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Gender and sexual health: Applying gender role theory to men and women's intention to engage in sexual health information seeking behaviors

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A thesis submitted in partial fulfillment of the requirement of the degree of Master of Science at Virginia Commonwealth University.

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Abstract

GENDER AND SEXUAL HEALTH: APPLYING GENDER ROLE THEORY TO MEN AND WOMEN'S INTENTION TO ENGAGE IN SEXUAL HEALTH INFORMATION SEEKING BEHAVIORS

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The purpose of the present study is to examine the pathways between gender and behavioral intention to engage in sexual HISB through application of the Theory of Planned Behavior (TPB). It was found that feminine and masculine gender role stress differentially influence perceived behavioral control and behavioral attitudes, and that intention to engage in HISB was higher among women than men. Attitudes and PBC significantly predicted behavioral intention in this model. Further, women in the sample were more likely to search for sexual health information, with online sources being the most frequently reported resource. Additionally, past HISB was a significant predictor of sexual health literacy, eHealth literacy, and sexual health knowledge. These findings indicate that gender role stress may play a role in the maintenance of attitudes and perceived behavioral control about sexual health information seeking behaviors, and that HISB in general is higher among women.

Gender and sexual health: Applying gender role theory to men and women's intention to engage in sexual health information seeking behaviors

Chapter 1: Health Information Seeking Behaviors

Health information seeking behaviors (HISB) pertain to the manner by which people seek, obtain, evaluate, categorize, and use health information (Lambert & Loiselle, 2007). HISB is often used as a coping strategy for engagement in personal health promotion or psychosocial adjustment to chronic illness and is a critical component of the medical decision making process (Lambert & Loiselle, 2007). HISB has become particularly relevant to health promotion topics since recent trends show medical providers moving away from paternalistic patient-provider interaction models to embrace more patient participatory approaches that emphasize patient health decision-making and healthcare involvement (Epstein, Alper, & Quill, 2004; Arnetz, Winblad, Arnetz & Hoglund, 2008; Moumjid, Gafni, & Brémond, 2007).

As a result, HISB has become a focus of recent research (e.g., Anker, Reinhart, & Feeley, 2011; Ybarra & Suman, 2005; Hesse et al., 2005; Fox & Rainie, 2002; Purcell & Fox, 2010). Since health care practices now tend towards more collaborative decision-making processes between patients and providers, HISB is pertinent to the patient's role in the healthcare process. Further, the advent of more accessible health information sources (i.e., the Internet) provides more opportunities for individuals to engage in HISB.

Actively seeking health information has been associated with stronger health-oriented beliefs and healthier behaviors. In a nationally representative U.S. sample (n = 2636; Dutta-Bergman, 2004) of HISB and Internet use, individuals who searched for health information using the Internet were more likely to be health-oriented than individuals who did not use the Internet for health-related searches. To date, the literature on HISB has had a broad focus on health

topics, including research on chronic illness (Xiao, Sharman, Rao, & Upadhyaya, 2014 and Manierre, 2015; Burns & Mahalik, 2008), preventive health care (e.g., Hallyburton & Evarts, 2014; Ybarra & Suman, 2008), and to a lesser extent, sexual health (e.g., Boies, 2002).

Sexual health and HISB.

Sexual health is a major area of public health attention in the United States. Rates of STI proliferation are high—it is estimated that 20 million new cases of STIs occur annually (Centers for Disease Control and Prevention [CDC], 2013), and over half of these cases occur among individuals age 15 to 24 years old (CDC). Sexual health information seeking, in particular, is a construct of interest since previous research has shown that lack of knowledge about STI prevention is associated with engagement in risky sex behaviors (Lim et al., 2007; MacDonald et al., 1990).

STI symptomology and prevention are not the only core areas of sexual health. Pregnancy and contraception, sexual violence, use of barrier protections, physical consequences of STI contraction, and adaptive sexual communication practices are all information topics that are critical to sexual health. Further, information about provider services (e.g., obstetrics and gynecologists, STI screening locations, birth control prescriptions and script providers, and insurance-related information) is also important to the sexual health decision-making process, and the ability to access these entities is another critical component of health literacy (Nutbeam, 2000). Another important sexual health topic is sexual violence and abuse. Sexual violence is a large public health concern—it directly impacts individuals' abilities to protect against sexually transmitted infections (STIs) and unwanted pregnancy (Wood, Maforah, & Jewkes, 2003).

Despite the pertinence of these topics to sexual health decision-making, little research has been done on the information-seeking processes behind sexual health information seeking

behaviors (S-HISB)—especially among young adults. Given that young adults report inadequate sexual health education as adolescents and feel a need for more sexual health information (von Sadovszky et al., 2006)—in addition to recent findings that show significant gaps in college students STI/STD and condom usage knowledge (Moore & Smith, 2012)—it is likely that they are turning to alternative sources for sexual health information—including the Internet—in order to answer questions about STI prevention, contraception, and reproductive system functioning. A Canadian study of university undergraduates (n = 760; Boies, 2002) found that over half of its participants used the Internet to obtain sexual information. Patterns are likely to be similar among U.S. undergraduates. However, the actual ability of young adults to locate accurate sexual health information online is questionable. In a study by Smith and colleagues (2000), a review of websites containing sexual health material was conducted through a search of sex education keywords. Over 63% of search results were pornography, with the remaining 37% of websites containing pertinent condom use and STI symptom information (Smith, Gertz, Alvarez, & Lurie, 2000). In addition, they tasked undergraduate students with using the Internet to find information on condom use and STI symptoms—a task which averaged 4 minutes. This finding indicates that general sexual health information on the Internet may be difficult to access for non-routine seekers, or not immediately accessible without sorting through spurious search results (i.e., pornography). Further research needs to be conducted regarding HISB of young adult men and women and the sources that these seekers consult still need to be identified.

Use of Internet.

Reports observe that 70-81% of Americans now use the Internet (Purcell & Fox, 2010; Fox & Jones, 2011), and that more than half of these individuals use the Internet for health information seeking purposes (Ybarra & Suman, 2005; Hesse et al., 2005; Fox & Rainie, 2002;

Fox & Purcell, 2010)—even before physician consultation (Hesse et al., 2005). Sources of Internet health information include government-hosted websites, social media, and privately hosted websites, and search engines can be used as a strategy for finding these sources. Quality of health-related search engine results varies, with information related to preventive health and social health issues (e.g., pregnancy prevention) being lower quality than information related to diagnosis and treatment of physical injury or disease (Kitchens, Harle, & Li, 2014). Studies have identified enhancing medical care, diagnosing medical problems, seeking health-related social support, and supplementing health provider's advice to be primary reasons for Internet HISB (Ybarra & Suman, 2005). In addition, Internet HISB has also been theorized to be able to improve overall health outcomes by reducing existing health disparities via improving patient-provider communication, information tailoring, and the ability to diminish certain health-related barriers to care (e.g., travel time/distance, cost; Cline et al., 2007).

A nationally representative longitudinal study conducted by Ybarra and Suman (2008; *n* = 2010) of individuals age 12 and older found that Internet HISB improved the relationship between patients and providers across all age and sex ranges (Ybarra & Suman, 2008). Further, other work has found that perceived low quality of communication with a healthcare provider is associated with preference for using the Internet as an initial health information research strategy (Xiao, Sharman, Rao, & Upadhyaya, 2014). Ahadzadeh and colleagues (2015) conducted a study on urban Malaysian women and internet-centric HISB with the aim of assessing the association between perceived health risk and health consciousness on health-related Internet usage. Both perceived health risk and health consciousness were associated with increased Internet HISB. Thus, health consciousness—particularly among women—may be an antecedent for HISB.

Health consciousness may also play a specific motivational role in the enactment of HISB. Internet HISB in particular has been documented as a proactive—not reactive—health behavior (Ahadzadeh et al., 2015). This implies that individuals—particularly women—may conduct an appraisal process about health and disease susceptibility that motivates Internet HISB. Further, research has found that women who use the Internet for HISB were more likely to communicate with health professionals about health information, cite this information as part of their decision-making process, and were more aware of health resources (Warner & Procaccino, 2007). Thus, there may be clear gains for those who use the Internet for HISB.

Use of the Internet for health purposes can also have negative consequences—Weaver and colleagues (2009) found that over 11.2% of participants used information obtained from the Internet to rationalize treatment non-adherence, though this relationship may be mediated by personal factors like neuroticism, poor health-related quality of life (HRQOL), lower perceived risk, and gender. Of the respondents who reported discontinuing care based on Internet search results, 71.4% were female. This indicates that demographic factors—like gender—may play a moderating role on how health information is used after HISB activities.

Internet usage for health seeking purposes tends to vary based on age, income, and gender (Cotten & Gupta, 2004). Age has often been used as a proxy for Internet usage skills and overall Internet literacy. Previous research has indicated that elderly individuals are less likely to know how to use the Internet and as a result often underutilize it in the context of HISB (van Deursen, van Dijk, & Peters, 2010). Adults between ages 20 and 39 are most likely to use the Internet for health information seeking (Ybarra & Suman, 2005), though adolescents and young adults are more likely to use the Internet for general purposes. In some samples, middle-aged

adults were more likely than younger adults with the same medical condition (e.g., cancer) to use the Internet as a health information resource (Sabel, Stringfield, & Schwartz, 2005).

Income is another significant factor in Internet HISB. Data from the U.S. (Fox & Jones, 2009) shows that people with college degrees (e.g., Associate's, Bachelor's) and those with annual incomes above $75,000 were more likely to engage in Internet HISB. College undergraduates are an exception within this SES range—in these cases, the Internet is a more readily available resource compared to other low-income individuals with different education status (Escoffery et al., 2005). This study of U.S. undergraduate students (n = 743) found that over 74% of respondents reported searching for health information online, and 40% reported regular use of the Internet as a health information resource. Given that undergraduate students have demonstrated competent health search-related computer literacy (Buhi, Daley, & Fuhrmann, 2009), online sources of health information may be a prime area for health research and outreach to this population.

Use of social media and online groups.

Use of social media is another form of Internet HISB that impacts health maintenance and information seeking. Facebook, Twitter, ICQ, chatrooms, and health forums are becoming more common platforms for health information seeking (Mano, 2014; Scanfeld, Scanfeld, & Larson, 2010). Recent investigations of the use of social media and health empowerment (n = 1406; Mano, 2014) have found that online HISB empowers health information seekers to use online health services, and use of social media as a health consulting resource was associated with individuals using online health services. Further, health institutions use social media to raise health awareness and distribute health information (Bundorf, Wagner, Singer, & Baker, 2006;

Park, Rodgers, & Stemmle, 2011). In particular, social website usage has been associated with increasing patient-provider communication and connectivity (Schein, Wilson, & Keelan, 2010).

Online groups, ranging from anonymous forums to support groups, can also be additional sources of health information. Individuals often utilize support groups as forms of social support that often have the benefit of anonymity (Sharf, 1997). Given the perceptions of stigma tied around sexual health problems or concerns (Sandfort and Pleasant, 2009; Normansell, Drennan, & Oakeshott, 2015), such online sources may be critical access points for at-risk individuals which sexual health concerns they are not comfortable with disclosing to peers or family members, or for individuals who do not have readily available access to a health care provider.

Empirical information about social media and support group usage and sexual health information seeking is limited. A systematic review of social network websites and sexual health promotion (Gold et al., 2011) found that such websites are used for sexual health promotion, with Facebook being the most common platform. Additionally, use of social media for health information purposes has been associated with greater Internet health literacy among older adults (Tennant et al., 2015). However, quality and success of social media as a health resource as well as their utilization by sexual health information seekers has yet to be documented.

Chapter 2: Gender and HISB

Recent research in behavioral health has documented significant gender differences in health information seeking behaviors (HISB) (Escoffery et al., 2005; Hallyburton & Evarts, 2014; Manierre, 2015; Ybarra & Surman, 2008; Ybarra & Suman, 2005; Kassulke et al., 1993), with women being up to 90% more likely than men to use the Internet to search for or access health information (Ybarra & Suman, 2005). Women tend to ask more health-related questions and seek out health information, including from the Internet and traditional informational sources

(e.g., providers, peers, family, TV, radio; Ek, 2013; Dobranksy & Hargittai, 2012). Seeking supplementary health information has been identified as a primary reason that women engage in HISB (Pandey, Hart, & Tiwary, 2003). Further, women have been shown to be more likely to use the Internet to search for health information than men regardless of other demographic factors (Stern, Cotton, & Drentea, 2011). Particular reasons for searching for health information also differ between male and female health information seekers—research suggests that men are more likely to look for information about specific, sensitive health subjects (e.g., to make a diagnosis about a health problem) while women are more likely to search for online information related to coping with illness or to seek support from others (Fox & Rainie, 2002; Ybarra & Suman, 2008).

Few studies have examined the reason behind this gender differential in health information seeking and avoidant behaviors, and if this differential leads to a gendered difference in health literacy. To date, two studies have examined gender differences in HISB (Manierre, 2015; Bidmon & Terlutter, 2015).

Bidmon and Terlutter (2015) conducted a survey of randomly selected German patients (n = 1006) in order to examine gender differences in online HISB based on emotional, motivational, attitudinal, and cognitive dimensions. Additionally, the study sought to examine normative influences on HISB. Results showed that women more frequently used the Internet for health-information seeking—a finding that is consistent with other HISB literature (Manierre et al., 2015; Ybarra & Suman, 2005). In particular, gender differences were identified in motivation for Internet usage as well as usability attitudes. Women showed more positive attitudes towards the Internet than men did, and also displayed a higher degree of social motivation. However, women displayed a lower degree of Internet usage self-efficacy. Taken together, these findings

provide an exploratory account of sex-based differences in Internet health-based information seeking behaviors and motivations.

Additionally, a recent meta-analysis of gender and online HISB found that both men and women are most likely to use the Internet for HISB over all other resources but that men were less likely to engage in Internet HISB than women (Hallyburton & Evarts, 2014). Additionally, the second most-utilized source after the Internet was other individuals, which indicates—if this pattern translates onto an Internet context—men and women may differentially use social media for HISB. Additionally, Ek (2014) found that women reported receiving more informal health information from close family members, friends, or colleagues than men did. Given that Hallyburton and Evarts (2014) include healthcare providers in their conceptualization of interpersonal resources, and Ek (2014) only assessed informal health information sources (e.g., friends, family), these findings do not negate one another, but indicate a diverse portrait of gender differences in HISB.

An additional study on gender differences in HISB attempted to explain the reason for the gender difference through a longitudinal study of men and women with cancer (Manierre, 2015). Manierre hypothesized that the gender gap is due to either: 1.) Childrearing duties place women in a caregiver role that causes them to be more responsible for family health and welfare, 2.) Socialization causes women to be more involved in monitoring their bodies and more likely to perceive health issues, or 3.) Women are more reactive to health problems. Results confirmed the sex gap in HISB that has been found in other studies (e.g., Escoffery et al., 2005; Hallyburton & Evarts, 2014; Ybarra & Suman, 2008), though the three proposed explanations were not supported. This may be in part due to limitations with study methodology. Caregiving role was only examined by asking whether women had a child under 18—whether or not she adhered to

feminine caregiver gender role norms was not measured. The gender reactivity hypothesis is also limited, again, by using gender as a dichotomous grouping variable. Instead of exploring how gender norms may contribute to socialization of acceptable health behaviors, it relies on strictly examining whether gender identity is associated with patterns of health behaviors and their antecedents (e.g., health monitoring, risk perception). Thus, it is unsurprising that findings have been unsupported or conflicted, given the immense variability that is attributable to gender as a whole construct. The primary finding from this study is that the gender gap exists, it is persistent, and explorations into why it exists need to delve further into the way gender is internalized and influences decision-making processes.

Limitations in Current Research

Most of the studies on gender and HISB have been limited by differing definitions of what constitutes searching for health information. Of the demographic studies examined in Hallyburton and Evarts' (2014) meta-analysis, "health information" was inconsistently operationalized within their surveys (American College Health Association, 2008; Center for Studying Health System Change, 2010; National Center for Health Statistics, 2011; National Cancer Institute, 2012; Pew Internet and American Life, 2012). Examples include different timelines ("past 12 months" vs. nonspecific frames of reference), and limitations in what information seeking behaviors were considered health-oriented. Additionally, most surveys examining HISB do not make distinctions between differing health areas and often do not explicitly ask about sexual health information seeking behaviors. Of the studies that do (Boies, 2002; Smith, Gertz, Alvarez, & Lurie, 2000), patterns of gendered HISB are comparable to those identified in non-specific HISB studies (e.g., Escoffery et al., 2005; Hallyburton & Evarts, 2014; Manierre, 2015; Ybarra & Surman, 2008; Ybarra & Suman, 2005).

Another major limitation of the studies specifically examining potential causes behind the gender differential with HISB (Bidmon & Terlutter, 2015; Manierre, 2015) is the tendency to examine gender as a dichotomous grouping variable without delving into its related components. Studies often conflate gender with sex. In practice, this is done by using gender as a grouping variable (i.e., male/female) to examine differing rates and sources of HISB (e.g., Ek, 2014; Bidmon & Terlutter, 2015), without taking into account variations in gender expression and identity, or by conflating gender with sex and diminishing or outright ignoring the presence of gender roles. Thus, it is currently unknown how gender role internalization or socialization may impact attitudes about HISB. Further, studies that describe the male/female "gender" difference in HISB independent of demographic factors typically look at age, internet proficiency, geographic locale, education, and employment status.

Chapter 3: Sexual Health Literacy

Health literacy concerns the links between health, education, and its social determinants and involves three primary areas: functional health literacy, interactive health literacy, and critical health literacy (Nutbeam, 2000). Functional literacy concerns an individual's ability to function in everyday circumstances that involve basic skills like reading and writing. Interactive literacy involves more advanced skills—in particular, social skills—that allow an individual to interact more effectively and play a more active role in their health care experiences. Critical literacy involves analytical ability, which allows individuals to exert more control over their decision-making processes. Taken together, these three levels of health literacy depict a tiered approach to information gathering, seeking, and analysis, which contribute to health care autonomy and empowerment. Communication content and methods influence progression into each stage, which is then further mediated by personal and social attributes (e.g., gender;

Nutbeam, 2000). With this in mind, we can consider sexual health literacy to refer to an individual's ability to comprehend and evaluate the potential risks and outcomes of sexual behaviors. Thus, sexual health literacy involves not only knowledge and access to sexual health information, but also its incorporation into the decision-making process (i.e., critical literacy; Graf & Patrick, 2015).

In general, it is theorized that greater access to health information improves health literacy (Nutbeam, 2000), and research has found that more Internet HISB is related to greater health literacy (Lam & Lam, 2012). In particular, the Internet has been found useful in enhancing content-based areas (e.g., identifying STI symptoms, finding contraceptive or safe sex information), though issues exist concerning individuals' abilities to locate local health resources (e.g., providers, services; Buhi, Daley, Fuhrmann, & Smith, 2009). In turn, both higher levels of HISB and greater health literacy are associated with positive health outcomes (Shieh & Halstead, 2009). Shieh and Halstead (2009) found that low health literacy is associated with decreased health knowledge, participation in preventive behaviors, and literacy in navigating health care systems in a sample of U.S. women.

eHealth literacy (i.e., an individual's ability to locate, understand, and appraise health information found online), is another facet of health literacy that involves people's competency in using the Internet to find health information (Norman & Skinner, 2006). Preliminary research on the eHealth literacy of college students has found that although they report greater comfort using the Internet for HISB, their actual literacy skills are largely inadequate (Stellefson et al., 2011). In a meta-analysis of six eHealth literacy studies of college students, Stellefson and colleagues found that in general, students have poor skills in searching for, retrieving, and utilizing sources of online health information. Students often could not identify trustworthy

websites, use search engines to full effectiveness, or correctly interpret online health information (Ivanitskaya, O'Boyle, & Casey, 2006). Additional research has found that differing levels of eHealth literacy result in different Internet HISB strategies (e.g., having different evaluation skills for sources, going beyond use of search engines; Stellefson et al., 2012). Considering the role eHealth literacy can play in evaluating the quality of online health information sources (Park et al., 2016), and the sheer frequency of Internet usage in HISB (Ybarra & Suman, 2005; Hesse et al., 2005; Fox & Rainie, 2002; Fox & Purcell, 2010), eHealth literacy may be another important tool that young adults use to access and appraise sexual health information.

Sexual health literacy can have behavioral outcomes. Fortenberry and colleagues found that low health literacy (as assessed with the Rapid Estimate of Adult Literacy in Medicine scale)—which tested for functional health literacy—found lower levels of such literacy associated with a lower likelihood of annual gonorrhea testing. In another cross-sectional study, Weinstein, Walsh, & Ward (2008) tested whether prior exposure to sexual health education and communication impacted performance on a test of sexual health knowledge in a sample of undergraduate students. Findings showed that overall, undergraduate students displayed very poor understanding of sexual health issues. However, better performance on the knowledge measure was associated with prior exposure to sex education messages about reproductive health and contraception. Thus, exposure to sexual health content can have a significant effect on overall literacy and sexual health knowledge among young adults. Given the role HISB plays in exposure to such messages (Boies, 2002; Smith, Gertz, Alvarez, & Lurie, 2000), it follows that greater HISB should be linked with increased sexual health literacy and knowledge.

Further, Weinstein, Walsh, & Ward (2008) found that sexual health literacy and knowledge differ based on participant gender. Female participants were more knowledgeable

about sexual health topics than male participants, especially in areas concerning contraception and STD/Is. Additionally, male participants with previous exposure to formal sexual health educations exhibited greater knowledge gains than female participants, which indicates that proliferation and consumption of sexual health information may be a critical area of focus for men's sexual health.

The finding of greater sexual health knowledge among women is congruent with previous research on gender and sexual health literacy and knowledge. Sandfort and Pleasant (2009) found that male participants exhibited higher levels of stigma towards individuals with HPV (human papillomavirus; i.e., held more negative attitudes) and less knowledge about HPV than female participants. Health literacy can also differentially impact risk perception and distress depending on gender. One study of HPV infection found that positive HPV diagnosis is linked to decreased distress and anxiety among women when educated about the common incidence of the virus (McCaffery & Irwig, 2005). Despite this, it is important to note that sexual health literacy does not always predicate avoidance of sexual risk behaviors (Graf & Patrick, 2015)—rather, sexual health literacy and knowledge are components of a larger picture of sexual health decision-making.

Taken together, these findings indicate that identifying the pathways among gender, health information seeking, and health literacy can shed light on a critical path for sexual health education development.

Chapter 4: Gender

Sex Disparities

Men and women face vastly different reproductive health outcomes worldwide. Women face higher rates of STI and HIV infections. Yet, actual sexual health knowledge shows the

opposite pattern—men's awareness of STIs and sexual health services are very low. In a U.K. study of men's sexual health knowledge, over 20% of participants had never heard of herpes, syphilis, or chlamydia, 10% had never heard of gonorrhea, and only 13% knew where a local clinic was (Mason, 2005). Embarrassment was a primary reported reason for this lack of knowledge. A U.S. study of college student sexual health had similar findings: students demonstrated a poor understanding of sexual health issues, though women were more knowledgeable than men about STDs and contraception (Weinstein, Walsh, & Ward, 2008). Though increased rates of STI infection among heterosexual women may be partially attributable to physiological differences between male and female sexual anatomy (CDC, 2011), discrepancies between sexual health knowledge between men and women as well as gender differences in aforementioned health information seeking behaviors imply a psychosocial force behind this higher rate of diagnosed STI/Ds among women.

Gender roles and socialization.

Recent work has attempted to discern the interconnectedness of the dimensions of biological sex and social gender. Biomedical theory centers on the sex differences in reproductive systems (Doyal, 2000). However, this approach is limited by its conceptualization of sex as a dichotomous grouping variable in order to compare disparate health outcomes rather than focus on how aspects of gender can shape behavioral attitudes and social perceptions (Doyal, 2000; Bird & Rieker, 1999). Gender and sex are distinct constructs, and over-focus of health research on "male" vs. "female" behaviors without investigations of masculine and feminine attitudes results in an explanatory hole in the research literature.

Another theoretical perspective involves gender roles and socialization (Bem, 1981). Examining how people "sex"-type health behaviors can give insight into how certain gender role

endorsements can be ultimately harmful and predispose people having them to risky sexual behaviors. Exploratory qualitative work has identified gender socialization in men to be a potential barrier to male undergraduate students seeking care (Davies et al., 2000), and other studies have theorized that gender socialization may play a role in the development of men and women's health information seeking and avoidance behaviors (Courtenay, 2000; Manierre, 2015). Empirical work on other sexual health behaviors has found gender role attitudes to be associated with sexual behaviors and beliefs in a sample of sexually active college students (Shearer, Hosterman, Gillen, & Lefkowitz, 2005). In particular, endorsement of anti-feminine norms (i.e., men should not behave in a stereotypically feminine way) was associated with a higher lifetime likelihood of engaging in unsafe sex.

"Maleness" and "femaleness" and their conceptualizations vary between cultures, subcultures, and communities (Doyal, 2000). Thus, the way "maleness", "femaleness", or "androgyny" is interpreted and expressed can impact an individual's health and wellbeing. A cross-sectional study by Anson, Paran, Neumann, & Chernichovsky (1993) had findings in line with this direction—men and women differed on health perceptions, such that women were more likely to view their health as poor. This implies there is a gender role socialization component to health perceptions, and by extension, to health behaviors.

Gender role norms refer to the measurement of traditional masculinity or femininity ideology that an individual possesses. Mahalik's gender role norms model (2003) posits that macro-level groups that are socially dominant (i.e., men) shape gender role norms that are proliferated throughout society. Individuals can then vary in their levels of conformity and experiences with role norms, and both group and individual level factors further shape these norms. Further, Mahalik and colleagues (2003) postulate that conforming and not conforming to

norms can have social, personal, or even health-related costs. Thus, these dominant cultural norms create expected behavioral patterns for men and women, and whether they are adhered to correctly can dictate both personal and interpersonal perceptions. Gender role norms have been used to study maladaptive consequences of men's adherence to gender role norms (Liu & Iwamoto, 2007; Mahalik, Lagan, & Morrison, 2006; Mahalik, Levi-Minzi, & Walker, 2007; Burns & Mahalik, 2008; Good et al., 2006) whereas research on feminine gender role has largely focused on eating disorder pathology (Bekker & Boselie, 2002; Martz, Handley, & Eisler, 1995).

Gender role norms are related to gender role stress. Bem (1981) first introduced this concept of socialized gender performativity and appraisal in her theory of gender role schema, which posits that men and women are aware of sex-typed cultural norms and ideologies via socialization, and seek to adapt to roles consistent with "masculinity" and "femininity" in order to reinforce their own gender role identity. Thus, experiences of "marginalized masculinity" and other variants and consequences of gender performance (e.g., the Shearer and colleagues 2005 study that found anti-feminine ideology was associated with unsafe sex) must involve a judgment process. Lazarus and Folkman's theory of gender role stress (1984) combines this perspective with Bem's (1981) concept of gender schemata—gender role stress is the result of an individual's appraisal of a situation and its gender-appropriate reaction. Further, it posits that deviating from expected gender roles can be stressful.

A recent Polish study (Kazmierczak, 2010) investigated the viability of the current five-factor feminine and masculine stress models (n = 1515). According to these models, feminine gender role stress stems from five factor loadings: 1.) nonemotional relationship development, 2.) lack of nurturant qualities, 3.) exposure to violence of victimization, 4.) behaving assertively, or 5.) feeling physically unattractive. Among men, these five factors involve 1.) expressing

emotional vulnerability, 2.) perceived intellectual inferiority, 3.) Performance failure related to work or sex, 4.) Being outperformed by women in "male" activities, and 5.) Feeling physically inadequate (Kazmierczak, 2010, p. 4). Findings supported the validity of the five-factor model (i.e., the Feminine Gender Role Stress and Masculine Gender Role Stress scales). This model has been supported by research on the performance of masculinity, femininity, and gender role stress. Feminine gender role stress has previously been associated with increased depression among women, and masculine gender role stress with increased anxiety and hostility among men (Gillespie & Eisler, 1992; Eisler, 1995). More recent operationalization of gender role stress have taken the form of the Subjective Masculinity Stress Scale (SMSS; Wong et al., 2013) and Subjective Femininity Stress Scale (SFSS; Shea et al., 2014), which validated additional dimensions of gender role in women (e.g., competence, independence, feminism, ladylike behaviors, procreation, domestic roles, multiple roles, sexual fidelity, hyper-femininity, and self-sacrifice) and tapped into subjective masculinity stress among men.

It is important to note that gender role stress is distinct from the previously described construct of gender role ideology (i.e., norms; Eisler, Skidmore, & Ward, 1988), such that gender role stress pertains to a gendered appraisal process of specific scenarios, whereas masculinity or femininity encompass an individuals' self-perceptions about attributes that are desirably masculine or feminine. Thus, both gender role stress and gender role norms (i.e., ideology) are separate constructs that can either interact or individually contribute to an individual's health behaviors. Thus, it is likely that both masculine/feminine indices of gender role stress and global perceptions of masculine/feminine gender role norms influence specific health appraisal processes (e.g., subjective norms and behavioral beliefs), and by extension, health protective or risk behaviors (i.e., sexual health information behavior seeking).

A third component of gender role socialization involves reference groups. Reference groups are a means of measuring social norms about a behavior or set of behaviors. Within gender role literature and health, social norms have been studied as perceived normative health behaviors (Mahalik, Burns, & Syzdek, 2007). Research on gender role norms and health is limited, but findings indicate that male social norm models (i.e., reference groups) act as risk factors for male health promotion, and that both male and female social norms can impact alcohol use (Korcuska & Thombs, 2003). Research on peer social norms, however, is well established, and consistently shows a link between peer social norms and an individual's own health risk behaviors (e.g., Mahalik, Burns, & Syzdek, 2007; Gunther et al., 2006, Perkins, Haines, & Rice, 2005).

Masculinity and Masculine Gender Role Stress.

Before research into masculinity and health began, male gender has often been seen as not being gendered at all, or as being the "default" gender (Doyal, 2000). More recent literature on gender and health has moved towards examining the links between gender, heterosexuality, and wellbeing. Such research has shown that the construction and management of a male-gendered identity is associated with health-related risk behaviors. However, the type of behavior depends on which component construct of masculinity is being examined.

One construct that may influence male health risk behaviors or outcomes is gender role norms (or schema)—i.e., sex-typed behaviors that reinforce one's gender identity self-concept (Bem, 1981). For example, many men engage in risky health behaviors in order to perform masculine gender in a socially approved manner (Harrison, Chin, & Ficarotto, 1992). Courtenay (2000a) reported that behaviors including tobacco use, excessive alcohol consumption, poor diet, and risk taking are more prevalent among men than women, but the psychosocial proponents

behind this gender difference still need to be investigated. Recent studies on masculine gender roles are congruent with Courtenay's approach, and have found it to be associated with increased alcohol consumption (e.g., Sánchez-López, Cuellar-Flores, & Dresch, 2012; Iwamoto et al., 2011; Wells et al., 2014), tobacco use (Sánchez-López, Cuellar-Flores, & Dresch, 2012), and unsafe sexual practices (Bowleg, 2004; Pleck, Sonenstein, & Ku, 2010).

Masculine norms were also implicated as potential risk factors for health promotion behaviors in a study by Levant and Wimer (2014)—a replication of a previous study (Levant, Wimer, & Williams, 2011). In both studies, the Conformity to Masculine Norms Inventory (CMNI-46) was used to assess degree of adherence to masculine gender role norms, in addition to investigating its relation to male health. CMNI scores were found to act as a risk factor for certain health-averse behaviors, including substance use and lack of preventive self-care.

One consequence of violating gender role norms that has been theorized to influence such health behaviors is "marginalized masculinity" (Cameron & Bernardes, 1998; Doyal, 2000)—i.e., circumstances where illness or concerns about illness are seen as a weakness that diminishes masculine expression and identity. Further, gender role beliefs can impact dyadic processes like safe sex negotiation. Women can consume and engage with masculine gender role ideologies (about potential partners) that are unhealthy and promote unsafe sex practice (e.g., masculine invulnerability to health threats, judgment calls, perception that men initiate communication/safe sex practices; Kippax, Crawford, Waldby, & Benton, 1989).

Gender role norms dictate what behaviors are socially acceptable for men to enact—thus, violation of this can result in gender role conflict or stress, which has been shown to affect men's psychological wellbeing and substance use behaviors (Blazina & Watkins, 1996) as well as predict poorer health practices in women who identify with traditionally masculine constructs

(Sloan, Conner, & Gough, 2015). Masculine gender role stress involves the "cognitive appraisal of specific situations as stressful for men" (Eisler & Skidmore, 1987, p. 125). Research on masculine gender role stress and health has established a link between the two constructs. Eisler, Skidmore, & Ward (1988) found that stress appraisal among men does have a gendered component, and that this component predicted increased anxiety and poorer health habits, including diet, exercise, and substance abuse behaviors. Baffi and colleagues (1991) found that men with masculine gender role identity exhibited poorer health behaviors compared to men with feminine or androgynous gender role identities, and Lash, Eisler, & Schulnian (1990) found that men with higher masculine gender role stress exhibited higher systolic blood pressure.

Due to the common dichotomization of "maleness" and "femaleness" (i.e., masculinity and femininity) as two poles on one spectrum of gender expression, shaping behaviors to be seen as "less masculine" results in these behaviors being viewed as stereotypically "more feminine". This is an example of one potential social barrier to health behavior maintenance that could impact the adoption of healthier, more "feminine" behaviors. Help-seeking in the form of health information seeking may be seen as a "feminine" behavior, and as a result, engaging in HISB may result in the threat of marginalized masculinity through increased masculine gender role stress. Given that decreased medical help-seeking among men has previously been linked to masculine gender role (Addis & Mahalik, 2003), it stands that HISB may be a specific manifestation of help-seeking that follows a similar behavioral trend.

Given that masculine gender role socialization can encourage men to engage in health risk behaviors (Courtenay, 2000)—including sexual risk behaviors (Pleck, Sonenstein, & Ku, 2010)—gender role ideology and stress may play a role in men's perceived behavioral norms and attitudes towards sexual health information seeking. It has been argued that health equity is

achievable through the reconstruction of masculinity (Doyal, 2000). Enabling men towards less self-destructive behaviors could have a direct impact on both men's health as well as the health of others that is shaped by interactions with masculine gender performance (e.g., sexual health; Campbell, 1995). Campbell (1995) asserts that sexual health efforts—in this case, HIV prevention—must include focus on how gender role socialization influences safe sex practices, and that attention must be paid to male behaviors in relation to female partners.

Femininity and Feminine Gender Role Stress

Like masculinity, femininity is a social construction that is not inextricably linked to biological sex or female gender (Annandale & Hunt, 1990). Rather, "female-ness" is the result of macro-level socialization processes inherent in different cultures that reinforce stereotyping behaviors as "not masculine" (Bem, 1981). Feminine gender role norms involve nine dimensions: thinness, domesticity, investment in appearance, modesty, relational ability, involvement with children, sexual fidelity, romantic relationship desires, and sweetness/niceness (Parent & Moradi, 2009). Such norms may be related to expectations and sexual role performance among women. Prior research on heterosexual women's safe sex practices puts the onus of safe sex burden on women's ability to negotiate safe sex practices (Pulerwitz, Amaro, De Jong, & Gortmaker, 2002; Carter, McNair, Corbin, & Williams, 1999) rather than men's awareness and knowledge of sexual and reproductive health risks and practices. Thus, male sexual gender roles have been identified as sexually reactive rather than assertive forces concerning safe sex practices (Carter, McNair, Corbin, & Williams, 1999; Noar, Morokoff, & Halow; 2002).

As previously mentioned, gender role stress is a distinct construct from gender role norms or perception (Eisler, Skidmore, & Ward, 1988; Gillespie & Eisler, 1992). Like masculine

gender role stress, feminine gender role stress examines the appraisal process that occurs when women determine what a socially acceptable "feminine" response is to a particular situation or stimulus, and whether their reaction is in line with this desired conduct. It involves six dimensions: fear of unemotional relationships, fear of being unattractive, fear of victimization, fear of behaving assertively, and fear of not being nurturant (Gillespie & Eisler, 1992). This construct has been primarily linked with poorer body image and increased eating disorder pathology amongst women (Martz, Handley, & Eisler, 1995; Bekker & Boselie, 2002; Mussap, 2007) perceptions of poor health (Anson, Paran, Neumann, & Chernichovsky, 1993), and a greater rate of chronic illness (Sánchez-López, Cuellar-Flores, & Dresch, 2012). Whether or not feminine gender roles or gender role stress is related to help seeking behaviors—like health information seeking—has yet to be established. Given the inclusion of nurturance in the five-factor Feminine Gender Role Stress scale and caregiver (i.e., involvement with children) in the Conformity to Feminine Norms Inventory; Parent & Moradi, 2009) and the speculated relationship between the feminine "caregiver" role and health information seeking behaviors (Hallyburton & Evarts, 2014; Manierre, 2015), it is likely there is a link between feminine gender role performance, stress, and HISB. Thus, it is probable that individuals who display higher levels of feminine gender role stress may be more likely to appraise HISB as a necessary behavioral coping strategy.

Chapter 5: The Theory of Planned Behavior

The Theory of Planned Behavior (TPB) is an extension of the Theory of Reasoned Action (TRA) that theorizes that a person's intention to perform a health behavior is influenced by cognitive factors, such as the individual's attitudes and perceived norms towards the behavior and perceived ability to perform the behavior (Ajzen, 1991; Ajzen & Fishben, 1980). The TPB

posits that these constructs are impacted by both internal and external factors, and consist of perceived norms, behavioral attitudes, and perceived behavioral control (Ajzen). These three constructs, in turn, predict behavioral intention, which should then predict performance of the health behavior. These intentions are the core component of the TPB, as it emphasizes that an individuals' intention to perform a behavior is linked directly in strength to an individual's likelihood to perform that behavior.

According to the TPB, behavioral action and intention are jointly influenced by intrinsic motivation and ability (i.e., behavioral control; Ajzen, 1991). One domain of ability within this model is perceived behavioral control. This refers to an individual's perception of their ability to successfully engage in or commit to a behavior (i.e., perceived likelihood of behavioral achievement). This construct is similar to Bandura's theory of self-efficacy (1997, 1982), which involves an individual's judgment about their ability to engage in specific behaviors in relation to an anticipated situation. Such beliefs can influence choice of, preparation for, and effort spent engaging in a behavioral health activity.

A second component of the TPB, perceived norms, consists of two constructs: normative beliefs and subjective norms (Ajzen, 1991). Normative beliefs involve the likelihood that reference groups approve or disapprove of performing a specific health behavior. Such reference groups can engender social pressures regarding engagement in a health behavior, which in turn is related to subjective norms about the health behavior—i.e., the individual's own perceptions about the behavior. More direct social relations, like friends or family members, may influence subjective norms.

A third component, attitudes, consists of behavioral beliefs and attitudes towards the health behavior (Ajzen, 1991). Behavioral beliefs concern the perceived consequences an

individual possesses about a health behavior. Behavioral attitudes involve positive or negative evaluations of an individual's performance of a behavior's consequences, and whether these outcomes are desirable or undesirable.

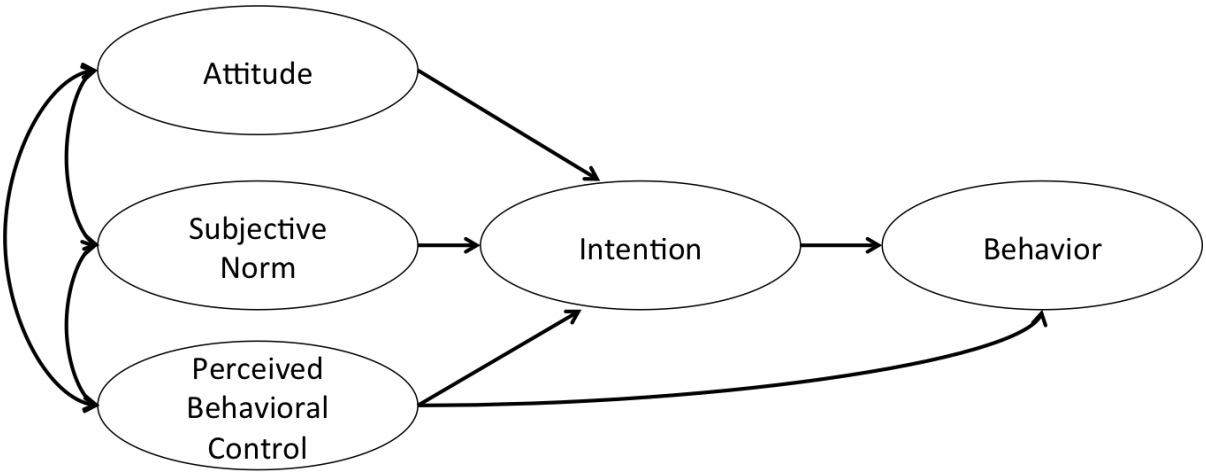

Figure 1. The Theory of Planned Behavior.

TPB, HISB, & Gender

In a review of TPB literature, Ajzen (2011) argues that accurate information does not necessarily predicate behavioral intention. Rather, possession of health information itself may influence intention and action, regardless of accuracy of information. Further, research shows that beliefs about a behavior may be inaccurate, biased, or unrepresentative, and that such content can still influence behavioral intention or action. As a result, judging factual content via knowledge tests may have no clear relationship to the construct of behavioral intention. In other words, correct knowledge does not indicate being in support of performing a given health behavior (i.e., thus, knowledge about seeking health information or its sources would not necessarily result in the individual being likely to engage in HISB). With this in mind, attitudinal measures (e.g., perceived norms, behavioral beliefs) theoretically become stronger predictors of behavioral intention, and as a result, behavioral action. Thus, focus on such measures (e.g., gender role ideology, stress) could provide important explanatory information on behavioral

beliefs—regardless of correctness—that influence behavioral intentions. This is corroborated by findings from a study of the TPB and information accuracy (Ajzen, Joyce, Sheikh, & Cote, 2011), where in instances where knowledge did have a positive association with behavioral intentions, there was a significant mediation by behavioral attitudes.

In this vein, the TPB has been previously used to study the cognitive components that underlie health information seeking. Austvoll-Dahlgren, Falk, and Helseth (2012) developed a survey that measured health information seeking intentions using the TPB. Results showed that in two samples of the general public (n = 30) and parents (n = 45) in Norway, attitudes and perceived behavioral control were positively associated with behavioral intention to engage in HISB. Though the final stage of the TPB, behavioral action, was not measured in this study, it sets precedent for the valid use of the TPB in studying the cognitive processes behind health information seeking. Within the general public sample, reliability ranged from very good for the measures of behavioral intentions (α = .98) and attitudes (α = .92) to adequate for subjective norms (α= .66) and perceived behavioral control (α = .74). Within the parent sample, reliability followed a similar trend (α = .78 = .93). This demonstrates that proper adaptation of the TPB can be effectively used to examine cognitive predictors of health information seeking. These results, combined with findings that highlight the unique importance of behavioral attitudes (Ajzen, Joyce, Sheikh, & Cote, 2011), demonstrate that the TPB is an appropriate model for use with measures that influence attitude development (i.e., gender role ideology and stress).

The TPB has also previously been shown to have valid use in examining gender-related constructs (e.g., masculinity) in conjunction with TPB constructs and health outcomes (Smith, Tran, & Thompson, 2008) and in identifying gender differences in attitudes (Zimmermann & Sieverding, 2010). Further, it has shown that perceived behavioral control and attitudes towards

health behaviors differ in significance based on gender, with studies ranging from research on eating behaviors (Blanchard et al., 2009) to condom usage (Muñoz-Silva, Sánchez-García, Nunes, & Martins, 2007).

As previously mentioned, reference groups can influence normative beliefs about a health behavior. Mahalik, Burns, & Syzdek (2007) found that, in a sample of adult men (n = 140), masculinity and the perceived normativity of other men's health behaviors predicted participants' own health behaviors. This indicates that gender role socialization—reference groups, in particular—can influence the perceived norms about health behaviors. Thus, examining masculinity and masculine gender role in relation to perceived norms has a precedent in health psychology research.

This makes sense when contrasted with previous research on more general attitudes. When broad attitudes or more general dispositions towards a behavior are measured in isolation (i.e., general attitudes about performing a health behavior), they typically function as poor predictors of actual health behaviors (Ajzen, 2011). Specialized measures of attitudes—i.e., dispositional measures that are most specific to the behavior and the actors involved—are more predictive of behavioral performance (Ajzen, 2005; Fishbein & Ajzen, 1974; Kraus, 1995). Thus, targeting specific constructs related to attitude development—like gender socialization and its relation to behaviors that show differential gendered performance—may have stronger predictive power when added to the TPB model.

Chapter 6: Project Plan

The primary purpose of this project was to examine the factors behind the gender difference in sexual health information seeking behaviors (S-HISB). The overall goal of this proposal was to conduct a theory-driven investigation of whether and how gender-related

constructs (e.g., gender norms, gender role stress) affect an individual's intentions to engage in sexual health information-seeking behaviors. In particular, the present study design was interested in examining how gender role norms impact perceived behavioral norms and attitudes that impact S-HISB motivations. The primary study aims include 1.) Examine whether gender role socialization (i.e., gender role norms, stress, reference groups) affects the relationship between behavioral attitudes, perceived behavioral control, and perceived norms and behavioral intention in the Theory of Planned Behavior (TPB), 2.) Use the TPB to predict the sexual health information seeking behavior (S-HISB) intentions of men and women, 3.) Explore the relationship between sexual health information seeking behaviors and sexual health literacy in male and female college students.

The study hypotheses are:

Hypothesis 1.: Behavioral attitudes, perceived behavioral control, and perceived norms will predict S-HISB behavioral intention.

Hypothesis 2:

2.a. Compared to female participants, male participants will have lower behavioral intention to engage in S-HISB.

2.b.: Gender role constructs (feminine and masculine gender role norms and stress) will influence constructs of the TPB (PBC, normative beliefs, attitudes).

Hypothesis 3: A higher number of previous sexual health information seeking behaviors will predict higher levels of sexual health literacy, knowledge, and eHealth literacy among male and female college undergraduates.

Chapter 7: Methods

1. Sample

Undergraduate students from Virginia Commonwealth University (VCU) were the primary sampling targets. Given that previous research has shown that gender differences in Internet HISB follow patterns in the general population (Escoffery et al., 2005), purposive sampling of university undergraduates should not impact anticipated gender-based performance on HISB survey items. Eligibility criteria required that all participants must be: 1.) Age 18 or older, 2.) Presently enrolled as a student of VCU, and 3.) Identify as either male or female (and not a nonbinary gender identity). Given that path modeling using SEM requires at least 200 participants in order to conduct sufficient analyses (Kline, 2011), a total of 400 participants were targeted for data collection (200 males, 200 females). 348 students were recruited, and a total of 105 men and 240 women took the survey. Two participants did not meet eligibility criteria based on gender, and their responses were subsequently not used for analysis.

The final sample size used for analysis was 345 students. Demographic data is provided in Table 1. The mean age of participants was 20.51 (N = 344), and the average participant GPA was 3.17 (N = 286). In the sample, out of 344 participants who answered the question, 71.9% of participants reported seeing a health care provider in the past three months

Table 1.
Participant demographics.

	N	%
Race/Ethnicity	343	
White, Caucasian	149	43.2
African American	67	19.4
Hispanic, Latino	19	5.5
Asian American	52	15.1
Native American	1	.30
Multiracial, Multiethnic	45	13
Other	10	2.9
Gender	345	
Male	105	30.4
Female	240	69.6

Sexual Orientation	345	
Heterosexual	292	84.6
Bisexual, Pansexual	32	9.3
Homosexual	19	5.5
Other	2	.60
Relationship Status	343	
Long term relationship (> 12 months)	152	44.1
New relationship (< 12 months)	71	20.6
Not currently dating	120	34.8
Parent Annual Income	282	
$14,999 or less	15	4.3
$15,000 - 29,999	44	12.8
$30,000 - 59,999	61	17.7
$60,000 - 199,999	162	47
Personal Annual Income	298	
less than $1,000	125	36.2
$1,000 - 4,999	67	19.4
$5,000 - 9,999	39	11.3
$10,000 - 14,999	32	9.3
$15,000 - 29,999	30	8.7
> $50,000	5	1.4
Insurance Type	319	
None	28	8.1
Medicaid	29	8.4
Private (from job)	21	6.1
Private (through parents)	220	63.8
Private (other)	21	6.1
Year in School	344	
Freshman	129	37.4
Sophomore	92	26.7
Junior	67	19.4
Senior	56	16.2

2. Procedure

2a. Recruitment

Surveys were disseminated through the university's SONA survey host. Participants who were recruited through the SONA system were eligible to receive extra credit or course credit (depending on instructor requirements), for a total of 0.5 credits.

2b. Protocol

Before taking the survey, participants were directed to an electronic informed consent form. After reading through the form, participants were able to complete a consent field or refuse to participate in the survey. This field also contained information about study purposes, as well as researcher contact information for any questions about the study. Data was confidential and all surveys were anonymous. The informed consent form explained that the study seeks to explore gender and sexual health, and that due to the voluntary nature of the survey, participants may refuse to complete any items that they are not comfortable answering. Upon completion, students were eligible to receive course or extra credit for a class via the SONA system. The survey on average took 40 minutes to complete. The Virginia Commonwealth University Institutional Review Board approved the study design protocol.

3. Constructs[1]

3a. Demographics. Participants were asked their age, gender, sexual orientation, race/ethnicity, relationship status, socioeconomic status (personal annual household income, household size including dependents of the participant, and parent(s)' annual household income), year in school, whether or not they had seen a provider in the past year, and GPA.

3b. Theory of Planned Behavior. TPB items were developed based on the previous literature review and use of Ajzen's TPB questionnaire construction guide (Ajzen, 2013). According to

[1] Refer to Appendix A for the full survey.

these guidelines, the behavior examined was defined based on "Target, Action, Context, and Time", where:

- Target: Sexually active young adults
- Action: Sexual health information seeking, where sexual health includes topics of STD/Is, contraception, pregnancy prevention
- Context: Sexual health decisions
- Time: Outside healthcare appointments or consultations.

Then, items were formulated for indirect measures (attitude, perceived norm, perceived behavioral control, and behavioral intention). Per Ajzen's (2013) recommendation, each item was rated on a 7-point bipolar adjective scale. After data collection, exploratory factor analyses were conducted in order to evaluate internal consistency and overall item performance. Item deletion was used for items that did not meet reliability or performance standards.

Attitude towards S-HISB. This 17-item scale measures the strength of behavioral beliefs ("My searching for sexual health information would be…"; "Helpful/Unhelpful", "Likely/Unlikely") and the evaluation of the behavioral outcome ("Making informed decisions about my own sexual health would be…"; "Good/Bad", "Necessary/Unnecessary"). Higher total scores indicate more negative attitudes about searching for sexual health information.

Subjective norm towards S-HISB. This 14-item scale measures an individual's injunctive and descriptive normative beliefs about searching for sexual health information and their motivation to comply with the referent individual or group (e.g., "Searching for sexual health information is something…", "People of my gender approve of", "My parents approve of"; and "When it comes to searching for sexual health information, I want to do what…", "My

friends approve of"). Higher total scores indicate more negative strength of belief and weaker motivation to comply.

Perceived behavioral control towards S-HISB. Perceived behavioral control was measured via eight items. This scale measures an individual's perceived ability to search for sexual health information (e.g., "I am confident I can identify good and bad sources of sexual health information", "I expect that I will search for sexual health information in the future"). Higher scores indicate greater perceived behavioral control towards looking for sexual health information.

Behavioral intention to S-HISB. This construct was measured with one 7-point Likert item: "I intend to search for sexual health information on my own in the future". Responses ranged from strongly disagree to strongly agree, where higher item scores indicate greater intention to engage in S-HISB.

3c. Gender role socialization. Both male and female participants were administered both masculine and feminine versions of the gender role stress and norms scales in order to capture feminine and masculine beliefs among the full sample—which is in line with Bem (1981)'s conception of gender role schema.

Masculine Gender Role Stress. The Masculine Gender Role Stress Scale (MGRS; Eisler & Skidmore, 1987) assesses stress related to perceived masculine gender role norms along four dimensions: physical inadequacy, emotional inexpressiveness, subordination to women, intellectual inferiority, and performance failure. Responses were scored on a seven-point Likert-type scale ranging from 1 (Not at all stressful) to 7 (Extremely stressful), where higher total scores indicate greater masculine gender role stress. The scale has demonstrated good reliability in past research (α =.67-.80; Kazmierczak, 2010).

Feminine Gender Role Stress. The Feminine Gender Role Stress Scale (FGRS; Gillespie & Eisler, 1992) assesses stress related to perceived feminine gender role norms along four dimensions: fear of unemotional relationships, fear of physical unattractiveness, fear of victimization, fear of behaving assertively, and fear of not being nurturing. Responses were scored on a six-point Likert-type scale ranging from 0 (Not stressful at all) to 5 (Extremely stressful), where higher total scores indicate greater feminine gender role stress. The scale has demonstrated high reliability (α =.73-.83) and good test-retest reliability (r = .82; Gillespie & Eisler, 1992). FGRS items were re-scaled to operate on the same 1-7 Likert scale of the MGRS in order to have comparable interpretation of results between the two scales.

Masculine Gender Role Ideology. The Conformity to Masculine Norms Inventory-46 (CMNI-46; Parent & Moradi, 2009) is a validated short form of the full CMNI (Mahalik et al., 2003) that examines traditional masculinity along nine dimensions: winning, emotional control, work primacy, violence, heterosexual self-presentation, playboy behavior, self-reliance, and power over women. Example items include "I ask for help when I need it" and reverse-coded items like "In general, I do not like risky situations." Responses were scored on a four-point Likert scale ranging from 0 (Strongly Disagree) to 3 (Strongly Agree), and higher scores indicate greater adherence to traits of a given subscale. Strong internal consistency has been established for this short form version of the scale (α = .88; Parent & Moradi, 2009).

Feminine Gender Role Ideology. The Conformity to Feminine Norms Inventory-45 (CFNI; Parent & Moradi, 2010) is the short form of the full CFNI (Mahalik et al., 2005), and measures traditional femininity along nine dimensions: thinness, domesticity, investment in appearance, modesty, relational, involvement with children, sexual fidelity, romantic relationship, and sweet/nice. Example items include "I would feel guilty if I had a one-night

stand" and "I would be ashamed if someone thought I was mean." Responses were scored on a four-point Likert scale and range from 0 (Strongly Disagree) to 3 (Strongly Agree), where higher scores indicate greater adherence to a given subscale. Strong internal consistency has been established for this short form version of the scale (α = .69-.92; Parent & Moradi, 2011).

3d. Sexual Health Literacy and Knowledge. Sexual health literacy was measured using two scales: a version of the Health Literacy Survey (Ishikawa, Takeuchi, & Yano, 2008) that was adapted for use with sexual health criteria instead of chronic health, and the Sexually Transmitted Disease Knowledge Questionnaire (STD-KQ; Jaworski & Carey, 2007), which was used as a proxy for sexual health knowledge. The Health Literacy Survey (Ishikawa, Takeuchi, & Yano, 2008) operationalizes Nutbeam's (2000) definition of health literacy, and captures health literacy across three domains: functional, communicative, and critical. It is a 5-point Likert-type scale where higher scores indicate greater health literacy. It has been successfully adapted for use with non-Japanese populations (Wångdahl & Mårtensson, 2013) and other health issues apart from diabetes (Suka et al., 2013), and the original short-form scale demonstrated good internal consistency for all three subscales (α = 0.65-0.84; Ishikawa, Takeuchi, & Yano, 2008). The adapted version of the scale created for the present study totals 10 items based on the three dimensions present in the original scale—functional ("The information is too difficult or confusing for me to understand"), communicative ("I am able to extract information I want"), and critical ("I check whether the information is accurate and reliable"), where phrasing has been adjusted for sexual health (e.g., "When you read about sexual health (example: STI/STDs, safe sex practices, contraception), how much do you identify with the following statements?"). Exploratory factor analysis was conducted to examine internal consistency and item performance of the scale adapted for use in the present study.

The STD-KQ (Jaworski & Carey, 2007) is a 27-item, 3-point scale (true/false/don't know) about STD/I knowledge (e.g., "Genital herpes is caused by the same virus as HIV"). Scores range from 0 – 27, where higher scores indicate a greater number of correct items and reflects more STD/I knowledge. Jaworski & Carey (2007) have demonstrated good internal consistency ($\alpha = .87$) and test-retest reliability ($r = .88$) for the questionnaire. Additional general sexual health knowledge items were created based on content from the Planned Parenthood (2015) website.

3e. eHealth literacy. eHeals, an eight-item Likert-type eHealth literacy scale, examines the degree to which individuals perceive their ability to find, evaluate, and apply online and electronic health information to health concerns (Norman & Skinner, 2006). Higher scores indicate greater eHealth literacy. The scale has demonstrated strong internal consistency in past research ($\alpha = .88$) as well as stable test-retest reliability (Norman & Skinner, 2006).

3f. Source of Health Information. Source of health information was assessed by asking participants to indicate and list which of the following sources of health information they have used in the past 12 months: Internet (chat room, forum, social media, search engine), Formal Healthcare Entity (provider, health care department, Planned Parenthood, campus health communication), Informal social (Parent, friend, peer), Other media (television, radio).

Chapter 8: Results

Data Quality Assurance

Data was checked for normality, and all scales displayed acceptable skewness and kurtosis values (i.e., in the general range of |1.0| or less than |1.0|), and full descriptive information is presented in Table 2. Three cases were excluded from analyses, two of which did not meet gender inclusion criteria (reported as "nonbinary gender identity" and declined to

answer), and the third case completed less than 10% of the full survey. All scales underwent missing variable analysis to detect missing data percentages and patterns. For all scales except the CFNI, CMNI, FGRS, MGRS, self-reports of past health information seeking behaviors, and certain demographic variables (e.g., parent and personal SES), less than 5% data was missing. Little's MCAR test was run for the general scales and it indicated that data was missing completely at random (p = .370). Since data was MCAR and less than 5% of cases were missing, deletion was used for analyses with these scales (Schafer, 1999; Schlomer, Bauman, & Card, 2010). For the gender role scales (which were also MCAR, p = .595), full maximum likelihood information methods (FIML) were used to account for missing data (Enders & Bandalos, 2001). The percentages of participants that did not provide complete responses for each scale are provided in Table 2, and the total missing data per scale is provided in Table 3. For scales created or adapted for purposes of the study (i.e., The Theory of Planned Behavior, Health Literacy), exploratory factor and reliability analyses (Cronbach's α) were run in order to eliminate poorly performing items and to improve overall study power of path analysis procedures, which require a small parameter count in respect to the small sample size of the study (N = 345). Analyses were performed with Amos version 23 and SPSS version 23.

Table 2.
Descriptive statistics for scales (N = 345).

	N	%	Mean	Standard Deviation	Skew -ness	Kurtosis
Attitudes	336	2.61	28.65	13.83	1.15	.93
Norms	339	1.74	23.55	9.66	.54	.08
Perceived Behavioral Control	342	.87	20.63	3.45	-.13	.22
Behavioral Intention	344	.29	4.90	1.65	-.36	-.71
Health Literacy	335	2.90	27.47	4.25	-.58	-.43
eHealth Literacy	341	1.16	31.21	6.16	-.82	1.35

Sexual Health Knowledge	337	2.32	16.68	7.24	-.43	-.55
HISB past 12 months	333	3.48	0.72	0.45	-.99	-1.03
CFNI	287	16.81	124.03	11.63	.01	-.36
CMNI	283	17.97	101.88	12.23	.10	.56
FGRS	301	12.75	165.90	38.44	-.68	.19
MGRS	288	16.52	142.63	34.02	.22	.72

Note: MGRS = Masculine Gender Role Stress, FGRS = Feminine Gender Role Stress, CMNI = Conformity to Masculine Norms Inventory, CFNI = Conformity to Feminine Norms Inventory; N = number of participants who completed scale in full, % = percentage of participants who completed scale out of the total sample of 345

Table 3.
Percentage of missing data for each scale (N = 345).

	% Missing
Theory of Planned Behavior	.34
Health Literacy	.49
eHealth Literacy	.43
Sexual Health Knowledge	.54
HISB past 12 months	.62
CFNI	.96
CMNI	1.51
FGRS	2.53
MGRS	2.00

Results

First, an exploratory factor analysis (EFA) was run for the entire TPB scale used. Maximum likelihood estimation was used with direct oblimin rotation (in respect to correlated factors). An initial EFA was run based on the Kaiser rule, which extracted factors which had an eigenvalue greater than one. This factor analysis extracted a total of nine factors, however, most items had loadings split across multiple factors. Based on an examination of the scree plot (Figure 2), a three-factor solution was then extracted for, again using direct oblimin rotation.

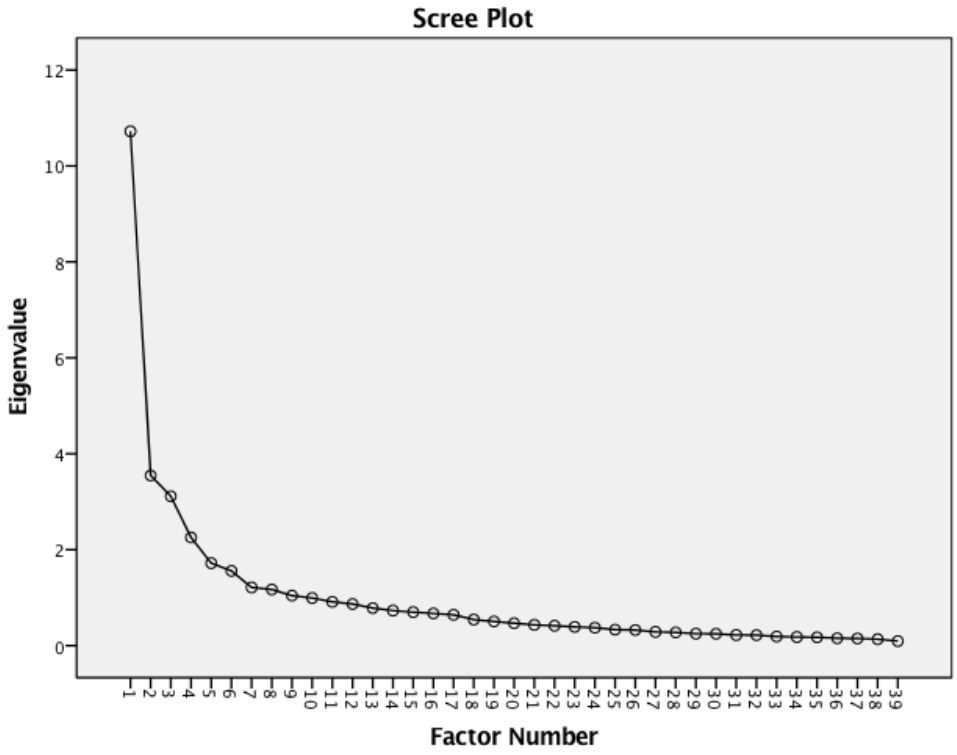

Figure 2. Scree plot for theory of planned behavior factors based on eigenvalue.

In this extraction, items clearly loaded onto each of the three factors. Any items which did not load on a factor at a loading of .32 or greater was removed from the scale, per recommendations by Tabachnik and Fidell (2001). Three motivation to comply items from the behavioral norms subscale loaded strongly on the attitudes factor; these were subsequently removed from the scale. The full list of items (both retained and deleted) and their factor loadings are available in Table 4 in Appendix B, and a list of items used in subsequent analyses or located below in Table 5. Analyses were also run on each factor for internal consistency. Both behavioral attitudes (α = .917) and norms factors (α = .849) demonstrated high internal consistency. Perceived behavioral control initially demonstrated poor reliability (α = .390), and an additional item was removed, resulting in a final, adequate Cronbach's α of .661.

Table 5.
Final items of the theory of planned behavior scale.

Attitudes

1. My searching for sexual health information would be helpful
2. My searching for sexual health information would be necessary
3. My searching for sexual health information would be likely
4. Searching for sexual health information would help me make informed decision about my own sexual health
5. Searching for sexual health information would increase my knowledge about STD/STIs
6. Searching for sexual health information would increase my knowledge about contraception and pregnancy prevention
7. Making informed decisions about my own sexual health would be necessary
8. Making informed decisions about my own sexual health would be desireable
9. Increasing my knowledge of STD/STIs would be good
10. Increasing my knowledge of STD/STIs would be necessary
11. Increasing my knowledge of STD/STIs would be desireable
12. Increasing my knowledge of contraception and pregnancy prevention would be good
13. Increasing my knowledge of contraception and pregnancy prevention would be necessary
14. Increasing my knowledge of contraception and pregnancy prevention would be desireable

Norms

1. When it comes to searching for sexual health information, I want to do what my friends do
2. When it comes to searching for sexual health information, I want to do what people of my gender do
3. When it comes to searching for sexual health information, I want to do what someone I would date does
4. When it comes to my sexual health, I want to do what people of my gender approve of
5. When it comes to my sexual health, I want to do what my parents approve of
6. When it comes to my sexual health, I want to do what my friends approve of
7. When it comes to my sexual health, I want to do what someone I would date approves of

Perceived Behavioral Control (PBC)

1. ® I believe that any sexual health information I find will be inaccurate
2. I believe that any sexual health information I find will not be conflicting
3. I am confident that if I have a question about sexual health, I can find an answer
4. I am confident I can identify good and bad sources of sexual health information

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Note. ® indicates a reverse-coded item.

A multiple linear regression was then run to test the hypothesis that behavioral attitudes, norms, and perceived behavioral control (PBC) predict behavioral intention to engage in sexual

health information seeking behaviors (N = 331). In this regression, the three TPB factors explained 26.7% of the variance in behavioral intention [$F(3, 327) = 39.65$, $p < .001$]. Attitudes (β = - .38, $p < .001$) and PBC (β = .32, $p < .001$) were uniquely associated with behavioral intention. Norms (β = .07, p =.176) did not predict behavioral intention. These results indicate that endorsement of negative attitudes about sexual health information seeking predicts lower behavioral intention, and higher PBC predicts increased behavioral intention.

Hypothesis 2A

An independent samples t-test was run in order to examine mean differences of gender on behavioral intention to engage in sexual health information seeking behaviors (N = 344). Women (M = 5.05) had significantly higher behavioral intention scores than men (M = 4.57), $t(342)$= -2.49, p = .013, η^2 = .018. Gender accounted for 1.8% of the variability in behavioral intention, a small effect.

Hypothesis 2B

A path model was developed using AMOS version 23.0 to test the hypothesis that gender role norms and stress influence factors of the Theory of Planned behavior. Given that only attitudes and PBC significantly predicted behavioral intention in the previous regression analysis, the path model was constructed to test for potential relationships between the gender role predictors, attitudes, and PBC instead of the full model. Full information maximum likelihood (FIML) estimation was used, thus the full sample was retained for analysis (N = 345). Figure 3 presents the full path model with standardized regression coefficients for each path. Reliability analyses were also run for the four gender role measures used, and they all exhibited high internal consistency (MGRS, α =.92; FGRS, α = .95; CMNI, α = .86; CFNI, α = .80).

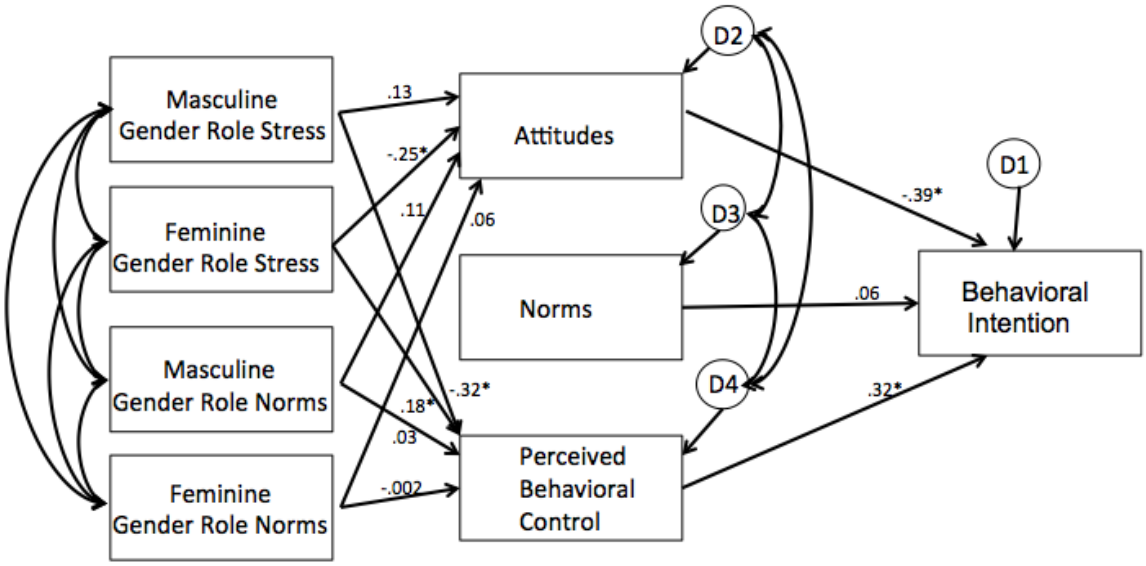

Figure 3. Path model of gender role variables regressed onto the theory of planned behavior.

The fit indices of the path model were all in the good range (χ^2= 7.92, df = 8, p = .441, CFI = 1.00, *RMSEA* < .001, *NFI* = .979, *IFI* = 1.00, *TLI* = 1.001), which indicates the model is an excellent fit for the data. Feminine gender role stress significantly predicted behavioral attitudes (β = -.25, p = .001), both masculine gender role stress and feminine gender role stress significantly predicted perceived behavioral control (β = -.32, p < .001; β = .18, p =.02), and both attitudes (β = -.39, p < .001) and perceived behavioral control significantly predicted behavioral intention (β = .32, p < .001), which is in line with the findings from the regression model of the TPB previously run for Hypothesis 1. All others path were not significant.

These results indicate that lower perceived male gender role stress is associated with better PBC while greater feminine gender role stress is associated with better PBC. Further, higher ratings of feminine gender role stress are associated with more positive endorsements of behavioral attitudes about sexual health information seeking behaviors. In turn, perceived

behavioral control and behavioral attitudes predict intention to engage in sexual health information seeking in the future.

Additionally, there were multiple significant correlations among the gender role norm exogenous variables, presented in Table 6, and a significant correlation among the TPB predictors, presented in Table 7.

Table 6.
Correlations among gender role predictors.

Construct	MGRS	FGRS	CMNI	CFNI
1. MGRS	1			
2. FGRS	.48**	1		
3. CMNI	.22**	-.28**	1	
4. CFNI	.23**	.43**	-.19*	1

Note: MGRS = Masculine Gender Role Stress, FGRS = Feminine Gender Role Stress, CMNI = Conformity to Masculine Norms Inventory, CFNI = Conformity to Feminine Norms Inventory
$N = 435$. *$p < .05$, **$p < .001$

Table 7.
Correlations among theory of planned behavior predictors.

Construct	Attitudes	Norms	PBC
1. Attitudes	1		
2. Norms	.25**	1	
3. PBC	-.05	.02	1

Note: PBC = Perceived behavioral control
N = 435. *p < .05, **p < .001

Masculine gender role stress was significantly and positively correlated with feminine gender role stress (r = .48, p < .001), conformity to masculine norms (r = .22, p < .001), and conformity to feminine norms (r = .23, p < .001), indicating individuals that perceive high masculine gender role stress also have high feminine gender role stress, and endorse both masculine and feminine gender role norms. Additionally, feminine gender role stress was significantly and negatively associated with conformity to masculine norms (r = -.28, p < .001), and positively and significantly associated with conformity to feminine norms (r = .43, p <.001). This indicates that individuals who perceive greater feminine gender role stress tend to endorse feminine gender role norms, and are less likely to endorse masculine norms. Finally, conformity to masculine and feminine norms were inversely and significantly associated (r = -.19, p = .003), which indicates individuals who endorse masculine norms strongly are less likely to endorse feminine norms, and vice versa.

Of the TPB constructs, only attitudes and norms were significantly correlated (r = .25, p < .001), which indicates individuals with more positive attitudes about searching for sexual health information are more likely to view searching for sexual health information as a normative behavior.

Hypothesis 3

A factor analysis was run to examine the factor structure of the adapted health literacy scale, as well as reliability analyses. In the original ten-item version of the scale, internal consistency was acceptable (α= .872). An EFA using maximum likelihood estimation and direct oblimin rotation as the extraction method was performed. Factors were extracted based on the Kaiser rule (i.e., eigenvalues $\geq$ 1). Items with factor loadings above .32 were retained. The scale loaded on three factors with an eigenvalue greater than or equal to 1. Two of the items had severely split loadings on all three factors, and were subsequently removed from the scale. This resulted in an 8-item measure that loaded distinctly onto three different factors and demonstrated good overall internal consistency for the total scale (α = .834), functional literacy (α = .729), communicative literacy (α = .817), and critical literacy (α = .895) subscales. In Appendix B, Table 8 provides the factor loadings for the full measure. Items removed from the scale are indicated with a strikethrough.

Hierarchical linear regressions were run, with personal and parent income variables entered into the first step of each analysis as a control. Examination of p-plots and scatterplots of residuals for each analysis indicated data were normally distributed and heteroscedasticity assumptions were met.

In the first hierarchical multiple regression with sexual health literacy as the criterion variable, personal and parent incomes were entered into the first step, which was significant, $F(2, 249) = 6.99$, $p < .001$, $R^2 = .053$. The amount of variance explained in sexual health literacy increased significantly in the second step with past sexual health information seeking behavior (S-HISB), $\Delta F(1, 248) = 10.30$, $p = .002$, $\Delta R^2 = .038$. Past S-HISB ($\beta = .20$, $p = .002$) was uniquely associated with sexual health literacy. Additionally, personal income remained

positively associated with sexual health literacy (β = .19, p = .002), and parent income remained nonsignificant (β = .09, p = .127).

In the second regression with sexual health knowledge as the criterion variable, personal and parent incomes were again entered into the first step, which was significant, $F(2, 254) = 3.68$, p = .027, R^2 = .028. The amount of variance explained in sexual health knowledge increased significantly in the second step with past S-HISB, $\Delta F(1, 253) = 19.01$, $p < .001$, ΔR^2 = .068. Past S-HISB (β = .26, $p < .001$) was uniquely and positively associated with sexual health knowledge. However, personal income (β = .12, p = .057) fell to borderline significance and parent income (β = .09, p = .134) remained nonsignificant.

In the third regression with eHealth literacy as the criterion variable, personal and parent incomes were again entered into the first step, which was significant, $F(2, 255) = 9.44$, $p < .001$, R^2 = .069. The amount of variance explained in eHealth literacy increased significantly in the second step with past S-HISB, $\Delta F(1, 254) = 6.84$, p = .009, ΔR^2 = .024. Past S-HISB (β = .16, p = .009) was uniquely associated with eHealth literacy. Personal (β = .19, p = .002) and parent incomes (β = .16, p = .01) also remained uniquely and positively associated with eHealth literacy. These results indicate that past engagement in sexual health information seeking behavior is related to increased sexual health knowledge, literacy, and eHealth literacy, beyond the effects of socioeconomic status. Further, higher socioeconomic status is associated with higher eHealth literacy and sexual health knowledge.

Given the amount of missing data from the sociodemographic items (13.6-18.3%), the analyses were also run with the full sample (i.e., with all demographic controls removed so all participants were included). In the first regression (N = 323), past-year S-HISB explained 5.8% of the variance in health literacy [$F(1,322)= 19.95$, $p < .001$]. Past-year S-HISB was positively

associated with health literacy, $\beta = .24$, $p < .001$. In the second regression ($N = 326$), past-year HISB explained 6.5% of the variance in sexual health knowledge, [$F(1, 324) = 22.41$, $p < .001$]. Past-year S-HISB was positively associated with sexual health knowledge, $\beta = .254$, $p < .001$. In the third regression ($N = 329$), past-year S-HISB explained 1.7% of the variance in internet health literacy [$F(1,328) = 5.66$, $p = .018$] and was positively associated with internet health literacy ($\beta = .13$, $p = .018$). These results indicate that the patterns of findings from the previous regression analyses run with the income predictors are comparable to regressions run in the larger sample.

Exploratory analyses: HISB and gender

Of the female participants, 75.3% reported searching for sexual health information in the past year, compared to 64.7% of men. There was a significant relationship between gender and searching for sexual health information in the past year, $\chi^2(1, \underline{N} = 333) = 3.96$ p = .046. These results indicate women were more likely to have searched for sexual health information in the past year.

Frequency analyses were run to examine the rates at which male and female participants have utilized different types of health information sources in the past, in addition to chi-square analyses to determine if gender is related to type of source used. Percentages and chi-square test results are provided in full in Table 9. Overall, both men and women used Internet search engine, educational website, healthcare providers, friends, and significant others more than any other information source. Of all these sources, women were significantly more likely to report using internet search engines, educational websites, healthcare providers, health departments, campus resources, parents, and friends as sources of sexual health information than men.

Table 9.
Frequency and chi-square analyses of HISB source.

Source	% Male (n = 105)	% Female (n = 240)	χ^2	*p*
Search Engine	61.9	79.6	12.43**	< .001
Provider	36.2	65.4	25.51**	< . 001
Friend	38.1	53.8	7.36*	.007
.edu website	35.2	49.2	6.05*	.014
Health department	24.8	42.1	9.59*	.002
Significant Other	32.4	38.8	1.4	.237
.gov website	29.5	36.3	1.66	.197
Forum	30.5	29.2	.05	.824
Parent	21	32.5	4.83*	.028
Campus	16.2	28.3	5.9*	.015
Private website	18.1	22.1	.797	.372
Social Media	15.2	21.7	1.96	.162
Planned Parenthood	12.4	20	2.97	.085
TV/film	14.3	16.3	.23	.633
News website	15.2	14.2	.05	.829
Other	10.5	11.7	.12	.729
Podcast/radio	5.7	7.5	.37	.542

*Note. *p < .05, **p < .001.*

Chapter 9: Discussion

The present study was conducted in order to integrate a theory-based approach to examining gender differences among male and female college undergraduate students' sexual health information seeking behaviors, knowledge, and literacy.

Hypothesis 1: The Theory of Planned Behavior and Sexual Health Information Seeking Behaviors

The first hypothesis examined whether behavioral attitudes, perceived behavioral control (PBC), and behavioral norms would predict participants' intentions to engage in sexual health information seeking behaviors (S-HISB). In a multiple regression analysis, behavioral attitudes and PBC were each unique and significant predictors of behavioral intention, while norms were not a significant predictor of intentions. This indicates that individuals who possess high PBC and more positive attitudes about searching for sexual health information are more likely to report greater intention to search for sexual health information. Further, the regression model explained 26.7% of the variance in behavioral intention, which is in line with the majority of the literature on the TPB's explanatory power, which typically ranges from 27-39% (Armitage & Conner, 2001). Attitudes (β = - .38) and PBC (β = .32) being significant and fairly strong predictors of intention is also congruent with other research using HISB through the lens of the TPB. In Austvoll-Dahlgren, Falk, & Helseth's (2012) study of HISB in a Norwegian sample of the general public and parents, both attitudes and PBC were the strongest predictors of behavioral intention.

Additionally, behavioral norms' lack of significance and low beta weight (β = .07) is not out of line with current findings and perspectives from TPB literature, where it has been identified as the weakest predictor of behavioral intentions (Shepperd et al., 1988; Van den Putte,

1991; Armitage & Conner, 2001). In terms of perceived norms and HISB, literature with similar findings have speculated that social referents for behavioral health intentions may be more complex than the typical operationalization of the norms construct (Austvoll-Dahlgren, Falk, & Helseth, 2012), and findings from the present study may be limited by its operationalization. In regards to their findings that norms is only a modest predictor of HISB, Austvoll-Dahlgren, Falk, & Helseth (2012) argue that subjective norms may not be as straightforward to HISB as other health behavior intentions.

Further, given that perceived norms rely on communication with and perceptions of other members of a reference group, this lack of significance between norms and behavioral intention to engage in S-HISB may reflect the lack of communication college undergraduates may have surrounding this topic. Given the later finding from our exploratory analyses that interpersonal sources of HISB (e.g., speaking with friends, use of social media) are not very frequently used sources, and that more solitary sources are used more often (e.g., Internet search practices), behavioral intention to engage in S-HISB may not be reflected by perceived norms since interpersonal social influences are not being referred to as much as larger, more systemic beliefs about searching for sexual health information (i.e., through behavioral attitudes).

Qualitative research on young adult female students reflects this communication issue. In a series of semi-structured interviews conducted by Normansell, Drennan, & Oakeshott (2015), women reported feeling uncomfortable discussing STI testing with their peers and family members, and felt that speaking about testing would be a stigmatizing experience. Evers and colleagues (2013) similarly found that young adult focus group participants associate sexual health discussions as stigmatizing and embarrassing, and reported preferring anonymous forms of searching (e.g., Internet searches, anonymous forums, YouTube videos) rather than

interpersonal online sources (e.g., social networks). If discussions about searching for sexual health information are not normative practices, it is not altogether surprising that normative beliefs do not function as significant or particularly strong predictors of behavioral intentions. Future conceptualizations of perceived norms, as they relate to sexual health information, should take into account norms about sexual health communication as a potential modifying factor of the construct.

Hypothesis 2: Gender Role Norms and the Theory of Planned Behavior

The second hypothesis examined whether male undergraduate students had lower behavioral intention to engage in S-HISB compared to their female counterparts, and if so, whether gender role norms predicted behavioral attitudes, norms, and PBC factors of the TPB. Based on the results from the independent samples t-test, women in the sample had higher intentions to engage in S-HISB in the future. Gender explained 1.8% of the variability in behavioral intention.. This reflects literature on general HISB, where women tend to be more likely to report searching for health information (Escoffery et al., 2005; Hallyburton & Evarts, 2014; Ybarra & Suman, 2008).

Given this finding, a path model was run to examine the associations between gender role norms and TPB constructs. Using a combination of the final TPB scale (Ajzen, 2013) constructed for the study and the conformity to masculine/feminine norms (Parent & Moradi, 2010; Parent & Moradi, 2009) and masculine/feminine gender role stress scales (Eisler & Skidmore, 1987, Gillespie & Eisler, 1992), the overall model provided very strong fit for the data. Based on the path coefficients, feminine gender role stress was the only unique predictor of behavioral attitudes, and was fairly large in size (β = -.25). This indicates that individuals who report greater levels of feminine gender role stress tend to hold more favorable attitudes about

searching for sexual health information. This is congruent with more general trends in the literature that posit feminine gender role stress is tied to acceptably feminine "caregiver" or "nurturance" roles and greater health introspection (Hallyburton & Evarts, 2014; Manierre, 2015). Thus, if feminine gender role stress promotes a positive appraisal process about health information seeking, it logically follows that higher feminine gender role stress (i.e., searching for sexual health information is appropriately feminine) is tied to higher behavioral intentions, which in turn reflects a potential explanation for the higher behavioral intention among college women. Since searching for sexual health information is consistent with feminine gender role, overall attitudes about the behavior are more positive and result in higher intentions to engage in S-HISB in the future.

Both masculine gender role stress (β = -.32) and feminine gender role stress (β = .18) were large to moderate predictors of PBC. Similar to the patterns between female gender role stress and behavioral attitudes, higher feminine gender role stress was associated with increased PBC. Again, the rationale behind these paths is similar to the framework behind feminine gender role stress and behavioral attitudes. Feminine gender role stress involves an appraisal process of determining whether a behavior is appropriately gendered (Lazarus & Folkman, 1984), and if so, if acting in a capacity that is not appropriately feminine is stressful. Thus, higher scores on this scale indicate an individual feels more stress due to a perceived failure to meet the expectations of one's gender role. Thus, individuals who perceive high stress in conforming to feminine stereotypes are more likely to exhibit higher perceived behavioral control about engaging in S-HISB. Alternatively, individuals who either don't possess a feminine gender role or do not experience stress conforming to one would score low on this scale, and in turn would have lower PBC. Masculine gender role stress follows a similar interpretation, as high scores on this scale

indicate the individual experiences greater stress tied to meeting the demands of masculine gender role performance. In this case, individuals who feel more stress to act appropriately masculine are more likely to have poorer perceived behavioral control about S-HISB. Thus, individuals who do not experience a masculine gender role or considerable stress adhering to one would be more likely to have better PBC. This indicates that HISB may be seen as a "feminine" gender role behavior in this sample.

This means that if a person views S-HISB as a threat to their gender role, they are less likely to view it as an acceptable behavior to perform, and thus have lower PBC involving it.

This is again reflected in the model path coefficient (β = -.32), where increased endorsements of masculine gender role stress are associated with lower PBC.

Given past findings that masculine gender role socialization has been linked to decreased help-seeking (Addis & Mahalik, 2003), it is not surprising to find this pattern manifest in an adjacent construct of masculine gender role stress. Additionally, stress appraisal among men has been previously linked with poor health behaviors (Skidmore & Ward, 1988; Lash, Eisler, & Schulnian, 1990; Sloan, Conner, & Gough, 2015), thus masculine gender role stress having a negative impact on PBC, a moderating construct of behavioral intention, is in line with the overarching literature. Overall, this finding can be interpreted as participants who have high masculine gender role stress as viewing sexual health information seeking as a gender inappropriate reaction, which in turn leads to lower PBC.

This relationship is also represented in the correlation matrix between gender role variables. Feminine and masculine gender role stress constructs were positively and significantly correlated. This indicates that individuals prone to one type of gender role stress are likely to be prone to the other, while individuals with lower gender role stress endorsements do not rely as

heavily on this specific appraisal process (or are more emotionally stable). This is congruent with findings that masculine gender role stress is not sex-specific (McCreary et al., 1996) and that women's eating behaviors can be affected by both masculine and feminine gender role stress (Bekker & Boselie, 2002), thus combinations of masculine and feminine gender role stress should operate in conjunction with each other.

Throughout the rest of the matrix, all gender role constructs were significantly associated in some fashion. Conformity to masculine and feminine norms constructs were inversely associated and had a large effect size (r = .49), which indicates that individuals who endorse strong masculine norms were less likely to endorse strong feminine norms, and vice versa. It makes sense for this pattern of associations to diverge in pattern from gender role stress, as the former involves an appraisal process (ergo, individuals can be psychologically invested in gender role norms but not use them as a reference point for behavioral coping processes, or they may not care to adhere to societal expectations about gender role expression; Lazarus & Folkman, 1984). The polarity of masculine and feminine norms constructs is congruent with gender role theory (Bem, 1981), which states "masculinity" and "femininity" occur along a continuum, each embodying opposite ends. Given past findings that both masculine and feminine constructs of gender role stress are not sex specific (van Well, Kolk, & Arrindell, 2005), given scores on either measure don't necessarily indicate an individual's gender or sex, but instead whether or not they experience either type of gender role conformity as a stressor.

Finally, masculine gender role stress and conformity to masculine norms were both positively associated, as were feminine gender role stress and conformity to feminine norms. According to their creators, these gender role stress scales should not be correlated and act as distinct constructs (Eisler, Skidmore, & Ward, 1988). Given that the effect sizes were only

medium (r = .22) for both correlations, it may be reasonable to assume these constructs are distinct but related in the present study, and that endorsement of norms is tied to a gendered appraisal process (where lack of conformity should not result in an appraisal of appropriately gendered performance, and thus no gender role stress).

Interestingly, feminine gender role stress and conformity to masculine gender role norms were inversely associated (r = -.28), though conformity to feminine gender role norms and masculine gender role stress constructs were positively associated with each other (r = .22). This indicates certain aspects or sub-factors within masculine and feminine gender role constructs may have different patterns of associations that drive the larger associations of the total scores of the scales, especially pertaining to the relationships between gender role norm endorsement and actual gender role stress appraisals. Thus, a more nuanced investigation of the gender role continuum that involves measurement of "androgynous" gender role attitudes may shed more light on the pattern of associations presented here. Past research has found androgynous gender role identity to be tied to greater likelihood of engaging in preventive health behaviors among college men (Baffi et al., 1991).

As past studies have found both PBC and attitudes to differ based on gender for a variety of health behaviors (Muñoz-Silva, Sánchez-García, Nunes, & Martins, 2007; Blanchard et al., 2009), both constructs differing in some capacity based on gender role stress is an intriguing finding, especially given the absence of the gender role conformity constructs as significant predictors within the path model. One implication may be that appraisal processes may play a more direct role on PBC. Folkman (1984) argues that primary and secondary appraisal processes should have direct influence on situational factors, including likelihood of an event occurring, and appraisals of control, including whether there is a need for action. Thus, gender role stress

may be a particular manifestation of appraisal of control, similar to Bandura's (1977) concept of "outcome expectancy". Individuals with higher masculine gender role stress may appraise outcomes tied to sexual health information seeking (or the causes for searching for this information in the first place) as unfavorable or threatening, which in turn would reduce outcome expectancy and result in lower PBC.

Hypothesis 3: Sexual Health Information Seeking Behaviors and Sexual Health Knowledge, Literacy, and eHealth Literacy

The third hypothesis examined whether engagement with previous S-HISB predicted increased sexual health literacy, knowledge, and Internet health literacy among men and women. Through a series of linear regressions, it was found that searching for sexual health information in the past year did significantly predict increased sexual health knowledge, literacy, and Internet health literacy, above and beyond the effects of socioeconomic status.

In the first regression, past-year S-HISB was associated with increased sexual health literacy. Thus, individuals who searched for sexual health information were more likely to exhibit higher functional, communicative, and critical health literacy aptitudes. This is in line with findings in the general population about general health information, where HISB has been associated with greater degrees of health orientation (Dutta-Bergman, 2004) and health literacy (Lam & Lam, 2012). Higher personal income remaining a unique and significant predictor of greater health literacy is also consistent with research on literacy and socioeconomic status: individuals with higher income tend to have greater access to health information sources like the Internet (Fox & Jones, 2009).

In the second regression analysis, past-year HISB was associated with increased sexual health knowledge, including accurate knowledge of STIs, screening behaviors, reproductive

health issues, and contraception issues. Again, this is consistent with findings that exposure to sexual health information messages can improve sexual health knowledge (Weinstein, Walsh, & Ward, 2008), and implicates actively searching for sexual health information as a method of increasing sexual health knowledge among young adults.

In the third regression analysis, past-year HISB was associated with increased perceived eHealth literacy, which indicates individuals searching for sexual health information are likely to believe they have a higher aptitude for navigating and appraising online sources. This sheds light on an interesting direction for sexual health literacy interventions—given the high rates of Internet HISB utilization (Boies, 2002; Ybarra & Suman, 2005), enhancing young adults' skillsets in finding and evaluating sexual health information and developing easily accessible and competent online sexual health information resources may provide enhancements in current sex education initiatives. eHealth literacy has been examined in other health contexts, where interventions have been associated with positive eHealth literacy perceptions among HIV-positive adults (Robinson & Graham, 2010), and low health literacy plays a significant role in online health information evaluation (Diviani et al., 2015). The finding that both personal and parent income remained significant in the regression analysis is also consistent with past research that has found sociodemographic variables to be an important predictor of eHealth literacy (Tennant et al., 2015) and that low income tends to be related to lack of Internet usage for HISB (Cotton & Gupta, 2004).

Exploratory Analyses: Sources of Health Information, Internet Use, and Gender

Exploratory analyses were performed to investigate the patterns of specific S-HISB source usage between men and women, and the overall frequencies of their search behaviors.

The finding that Internet (and Internet search engines in particular) were the most commonly reported source of sexual health information is in line with past qualitative findings (Evers et al., 2013), where young adults report search engines like Google as their first line of inquiry for health information access. This also replicates Boies and colleagues' finding (2002) that university undergraduates use the Internet most in order to obtain sexual health information. Seeking sexual health information from providers was the second most frequently used source of S-HISB, followed by friends, educational websites, the health department, and a significant other. Given the role of Internet HISB as a proactive information seeking strategy (Ahadzadeh et al., 2015), it makes sense that other sources of sexual health information have lower reported frequencies in comparison.

Second, women had significantly more frequent search behaviors for online (search engines, educational websites), professional (provider, health department, campus), and interpersonal sources (friends, parents). This is congruent with overall patterns of HISB which show that women are more likely to search for health information than men (Hallyburton & Evarts, 2014; Ek, 2014), as well as the study's finding that women in this sample had higher behavioral intention to engage in S-HISB than their male counterparts.

An interesting finding was that over 15-20% of the sample utilized social media as a resource, and thirty percent of the sample reported using an online forum. Anonymous forums (e.g., Reddit) may be used for different reasons than more open online sources (e.g., Facebook, Instagram), and future research should incorporate a more nuanced investigation of how different Internet search strategies may be associated with different reasons for searching for sexual health information online. In qualitative research, young adults often report that anonymous search methods (like forums, videos, and search engines) offer circumventions around potentially

embarrassing or stigmatizing discussions (Evers et al., 2013). Additionally, eHealth literacy may manifest differently with social media and interpersonal online health sources, as past research of older adults has found than those who use websites like Facebook and Twitter to share health information tend to have higher eHealth literacy (Tennant et al., 2015). Given social media's use as a sexual health information source for college undergraduates and the higher eHealth literacy rates among individuals who report past-year HISB in our sample, it may be likely that individuals who utilize different Internet sources have different eHealth literacy as well.

The present study did not capture whether Internet sources were used anonymously (i.e., whether social media or forum usage with websites like Facebook and Twitter were done from publically identifiable handles or "throw-away accounts" with no ties to an individual's public identity). Further, it did not examine the type of search behavior used with different Internet platforms (e.g., whether individuals merely accessed information vs. whether they used an account to ask questions or join a conversation). Future examinations of Internet usage and sexual health information seeking should focus on how young adults use different online and electronic resources, their communication patterns, and the reasons for using particular online sources over others based on their sexual health concern or question.

Implications.

The study's findings have important implications for sexual health communication and policy. Identifying the most commonly used sexual health information sources of college men and women offers an opportunity for policies to be created that target these online communication channels, offering an effective avenue for sexual health education to a high-risk population. Cumulatively, the findings from the present study demonstrate that sexual health information seeking is both a nuanced and transactional process that can reach a larger number

of young adults and can benefit practical outcomes like sexual health literacy and knowledge. High rates of Internet usage indicate that online sexual health resources can be tailored to an audience that is seeking out information about sexual health. Given the likely interaction of online, professional, and informal sources of sexual health information in sexual health communication practices and decision making strategies, future research should work to break down how different types of search behaviors inform one another, as well as their additive effects on knowledge and literacy constructs.

Further, identifying underlying attitudinal differences behind behavioral intention allows for nuance in the promotion and targeting of sexual health messages. Considering how male gender role norms exacerbate barriers to sexual health information seeking, harmful masculine attitudes need to be addressed and challenged in order to open pathways of effective health communication with individuals who hold such attitudes. In order to develop successful sexual health campaigns, a population's receptiveness and perceptions about sexual health information need to be addressed. Promoting positive caretaking (or "feminine") appraisals about sexual health and debunking harmful "masculine" appraisals can help proliferate effective sexual health education. Given the link between S-HISB and higher literacy and knowledge levels, delivering such tailored information through commonly used Internet sources may be an effective route to improving sexual health literacy and knowledge among college students. College men in particular need to be a target of sexual health communication campaign outreach, given their lower behavioral intention to search for sexual health information and its link to sexual health knowledge and literacy. Again, this underscores the importance of challenging negative masculine norms during sexual health promotion.

Limitations and Future Directions.

First, the study had a one-time cross-sectional design that did not collect data on the final stage of the TPB, behavior. As a result, we were unable to examine if behavioral intention significantly predicted the behavior of sexual health information seeking in the present study. Additionally, temporal precedence cannot be assumed in this design, thus assumptions of causality or directions of the effects in the path model analysis cannot be made. However, since this study is the first of its kind to examine the factor structure of the TPB with a sexual health information-seeking outcome, and items were adapted for its use, consequent data collections should aim to perform a confirmatory factor analysis (CFA) of the scale structure in order to validate this particular theoretical application of the TPB. Additionally, the use of a path model instead of a structural equation model presents concerns about the impact of measurement error on the factors being examined. A relatively large sample size (i.e., in the thousands) would be needed to test the latent factor structure of the TPB given the number of potential indicators in the study's version of the TPB. Future iterations should use a smaller version of the scale with a longitudinal design that collects data on behavior outcomes. Thus, the TPB model presented in this study offers an exploratory perspective behind the relationship among gender role stress, behavioral attitudes, PBC, and intention to engage in S-HISB.

A second limitation is the overall generalizability of this sample, as it is composed of undergraduate students from one urban, geographic location and findings may not generalize to all university students (or young adults). Further, it is important to note that this was a cisgender sample, and results cannot be generalized to transgender young adults, who may have their own unique barriers and facilitators to sexual health communication and information seeking, as well as different utilizations for gender role norms. Lastly, the sample was primarily heterosexual (84.6%) and female (69.6%). Sexual health information concerns and communication practices

are likely very divergent among homosexual and bisexual samples, and future research should seek to examine behavioral intention, gender role norm, and sexual health information search patterns among these groups. Different intersections of gender identity and sexual orientation are also likely to exhibit different patterns among these variables.

Third, attention also needs to be paid to the accuracy and delivery of sexual health information (Cline & Haynes, 2001). The present study did not investigate accuracy of sexual health information, and instead only assessed one cumulative knowledge construct as a general indicator of sexual health knowledge. Future research should directly test how different search behaviors may be associated with the practical implementation of sexual health knowledge and literacy.

Fourth, it may be useful to differentially operationalize how gender role norms and stress are measured. The present study did not capture "androgynous" gender role attitudes or appraisals, and instead used total scores of distinct "masculine" and "feminine" scales. Thus, the interactions of different gender role constructs, as well as differing combinations of their endorsement along a continuum were not examined.

Finally, future research should investigate the interactions of gender and gender role on TPB constructs, as well as measures of sexual health literacy and knowledge. The sample size in the present study was not large enough to provide enough power for a moderation analysis. An experimental examination of sexual health messages, gender, and applications of knowledge and literacy could inform next steps in the research process on how the findings from the present study interact to influence sexual health outcomes. Additionally, a more nuanced investigation of gender role—and its manifestations along separate continuums of masculinity, femininity, and androgyny should be undertaken. In its current forms, the masculine and feminine gender role

stress scales can have ambiguity of interpretation. Whether or not a person experiences a particular gender role, whether it causes stress, and whether differing cultural or personality components (i.e., neuroticism) are at play cannot be interpreted. Future studies should incorporate a neuroticism measure since an aspect of stress is being studied, and should additionally examine how gender and gender role may interact.

Conclusion.

Cumulatively, the study's findings demonstrate that patterns of health information seeking found in populations with chronic illness and general health concerns also extend to college students who search for sexual health information. The Internet is a predominant source of sexual health information for both men and women, with sources like providers, peers, and family being less frequently used in comparison. Further, gender role stress plays a significant role in the appraisal of behavioral attitudes and perceived behavioral control, which indicates gender role norms, and not necessarily gender alone, influence attitudes about behavioral intention to engage in sexual health information seeking behaviors. With the evidence of past-year S-HISB influencing sexual health literacy, knowledge, and eHealth literacy, we propose that future research on sexual health education should take into account how differential use of sexual health sources may improve literacy and knowledge outcomes, and that their links to actual behavioral health outcomes should be investigated. Overall, knowledge of how gender role norms and access to health information messages interact can provide critical information on how we can deliver effective sexual health communication messages to at-risk young adults.

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Appendix A

Theory of Planned Behavior

Sexual health information involves information about STD/STIs, birth control, sexual functioning, and the healthcare entities that provide services for these areas. The following items refer to these topics.

1. My searching for sexual health information would be…

Helpful	_ _ _ _ _ _ _	Unhelpful
Embarrassing	_ _ _ _ _ _ _	Not embarrassing
Good	_ _ _ _ _ _ _	Bad
Necessary	_ _ _ _ _ _ _	Unnecessary
Likely	_ _ _ _ _ _ _	Unlikely

2. Searching for sexual health information would…

Help me make informed decisions about my own sexual health.

Agree	_ _ _ _ _ _ _	Disagree

Increase my knowledge about STD/STIs

Agree	_ _ _ _ _ _ _	Disagree

Increase my knowledge about contraception and pregnancy prevention

Agree	_ _ _ _ _ _ _	Disagree

3. Making informed decisions about my own sexual health would be…

Good	_ _ _ _ _ _ _	Bad
Necessary	_ _ _ _ _ _ _	Unnecessary
Desirable	_ _ _ _ _ _ _	Undesirable

4. Increasing my knowledge of STD/STIs would be…

Good	_ _ _ _ _ _ _	Bad
Necessary	_ _ _ _ _ _ _	Unnecessary
Desirable	_ _ _ _ _ _ _	Undesirable

5. Increasing my knowledge of contraception and pregnancy prevention would be…

Good	_ _ _ _ _ _ _	Bad
Necessary	_ _ _ _ _ _ _	Unnecessary
Desirable	_ _ _ _ _ _ _	Undesirable

6. Searching for sexual health information is…

Something that people who are like me would do

Agree _ _ _ _ _ _ _ Disagree

Something my friends would do

Agree _ _ _ _ _ _ _ Disagree

Something a significant other would do

Agree _ _ _ _ _ _ _ Disagree

7. When it comes to searching for sexual health information, I want to do what…

My friends do

Agree _ _ _ _ _ _ _ Disagree

People of my gender do

Agree _ _ _ _ _ _ _ Disagree

Someone I would date does

Agree _ _ _ _ _ _ _ Disagree

8. Searching for sexual health information is something…

People of my gender approve of

Agree _ _ _ _ _ _ _ Disagree

My parents approve of

Agree _ _ _ _ _ _ _ Disagree

My friends approve of

Agree _ _ _ _ _ _ _ Disagree

Someone I would date approves of

Agree _ _ _ _ _ _ _ Disagree

9. When it comes to my sexual health, I want to do what…

People of my gender approve of

Agree _ _ _ _ _ _ _ Disagree

My parents approve of

Agree _ _ _ _ _ _ _ Disagree

My friends approve of

Agree _ _ _ _ _ _ _ Disagree

Someone I would date approves of

Agree _ _ _ _ _ _ _ Disagree

10. I expect that I will search for sexual health information in the future.

Likely _ _ _ _ _ _ _ Unlikely

11. Any information I find will help me make decisions about my sexual health.

Disagree _ _ _ _ _ _ _ Agree

12. I believe that any sexual health information I find will be…

Trustworthy _ _ _ _ _ _ _ Not trustworthy

Accurate _ _ _ _ _ _ _ Inaccurate

Conflicting _ _ _ _ _ _ _ Not conflicting

13. I am confident that if I have a question about sexual health, I can find an answer.

Disagree _ _ _ _ _ _ _ Agree

14. I am confident I can identify good and bad sources of sexual health information.

Disagree _ _ _ _ _ _ _ Agree

15. I believe that searching for sexual health information would be too time consuming.

Disagree _ _ _ _ _ _ _ Agree

16. I intend to search for sexual health information on my own in the future.

Strongly Disagree 1 2 3 4 5 6 7 Strongly Agree

Conformity to Feminine Norms

[Scale under copyright by Dr. Michael Parent, michael.parent@ttu.edu]

Conformity to Masculine Norms

[Scale under copyright by Dr. Michael Parent, michael.parent@ttu.edu]

Feminine Gender Role Stress Scale

Please indicate how stressful you find the following scenarios. 1 indicates “not stressful at all” and 7 indicates “extremely stressful”.

	Not at all Stressful						Extremely Stressful
1. Feeling pressured to engage in sexual activity	1	2	3	4	5	6	7
2. Having to deal with unwanted sexual advances	1	2	3	4	5	6	7
3. Being taken for granted in a sexual relationship	1	2	3	4	5	6	7
4. Being pressured for sex when seeking affection from your mate	1	2	3	4	5	6	7
5. Having multiple sex partners	1	2	3	4	5	6	7
6. Having an intimate relationship without any romance	1	2	3	4	5	6	7
7. Not being able to meet family members’ emotional needs	1	2	3	4	5	6	7
8. Your mate will not discuss your relationship problems	1	2	3	4	5	6	7
9. Being considered promiscuous	1	2	3	4	5	6	7
10. Having other believe that you are	1	2	3	4	5	6	7

emotionally cold							
11. Being perceived by others as overweight	1	2	3	4	5	6	7
12. Finding out that you gained 10 pounds	1	2	3	4	5	6	7
13. Feeling less attractive than you once were	1	2	3	4	5	6	7
14. Being heavier than your mate	1	2	3	4	5	6	7
15. Being unusually tall	1	2	3	4	5	6	7
16. Being unable to change your appearance to please someone	1	2	3	4	5	6	7
17. Turning middle-aged and being single	1	2	3	4	5	6	7
18. Wearing a bathing suit in public	1	2	3	4	5	6	7
19. Hearing a strange noise while you are home alone	1	2	3	4	5	6	7
20. Hearing that a dangerous criminal has escaped nearby	1	2	3	4	5	6	7
21. Having your car break down on the road	1	2	3	4	5	6	7
22. Feeling that you are being followed by someone	1	2	3	4	5	6	7
23. Having to move to a new city or town alone	1	2	3	4	5	6	7
24. Receiving an obscene phone call	1	2	3	4	5	6	7
25. Bargaining with a salesperson when buying a car	1	2	3	4	5	6	7
26. Negotiating the price of car repairs	1	2	3	4	5	6	7
27. Making sure you are not taken advantage of when buying a house or car	1	2	3	4	5	6	7
28. Supervising older and more experienced employees at work	1	2	3	4	5	6	7
29. Trying to be a good parent *and* excel at work	1	2	3	4	5	6	7
30. Having to “sell” yourself at a job interview	1	2	3	4	5	6	7
31. Talking with someone who is angry with you	1	2	3	4	5	6	7
32. Your mate is unemployed and cannot find a job	1	2	3	4	5	6	7
33. Your child is disliked by his or her peers	1	2	3	4	5	6	7
34. Having a weak or incompetent spouse	1	2	3	4	5	6	7
35. Having someone else raise your children	1	2	3	4	5	6	7
36. Returning to work soon after your child is born	1	2	3	4	5	6	7
37. Trying to get your spouse to take responsibility for child care	1	2	3	4	5	6	7

38. Losing custody of your children after divorce	1	2	3	4	5	6	7
39. A very close friend stops speaking to you	1	2	3	4	5	6	7

Masculine Gender Role Stress Scale

Please indicate how stressful you find the following scenarios. 1 indicates “not stressful at all” and 7 indicates “extremely stressful”.

	Not at all Stressful						Extremely Stressful
1. Feeling that you are not in good physical condition	1	2	3	4	5	6	7
2. Not being able to find a sexual partner	1	2	3	4	5	6	7
3. Having your lover say that she/he is not satisfied	1	2	3	4	5	6	7
4. Being perceived by someone as “gay”	1	2	3	4	5	6	7
5. Losing in a sports competition	1	2	3	4	5	6	7
6. Being perceived as having feminine traits	1	2	3	4	5	6	7
7. Appearing less athletic than a friend	1	2	3	4	5	6	7
8. Being compared unfavorably to men	1	2	3	4	5	6	7
9. Knowing you cannot hold your liquor as well as others	1	2	3	4	5	6	7
10. Telling your spouse that you lover her/him	1	2	3	4	5	6	7
11. Telling someone that you feel hurt by what she/he said	1	2	3	4	5	6	7
12. Admitting that you are afraid of something	1	2	3	4	5	6	7
13. Having your children see you cry	1	2	3	4	5	6	7
14. Talking with a woman who is crying	1	2	3	4	5	6	7
15. Comforting a male friend who is upset	1	2	3	4	5	6	7
16. Having a man put his arm around your shoulder	1	2	3	4	5	6	7
17. Being outperformed at work by a woman	1	2	3	4	5	6	7
18. Having a female boss	1	2	3	4	5	6	7
19. Letting a woman take control of the situation	1	2	3	4	5	6	7
20. Being married to someone who makes	1	2	3	4	5	6	7

more money than you							
21. Being with a partner who is more successful than you	1	2	3	4	5	6	7
22. Being outperformed in a game by a woman	1	2	3	4	5	6	7
23. Needing your spouse to work to help support the family	1	2	3	4	5	6	7
24. Admitting to your friends that you do housework	1	2	3	4	5	6	7
25. Being with a partner who is much taller than you	1	2	3	4	5	6	7
26. Having to ask for directions when you are lost	1	2	3	4	5	6	7
27. Working with people who seem more ambitious than you	1	2	3	4	5	6	7
28. Talking with a "feminist"	1	2	3	4	5	6	7
29. Having people say that you are indecisive	1	2	3	4	5	6	7
30. Having others say that you are too emotional	1	2	3	4	5	6	7
31. Working with people who are brighter than yourself	1	2	3	4	5	6	7
32. Staying home during the day with a sick child	1	2	3	4	5	6	7
33. Being unemployed	1	2	3	4	5	6	7
34. Not making enough money	1	2	3	4	5	6	7
35. Finding you lack the occupational skills to succeed	1	2	3	4	5	6	7
36. Being unable to perform sexually	1	2	3	4	5	6	7
37. Being too tired for sex when your lover initiates it	1	2	3	4	5	6	7
38. Being unable to become sexually aroused when you want	1	2	3	4	5	6	7
39. Getting passed over for a promotion	1	2	3	4	5	6	7
40. Getting fired from your job	1	2	3	4	5	6	7

Health Literacy

When you read about sexual health (example: STI/STDs, safe sex practices, contraception), how much do you identify with the following statements?

1. The information is too difficult or confusing for me to understand.

   Strongly Disagree 1 2 3 4 5 Strongly Agree

2. It takes a long time for me to read through sexual health information.

Strongly Disagree 1 2 3 4 5 Strongly Agree

Think of when you have concerns or questions about your sexual health (example: STI/STDs, safe sex practices, contraception), but have little information about it. How much do you agree or disagree with the following items?

3. I am able to extract information I want.

Strongly Disagree 1 2 3 4 5 Strongly Agree

4. I understand information I obtain.

Strongly Disagree 1 2 3 4 5 Strongly Agree

5. I discuss my opinions about sexual health information to my doctor, friends, or family.

Strongly Disagree 1 2 3 4 5 Strongly Agree

6. I apply sexual health information to my daily life.

Strongly Disagree 1 2 3 4 5 Strongly Agree

7. I apply sexual health information to my relationships and sexual encounters.
Strongly Disagree 1 2 3 4 5 Strongly Agree

You or a significant other are diagnosed with an STI/STD or have questions about safe sex practices. You can obtain information about these sexual health issues. How much do you agree or disagree with the following items?

8. I consider whether the information I found is applicable to me.

Strongly Disagree 1 2 3 4 5 Strongly Agree

9. I consider whether the information is credible and trustworthy.

Strongly Disagree 1 2 3 4 5 Strongly Agree

10. I check whether the information is accurate and reliable.

Strongly Disagree 1 2 3 4 5 Strongly Agree

STD/I Knowledge

For the following items, select “T” for “true”, “F” for “False”, and “DK” for “Don’t Know”.

1. Genital Herpes is caused by the same virus as HIV.	T	F	DK
2. Frequent urinary infections can cause Chlamydia.	T	F	DK
3. There is a cure for Gonorrhea.	T	F	DK
4. It is easier to get HIV if a person has another Sexually Transmitted Disease.	T	F	DK
5. Human Papillomavirus (HPV) is caused by the same virus that causes HIV.	T	F	DK
6. Having anal sex increases a person's risk of getting Hepatitis B.	T	F	DK
7. Soon after infection with HIV a person develops open sores on his or her genitals (penis or vagina).	T	F	DK
8. There is a cure for Chlamydia.	T	F	DK
9. A woman who has Genital Herpes can pass the infection to her baby during childbirth.	T	F	DK
10. A woman can look at her body and tell if she has Gonorrhea.	T	F	DK
11. The same virus causes all of the Sexually Transmitted Diseases.	T	F	DK
12. Human Papillomavirus (HPV) can cause Genital Warts.	T	F	DK
13. Using a natural skin (lambskin) condom can protect a person from getting HIV.	T	F	DK
14. Human Papillomavirus (HPV) can lead to cancer in women.	T	F	DK
15. A man must have vaginal sex to get Genital Warts.	T	F	DK
16. Sexually Transmitted Diseases can lead to health problems that are usually more serious for men than women.	T	F	DK
17. A woman can tell that she has Chlamydia if she has a bad smelling odor from her vagina.	T	F	DK
18. If a person tests positive for HIV the test can tell how sick	T	F	DK

the person will become.

19. There is a vaccine available to prevent a person from getting Gonorrhea.	T	F	DK
20. A woman can tell by the way her body feels if she has a Sexually Transmitted Disease.	T	F	DK
21. A person who has Genital Herpes must have open sores to give the infection to his or her sexual partner.	T	F	DK
22. There is a vaccine that prevents a person from getting Chlamydia.	T	F	DK
23. A man can tell by the way his body feels if he has Hepatitis B.	T	F	DK
24. If a person had Gonorrhea in the past he or she is immune (protected) from getting it again.	T	F	DK
25. Human Papillomavirus (HPV) can cause HIV.	T	F	DK
26. A man can protect himself from getting Genital Warts by washing his genitals after sex.	T	F	DK
27. There is a vaccine that can protect a person from getting Hepatitis B.	T	F	DK

Safe Sex Knowledge

1. Pulling out is an effective way to prevent pregnancy.	T	F	DK
2. There is no form of protection for oral sex.	T	F	DK
3. Birth control can cause weight gain and infertility.	T	F	DK
4. Emergency contraception can be taken up to five days after unprotected sex and still be effective.	T	F	DK
5. Sexual health check ups are available for men.	T	F	DK
6. A woman is able to get STD/I results from a pap smear.	T	F	DK
7. Pregnancy tests work best after a woman has had her period.	T	F	DK

Source of Health Information

How many times in the past 12 months have you searched for sexual health information: _____

Please indicate which of the following sources you have used in the past 12 months to search for sexual health information:

Internet Forum (ex: Reddit)	Yes	No
Social media (ex: Instagram, FaceBook, Twitter)	Yes	No
Search engine (ex: Google, Yahoo, Bing)	Yes	No
.edu website	Yes	No
.gov website	Yes	No
News website (ex: NPR, CNN, FOX)	Yes	No
Private/personal website or blog	Yes	No
Provider/doctor	Yes	No
Health care department	Yes	No
Planned Parenthood	Yes	No
Campus Health Service	Yes	No
Parent	Yes	No
Friend	Yes	No
Significant other	Yes	No
Television/Film	Yes	No
Podcast/Radio	Yes	No
Other (Please describe: _____)	Yes	No

eHealth Literacy Scale

I would like to ask you for your opinion and about your experience using the Internet for health information. For each statement, tell me which response best reflects your opinion and experience *right now*.

1. I know **what** health resources are available on the Internet

1) O Strongly Disagree
2) O Disagree
3) O Undecided
4) O Agree
5) O Strongly Agree

2. I know **where** to find helpful health resources on the Internet

1) O Strongly Disagree
2) O Disagree
3) O Undecided
4) O Agree
5) O Strongly Agree

3. I know **how** to find helpful health resources on the Internet

1) O Strongly Disagree
2) O Disagree
3) O Undecided
4) O Agree
5) O Strongly Agree

4. I know **how to use** the Internet to answer my questions about health

1) O Strongly Disagree
2) O Disagree
3) O Undecided
4) O Agree
5) O Strongly Agree

5. I know how to use **the health information** I find on the Internet to help me

1) O Strongly Disagree
2) O Disagree
3) O Undecided
4) O Agree
5) O Strongly Agree

6. I have the skills I need to **evaluate** the health resources I find on the Internet

1) O Strongly Disagree
2) O Disagree
3) O Undecided
4) O Agree
5) O Strongly Agree

7. I can tell **high quality** health resources from **low quality** health resources on the Internet

1) O Strongly Disagree
2) O Disagree
3) O Undecided
4) O Agree
5) O Strongly Agree

8. I feel **confident** in using information from the Internet to make health decisions

1) O Strongly Disagree
2) O Disagree
3) O Undecided
4) O Agree
5) O Strongly Agree

Demographics

1. How old are you? ____ years

2. Which best describes you?
   _ White/Caucasian
   _ African-American
   _ Hispanic/Latino
   _ Asian American
   _ Native American
   _ Multiracial/Multiethnic
   _ Other: _____

3. What is your gender?
   _ Male
   _ Female
   _ Nonbinary gender identity

4. What is your sexual orientation?

Heterosexual Bisexual/Pansexual Homosexual

Other (Please Describe: _____)

5 Select the answer that best applies to you:
In a long term relationship (> 12 months) ___
In a new relationship (< 12 months) ___
Not currently dating/in a relationship ___

6. What is your annual household income?
_ $14,999 or less
_ $15,000 – 29,999
_ $30,000 – 59,999
_ $60,000 – 199,999

7. What is your household size (including your dependents)? ___

8. Have you seen a health care provider in the last three months?

Yes No

9. What is your year in school?

Freshman Sophomore Junior Senior

10. What is your GPA? _____

Appendix B

Table 4.
Factor loadings for the theory of planned behaviors constructs.

Theory of Planned Behavior Items (N = 327)	Attitudes (Factor 1)	Norms (Factor 2)	PBC (Factor 3)	Mean	SD
1. My searching for sexual health information would be helpful	.55	-.011	.112	2.34	1.48
~~2. My searching for sexual health information would be embarrassing~~	~~.093~~	~~.021~~	~~-.392~~	~~4.93~~	~~1.96~~
~~3. My searching for sexual health information would be good~~	~~.481~~	~~-.024~~	~~.359~~	~~1.95~~	~~1.22~~
4. My searching for sexual health information would be necessary	.745	-.048	-.105	2.70	1.73
5. My searching for sexual health information would be likely	.66	-.028	-.037	3.17	1.76
6. Searching for sexual health information would help me make informed decision about my own sexual health	.575	.043	.218	1.86	1.31
7. Searching for sexual health information would increase my knowledge about STD/STIs	.601	.035	.214	1.69	1.24
8. Searching for sexual health information would increase my knowledge about contraception and pregnancy prevention	.705	-.019	.035	1.84	1.44
~~9. Making informed decisions about my own sexual health would be good~~	~~.397~~	~~-.019~~	~~.454~~	~~1.35~~	~~0.86~~
10. Making informed decisions about my own sexual health would be necessary	.563	-.003	.224	1.63	1.15
11. Making informed decisions about my own sexual health would be desireable	.474	.04	.278	1.65	1.17
12. Increasing my knowledge of STD/STIs would be good	.51	-.021	.272	1.40	.84
13. Increasing my knowledge of STD/STIs would be necessary	.767	-.072	-.218	2.11	1.52
14. Increasing my knowledge of STD/STIs would be desireable	.83	-.039	-.111	2.13	1.39
15. Increasing my knowledge of contraception and pregnancy prevention would be good	.608	.011	.085	1.61	1.11
16. Increasing my knowledge of contraception and pregnancy prevention would be necessary	.802	-.007	-.278	2.32	1.74
17. Increasing my knowledge of contraception and pregnancy prevention would be desireable	.818	.008	-.235	2.15	1.57
~~18. Searching for sexual health information is something that people who are like me would do~~	~~.70~~	~~.079~~	~~-.059~~	~~2.64~~	~~1.66~~
~~19. Searching for sexual health information is~~	~~.507~~	~~0.075~~	~~0.034~~	~~2.87~~	~~1.71~~

~~something my friends would do~~					
~~20. Searching for sexual health information is something a significant other would do~~	~~.568~~	~~0.138~~	~~0.041~~	~~2.52~~	~~1.64~~
21. When it comes to searching for sexual health information, I want to do what my friends do	.102	0.668	-0.256	4.33	1.94
22. When it comes to searching for sexual health information, I want to do what people of my gender do	.027	0.7	-0.13	3.54	1.94
23. When it comes to searching for sexual health information, I want to do what someone I would date does	-.018	0.558	0.076	3.05	1.86
~~24. Searching for health information is something people of my gender approve of~~	~~.30~~	~~0.215~~	~~0.254~~	~~2.21~~	~~1.44~~
~~25. Searching for health information is something my parents approve of~~	~~.217~~	~~0.183~~	~~0.216~~	~~2.16~~	~~1.65~~
~~26. Searching for health information is something my friends approve of~~	~~.325~~	~~0.199~~	~~0.412~~	~~2.09~~	~~1.35~~
~~27. Searching for health information is something someone I would date approves of~~	~~.335~~	~~0.194~~	~~0.439~~	~~1.84~~	~~1.21~~
28. When it comes to my sexual health, I want to do what people of my gender approve of	.031	0.765	-0.128	3.66	1.98
29. When it comes to my sexual health, I want to do what my parents approve of	-.035	0.501	0.091	2.90	1.90
30. When it comes to my sexual health, I want to do what my friends approve of	-.011	0.818	-0.049	3.42	1.83
31. When it comes to my sexual health, I want to do what someone I would date approves of	-.035	0.616	0.262	2.43	1.71
~~32. I expect that I will search for sexual health information in the future.~~	~~.693~~	~~-0.001~~	~~-0.035~~	~~2.19~~	~~1.61~~
~~33. Any information I find will help me make decisions about my sexual health~~	~~.042~~	~~-0.176~~	~~0.21~~	~~3.67~~	~~2.18~~
~~34. I believe that any sexual health information I find will be trustworthy ®~~	~~.007~~	~~0.191~~	~~0.305~~	~~2.82~~	~~1.17~~
35. I believe that any sexual health information I find will be inaccurate ®	.047	0.159	0.333	2.89	1.09
36. I believe that any sexual health information I find will not be conflicting	-.109	-0.017	0.356	3.94	1.54
37. I am confident that if I have a question about sexual health, I can find an answer	.095	0.038	-0.667	5.651	1.59
38. I am confident I can identify good and bad sources of sexual health information	.048	0.082	-0.62	5.53	1.62
~~39. I believe that searching for sexual health information would be too time consuming~~	~~.165~~	~~-0.022~~	~~0.337~~	~~2.66~~	~~1.68~~

** Note. ® indicates a reverse coded item.*

Table 8.
Factor loadings for the health literacy scale.

Health Literacy Scale Items (N = 335)	Critical Literacy (Factor 1)	Communi-cative Literacy (Factor 2)	Functional Literacy (Factor 3)	Mean (SD)	Eigen-values	% of Variance
The information is too difficult or confusing for me to understand.	-0.063	-0.11	0.666	1.76 (.87)	1.004	10.042
It takes a long time for me to read through sexual health information.	0.073	0.064	0.828	2.28 (1.16)		
~~I am able to extract information I want.~~	~~0.314~~	~~0.103~~	~~-0.385~~	~~3.83 (.99)~~		
~~I understand information I obtain.~~	~~0.274~~	~~0.272~~	~~-0.395~~	~~3.93 (.94)~~		
I discuss my opinions about sexual health information to my doctor, friends, or family.	-0.025	0.542	-0.242	3.36 (1.28)	1.568	15.682
I apply sexual health information to my daily life.	-0.091	0.917	0.031	3.5 (1.22)		
I apply sexual health information to my relationships and sexual encounters.	0.146	0.795	0.074	3.94 (1.12)		
I consider whether the information I found is applicable to me.	0.81	0.004	0.03	4.16 (.91)	4.788	47.881
I consider whether the information is credible and trustworthy.	0.959	-0.058	0.004	4.26 (.93)		
I check whether the information is accurate and reliable.	0.827	0.039	-0.012	4.21 (.98)		

Vita

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