.0%), 1 (n = 103, 22.9%), or 2 (n = 140, 31.1%) exams over the past 24 months. Exam behaviors over the past 12 months ranged from 0 to 3 exams (*Mdn* = 0.00; *SD* = 0.59; n = 450), with the majority of participants having received either 0 (n = 230, 51.1%) or 1 (n = 203, 45.1%) exam(s) during this time period.

Sexual Behaviors

The majority of participants indicated previously engaging in vaginal intercourse (n = 275, 61.4%). Most also indicated having oral sex (n = 307, 68.4%). The number of vaginal intercourse partners over the past three months ranged from 0 to 4, with the majority of participants indicating 0 (n = 234, 52.1%) or 1 (n = 199, 44.3%) partner(s). The number of oral sex partners ranged from 0 to 6, with the majority of participants

Table 4.1

Participant Demographics (*N* = 450)

Variable	n	%
Classification (n = 450)		
Senior	223	49.6
Junior	104	23.1
Sophomore	64	14.2
Freshman	48	10.7
Graduate	11	2.4
Race/ethnicity (n = 450)		
White or Caucasian	350	77.8
Hispanic or Latino	57	12.7
Asian or Asian-American	20	4.4
Black or African American	15	3.3
American Indiana or Alaskan Native	5	1.1
Other	3	0.7
Sexual Orientation (n = 450)		
Heterosexual/Straight	439	97.6
Bisexual	9	2.0
Homosexual/Gay or Lesbian	1	0.2
Other	1	0.2
Current Relationship Status (n = 447)		
In a relationship but not living together	203	45.4
Single and not dating	136	30.4
Single and dating/hanging out with someone	88	19.7
Living together but not married	16	3.6
Married and living together	2	0.4
Married but not living together	2	0.4
Current Sexual Relationship Status (n = 450)		
Not currently sexually active	235	52.6
Exclusive/Monogamous sexual relationship	184	41.2
Sexually active but not in a sexual relationship	24	5.4
Sexual relationship with several different people	4	0.9
Insurance (n = 450)		
Yes	418	93.5
No	28	6.3

Table 4.1 Continued

Variable	n	%
Unsure	1	0.2
Ever Had Gynecological Exam (n = 450)		
Yes	280	62.6
No	167	37.4

indicating 0 (n = 218, 48.6%) or 1 (n = 216, 48.1%) oral sex partner(s) during the past three months.

Body Parts Satisfaction Scale-Revised (BPSS-R)

The mean score of the BPSS-R was 4.01 (*SD* = 0.74; n = 432), with scores ranging from 1.17 to 5.83. Using Cronbach's alpha (Cronbach, 1951) as a measure of internal consistency, the scale had very good reliability (α = 0.86) (DeVellis, 2003) in this sample; Table 4.2 provides a descriptive summary of each item within the BPSS-R.

Female Genital Self-Image Scale

Reliability analyses were conducted on the FGSIS using Cronbach's alpha as an indicator of internal consistency (Cronbach, 1951). The 7-item FGSIS yielded a Cronbach's alpha of 0.89, demonstrating very good internal consistency (DeVellis, 2003). The items on Factor 1 (Intrapersonal Concerns) yielded a Cronbach's alpha of 0.86 and items on Factor 2 (Interpersonal Concerns) yielded a Cronbach's alpha of 0.82, both demonstrating very good internal consistency (DeVellis, 2003). The scale resulted in a mean total score of 21.80 (*SD* = 3.61; n = 450), with a range from 7 to 28. Table 4.3 provides a descriptive summary of all items.

Construct Validity

An in-depth examination of results from a principal component analysis (PCA) and parallel analysis indicated a two-factor solution underlying the FGSIS (Thompson & Daniel, 1996). A total of 72.59% of variance was explained through the two factors solution. All item-to-factor loadings were .70 or higher. A confirmatory factor analysis (CFA) for both the two-factor (see Figure 4.1) and one-factor (see Figure 4.2) FGSIS

Table 4.2

Body Parts Satisfaction Scale-Revised (BPSS-R) Results (N=450)

BPSS-R Items	n	*M*	*SD*
1. Weight	450	3.73	1.24
2. Hair	450	4.83	0.96
3. Complexion	448	4.25	1.21
4. Overall face	450	4.53	0.98
5. Arms	449	4.11	1.16
6. Stomach	450	3.31	1.25
7. Breasts	450	4.09	1.33
8. Buttocks	450	4.07	1.16
9. Hips	448	3.94	1.22
10. Upper thighs	450	3.40	1.34
11. General muscle tone	450	3.76	1.16
Overall satisfaction with the size and shape of your body	432	4.10	0.99

Table 4.3

Factor Results for the Female Genital Self-Image Scale (FGSIS)

FGSIS Items	*Factor*	*M*	*SD*
1. I feel positively about my genitals.	1	3.23	0.58
2. I am satisfied with the appearance of my genitals.	1	3.17	0.63
3. I would feel comfortable letting a sexual partner look at my genitals.	2	2.93	0.75
4. I think my genitals smell fine.	1	3.07	0.63
5. I think my genitals work the way they are supposed to work.	1	3.34	0.57
6. I feel comfortable letting a healthcare provider examine my genitals.	2	3.06	0.73
7. I am not embarrassed about my genitals.	2	3.02	0.72

Note: Factor 1 = Intrapersonal concerns; Factor 2 = Interpersonal concerns

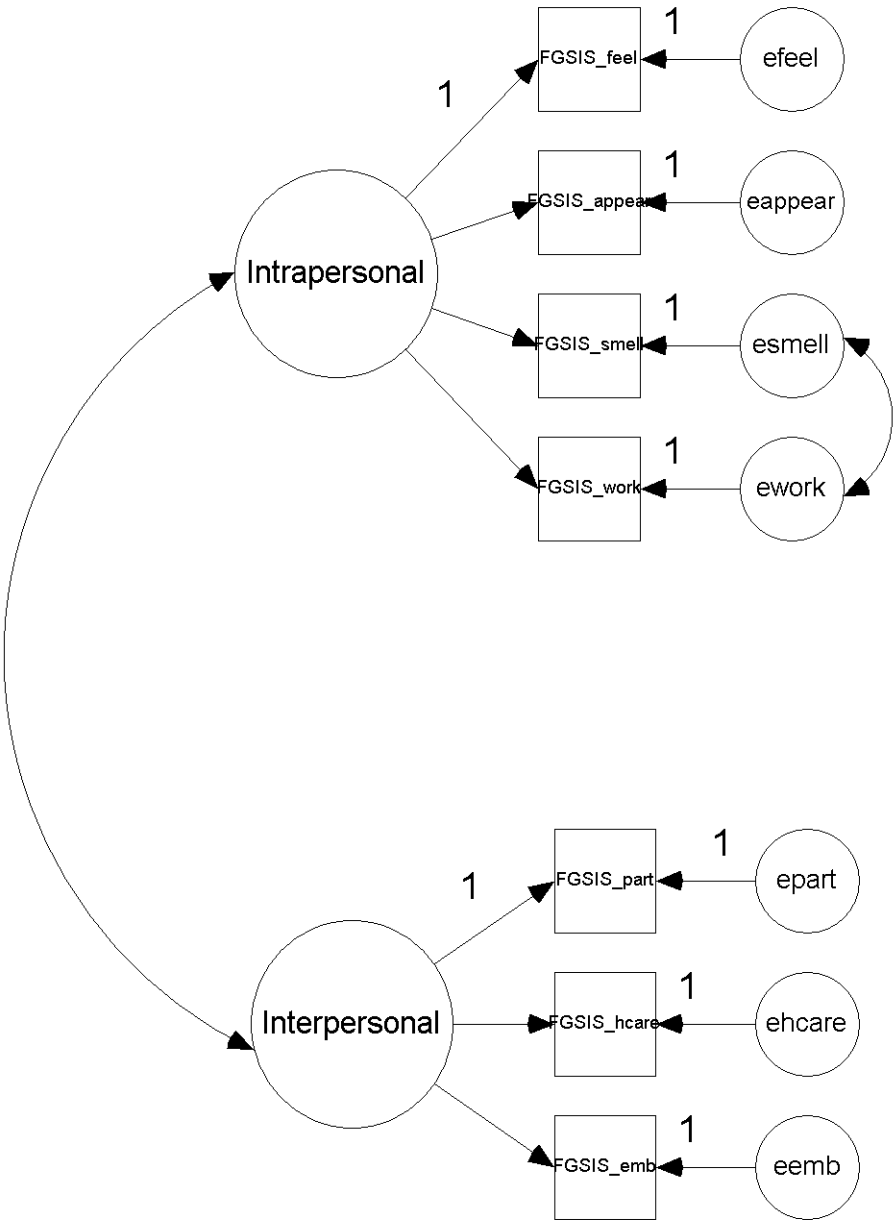


Figure 4.1: *Model 1, 2-Factor CFA of FGSIS*

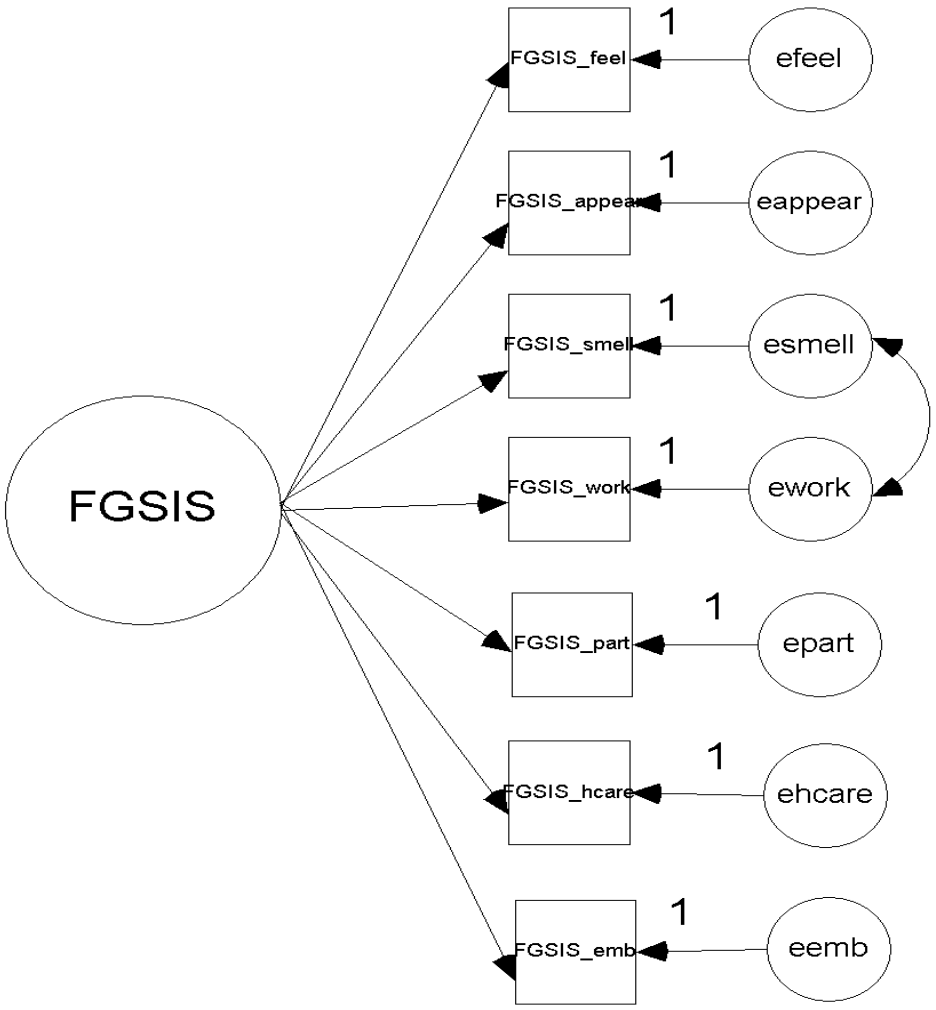


Figure 4.2: *Model 2, 1-Factor CFA of FGSIS*
Note: FGSIS = Female Genital Self-Image Scale

models were conducted using AMOS 17.0. Results of the CFA revealed the two-factor model better fit the current data, yielding a X^2 (12, N = 450) = 49.77, p < .001 and a Root Mean Square Error of Approximation (RMSEA) of 0.08, a Comparative Fit Index (CFI) = 0.98 and a Normed Fit Index (NFI) = 0.97. The resulting two-factor model demonstrated acceptable, good and good model fit respectively (Fan, Thompson & Wang, 1999; Hu & Bentler, 1999, 1998; Byrne, 2001). Regression weights for both CFA models can be found in Table 4.4 and Table 4.5.

The FGSIS was further evaluated by examining the correlation between the FGSIS and BPSS-R. A Pearson product moment correlation was conducted to explore the relationship between FGSIS total scores and BPSS-R mean scores, and yielded a significant positive correlation (r = .337, p < .001).

Predictive Capacity

Predictive capacity was established using SEM to exhibit the relationship between the two-factor FGSIS and gynecological exam behaviors. SEM results demonstrated significant unstandardized regression weights between both factors (Intrapersonal = -.82, p < .001, Interpersonal = .86, p < .001) and 24-month gynecological behaviors. Figure 4.3 represents an illustration of this model. The SEM analysis yielded a X^2 (22, N = 450) = 69.60, p < .001, a RMSEA of 0.07, a CFI = 0.98 and an NFI = 0.97. The results indicate acceptable, good and good model fit respectively (Fan, Thompson & Wang, 1999; Hu & Bentler, 1999, 1998; Byrne, 2001). All regression weights for the model are provided in Table 4.6. A complete list of model fit statistics, including those from both CFA analyses and the current SEM analysis, is

Table 4.4

Standardized & Unstandardized Regression Weights for Model 1

	Model 1		
Path	Standardized	Unstandardized	*SE*
IE—EMB	0.86	1.06***	0.06
IE—HCARE	0.68	0.84***	0.06
IE—PART	0.78	1.00	
IA—APPEAR	0.91	1.06***	0.03
IA—SMELL	0.57	0.67***	0.05
IA—WORK	0.67	0.70***	0.04
IA—FEEL	0.95	1.00	

Note: IE = Interpersonal, IA = Intrapersonal
***$p < .001$

Table 4.5

Standardized & Unstandardized Regression Weights for Model 2

	Model 2		
Path	Standardized	Unstandardized	*SE*
SMELL—FGSIS	0.59	0.69***	0.05
PART—FGSIS	0.70	0.97***	0.05
APPEAR—FGSIS	0.91	1.07***	0.04
FEEL—FGSIS	0.93	1.00	
WORK—FGSIS	0.68	0.71***	0.04
HCARE—FGSIS	0.57	0.77***	0.06
EMB—FGSIS	0.74	0.99***	0.05

Note: FGSIS = Female Genital Self-Image Scale
***$p < .001$

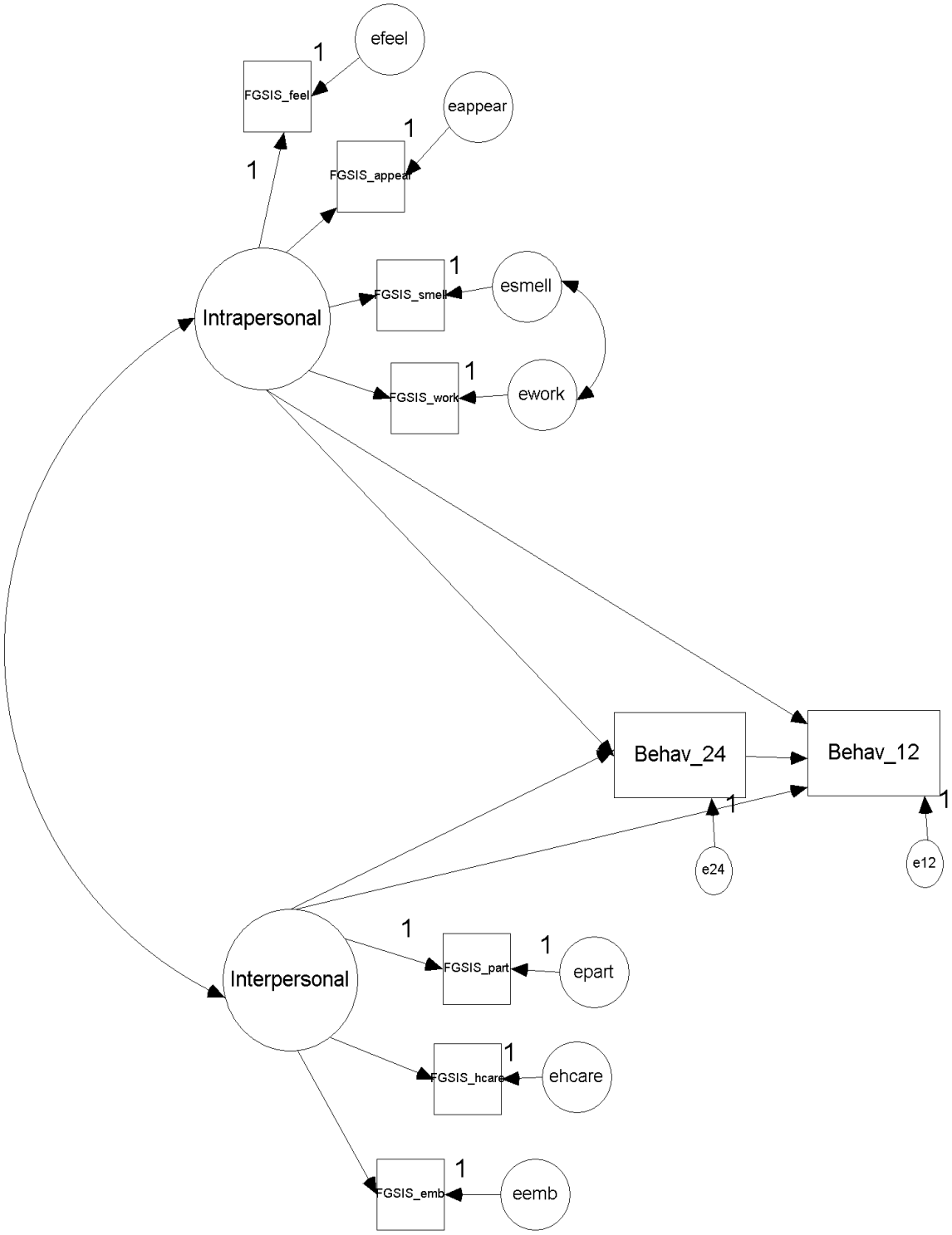


Figure 4.3: *Model 3, SEM with 2-Factor FGSIS & Gynecological Exam Behavior*
Note*:* Behav_24 = 24mo Behavior, Behav_12 = 12mo Behavior

Table 4.6

Standardized & Unstandardized Regression Weights for Model 3

	Model 3		
Path	Standardized	Unstandardized	*SE*
B12—IA	-0.05	-0.05	0.06
B12—IE	0.02	0.02	0.06
B24—IA	-0.45	-0.82***	0.19
B24—IE	0.50	0.86***	0.19
B24—B12	0.85	0.50***	0.02
EMB—IE	0.85	1.04***	0.06
HCARE—IE	0.69	0.85***	0.06
PART—IE	0.79	1.00	
APPEAR—IA	0.91	1.06***	0.03
SMELL—IA	0.57	0.66***	0.05
WORK—IA	0.67	0.70***	0.04
FEEL—IA	0.95	1.00	

Note: B = Behavior, IE = Interpersonal,
IA = Intrapersonal, B24 = 24mo Behavior,
B12 = 12mo Behavior
***$p < .001$

Table 4.7

Fit Statistics for Model 1, Model 2 & Model 3

Model	Model Type	# of Factors	X^2	RMSEA	CFI	NFI
1	CFA	2	49.77	0.08	0.98	0.97
2	CFA	1	178.82	0.17	0.91	0.91
3	SEM	2	69.60	0.07	0.98	0.97

presented in Table 4.7. The results of the SEM provide strong evidence of construct validity for the two-factor FGSIS when used to predict gynecological exam behaviors. Further, logistic regression results indicate the two factors of the FGSIS were significant predictors of 24 month gynecological exam behaviors (intrapersonal concerns (p = 0.001), interpersonal concerns ($p < .001$)), whereas the BPSS-R was not ($p = .922$). This provides further evidence of the need to examine genital self-image when establishing determinants of exam behaviors.

Upon further assessment, a t-test revealed a significant difference between FGSIS scores among women who had not received a gynecological exam compared with those who received at least one exam during the past 24 months (t (449) = -2.501, p =.01). Women who engaged in at least one gynecological exam had more positive genital self-image than those who had not.

An examination of the FGSIS scores among those engaging in sexual behaviors (i.e., vaginal intercourse, oral sex) during the past three months was conducted. A t-test revealed a significant difference for the FGSIS with vaginal intercourse partners, t(449) = -4.893, $p < .001$, with women indicating more positive feelings toward their genitals having at least one partner during the past three months. An second t-test showed a significant difference for the FGSIS with oral sex partners, t(449) = -4.446, $p< .001$, with higher FGSIS scores being among women who had at least one oral sex partner during the past three months.

Discussion

Data collected on the Female Genital Self-Image Scale (FGSIS) among a convenience sample of college women proved to be both valid and reliable. Construct validity analyses revealed a significant positive correlation between genital self-image and body image. Further, a significant difference was found among FGSIS scores of participants who indicated at least one gynecological exam over the past 24 months compared to those who did not, as well as between participants who indicated having at least one vaginal intercourse partner and those who had one oral sex partner during the past three months compared to those who did not. CFA and SEM results provide sound evidence for a two-factor structure of the FGSIS in this particular sample, with significant regression weights among both factors (intrapersonal concerns, interpersonal concerns), in predicting 24 month gynecological exam behaviors. Reliability assessments yielded very good internal consistency for each factor and the FGSIS as a whole.

Previous data collected on the FGSIS indicate a one-factor model (Herbenick et al., 2011; Herbenick et al., 2010; Herbenick & Reece, 2010); however, further CFA and construct validity assessments revealed, in this particular convenience sample of college students, a two-factor model better fit the underlying structure of the 7-item scale. The two-factor model, separating intrapersonal concerns from interpersonal concerns, could prove beneficial for public health practitioners and healthcare providers when addressing genital self-image among this population. Previous scales provide support for multiple factors underlying the concept of genital perceptions and genital self-image (Berman et

al., 2003; Reinholtz & Muehlenhard, 1995). Perhaps the underlying two-factor structure of the FGSIS is indicative of the distinction between intrapersonal and interpersonal concerns which impact female genital self-image of college women.

To examine the strength of genital self-image compared to body image as predictors of gynecological exam behaviors of college women, logistic regression analyses were conducted. Results indicated a significant relationship between the two FGSIS factor scores and 24 month exam behaviors, while the BPSS-R did not. This provides further evidence of the need to examine genital self-image, rather than body image, when establishing determinants of exam behaviors of college women.

Previous research indicates dissatisfaction with genital appearance may have negative implications, not only on gynecological exam behaviors, but also on a woman's sexual health (Schick et al., 2010a). Specifically, the media may have an influence on what is perceived as acceptable regarding genital appearance (Schick, Rima & Calabrese, 2010b; Koning, Zeijlmans, Bouman & van der Lei, 2009). As the number of women who request surgery to alter their genital appearance is increasing, it is important for researchers to understand the underlying issues associated with genital self-image (Liao & Creighton, 2007). Women have indicated engaging in this type of cosmetic surgery for reasons such as aesthetic or functional purposes, discomfort in clothing, and psychological concerns (i.e., social embarrassment) (Braun, 2010; Bramwell & Morland, 2009). The conceptualization of a two-factor FGSIS might help to better understand the complexity behind motivating factors resulting in women choosing to have elective genital surgeries.

Additionally, concerns associated with upper thigh and pubic hair removal prior to gynecological exams is frequent in females (Stewart & Spencer, 2002) and often to declining a same-day appointment due to the need to 'prepare.' A recent study found women's total pubic hair removal was related to age, sexual relationship status, and cunnilingus behaviors (Herbenick et al., 2010). Women who removed all pubic hair tended to have more positive genital self-image as indicated by scores on the FGSIS. Future research using the FGSIS might assess the intrapersonal (i.e., how the genitals smell, work) and interpersonal (i.e., comfort with allowing a healthcare provider or partner to view the genitals) concerns to better understand women's rationale behind pubic hair removal, elective genital surgeries, and gynecological exam behaviors, especially among demographically similar samples.

Strengths and Limitations

The current study was not without limitations. Although results provide evidence for the validity and reliability of the two-factor FGSIS, the scale is limited to its application among female college students in one geographic region of the US. While the scale exhibits very good internal consistency, we were unable to assess temporal stability in the current sample due to a single administration of the scale (DeVellis, 2003). However, previous research involving the FGSIS as administered to a nationally representative sample of women in the US has established temporal stability for the scale.

In-class recruitment and data collection could have limited the number of survey responses and potentially introduced response bias due to the sensitive nature of the

survey. Women who felt uncomfortable answering questions related to gynecological exam behaviors, genital self-image, and sexual behaviors may have chosen to forgo their participation in the current study. Additionally, women enrolled in health-based courses may have more accurate knowledge and opinions regarding female genitals, further limiting the extent of the generalizability of the study results. Limitations warrant the need for additional research examining the psychometric properties of the two-factor FGSIS across different populations.

The study also had a number of strengths—one being the measurement tool. Items within the survey were written based on existing literature and a strong theoretical framework. An established scale measuring genital self-image with items written based on existing literature, proved valid and reliable among data collected from two previous samples: a nationally representative sample of women aged 18-60 and a group of in-home sex toy party facilitators (Herbenick et al., 2011; Herbenick & Reece, 2010). Additionally, in the current study, data collected on the FGSIS captured scores from women with a mean age of 20.60 years and a limited age range of 18 to 24, representing a younger sample from a geographically different location than captured in previous studies.

Implications and Future Research

Data collected using the FGSIS were found to be both valid and reliable, aiding in the understanding of women's genital self-image among a college population using an underlying two-factor approach. This information has important implications for the development of both sexual health and women's health programs. Specifically, scores on

the FGSIS can aid both medical and public health professionals in establishing relationships between genital self-image and gynecological exam behaviors.

Future research should examine genital self-image in a clinical setting, both pre- and post- gynecological exam, to assess any change in genital self-image after having a healthcare provider view and inspect the genitals. Additional research is also needed to confirm the two-factor structure of the FGSIS in order to further intervention development related to increasing gynecological exam behaviors due to intrapersonal and interpersonal concerns. It is also suggested the FGSIS be incorporated in future research to better understand women's requests for surgeries to alter their genital appearance.

CHAPTER V

CONCLUSION, REFLECTION, AND FUTURE DIRECTION

Conclusion

Understanding the factors influencing a woman's decision to engage in gynecological exams is important in order for health and medical professionals to address the inhibiting factors in this preventative health measure. The current research sought to apply the Theory of Planned Behavior (TPB) to predict and explain gynecological exam behaviors of college-aged women. Structural equation modeling (SEM) revealed the TPB was a successful predictor of gynecological exam intention and behavior. Intention appears to be derived from attitude toward the behavior, subjective norm, and perceived behavioral control. In turn, intention proves predictive of gynecological exam behavior. Information surrounding the TPB and gynecological behaviors suggests intervention strategies should target the interpersonal constructs surrounding this behavior due to the strong relationship between subjective norm and intention. The addition of genital self-image to the TPB (through a direct pathway from scores on the Female Genital Self-Image Scale (FGSIS) to intention) yielded similar fit indices; however, the TPB alone appears to be more predictive of gynecological exam behaviors among the current sample.

When comparing the predictive abilities of genital self-image, body image, and sexual behaviors, findings from a predictive discriminant analysis (PDA) suggested the number of vaginal intercourse partners during the past 3-month period was the single most predictive variable. The number of vaginal intercourse partners when paired with

genital self-image and the number of anal intercourse partners during the past three months was also found to be highly predictive compared to other predictors. It should be noted that behavioral predictors (e.g., engaging in vaginal intercourse, engaging in oral sex) were more foretelling of exam behaviors than attitude-specific predictors (e.g., genital self-image, body image).

Data collected on the Female Genital Self-Image Scale (FGSIS) among the current sample proved to be both valid and reliable. A significant difference was found among FGSIS scores of participants who indicated at least one gynecological exam over the past 24 months compared to those who did not, as well as between participants who indicated having at least one vaginal intercourse partner and those who had one oral sex partner during the past three months compared to those who did not. A confirmatory factor analysis (CFA) revealed a two-factor model better fit the FGSIS data, in this particular sample, than a one-factor model. SEM results provide sound evidence for a two-factor structure of the FGSIS in predicting 24 month gynecological exam behaviors. Reliability assessments yielded very good internal consistency for each factor and the total FGSIS. The two-factor model, separating intrapersonal concerns from interpersonal concerns, could prove beneficial for public health practitioners and healthcare providers when addressing genital self-image among this population.

Strengths and Limitations

The current study was not without limitations. In-class recruitment and data collection could have limited the number of survey responses and potentially introduced response bias due to the sensitive nature of the survey. Women who felt uncomfortable

answering questions related to gynecological exam behaviors, genital self-image, body image, and sexual behaviors may have chosen to not participate in the current study. Additionally, women enrolled in health-based courses may have more accurate knowledge and opinions regarding gynecological exams and female genitals, further limiting the extent of the generalizability of the study results.

This study also had a number of strengths. Survey items were written based on previous literature and a sound theoretical framework, with multiple items measuring each of the various constructs encompassed within the survey. Established valid and reliable scales were used to measure genital self-image and body image. All items within the survey were revised and reviewed by individuals with expertise in women's health and human sexuality.

An additional strength of the current study was the use of numerous statistical analyses (e.g., CFA, SEM, and PDA). This allowed for a more comprehensive examination of the influences of genital self-image, body image, and sexual behaviors on gynecological exam behaviors of college women.

Implications and Future Research

The information gained from this study has significant theoretical and practical implications. Results from this study can be used in medical settings to assist physicians in understanding barriers women face regarding gynecological exams. Specifically, medical professionals can gain insight into frequencies of exam behaviors and factors influencing a woman's decision to seek gynecological care. Results from this study can also be used in a health education setting to educate women about the importance of

gynecological exams. Health education professionals can also use the findings to inform women about concepts influencing the decision to seek an exam, such as social constructs, sexual behaviors and genital self-image.

With the confirmation of the TPB's ability to explain and predict gynecological exam behaviors, researchers, program developers, and practitioners can direct some efforts toward addressing individuals' attitude toward the behavior, subjective norm, perceived behavioral control, and intention. Strong relationships between subjective norm and intention suggest intervention development should target interpersonal aspects specific to this behavior. Additional direct and indirect genital self-image pathways within the TPB model should be developed when predicting and explaining gynecological exam behaviors.

Data collected using the FGSIS were found to be both valid and reliable, aiding in the understanding of women's genital self-image among a college population using an underlying two-factor approach. As the number of women who request surgery to alter their genital appearance is increasing, it is important for researchers to understand the underlying issues associated with genital self-image (Liao & Creighton, 2007). The conceptualization of a two-factor FGSIS might help to better understand the complexity behind motivating factors resulting in women choosing to have elective genital surgeries.

Future research should examine the TPB's predictive ability among a more diverse population and should include additional components significant to the prediction of gynecological exam behaviors, such as genital self-image. Forthcoming

research should also examine the predictability of genital self-image, body image, and sexual behaviors on gynecological exams among a more diverse population. Additional research is needed to confirm the two-factor structure of the FGSIS. Upcoming research using the FGSIS might assess the intrapersonal (i.e., how the genitals smell, work) and interpersonal (i.e., comfort with allowing a healthcare provider or partner to view the genitals) concerns to better understand women's rationale behind pubic hair removal, elective genital surgeries, and gynecological exam behaviors, especially among demographically similar samples.

Reflection

As I sit here and reflect on this dissertation process, I find myself having feelings of relief, excitement, and sadness. It is almost *bittersweet*. As my mother would say, I have been a *perpetual student* for pretty much my entire life. Sitting here, writing this, means that identity is coming to an end. Not only am I finishing a huge chapter of my educational journey and life; I am about to leave my *home* for the past three years, friends I have made, a city I have learned to love, and a campus environment unlike any place I've ever experienced. Although I don't see myself living in *Aggieland* forever, I feel as though my time here went by too quickly. While I compile this reflection and future direction chapter, I am not only reflecting on my dissertation process, but my time spent at Texas A&M University as well. Though I wish I would have kept a journal containing personal thoughts and lessons learned through my doctoral journey (mental note for future mentoring purposes), my memories, small notes, and past work will be more than sufficient to aid in the reflection process.

Neuroscience, Sport Psychology and Health Education…OH MY!

I've had an all-encompassing education, to say the least. Perhaps, Dr. Pruitt would classify my education accomplishments as me having a *good pedigree*. Upon arriving at Texas A&M University, I felt as though every health topic was of interest. This was my first health degree, so I had a lot to learn and found so many aspects of health and health education interesting. My initial interests focused on health behaviors of college students; specifically, changes in nutrition and physical activity behaviors from a high school setting to a university setting. I had huge plans to implement changes at Texas A&M through disseminating nutrition- and physical activity-related information during freshmen orientation. Upon looking further into this, I realized the disparities were more so among changes in sexual behaviors than among the aforementioned behaviors. Through getting these ideas together, I started to panic because I was not currently involved in any research projects. Dr. Pruitt assured me I needed to focus on my schoolwork and dabble in the many domains of health; however, I was not convinced. I was at a research institution; getting a research degree…I needed to be involved in research!

The Arrival of Dr. Ariane Hollub

Fall 2009. I was a little skeptical of working with Ariane; not because I doubted her abilities as a researcher, but because she was a *baby doc* and I was a *baby, baby doc*…could we really accomplish all I had in mind? I soon found out she was very welcoming and willing to assist me in my research endeavors. We conducted our first study—a replication of her dissertation with questions I was interested in (related to

sources college students use to obtain sexuality-related information). I learned how to write successful IRB applications, collect data, analyze large data sets, etc. I *finally* felt like I was doing what a doctoral student should be doing.

Through Ariane, I had the opportunity to meet Dr. Debby Herbenick. I soon became fascinated with her work in the field of female sexual health. This interest came at the same time I was teaching my very own Women's Health course. I realized the disparities there were surrounding research in women's health, especially related to female anatomy. Specifically, I was astounded to find out my Women's Health students knew very little about female genitals and female genital health. Upon looking further into this, I also realized many of my (upper-level) students were not engaging in regular gynecological exams. A light bulb went off…and a dissertation idea was born.

The V

I soon found myself looking further into gynecological screening behaviors of college women. Specifically, I was interested in if college women held the knowledge necessary about gynecological exam procedures and guidelines. This quickly spread into the influence of body image, genital self-image, and sexual behaviors on gynecological exam behaviors. Although Ariane and I had finished our first study and were in the process of writing and presenting on that data, I found myself more interested in this new research focus. It was hard to read and write on the *Sources* study when I had found my forte. And so, I continued to read…and read…and read…I couldn't get over the gaps that existed in the literature in regards to gynecological and genital health.

Leaving on a Jet Plane

Although my interests had shifted from sources of sexual information to gynecological screening behaviors, Ariane and I had an obligation to disseminate the information from our first study. After some state and national presentations, I was offered the opportunity of a lifetime…to travel internationally to present our work. We enjoyed two fabulous weeks in Europe during July 2010. I got to see new places, try new foods, meet new people, and be exposed to lots, and lots, and LOTS of research surrounding sexuality. My relationship with Ariane definitely changed during this time. We spent two whole weeks together traveling in planes and trains and living in miniature hotel rooms. I am so thankful for this opportunity and very appreciative of all Ariane did to help give me this opportunity. Many memories.

Did Someone Say Oral?

My two weeks quickly came to an end and upon returning back to the US, I was greeted with three lovely weeks of preliminary exam studying and preparation. I wasn't sure what to expect or how I would handle this process. According to my records, I only cried twice. The written part of the exam process was very eye-opening for me. I actually realized I knew more than I thought. I found the process to be traitorous, yet rewarding. I was faced with 17 total questions. Exhausted at the end of that process is an understatement. After the written exams, I had a week's break before I faced the oral exam. This, in my opinion, was one of the most fun exams I had ever had. I got to be me. I got to talk about my opinions about things, my knowledge about things, and defend my

positions. It was very rewarding to hear the words *you passed*; however, I knew those words would soon translate into *and now you have even more work to do*.

Dissertating

After successfully proposing my dissertation idea in September 2010, I embarked on my dissertation process. I was excited, anxious, and feeling the pressure of a March 11th defense deadline…especially considering it took the IRB almost two months to approve my study. Luckily, I had known exactly what I wanted to do and how I was going to do it. And *thanks* to my committee, I had exceptional feedback and suggestions regarding the methodologies. I chose to do in-class data collection using a paper-and-pencil survey instrument. I wanted to not only get a good response rate, but also know the data more intimately through hand entering it myself. Data collection soon commenced in November 2010 and I was well on my way. Data collection happened quickly due to my population being college students who were about to head home for winter break. I was very thankful to the professors who let me barge in on their classrooms with very little notice. Due to their generosity, I was able to collect almost 500 surveys in two weeks' time.

Giving Birth

I have thoroughly enjoyed the writing process. I am amazed at how much I can produce in such little time. My passion and excitement for the topic and potential implications has carried me through this process….alongside my committee members, of course! The paper that was hardest to write and taking the most time (Paper 3) turned out to be my favorite. I didn't realize all that went into a psychometric assessment until

actually conducting one. I am thankful Ariane was supportive of this idea and willing to teach me about the many psychometric techniques. I am proud of the product I have put together and I hope it impacts the lives of many women. I have repeatedly referred to my dissertation as *my baby,* and it feels so good to have finally *given birth*.

Production of manuscripts from my dissertation data does not stop here. I am already starting to conceptualize additional papers to produce. I look forward to applying the feedback, suggestions, and comments made by my committee members in both my current and future work. I also look forward to future opportunities to collaborate with my committee members on this dataset.

My Advisory Committee

I am grateful to have had an amazing group of faculty members to call my *committee.* They persistently challenged me throughout this entire process. With initial guidance from Dr. Pruitt, I was able to maneuver my way through my first health-based degree. He has been my *yoda* on my committee. I was thrilled when I found out Dr. Hollub was *finally* granted approval to sit on my committee as my Co-Chair. All the effort she put into my development as a scholar, researcher, and professional was legitimized through formal documentation! I am honored to be her first doctoral student, and I hope I did her proud. I asked Dr. Ballard to be on my committee because I instantly felt connected to her; especially considering she was one of my first contacts at Texas A&M (she received her PhD with one of my favorite UNT professors). She is also an expert in women's health and has opened many doors for me. I was thankful she agreed to take me on!

Now, I know I had my choice of committee members and I know not many students would even take on this challenge, but I am grateful I did. Having Dr. Thompson on my committee has been very beneficial. It is important for me to not only be able to run my own statistical analyses, but present them correctly within my manuscripts. I am glad he agreed to sit on my committee, even if the topic wasn't his first area of interest. Lastly, Dr. Herbenick, one of the few individuals who has extensive knowledge on all things *vulva*. I have greatly valued her knowledge surrounding my research topic. It has allowed me to put together conceptually accurate and theoretically sound pieces of work.

Future Direction

Purdue University → University of North Texas → Texas A&M University → University of Texas Medical Branch

As I reflect on my academic journey, I realize not only how much I have learned, but how I've developed as a person. I have gained confidence as a scholar, writer, researcher, teacher, presenter, and professional in the field. I am excited to embark on the journey as a *post doc*. Although I've had to repeatedly explain to everyone what a post doc position entails, I think they are excited for me as well. I am eager to further my skills as a researcher and statistician and have the opportunity to work with OBGYNs and other professionals in the field of Women's Health. I know many doors will open for me at the completion of my two-year commitment to UTMB. Although I had originally seen myself as taking an assistant professor position directly out of Texas A&M; I am

excited to have accepted an NIH-funded post doc—working with great people, in a fabulous environment. I hope the beach is ready for lots of my footprints.

Bs, Vs, and Ds

As I continue my research, I plan to stay in the fields of women's health and female sexual health. Specifically, I hope to further my research on gynecological issues among a more diverse population. I also intend to further investigate the issues related to genital self-image and attitude toward women's genitals. I am interested in looking further into female genital self-image in order to predict sexual behaviors (eg., receiving oral sex), gynecological screening behaviors, and elective genital cosmetic surgery. I also have an interest in looking at the male perspective of female genitalia in relation to sexual behaviors (eg., giving oral sex) and comparing and contrasting results to those found among females.

This agenda is going to be greatly supported while at UTMB. I am excited to work with people who share the same research interests, as well as have access to data collected in an OBGYN clinic. I know additional research ideas will spark once I commence my work at UTMB. I look forward to creating future agendas and collaborations.

There's Life after UTMB?

It's hard for me to plan where I am going to be after UTMB, especially considering I didn't even think I was going to end up in a post doc position at UTMB! Essentially, I would love to take on a role as an Assistant Professor at a medical or research institution, similar to Purdue and Texas A&M. I hope to settle in the Midwest

(to be close to family) or on the East Coast (because there's where I always saw myself ending up, and cause I love the food!), but would be open to anywhere my career and future family takes me. I would love to pursue my research agenda as well as teach a Human Sexuality or Women's Health course. I would also be open to the idea of teaching writing and methodology courses. I would like to end up at a school that has lots of spirit, culture, and competitive athletics. I look forward to this step of my career…I just have to get there first!

REFERENCES

Ackard, D.M., Kearney-Cooke, A. & Peterson, C.B. (2000). Effect of body image and self-image on women's sexual behaviors. *International Journal of Eating Disorders, 28,* 422-429.

Adams, C.H., Smith, N.J., Wilbur, D.C. & Grady, K.E. (1993). The relationship of obesity to the frequency of pelvic examinations: Do physician and patient attitudes make a difference? *Women & Health, 20*(2), 45-57.

Ajzen, I. (1985*).* From intentions to actions: A theory of planned behavior. In J. Kuhl & J. Beckmann (Eds.), *Action control: From cognition to behavior* (11-39). New York: Springer-Verlag.

Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes, 50*(2), 179-211.

Ajzen, I. & Fishbein, M. (1980). *Understanding attitudes and predicting social behavior*. Englewood Cliffs, NJ: Prentice-Hall.

Ajzen, I. & Madden, T.J. (1986). Prediction of goal-directed behavior: Attitudes, intentions, and perceived behavioral control. *Journal of Experimental Social Psychology, 22*(5), 453-474.

Aldrich, T. & Hackley, B. (2010). The impact of obesity on gynecologic cancer screening: An integrative literature review. *Journal of Midwifery & Women's Health, 55*(4), 344-356.

Allison, D.B., Fontaine, K.R., Manson, J.E., Stevens, J. & VanItallie, T.B. (1999). Annual deaths attributable to obesity in United States. *Journal of the American Medical Association, 282*(16), 1530-1538.

American Cancer Society (ACS) (2006). *What are the key statistics about cervical cancer?* Accessed on February 16, 2011 from http://web.archive.org/web/20071030194439/http://www.cancer.org/docroot/CRI/content/CRI_2_4_1X_What_are_the_key_statistics_for_cervical_cancer_8.asp?sitearea=.

American Cancer Society (ACS) (2010). *Breast cancer.* Accessed on January 11, 2011 from http://www.cancer.org/cancer/breastcancer/detailedguide/breast-cancer-detection.

American Congress of Obstetricians and Gynecologists (ACOG) (2009a). *First cervical cancer screening delayed until age 21: Less frequent pap tests recommended.* Accessed on September 16, 2010 from http://www.acog.org/from_home/publications/press_releases/nr11-20-09.cfm.

American Congress of Obstetricians and Gynecologists (ACOG) (2009b). *Practice healthy living in 2009.* Accessed on January 4, 2011 from http://www.acog.org/from_home/publications/press_releases/nr01-05-09.cfm.

American Congress of Obstetricians and Gynecologists (ACOG) (2010). *Teen girls may need two annual 'well-child' visits.* Accessed on January 4, 2011 from http://www.acog.org/from_home/publications/press_releases/nr06-22-10-2.cfm.

Amy, N.K., Aalbor, A., Lyons, P. & Keranen, L. (2006). Barriers to routine gynecological cancer screening for white and African-American obese women. *International Journal of Obesity, 30*(1), 147-155.

Barling, N.R. & Moore, S.M. (1996). Prediction of cervical cancer screening using the theory of reasoned action. *Psychological Reports, 79*(1), 77-78.

Berman, L., Berman, J., Miles, M., Pollets, D. & Powell, J.A. (2003). Genital self-image as a component of sexual health: Relationship between genital self-image, female sexual function, and quality of life measures. *Journal of Sex & Marital Therapy, 29,* 11-21.

Berscheid, E., Walster, E. & Bohrnstedt, G. (1973). The happy American body: A survey report. *Psychology Today, 7,* 119-131.

Blake, D.R., Weber, B.M. & Fletcher, K.E. (2004). Adolescent and young adult women's misunderstanding of the term *pap smear*. *Archives of Pediatrics & Adolescent Medicine, 158*(10), 966-970.

Bramwell, R. & Morland, C. (2009). Genital appearance satisfaction in women: The development of a questionnaire and exploration of correlates. *Journal of Reproductive and Infant Psychology, 27*(1), 15-27.

Braun, V. (2005). In search of (better) sexual pleasure: Female genital 'cosmetic' surgery. *Sexualities, 8*(4), 407-424.

Braun, V. (2010). Female genital cosmetic surgery: A critical review of current knowledge and contemporary debates. *Journal of Women's Health, 19*(7), 1393-1407.

Braun, V. & Kitzinger, C. (2001). The perfectible vagina: Size matters. *Culture Health & Sexuality, 3,* 263-277.

Breitkopf, C.R., Pearson, H.C. & Breitkopf, D.M. (2005). Poor knowledge regarding the pap test among low-income women undergoing routine screening. *Perspectives on Sexual and Reproductive Health, 37*(2), 78-84.

Burak, L.J. & Meyer, M. (1997). Using the health belief model to examine and predict college women's cervical cancer screening beliefs and behaviors. *Health Care for Women International, 18*(3), 251-262.

Buras, A. (1996, January). *Descriptive verses predictive discriminant analysis: A comparison and contrast of the two techniques.* Paper presented at the annual meeting of the Southwest Educational Research Association, New Orleans, LA.

Burnett, C.B., Steakley, C.S. & Tefft, M.C. (1995). Barriers to breast and cervical cancer screening in underserved women of the District of Columbia. *Oncology Nursing Forum, 22*(10), 1551-1558.

Byrne, B.M. (2001). *Structural equation modeling with AMOS: Basic concepts, applications and programming.* Mahwah, NJ: Lawrence Erlbaum.

Calle, E.E., Rodriguez, C., Walker-Thurmond, K. & Thun, M.J. (2003). Overweight, obesity, and mortality from cancer in a prospectively studied cohort of U.S. adults. *New England Journal of Medicine, 348*(17), 1625-1638.

Calle, E.E. & Thun, M.J. (2004). Obesity and cancer. *Oncogene, 23,* 6365-6378.

Castrucci, B.C., Guzman, A.E., Saraiya, M., Smith, B.R., Lewis, K.L., Coughlin, S.S., Gossman, G.L., McDonald, J.A., Foulkes, H., Mirchandani, G., Canedo, L.C.R.,

Garcia, I.M. & Acuna, J. (2008). Cervical cancer screening among women who gave birth in the US-Mexico border region, 2005: The Brownsville-Matamoros sister city project for women's health. *Preventing Chronic Disease, 5*(4), 1-15.

Centers for Disease Control and Prevention (CDC) (2004). *Laboratory testing for cervical cancer: PAP smear activities.* Accessed on January 14, 2011 from http://wwwn.cdc.gov/clia/cyto.aspx.

Centers for Disease Control and Prevention (CDC) (2006). *Cancer of the cervix: An overview.* Accessed on January 11, 2011 from http://wwwn.cdc.gov/cliac/pdf/Addenda/cliac0606/AddendumD.pdf.

Centers for Disease Control and Prevention (CDC) (2009). *Genital HPV infection fact sheet.* Accessed on January 20, 2011 from http://www.cdc.gov/std/HPV/STDFact-HPV.htm#common.

Centers for Disease Control and Prevention (CDC) (2010a). *Cervical cancer fact sheet.* Accessed on September 16, 2010 from http://www.cdc.gov/cancer/cervical/pdf/Cervical_FS_0510.pdf.

Centers for Disease Control and Prevention (CDC) (2010b). *Human papillomavirus (HPV).* Accessed on September 16, 2010 from http://www.cdc.gov/hpv/WhatIsHPV.html.

Centers for Disease Control and Prevention (CDC) (2010c). *Cancer prevention and control.* Accessed on January 10, 2011 from http://www.cdc.gov/cancer/dcpc/prevention/other.htm.

Centers for Disease Control and Prevention (CDC) (2010d). *Get the facts about gynecologic cancer.* Accessed on January 6, 2011 from http://www.cdc.gov/cancer/knowledge/pdf/CDC_GYN_Comprehensive_Brochure.pdf.

Centers for Disease Control and Prevention (CDC) (2010e). *Cervical cancer risk factors.* Accessed on January 10, 2011 from http://www.cdc.gov/cancer/cervical/basic_info/risk_factors.htm.

Centers for Disease Control and Prevention (CDC) (2010f). *What women should know before they get a pap and HPV test.* Accessed on September 16, 2010 from http://www.cdc.gov/std/hpv/common-clinicians/InsertPap.pdf.

Cronbach, L.J. (1951). Coefficient alpha and the internal structure of tests. *Pychometrika, 16*(3), 297-334.

DeVellis, R.F. (2003). *Scale development: Theory and applications* (2nd ed.). Thousand Oaks, CA: Sage Publications.

Fan, X., Thompson, B. & Wang, L. (1999). The effects of sample size, estimation methods, and model specification on SEM fit indices. *Structural Equation Modeling*, 6, 56-83.

Fishbein, M. & Ajzen, I. (1975). *Belief, attitude, intention, and behavior: An introduction to theory and research*. Reading, MA: Addison-Wesley.

Fletcher, P.C. & Bryden, P.J. (2005). Preliminary examination of cervical health practices and knowledge among university-aged females. *College Student Journal, 39*(3), 469-477.

Fontaine, K.R., Faith, M.S., Allison, D.B. & Cheskin, L.J. (1998). Body weight and health care among women in the general population. *Archives of Family Medicine, 7*(4), 381-384.

Fontaine, K.R., Heo, M. & Allison, D.B. (2001). Body weight and cancer screening among women. *Journal of Women's Health & Gender-Based Medicine, 10*(5), 463-470.

Godin, G. & Kok, G. (1996). The theory of planned behavior: A review of its applications in health-related behaviors. *American Journal of Health Promotion, 11*, 87-98.

Haskew, P. & Adams, C.H. (1989). *Eating disorders: Managing problems with food*. Mission Hills, CA: Glencoe.

Henington, C. (1994, January 27). *A primer on the use of predictive discriminant analysis*. Paper presented at the annual meeting of the Southwest Educational Research Association, San Antonio, TX.

Herbenick, D. (2009). The development and validation of a scale to measure attitudes toward women's genitals. *International Journal of Sexual Health, 21*(3), 153-166.

Herbenick, D. & Reece, M. (2010). Development and validation of the Female Genital Self-Image Scale. *The Journal of Sexual Medicine, 7*(5), 1822-1830.

Herbenick, D., Schick, V., Reece, M., Sanders, S., Dodge, B. & Fortenberry, D. (2011). The female genital self-image scale (FGSIS): Results from a nationally

representative probability sample of women in the United States. *The Journal of Sexual Medicine, 8*(1), 158-166.

Herbenick, D., Schick, V., Reece, M., Sanders, S. & Fortenberry, D. (2010). Pubic hair removal among women in the United States: Prevalence, methods, and characteristics. *The Journal of Sexual Medicine, 7*(10), 3322-3330.

Hu, L.T. & Bentler, P.M. (1998). Fit indices in covariance structure modeling: Sensitivity to underparameterized model misspecification. *Psychological Methods, 3*(4), 424-453.

Hu, L.T. & Bentler, P.M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling*, *6*(1), 1-55.

Huberty, C. (1994). *Applied discriminant analysis.* New York: Wiley and Sons.

Huberty, C.J. & Lowman, L.L (1998). Discriminant analysis in higher education research. In J.C. Smart, *Higher education: Handbook of theory and research* (181-200). New York: Agathon Press.

Jennings-Dozier, K. (1999). Predicting intentions to obtain a pap smear among African American and Latina women: Testing the theory of planned behavior. *Nursing Research, 48*(4), 198-205.

Kahn, J.A., Chiou, V., Allen, J.D., Goodman, E., Perlman, S.E., Emans, S.J. (1999). Beliefs about papanicolaou smears and compliance with papanicolaou smear follow-up in adolescents. *Archives of Pediatrics & Adolescent Medicine, 153*(10), 1046-1054.

Koning, M., Zeijlmans, I.A., Bouman, T.K. & van der Lei, B. (2009). Female attitudes regarding labia minora appearance and reduction with consideration of media influence. *Aesthetic Surgery Journal, 29*(1), 65-71.

Liao, L.M. & Creighton, S.M. (2007). Requests for cosmetic genitoplasty: How should healthcare providers respond? *British Medical Journal, 334*(7603), 1090-1092.

Lindley, L.L., Brandt, H.M., Annang, L., Barnett, C.L., Hardin, J.W. & Burcin, M. (2009). Receipt of routine gynecological examinations among sexually active college students in the United States. *Journal of Women's Health, 18*(8), 1195-1200.

Massad, L.S., Meyer, P. & Hobbs, J. (1997). Knowledge of cervical cancer screening among women attending urban colposcopy clinics. *Cancer Detection and Prevention, 21*(1), 103-109.

Mitchell, R.S., Padwal, R.S., Chuck, A.W. & Klarenbach, S.W. (2008). Cancer screening among the overweight and obese in Canada. *American Journal of Preventive Medicine, 35*(2), 127-132.

Mosher, W.D. & Jones, J. (2010). Use of contraception in the United States: 1982-2008. *Vital and Health Statistics, 23*(29). Accessed on February 10, 2011 from http://www.cdc.gov/nchs/pressroom/data/Contraception_Series_Report.pdf.

National Cancer Institute (NCI) (2010). *Pap test.* Accessed on January 11, 2011 from http://www.cancer.gov/cancertopics/factsheet/Detection/Pap-test.

Nelson, W., Moser, R.P., Gaffey, A. & Waldron, W. (2009). Adherence to cervical cancer screening guidelines for U.S. women aged 25-64: Data from the 2005

health information national trends survey (HINTS). *Journal of Women's Health, 18*(11), 1759-1768.

Østbye, T., Taylor, D.H., Yancy, W.S. & Krause, K.M. (2005). Associations between obesity and receipt of screening mammography, papanicolaou tests, and influenza vaccination: Results from the health and retirement study (hrs) and the asset and health dynamics among the oldest old (ahead) study. *American Journal of Public Health, 95*(9), 1623-1630.

Petrie, T.A., Tripp, M.M. & Harvey, P. (2002). Factorial and construct validity of the body parts satisfaction scale-revised: An examination of minority and nonminority women. *Psychology of Women Quarterly, 26*(3), 213-221.

Price, J.H., Easton, A.N., Telljohann, S.K. & Wallace, P.B. (1996). Perceptions of cervical cancer and pap smear screening behavior by women's sexual orientation. *Journal of Community Health, 21*(2), 89-105.

Reid, J. (2001). Women's knowledge of pap smears, risk factors for cervical cancer, and cervical cancer. *Journal of Obstetric, Gynecologic, and Neonatal Nursing, 30*(3), 299-305.

Reinholtz, R.K. & Muehlenhard, C.L. (1995). Genital perception and sexual activity in a college population. *Journal of Sex Research, 32*(2), 155-165.

Saraiya, M., Martinez, G., Glaser, K. & Kulasingam, S. (2009). Pap testing and sexual activity among young women in the United States. *Obstetrics & Gynecology Survey, 114*(6), 1213-1219.

Schick, V.R., Calabrese, S.K., Rima, B.N. & Zucker, A.N. (2010a). Genital appearance dissatisfaction: Implications for women's genital image self-consciousness, sexual esteem, sexual satisfaction, and sexual risk. *Psychology of Women Quarterly, 34*(3), 394-404.

Schick, V.R., Rima, B.N. & Calabrese, S.K. (2010b). Evulvalution: The portrayal of women's external genitalia and physique across time and the current Barbie doll ideals. *Journal of Sex Research, 47*(1), 1-9.

Sheeran, P. & Orbell, S. (2000). Using implementation intentions to increase attendance for cervical cancer screening. *Health Psychology, 19*(3), 283-289.

Stewart, E.G. & Spencer, P. (2002). *The V book: A doctor's guide to complete vulvovaginal health.* New York: Bantam Books.

Stewart, F.H., Harper, C.C., Ellertson, C.E., Grimes, D.A., Sawaya, G.F. & Trussell, J. (2001). Clinical breast and pelvic examination requirements for hormonal contraception: Current practice vs. evidence. *Journal of the American Medical Association, 285*(17), 2232-2239.

Thompson, B. & Daniel, L.G. (1996). Factor analytic evidence for the construct validity of scores: A historical overview and some guidelines. *Educational and Psychological Measurement, 56*(2), 197-208.

Waltner, R. (1986). Genital identity: A core component of sexual- and self-identity. *Journal of Sex Research, 22*(3), 399-402.

Wee, C.C., McCarthy, E.P., Davis, R.B. & Phillips, R.S. (2000). Screening for cervical and breast cancer: Is obesity an unrecognized barrier to preventative care? *Annals of Internal Medicine, 132*(9), 697-704.

Wee, C.C., Phillips, R.S. & McCarthy, E.P. (2005). BMI and cervical cancer screening among white, African-American, and Hispanic women in the United States. *Obesity Research, 13*(7), 1275-1280.

APPENDIX A

EMAIL TEXT TO ASK INSTRUCTOR PERMISSION FOR CLASSROOM RECRUITMENT

Howdy!

My name is Andrea L. DeMaria and I am a Doctoral Student within the Department of Health and Kinesiology. You are being contacted because you have been identified as teaching an undergraduate course where I would like to do classroom recruitment for a current dissertation research study. The purpose of my study is to explore gynecological screening behaviors of college females relating to genital self-image, sexual behaviors, body image, and knowledge of the behavior. If you allow me to recruit participants from your class, it would entail me coming into your class—at the beginning or end—for 15 minutes to recruit participants and allow for data collection using a written survey measurement tool.

Please reply to this email if you are willing to let me visit your class to recruit participants and collect data for my dissertation study. Within your email, please include the date you would prefer me to recruit from your class as well as if you prefer that I come at the beginning or end of your class period.

I appreciate your time and consideration.

Sincerely,

Andrea L. DeMaria

Andrea L. DeMaria, PhD(c) | Graduate Research and Teaching Assistant | Division of Health Education Department of Health and Kinesiology | Texas A&M University 119G G. Rollie White | 4243 TAMU | College Station, Texas | 77843-4243 | Phone: 979.862.7655 | Fax: 979.862.2672 | ademaria@hlkn.tamu.edu

APPENDIX B

EMAIL TEXT TO ASK SORORITY PRESIDENT PERMISSION FOR SORORITY RECRUITMENT

Howdy!

My name is Andrea L. DeMaria and I am a Doctoral Student within the Department of Health and Kinesiology. You are being contacted because you have been identified as the president of a sorority where I would like to recruit female participants for a current dissertation research study. The purpose of my study is to explore gynecological screening behaviors of college females relating to genital self-image, sexual behaviors, body image, and knowledge of the behavior. If you allow me to recruit participants within your home, it would entail me coming into your sorority house—at the beginning or end of dinner or the beginning or end of a chapter meeting—for 15 minutes to recruit participants and allow for data collection using a written survey measurement tool.

Please reply to this email if you are willing to let me visit your sorority house to recruit participants and collect data for my dissertation study. Within your email, please include a date(s) you would prefer me to recruit from your chapter as well as if you prefer that I come at the beginning or end of dinner or a chapter meeting.

I appreciate your time and consideration.

Sincerely,

Andrea L. DeMaria
Alpha Gamma Delta, Beta Xi Chapter
Pledge Class Spring 2003
Purdue University, West Lafayette, IN

Andrea L. DeMaria, PhD(c) | Graduate Research and Teaching Assistant | Division of Health Education Department of Health and Kinesiology | Texas A&M University 119G G. Rollie White | 4243 TAMU | College Station, Texas | 77843-4243 | Phone: 979.862.7655 | Fax: 979.862.2672 | ademaria@hlkn.tamu.edu

APPENDIX C

RECRUITMENT SCRIPT

Howdy!

My name is _____ and I am collecting data for a doctoral dissertation study being conducted within the Department of Health and Kinesiology.

The purpose of my study is to explore gynecological screening behaviors of college females relating to genital self-image, sexual behaviors, body image, and knowledge of the behavior. You will be asked to voluntarily complete an anonymous written survey that will take no longer than 10 minutes. The survey will ask you to respond to questions related to your background, gynecological screening behaviors and sexual behaviors.

If you choose to participate and complete the survey, you will have the option to provide your email address to be entered into a drawing to win one of twenty, $25 Wal-Mart gift cards. Approximately 500 individuals are expected to participate in the study. Therefore, you have a one in twenty chance of winning.

If you are a female and would like to participate, please stay and I will provide more detailed information regarding this study as well as provide you with a survey packet.

Thank You!

(Researcher will pass out a survey packet with an information sheet attached.)

APPENDIX D

INFORMATION SHEET

Using the Theory of Planned Behavior and Female Genital Self-Image Scale (FGSIS) to Explain and Predict Gynecological Screening Behaviors of College Women

Introduction
The purpose of this form is to provide you (as a prospective research study participant) information that may affect your decision as to whether or not to participate in this research.

You have been asked to participate in a research study examining gynecological screening behaviors of college women. The purpose of this study is to understand the knowledge college women hold regarding gynecological exams and determine factors that influence gynecological exam screening behaviors. You were selected to be a possible participant because you are a female student enrolled at Texas A&M University- College Station.

What will I be asked to do?
If you agree to participate in this study, you will be asked to complete a paper and pencil questionnaire answering questions related to your gynecological exam screening behaviors. This study will take approximately 10 minutes to complete.

What are the risks involved in this study?
The risks associated with this study are minimal and are not greater than risks ordinarily encountered in daily life. Participants may feel discomfort when reading questions pertaining to sexuality, sexual preference, and/or gynecological exams.

What are the possible benefits of this study?
You will receive no direct benefit from participating in this study; however, the results of this study will inform future research related to gynecological screening behaviors, body image, sexual behaviors and genital self-image of college women.

Do I have to participate?
Your participation is voluntary. You may decide not to participate or to withdraw at any time without your current or future relations with Texas A&M University being affected.

Will I be compensated?
You will have the opportunity to submit your email address upon completion of the survey to be entered into a drawing to win one of twenty $25 Wal-Mart gift cards. Winners will be randomly selected from those who decide to enter into the drawing.

Who will know about my participation in this research study?
This study is anonymous and the records of this study will be kept private. No identifiers linking you to this study will be included in any sort of report that might be published. The email address that you provide, should you want to be included in the drawing to win a gift card, will be kept separately from other study data. Your email address will not be linked with any of your responses. Research records will be stored securely and only Andrea L. DeMaria and Dr. Ariane V. Hollub will have access to the records.

Whom do I contact with questions about the research?
If you have questions regarding this study, you may contact Andrea L. DeMaria by phone at (979) 862-7655 or by email at ademaria@hlkn.tamu.edu. You may also contact Dr. Ariane V. Hollub by phone at (979) 845-3861 or by email at avhollub@hlkn.tamu.edu.

Whom do I contact about my rights as a research participant?
This research study has been reviewed by the Human Subjects' Protection Program and/or the Institutional Review Board at Texas A&M University. For research-related problems or questions regarding your rights as a research participant, you can contact these offices at (979)458-4067 or irb@tamu.edu.

Participation
Please be sure you have read the above information, asked questions and received answers to your satisfaction. If you would like to be in the study, please fill out the attached questionnaire.

APPENDIX E

MEASUREMENT TOOL

Gynecological Screening Behaviors

Please do not write your name or email address on this questionnaire. Thank you!

BACKGROUND

1. What is your age? _____ years

2. What is your current classification?
   - ☐ Freshman
   - ☐ Sophomore
   - ☐ Junior
   - ☐ Senior
   - ☐ Graduate Student

3. In what college are you enrolled?
   - ☐ Interdisciplinary Degree Program
   - ☐ College of Agriculture and Life Sciences
   - ☐ College of Architecture
   - ☐ Mays Business School
   - ☐ College of Education and Human Development
   - ☐ Dwight Look College of Engineering
   - ☐ College of Geosciences
   - ☐ George Bush School of Government and Public Service
   - ☐ College of Liberal Arts
   - ☐ College of Science
   - ☐ College of Veterinary Medicine and Biomedical Sciences
   - ☐ Non-declared
   - ☐ Other: _____

4. Which one of the following best describes your race or ethnicity?
   - ☐ American Indian or Alaskan Native
   - ☐ Asian or Asian-American
   - ☐ Black or African-American
   - ☐ Native Hawaiian or Other Pacific Islander
   - ☐ Hispanic or Latino
   - ☐ White or Caucasian
   - ☐ Other: _____

5. Which of the following commonly used terms best describes your sexual orientation?
    - ☐ Heterosexual/straight
    - ☐ Homosexual/gay or lesbian
    - ☐ Bisexual
    - ☐ Asexual (I have never been sexually attracted to others)
    - ☐ Other

6. Which of the following best describes your current relationship status?
    - ☐ Single and not dating
    - ☐ Single and dating/hanging out with someone
    - ☐ In a relationship but not living together
    - ☐ Living together but not married
    - ☐ Married and living together
    - ☐ Married but not living together

7. Are you currently in a sexual relationship?
    - ☐ I am in an exclusive/monogamous sexual relationship (that is, you and your partner are having sexual activity only with each other)
    - ☐ I am having sexual relationships with several different people
    - ☐ I am sexually active, but don't consider myself to be in a "sexual relationship"
    - ☐ I am not currently sexually active with another person

8. Do you currently have health insurance coverage?
    - ☐ Yes
    - ☐ No
    - ☐ Unsure

9. Have you ever had a gynecological exam?
    - ☐ Yes
    - ☐ No

If yes, how old were you when you had your first gynecological exam? _____ years

10. Do you belong to a social sorority on campus?
    - ☐ Yes
    - ☐ No

FEMALE GENITAL SELF-IMAGE SCALE

The following set of items are about your feelings and beliefs related to your own genitals (both the **vulva** and the **vagina**). The word **vulva** refers to a woman's external genitals (the parts that you can see from the outside such as the clitoris, pubic mound, and vaginal lips). The word **vagina** refers to the inside part, also sometimes called the "birth canal" (this is also the part where a penis may enter or where a tampon is inserted).

Please mark an "X" in the box to indicate how strongly you agree or disagree with each statement.

	Strongly Disagree	**Disagree**	**Agree**	**Strongly Agree**
I feel positively about my genitals.				
I am satisfied with the appearance of my genitals.				
I would feel comfortable letting a sexual partner look at my genitals.				
I think my genitals smell fine.				
I think my genitals work the way they are supposed to work.				
I feel comfortable letting a healthcare provider examine my genitals.				
I am not embarrassed about my genitals.				

SOCIAL PHYSIQUE ANXIETY SCALE

Please rate the degree to which the following statements are characteristic of you.

	Not at all characteristic of me				Extremely characteristic of me
I wish I wasn't so uptight about my body/figure.	1	2	3	4	5
There are times when I am bothered by thoughts that other people are evaluating my weight or muscular development negatively.	1	2	3	4	5
Unattractive features of my body/figure make me nervous in certain social settings.	1	2	3	4	5
In the presence of others, I feel apprehensive about my body/figure.	1	2	3	4	5
I am comfortable with how fit my body/figure appears to others.	1	2	3	4	5
It would make me uncomfortable to know others were evaluating my body/figure.	1	2	3	4	5
When it comes to displaying my body/figure to others, I am a shy person.	1	2	3	4	5
I usually feel relaxed when it is obvious that others are looking at my body/figure.	1	2	3	4	5
When in a bathing suit, I often feel nervous about the shape of my body/figure.	1	2	3	4	5

BODY PARTS SATISFACTION SCALE

Below are listed different parts or aspects of your body. For each one, using the scale provided, honestly rate your current level of satisfaction. There are no right or wrong answers, so please respond to each item as it applies to you.

	Extremely Dissatisfied					Extremely Satisfied
1. WEIGHT	1	2	3	4	5	6
2. HAIR	1	2	3	4	5	6
3. COMPLEXION	1	2	3	4	5	6
4. OVERALL FACE	1	2	3	4	5	6
5. ARMS	1	2	3	4	5	6
6. STOMACH	1	2	3	4	5	6
7. BREASTS	1	2	3	4	5	6
8. BUTTOCKS	1	2	3	4	5	6
9. HIPS	1	2	3	4	5	6
10. UPPER THIGHS	1	2	3	4	5	6
11. GENERAL MUSCLE TONE	1	2	3	4	5	6

Overall satisfaction with the size and shape of your body.

Extremely Dissatisfied					Extremely Satisfied
1	2	3	4	5	6

GYNECOLOGICAL SCREENING BEHAVIORS

11. Have you had a gynecological exam within the past 24 months?
    - ☐ Yes
    - ☐ No

    If yes, how many exams have you had? _____ exams

12. Have you had a gynecological exam within the past 12 months?
    - ☐ Yes
    - ☐ No

    If yes, how many exams have you had? _____ exams

Please mark an "X" in the space that indicates your response for each of the following.

13. I intend to obtain a gynecological exam within the next 12 months.

Extremely unlikely: _____:_____:_____:_____:_____:_____:_____: Extremely likely

14. I intend to obtain a gynecological exam within the next 24 months.

Extremely unlikely: _____:_____:_____:_____:_____:_____:_____: Extremely likely

15. For me, obtaining a gynecological exam is:

Harmful : _____:_____:_____:_____:_____:_____:_____: Beneficial

Uncomfortable : _____:_____:_____:_____:_____:_____:_____: Comfortable

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

Worthless : _____:_____:_____:_____:_____:_____:_____: Valuable

Painful : _____:_____:_____:_____:_____:_____:_____: Not painful

Unhealthy : _____:_____:_____:_____:_____:_____:_____: Healthy

16. My family thinks I should obtain a gynecological exam.

Unlikely : _____:_____:_____:_____:_____:_____:_____: Likely

17. My friends think I should obtain a gynecological exam.

Unlikely : _____:_____:_____:_____:_____:_____:_____: Likely

Please mark an "X" in the space that indicates your response for each of the following.

18. The people in my life whose opinions I value would approve of me obtaining a gynecological exam.

Disagree : _____:_____:_____:_____:_____:_____:_____: Agree

19. For me, obtaining a gynecological exam would be:

Not up to me : _____:_____:_____:_____:_____:_____:_____: Up to me

Not under my control : _____:_____:_____:_____:_____:_____:_____: Under my control

SEXUAL AND CONDOM USE BEHAVIORS

20. Have you ever had **vaginal intercourse** (penis inserted into a vagina)?
    - ☐ Yes
    - ☐ No

21. Over the past 3 months, how many different people have you had **vaginal intercourse** with?

    _____ people

22. Over the past 3 months, how often did you use a condom when you had **vaginal intercourse**?
    - ☐ Every time
    - ☐ Most of the time
    - ☐ About half of the time
    - ☐ Less than half of the time
    - ☐ Never
    - ☐ Did not have vaginal intercourse in the past 3 months

23. Have you ever had **oral sex** (mouth on sexual partner's genitals)?
    - ☐ Yes
    - ☐ No

24. Over the past 3 months, how many different people have you had **oral sex** with?

    _____ people

25. Over the past 3 months, how often did you use a dental dam (latex barrier) or condom when you had **oral sex**?
    - ☐ Every time
    - ☐ Most of the time
    - ☐ About half of the time
    - ☐ Less than half of the time
    - ☐ Never
    - ☐ Did not have oral sex in the past 3 months

26. Have you ever had **anal intercourse** (penis inserted into anus)?
    - ☐ Yes
    - ☐ No

27. Over the past 3 months, how many different people have you had **anal intercourse** with?

    _____ people

28. Over the past 3 months, how often did you use a condom when you had **anal intercourse**?
    - ☐ Every time
    - ☐ Most of the time
    - ☐ About half of the time
    - ☐ Less than half of the time
    - ☐ Never
    - ☐ Did not have anal intercourse in the past 3 months

29. Have you ever been told by a healthcare provider that you have any of the following sexually transmitted infections (STI)? (Mark all that apply.)
    - ☐ Chlamydia
    - ☐ Genital Warts/Human Papilloma Virus (HPV)
    - ☐ Gonorrhea
    - ☐ Herpes Simplex Virus (HSV)
    - ☐ Human Immunodeficiency Virus (HIV)
    - ☐ Syphilis
    - ☐ Trichomoniasis
    - ☐ Other: _____

30. Have you ever had an abnormal Pap Smear?
    - ☐ Yes
    - ☐ No
    - ☐ Don't Know

    If yes, which of the following follow-up procedures were recommended, if any?
    - ☐ Repeat Pap Smear
    - ☐ Colposcopy
    - ☐ Biopsy
    - ☐ Don't remember
    - ☐ Other: _____

KNOWLEDGE

31. A gynecological exam includes: (Mark all that apply.)
    - ☐ Clinical Breast Exam
    - ☐ Pap Smear
    - ☐ Pelvic Exam
    - ☐ Vulvar Examination
    - ☐ Rectal Exam

32. A 21 year old woman, sexually active or not, should obtain regular gynecological exams if she is not already doing so.
    - ☐ True
    - ☐ False

33. How often, at minimum, should a woman obtain a gynecological exam?
    - ☐ At least two times per year
    - ☐ At least once per year
    - ☐ At least once every 2 years
    - ☐ At least once every 3 years
    - ☐ Unsure

Thank you for completing the survey.

APPENDIX F

EMAIL ENTRY FORM FOR INCENTIVE

Thank you for completing my survey!

You are now eligible to provide your email address to be included in a drawing to win one of twenty, $25 Wal-Mart gift cards.

Please write your preferred email address below. Be sure to write legibly. Please do not write your name or any other personal information on this sheet.

Email:_____

APPENDIX G

EMAIL TEXT FOR CONTACTING INCENTIVE WINNERS

Howdy!

I am contacting you because you participated in a written survey conducted through the Department of Health and Kinesiology which collected information on gynecological screening behaviors. You completed the survey and provided your email address to be entered into a drawing to win a $25 Wal-Mart gift card. You were randomly selected as one of the 20 winners to win a gift card!

If you would like to claim your gift card, you must come to my office on one of the following dates:

Tuesday, December 14: between 10am and 4pm

Wednesday, December 15: between 9am and 2pm

My office is located within the Office of Health Informatics, across from the bookstore in G. Rollie White. My office number is 119G.

If you cannot pick up your card on December 14th or 15th, you will forfeit your right to the card.

Please respond back to this email indicating the date and time you plan to pick up your $25 gift card.

Again, thank you for participating in my research study and congratulations on winning!

Sincerely,

Andrea L. DeMaria

Andrea L. DeMaria, PhD(c) | Graduate Research and Teaching Assistant | Division of Health Education Department of Health and Kinesiology | Texas A&M University 119G G. Rollie White | 4243 TAMU | College Station, Texas | 77843-4243 | Phone: 979.862.7655 | Fax: 979.862.2672 | ademaria@hlkn.tamu.edu

APPENDIX H

MANUSCRIPT 1, CORRELATION MATRIX

	FGSIS_emb	FGSIS_hcare	FGSIS_work	FGSIS_smell	FGSIS_part	FGSIS_appear	FGSIS_feel	Behav_24	Behav_12	Int_24	Int_12	PBC_me	PBC_control	SN_fam	SN_friend	SN_value	Att_harm	Att_ucomf	Att_bad	Att_worth	Att_pain	Att_uheal
FGSIS_emb	1.000																					
FGSIS_hcare	.608	1.000																				
FGSIS_work	.467	.442	1.000																			
FGSIS_smell	.496	.364	.496	1.000																		
FGSIS_part	.662	.528	.482	.442	1.000																	
FGSIS_appear	.643	.433	.594	.516	.611	1.000																
FGSIS_feel	.650	.502	.640	.530	.604	.867	1.000															
Behav_24	.067	.207	.012	.022	.114	-.047	-.035	1.000														
Behav_12	.027	.181	.003	.030	.083	-.077	-.061	.853	1.000													
Int_24	.123	.221	.042	.021	.164	.029	.035	.389	.347	1.000												
Int_12	.119	.226	.004	.022	.177	.024	.029	.447	.373	.797	1.000											
PBC_me	.072	.132	.005	.066	.082	-.028	.004	.176	.168	.210	.220	1.000										
PBC_control	.090	.134	.018	.105	.096	-.006	.006	.192	.177	.240	.225	.899	1.000									
SN_fam	.156	.204	.046	.069	.112	.053	.049	.427	.394	.511	.533	.174	.208	1.000								
SN_friend	.193	.220	.017	.006	.143	.013	.029	.370	.340	.476	.501	.190	.189	.661	1.000							
SN_value	.084	.171	.057	.018	.097	.036	.016	.319	.291	.431	.459	.272	.286	.525	.371	1.000						
Att_harm	.176	.285	.063	.034	.152	.054	.069	.382	.351	.515	.533	.284	.282	.471	.490	.461	1.000					
Att_ucomf	.268	.479	.085	.165	.216	.095	.139	.298	.282	.327	.415	.235	.276	.329	.342	.309	.419	1.000				
Att_bad	.260	.341	.124	.113	.237	.119	.139	.238	.203	.343	.384	.195	.220	.359	.361	.293	.572	.472	1.000			
Att_worth	.126	.210	.108	.008	.112	.047	.058	.295	.289	.422	.396	.264	.286	.405	.425	.373	.599	.316	.635	1.000		
Att_pain	.179	.306	.134	.178	.193	.113	.153	.220	.205	.222	.245	.152	.190	.230	.229	.212	.355	.545	.346	.276	1.000	
Att_uheal	.084	.122	.048	-.003	.104	.032	.044	.289	.276	.357	.380	.257	.302	.407	.415	.304	.559	.218	.550	.633	.255	1.000

APPENDIX I

MANUSCRIPT 2, CORRELATION MATRIX

		FGSIS_TOTAL	BPSS_AVG	Vag_Int_#	Oral_Sex_#	Anal_Int_#	Behav_12	Behav_24
FGSIS_TOTAL	Pearson Correlation	1	.337**	.174**	.120*	-.001	.042	.070
	Sig. (2-tailed)		.000	.000	.011	.984	.380	.136
	N	450	432	449	449	449	450	450
BPSS_AVG	Pearson Correlation	.337**	1	.058	.032	-.038	.039	.012
	Sig. (2-tailed)	.000		.228	.506	.433	.417	.809
	N	432	432	431	431	431	432	432
Vag_Int_#	Pearson Correlation	.174**	.058	1	.705**	.233**	.311**	.370**
	Sig. (2-tailed)	.000	.228		.000	.000	.000	.000
	N	449	431	449	449	449	449	449
Oral_Sex_#	Pearson Correlation	.120*	.032	.705**	1	.206**	.254**	.284**
	Sig. (2-tailed)	.011	.506	.000		.000	.000	.000
	N	449	431	449	449	449	449	449
Anal_Int_#	Pearson Correlation	-.001	-.038	.233**	.206**	1	.091	.122**
	Sig. (2-tailed)	.984	.433	.000	.000		.053	.009
	N	449	431	449	449	449	449	449
Behav_12	Pearson Correlation	.042	.039	.311**	.254**	.091	1	.853**
	Sig. (2-tailed)	.380	.417	.000	.000	.053		.000
	N	450	432	449	449	449	450	450
Behav_24	Pearson Correlation	.070	.012	.370**	.284**	.122**	.853**	1
	Sig. (2-tailed)	.136	.809	.000	.000	.009	.000	
	N	450	432	449	449	449	450	450

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

APPENDIX J

MANUSCRIPT 3, MODEL 4 REGRESSION WEIGHTS

Standardized & Unstandardized Regression Weights for Model 4

	Model 4		
Path	Standardized	Unstandardized	*SE*
B—IE	0.51	0.45***	0.11
B—IA	-0.46	-0.44***	0.11
B—B24	0.98	1.90***	0.24
B—B12	0.87	1.00	
IE—EMB	0.85	1.04***	0.06
IE—HCARE	0.69	0.85***	0.06
IE—PART	0.79	1.00	
IA—APPEAR	0.91	1.06***	0.03
IA—SMELL	0.57	0.66***	0.05
IA—WORK	0.67	0.70***	0.70
IA—FEEL	0.95	1.00	

Note: B = Behavior, IE = Interpersonal, IA = Intrapersonal, B24 = 24mo Behavior, B12 = 12mo Behavior

***$p < .001$

APPENDIX K

MANUSCRIPT 3, MODEL 5 REGRESSION WEIGHTS

Standardized & Unstandardized Regression Weights for Model 5

	Model 5		
Path	Standardized	Unstandardized	*SE*
B—FGSIS	-0.02	-0.04	0.05
IE—FGSIS	1.00	0.97***	0.05
IA—FGSIS	1.00	1.00	
B24—B	0.46	0.42	1.71
B12—B	1.86	1.00	
IE—EMB	0.74	1.02***	0.07
IE—HCARE	0.57	0.79***	0.07
IE—PART	0.70	1.00	
IA—APPEAR	0.91	1.07***	0.04
IA—SMELL	0.59	0.69***	0.05
IA—WORK	0.68	0.71***	0.04
IA—FEEL	0.93	1.00	

Note: B = Behavior, IE = Interpersonal, IA = Intrapersonal, B24 = 24mo Behavior, B12 = 12mo Behavior, FGSIS = Female Genital Self-Image Scale
***$p < .001$

APPENDIX L

MANUSCRIPT 3, MODEL 6 REGRESSION WEIGHTS

Standardized & Unstandardized Regression Weights for Model 6

	Model 5		
Path	Standardized	Unstandardized	*SE*
SMELL—FGSIS	0.59	0.69***	0.05
PART—FGSIS	0.70	0.97***	0.05
APPEAR—FGSIS	0.91	1.07***	0.04
FEEL—FGSIS	0.93	1.00	
WORK—FGSIS	0.68	0.71***	0.04
HCARE—FGSIS	0.57	0.77***	0.06
EMB—FGSIS	0.74	0.99***	0.05

Note: FGSIS = Female Genital Self-Image Scale
***$p < .001$

APPENDIX M

MANUSCRIPT 3, MODEL 7 REGRESSION WEIGHTS

Standardized & Unstandardized Regression Weights for Model 7

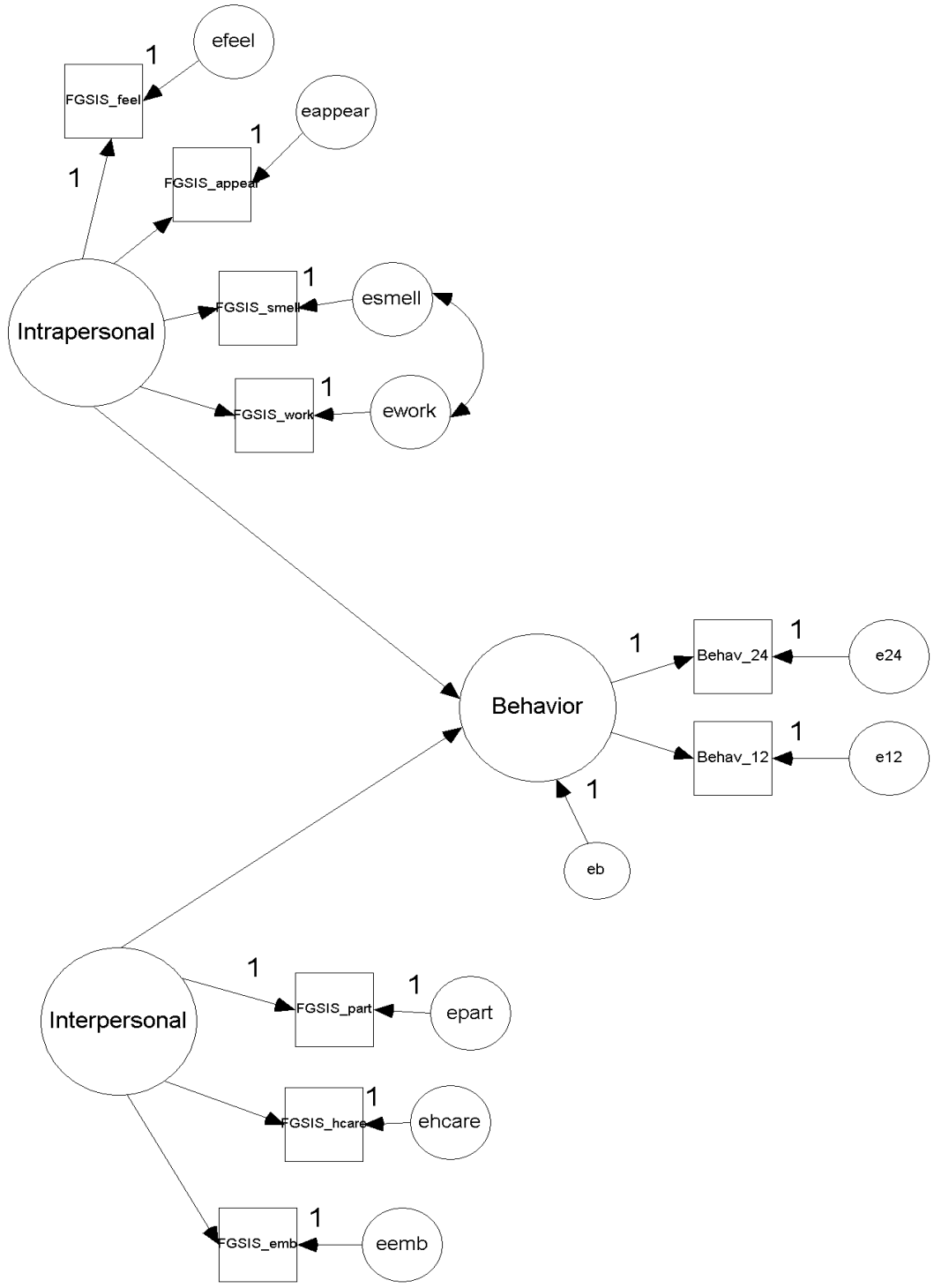
	Model 7		
Path	Standardized	Unstandardized	*SE*
B12—IA	-0.42	-0.46***	0.11
B12—IE	0.44	0.44***	0.11
B24—IA	-0.09	-0.17	0.10
B24—IE	0.13	0.23	0.10
B24—B12	0.83	1.42***	0.05
EMB—IE	0.85	1.04***	0.06
HCARE—IE	0.69	0.85***	0.06
PART—IE	0.79	1.00	
APPEAR—IA	0.91	1.06***	0.03
SMELL—IA	0.57	0.66***	0.05
WORK—IA	0.67	0.70***	0.04
FEEL—IA	0.95	1.00	

Note: B = Behavior, IE = Interpersonal, IA = Intrapersonal, B24 = 24mo Behavior, B12 = 12mo Behavior

***$p < .001$

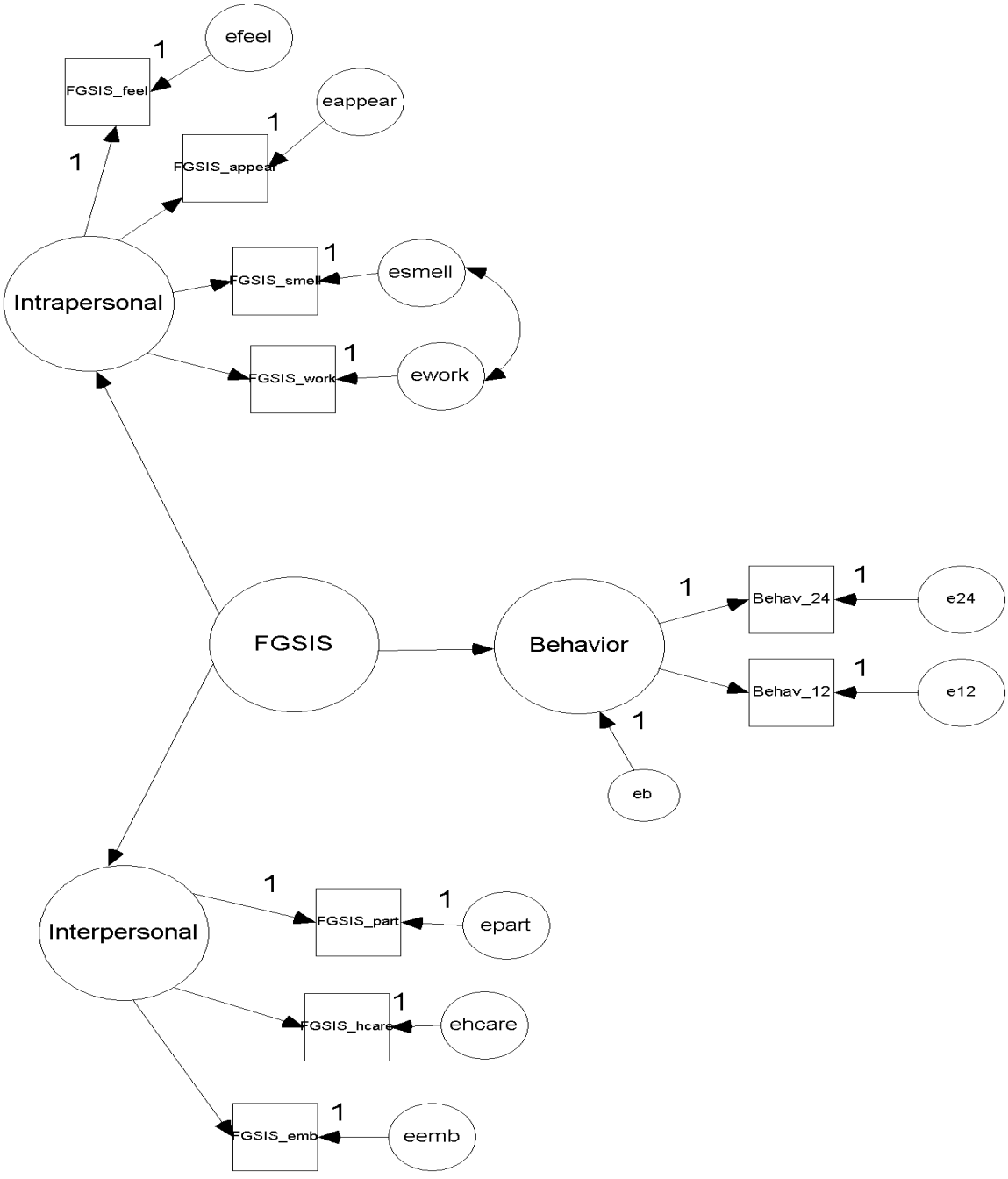
APPENDIX N

MANUSCRIPT 3, MODEL 4 FIGURE



APPENDIX O

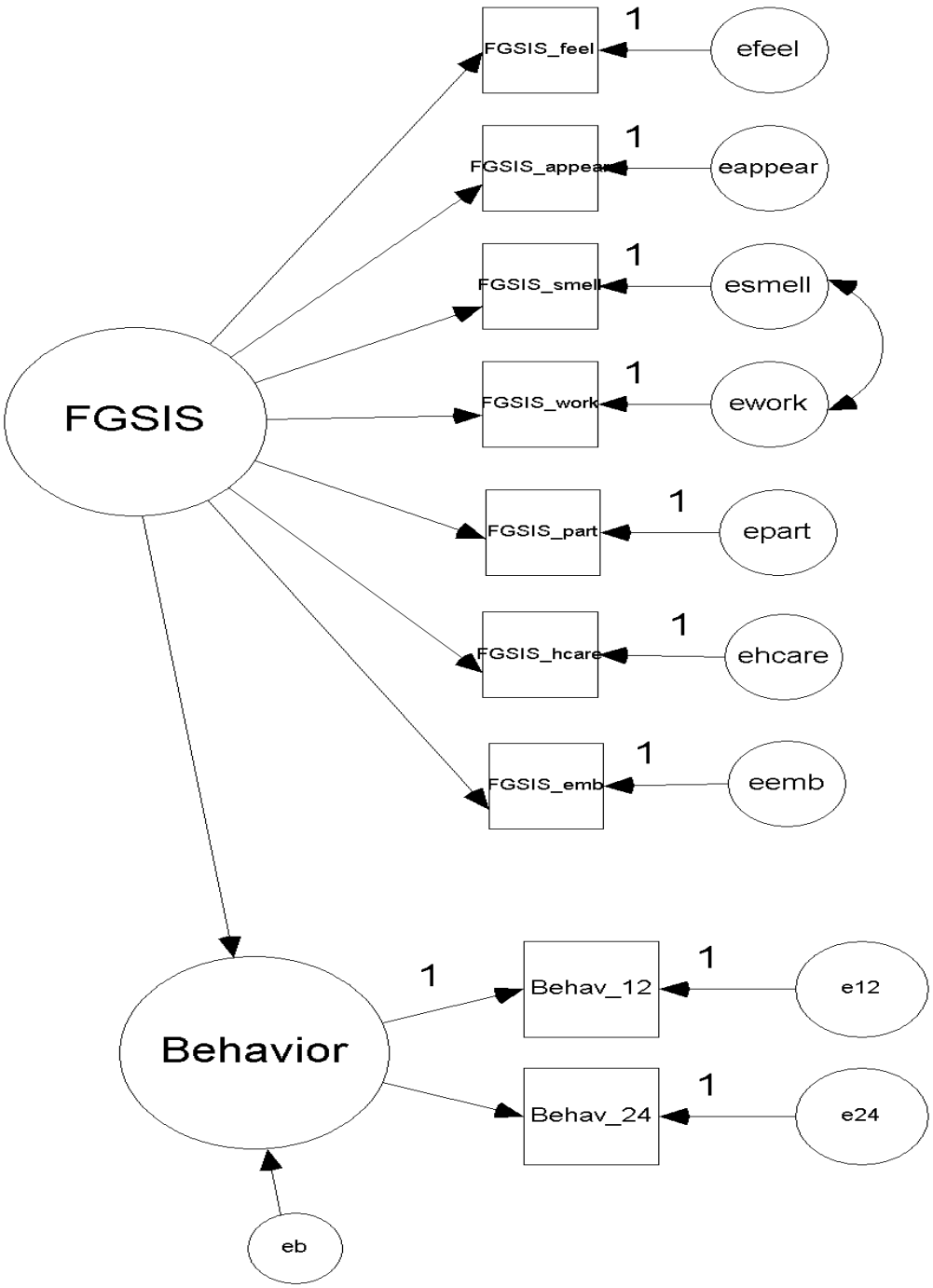
MANUSCRIPT 3, MODEL 5 FIGURE



Note: FGSIS = Female Genital Self-Image Scale

APPENDIX P

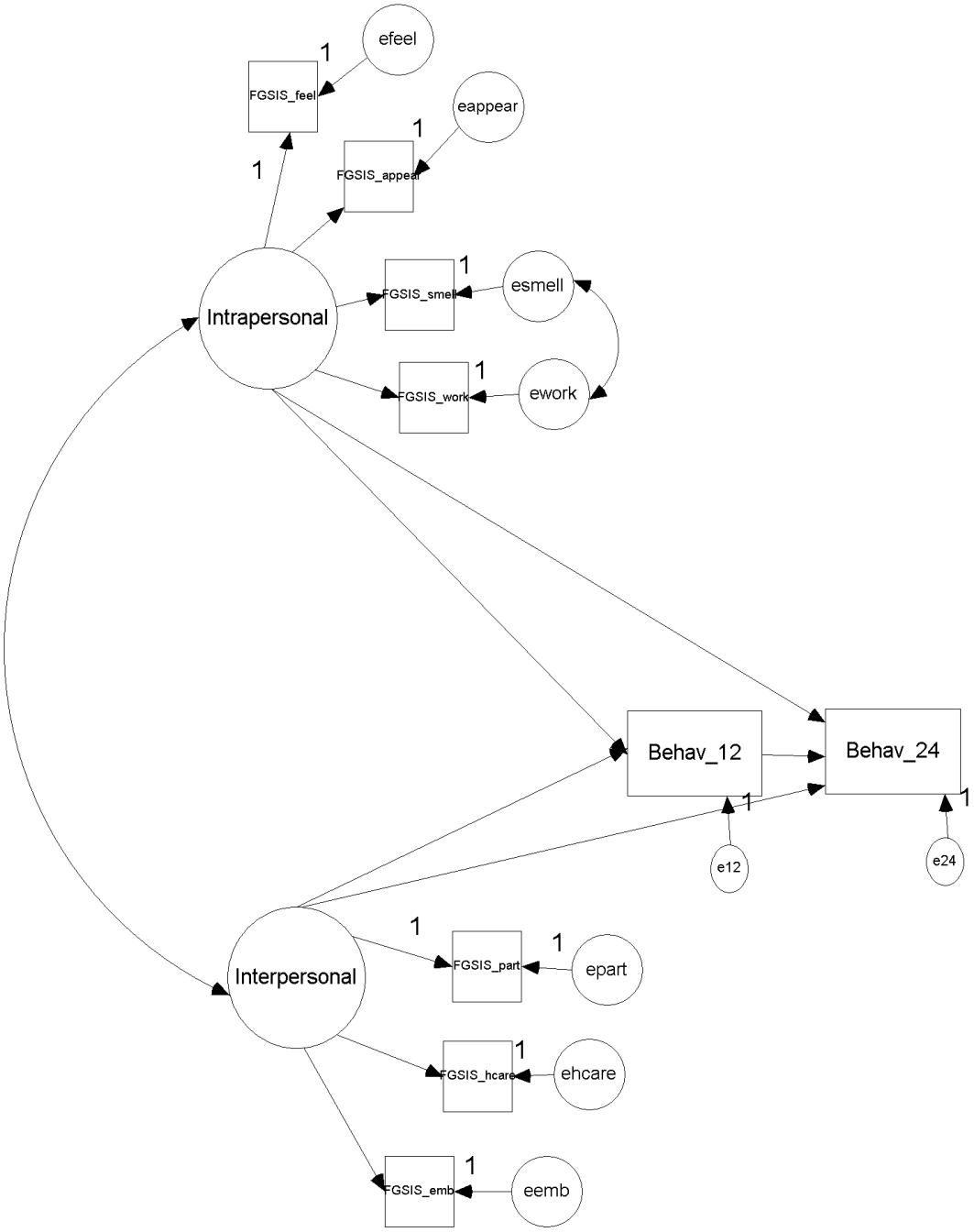
MANUSCRIPT 3, MODEL 6 FIGURE



Note: FGSIS = Female Genital Self-Image Scale

APPENDIX Q

MANUSCRIPT 3, MODEL 7 FIGURE



Note: Behav_24 = 24mo Behavior, Behav_12 = 12mo Behavior

APPENDIX R

MANUSCRIPT 3, MODEL 4 THROUGH MODEL 7 FIT STATISTICS

Fit Statistics for Model 4 through Model 7

Model	Model Type	# of Factors	X^2	RMSEA	CFI	NFI
4	SEM	2	71.17	0.07	0.98	0.97
5	SEM	2	221.44	0.13	0.92	0.91
6	SEM	1	221.44	0.13	0.92	0.91
7	SEM	2	69.60	0.07	0.98	0.97

MANUSCRIPT 3, CORRELATION MATRIX

	Behav_24	Behav_12	FGSIS_part	FGSIS_emb	FGSIS_hcare	FGSIS_work	FGSIS_smell	FGSIS_feel	FGSIS_appear
Behav_24	1.000								
Behav_12	.853	1.000							
FGSIS_part	.114	.083	1.000						
FGSIS_emb	.067	.027	.662	1.000					
FGSIS_hcare	.207	.181	.528	.608	1.000				
FGSIS_work	.012	.003	.482	.467	.442	1.000			
FGSIS_smell	.022	.030	.442	.496	.364	.496	1.000		
FGSIS_feel	-.035	-.061	.604	.650	.502	.640	.530	1.000	
FGSIS_appear	-.047	-.077	.611	.643	.433	.594	.516	.867	1.000

VITA

Name: Andrea Laine DeMaria

Address: c/o Dr. Ariane V. Hollub
4243 TAMU
College Station, TX 77843-4243

Email Address: ademaria@hlkn.tamu.edu

Education: Ph.D., Health Education, Texas A&M University, 2011
M.S., Kinesiology, University of North Texas, 2008
B.A., Behavioral Neuroscience, Purdue University, 2006