

College Students' Online Pornography Use: Contrasting General and Specific Structural Variables with Social Learning Variables

Danielle Tolson Cooper¹ · Jennifer L. Klein²

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Abstract This research partially tests Akers' social structure-social learning theory (SSSL). The data was collected online through a self-report questionnaire and nearly half (48.8%) of the sample of 812 college students reported visiting a porn site. To better understand this self-report behavior, bivariate correlations and three binary logistic regression analyses were conducted. In Model A, participants who were male, Hispanic, had more years in college, and more inclined toward homosexuality had an increased likelihood of visiting a porn site. In Model B, again, gender, ethnicity, year in school, and the sexuality scale were significant predictors. However, race appeared as significant for the first time along with number of sex partners, and frequency of masturbation, indicating that participants who were Black, had a greater number of sexual partners, and masturbated more frequently had an increased likelihood of visiting porn site. As with the first and second models, gender, race, sexuality scale, and frequency of masturbation were significant predictors in Model C. Additionally, differential peer association, differential reinforcement, and definitions favorable were significant, indicating that participants who had greater association with peers who viewed porn, who had observed someone watching porn and decided to mimic their behaviors, and who had defined visiting porn sites favorably had an increased likelihood of visiting a porn site. Overall, Akers' SLT variables fully mediated ethnicity, year in school, and number of sex partners, but it only partially mediated gender, race, and sexuality scale.

Keywords Social learning theory · Social structure · Gender · Pornography · Mediation

✉ Danielle Tolson Cooper
dcooper@newhaven.edu

Jennifer L. Klein
jenniferklein@uttyler.edu

¹ Henry C. Lee College of Criminal Justice and Forensic Sciences, University of New Haven, 300 Boston Post Road, South Campus Hall, West Haven, CT 06515, USA

² Department of Social Sciences, Division of Criminal Justice, University of Texas at Tyler, 3900 University Blvd., Tyler, TX 75799, USA

Introduction

Concern for the creation and viewing of erotic materials (furthermore referenced as “pornography” or “porn”) predates the development of the world wide web in 1990 (Wall, 2003), and the technology, such as computers, cell phones, and tablets, to access online materials (Buzzell, 2005). However, with the invention of these technologies came the expansion of digital media, allowing for easier access to an increasing array of pornography (Buzzell, Foss, & Middleton, 2006). The invention of the Internet further allowed for the creation of new social connections, marketplaces, and informational sources that assisted curious individuals in finding pornography to explore their sexuality (Cooper, 1998). These changes in technology have resulted in a rapidly growing number of individuals who utilize materials created by the porn industry over the past few decades (Buzzell, 2005). For example, as one of the most popular globally-accessed pornography websites, PornHub.com serves billions of people around the world and millions of people throughout the United States (Pornhub.com, 2017).

Today, more people than ever before are viewing pornography (online and offline), and viewer’s demographic characteristics have become more diverse, specifically across gender and race (Mowlabocus & Wood, 2015). In most public settings, viewing pornographic materials of any kind has been labeled as unacceptable, deviant, and sometimes even criminal, depending on the type of pornography being viewed (Diamond, 2009). However, in environments that are more private, viewing porn has become more culturally acceptable in the United States. The viewing of porn is even encouraged by some scholars as an act of empowerment to build self-esteem and comfort in one’s sexuality (Weinberg, Williams, Kleiner, & Irizarry, 2010). It has also aided some individuals in sexual identity exploration and sexual education (for example, see Rothman, Kaczmarzsky, Burke, Jansen, & Baughman, 2015).

The current study utilizes a sample of young adults (aged 18 to 25) enrolled in college to explore their engagement in visiting pornography websites. Specifically, the study addresses three research questions. First, do demographic characteristics predict whether college students visit porn websites? Second, do sexual activity/relationship characteristics predict whether college students visit porn websites, mediating the effect of the demographic characteristics? Third, do social learning processes predict whether college students visit porn websites, mediating the effect of demographic characteristics and sexual activity/relationship characteristics?

The researchers have approached the research questions by fully testing the four core constructs of Ronald Akers’ social learning theory. Additionally, a partial test of Akers’ social structure-social learning (SSSL) theory has also been incorporated into the study, which provides consideration for structural (group and organizational level) and processual (individual level) factors. SSSL theory additionally states that those structural variables significant in the model should experience a reduction in effect (mediation), specifically when considered alongside social learning process variables. This study contributes to the limited published research that has applied theoretical frameworks to online pornography use of college students (for example, see incorporation of self-control as the theoretical framework in Buzzell et al., 2006). Prior literature relating to the predictor variables, outcomes of interest, and the theoretical framework provided by SSSL theory are discussed below.

Literature Review

While many older adults who view porn continue to view it through traditional means (e.g., print and hard-copy video), older teens and young adults are contributing to the growing proportion of online porn viewers (Mowlabocus & Wood, 2015). Pornhub.com's *2016 Year in Review* finds that 18–24 year olds make up 31% of the website's global visitors, and that a slightly higher percentage (33%) of 18–24 year old viewers reside in the United States (see user information available at Pornhub.com, 2017). Overall, the younger adults use cellphones at a higher rate, which make it easier to access porn from almost anywhere (Lenhart, Purcell, Smith, & Zickuhr, 2010). The changing dynamic of pornography use amount younger individuals may also be influenced by the interactions that they are having with peers. The college environment is often a place in which young adults can experiment and try new activities that they may have never engaged in before leaving home.

Emerging Adults in the College Environment

Among youths and young adults, The Pew Research Center's *Internet & American Life Project* found that frequency of daily Internet use, wireless access to the Internet, and cellphone, computer, mp3 player, and gaming platform ownership are all positively correlated with education levels (Lenhart et al., 2010). This increased access to digital media through Internet-ready devices has made observing pornographic materials easier and more acceptable for people to do within their homes, and privately, while in a public area (Buzzell, 2005; Diamond, 2009; Kammeyer, 2008).

Researchers have already scrutinized college and university environments for their cultures of casual or unplanned unprotected sex, which is exacerbated by the culture of underage drinking and binge drinking (Bersamin, Paschall, Saltz, & Zamboanga, 2011; Hingson, Heeren, Winter, & Wechsler, 2003; White & Hingson, 2014). In *Sex and the Soul, Updated Edition: Juggling Sexuality, Spirituality, Romance, and Religion on America's College Campuses*, the author details a class project at one Catholic university that evolved into over 2500 face-to-face interviews at seven colleges (categorized as Catholic, Evangelical, nonreligious private, and public) throughout the United States (Freitas, 2015). These interviews highlighted that college students' experiences on religiously affiliated campuses are similarly dominated by the culture of sex and partying on campus, similar to their peers at non-religious schools. In addition to the concern stated generally about college students' sexual exploration, members of Greek-letter organizations (fraternities or sororities) have been defined as special populations of concern in terms of drinking behaviors on campus and related negative outcomes, such as increased likelihoods of blackouts, missing class, and even, death (O'Brien et al., 2013; White & Hingson, 2014). Overall, college students' sexual exploration (an activity that, for many, started before college) and their use of technology on- and off-campus (which is a new phenomenon that is constantly changing the landscapes of colleges) has broadened the marketplace to find porn online versus in hard copy format (Buzzell, 2005; Leahy, 2009).

Explanations of Online Porn Use: Gender and Theory

With women now representing more than 50% of undergraduate students in the United States, attending college—like visiting pornography—is no longer as male-dominated as it once was (Goldin, Katz, & Kuziemko, 2006; Mowlabocus & Wood, 2015). In comparison to men, women have expressed more opposition to pornography use over the past few decades, but most recently, the frequency of female porn usage has grown (Lykke & Cohen, 2015). Changes in gender dynamics can be significant in the changing rate of female sexual exploration, particularly in a college setting.

For example, in a study of college students ages 18–26 years old, researchers have examined gender differences in regards to frequency of pornography use; they found a smaller gap between agreeing that viewing pornography was acceptable—67% of men and 49% of women—compared to having reported using pornography of any media type—87% of males and 31% of females (Carroll et al., 2008). While the differences in the perceived acceptability of pornography use was not as stark as it was for the actual act of using pornography, the findings illustrate the different ways in which young adult females are judging the consumption of pornographic materials compared to young adult males. Overall, the younger generation of adult women are viewing porn more frequently than the older generations did when they were at the same age, and younger women are doing it more frequently throughout their lifetime (Diamond, 2009).

Just as researchers have continued to nuance who is using porn and how it is being used, researchers have also explored the connection between using porn and engagement in masturbation (Das, 2007). Similar to watching porn videos, masturbation can be a solo activity or a group activity. Also, it can be used to compensate for a lacking sex life, or to augment an already healthy sex life (Bockting & Coleman, 2013; Regnerus, Price, & Gordon, 2017). In order to better nuance the role of pornography, as well as masturbation, researchers have called for more research that distinguishes what leads an individual to engagement, what context the engagement occurs within, and what outcomes are associated with engagement (Campbell & Kohut, 2017).

In one of the few attempts to provide a theoretical explanation for the use of online pornography among college students, Buzzell et al. (2006) utilized self-control theory as their theoretical framework. Using a sample of undergraduates from a small Midwestern university, the researchers found significant direct effects of low self-control on increased pornography use. They also found that downloading pornography was mediated by gender and self-control. They concluded by calling for additional research that would explore gender-specific mechanisms (Buzzell et al., 2006). The current study responds to their call for additional research by conducting a full test of social learning theory to explore gender differences among those who visit online pornography websites.

Social Learning Theory

Akers' social learning theory has been previously used to examine specific criminal and deviant behaviors, but also claims to be a general theory that can explain a wider array of behaviors (Akers, 1998, 2009). Unfortunately, many of these theoretical tests have been limited to adolescents and their delinquent or criminal behaviors (for a meta-

analysis of studies using Akers' social learning theory, see Pratt et al., 2010). The four core constructs from Akers' social learning theory (differential association, differential reinforcement, imitation/ modeling, and definitions favorable) provide a micro-level framework to examine deviant and non-deviant behaviors (Akers, 1973). The current study focuses on visiting pornography websites—a behavior that is not clearly deviant or criminal, but that has a social stigma associated with it dependent on the type of pornography viewed, and the social situation or the location in which the participant engages in the behavior. In reference to social learning theory, pornography can be socially accepted or discouraged by friends, which affects whether the individual in question will continue to engage in said behaviors.

Differential association refers to social interactions with intimate groups that may influence one's behavior (Akers, 1973). Peers and family members are considered the core social groups highlighted in Akers' social learning theory. During the transition into adulthood, the role of the family moves from the forefront, and the influence of peers begins to dominate the socialization process (Arnett, 2008). College provides an opportunity to develop social relationships with non-familial social groups while exploring oneself and loosening the constraints placed on the individual by home and family structures (Pascarella & Terenzini, 2005). Furthermore, differential peer association with other college students who are visiting pornography websites can be seen as an acceptable and normative part of the sexual development process and educational experience (Weinberg et al., 2010).

Through differential association with different peer groups, an individual will also be exposed to differential reinforcement, which refers to how social groups can impose social rewards and punishments that may influence engagement in deviant and non-deviant behaviors (Akers, 1973). Visiting pornography websites may be encouraged and supported by social groups, but it could also be discouraged and punished when it is deemed unacceptable (Carroll et al., 2008; Diamond, 2009). Within the context of the college environment, there are different social groups at play, and it is unclear how dominant the stigmatization of viewing pornographic materials is on campuses. For some youth and young adults, porn can be viewed as a part of their sexual exploration and education (Rothman et al., 2015); whereas, others may view it as an immoral practice which distracts students from the intellectual enlightenment encouraged during the college education experience (Nelson, Padilla-Walker, & Carroll, 2010).

Imitation and modeling refer to learning that takes place through observation that leads to mimicked performance (Akers, 1973). Colleges are learning environments and as students acclimate to these new surroundings, they must take cues from what is ongoing in these social structures (Pascarella & Terenzini, 2005). In college, students are exposed to social groups that inform their behaviors and decision-making. The shared and open spaces found on many college campuses make it possible to observe someone during what they perceive to be a private moment. This openness can also make it difficult to fully conceal certain behaviors. As college students acclimate to the culture of sex and partying that has become more pervasive at college (Leahy, 2009), they can better determine whether others engage in visiting pornography websites and make decisions about their own engagement in the behavior.

Observing the behavior of others and associating with groups that influence one's behavior is also linked to definitions that are favorable or unfavorable toward different behaviors (Akers, 1973). Over time, individuals become aware of environmental stimuli and cues that indicate when certain behaviors are acceptable or unacceptable (Akers & Jensen, 2003). Furthermore, an individual's own moral and religious beliefs may be influential on behavioral definitions. Attending college during young adulthood represents a specific context where students must navigate the expectations of different social groups, including their peers, professors, and school administrators (Hamilton & Hamilton, 2006). For many young people, this may be the first time in which their parents are physically removed from their day to day lives, allowing young adults to form their own belief systems which may depart from parental expectations (Mattanah, 2016). The elements of Akers social learning theory can exist at both the micro- and macro-levels, but later work on social structure-social learning theory takes into account structural factors that many influence the learning process.

Social Structure-Social Learning Theory

In addition to his work with social learning theory, Akers further elaborated on his theoretical framework by integrating micro and macro theoretical approaches in the creation of social structure-social learning (SSSL) theory, which allows for the combination of social learning processes with structural variables (Akers, 1998, 2009). In his book chapter discussing SSSL, Akers states, "the social structural variables are indicators of the primary distal macro-level and meso-level causes of crime, while the social learning variables reflect the primary proximate cause of criminal behavior by individuals that mediate the relationship between social structure and crime rates" (Akers, 2009, p. 322).

SSSL theory has not previously been applied to explaining online pornography use, but this work has been used to study another type of behavior among college students—binge drinking (Capece & Lanza-Kaduce, 2013; Lanza-Kaduce & Capece, 2007; Lanza-Kaduce, Capece, & Alden, 2006), which informed the current study's approach. SSSL theory includes four structural dimensions: differential location in the social structure, differential location in groups, differential social organization, and variables derived from structural theories. However, this study only addresses one of the four dimensions, differential location in the social structure, making this only a partial test of Akers' SSSL theory.

Within the current study, Akers' theoretical construct of differential location in the social structure is represented by the participant demographic characteristics (gender, age, race, ethnicity, religion, number of years in school, sexuality, self-esteem, frequency of drinking, and frequency of time spent online) and sexual activity/relationship characteristics (number of sexual partners, being in a committed relationship, frequency in having sex, first age of pornography use, and frequency of masturbation) among college students. While the variables measuring demographic characteristics are specific to the target population (college students), the variables measuring sexual activity/relationship characteristics are specific to the target behavior (visiting pornography websites). Both sets of variables represent the SSSL dimension of differential location in the social structure and they are all hypothesized to be mediated by social learning variables in the models predicting pornography use.

The Current Study

Dependent on the setting, the type of material being viewed, and who is watching the material in question, visiting pornography websites can be viewed as deviant or non-deviant in nature. College provides a social environment where interest in porn is less shunned, and can alter the stigma surrounding pornography use that is typically present when older adults are present in the conversation. Social structure-social learning theory combines the core social learning theory variables with structural variables to provide a theoretical framework for understanding the social processes predictive of visiting pornography websites within the context of a college environment. This study has been designed to test the possible mediation effect between general structural factors (demographic characteristics) and specific structural factors (sexual activity/relationship characteristics). Additionally, the mediation hypothesis stated by Akers in SSSL will be tested. Akers' mediation hypothesis states that if social learning theory variables are significant in the model, then they will reduce the effect of any other variable that was previously significant before the introduction of the social learning theory variables.

Overall, the current study tests five hypotheses predicting visiting pornography websites in the past six months; all of which relate to the three research questions posed earlier. While Hypotheses 1–3 are more specifically related to the introduction of specific variable groups, Hypothesis 4 explores mediation among the structural variables by contrasting the general and specific structural variables that are in the differential location in the social structure dimension. Hypothesis 5, which is directly related to SSSL theory's mediation hypothesis as stated in Akers' previous work (Akers, 1998, 2009), explores the mediation of all significant structural variables by social learning process variables.

This study's hypotheses are:

- Hypothesis 1: The general structural variables (*demographic characteristics*) representing the dimension of differential location in the social structure will significantly correlate with visiting pornography websites. (H1)
- Hypothesis 2: The specific structural variables (*sexual activity/relationship characteristics*) representing the dimension of differential location in the social structure will significantly correlate with visiting pornography websites. (H2)
- Hypothesis 3: The social learning variables representing the processual dimension will significantly correlate with visiting pornography websites. (H3)
- Hypothesis 4: The significant general structural variables (*demographic characteristics*) will be reduced in effect (mediated) with the introduction of specific structural variables (*sexual activity/relationship characteristics*). (H4)
- Hypothesis 5: All significant structural variables will be reduced in effect (mediated) with the introduction of social learning process variables. (H5)

Methodology

Online Survey Instrument and Data Collection Protocol

The current study uses primary data collected from November 2012 to April 2014 at a large, southeastern university. Using a sociology and criminology participant pool to access a convenience sample, data collection yielded 812 participants. Participants were asked demographic questions pertaining to their identity as college students, in order to establish their position within the college environment while capturing the dynamics of the socialization that takes place on university campuses. These questions were used as variables representing the differential location in the social structure dimension, as well as to establish a baseline effect for structural factors relevant to college student identity based on prior research.

This data was collected using an online instrument designed with Qualtrics Research Suite™ (“Qualtrics,” 2017). Participants were able to self-select into the survey and therefore, the response rate for this survey is unknown. Once a participant was provided entry into the survey, they were prevented from gaining entry more than once to avoid duplication of responses. Each participant completed an informed consent form online, and were then directed to a self-report survey that collected a wide array of information about access to technology and use of the Internet to engage in deviant activities. Due to use of college students as participants, this sample is not generalizable to a larger population of young adults. Instead the primary goal of this study is to test social structure-social learning theory, and the sample reflects the necessary power needed to analyze the bivariate relationships, as well as the multivariate models presented to assess mediation (Faul, Erdfelder, Lang, & Buchner, 2007).

Operationalization of Independent Variables

For this study, we used several independent variables to measure differential location in the social structure, and the four elements of Akers’ social learning theory. They are operationalized below.

Differential Location in the Social Structure (General Structural Variables) The participants most commonly reported that they were female (65.3%), 21 years old (27.3%), White (73.9%), non-Hispanic (78.2%), Christian (64.2%) and had only attended college for one year (36.6%). Participants reported that they most commonly consumed alcohol 2–3 times per month (30.5%), and that they frequently went online multiple times each day (26.8%).

Additionally, participants rated their self-esteem by completing the Rosenberg self-esteem (RSE) scale (F. Rosenberg, Rosenberg, & McCord, 1978; M. Rosenberg, 1965). For this self-report measure of self-esteem, ten items were coded on a four-point Likert scale with response options ranging from 1 (Strongly Disagree) to 4 (Strongly Agree), with five out of ten items being reverse coded. Scores were then added to form a continuous scale. On average, participants scored a 31.93 (sd = 4.64; mode = 30.00). This indicates higher self-

esteem among the sample, with 11 being the lowest possible score (indicative of low self-esteem) and 44 being the highest (indicative of high self-esteem).

Participants were also asked to report their sexuality using the Kinsey continuous sexuality scale, which is a metric that ranks sexuality identity on a scale of 0 to 6, ranging from exclusively heterosexual (0) to exclusively homosexual (6) (Sell, 1997). While it has been noted that the original use of the scale allowed for interviewers to rate participant sexuality (Weinrich, 2014), this framework was used to allow participants to self-report their own sexuality. Most commonly, participants (53.7%) reported that they were exclusively heterosexual with no homosexual interest or experience. Each of the variables discussed in this section represents a general (demographic characteristics) structural variable that is included in the model as an independent variable representing the differential location in social structure dimension.

Differential Location in the Social Structure (Specific Structural Variables) In addition to the first set of variables, the second set of independent variables focus more specifically on details about participants' sexual activity and their romantic relationships. Although the first set of variables are for measuring demographic characteristics specific to the target population (college students), these variables measure sexual activity/relationship characteristics that are specific to the target behavior (visiting pornography websites). Specifically, these variables include the participants' reported number of sex partners, whether the participant was in a committed relationship at the time of the survey, the frequency that the participant was having sex at the time of survey, the first age of pornography use, and their frequency of masturbation.

To measure number of sexual partners, participants were asked, "How many sexual partners have you had?" and were asked to provide a specific number. A sexual partner was defined for the participants as "anyone with whom you have had sexual contact with (i.e. oral sex, vaginal intercourse, or anal sex)." Participant responses were recoded into a truncated scale, ranging from 0 to 5 or more partners. The most common response (30.8%) from participants was that they had five or more sexual partners.

To measure relationship status, participants were asked, "Are you in a committed relationship?" It was clarified for the participants that their answers should be to the best of their ability using their own definition of a committed relationship. Participants responded to a single item measure that was coded 0 for no and 1 for yes. The majority of participants (56.3%), reported that they were not in a committed relationship.

To measure frequency in having sex, participants were asked, "In the past six months, how frequently have you had sexual intercourse?" Participant response options were measured on a 5-point Likert scale ranging from (0)never to (5) more than four times a week. Most commonly, participants (39.4%) reported that they had sexual intercourse five or fewer times in the past six months.

To measure first age of pornography use, participants were asked, "At what age did you first view pornography (for any reason, at any place, and for any length of time)?" Participants were able to provide an open-ended response and were asked to type not applicable if they had never seen porn. A truncated scale was created from their responses to indicate ages under five years old through age 22 years old. The most common response (31.3%) was that participants had first viewed porn at 14 years old.

To measure frequency of masturbation, participants were asked, “How frequently have you masturbated in the past six months?” Response items ranged from never to daily, on a 6-point Likert scale. Participants most frequently reported (26.8%) that they masturbated at least once a week; at least once a month and daily were similarly reported (23.0% and 23.3%, respectively).

Social Learning Process Variables The independent variables operating at the micro-level focus on testing the four core concepts from Akers’ social learning theory. By using these variables, the researchers are able to explore the applicability of SLT, as well as SSSL. These variables are differential peer association, differential reinforcement, imitation/modeling, and definitions favorable.

For the variable measuring differential peer association, participants were asked, “In the past six months to the best of your knowledge of their online behaviors, how many of your best friends or friends that you spent the most time with visited pornography websites?” The responses were measured on a 5-point Likert scale (ranging from 1 to 5) that included none, some, half, most, and all. Most frequently, participants reported (37.9%) that none of their friends had visited pornography websites in the past six months to their knowledge.

For the variable measuring differential reinforcement, participants were asked to respond to the following statement: “Thinking generally about other college students instead of my own behaviors, select the option that indicates what you think is usually the outcome for students who are visiting pornography websites.” The responses were measured on a 3-point Likert-type scale (ranging from 1 to 3) that included positive (mainly good, gain more than you lose), neutral (about as much good as bad), and negative (mainly bad, lose more than you gain) options to choose from. The most frequent response from participants (40.5%), was that the average college student who visited pornography websites experienced outcomes that were negative (mainly bad or they would lose more than they gained).

For the variable measuring imitation/modeling, participants were asked to respond to the following statement: “Observing my friends’ behaviors using the Internet on their cell phone, laptop, tablet, or any other technology device at [my school] has influenced me to at least try visiting pornography websites.” Response options were measured on a 4-point Likert scale (ranging from 1 to 4), that included strongly disagree, disagree, agree, and strongly agree. Participants most frequently reported that they strongly disagree (66.4%) that observing their friends’ behavior influenced their decision to visit pornography websites.

For the variable measuring definitions favorable, participants were asked the following statement: “Thinking specifically about online behaviors, it is acceptable to visit pornography websites.” Response options were once again measured on a 4-point Likert scale (ranging from 1 to 4), that included strongly disagree, disagree, agree, and strongly agree. Most frequently, participants strongly disagreed (33.7%) that it is acceptable to visit pornography websites (definitions favorable). Similarly, 32.3% of participants agreed that it was acceptable to visit pornography websites, which indicates that the sample is significantly divided in terms of the moral and ethical elements they associate with visiting pornography websites, as suggested by social learning theory.

Operationalization of the Dependent Variable

This research was designed to test four hypotheses that are focused on one outcome of interest: the participants' frequency in visiting online porn websites in the past six months. To measure engagement in visiting pornography websites, participants were asked to respond to the following statement: "In thinking specifically about my behavior while using the Internet, in the past six months I have visited pornography websites." Response options were measures on a 5-point Likert scale (ranging from 0 to 4), which included never, five or fewer times, at least once per month, at least once per week, or more than four times per week. The majority of the sample (51.2%) reported that they had never viewed pornography in the last six months. Additionally, 48.8% of participants viewed pornography at least once in the past six months, 20.8% viewed porn five or fewer times, 10.6% viewed it at least once per month, 9.4% viewed it at least once per week, and 8% viewed it more than four times per week.

Due to the skewed nature of the data for this variable, a dichotomized variable was created. The dependent variable was recoded as 0, for not having viewed porn websites in the past six months, and 1, for having viewed porn websites at least once in the past six months. Although the sample was majority female, there were differences found between the frequencies of visitation for male and female participants, which showed that the greater majority of male participants (75.2%) had viewed porn at least once in the past six months, compared to only 34.7% of female participants. A breakdown of the frequencies by gender is presented in Table 1.

Analysis Plan

This study uses participant demographics (general structural variables), sexual activity and romantic relationship variables (specific structural variables), and the theoretical predictors of social learning theory, to predict participant engagement in visiting pornography websites. Prior to conducting any analyses, missing variables were assessed and no substantive missing data were found (less than 5%); median replacement was used for a single imputation method since many variables were whole numbers. Additionally, multicollinearity was explored and was no extreme correlations were found.

Table 1 Frequencies for visiting porn sites in the past 6 months

	Female		Male		Total	
	Frequency	%	Frequency	%	Frequency	%
Never	346	65.3%	70	24.8%	416	51.2%
Five or fewer times	115	21.7%	54	19.1%	169	20.8%
At least once/ month	41	7.7%	45	16.0%	86	10.6%
At least once/ week	18	3.4%	58	20.6%	76	9.4%
More than 4×/ week	10	1.9%	55	19.5%	65	8.0%
Total	530	100.0%	282	100.0%	812	100.0%

In addition to the univariate analyses discussed earlier, this study addresses what bivariate and multivariate relationships exist with a dichotomous outcome variable, visiting pornography websites. In order to test the bivariate relationships mentioned in Hypotheses 1–3, correlation analyses were conducted, which allowed insight in to what variables were related. This is a necessary step before any mediation tests can be conducted. Table 2 (discussed below) shows significant correlations between the predictor variables and visiting pornography websites in the past six months, which are also included in the [Results](#) section.

Due to the dichotomous nature of the dependent variable, three binary logistic regression analyses were conducted and are presented in Table 3 (discussed below), highlighting the goal of testing for mediation as discussed in Hypotheses 4 and 5. The current study's analyses allowed first for the most general structural variables (demographic characteristics) to be introduced, followed by the introduction of the more specific structural variables (sexual activity/relationship characteristics) to see if they were better predictors, based on their specificity as related to the outcome of interest. The third step was to introduce SLT variables, as SSSL suggests that the mediation of any previously significant structural variables should occur once the SLT variables are introduced into the model. The analysis of the bivariate and multivariate relationships are presented below.

Table 2 Correlation coefficients for bivariate relationship with visiting porn sites in past six months

	Coefficient	Significance
Gender (Male)	0.385	***
Age	0.092	**
Race (White)	−0.020	Ns
Ethnicity (Hispanic)	0.040	Ns
Religion (Catholic)	−0.093	**
Years in school	0.102	**
Sexuality scale	0.164	***
Self esteem scale	−0.055	Ns
Frequency of drinking	−0.064	Ns
Frequency online	−0.008	Ns
Number of sex partners	0.190	***
In committed relationship	0.034	Ns
Frequency in having sex	0.153	***
First age of pornography use	−0.155	***
Frequency of masturbation	0.487	***
Differential peer association	0.486	***
Differential reinforcement	0.377	***
Imitation/modeling	0.324	***
Definitions favorable	0.438	***

*** $p < .001$, ** $p < .01$, * $p < .05$

Table 3 Odds ratios (OR) for deviant cyber-sexual engagement-viewing porn sites

	Model A	Model B	Model C
	OR	OR	OR
Gender (Male)	7.742***	3.683***	3.016***
Age	0.996	0.909	1.080
Race (White)	0.780	0.630*	0.491**
Ethnicity (Hispanic)	1.498*	1.523*	1.455
Religion (Catholic)	0.761	0.819	1.155
Years in school	1.260*	1.297*	1.191
Sexuality scale	1.606***	1.399***	1.282**
Self esteem scale	0.968	0.973	0.974
Frequency of drinking	0.951	1.018	1.029
Frequency online	1.349	1.266	1.306
Number of sex partners		1.132*	1.028
In committed relationship		1.063	0.899
Frequency in having sex		1.075	1.049
First age of pornography use		0.987	1.020
Frequency of masturbation		1.920***	1.622***
Differential peer association			1.814***
Differential reinforcement			1.196
Imitation/modeling			1.881***
Definitions favorable			1.745***
Intercept	0.107	0.021**	0.001***
χ^2	189.582***	295.802***	439.888***
Degrees of freedom	10	15	19
Number of observations	812	812	812

*** $p < .001$, ** $p < .01$, * $p < .05$

Results

Bivariate Correlation Analyses

Of the ten general structural variables, five were significantly correlated with the dependent variable (visiting porn sites in the last six months), with coefficients at or above the p -value of 0.01: gender, age, religion, years in school, and the sexuality scale, indicating partial support for H1. Of the five specific structural variables focused on sexual activities and relationships, four were significantly correlated with the dependent variable with coefficients at or above the p -value of 0.01: number of sex partners, frequency in having sex, first age of pornography use, and frequency of masturbation, indicating partial support for H2. Finally, all four of the social learning process variables were significantly correlated with the dependent variable at or above the p -value of 0.01, indicating full support for H3.

This analysis highlights that not all of the general or specific structural variables were significant, but several were significant and had strong coefficients. It is noteworthy that the majority of the general and specific structural variables predicted a positive relationship with visiting pornography sites, but religion and first age of pornography use had negative relationships. The coefficients and significance level for each variable are in Table 2.

Multivariate Regression Analyses

Using a dichotomized dependent variable, a triplet of binary logistic regressions of 812 cases was conducted to predict the frequency in visiting porn sites. The analyses of multivariate regression models A, B, and C are presented in Table 3. The independent variables in Model A were limited to the ten general structural measures focused on the participants' differential location in the social structure. Overall, the model was significant in predicting the outcome of interest ($X^2 = 189.582$; $p > 0.001$). Out of the ten general structural variables, four were significant in Model A—gender ($OR = 7.74$; $p < .001$), ethnicity ($OR = 1.50$; $p < .05$), year in school ($OR = 1.26$; $p < .05$), and the sexuality scale ($OR = 1.61$; $p < .001$), indicating partial support for H1. Male participants had a 674% increased likelihood to visit a porn website compared to female participants. Hispanic participants had a 50% increased likelihood to visit a porn website compared to non-Hispanic participants. For every unit increase in years in school, participants had a 26% increased likelihood to visit a porn website. For every unit increase in the sexuality scale (meaning that participants identified more as homosexual than heterosexual), participants had a 61% increased likelihood to visit a porn website. In Model A, gender overwhelmingly predicted the largest increase in visiting porn sites.

The independent variables in Model B include the ten general structural variables from Model A, with the addition of six specific structural variables measuring sexual activities and romantic relationships. Both sets of variables represent the SSSL dimension differential location in the social structure. Overall, the model significantly predicted the outcome of interest ($X^2 = 295.802$; $p < 0.001$). Out of the ten general structural variables, five variables were significant in Model B—gender ($OR = 3.68$; $p < .001$), race ($OR = 0.63$; $p < .05$), ethnicity ($OR = 1.52$; $p < .05$), year in school ($OR = 1.30$; $p < .05$), and the sexuality scale ($OR = 1.40$; $p < .001$), indicating continued partial support for H1. Besides the addition of the significant race variable, these were the same four general structural variables that were significant in Model A. Male participants had a 268% increased likelihood to visit a porn website compared to female participants. White participants had a 37% decreased likelihood to visit a porn website compared to non-White participants. Hispanic participants had a 52% increased likelihood to visit a porn website compared to non-Hispanic participants. For every unit increase in years in school, participants had a 30% increased likelihood to visit a porn website. For every unit increase in the sexuality scale, participants had a 40% increased likelihood to visit a porn website.

Out of the five specific structural variables, two were significant in Model B—number of sex partners ($OR = 1.13$; $p < .05$) and frequency of masturbation ($OR = 1.92$; $p < .001$), indicating partial support for H2. For every unit increase in the number of sex partners, participants had a 13% increased likelihood to visit a porn website. For every unit increase in the frequency of masturbation, participants had a 92% increased likelihood to visit a

porn site. In Model B, gender predicted the largest increase in visiting porn sites yet the size of the odds ratio for this variable decreased in strength. This demonstrates only partial mediation of the significant general structural variables when the specific structural variables were introduced, which provides partial supports for H4.

The independent variables in Model C include the ten general structural and the five specific structural variables examined in Model B, and then adds the four social learning variables that focus on the social processes involved at the individual level. This model incorporates the previous measures of the SSSL dimension differential location in the social structure (demographic characteristics and sexual activity/relationship characteristics) and allows for comparison with measures of the SSSL dimension for social process variables. Overall, the model was significant in predicting the outcome of interest ($X^2 = 439.888$; $p > 0.001$). Out of the ten general structural variables, three were significant in Model C—gender ($OR = 3.02$; $p < .01$), race ($OR = 0.49$; $p < .01$), and the sexuality scale ($OR = 1.28$; $p < .01$), indicating a reduction in support for H1 in comparison to Models A and B, and that a mediation effect is occurring. Male participants had a 202% increased likelihood to visit a porn website compared to female participants. This was the lowest likelihood over the three models. White participants had a 51% decreased likelihood to visit a porn website than non-White participants. For every unit increase in the sexuality scale, participants had a 28% increased likelihood to visit a porn website.

Out of the five specific structural variables measuring sexual activity/relationship characteristics, one variable was significant in Model C—frequency of masturbation ($OR = 1.622$; $p < .001$), indicating a reduction in support for H2 in comparison to Model B. For every unit increase in the frequency of masturbation, participants had a 62% increased likelihood to visit a porn website. Out of the four social learning process variables, three variables were significant in Model C—differential peer association ($OR = 1.82$; $p < .001$), imitation/modeling ($OR = 1.88$; $p < .001$), and definitions favorable ($OR = 1.74$; $p < .001$), indicating partial support for H3. For every unit increase in differential peer association, participants had an 82% increased likelihood to visit a porn website. For every unit increase in imitation/modeling, participants had an 88% increased likelihood to visit a porn website. Finally, for every unit increase in definitions favorable, participants had a 74% increased likelihood to visit a porn website. In Model C, gender once again predicted the largest increase in visiting porn sites. Some of the general and specific structural variables were completely mediated out of the model once the SLT variables were introduced (ethnicity, years in school, and number of sex partners). However, others were only partially mediated once the SLT variables were introduced (gender, race, sexuality, masturbation). These two points demonstrate only partial success in mediating significant general and specific structural variables with the introduction of social learning process variables, which provides partial supports for H5.

Discussion

The aim of this cross-sectional study was to explore online pornography use among a subset of college students. Support was mixed for the five hypotheses tested in this project. The bivariate correlation analyses revealed that only some of the general and

specific structural variables had significant relationships with online pornography use, which partially supported H1 and H2. Each structural variable tested was selected based on prior research connecting it with the outcome of interest. In contrast with H1 and H2, full support was found for H3 because all four of the social learning variables had a significant relationship with online pornography use at the bivariate level, which is consistent with findings from meta-analytic research examining support for social learning theory (Pratt et al., 2010).

Furthermore, this study incorporated a full micro-level theory (social learning theory) and a micro-macro theory (social structure-social learning theory) to explore meditation among the variables, while still accounting for demographic features, such as gender and age. Based on prior research, one of the main foci of this study was to examine the role that gender plays in pornography use. The findings partially supported the claim from H4 that effect of general structural variables would be reduced with the introduction of specific structural variables and fully supported H5's claim that any significant structural variable would be reduced with the introduction of social learning variables. Despite the strength of explanation provided by the masturbation and social learning variables, gender remained the strongest variable in all of the three logistic regression models, and social learning theory was unable to completely mediate the effect of the gender variable. These results highlight that gender is a strong predictor for understanding online pornography use, especially among college students, which is consistent with the findings in Buzzell et al. (2006).

College administrators and others may find these findings useful in trying to understand the reasons why college students engage in pornography use. Furthermore, this may aid in curtailing deviant forms of pornography use. Policies can be put into place that discourage engagement in these activities in public spaces or common areas. However, policies can also encourage sexual exploration (through viewing porn, masturbating, etc.) as means to achieving sexual health. Additionally, those interested in preventing the behaviors before they occur or become prevalent among their subpopulation can use the information to see which structural and process variables were associated with higher engagement in visiting online pornography websites. While pornography is a timeless tradition, those involved in academic, as well as nonacademic, policymaking must take into account the current trends that show millennials as a whole are visiting a lot of pornography websites, and that female consumers are no longer as small a part of the conversation as they have been previously (Mowlabocus & Wood, 2015).

Although very informative, this study like every study has limitations. First, this project lacks generalizability to larger populations of college students and other young adults. However, theory testing was the primary goal of this research with the assumption that once relationships between variables are established, future research can be conducted with a more generalizable sample. Future studies should consider comparing these findings amongst different sets of students that represent other majors or come from different schools. Second, online pornography use has been operationalized differently throughout prior literature. This study exclusively asked about visiting online pornography websites. However, it does not distinguish between viewing pictures versus video, the type of pornography viewed (in terms of content), or ask about what you do once you visit the pornography website. The researchers did provide clarification in the survey that the question was asking generally whether you had

visited a pornography website for any reason, which does not separate out people who potentially have gone there on accident. This would assume deliberation in the choice to visit a pornography website, indicating probable sexual interest in the material. Furthermore, participants are not asked about their reasons for visiting the pornography website. This connects to the idea that individuals might be using the material to compensate for a lacking sexual life, to engage in autonomous sexual activity, or to complement an already active sex life. As there are several reasons for why participants might be visiting these sites, we cannot make the assertion as to which was the predominate reason based on the wording of the measure included in this study.

Conclusion

This research sought to address three research questions. First, do characteristics associated with college identity predict whether college students visit porn websites? Second, do sexual activity/relationship characteristics predict whether college students visit porn websites, mediating the effect of the characteristics associated with college identity? Third, do social learning processes predict whether college students visit porn websites, mediating the effect of demographic characteristics or sexual activity/relationship characteristics? By providing a glimpse into participants' demographic characteristics and sexual activities/relationships that they are engaging in, future researchers can continue to better examine the nuances involved in who is in engaging in online pornography use. As the industry of online porn continues to grow, the pull of young adults into pornography websites is likely to continue to increase. Also, it was shown that while specific variables can provide additional explanation above and beyond general variables, gender was a dominate force in every model and could not be explained away by any other variables, including social learning theory, which has been generally shown to have a dominate effect over other variables (Pratt et al., 2010). Therefore, future research should continue to examine the role that gender plays in pornography use given its strong dominance in the models. In addition, gender should continue to be examined in the discussion of social learning theory, and social structure-social learning theory given the inability of the SLT variables completely mediate out the gender variable. This suggests that gender is an important structural factor for predicting pornography use, and may also be important in the prediction of other behaviors. Lastly, as social learning theory variables were introduced into Model C, the strength of the model nearly doubled and all variables were either partially or fully mediated, providing partial support for SLT theory. These analyses highlight Akers' position that social learning processes are not in conflict or in competition with structural variables, but instead should be characterized as complementary in nature (Akers, 2009). Future research must continue to explore how context and process operate together as predictors.

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Danielle Tolson Cooper Ph.D., CPP is an Assistant Professor of Criminal Justice at the University of New Haven, and completed her doctoral work at the University of Florida (2015). Her research interests are juvenile delinquency/ justice, resistance to authority, and other psychology, law, and society issues. Her email is dcooper@newhaven.edu.

Jennifer L. Klein Ph.D. is an Assistant Professor of Criminal Justice at the University of Texas at Tyler, and completed her doctoral work at the University of Florida (2014). Her primary research interests include sexual offenders and the effects the registry has on those registered, deviant behaviors of college students, and the Jerry Sandusky scandal. Her email is jenniferklein@uttyler.edu.