1-1-2019

Knowledge, assertiveness, competence: using a self-determination theory framework to explain sexual satisfaction in college students

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KNOWLEDGE, ASSERTIVENESS, COMPETENCE:

USING A SELF-DETERMINATION THEORY FRAMEKWORK TO EXPLAIN SEXUAL SATISFACTION IN COLLEGE STUDENTS

A Dissertation

Presented in partial fulfillment of requirements
For the degree of Doctor of Philosophy
In the Department of Psychology
The University of Mississippi

by

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August 2019

ABSTRACT

Sexual satisfaction has been shown to be related to many positive factors such as high relationship satisfaction, enhanced physical and psychological health, and increased overall well-being. Despite making up 27% of the sexually active population in the United States, young people (ages 15-24) but are typically not taught about the benefits of sexual satisfaction or how to have a pleasurable sexual experience. Due to their high risk of Sexually Transmitted Infections (STIs) and unplanned pregnancies, most education and research on young people's sexuality focuses on risk behaviors and prevention. The goal of this study was to take a positive outlook on young people's sexuality by exploring two types of sexual knowledge, health and personal preferences/needs, in the context of sexual pleasure. A Self-Determination Theory (SDT; Deci & Ryan, 2002) framework was used to propose how sexual knowledge and assertiveness would relate to young people's satisfaction via sexual competence. It was hypothesized that individuals need to be sexually knowledgeable to assert themselves during sexual interactions. If sexual knowledge and assertiveness are present during sexual encounters, individuals will feel more sexually competent, which in turn will lead to more sexual satisfaction. Mediation analyses were conducted to investigate the role of sexual knowledge on sexual satisfaction via two serial mediators, sexual assertiveness and sexual competence. Participants were 348 undergraduate students ages 18 to 23 (M = 18.91; SD = 1.02) from a medium-sized university in the Southern United States who reported sexual activity with another person during the past six months. Statistical analyses showed significant direct effects of personal sexual knowledge on sexual assertiveness, competence and satisfaction. Further, an

indirect path between personal sexual knowledge and sexual satisfaction was found going through sexual assertiveness first, followed by sexual competence. Finally, sexual health knowledge showed a significant effect on sexual competence and a significant indirect effect on sexual satisfaction via competence. Findings from the present study highlight the importance of sexual knowledge and assertiveness in young people's sex lives, and help understand how to support young people's sexual competence and satisfaction.

DEDICATION

This dissertation is dedicated to my mother, Astrid Seifen, who always encouraged me to pursue my academic goals and dreams, even when it meant thousands of miles away from her. My mother passed away during my first year of graduate school, but I know she would be incredibly proud to see this project completed and my graduate training coming to an end.

LIST OF ABBREVIATIONS

CDC	Center for Disease Control and Prevention
H	Hypothesis
SDT	Self-Determination Theory
STD	Sexually Transmitted Disease
STI	Sexually Transmitted Infection

ACKNOWLEDGEMENTS

First, I would like to express the deepest appreciation for my dissertation chair, Dr. Laura Johnson for inviting me into this program, believing in me and guiding me to the finish line. She has been a wonderful mentor, educator, and friend to me over the past 4 years. This project would not have happened without her leadership and support.

Next, I wish to express my gratitude to Dr. Carrie Smith for her help and guidance on this project. Her expertise in the field of human sexuality was essential to this dissertation. I would also like to thank Drs. Alan Gross and Jaime Harker for their time and support of this project.

To the faculty, staff, and students in the Department of Psychology, thank you for making my time at the University of Mississippi such a meaningful and unforgettable experience. Specifically, I would like to thank my fellow graduate students for their statistical wisdom and willingness to help, which were extremely important for the completion of this dissertation.

Finally, I would like to thank my father, Peter Seifen, for his unconditional support throughout this project, my graduate training, and my life. And last, but not least, I would like to express my love and appreciation for my husband Zachariah Adkins, who spent hours reviewing this document and listening to me practice my proposal and defense.

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I. INTRODUCTION

Positive sexual experiences play a very important role in the lives of many individuals and are connected to general and psychological well-being (Whipple, Knowles, Davis, Gianotten, & Owens, 2007; Cross & Weeks, 2007). Research on sexual satisfaction has found it to be associated with increased overall well-being (Dundon & Rellini, 2010), quality of life (Davison, Bell, LaChina, Holden, & Davis, 2009), and life satisfaction (Schmiedeberg, Huyer-May, Castiglioni, & Johnson, 2017). Intimate relationships that allow people to express sexuality and sensuality can enhance physical and psychological health (Cross & Weeks, 2007). Furthermore, research suggests that higher levels of sexual assertiveness (Haavio-Mannila & Kontula, 1997), increased communication within romantic relationships (MacNeil & Byers, 2009), and high relationship satisfaction (Sprecher, 2002; Butzer & Campell, 2008; McNulty, Wenner, & Fisher, 2016) are also associated with greater sexual satisfaction. These findings point to the role and importance of sexual satisfaction for personal and relational well-being.

In the literature, sexual satisfaction has been defined, operationalized, and assessed in numerous ways (Byers, 1999; Mark, Herbenick, Fortenberry, Sanders, & Reece, 2014). According to Sandra Byers (1999), sexual satisfaction incorporates more than just physical pleasure, and it is not equivalent to the absence of sexual dissatisfaction or sexual dysfunction. Lawrance and Byers (1995) suggest the following definition of sexual satisfaction: “An affective response arising from one's subjective evaluation of the positive and negative dimensions associated with one's sexual relationship.” (p.268). Even though this definition is one of the most

commonly used, it focuses on sexual satisfaction within the context of a romantic relationship (e.g., Byers & Macneil, 2006). Outside of the relationship context, Stephenson and Sullivan (2009) define sexual satisfaction from a more general perspective, referring to it as a person's satisfaction with their overall sex life.

Past research on sexual satisfaction generally took a 'couples-focused' approach looking at individuals within a committed, romantic relationship (Byers & Demmons, 1999; Lawrance & Byers, 1995; Michael, Gagnon, Laumann, & Kolata, 1994). More recent studies have tried to include different types of relationship statuses when looking at sexual satisfaction, such as comparing sexual satisfaction in friends-with-benefits relationships to romantic relationships (Lehmiller, Vanderdrift, & Kelly, 2014). It appears that differences in sexual satisfaction between different types of relationships (e.g., friends with benefits, casual dating, exclusive dating, engaged, and married) are generally modest (Birnie-Porter & Hunt, 2015).

Gender differences related to sexual satisfaction have mixed support. For example, it is well-reported that men experience more orgasms compared to women (e.g., Laumann, Gagnon, Michael, & Michaels, 1994), which some may consider 'the climax' of sexual satisfaction. Also, men tend to engage in more sexual behaviors (e.g., masturbation, pornography use, casual sex) and tend to have more permissive sexual attitudes than women (Petersen & Hyde, 2010). Given these findings, it might seem that women report less sexual satisfaction. However, research suggests that men and women generally report similar levels of sexual satisfaction (e.g., Haavio-Mannila & Kontula, 1997), they just may experience it differently. According to Lawrance and Byers (1995) women describe relational aspects, such as the emotional quality of the sexual relationship as rewarding during sexual encounters, whereas men describe more physical aspects,

such as physical gratification, orgasms, or frequency of sexual activity as rewarding. Hence, sexual satisfaction includes a combination of physical and subjective satisfaction.

Although sexual satisfaction yields a lot of benefits, it rarely seems to be the focus of research on sexuality among young people. When investigating sexual behaviors among adolescents and young adults, the emphasis often is on preventing sexual risk behaviors, such as unprotected sex (e.g., Shapiro, Radecki, Charchian, & Josephson, 1999; D'Urso, Thompson-Robinson, & Chandler, 2007; Baer, Allen, & Braun, 2000; Rouner & Lindsey, 2006; Weinstein, Walsh, & Ward, 2008). In the U.S., the sexual pleasure and satisfaction of teens and young adults is rarely, if ever, included in school-based education. Sex education programs in U.S. public schools typically teach youth not to engage in any kind of sexual activities (i.e., Abstinence Only Programs), or they include information about contraception and condom use, but with a strong abstinence message (i.e., Abstinence-Plus Education). Less common are 'Comprehensive Sex Education' approaches, which include developmentally appropriate sexual education that includes information on sexually transmitted infections (STIs), pregnancy prevention, as well as interpersonal and communication skills (Advocates for Youth, 2001). However, information on how to have pleasurable sexual experiences, including sexual satisfaction are typically not included in any of these programs (e.g., Kirby & Coyle, 1997; Santelli et al., 2006). To receive detailed information about human sexuality over the life span, including risk behaviors and prevention, but also human anatomy, sexual functioning, sexual behaviors and arousal, and the positive benefits of sex and sexual relationships (e.g., Henry, 2013), young people in the U.S. usually must wait until college, if they choose to enroll in a comprehensive human sexuality class.

Despite limited guidance on how to have a pleasurable sexual experience, young people (ages 15-24) make up 27% of the sexually active population in the U.S. (CDC, 2013), with 40% of high school students already having had sexual intercourse (CDC, 2017). This data shows that young people are engaging in sexual activities, but limited research focuses on their satisfaction with their sex life. Knowing that sexual satisfaction can lead to several positive outcomes such as increased physical and psychological well-being (Cross & Weeks, 2007) or life satisfaction (Schmiedeberg et al., 2017), it is important not to overlook young people's sexual satisfaction and contributing factors.

Self-Determination Theory

One theory that could be helpful in explaining the path to sexual satisfaction is called basic needs theory, which is one of four mini-theories of *Self-Determination Theory* (SDT; Deci & Ryan, 2002). According to basic needs theory there are three fundamental psychological needs that need to be met for people to experience personal health and well-being: *competence*, *relatedness*, and *autonomy*. Competence refers to a person's perception of being able to perform activities, to act effectively, and to bring about goals. The need for competence leads individuals to seek challenges that match their capacities and motivates them to constantly maintain and enhance those capacities. Autonomy describes an individual's feeling that goals and activities are self-chosen and are in line with one's intrinsic interests and values. It basically encompasses interest driven actions. Finally, relatedness describes the feeling of being connected to others, such as being cared for by others and experiencing a sense of belonging. It incorporates the psychological sense of being with others, as in being part of a group or community.

Several studies have investigated the relationship between basic needs satisfaction and well-being. For example, Sheldon, Ryan, and Reis (1996) investigated whether the satisfaction of

two psychological needs, autonomy and competence, would lead to greater daily well-being. They found that general satisfaction of these needs not only leads to more overall well-being, but also that daily need satisfaction helps explain fluctuations of well-being within individuals over time. Similar findings were reported by Sheldon and Elliot (1999), who examined the relationship between need-satisfying experiences and well-being longitudinally. They showed that daily experiences of competence, autonomy, and relatedness over time promote greater well-being. Kasser and Ryan (1999) also found that nursing home residents' needs satisfaction (autonomy and relatedness) was related to well-being and physical health. Overall, findings from these studies suggest that the fulfillment of psychological needs (competence, autonomy, and relatedness) can enhance individuals' well-being, and therefore offer support for the postulates of basic needs theory.

Within the context of sexual behavior, Smith (2007) was one of the first to formally investigate need satisfaction and sexual satisfaction. More specifically, she examined the relationship between the three basic psychological needs (i.e., competence, autonomy, and relatedness) and sexuality. In her study, participants were asked to record their sexual experiences over the course of three weeks in an interaction diary. Participants described situational factors of the sexual encounter, as well as rated the extent to which psychological needs were met, and how satisfying the sexual interaction was for them. Results suggested that greater need satisfaction, in terms of feeling autonomous, competent, and related, was associated with a more positive sexual experience. Further, individuals with greater general sexual competence endorsed feeling more competent during their sexual interactions. Similar results were found for autonomy, that is general sexual autonomy predicted autonomy during sexual interactions.

According to Smith (2007), there have been studies that did not specifically link SDT with sexuality, but also provide evidence for a relationship between the two. For example, in a study by Apt, Huribert, Pierce, and White (1996) women who were more sexually satisfied reported being more sexually assertive. Based on these findings, Smith (2007) suggested that a person who is sexually assertive is fulfilling both needs, competence and autonomy. That is, to be sexually assertive, a person must have the capacity to discuss their desires (competence), but also must choose to communicate their desires and needs (autonomy).

In general, SDT postulates that all three basic needs must be met for an individual to experience health and well-being, or sexual satisfaction. However, past research has focused on only one or two of the three basic needs when investigating general satisfaction (e.g., Sheldon, Ryan, & Reis, 1996; Kasser & Ryan, 1999). For the present study, the basic need of competence will be more closely examined in terms of how it relates to young people's sexual satisfaction. More specifically, this study focuses on how to support young people in meeting this need by exploring knowledge and assertiveness as contributing factors.

Sexual Competence

SDT defines competence as an individual's perception of being able to act effectively and express one's capacities (Deci & Ryan, 2002). In the context of sexual activity, Hirst (2008) describes *sexual competence* as having the ability, skills or knowledge to successfully engage in sexual encounters. Successful means to have a positive sexual experience, in the sense of being pleasurable and enjoyable, which does not threaten an individual's sexual health or result in regret. Hirst (2008) suggests that knowledge should be considered a prerequisite of sexual competence, but that confident fluency in talking about sex is also important for greater sexual competence. Considering the proposed definitions, sexual competence should be approached

through sexual knowledge and the ability to effectively express and apply it during sexual encounters. Further, as postulated by SDT, sexual competence should be related to an increase in general sexual satisfaction.

Previous research on sexual competence among young people tended to focus on its relationship to negative physical and emotional outcomes of sexual encounters, such as unplanned pregnancies, STIs, or regretting the experience. Adolescents were described as sexually competent, if they delayed their first sexual intercourse to a later age (e.g., Wellings et al., 2001), or if pregnancy or STIs were prevented (Crosby et al., 2002; de Graaf, Meijer, Vanwesenbeeck, & Poelman, 2005). Wellings and colleagues (2001) used criteria such as absence of regret, willingness, autonomy of decision, and reliable use of contraception as criteria to determine if adolescents were sexually competent with respect to their first intercourse. Similarly, in a recent study by Palmer et al. (2017), sexual competence during first intercourse was measured using the following conditions: equally willing, acceptable timing of sexual intercourse, autonomy of decision, and contraceptive decision. According to Hirst (2008), it is difficult to decide if pleasure stays unrecognized or ignored, or is considered as implicitly present in categories such as absence of regret or willingness. Either way, positive outcomes of sexual competence among young people, such as sexual satisfaction, appear to commonly not be the focus of attention.

Sexual Knowledge

In the literature, *sexual knowledge* is commonly looked at from two perspectives: On the one hand, sexual knowledge refers to knowledge or "awareness of what sexual desires, feelings, and behaviors one finds pleasurable and arousing" (La France, 2010, p. 198). How much does a person know about their personal sexual preferences and what feels good to them? On the other

hand, the term sexual knowledge is often used to refer to knowledge about sexual health. Common topics assessed include reproductive health, contraception, condom use, sexually transmitted infections/diseases, and HIV/AIDS (e.g., Weinstein, Walsh, & Ward 2008).

Overall, research suggests that exposure to sex education programs that provide students with information on reproductive health issues and newer contraceptive methods is correlated with greater sexual health knowledge across multiple domains (e.g., Weinstein, Walsh, & Ward 2008). However, most young people often lack adequate knowledge to make healthy decision about their sexuality (e.g., Scott-Jones & Turner, 1988; Westwood & Mullan, 2006). Weinstein and colleagues (2008) reported that their sample of 300 undergraduate students displayed poor knowledge regarding sexual health (e.g., knowledge of reproductive health, contraception, condom use, sexually transmitted diseases, and HIV/AIDS). Similar results were reported by Synovitz, Herbert, Kelley and Carlson (2002), who found that students at four Louisiana universities performed poorly on a sexual knowledge test, even though over half of the sample had received some type of sex education in high school. Hirst (2008) conducted group and individual interviews with adolescents. He found participants had limited or inaccurate vocabulary on sexual autonomy and practices. For example, while talking about masturbation, adolescent females pointed to their genitals or referred to their genitals as 'girl's bits' or 'under our pants' instead of using appropriate terminology.

Despite poor performance on sexual health knowledge measures, young people often perceive themselves as knowledgeable about STIs (e.g., Rouner & Lindsey, 2006). For example, Martin and Mak (2013) found a significant difference between self-perceived sexual health knowledge and actual sexual health knowledge among a college student sample. Research indicates that young adults do not necessarily display any difficulties naming common STIs such

as HIV, chlamydia, or genital warts (Baer, Allen & Braun, 2000; Rouner & Lindsey, 2006), however, when asked to describe typical symptoms of such infections, they usually struggle to answer (D'Urso, Thompson-Robinson, & Chandler, 2007; Baer, Allen & Braun, 2000). Furthermore, they display difficulties answering questions about how STIs are transmitted and diagnosed (Lewis, Rosenthal, Succop, Stanberry, & Bernstein, 1999; Baer, Allen & Braun, 2000; Yacobi, Tennant, Ferrante, Pal, & Roetzheim, 1999).

According to a study by Goldfarb (2005), young people receive limited information about sexuality throughout their adolescents, with the focus mainly being on preventing sexual risk behaviors or promoting abstinence. Findings from her study suggest that young adults expect more from a human sexuality course than just information about pregnancy prevention, safe sex, and STIs. They want to become more comfortable with their sexuality and make good decisions regarding their sexuality. College students in Goldfarb's (2005) study responded that they wanted to have greater insight and understanding into their own bodies, become better at communicating about sexuality, and apply what they have learned in real life, such as being more assertive. Similarly, Hirst (2008) suggested there are faults in traditional approaches to sex education and as they relate to sexual competence. He stated that its content often does not match young people's needs and sexual experiences. For example, adolescents in his study criticized the heteronormative agenda and emphasis on vaginal intercourse in common sex education programs. They highlighted the lack of education about other common behaviors such as kissing (e.g., lips, nipples/breasts, and genitals), masturbation, and oral sex.

On the college level, several studies have reported that human sexuality courses seem to provide young adults with the type of sexual knowledge and skills beneficial to their personal lives and intimate relationships. After taking a comprehensive sexuality class in college, young

adults report more perceived sexual knowledge (e.g., Rogers, McRee, & Arntz, 2009; Rutledge, Siebert, Chonody, & Killian, 2011), feeling more comfortable with and engaging in more sexual health related behaviors such as breast and testicular self-examinations (Voss & Kogan, 2001), and being more open-minded and accepting of their own and other people's sexuality and sexual behaviors (Goldfarb, 2005; Wright & Cullen, 2001).

In a qualitative study, Henry (2013) investigated the influence of a human sexuality class on college students' relationships. Henry (2013) found that college students who had participated in the class reported changes in overall communication, changes in communication about sex with their partner, feeling more comfortable about their sexuality in general, and being more open to trying new sexual behaviors. Some of the participants reported that the human sexuality class helped them not only in communicating their sexual desires to their partner, but also increased their ability to refuse sex if unwanted. New information about health and anatomy seemed to have led to increased protective behaviors, and for some students even to increased sexual pleasure (Henry, 2013).

La France (2010) proposed that a person cannot communicate about their sexual behavioral preferences unless he or she is knowledgeable about them. La France (2010) was the first to empirically investigate this relationship. She found that participants who were more knowledgeable about what sexual behaviors they find pleasurable were more willing to communicate their needs and desires. However, only sexual knowledge, not willingness to communicate, significantly predicted sexual satisfaction. Findings from her study suggest that sexual knowledge (i.e., about personal sexual preferences) plays an important role in individuals' satisfaction with their sex life. Further, personal sexual knowledge seems to be related to an individual's willingness to communicate during sexual encounters.

It seems important to investigate how the two different types of sexual knowledge, personal and health, relate to each other, and which role they play in young people's sexual experiences. How do both relate to sexual competence, and ultimately sexual satisfaction? As suggested by Hirst (2008), knowledge should be considered a prerequisite for sexual competence, but competence involves more than just knowledge, such as effectively expressing one's abilities. Therefore, it is relevant to examine the role of effective communication on sexual competence and satisfaction.

Sexual Assertiveness

Sexual assertiveness refers to the ability to effectively express and communicate one's sexual beliefs and desires. Sexual assertiveness is an important part of healthy sexual intimacy, as it helps individuals to protect their sexual health and autonomy, and to protect themselves against unwanted sexual activities (Morokoff et al., 1997). Sexual assertiveness does not only mean to communicate personal preferences, it also incorporates making requests and initiating sexual behavior. It is important to differentiate between sexual assertiveness for the purpose of safer sex (e.g., "Have you ever had an STI?", "I want you to wear a condom.") and sexual assertiveness for the purpose of pleasure (e.g., "It feels good when you do this, do it more.") (Ménard & Offman, 2009). Typically, sex education programs focus on the first rather than the latter. Rarely, young people are taught to communicate their sexual needs and desires to have a pleasurable sexual experience (Allen, 2007).

Regarding sexual health, the ability to openly communicate has been shown to decrease sexual risk behavior and support safe sex decision making (e.g., Noar, Carlyle, & Cole, 2006). Sexual assertiveness plays an especially important role for adolescents and young adults who are sexually active and are at high risk for unintended pregnancies and STIs. Research suggests that

sexually active adolescents and young adults display difficulties with engaging in sexual communication with their sex partners. For example, Ryan, Franzetta, Manlove, and Holcombe (2007) found that in a sample of 1426 teenagers, only half of the teenagers discussed contraception or STIs with their partner before engaging in sexual intercourse for the first time.

In the context of sexual pleasure, asserting one's desires and needs has been shown to be associated with greater sexual satisfaction (e.g., Bridges, Lease & Ellison, 2004, Haavio-Mannila & Kontula 1997), and better sexual functioning (Hurlbert, 1991). Studies on adolescent females and young women indicate that the ability to communicate one's desires and fantasies can promote general psychological health and well-being (Jack, 1991; Harper and Welsh, 2007; Impett, Sorsoli, Schooler, Henson, & Tolman, 2008).

Current Study

The goal of the present study is to move away from a disease and risk focused outlook on young people's sexuality, and to extend the current literature on sexual satisfaction among young people by looking at variables such as sexual knowledge, assertiveness, and competence. A SDT framework is used as a theoretical model to propose how sexual knowledge and assertiveness relate to sexual satisfaction among young people. Specifically, this study focuses on one basic need out of the SDT basic needs theory: competence (sexual competence). It is hypothesized that sexual knowledge is necessary for individuals to assert themselves during sexual encounters. If an individual has high levels of sexual knowledge and reports high levels of sexual assertiveness, he/she will also report feeling more competent during sexual experiences, which in turn will be associated with higher levels of sexual satisfaction. It is assumed that the relationship between sexual knowledge, personal and health, and sexual satisfaction will be mediated by sexual assertiveness and sexual competence (see Figure 1).

Further, the present study aims to look at sexual knowledge from two different perspectives, such as sexual health knowledge and knowledge about personal sexual preferences. The goal is to obtain a better understanding about these two types of sexual knowledge and how they relate to the outcome variables of interest (i.e., sexual assertiveness, sexual competence, and sexual satisfaction). A comprehensive literature review did not indicate that previous empirical work has included both conceptualizations of sexual knowledge together within a study to investigate their relationship to sexual satisfaction.

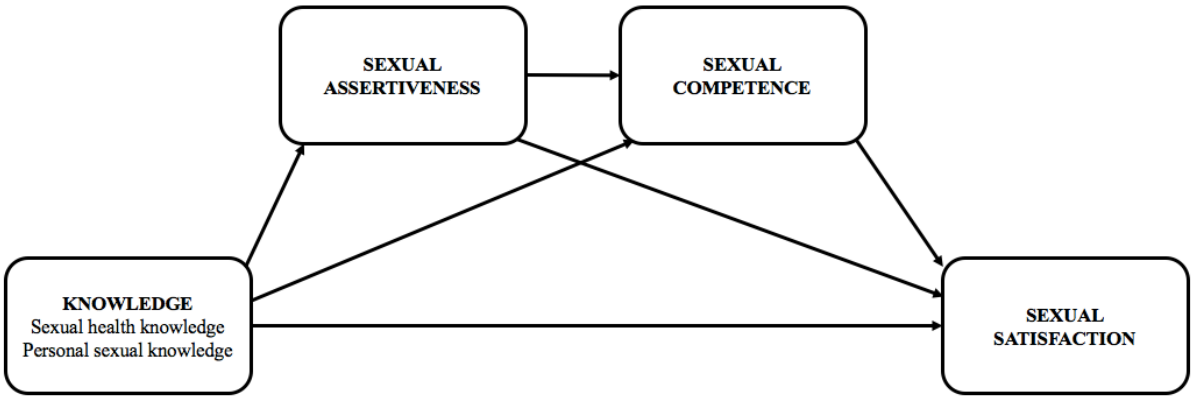

Figure 1. Model of sexual satisfaction. This figure illustrates the proposed relationship between sexual knowledge, assertiveness, competence, and satisfaction.

Hypotheses

Based on the literature review, the following hypotheses were proposed for the present study:

H1: The measures of sexual knowledge (personal and health) will be positively correlated with each other.

H2: Higher levels of sexual knowledge will be related to higher levels of sexual assertiveness during sexual encounters.

H3: Individuals with higher levels of sexual knowledge and sexual assertiveness will report feeling more competent during sexual encounters.

H4: Sexual knowledge, sexual assertiveness, and sexual competence will predict sexual satisfaction

H5: The relationship between sexual knowledge and sexual satisfaction will be serially mediated, going through sexual assertiveness first, and then sexual competence.

II. METHODOLOGY

Participants

A total of 510 undergraduate students enrolled at a medium-sized university in the Southern U.S. completed the survey in exchange of one course credit. Participants who failed one or more attention check items were removed from the sample (n = 83). Eligibility for inclusion in the analyses was restricted to participants who had been 'sexually active' with another person over past six months (58 participants were excluded). This inclusion criteria matched the time-period assessed by the sexual satisfaction measure used in this study (Štulhofer, Buško, & Brouillard, 2010). 'Sexually active' was defined as having engaged in one or more out of 10 sexual behaviors drawn from a study by Pitts and Rahman (2001) (e.g., deep kissing, oral contact with breasts, oral contact with genitals, penile-vaginal intercourse, penile-anal intercourse). Participants had to be at least 18 years of age to ensure that they are of proper age to give legal consent, but not older than 24 years of age to fit the targeted group of young people as defined by the Center for Disease Control (CDC, 2013).

After screening for outliers, the final sample consisted of 348 participants between the ages of 18 to 23 (M = 18.91; SD = 1.02). They were 41% male and 59% female, and predominantly identified as heterosexual (87%). Some participants (9%) appeared to not know what was meant when asked for their sexual orientation, as evident by responses such as "virgin", "I like sex", "I am not sure what this means", or reporting gender instead of sexual

orientation. Participants were predominantly Caucasian (79.9%), followed by African American (13.2%), Asian American (2.6%), Multiracial (1.7%), Hispanic (1.1%), other (0.9%), and Native American (0.3%). Most participants reported that they were involved in some type of relationship (Dating = 21.3%, Committed Relationship = 27.6%, Friends with Benefits = 15.8%, Married = 0.6%, Other = 0.6%), and around one-third identified as Single (34.2%). Finally, 57.8% of participants had participated in some type of sexual education class in the past. Open-ended responses indicated that this type of education had been offered through high school.

Measures

Sexual health knowledge. Participants completed the Knowledge of Sexual Health questionnaire designed by Weinstein, Walsh, and Ward (2008). The questionnaire consists of 55 items. It measures knowledge related to sexual health topics such as reproductive health (11 items), contraception (seven items), condom use (nine items), Sexually Transmitted Diseases (12 items), and HIV/AIDS (17 items). Participants were asked to answer each item with either true, false, or unsure. Items answered correctly received a score of "1", and items answered incorrectly (incorrect or unsure) received a score of "0". At total global sexual health knowledge score of 56 could be obtained. Weinstein et al. (2008) reported adequate internal consistency for this measure (*alpha* = .83).

Personal sexual knowledge. Participants' personal sexual knowledge about behaviors that they find pleasurable was assessed using a scale of four items introduced by La France (2010): (1) I know what types of behaviors lead me to orgasm, (2) I am familiar with types of touch that make me excited sexually, (3) I know what turns me on sexually, and (4) I can identify the things that satisfy me sexually. Participants were asked to rate each question on a scale from 1 to 5 (1=strongly disagree to 5=strongly agree), and an average score was calculated. Higher

scores indicate greater levels of personal sexual knowledge. La France (2010) reported adequate internal consistency (*alpha* = .87) for this measure.

Sexual assertiveness. To determine participants' ability to communicate sexual needs and desires to a potential sex partner, Hurlbert's Index of Sexual Assertiveness was used (Hurlbert, 1991). Hurlbert's Index of Sexual Assertiveness is a 25-item self-report questionnaire which assesses an individual's ability to assert themselves during sexual encounters, that is to initiate or refuse sex and to engage in sexual satisfaction communication (e.g., "I feel comfortable telling my partner how to touch me", and "I communicate my sexual desires to my partner"). On a 5-point scale, items are rated from "never" (0) to "all the time" (4) and a total score of 100 can be obtained. Pierce and Hurlbert (1999) reported adequate test-retest reliability for this measure within a clinical and a non-clinical sample (*alpha* = .85).

Sexual competence. To measure sexual competence, the Basic Need Satisfaction in Relationships questionnaire by La Guardia, Ryan, Couchman, and Deci (2000) was used. This questionnaire was developed to assess need satisfaction in particular relationships. LaGuardia and colleagues (2000) reported adequate internal consistency for this measure across different relationships (*alpha* = .85-.94). It consists of nine items, with three items for each basic need (i.e., autonomy, competence, and relatedness). Each item begins with "When I am with XXXXX, …." For the purpose of this study, only the three items of the competence scale were used, and the beginning of each item was changed to fit the sexual context: "When I am engaging in sexual activities, … (1) I feel like a competent person, (2) I often feel inadequate or incompetent (R), and (3) I feel very capable and effective." Items were rated on a 7-point scale, from "not at all true" (1) to "very true" (7), and an average score was calculated. Higher scores indicate greater levels of sexual competence.

Sexual satisfaction. Sexual satisfaction was assessed using the New Sexual Satisfaction Scale (NSSS; Štulhofer, Buško, & Brouillard, 2010). The NSSS is a 20-item measure of sexual satisfaction and items are rated on a 5-point scale (1=not at all satisfied to 5=extremely satisfied), with a possible total score of 100. The measure asks participants to think about their sex life during the last six months, and rate their satisfaction with certain aspects of it (e.g., "The quality of my orgasms," "My mood after sexual activity," and "My partner's sexual creativity"). The measure consists of two subscales with 10-items each: (1) focused on self ("ego-centered"), and (2) focused on the other ("partner- and sexual activity-centered"). Štulhofer et al. (2010) reported high internal consistency for the NSSS across different samples (*alpha* = .94-.96).

Socio-Demographics. Participants completed a questionnaire asking about age, gender, race/ethnicity, relationship status, sexual orientation, sex education experience, and sexual activities over the past six months.

Procedure

This study was approved by the university's Institutional Review Board (IRB). Participants were recruited during the fall and spring semester of the 2017/2018 academic year via SONA Systems, an online recruiting and participant management system. To obtain control of the testing environment, participants were asked to come the Department of Psychology's computer lab to complete the survey after signing up for a time slot of their choosing. Each participant was seated in front of a computer and directed via a link to the online survey designed in Qualtrics, an online survey tool. Participants were presented with a consent form on the screen, which informed them about the voluntary and anonymous nature of their participation as well as the sensitive nature of the survey. Participants were warned about possible discomfort answering questions about sex. They were required to provide informed consent for their

participation by checking a box. Participants were provided with the option to discontinue the survey at any point in time without penalty.

To avoid effects of order in which the measures were presented, the main measures (i.e., sexual health knowledge, personal sexual knowledge, sexual assertiveness, sexual competence, and sexual satisfaction) were presented to the participants in randomized order, using a survey flow randomizer provided by Qualtrics. The demographics questionnaire was presented as the final measure to each participant. To help with data screening and identifying inattentive and careless responses, six bogus questions/ attention check items (Meade & Craig, 2012; DeSimone, Harms, & DeSimone, 2014) were placed randomly throughout the survey (e.g., "I am using a computer currently," or "If you are reading this, answer "a little satisfied").

Upon completion of all questionnaires, participants were thanked for their participation and were provided with a list of psychological services available to them locally in case the content of the survey had led to any type of distress. Participants received one research credit hour for completing the survey.

Statistical Analyses

Following data collection, the Statistical Package for the Social Science (SPSS), Volume 22, was used for statistical data screening and analyses. Each measure was scored using the scoring guidelines reported in the respective measure development study. For the measures of sexual health knowledge, sexual assertiveness, and sexual satisfaction, a total score was calculated. Personal sexual knowledge and sexual competence were calculated as an average score. Descriptive analyses (e.g., mean and standard deviation) were conducted and each measure was screened for outliers, skewness, and kurtosis (Tabachnick & Fidell, 2012). Further, participants were screened according to the inclusion criteria (sexual activity level, age, and

attention). Correlational analyses were conducted to determine the relationship between the two measures of sexual knowledge (health vs. personal) and to investigate the relationship between the other main variables. PROCESS for SPSS (Hayes, 2013) was used to examine the proposed relationship between sexual knowledge, sexual assertiveness, sexual competence, and sexual satisfaction. In PROCESS, model 6 (see Figure 2) was chosen to perform two serial mediator analyses with bias-corrected 95 percent confidence intervals using bootstrapping with 10,000 resamples. Standardized coefficients were calculated automatically through PROCESS for indirect effects and manually for all direct effects using the complete standardization method in which the effects are multiplied by the quotient of the standard deviation of the *X* variable divided by the standard deviation of the *Y* variable.

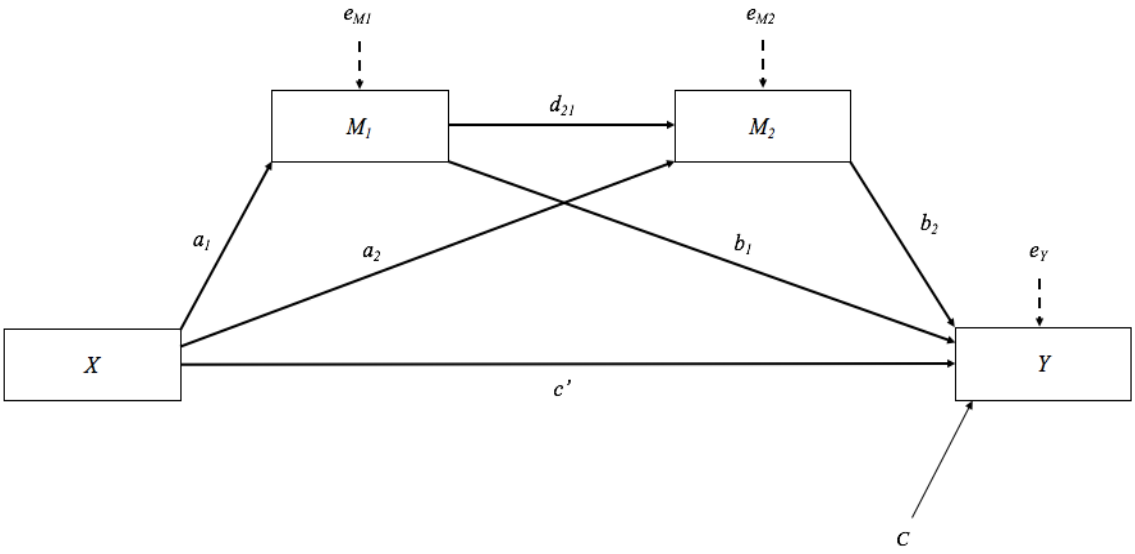

Figure 2. Statistical diagram of the serial two mediator model. *X* = independent variable, *Y* = dependent variable, *M* = mediator, *C* = covariate, and a_1, a_2, b_1, b_2, c', d_{21} = regression coefficients.

III. RESULTS

Descriptive Analyses

Means, standard deviations, and internal consistencies were calculated for each measure (see Table 1). Overall, internal consistency scores can be considered adequate for each measure used in this study (Tavakol & Dennick, 2011).

Table 1

Means, standard deviations, and internal consistencies for the key variables

Measure	*N*	*Mean (SD)*	*Range*	*Cronbach's alpha*
Sexual Knowledge - Health	347	34.10 (6.27)	17-49	0.76
Reproductive Health	348	5.34 (1.78)	0-10	0.39
Contraception	348	3.82 (1.56)	0-7	0.43
Condom Use	348	6.27 (1.63)	1-9	0.36
STDs	348	7.51 (1.77)	2-12	0.51
HIV/ ADIS	347	11.17 (2.52)	3-17	0.55
Sexual Knowledge - Personal	348	4.28 (0.55)	2.25-5	0.82
Sexual Assertiveness	348	67.26 (12.66)	21-95	0.86
Sexual Competence	348	5.56 (0.98)	2.33-7	0.72
Sexual Satisfaction	347	73.02 (14.06)	29-100	0.94

During development of the sexual health knowledge measure, Weinstein and colleagues (2008) reported a mean of 35.31 out of 56 (*SD* = 7.21) for their sample of college students, which they described as an indicator of poor understanding of sexual health issues. In the present study, participants obtained a mean of 34.10 (61.82% correct responses) on this measure, suggesting a rather low level of sexual health knowledge. This is consistent with the low rate of prior sex education reported by this sample. In contrast, participants reported an overall high level personal sexual knowledge, with a mean of 4.28 out of 5 (*SD* = 0.55).

In the development and validation study of the New Sexual Satisfaction Scale (Štulhofer, Buško, & Brouillard, 2010) a mean of 74.07 (*SD* = 15.36) was reported for a sample of US students, leaning toward more sexual satisfaction. In the present study, participants obtained a similar mean score of 73.02 (*SD* = 14.06). For sexual assertiveness and competence, participants also reported scores leaning towards higher levels, suggesting adequate levels assertiveness and competence (see Table 1).

Correlational Analyses

To test hypothesis 1 and explore the relationship between the main variables, correlations were calculated (see Table 2).

Table 2

Summary of intercorrelations between main variables

Measure	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
1. SK-H	1									
2. RH	.656**	1								
3. Contr	.661**	.379**	1							
4. Cond	.619**	.286**	.331**	1						
5. STDs	.711**	.315**	.405**	.339**	1					
6. HIV	.725**	.299**	.274**	.252**	.378**	1				
7. SK-P	.076	.018	.023	.051	.036	.102	1			
8. A	.060	-.011	.043	.039	.045	.072	.526**	1		
9. C	.172**	.126*	.093	.171**	.076	.115*	.373**	.557**	1	
10. S	.026	-.046	-.024	.018	.035	.074	.467**	.585**	.463**	1

Note. $N = 348$ for all variables except HIV, SK-H, S for which $N = 347(346)$. Main variables 1-10: sexual health knowledge, reproductive health, contraception, condom use, sexually transmitted diseases, HIV/AIDS, personal sexual knowledge, sexual assertiveness, sexual competence, and sexual satisfaction.
**Correlation is significant at the 0.01 level (2-tailed)
*Correlation is significant at the 0.05 level (2-tailed)

All subscales of the sexual health knowledge questionnaire were significantly inter-correlated. Failing to support hypothesis 1, the two types of sexual knowledge assessed in this study, health and personal, were not associated with each other. However, both were significantly associated with sexual competence. More specifically, the subscales reproductive health, condom use, and HIV/AIDS knowledge resulted in significant positive correlations with sexual competence. Despite the positive relationship with sexual competence, sexual health knowledge was not associated with any of the other outcome measures. In contrast, personal sexual knowledge was significantly correlated with sexual assertiveness and sexual satisfaction. Finally, sexual assertiveness was significantly associated with sexual competence, and both were significantly correlated with sexual satisfaction.

Mediation Analyses

To test the proposed hypotheses 2 through 5, two serial multiple mediation analyses were conducted using sexual knowledge (personal or health) as the independent variables, sexual assertiveness as the first mediator and sexual competence as the second mediator, and sexual satisfaction as the dependent variable. For the model with personal sexual knowledge as the independent variable, sexual health knowledge was statistically controlled by treating it as a covariate, and vice versa.

Personal Sexual Knowledge Mediation Model. Figure 3 shows the first serial mediation analysis, in which personal sexual knowledge (X) is modeled as affecting sexual satisfaction (Y) directly and through three indirect pathways. In the first pathway, personal sexual knowledge is modeled to have an effect on sexual assertiveness (M_1), which in turn affects sexual satisfaction (X). Secondly, personal sexual knowledge (X) is modeled to affect sexual competence (M_2), which in turn affects sexual satisfaction (X). Third, personal sexual knowledge is modeled to have an effect on sexual assertiveness (M_1), which effects sexual competence (M_2), which in turn affects sexual satisfaction (X). The final path shows the proposed direct effect of personal sexual knowledge on sexual satisfaction.

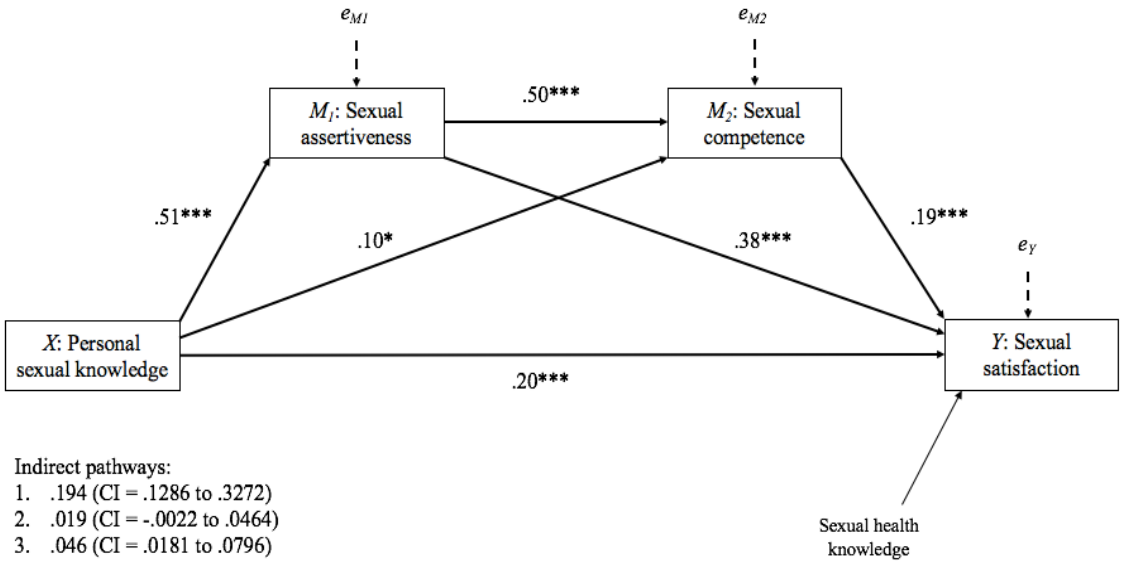

Figure 3. Statistical diagram of the effect of personal sexual knowledge on sexual satisfaction through two serial mediators, sexual assertiveness and sexual competence. Path values and indirect pathways show standardized regression coefficients. The effect of sexual health knowledge on sexual satisfaction was statistically controlled.
$N = 346$. *** = $p < .001$ and * = $p < .05$.

As shown in Table 3, personal sexual knowledge was a significant predictor of sexual assertiveness ($a_1 = 11.679$, $SE = 1.048$, $t = 11.148$, $p < .001$), sexual competence ($a_2 = .181$, $SE = .092$, $t = 1.974$, $p = .049$), and sexual satisfaction ($c' = 5.164$, $SE = 1.264$, $t = 4.087$, $p < .001$). Further, sexual assertiveness significantly predicted sexual competence ($d_{21} = .038$, $SE = .004$, $t = 9.298$, $p < .001$) and sexual satisfaction ($b_1 = .422$, $SE = .062$, $t = 6.794$, $p < .001$). Finally, sexual competence had a significant direct effect on sexual satisfaction ($b_2 = 2.667$, $SE = .741$, $t = 3.602$, $p < .001$).

The indirect effect of personal sexual knowledge on sexual satisfaction, through assertiveness and competence, was significant, with bootstrap 95 percent confidence intervals entirely above zero ($a_1 d_{21} b_2 = 1.1731$, $SE = .3978$, CI = .4645 to 2.0199). Additionally, the indirect effect of personal sexual knowledge on sexual satisfaction, through assertiveness only,

was significant, with bootstrap 95 percent confidence intervals entirely above zero (a_1b_1 = 4.927, *SE* = .918, CI = 3.2076 to 6.7928). The indirect path from personal sexual knowledge to sexual satisfaction via competence was not significant (see Table 3).

Table 3

Unstandardized regression coefficients of direct and indirect effects with standard errors, t-values, significance level, and 95% bootstrap confidence intervals for the personal sexual knowledge mediation model

Path	Unstand'd. Coefficient (*SE*)	*t*	*P*	Bootstrap CI's	
				Lower	Upper
c (total effect)	11.749 (1.223)	9.607	<.001	9.3426	14.1531
c' (direct effect) SK-Personal → Satisfaction	5.164 (1.264)	4.087	<.001	2.6789	7.6497
a_1 SK-Personal → Assertiveness	11.679 (1.048)	11.148	<.001	9.6186	13.7401
a_2 SK-Personal → Competence	.181 (.092)	1.974	.049	.0006	.3615
d_{21} Assertiveness → Competence	.038 (.004)	9.298	<.001	.0297	.0456
b_1 Assertiveness → Satisfaction	.422 (.062)	6.794	<.001	.2997	.5440
b_2 Competence → Satisfaction	2.667 (.741)	3.602	<.001	1.2105	4.1238
Indirect effects					
a_1b_1 SK-Personal → Assertiveness → Satisfaction	4.927 (.918)	-	-	3.2076	6.7928
a_2b_2 SK-Personal → Competence → Satisfaction	.483 (.313)	-	-	-.0546	1.1866
$a_1d_{21}b_2$ SK-Personal → Assertiveness → Competence → Satisfaction	1.173 (.398)	-	-	.4645	2.0199
Total indirect effect	6.584 (.914)	-	-	4.8786	8.4605

Model summaries of the regression analyses from this serial mediation showed the following: the model predicting sexual assertiveness via personal sexual knowledge (*X)* and sexual health knowledge (covariate *C*) accounted for 26.8% of the variance in sexual assertiveness (R^2= .268, F (2, 343) = 62.867, $p < .001$). Further, the direct effects of personal sexual knowledge, sexual assertiveness, and sexual health knowledge (*C*) on sexual competence were significant, explaining 32.3% of variance in sexual competence (R^2= .323, F (3, 342) = 54.423, $p < .001$). Finally, the model predicting sexual satisfaction via personal sexual knowledge, sexual assertiveness, and sexual competence (with sexual health knowledge as a covariate) accounted for 39.3% of variance in sexual satisfaction (R^2= .393, F (4, 341) = 55.273, $p < .001$).

Sexual Health Knowledge Mediation Model. The second serial mediation analysis is displayed in Figure 4. Sexual health knowledge (*X*) is modeled as affecting sexual satisfaction (*Y*) directly and through three indirect pathways. In the first pathway, sexual health knowledge is modeled to have an effect on sexual assertiveness (M_1), which in turn affects sexual satisfaction (*X*). Secondly, sexual health knowledge (*X*) is modeled to affect sexual competence (M_2), which in turn affects sexual satisfaction (*X*). Third, sexual health knowledge is modeled to have an effect on sexual assertiveness (M_1), which effects sexual competence (M_2), which affects sexual satisfaction (*X*). The final path shows the proposed direct effect of sexual health knowledge on sexual satisfaction.

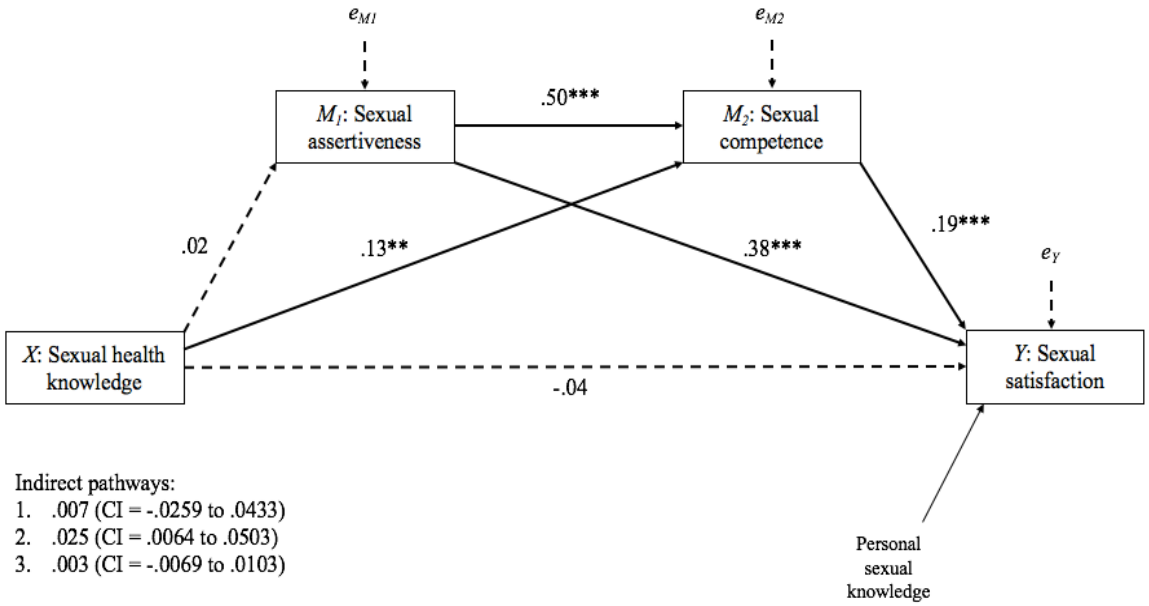

Figure 4. Statistical diagram of the effect of sexual health knowledge on sexual satisfaction through two serial mediators, sexual assertiveness and sexual competence. Path values and indirect pathways show standardized regression coefficients. Dashed line represents non-significant relationship. The effect of personal sexual knowledge on sexual satisfaction was statistically controlled.
$N = 346$. *** = $p < .001$ and ** = $p < .01$.

As listed in Table 4, the indirect effect of sexual health knowledge on sexual satisfaction, through competence, was significant, with 95 percent bootstrap confidence intervals entirely above zero ($a_2b_2 = .055$, $SE = .025$, CI = .4645 to 2.0199). Accordingly, sexual health knowledge had a significant direct effect on sexual competence ($a_2 = .021$, $SE = .007$, $t = 3.013$, $p = .003$) and competence had a significant direct effect on satisfaction ($b_2 = 2.667$, $SE = .741$, $t = 3.602$, $p < .001$). Sexual health knowledge did not have a significant direct effect on sexual assertiveness or sexual satisfaction (see Table 4). The two indirect pathways that went through sexual assertiveness (a_1b_1 and $a_1d_{21}b_2$) were also non-significant (Table 4).

Table 4

Unstandardized regression coefficients of direct and indirect effects with standard errors, t-values, significance level, and 95% bootstrap confidence intervals for the sexual health knowledge mediation model

Path	Unstand'd. Coefficient (*SE*)	*t*	*P*	Bootstrap CI's	
				Lower	Upper
c (total effect)	-.017 (.107)	-.156	.876	-.2278	.1942
c' (direct effect) SH-Personal → Satisfaction	-.091 (.096)	-.955	.340	-.2796	.0969
a_1 SH-Personal → Assertiveness	.037 (.092)	.399	.690	-.1441	.2175
a_2 SH-Personal → Competence	.021 (.007)	3.013	.003	.0072	.0343
d_{21} Assertiveness → Competence	.038 (.004)	9.298	<.001	.0297	.0456
b_1 Assertiveness → Satisfaction	.422 (.062)	6.794	<.001	.2997	.5440
b_2 Competence → Satisfaction	2.667 (.741)	3.602	<.001	1.2105	4.1238
Indirect effects					
a_1b_1 SH-Personal → Assertiveness → Satisfaction	.016 (.039)	-	-	-.0582	.0973
a_2b_2 SH-Personal → Competence → Satisfaction	.055 (.025)	-	-	.0147	.1114
$a_1d_{21}b_2$ SH-Personal → Assertiveness → Competence → Satisfaction	.004 (.009)	-	-	-.0155	.0229
Total indirect effect	.075 (.053)	-	-	-.0279	.1796

Supplemental Analyses

To explore group differences among the main variables, the following socio-demographic variables were chosen based on differences reported for these variables by previous studies:

sexual education experience (Weinstein et al., 2008), relationship status (Birnie-Porter & Hunt, 2015), and gender (Lawrence & Byers, 1995).

Male participants ($M = 4.36$, $SD = 0.52$) reported significantly higher personal sexual knowledge than female participants ($M = 4.22$; $SD = .57$; $t\ (346) = 2.50$, $p < .05$). No gender differences were found for the other outcome measures. Participants who indicated that they had participated in a sexual education class ($M = 34.90$, $SD = 6.13$) had significantly higher scores on the sexual health knowledge measure than participants who had not received any formal sexual education ($M = 33.03$; $SD = 6.34$; $t\ (345) = 2.76$, $p < .01$).

Regarding relationship status, an ANOVA was calculated for each outcome variable, investigating the differences between participants who identified as single, friends-with-benefits, dating, or committed relationship. Married individuals were excluded from these analyses due to small sample size ($n = 2$). Significant group differences were found for each outcome variable; sexual health knowledge ($F\ (3,339) = 3.85$, $p < .05$), personal sexual knowledge ($F\ (3,340) = 5.95$, $p < .01$), sexual assertiveness ($F\ (3,340) = 11.75$, $p < .001$), sexual competence ($F\ (3,340) = 8.19$, $p < .001$), and sexual satisfaction ($F\ (3,339) = 19.01$, $p < .001$).

Post hoc comparisons using the Tukey HSD test indicated that for sexual health knowledge the mean score was significantly higher among participants in a committed relationship ($M = 35.81$, $SD = 6.17$) than singles ($M = 33.25$, $SD = 6.35$) or participants in a dating relationship ($M = 33.07$, $SD = 6.16$). Further, singles ($M = 4.13$, $SD = .56$) reported significantly less personal sexual knowledge than individuals in a friends-with-benefits ($M = 4.38$, $SD = .51$), or committed relationship ($M = 4.41$, $SD = .51$). For sexual assertiveness, singles ($M = 62.54$, $SD = 12.87$) reported being significantly less assertive during sexual encounters than individuals in a dating ($M = 67.32$, $SD = 12.32$), friends-with-benefits ($M = 67.71$, $SD = 11.63$),

or committed relationship (M = 72.34, SD = 11.10). Participants who reported being in a committed relationship also had significantly higher assertiveness scores than participants who were dating (or single). For sexual competence, singles (M = 5.23, SD = 1.03) reported feeling significantly less competent during sexual encounters than individuals in a friends-with-benefits (M = 5.66, SD = 0.84), or committed relationship (M = 5.86, SD = 0.89). Finally, regarding sexual satisfaction, post hoc comparisons showed that singles (M = 65.98, SD = 12.88) reported significantly less sexual satisfaction than individuals in a dating (M = 77.60, SD = 12.11), friends-with-benefits (M = 72.74, SD = 14.43), or committed relationship (M = 77.79, SD = 12.93).

IV. DISCUSSION

This study used a Self-Determination Theory framework (Deci & Ryan, 2002) to investigate how sexual knowledge, assertiveness, and competence relate to young people's satisfaction with their sex life. The purpose of the study was to explore predictors of sexual competence and to differentiate between two types of sexual knowledge (i.e., knowledge about personal sexual behaviors and desires and knowledge about sexual health). Findings from this study support the SDT framework, i.e. sexual competence predicts sexual satisfaction, and lend partial support for the other proposed hypotheses.

The first hypothesis stated that the two types of sexual knowledge measured in this study, health and personal, will be positively correlated with each other. This hypothesis was not supported by the data. Sexual health knowledge and personal sexual knowledge were not significantly correlated. Based on the literature review, the present study is the first to have formally investigated these two types of sexual knowledge together. Past research on sexual health knowledge among young people typically did not investigate its relationship to other types of sexual knowledge (e.g., Synovitz et al., 2002; Weinstein et al., 2008; Martin & Mak, 2013). Similarly, La France (2010) did not consider sexual health when defining sexual knowledge as the "awareness of what sexual desires, feelings, and behaviors one finds pleasurable and arousing" (p. 198). It is possible that the non-significant relationship between the measures is related to the specific sexual health knowledge measure used in this study. Findings may have

been different if the measure had included items on sexual anatomy, external genitalia, the sexual response, etc.

Generally, the current findings suggest that it is important to acknowledge different types of sexual knowledge, and to differentiate accordingly when using the term 'sexual knowledge'. An individual with adequate knowledge about sexual health (e.g., reproduction, condom use) does not necessarily know about their personal sexual desires and needs, and vice versa. Thus, teaching young people about one type of sexual knowledge will not automatically affect their knowledge in other areas of sexuality. When designing new, comprehensive sexual education programs it is especially important to consider these findings and ensure to cover the breadth that entails sexual knowledge.

The second hypothesis proposed that higher levels of sexual knowledge will be related to higher levels of sexual assertiveness during sexual encounters. This hypothesis was supported for personal sexual knowledge, but not sexual health knowledge. Personal sexual knowledge significantly predicted sexual assertiveness in this sample, suggesting that this type of sexual knowledge is important for young people to effectively communicate their needs during sexual encounters. La France (2010), who used the same items to assess (personal) sexual knowledge, reported similar findings; participants who knew about their personal sexual desires reported more willingness to communicate their sexual behavioral preferences compared to participants with less knowledge. The current study offers support for La France's (2010) general suggestion that a person cannot communicate about their sexual behavioral preferences, unless he or she is knowledgeable about them. Furthermore, these findings fit Cupach and Metts's (1991) statement that sexual knowledge can encourage sexual communication. The ability to effectively express and communicate one's sexual needs and desires for the purpose of sexual pleasure has been

linked to many positive outcomes such as greater sexual satisfaction (e.g., Bridges, Lease & Ellison, 2004, Haavio-Mannila & Kontula 1997) and better sexual functioning (Hurlbert, 1991). The current findings highlight the importance of sexual knowledge for effective communication, thus providing guidance on how to support young people in becoming more assertive in pursuit of satisfying sexual experiences.

The non-significant relationship between sexual health knowledge and sexual assertiveness appears to be inconsistent with the literature, but it might be related to the measure of sexual assertiveness which was used in the current study. Previous research on sexual assertiveness often focused on its role and importance for safe sex behaviors. For example, HIV/AIDS prevention programs have been shown to have a positive effect on sexual assertiveness (e.g., Noia & Schinke, 2007; Onuoha & Manukata, 2005). However, the present study was focused on sexual assertiveness for the purpose of sexual pleasure. Hurlbert's Index of Sexual Assertiveness (Pierce & Hurlbert, 1999) was chosen as a measure of sexual assertiveness, because compared to other measures of assertiveness it emphasizes initiation and refusal of desired sex as well as sexual satisfaction communication. However, the index does not include items on contraceptive insistence, like some other measures of sexual assertiveness (e.g., Morokoff et al., 1997). If items about contraceptive insistence had been included, a significant relationship between sexual health knowledge and sexual assertiveness might have been found. Likewise, if the sexual health knowledge questionnaire had included items about sexual behaviors and functioning, such as clitoral stimulation, a relationship between sexual health knowledge and sexual assertiveness might have been established.

According to the third hypothesis, individuals with higher levels of sexual knowledge and sexual assertiveness should report feeling more competent during sexual encounters. As

anticipated, both measures of sexual knowledge, health and personal, and sexual assertiveness were significant predictors of sexual competence. Individuals with more sexual health knowledge, specifically in the areas of reproductive health, condom use, and HIV/AIDS reported feeling more competent during sexual encounters. These findings fit with common ways of measuring sexual competence among young people, which tend to focus on criteria such as 'contraceptive decision' as indicators of sexual competence (Wellings et al., 2001; Palmer et al., 2017). Regarding sexual knowledge of personal desires and needs, individuals with higher levels of knowledge in this area reported feeling more competent as well. Based on the literature review, no previous research has looked at personal sexual knowledge as a predictor of sexual competence. Additionally, results showed that sexual assertiveness was also a significant predictor of sexual competence. Overall, these findings fit with Hirst's (2008) definition of sexual competence, i.e. having the ability, skills or knowledge to successfully engage in sexual encounters. More specifically, the results support Hirst's (2008) suggestion that knowledge should be considered a prerequisite of sexual competence, but it is not the only variable leading to sexual competence. Confident fluency in talking about sex is also important for greater sexual competence (Hirst, 2008). Current findings also fit with the SDT definition of competence, i.e. effectively expressing one's capacities (Deci & Ryan, 2002). Knowing that all three variables are associated with feeling more sexually competent helps extend the literature on sexual competence among young people by acknowledging its relationship to sexual pleasure. Past research in this area commonly conceptualized and measured sexual competence as the absence of regret, willingness, autonomy of decision, and/or reliable use of contraception (Wellings & colleagues, 2001; Palmer et al., 2017). Current findings suggest that sexual competence entails

more than this, such as knowledge about personal sexual desires as well as effective communication for the purpose of pleasure.

Hypothesis 4 proposed that sexual knowledge (personal and health), sexual assertiveness, and sexual competence will be significant predictors of sexual satisfaction. As expected from previous research, personal sexual knowledge (La France, 2010) and sexual assertiveness (e.g., Bridges, Lease & Ellison, 2004; Ménard & Offman, 2009) had significant direct effects on sexual satisfaction. Further, sexual competence significantly predicted sexual satisfaction as proposed by basic needs theory of Self-Determination Theory (Deci & Ryan, 2002). This is consistent with findings from other studies that investigated the role of SDT's basic needs on sexual satisfaction, which found that greater need satisfaction, such as feeling more competent is associated with a more positive sexual experience (e.g., Smith, 2007). Opposite as proposed, sexual health knowledge had no significant direct effect on sexual satisfaction.

The final hypothesis predicted that the relationship between sexual knowledge (personal and health) and sexual satisfaction is serially mediated by sexual assertiveness as the first mediator and sexual competence as the second mediator. For the model of personal sexual knowledge, results supported this hypothesis. Findings suggest that personal sexual knowledge can contribute to being more assertive during sex, which then affects individuals sense of sexual competence. This, in turn, effects their sexual satisfaction. Without sexual assertiveness, the indirect relationship between personal sexual knowledge and sexual satisfaction via sexual competence was not significant. This finding further emphasizes the role and importance of sexual assertiveness in connecting personal sexual knowledge with feeling sexually competent. It also offers support again for Hirst's (2008) statement that sexual knowledge is a prerequisite for sexual competence, but not the only contributing factor. Again, results offer support for SDT

(Ryan & Deci, 2002) in the sexual context. That is, when the basic need of sexual competence is met, through knowledge and assertiveness, then individuals will experience greater sexual satisfaction.

However, a significant direct effect of personal sexual knowledge on satisfaction was also found, which suggests that assertiveness and competence are not the only factors that contribute to the effect personal sexual knowledge has on sexual satisfaction. Other factors, such as sexual attitudes, sexual context, gender, or personal variables may have an influence on this relationship. Research suggests that an individual's values, attitudes, and beliefs about sex can be as important as knowledge regarding an individuals' behavior during sexual encounters (e.g., DeHart & Birkimer, 1997; Sheeran, Abraham, & Orbell, 1999). According to some models of health behaviors, such as the Knowledge-Attitude-Behavior Model (e.g., Baranowski, Cullen, Nicklas, Thompson, & Baranowski, 2003) attitudes play a very important role in navigating the relationship between knowledge and behavior. Societal and community norms help shape individual and partner expectations and behaviors.

Overall, personal sexual knowledge, sexual assertiveness, and sexual competence explained 39% of variance in sexual satisfaction, suggesting that other factors beyond knowledge, assertiveness and competence contribute to sexual satisfaction which were not examined in this study. According to basic needs theory of SDT (Deci & Ryan, 2002), (sexual) competence is only one out of three basic needs that should contribute to (sexual) satisfaction. The other two needs - autonomy and relatedness - also play a role in how satisfied an individual will be with a sexual encounter (Smith, 2007). Although autonomy and relatedness are essential components in SDT, the focus of the present study was to explore different predictors of sexual competence (knowledge and assertiveness).

For the model of sexual health knowledge, findings did not support hypothesis 5, but revealed other results of importance. Sexual health knowledge had a significant indirect effect on sexual satisfaction via sexual competence, but no direct effect on sexual satisfaction. This finding emphasizes the importance of sexual competence in the context of sexual pleasure and offers further support for the postulates of SDT (Deci & Ryan, 2002), that is competence contributes to satisfaction. Overall, findings from the present study offer initial support for the role of sexual health knowledge in the context of sexual satisfaction.

In general, the sample displayed a low level of sexual health knowledge, similar to findings from previous studies (Weinstein et al., 2008; Synovitz, Herbert, Kelley & Carlson, 2002). It is important to mention young people's wide variability of educational experiences, ranging from informal education via parents, peers, or the internet, to abstinence-only and comprehensive education programs offered in schools or the community. Some youth never participate in formal sexual education, because not all states in the U.S. require schools to provide their students with a comprehensive sexual education program and some schools still allow parents to opt-out of sex education on behalf of their children (National Conference of State Legislature, 2016). Therefore, it is not uncommon for young adults in the U.S. to have limited sexual health knowledge. However, as shown in this study, both types of knowledge assessed are important as they relate to sexual competence and satisfaction. Furthermore, participants who had received some type of sexual education in the past performed better on the measure of sexual health knowledge than participants who did not receive any education. This finding offers support for the benefits of sexual education programs for young people, and are consistent with the literature (e.g., Weinstein, Walsh, & Ward 2008). On the other outcome measures, participants reported scores leaned towards the higher end, suggesting that they

generally felt knowledgeable about their personal sexual preferences and needs, tended to assert their preferences during sexual encounters, felt competent during sexual encounters, and felt satisfied, overall, with their sex life. This pattern could potentially be related to a selection bias in that students who were generally more comfortable with talking about sexuality and satisfied with their sex life, were more likely to sign up for this study.

Supplemental gender comparisons showed that male participants reported higher levels of personal sexual knowledge than female participants. A possible explanation for this finding could be more knowledge of anatomy, functioning, and arousal resulting from masturbation, which is more frequent in males (Robbins et al., 2011; Petersen & Hyde, 2010). Men are also exposed to pornography at an earlier age and more frequently than females (Hald, 2006). These behaviors and experiences might have provided them with more opportunities to explore their sexual preferences and desires, likes and dislikes, and what behaviors lead them to orgasm. Finally, participants who identified as single reported overall less personal sexual knowledge, sexual assertiveness, sexual competence, and sexual satisfaction than individuals who were in some type of relationship. This finding could be related to singles having had less sexual encounters (and thus fewer opportunities for practice) over the past six months or the quality of their sexual encounters being different from those within some type of relationship. However, frequency and quality of sexual activity were not assessed during this study. Overall, the present study supports findings from previous studies which report that differences in sexual satisfaction between different types of relationships are modest (Birnie-Porter & Hunt, 2015).

Implications

Findings from the present study highlight the importance of sexual knowledge in young people's sex life, and help understand how to support young people in feeling more sexually

competent and becoming more sexually satisfied. Even though the two types of sexual knowledge investigated in the present study were not associated with each other, the present study was able to link both to sexual competence and sexual satisfaction. Results from the current study suggest that providing young people with adequate knowledge about sexuality, including both, sexual health topics as well as information about sexual desires and needs can assist them in having more pleasurable sexual experiences. Furthermore, encouraging young people to effectively apply their knowledge (with ability and confidence) during sexual encounters can contribute to a higher sense of sexual competence and sexual satisfaction.

Besides the benefit of pleasure itself, sexual satisfaction has been found to enhance physical and psychological health (Cross & Weeks, 2007), and has been shown to be related to increased overall well-being (Dundon & Rellini, 2010), quality of life (Davison et al. 2009), and life satisfaction (Schmiedeberg et al., 2017). However, common sexual education programs do not support young people in learning how to have a pleasurable sexual experience (National Conference of State Legislature, 2016). Practical implications from the current findings are that efforts should be made to expand sex education programs and human sexuality classes to include information about different types of sexual behaviors and sexual arousal, and guidance on how to explore one's personal sexual behavioral preferences and needs. The current study showed that 'knowing what feels good' and being able to say 'I like it like that' will lead to more satisfaction in the sexual context. Sexual education should allow young people to learn about the benefits of personal knowledge and effective communication during sexual encounters.

These suggestions are consistent with findings from previous studies that have asked young people for their opinion about sexual education. Young people tend to think that the content of sexual education does not match their needs and sexual experiences (Goldfarb, 2005).

They want to learn more about common sexual behaviors such as kissing (lips, nipples/breasts, and genitals), masturbation, and oral sex, instead of only learning about vaginal intercourse (Hirst, 2008). Further, they want to become more comfortable with their sexuality, make good decisions regarding their sexuality, have greater insight and understanding into their own bodies, become better at communicating about sexuality, and apply what they have learned in real life (Goldfarb, 2005). Sex education should consist of information that is relevant and useful for young people's sexual life (Baber & Murray, 2001). Other countries' approaches to sexual education could serve as a guideline for improving programs and classes. For example, according to anthropological research, some cultures and communities in Polynesia and Africa actively encourage adolescent pleasure-seeking, sexual behaviors though various practices and rituals (e.g., Levay, Baldwin, & Baldwin, 2015). Countries such as France, Australia, and the Netherlands are referred to as 'sex positive' because they have adopted comprehensive sex education policies that emphasize a non-judgmental approach to teaching young people about sex and focus on empowerment. These approaches do cover sexual risks and prevention, yet they also include anatomy, sexual functioning, and the positive benefits of sex and sexual relationships. Research suggest that countries with such sex positive policies have better sexual health related statistics than countries with an abstinence-only or abstinence-plus approach (Weaver, Smith, & Kippax, 2005).

Comprehensive sexuality courses as offered at the college-level could also be helpful when designing new sex education programs and classes. These types of courses typically include topics beyond sexual health, such as sexual attraction, arousal, behavior and relationships, as well as atypical sexuality and sexual minorities (e.g., Levay, Baldwin, & Baldwin, 2015), and they encourage personal knowledge and communication. Research suggest

that college-level human sexuality courses contribute to many positive outcomes such as feeling more comfortable talking about sexuality in general, being more open to trying new sexual behaviors, improvement in communicating sexual desires, increased ability to refuse unwanted sex, or increased sexual pleasure (Henry, 2013). Ideally, an open dialogue between young people and educators should take place to improve the ways and content of teaching about sexuality.

Limitations

This study also has several limitations. Data was collected at a single time point without any experimental manipulation. No statements about how these concepts hold over time, such as daily levels of sexual competence and satisfaction can be made from this data. Random selection was not implemented, and participants consisted of undergraduate students from a medium-sized university in the Southern U.S. only. The sample was predominantly Caucasian and heterosexual. One must be cautious when generalizing findings from this study to other young people in the U.S. Further, participants were not asked about the frequency of sexual activity over the past six months. No interpretation about how frequency of sexual activity relates to the outcome variables of interest can be drawn from this data. Additionally, some of the measures used in this study did not cover every area of the concept assessed. For example, the measure of sexual assertiveness did not include items on contraceptive insistence and the sexual health knowledge questionnaire did not include items on sexual anatomy, such genitals and sexual arousal. Findings may have been different if these areas had been covered. Finally, besides the sexual health knowledge measure, all measures used were self–report. Social desirability may have influenced the participants' responses to the questions, potentially leading to the overall high levels of personal sexual knowledge, assertiveness, competence, and satisfaction reported by this group or the gender differences found for personal sexual knowledge. Meston, Heiman,

Trapnell, and Paulhus (1998) found that even under anonymous testing conditions, response bias can influence sex survey data in a socially desirable direction. Despite these limitations, the study yields promising findings to help advance research on young people's sexuality and promote better sexual education. Using an already established theoretical framework (SDT; Deci & Ryan, 2002), the present study extends the literature on sexual competence among young people by placing it in the context of sexual satisfaction, and emphasizing new predictors such as knowledge and assertiveness for the purpose of sexual pleasure.

Future Directions

Future research efforts should continue to focus on differentiating between types of sexual knowledge and how to appropriately define, assess, and teach about them. Besides knowledge about sexual health and personal sexual preferences and desires, topics such as sexual anatomy, sexual behaviors, sexual attraction and sexual arousal should be considered.

Future studies may also include a more comprehensive measure for sexual assertiveness to test its relationship with sexual health knowledge, sexual competence, and sexual satisfaction. Further research may seek to investigate how the relationship between sexual knowledge (personal and health), sexual assertiveness, sexual competence, and sexual satisfaction holds over time, and what role frequency of sexual activity plays within the proposed model. Hirst (2008) suggested that sexual competence is not present all the time, but rather changes depending on the sexual context (e.g., place, time, sexual partner). Furthermore, research suggests that variables such as attitudes and beliefs about sex can influence individuals' behavior during sexual encounters (e.g., DeHart & Birkimer, 1997; Sheeran, Abraham, & Orbell, 1999). For example, stronger religious beliefs have been linked to more conservative sexual attitudes (Beckwith & Morrow, 2005; Brelsford, Luquis, & Murray-Swank, 2011), lower frequency of

sexual activity (Penhollow, Young, & Denny, 2005), and lower levels of sexual satisfaction (e.g., Higgins, Trussell, Morrer, & Davidson, 2010).

The present study took place at a medium-sized university in the Southern U.S. The sample consisted of only undergraduates who were predominantly Caucasian, mostly identified as heterosexual, and only half of them had participated in a sexual education class. According to SDT (Deci & Ryan, 2002), the relationship between competence and satisfaction should not be affected by such variables. However, it possible that the predictors of sexual competence investigated in this study (knowledge and assertiveness) change within different populations or their relationship may be affected by personal, social, or cultural variables. Future research may test how the relationship between these variables holds within other populations of young people. This type of information can be used to tailor sex education programs to different groups of young people (e.g., guiding the type of message, content, context, and delivery).

Finally, future research may want to focus on exploring the role of the other two basic needs of SDT (Deci & Ryan, 2002), autonomy and relatedness, and how these relate to young people's sex life. Specifically, efforts should be made to investigate how to support young people in meeting these needs for the purpose of a positive, satisfying sexual experience.

V. CONCLUSION

Findings from this study add to the literature of young people's sexuality by shifting away from a disease and risk focused approach, and highlighting variables such as sexual knowledge, assertiveness, and competence in the context of sexual pleasure. Personal sexual knowledge, i.e. 'knowing what feels good' was found to be a significant predictor of sexual assertiveness, sexual competence, and sexual satisfaction. Findings suggest that personal sexual knowledge helps young adults be more assertive during sexual encounters, which in turn leads to feeling more sexually competent, and ultimately, as proposed by SDT to more sexual satisfaction. Additionally, this study was the first to link sexual health knowledge to sexual satisfaction, using the SDT framework (Deci & Ryan, 2002). Sexual health knowledge was found to be a significant predictor of sexual competence, which in turn led to higher levels of sexual satisfaction. Findings from this study offer practical implications for improving sex education programs and human sexuality classes by focusing on multiple types of sexual knowledge and teaching young people how to effectively communicate their needs and desires during sexual encounters.

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Administration of assessment measures, clinical interviewing, comprehensive report writing, interdisciplinary staffing, and family feedback through the following interdisciplinary clinics:
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- *Child Development Clinic*
- *Multiple Disabilities Clinic*
- *Preschool and School-Age Autism Clinics*
- *Psychoeducation Clinic*
- *Behavior Assessment Clinic*

Group leader for *Program for the Education and Enrichment of Relational Skills* (PEERS).

Provide parent behavior management training and individual therapy to families in the Birmingham community.

04/2019 – 07/2019 **Department of Veterans Affairs,** Outpatient Post-Traumatic Stress Disorder Clinic, Bimingham, AL
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Provide outpatient treatment for post-traumatic stress disorder (PTSD) and co-morbid disorders to adult veterans.

12/2018 – 03/2019 **Children's of Alabama**, Birmingham, AL
Psychology Predoctoral Intern
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Provide psychological consultation regarding behavioral and emotional functioning to medical and other providers on units throughout the hospital.
Co-facilitate a dialectical behavioral therapy (DBT) group for adolescents.

08/2018 – 11/2019 **Glenwood Autism & Behavioral Health Center**, Birmingham, AL

Psychology Predoctoral Intern
Supervisors: Laura Stoppelbein, Ph.D. and Blake Ford, Ph.D.

Assist in comprehensive evaluations for children and adolescents suspected of having autism spectrum disorder, or other developmental, behavioral, or emotional difficulties. Tasks include administration of assessment measures, clinical interviewing, comprehensive report writing, and family feedback.

09/2017 – 07/2018 **Stonewater Adolescent Addiction Recovery**, Oxford, MS
Graduate Therapist and Psychological Examiner
Supervisor: Scott Gustafson, Ph.D.

Administered comprehensive evaluations to patients to assess their overall level of functioning and help guide treatment. Tasks included administration of assessment measures, clinical interviewing, comprehensive report writing, and participation in interdisciplinary staff meetings. Facilitated group therapy (e.g., dialectical behavioral therapy, DBT) and individual therapy for patients with focus on addiction.

07/2016 – 06/2018 **University of Mississippi Psychological Assessment Center**, University, MS
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Conducted comprehensive evaluations with adolescents and young adults suspected of having developmental, learning, behavioral, or emotional difficulties. Tasks included administration of assessment measures, clinical interviewing, comprehensive report writing, and feedback.

03/2015 – 06/2018 **University of Mississippi Psychological Services Center**, University, MS
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Provided individual cognitive-behavioral therapy (CBT), behavioral therapy, and dialectical behavioral therapy (DBT) for university and community outpatient adults and children.

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09/2016 – 08/2017 **St. Jude Children's Research Hospital**, Memphis, TN
Department of Psychology, Neuropsychology Clinic
Graduate Psychological Examiner
Supervisors: Darcy Raches, Ph.D., & Lisa Jacola, Ph.D.

Conducted neuropsychological screeners for children and adolescents with sickle cell disease, and full-battery neuropsychological assessments for children, adolescents, and young adults.

08/2014 – 05/2017 **International Programs**, University of Mississippi, University, MS
Co-facilitator of two Cultural Connections programs
Supervisor: Laura R. Johnson, Ph.D.

Facilitated bi-weekly support groups for the international student community to discuss acculturation, learn about cultures and diversity, connect with others, and cope with acculturative stress.

01/2016 – 06/2016 **DeSoto County Schools**, DeSoto, MS
Psychometrist
Supervisor: Shannon Sharp, Ph.D.

Conducted school assessments with children and adolescents who needed to be evaluated for special education services (IEP or 504 Plan).

07/2015 – 06/2016 **Autism Center of North Mississippi**, Tupelo, MS
Diagnostic Services Intern
Supervisor: J. Scott Bethay, Ph.D., BCBA

Conducted comprehensive evaluations with children, adolescents, and young adults suspected of having autism spectrum disorder, or other developmental, behavioral, and emotional difficulties. Tasks included administration of assessment measures, clinical interviewing, comprehensive report writing, attending of IEP meetings, and feedback.

Facilitated a parent training workshop for families in the community.

02/2013 – 07/2014 **University of Cologne Children's Research Hospital**, Interdisciplinary Social-Pediatric Outpatient Clinic, Cologne, Germany
Psychometrist
Supervisor: Tanos Freiha, Ph.D.

Conducted comprehensive evaluations with children and adolescents suspected of having developmental, behavioral, or emotional difficulties. Tasks included administration of assessment measures, clinical

interviewing, comprehensive report writing, family feedback, and participation in interdisciplinary staff meetings.

Research Experience

08/2014 – present **University of Mississippi**, University, MS
Department of Psychology, NICE lab
Graduate Research Assistant

Supervisor: Laura R. Johnson, Ph.D.
Collaborated on research in positive youth development, study abroad, acculturation, and cultural competency.

01/2013 – 05/2013 **University of Bonn Research Hospital**, Bonn, Germany
Clinic for Psychosomatic Medicine and Psychotherapy
Research Assistant
Supervisor: Franziska Geiser, MD

Collaborated on a research project on mimicry in patient-physician interactions.

03/2010 - 09/2012 **University of Bonn**, Bonn, Germany
Department of Psychology, Developmental Psychology Lab
Undergraduate and Graduate Research Assistant
Supervisor: Michael Kavsek, Ph.D.

Collaborated in research on visual perception in children using an eye tracking system, and cognitive difficulties in children born preterm.

03/2011 – 07/2011 **University of Bonn**, Bonn, Germany
Department of Psychology, Educational Psychology Lab
Supervisor: Udo Kaeser, Ph.D.

Assisted in a research project on burnout among teachers. Helped with literature review, data cleaning and analysis, and write-up.

Publications in Peer Reviewed Journal

Johnson, L**., Seifen, T**., Sandhu, D., Arbles, N., & Makino, H. (2018). Using a participatory approach and mixed methods to develop culturally responsive programs for international student adjustment. *Journal of International Students, 8*(4), 2166-3750.

Bastien, G., **Seifen, T**., & Johnson R. (2018). Striving for success: Academic adjustment in international students in the U.S. *Journal of International Students*, *8*(2), 2166-3750.

Hebert, E., **Seifen**, T., & Gross, A. (2017). The DATA model for teaching preschoolers with

autism – book review. *The Behavior Analyst*. (review of the book *The DATA Model for Teaching Preschoolers with Autism* by Schwartz, I., Ashmun, J., McBride, B., Scott, C., & Sandall, S., 2017. Baltimore, Maryland: Paul H. Brookes Publishing Co.)

Poster Presentations

Seifen, T., & Johnson, Y. (2017, March). *Improving parental distress and child behavior: a brief, group-based training.* Poster presented at Southeastern Psychology Association Annual Meeting, Atlanta, GA.

Seifen, T., Rodriguez, R., Hirschel M., & Johnson, L. (2016, March). *International students' challenges with adjustment: a comprehensive model of the relationship between acculturative stress, discrimination, and psychological health.* Poster presented at the UM/UMMC Research Day in Jackson, MS.

Seifen, T., Braun, S., Mehler, K., Kribs, A., Roth, B., & Kavšek, M. (2013, June). *Mental rotation performance in children born preterm vs. full-term.* Poster presented at the Neonatology And Pediatric Medicine Convention, Freiburg, Germany.

Oral Presentations

Seifen, T. (2017, July). *Sickle cell disease screener – a case presentation.* Presented at the psychology rounds of the Department of Psychology at St. Jude Children's Research Hospital, Memphis, TN.

Johnson, Y., & **Seifen, T.** (2017, April). *Improvement of parent stress and child behavior through a brief group-based parent training using the MATCH-ADTC.* Data Blitz presented at the 3rd Annual University of Mississippi Conference for Psychological Sciences, Oxford, MS.

Rodriguez, Y. & **Seifen, T.** (2016). *Study Abroad: An analysis of students'experiences.* Research symposium presented at the 2nd Annual University of Mississippi Conference of Psychological Science, Oxford, MS.

Johnson, Y., & **Seifen T.** (2016, April). *Evaluation of the MATCH-ADTC protocol in a brief, group-based parent training: A pilot study.* Research presented at the 2nd Annual University of Mississippi Conference for Psychological Sciences, Oxford, MS.

Seifen, T. (2013, March). *Mental rotation performance in preterm children.* Thesis presented at the Regional Developmental Psychology Meeting, Muenster, Germany.

Reviewing Experience

Ad Hoc reviewer with Dr. Alan Gross in the following journal:
Clinical Case Studies
(Manuscript: Parent-Child Care (PC-CARE) as a Brief Dyadic Intervention

for Children with Mild to Moderate Externalizing Problems: A Case Study)

Independent reviewer:
Journal of International Students

Professional Membership

Southeastern Psychological Association (SEPA)

Funded Grants

Principal Investigator. *Empowering You Parent Training Workshop*. Mississippi Council on Developmental Disabilities. (01/01/2016-09/30/2016). $10,000.

Activities and Leadership Experience

Co-facilitator of ***pre-departure cross-cultural orientation*** and ***re-entry workshop*** for the **Croft Institute of International Studies** with Laura R. Johnson, Ph.D., University of MS, 09/2014-05/2016.

Development of a ***Parenting Training Workshop - Empowering You*** offered at the Autism Center of North MS, 2/2016-5/2016.

Training in Leadership Education in Neurodevelopmental and Related Disabilities (LEND) at UAB Civitan-Sparks Clinics under the supervision of Dr. Sarah O'Kelley. 08/2018 – present.

Seminars and Workshops

Motivational Interviewing Workshop (October 26, 2018). Sponsored by the University of Alabama at Birmingham.

Acceptance and Commitment Therapy (Spring 2017). Seminar taught by Kelly Wilson, PhD.

Media Appearances

Interview on WTVA 9 News (March 7, 2016): *Empowering You Parent Training Workshop.* Tupelo, MS.