School-Based Sexuality Education, Gender, and Relationship Self-Efficacy: A Moderated-Mediation Analysis of Sexual Behavior in First-Year College Students

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SCHOOL-BASED SEXUALITY EDUCATION, GENDER, AND RELATIONSHIP SELF-EFFICACY: A MODERATED-MEDIATION ANALYSIS OF SEXUAL BEHAVIOR IN FIRST-YEAR COLLEGE STUDENTS

by

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DEDICATION

For my father, Jim Cohen, who would be amused to know that a lengthy document about sexual behavior is dedicated to his memory.
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ABSTRACT

While the effectiveness at abstinence-only versus comprehensive sexuality education in preventing adolescent risky sexual behavior is widely researched, little is known about whether material learned in secondary school sexuality education classes impacts emerging adult sexual behavior in the college environment. Furthermore, research suggests that self-efficacy – or beliefs in one’s abilities to organize and execute actions – may be more critical than knowledge or skills in terms of how individuals enact behavior. We hypothesized a moderated-mediation effect by which the causal impact of type of sexuality education on four different sexual behaviors during the first year in college is transmitted via relationship self-efficacy. We also hypothesized that the prediction of sexual behavior from type of sexuality education would differ across gender. College freshmen (n = 610, 73% female) from three, geographically diverse universities answered items pertaining to secondary school sexuality education courses, sexual behaviors in college, and romantic relationships. Results found no evidence of moderated-mediation for any of the behaviors examined. However, significant differences emerged among males who received abstinence-only sexuality education, males who received comprehensive sexuality education, females who received abstinence-only sexuality education, and females who received comprehensive sexuality education on several sexual behavior variables. Results imply that gender is an important consideration in understanding how sexuality education may impact sexual behavior. Policy implications and future research directions are discussed.
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CHAPTER 1
INTRODUCTION

The Sexuality Information and Education Council of the United States (SIECUS) defines sexuality education as “The lifelong process of acquiring information about sexual behavior, and of forming attitudes, beliefs, and values about identity, relationships, and intimacy” (SIECUS, 2004, p. 13). However, research suggests that educators and policy makers of school-based sexuality education tend to focus primarily on abstinence, or abstaining from sexual intercourse until marriage, and risks of sexual activity, in which adolescent sexuality is discussed only in terms of sexual acts that are seen as inherently risky or dangerous (Schalet, 2011). Furthermore, educating students about sexuality is a contentious topic, and there is great variety in state-wide sexuality education policies across the United States (Guttmacher Institute, 2012; National Conference of State Legislatures, 2014).

Nevertheless, leading researchers continue to call for a broader approach to teaching sex education, suggesting that sexuality should not just be seen as the presence or absence of pre-defined sexual behaviors, but also as a wider construct incorporating multiple dimensions of sexual development. In 1991, the National Guidelines Task Force released the first national model for comprehensive sexuality education (SIECUS, 1991). While the model has since been updated to reflect new information and changing times, the six key concepts remain the same—human development, relationships, personal skills, sexual behavior, sexual health, and society and culture (SIECUS, 2004). In 2012, the
first-ever national standards for sexuality education were published. The *National Sexuality Education Standards* (NSES; Future of Sex Education Initiative, 2012) incorporate seven key dimensions of sexuality including anatomy and physiology; puberty and adolescent development; reproduction and pregnancy; sexually transmitted infections (STIs) and human immunodeficiency virus (HIV); healthy relationships; and personal safety as the essential and minimum, core elements of comprehensive sexual education necessary before teenagers graduate from high school.

Yet despite more than two decades of developing national guidelines and standards for school-based sexuality education, we still know very little about their implementation. What’s more, while the NSES are pragmatic, grounded in an understanding of the United States’ educational system (Boonstra, 2012), the ultimate goal of helping to create sexually healthy adults is still missing (Haffner, 2012). Research on college students suggests that they, like high school students, frequently engage in unprotected sexual intercourse and have multiple casual partners (e.g., CDC, 2008; CDC, 2011; Turchik, Garske, Probst, & Irvin, 2010). Thus, while the impetus for sexuality education may be because of the problems and challenges pertaining to sexual risk taking behaviors in adolescence, (e.g., Halpern, 2010) it is unclear if knowledge and skills learned in secondary school-based education carry over to college campuses.

Furthermore, research suggests that self-efficacy, or beliefs in one’s abilities to organize and execute actions needed to attain goals, may be more critical than knowledge or skills in terms of how individuals enact behavior (Bandura, 1986; 1994). Studies show that global self-efficacy relates to various sexual behaviors (e.g., Dilorio, Dudley, & Kelly, 2001; Faryna & Morales, 2000; Collazo, 2004). However, relationship self-
efficacy, the extent to which a person is confident in his or her abilities to manage day-to-day relationship issues with a partner (Lopez, Morúa, & Rice, 2007), has not been studied in this context. Given that engaging in safer sexual behavior involves skills similar to those needed to maintain a healthy romantic relationship (Tross, Calsyn, Miele, Cohen, Campbell, & El-Bassel, 2009), it may be that college students with higher relationship self-efficacy are more likely to engage in safer sex practices. Moreover, since engaging in safer sex relies heavily on individual knowledge and skills (e.g., of different types of birth control, characteristics of healthy relationships, negotiation of condom use), school-based sexuality education theoretically should also play a role in guiding the sexual behavior choices of young adults. The current study explores whether relationship self-efficacy mediates the relation between type of secondary school-based sexuality education received and various types of sexual behavior during the first year of college.

*Current State of School-Based Sexuality Education*

School-based sexuality education has a long and storied history. As early as 1912, the National Education Association recommended that teachers be trained to provide education to students about sexuality (Pardini, 2013). In the 1940’s and 1950’s, human sexuality courses began to arise on college campuses. Backlash emerged in the late 1960’s, during the height of the sexual revolution, when groups of religious conservatives denounced school-based sexuality education as promoting promiscuity and moral depravity (Pardini, 2013). By 1988, on the heels of the nationwide concern over HIV, more than 90% of high schools across the United States were offering sexuality education, and by the mid-1990’s, every state passed legislation requiring acquired immunodeficiency syndrome (AIDS)-based education in schools. However, debate
persists between groups across the country, including educators, policy makers, religious leaders, and parents, on what constitutes appropriate sexuality education for teenagers.

One hundred years later, there is still no national policy on school-based sexuality education, and despite several public policy initiatives, sexuality education continues to be inconsistently implemented, with minimal time allotted to teaching the topic and with minimal teacher training (Future of Sex Education Initiative, 2012).

A majority of Americans favor some form of sexuality education in the public schools (Haffner & Wagoner, 1999), and nearly all adolescents do have some sort of sexuality education program during their secondary school experience (Kaiser Family Foundation, 2000). More than 90% of parents of middle and high school students agree that sexuality education should be an integral part of the school curriculum (Sex Education in America, 2004). Between 75%-90% of parents also believe that sexuality education should include components related to sexual orientation, use of and access to contraceptives, and other methods of preventing pregnancy (Sex Education in America, 2004). Over 90% of parents also believe that it is appropriate to provide education about sexually transmitted infections and making responsible choices based on individual values (Dailard, 2001).

Despite the support for sexuality education in schools, as of January 1st, 2014, only 22 states and the District of Columbia require public schools to teach sex education (National Conference of State Legislatures, 2014); 19 states mandate that sex education be “medically accurate” and age appropriate; however, there is considerable variation regarding what constitutes either one of these concepts (National Conference of State Legislatures, 2014). Only nine states require that sexuality education includes
information about contraception (Guttmacher Institute, 2012). According to the School Health Policies and Programs Study (SHPPS; CDC, 2011), 76% of middle school and 87% of high school teachers nationwide taught sexual abstinence as part of required instruction, while only 42% of middle school and 65% of high school teachers taught condom efficacy – (success rates of condoms when used properly). Even fewer teachers reported teaching how to correctly use a condom; 21% of middle school instructors and 39% of high school teachers.

Compounding these inconsistencies, in 1996, the passage of Section 510 of Title V of the Social Security Act mandated that the United States Government fund state-level abstinence-only-until-marriage education in public schools (Social Security Act, 1996). Subsequently, congress allocated $50 million per year from 1998 to 2002 to fund state programs that teach abstinence as the sole method of birth control to children and teens. In 2012, abstinence-only education programs still retained a $55 million dollar budget (National Abstinence Education Association, 2012). Abstinence-only programs stress abstaining from sexual intercourse until marriage; they do not acknowledge that many teens will engage in sexual intercourse, avoiding discussions about contraceptives and condom use. In contrast to abstinence-only programs is “abstinence plus” or “comprehensive” sexuality education. These programs tend to still stress abstinence as the best choice for teenagers, while also promoting effective use of contraceptives (e.g., Kirby & Coyle, 1997). In 2010, 75 million dollars was made available in federal funds for states to teach comprehensive, evidence-based sexuality education. Activists on both sides of the sexuality education debate continue to debate the merits of abstinence-only versus comprehensive sexuality education for teenagers in the press, championing their
respective causes through several media outlets. Comprehensive sexuality education is
generally favored by the scientific community. Over 140 national organizations,
including the American Academy of Pediatrics, the American Psychological Association,
and the American School Health Association, support medically accurate, age-
appropriate sexuality education (see http://www.ncsse.com for a complete list of member
organizations). In contrast, abstinence-only education is supported by several
religiously-based organizations, including the Family Research Council, Focus on the
Family, and the Heritage Foundation.

Several key stakeholders express ethical concerns related to abstinence-only
education. In a 2006 policy statement on abstinence-only education, the American Public
Health Association noted that “significant ethical and human rights concerns arise when
abstinence is presented to adolescents as the sole choice or when health information
regarding other choices is limited or misrepresented. APHA holds that individuals have
rights to accurate and complete information from their health care professionals and that
health care providers and health educators have ethical obligations to provide accurate
health information (APHA, 2006). Because good patient care is built upon notions of
informed consent and free choice, APHA holds that AOE programs are inherently
coercive by withholding information needed to make informed choices (APHA, 2006).
As defined by the U.S. government's own funding requirements, these programs are
required to “withhold information on contraception and other aspects of human sexuality,
and to promote scientifically questionable positions” APHA, 2006). Abstinence-only
education programs are insensitive to the needs of sexually active students; they also
neglect to address the needs of lesbian, gay, bisexual, and transgender (LGBT) students
(APHA, 2006; Santelli, Ott, Lyon, Rogers, Summers, & Schleifer, 2006). Same sex marriage is banned in 33 states; thus, abstinence-only programs effectively espouse that sexual minority students never engage in sexual intercourse. Finally, abstinence-only programs marginalize those teenagers who have been victims of sexual assault, who may feel further devalued by an abstinence-only message (see Dominguez, 2013).

In addition, several federally funded abstinence-only programs provide medically inaccurate information (United States Government Accountability Office, 2006). According to a 2004 congressional review, 85% (11 out of 13) of the most utilized abstinence-only curricula contained medical and scientific inaccuracies, including misrepresenting the effectiveness of condoms and providing misinformation about abortion risks and the incidence and transmission of STIs (Waxman, 2004). These programs also treat gender stereotypes as scientific facts; for example, women need “financial support” and men need “admiration,” and blur the lines between religion and science (Waxman, 2004).

In a 2007 report from Mathematica, a highly regarded policy research organization, final results from a multi-year, experimentally-based study of four different curricula-based abstinence-only programs showed that six years post-intervention, youth who participated in the abstinence-until-marriage education programs were no more likely than control group youth, who had access to no sexuality education services, to have abstained from sex. Among those youth who reported having had sex, those in the abstinence-only programs and those in the control group had similar numbers of sexual partners, had initiated sex at the same average age (14.9), and were equally likely to have engaged in unprotected sex. In contrast, youth in the abstinence-only program group
were less likely than those in the control group to report that condoms are usually effective at preventing STIs (Trenholm, Devaney, Fortson, Quay, Wheeler, & Clark, 2007). Furthermore, research suggests that adolescents who take a virginity pledge – an oral or written promise to refrain from sexual activity before marriage - within the context of abstinence-only education programs are no less likely than adolescents who did not take similar pledges to engage in sexual intercourse before marriage (Rosenbaum, 2009). One study found that 88% of adolescents who took virginity pledges reported engaging in sexual intercourse before marriage (Bearman & Bruckner, 2001); another study found that five years after taking a virginity pledge, 82% of pledges denied ever having taken the pledge (Rosenbaum, 2009). Pledgers are less likely than non-pledgers to use condoms or other forms of contraceptives (Rosenbaum, 2009) and are less likely to get tested or treatment for STIs (Bruckner & Bearman, 2005; Rosenbaum, 2009).

Several studies have also compared the effectiveness of abstinence-only education programs to comprehensive sexuality education programs. Systematic reviews have shown that, in comparison to teenagers receiving abstinence-only education, individuals receiving comprehensive sexual education had a lower likelihood of engaging in unprotected sex and had fewer sexual partners, and a lower risk of teenage pregnancy (Community Guide Branch, 2009; Kirby, 2007; Kohler, Manhart, & Lafferty, 2008). In a review of 56 studies assessing the impact of sexuality education curricula, Kirby (2008) found that most of the abstinence-only programs did not delay the initiation of sexual intercourse, and only one-third showed any significant positive effects on sexual behavior. In contrast, two-thirds of the comprehensive programs reviewed showed positive effects on sexual behavior, including delaying the initiation of sexual
intercourse, and increasing condom and contraceptive use. Of note, no research suggests that comprehensive sexuality education hastens sexual debut (Kohler et al., 2008; Underhill, Operario, & Montgomery, 2007).

Ironically, while the discussion of sexuality education has garnered a great deal of political and scholarly attention, the SHPPS reports that students receive very little education in sexuality; just 17.2 hours of instruction pertaining to pregnancy, HIV, and other STI prevention: 3.1 hours in elementary school, 6 hours in middle school, and 8.1 hours in high school (CDC, 2011). While several evidence-based, multi-year programs have been shown to be effective at reducing risky sexual behavior among youth (see Kirby, 2007 for a review), it is unclear just how many teenagers are receiving sexuality education grounded in some sort of evidence-base (SIECUS, 2004). Furthermore, these programs generally did not markedly reduce sexual risk taking or rates of STIs and pregnancy; even the most effective programs only reduced risky sexual behaviors by a third or less (Kirby, 2007). Of the 33 reviewed school-based sexuality education programs in Kirby’s comprehensive review of sexuality education programs for the National Campaign to Prevent Teen Pregnancy, more programs showed non-significant results than significant results for every category of sexual risk taking behavior, including delay of sexual initiation, number of partners, and condom and other contraceptive use (Kirby, 2007).

Thus, while there is mounting evidence suggesting the effectiveness of comprehensive sexuality education as compared to abstinence-only education, it is important to note that evidence-based programs intended to reduce teenage pregnancy, STIs, and associated sexual behaviors, do not appear to dramatically alter any of these
outcomes (Kirby, 2007). Also, since students enrolled in these programs are typically not evaluated past high school, the long-term stability of program outcomes is unclear (McLelland & Fine, 2008). Furthermore, these reviews are of curriculum-based sexuality education programs; we still know little about broader sexuality education efforts in schools. Compounding matters, some research suggests that even students in schools receiving funds for abstinence-only education may be receiving education in topics generally seen in more comprehensive courses, such as condom use (Jeffries, Dodge, Bandiera, & Reece, 2010). In sum, sexuality education in schools is a complex, divisive topic that garners much scholarly attention despite our limited understanding of what, exactly, students are learning and how this knowledge translates to changes in behavior over time.

*College Students’ Sexual Behavior*

The ages between 18 and 25 are often classified as emerging adulthood. Characterized by identity exploration, focus on the self, and feelings of endless possibility, those in this developmental stage are no longer adolescents, but not quite adults (Arnett, 2000). For emerging adults who attend college, there may be additional challenges. College is a time of great transition. For many young people, it is the first time they are living on their own, testing increased independence and separation from their parents. They are exposed to new stressors, such as greater academic demands and forging new social networks. Students who leave home for college/university often experience decreases in perceived social support and increased feelings of loneliness (Larose & Boivin, 1998). Furthermore, college students are often exposed to novel
situations and changing norms around peer drinking and sexual activity, all of which can be difficult to navigate.

Nearly 90% of college students report having engaged in sexual intercourse, and many report inconsistent condom use, having multiple casual partners, and using substances prior to sex (Centers for Disease Control [CDC] 1997; Desiderato & Crawford, 1995; Grello, Welsh, & Harper, 2006; Turchik et al., 2010). According to the American College Health Association’s National College Health Assessment, fewer than half of college students reported consistent condom use, and less than one quarter had been tested for HIV (Buhi, Marhefka, & Hoban, 2010). Consequently, college students are particularly at risk for STIs and unintended pregnancies (Eisenberg, Neumark-Sztainer, & Lust, 2005). Almost two-thirds of annual STI cases occur among youth aged 25 years or younger (Weinstock, Berman, & Cates, 2004) and one in every two sexually active youth will contract an STI by the age of 25 (Cates, Herndon, Schultz, & Darroch, 2004). Though they comprise 21% of the total population, nearly 26% of the estimated 47,500 new HIV infections in the United States in 2009 were among youths aged 13-24 (CDC, 2011). Fifteen percent of college females report unintentional pregnancy (CDC, 1997); women who become pregnant at 18 or 19 are less likely to complete college and have worse economic outcomes (Hoffman, 2006).

Furthermore, research suggests that college students – particularly college women – are at an increased risk of sexual assault. College women are more likely than similar-aged women in the general population to report that they were raped within the previous year (5.15% versus 0.94%; Kilpatrick, Resnick, Ruggiero, Conoscenti, & McCauley, 2007). Fisher and colleagues found that nearly 3% of their nationally representative
sample had experienced a completed or attempted rape in the previous seven months; extrapolated over an entire college career, this percentage may climb closer to 20 – 25% of women (Fisher, Cullen, & Turner, 2000). Fair & Vanyur (2011) found that 32% of sexually active college students reported being victims of sexual coercion, and 78% reported having verbally aggressive partners. The authors also found a negative relationship between sexual coercion and condom use consistency.

Typically, studies of sexual behavior neglect to account for the context in which the behavior occurs (Furman & Shaffer, 2011). In a content analysis of 324 abstracts of studies examining adolescent sexual behavior, Salazar and colleagues found that while almost all the studies (95%) examined individual characteristics related to sexual behavior, only 13% of the studies included any relationship factors in their models (Salazar, Bradley, Younge, Daluga, Crosby, Lang, & DiClemente, 2010). While approximately four-fifths of college students report that they have previously “hooked up” – or engaged in some type of sexual behavior with a casual partner (England, Shafer, & Fogarty, 2007; Paul, McManus, & Hayes, 2000) – the majority of sexual encounters on college campuses occur within the context of a committed romantic relationship (Fielder & Cary, 2010; Furman & Shaffer, 2011).

The Transition of Romantic Relationships from Adolescence to Young Adulthood

While in early adolescence there is a shift from parents as primary attachment figures to peers, by late adolescence this often shifts again to a romantic partner (Cyranowski, Frank, Young, & Shear, 2000; Kuttler & La Greca, 2004). Though romantic relationships in adolescence are often dismissed as superficial “puppy love” (Furman & Shaffer, 2003; Collins, 2003), research suggests that older teenagers’
portrayal of these relationships show strong resemblances to adult relationships in terms of commitment, passion, satisfaction, companionship, and communication (Levesque, 1993). Eighteen year olds typically report duration of romantic relationships of one or more years (Connolly & Johnson, 1996). For teenagers, having a high quality romantic relationship is associated with feelings of self-worth (Connolly, Furman, & Konarski, 2003). In addition, romantic relationships are the primary way in which teenagers learn about sexuality (Furman & Shaffer, 2003). They provide a context for discovering what is attractive and arousing, what partners like and dislike, and how to reconcile one’s own desires with those of one’s partner (Furman & Shaffer, 2003). The context of adolescent romantic relationships provides a foundation for understanding future romantic relationships (Collins, 2003). However, there is limited empirical research on the transition of romantic relationships from adolescence to young adulthood (see Furman & Winkles, 2011 for a review). Adolescents who have multiple dating partners may struggle to settle into exclusive romantic relationships with more adult-like features. Conversely, adolescents with few dating partners may have little opportunity to practice relationship skills needed for quality adult relationships (Madsen & Collins, 2011). Research suggests that better dating quality, as measured by conflict resolution, disclosure, enjoyment, intimacy, and security, is related to less negative affect and smoother relationship processes in young adult relationships (Madsen & Collins, 2011).

As teenagers transition from adolescence to young adulthood, the qualities and significance of romantic relationships change as well. Several theorists have proposed similar four-phase descriptions of these transitions in romantic relationships. Connolly and Goldberg (1999) propose that while initially relationships are about passion and
physical attraction, relationships go through three additional phases between adolescence and young adulthood, including an affiliative stage, in which romantic relationships emerge within the context of peers, an intimate stage, during which intimacy arises, and finally a committed romantic relationship stage, in which passion, affiliation, intimacy, and commitment define romantic relationships. Brown (1999) proposes similar stages of romantic relationship transition: an initiation phase, during which youths’ interest in the other sex increases; a status phase, in which one’s romantic relationships must be approved of by one’s peer groups; an affection phase, where the relationship is the focal point; and finally, a bonding phase. According to Brown, this bonding phase typically emerges in late adolescence and early adulthood and signifies the possibility of a long-term romantic commitment. Finally, Furman and Wehner (1994; 1997) propose that simple interchanges, casual dating, stable romantic relationships, and committed romantic relationships characterize the transition of romantic relationships from adolescence to young adulthood.

While inarguably differences will emerge across individuals and contexts, several differences between adolescent and young adult relationships have been identified. Both support and relationship satisfaction increase with age (Giordano, Flannigan, Manning, & Longmore, 2009; Seiffge-Krenke, 2003; Young, Furman, & Laursen, 2011). Romantic competence and confidence also increase as young adults become more comfortable negotiating romantic interactions; subsequently, feelings of awkwardness in communicating with romantic partners decrease (Young et al., 2011). Research on levels of conflict from adolescence to young adulthood is mixed, with some studies suggesting that conflict decreases from adolescence to young adulthood (Chen, Cohen, Kasen,
Johnson, Ehrensaft, & Gordon, 2006; Vujeva & Furman, 2011) and some suggesting it increases (Furman & Buhrmester, 1992). However, both problem-solving and conflict resolution skills tend to increase (Laursen, Finkelstein, & Betts, 2001; Vujeva & Furman, 2011). Problematically, research also suggests that interpersonal violence between dating partners increases between adolescence and young adulthood (Halpern, Spriggs, Martin, & Kupper, 2009). Finally, frequency of sexual intercourse is negatively associated with relationship quality in younger adolescents but positively associated with relationship commitment for older adolescents (Welsh, Haugen, Widman, Darling, & Grello, 2005). This finding suggests that for younger adolescents, sexual intercourse may be expressive of status or power (e.g., Savin-Williams & Diamond, 2004), but as adolescents grow older and their ability for intimacy and communication develop, sexual intercourse may become more symmetrical and mutually satisfying, thereby increasing relationship satisfaction (Welsh et al., 2005).

Taken together, research suggests that understanding sexual behavior of college students within a larger relationship framework is critical. Second, given the research on romantic relationships from adolescence to young adulthood, there appear to be tangible differences between romantic relationships in high school and in college and that these differences may relate to sexual behavior.

Sexuality Education & Adult Sexual Behavior

Though adolescence is just one developmental period of sexual and romantic relationship exploration, school-based sexuality education tends to focus predominantly on content areas or outcomes related to sexual behavior in adolescence, including abstinence, contraceptive use, and number of sexual partners, or knowledge related to
sexual behaviors, such as prevention of sexually transmitted infections and perceived
risks of having sex (e.g., Kirby, Baumler, Coyle, Basen-Enquist, Parcel, Harrist et al.,
2004; Kirby & Coyle, 1997; Kirby & Laris, 2009). There is limited focus on
contextualizing teenagers’ sexual behaviors within a larger ecological context, including
peer and romantic relationships, culture, and media (e.g. Bay-Cheng, 2003; Fine &
McLelland, 2006). There is also a limited focus on other types of sexual behavior, such
as kissing, fondling, masturbation, oral, and anal sex; implying that heterosexual, vaginal
sexual intercourse is the only “real” sex, (Bay-Cheng, 2003). Furthermore, school-based
sexuality education does not prepare teenagers to become lifelong, healthy sexual beings
(SIECUS, 2004; McLelland & Fine, 2008). This runs contrary to a growing research
base suggesting that the unparalleled focus on the negative consequences of sex for
teenagers may ultimately be doing them a disservice (e.g., Bay-Cheng, 2003; Boonstra,
2012; McLelland & Fine, 2008; Tolman, 1999). These critics suggest that sexuality
should be presented as a positive and healthy component of life; individuals must learn
when and how to say “no” but also when and how to say “yes” (Morris, 2004). What’s
more, the focus on sexual behaviors neglects to account for other emotional and physical
components of safe sex, including negotiating with dating partners, accessing
reproductive health services, and utilizing information learned in the classroom to
relationships later in life (McLelland & Fine, 2008). Given the evolution of romantic
relationships from adolescence to young adulthood, it is unclear how the information
learned in school-based sexuality education endures through young adulthood, if at all, or
if the information learned continues to be relevant.
Students’ perceptions of their formative experiences in sexuality education courses is a vastly understudied topic. This is likely due to the challenges inherent in conducting this type of research; public institutions such as schools typically shy away from allowing research on “risky” topics such as sexuality, wanting to avoid conflict and avoid compromising their core educational agenda by allowing an enhanced focus on sexuality education (Fields & Tolman, 2006; Kendall, 2008). One exception is a research study by McCaffree and Matlick (2001), who found that several students reported that their high school comprehensive sexuality education had a long-term impact on their lives, increasing self-efficacy related to sexual health skills. Nonetheless, students have very little voice in the decision-making process regarding sexuality education (Kendall, 2008). Several researchers have stressed the importance of engaging with youth about sexuality, allowing them to talk about what they need to know in order to develop into sexually healthy adults (e.g., Fine, 2005).

While research shows some evidence of effectiveness for comprehensive sexuality education, researchers typically do not follow students past high school (McLelland & Fine, 2008). Little is known about the relationship between sexuality education and sexual behaviors after students graduate. One study found that men who reported learning how to use a condom during high school sexuality education class were less likely to have been diagnosed with an STI and more likely to have been tested for an STI than were men without such education (Dodge, Reesc, & Herbenick, 2009). Lindberg and Maddow-Zimet (2012) used data from a national survey to compare sexual behavior in a sample of 15-24 year olds who received either abstinence-only or comprehensive sexuality education and found that those who received information on
both sexual refusal and methods of birth control were more likely to use condoms or contraceptives at first sex and had a first sex partner closer to their own age. Only one published study assessed the relationship between secondary school-based sexuality education and college behavior. Walcott, Chenneville, & Tarquini (2011) found little difference in regard to safer sex practices between students reporting comprehensive versus abstinence-only sexuality education. However, students who received comprehensive sexuality education were more knowledgeable about HIV, perceived sexuality education to be more helpful, and were more likely to be taught peer negotiation skills. However, in both this study, and that of Lindberg and Maddow-Zimet (2012), the wording of the questions regarding sexuality education left it unclear exactly what students learned. Based on detailed definitions provided, participants in the Walcott and colleagues’ (2011) study selected whether they had received abstinence-only or comprehensive sexuality education. The authors wrote that comprehensive models teach interpersonal and communication skills that allow teenagers to explore their own values, goals, and options, whereas abstinence-only models typically teach values, character building, and refusal skills. Yet even programs billing themselves as comprehensive frequently neglect to address communication skills or focus on proscriptive behavior such as delaying or refusing sex, rather than on clarifying one’s own values about sexual behavior (Schmidt, Wandersman & Hills, unpublished manuscript). Lindberg & Maddow-Zimet (2012) asked participants whether they had received formal instruction in “how to say no to sex” or “methods of birth control.” Nonetheless, details of birth control instruction were unclear, since birth control education could range from simply discussing failure rates to providing students access to reproductive health services.
Taken together, the paucity of research on the topic suggests that the relationship between specific content taught in school-based sexuality education and later sexual behavior needs to be further elucidated.

**Relationship Self-Efficacy as a Potential Mediator**

It is assumed that by the time individuals enter college, they will have acquired the skills they need to form lasting romantic relationships that are mutually satisfying in regards to affiliation, attachment, caregiving, and sexual gratification (Furman & Wehner, 1994). However, if late adolescents are not necessarily learning these skills in school-based sexuality education, it is important to understand where else they may be acquiring them. According to social cognitive theory (SCT; Bandura, 1989), individuals learn new behaviors by observing others. Learning is impacted by a model of reciprocal causation in which environmental, personal, and behavioral factors interact and influence one another bi-directionally.

As SCT proposes, knowledge and skills are a critical foundation; it is self-efficacy, or belief in one’s abilities to organize and execute actions needed to attain goals, that explains what individuals do with the knowledge and skills that they have (Bandura, 1986; 1994). Self-efficacy is determined by several interacting factors, including the ability to comprehend cause and effect, self-observation and self-regulation, and the response of social environments to one’s behaviors (Maddux & Gosselin, 2002). Self-efficacy has been shown to relate to various aspects of mental and physical functioning, including feelings of personal control, ability to cope with stressful situations, psychological health, preventing disease, and interpersonal competence (Bandura, 1997; Maddux & Gosselin, 2002).
While self-efficacy is frequently studied as a global construct (e.g., Bandura, 1994), measures of general self-efficacy are not as useful as understanding what people will do within a given context (Bandura, 1997; Maddux, 1995; Maddux & Gosselin, 2002). Researchers have long studied the relations between self-efficacy and sexual behavior. For example, several studies have found positive relationships between self-efficacy and various sexual behaviors for adolescence, including the ability to negotiate for safer sex (Sionéan et al., 2002), resist peer pressure to have sex (DiIorio et al., 2001), avoid sexual activity or risky sexual behavior (Faryna & Morales, 2000; Robinson, Price, Thompson, & Schmalzried, 1998; Robinson, Telljohan, & Price, 1999), and remain abstinent from sexual intercourse (Collazo, 2004). More specific types of self-efficacy, such as sexual self-efficacy and condom use self-efficacy, have also been shown to relate to sexual behavior. Condom use self-efficacy, a person’s confidence in his or her ability to successfully use a condom during sexual intercourse (Black, Sun, Rohrback, & Sussman, 2011), has been shown to relate to STI prevention and risk behavior in college women (Hale & Trumbetta, 1996), as well as condom use at last sex (Black et al., 2011). Sexual self-efficacy, or confidence in sexual situations, has been shown to relate to intentions to have safe sex (Van Campen & Romero, 2012).

Less often studied is relationship self-efficacy, the extent to which a person is confident in his or her abilities to manage day-to-day relationship issues with a partner. These issues include expressing emotional needs, dealing with disagreements openly, and accepting support (Lopez & Lent, 1991; Vanzetti, Notarius, & NeeSmith, 1992; Lopez et al., 2007). Inability to establish and maintain romantic relationships has been shown to relate to emotional and physical distress, whereas having a successful, healthy romantic
relationship is associated with personal well-being (Simon & Marcussen, 1999; Wickrama, Lorenz, Conger, & Elder, 1997). Cassidy (2001) proposed four key abilities needed for achieving intimacy in adult relationships: the ability to seek care, the ability to give care, the ability to feel comfortable with one’s autonomous self, and the ability to negotiate. Similarly, Lopez and colleagues (2007) proposed three factors intrinsic to relationship self-efficacy and, subsequently, relationship maintenance: mutuality, emotional control, and differentiation. Individuals with lower relationship self-efficacy feel less capable of resolving conflicts with their partners (Cui, Fincham, Pasley, 2008; Fincham, Harold, & Gano-Phillips, 2000) and are more likely to report both avoidance and anxiety within their relationships (Lopez et al., 1997).

No published research examines the links between relationship self-efficacy and risky sexual behavior. However, the skills needed that are related to engaging in safer sexual behavior, such as communication, negotiation, problem solving, and identifying and expressing needs (Tross et al., 2009), are similar to those needed to maintain a healthy relationship. For example, one study of urban minority women found that approximately half of inconsistent condom use could be attributed to the female having low power in her relationship (Wu, El-Bassel, Witte, Gilbert, & Chang, 2003). Thus, examining the relationship between relationship self-efficacy and sexual behavior seems to be a logical step. Furthermore, from a theoretical standpoint, comprehensive sexuality education courses are more likely to teach knowledge and skills related to maintaining a healthy dating relationship than are abstinence-only courses (e.g., SIECUS, 2004, Future of Sex Education Initiative, 2012). Subsequently, relationship self-efficacy may mediate the relation between school-based sexuality education and sexual behavior, and this effect
may be stronger for those who received comprehensive sexuality education as opposed to abstinence-only sexuality education.

*Gender as a Potential Moderator*

Gender roles are seldom explicitly discussed in evidence-based sexuality education programs (Schmidt et al., unpublished manuscript), and if they are discussed, they frequently rely on gender stereotypes (Bay-Cheng, 2003). However, the interplay of gender, sexuality, and romantic relationships suggests that the relationship between sexuality education, sexual behavior, and relationship self-efficacy may differ for men and women. Gender is integral to sexual expression. This is true both in terms of the way culture shapes what is considered appropriate sexual behavior for boys and girls and in terms of how health outcomes vary for boys and girls (e.g., Tolman, 1994; Impett, Schooler, & Tolman, 2006; DeLameter, 2007). Men and women are socialized differently regarding sexuality and may have different needs and expectations regarding their relationships (e.g., Tolman, Striepe, & Harmon, 2004). For example, men tend to have more permissive attitudes about casual sex, as well as engage in more casual sex, than do women (Grello et al., 2006; Petersen & Hyde, 2010). Furthermore, women tend to have different causes and consequences for having sex than do men. Men and women may have different reasons for engaging in sexual behavior. Women tend to place more emphasis on close relationships, (Graves, Senter, Workman & Mackey, 2010) which may alter their reasons for having sex. Women also tend to have less direct control over condom use, which means that they need a different type of skill set for negotiating the use of contraceptives (Impett et al., 2006). Sex also may have different consequences for young men and young women. Women are biologically more vulnerable to STIs
(Sagrestano, Rogers, & Service, 2008), more vulnerable to sexual assault and rape (US Department of Justice, 2003) than are men, and are more likely to bear the primary physical and emotional burden of an unplanned pregnancy (DeLameter, 2007).

Finally, research suggests that while sexually active teenagers most often have partners relatively close in age, 56% of females have recent partners one to three years older than they are, and 24% have recent partners who are at least four years older. In contrast, among sexually active males, as age increases, the odds of having a younger female partner also increase. At 19, more than half of males reported having a sexual partner one to three years younger (Vital & Health Statistics, 2002). Though it is unclear how age discrepancies may impact sexual behavior in college years, research suggests that not only do adolescents with older partners exhibit greater sexual risk-taking behavior during their teenage years, but also a greater partner age difference at first consensual intercourse is associated with a greater proportion of unprotected sex during young adulthood (Senn & Carey, 2011). It is possible that given the power imbalance in these age discrepant relationships, adolescent females who engage in sexual relationships with significantly older men may not develop the skills needed to negotiate for safer sex (Johnson, Scott-Sheldon, Smoak, Lacroix, Anderson, & Carey, 2009; Stein, Kaufman, Ford, Feldblum, Leone, & Miller, 2008). In sum, given the different patterns of socialization, the different risks and consequences of sexual behavior, and the different emphasis on romantic relationships for men and women, it seems likely that the effect of relationship self-efficacy on predicting the relation between type of sexuality education and various sexual behaviors will differ by gender.

*The Current Study*
The purpose of the current study is to explore the following three aims. The first aim is to investigate what content first-year college students report receiving and not receiving in secondary school-based sexuality education, including whether sexuality education could be classified as abstinence-only or comprehensive. The second aim is to examine prevalence of several sexual behaviors as they differ according to gender and type of sexuality education received. The third aim is to examine whether relationship self-efficacy mediates and gender moderates type of school-based sexuality education (i.e., abstinence-only versus comprehensive) and four specific sexual behaviors during the first year of college, including sexual intercourse with infrequent partners: a) without a condom and; b) without use of any protection against pregnancy and sexual intercourse with reasonably permanent partners; c) without a condom and; d) without any protection against pregnancy. The research questions are as follows: 1) What topics do first-year college students report receiving in school-based sexuality education? 2) In what types of sexual behaviors do first-year college students report engaging and does prevalence of behaviors vary according to gender and type of sexuality education received? We predicted that males will engage in riskier sexual behaviors than females, but this will be qualified by type of sexuality education. Specifically, individuals who received abstinence-only sexuality education will use condoms and contraceptives less frequently than individuals who received comprehensive sexuality education. 3) Does relationship self-efficacy mediate the relation between school-based sexuality education and sexual behavior? We predicted relationship self-efficacy will mediate the relation between type of sexuality education and sexual behavior, but the mediated effect will be stronger for those who received comprehensive sexuality education. 4) Given the differences
between males’ and females’ conceptualizations of sexual behavior, societal factors, and relationship factors, does gender moderate the proposed relation between type of sexuality education and relationship self-efficacy as well as type of sexuality education and sexual behaviors. Given the exploratory nature of these analyses, no specific predictions were made about the moderated-mediation models.
CHAPTER 2
METHOD

Participants

Participants were recruited from the University of South Carolina, Western Michigan University, and the University of Montana at Missoula. Recruitment began in early December, 2013 and continued through April 2014. A collaborator at each participating university was identified in order to facilitate recruitment efforts. Several recruitment strategies were utilized, including emails to professors of large introductory courses in psychology, sociology, public health, and biology, flyers posted around campus, and announcements in individual classes. In addition, the SONA System’s human subject pool was used at the University of South Carolina. The SONA System is used by numerous universities and allows students to sign up online to participate in research and receive extra credit. Participants who desired extra credit through the SONA system were instructed to email the Primary Investigator a screenshot of the final page of the survey, which stated, “Thank you for your participation in the Sexuality Education and Sexual Behaviors Survey; your assistance is greatly appreciated,” as well as the unique 7-digit identification code generated by the survey platform. This was conducted to ensure completion of the survey, as well as to control for multiple individuals submitting the same screenshot. In addition, several faculty members at the University of Montana and Western Michigan University allowed students to print the
final page of the survey and the unique 7-digit ID and submit them by hand for extra credit. These documents contained no information regarding specific survey responses. As an additional incentive for survey completion, participants could choose entrance into a raffle to win one of five $50 gift certificates to Amazon.com. Six hundred and ten participants completed the survey. All participants were first-year college students who graduated from high school in the United States in 2013.

Measures

Demographics. A demographic survey section was created including date of birth, gender, race, highest level of education obtained by either parent, religious affiliation, religiosity, type of residence, political affiliation, and sexual orientation. Participants were also asked to identify in which state they spent the majority of their high school career and what type of school they attended, as well as what university they currently attend and whether they reside on campus or at home.

Sexuality Education. The sexuality education component was comprised of three sub-sections. First, participants reported on the amount, quality, structure, source, and depth of high school sexuality education lessons. Second, participants reported on content areas taught in their sexuality education courses. Specifically, participants were asked, “At any point in your high school sexuality education classes, were you taught about the following? (check all that apply).” Participants indicated “Yes” or “No” in response to several content areas. Content areas included how to properly use a condom, abstinence from sexual activity, communication with a romantic partner, peer negotiation skills, sexually transmitted infections, pregnancy and reproduction, and homosexuality. Participants were also given the option to write in additional components. The third sub-
section of the sexuality education survey included several qualitative items related to perceived strengths and weaknesses of participants’ school-based sexuality education, perceived helpfulness, and perceived barriers to teaching sexuality education. Participants who reported that they did not receive sexuality education in high school were asked from what sources they did receive information about sexuality and were then advanced to the next section of the survey. Given that there are no substantiated measures surveying students’ experiences with school-based sexuality education, the Sexuality Education Survey was pilot tested with 55 undergraduate students at the University of South Carolina who were enrolled in a course on psychological research methods. After completing the survey, participants were asked to provide feedback on the item construction, ordering of questions, and survey content, as well as any information that the survey may not currently be capturing. Feedback was incorporated into the survey for the larger sample.

**Sexual Behaviors.** The sexual behaviors component began with the following description: “Unless otherwise specified, for purposes of this survey, sexual intercourse is defined as vaginal, anal, or oral sex.” Next, participants’ own definitions and appraisals of risky sexual behaviors were assessed. Participants were asked whether they had engaged in either psychologically or physically risky sex. If they answered yes, they were then asked to describe their experiences (e.g., Lustig, 2012). The goals of these items were: a) to obtain participants’ understanding of their own risky behaviors; and b) to corroborate this information with quantitative survey items. Next, participants were asked, “Have you ever had sexual intercourse?” Those responding “No” answered the item about pubertal timing, the items about dating violence and sexual assault, and were
then advanced to the next section of the survey. Those responding “Yes” were then asked at what age they first had sexual intercourse, with whom (e.g., with a steady romantic partner; with a friend or acquaintance; or with someone the participant just met), and the sex of the partner. They were also asked about pubertal timing. The remainder of the items on this survey began with the following instructions: “The following items ask you about various behaviors in which you may or may not have engaged.” Items 1 and 2 asked participants about number of opposite sex and same sex partners “since the beginning of your freshmen year in college” as well as “in your lifetime, including this year.” Participants also indicated whether the partner was a partner in a “committed or stable relationship” or a partner with whom they had sex with “once or infrequently.” Item 3 was adapted from Turchik and colleagues’ (2010) measurement of sexual risk taking, and asked “How many partners have you had sex with that you did not trust” both since the beginning of freshmen year in college and in your lifetime, including this year.” Items 4 through 14 were also adapted from Turchik and colleagues (2010), and asked about condom and birth control use, drug and alcohol use before sex, sexual regret, communication with sex partners, and sex with someone participants just met. A strength of Turchik and colleagues’ (2010) measure of sexual risk is that it differentiates between oral, vaginal, and anal sex acts, a property retained by the current study. However, we modified these items so that “committed” and “infrequent” partners were measured separately. For the items asking specifically about condom use and pregnancy protection during vaginal intercourse, as well as condom use during oral and anal intercourse, study participants were given the option of selecting “I have never
had vaginal (oral/anal) intercourse” or “I have had vaginal (oral/anal) intercourse, but not during my freshmen year in college.”

One limitation in sexual risk taking surveys is that respondents frequently rely on proportion data (Shroeder et al., 2003). While proportion data provides an understanding of how common it is for a person to engage in a specific behavior, it does not provide any information about relative risk. For example, Person A who has sex ten times and uses a condom twice would report that he/she uses a condom 20% of the time. In contrast, Person B who has sex one hundred times and uses a condom during eighty of these encounters would report that he/she uses condoms 80% of the time. While Person B’s behavior would appear less risky than Person A’s on a measure of frequency, his/her behavior would appear more risky on a measure of count (twenty unprotected encounters versus eight unprotected encounters). Nonetheless, only collecting count data would be a disadvantage. First, people with more sexual partners are more likely to struggle to recall specific frequencies of behavior (Catania et al., 1990). Thus, it is possible that the more sexual encounters a person experiences, the harder it will be for that person to accurately provide count data. Second, count data does not allow for an understanding of how representative a certain behavior might be for any given individual. Subsequently, while Turchik and colleague’s (2010) original measure includes only count data, we expanded these items to include information about frequency – or proportion - of behaviors. This was conducted so as to better capture the full picture of participants’ sexual behaviors. For example, for the item “How many times have you had vaginal intercourse without a latex or polyurethane condom?” participants both wrote in a specific number of times, as well as responded to a 5-point scale that asked “Is this number: Never; Seldom;
Sometimes; Most Times; Always?” Specific wording of the answer choices was adapted from the Monitoring the Future Survey (Johnston, O’Malley, Bachman, Schulenberg, & Patrick, 2012). Questions 15, 17, and 18 were adapted from the CDC-Youth Risk Behavior Survey (Brenner et al., 2002). Question 15 asked, “How many times did you drink alcohol or use drugs before you had sexual intercourse?” Questions 17 and 18 asked “In your lifetime, how many times has your boyfriend or girlfriend hit, slapped, or physically hurt you on purpose?” and “In your lifetime, how many times have you been forced to engage in any kind of sexual contact when you did not want to?” On these two items, participants also indicated “when was the first time this happened?” and “when was the last time this happened?” Participants also had the option of indicating “This has never happened to me.” Question 16 was taken from the National College Health Survey (2011) - “How many times have you or your partner(s) used emergency contraception? (‘morning after pill’)?” The next two items varied by gender. Participants were asked, “How comfortable do you feel asking a sexual partner to wear a condom?” and “How willing would you be to wear a condom if a sexual partner asked you to?” Response options for the former were “not at all, somewhat, often, extremely, or n/a I’m a male;” response options for the latter were “not at all, somewhat, often, extremely, or n/a I’m a female.” Finally, perceived peer norms were measured from the following two items adapted from the National College Health Survey (2011). Item 21 asked about frequency of oral, vaginal, and anal sex; “Within the last 30 days, how often do you think the typical student at your school has had: (place a checkmark in the appropriate box).” Item 22 asked, “Within the last 30 days, how often do you think the typical student at your school
has used a condom during (oral sex/vaginal sex/anal sex).” Participants had the option of selecting “The typical student at my school does not participate in this sexual activity.”

**Relationship items.** Participants were asked several questions pertaining to their current relationship status. They were first asked “Which of the following best describes your dating, sexual, or romantic relationship status?” Response options were “Never dated”; “Not currently dating”; “I go out on dates but I’m not in a sexual or romantic relationship”; “I am currently involved in a casual dating or sexual relationship”; and “I am in a committed, monogamous romantic relationship.” Individuals who responded that they had never dated were advanced to the next section of the survey. Those who indicated that they were currently dating, or go out on dates but were not involved in a committed relationship, or were currently involved in a casual dating or sexual relationship were then asked “Have you ever been in a monogamous romantic relationship?” Answer choices were “Yes, Currently;” “Yes, Previously,” and “No.” Participants responding “No” were advanced to the next section of the survey. Those indicating that they were currently in a monogamous relationship were then asked questions pertaining to the duration of the relationship, gender of their partner, and age of their partner. For those indicating that they were previously involved in a monogamous relationship, they were asked to identify the duration of their longest monogamous relationship, the gender of the partner, their age at the beginning of the relationship, and their partner’s age at the beginning of the relationship.

**Relationship self-efficacy.** The Relationship Self-Efficacy Scale (RSES; Lopez & Lent, 1991; Lopez et al., 2007) is a 35-item measure used to assess respondents’ confidence in their ability to manage aspects of their relationships with their intimate
partners. Typically, the instructions read, “Within your present relationship, how confident are you in your ability to do each of the following?” However, the instructions were modified to account for individuals not currently in a committed romantic relationship. Instead, the instructions read “Please answer the below items as they pertain to one individual. About whom will you be answering these items: 1) Current monogamous partner; 2) Current casual dating or sexual partner; 3) Prior monogamous partner; 4) Prior casual dating or sexual partner; 5) Never dated – answering about a hypothetical partner.” Participants were then prompted with the following: “Within your relationship specified above, how confident are YOU in YOUR ability to do each of the following?” The RSES uses a 9-point Likert-type scale ranging from 1 (I’m not at all confident) to 9 (I’m completely confident). Participants reported on confidence in their skills to: a) Provide care and receive care and support from their partner (“Mutuality;” sample item: “Tell your partner when you feel you are unable to solve a personal problem”); b) Regulate negative feelings of frustration, anger, or disappointment with their partner (“Emotional Control;” sample item: “Stay calm when you and your partner are having a serious argument”); and c) Express needs for separateness and assertively maintain clear interpersonal boundaries with their partner (“Differentiation;” sample item: “Tell your partner when you would prefer to spend time with other friends”)

Cronbach alphas for the scores on Mutuality, Emotional Control, and Differentiation were .93, .85, and .79, respectively (Lopez et al., 2007). Our sample obtained slightly higher alphas of .97, .87, and .84, respectively. The entire survey can be found in Appendix A.

Procedure
Participants were recruited from the University of South Carolina, Western Michigan University, and the University of Montana at Missoula. Recruitment began in early December, 2013, and continued through April, 2014. A collaborator at each participating university was identified in order to facilitate recruitment efforts. Several recruitment strategies were utilized, including emails to professors of large, introductory courses in psychology, sociology, public health, and biology, flyers posted around campus, and announcements in individual classes. In addition, the SONA Systems’ human subject pool was used at the University of South Carolina. The SONA System is used by numerous universities and allows students to sign up online to participate in research and receive extra credit. Participants wishing to receive extra credit through the SONA system were instructed to email the Primary Investigator a screenshot of the final page of the survey, which said, “Thank you for your participation in the Sexuality Education and Sexual Behaviors Survey; your assistance is greatly appreciated,” as well as the unique 7-digit identification code generated by the survey platform. This was done to ensure completion of the survey, as well as to control for multiple individuals submitting the same screenshot. In addition, several faculty members at the University of Montana and Western Michigan University allowed students to print the final page of the survey and the unique 7-digit ID and submit them by hand for extra credit. These documents contained no information about specific survey responses. As an additional incentive for being willing to complete the surveys, participants could choose to be entered into a raffle to win one of five $50 gift certificates to Amazon.com.

Online questionnaires were administered via PsychData (www.psychdata.com), which allows researchers to create internet-based surveys. PsychData’s services exceed
industry standards for internet security, as well as adhere to IRB policy for the protection of research participants. All participants first read an informed consent form that specified the details of the study, participants’ rights, and contact information for the principal investigator. After reading the informed consent, participants could either choose not to take the survey or to begin the study. Those who chose to begin the survey acknowledged that they understood the purpose of the study, that they voluntarily agreed to participate, and that they could choose at any time to stop participating with no adverse effects. In order to ensure confidentiality, two surveys were created, one for identifying information (an e-mail address, to inform raffle winners), and one for the survey questions. The data from the two surveys was not linked. All survey information was downloaded on a weekly basis by the Primary Investigator. At the conclusion of the survey, participants were debriefed and instructed to contact the principal investigator with any questions or concerns regarding study participation.

Once results were analyzed, a youth advisory survey was created with a target number of eight participants. The purpose of this survey was to garner reactions to the findings, identify avenues for future research, and discuss policy implications. On the separate survey on which participants provided their email addresses, they were also asked to indicate whether they were open to being contacted for an interview regarding the findings. One hundred and one participants agreed to be contacted. A random number generator was used to select thirty-two of these participants in order to ensure eight completed interviews. The survey was closed once eight completed surveys were logged. All study procedures were approved by the Institutional Review Board (IRB) at all three participating universities.
Data Analytic Plan

Analysis of Survey Data

In order to address the first research question, “What topics do first year college students report receiving in school-based sexuality education?”, frequencies were computed on the topics that participants indicated learning in their middle and/or high school sexuality education classes. In addition, descriptive statistics on amount, quality, structure, source, and depth of secondary school sexuality education lessons were computed. To address the second research question, “In what types of sexual behaviors do first-year college students report engaging and does prevalence of behaviors vary according gender or type of sexuality education received?”, counts and frequencies were computed on thirty-four sexual behaviors of interest, including virginity status; number of partners in a reasonably permanent relationship; number of partners in an infrequent sexual relationship; condom use with infrequent partners; birth control use with infrequent partners; sexual intercourse with someone participants just met; sexual intercourse before discussing STI history; and engaging in sexual intercourse that participants later regretted. Examples of the open-ended questions regarding physically and psychologically risky sex are also provided.

Individuals who responded to count data items with frequencies (e.g., “sometimes,” “most of the time”) were excluded from the count data analyses. On the frequency items, individuals who responded that they had never engaged in the behavior or they had engaged in the behavior but not since the beginning of freshmen year were excluded from the frequency analyses. The count data items that asked specifically about behavior since the beginning of freshmen year were then recoded to account only for
individuals for whom the question was applicable. For example, if an individual responded “0” to the count item “How many times have you had vaginal intercourse without a latex or polyurethane condom with partners in a reasonably permanent relationship?” and responded on the frequency item that they “Never” did not use condoms in a reasonably permanent relationship, the count data would be used for analyses. However, if an individual responded “0” to the count item “How many times have you had vaginal intercourse without a latex or polyurethane condom with partners in a reasonably permanent relationship?” and said that they “Never had vaginal intercourse with a partner in a reasonably permanent relationship,” this person would be removed from the count data analyses for this item.

*Moderated-Mediation*

To address the remaining two research questions, the analyses utilized multiple moderated mediation models. Mediation models – or conditional indirect effect models - can highlight how two variables are related. A mediation effect occurs when the causal impact of an independent variable, X, on a dependent variable, Y, is transmitted via an intervening or mediating variable, M (Preacher, Rucker, & Hayes, 2007). However, oftentimes, mediation effects do not remain constant across different contexts and groups of individuals (Preacher et al., 2007). Moderation models test whether the prediction of Y from X differs across levels of the moderator variable, Z. Moderated-mediation models expand on the simple mediation and moderation models by attempting to explain both how and when a specific effect occurs (e.g., Frone, 1999). Moderated mediation occurs when the strength of the indirect – or mediated – effect depends on the level of some other variable, the moderator.
It was predicted that type of sexuality education would have an indirect effect on four different sexual behaviors through relationship self-efficacy. Frequency data, as opposed to count data, was used for moderated-mediation models in order to maximize power. Furthermore, it was hypothesized that gender would moderate the relationship between type of sexuality education and relationship self-efficacy as well as between type of sexuality education and sexual behavior.

For all four moderated-mediation analyses, we controlled for relationship status in order to maximize the variability attributed to sexual behaviors, as well as for primary place in which individuals received sexuality education in order to maximize the variability attributed to school-based sexuality education. In addition, we anticipated controlling for variables that are typically found to be associated with sexual behavior in college students, including religiosity (Landor, Simons, Simons, Brody, & Gibons, 2011; Uecker, 2008), perceived peer norms (Martens, Page, Mowry, Damann, Taylor, & Cimini, 2006), age at first intercourse (Santelli, DiClemente, Miller, & Kirby, 1999), and race (Owen, Rhoades, Stanley, & Fincham, 2008). To determine potential control variables for each of the four models, inter-correlations were computed among the variables of interest, and demographic and relationship items were tested as possible control variables.

Type of sexuality education was dichotomized based on responses to the item “At any point in your middle/high school sexuality education classes, were you taught about the following?” Individuals who reported receiving “abstinence from sexual activity” and did not endorse learning “how to properly use a condom” or “how to properly use other forms of birth control” were classified as having abstinence-only sexuality education.
Individuals who reported receiving information on “how to properly use a condom” or “how to properly use other forms of birth control” were classified as having comprehensive sexuality education, regardless of whether or not they were also taught about abstinence. Next, four separate mediation models were computed according to the parameters outlined by Preacher and colleagues (2007). The conceptual model is presented in Figure 1. Multiple regression equations were used to examine path a, (type of sexuality education, gender, and the interaction of type of sexuality and gender) on relationship self-efficacy; path b (relationship self-efficacy predicting sexual behavior outcomes), path c (type of sexuality education, gender, and the interaction of type of sexuality education and gender predicting sexual behavior outcomes) and path c’ (type of sexuality education, gender, and the interaction of type of sexuality education and gender predicting sexual behavior outcomes controlling for relationship self-efficacy).

Relationship self-efficacy was centered prior to its inclusion in the model (MacKinnon, 2008). To test the significance of the indirect effect of type of sexuality education on sexual behaviors through relationship self-efficacy, the PROCESS macro in SPSS developed by Preacher and colleagues was utilized (2007). Conditional indirect effect models were computed and examined the relation between the independent variable (type of sexuality education) and mediator (relationship self-efficacy) hypothesized to vary according to gender. In order to conclude that moderated-mediation occurred, the interaction of type of sexuality education and gender needed to significantly predict various sexual behaviors, and the mediated effect of type of sexuality education on various sexual behaviors through relationship self-efficacy had to differ between men and women (Preacher et al., 2007). To test the moderated-mediation models, the sampling
distributing of the conditional indirect effects was estimated non-parametrically through bootstrapping techniques, which has been widely advocated for use in moderated mediation tests (e.g., Preacher & Hayes, 2008; Shrout & Bolger, 2002). In turn, the bootstrapping distributions were used to generate confidence intervals for the conditional indirect effect. If the confidence interval does not contain zero, the null hypothesis that there is no conditional indirect effect was rejected (Preacher et al., 2007). The moderation and mediation effects were analyzed simultaneously in order to understand how the effects work both separately and collectively. That is, we examined whether gender (Z) moderated the path between sexuality education (X) and relationship self-efficacy (M) as well as the path between sexuality education (X) and sexual behavior (Y) controlling for relationship self-efficacy (M) in the same model. Finally, in order to test the c paths, we ran regressions testing the direct effects of type of sexuality education, gender, and type of sexuality education by gender on individual sexual behaviors.

Test of Regression Assumptions. If bootstrapping techniques are used, the only regression assumptions that are required when testing conditional indirect effects are linearity independence of observations. To test linearity, the dependent variables were plotted against relationship self-efficacy to see if the lowest lines deviated from a straight line. Scatterplots indicated linear relationships between all four sexual behavior items and relationship self-efficacy, so transformations were not applied. To test independence of observations, the possibility of clustering of observations from students attending the same school was investigated using t-tests. T-tests and chi-squared analyses were conducted comparing students from the three universities represented on gender, type of sexuality education, relationship self-efficacy, and all sexual behavior variables. The
only difference that emerged was the number of lifetime opposite sex partners $F(3, 431) = 2.704, p = .045$. However, after applying a Bonferroni correction to account for Type 1 error in running multiple simultaneous t-tests, the significance disappeared.

**Outliers.** To examine outliers in the count data of sexual behavior, frequencies were computed and histograms were plotted. Four participants whose data were outside the acceptable range were removed from subsequent analyses.

**Power.** According to Preacher, Rucker, & Hayes (2007), to achieve .80 power, 435 participants are needed for small effect sizes. However, given that the outcomes required that participants had engaged in sexual intercourse, the target number of participants was modified. According to a large-scale nationally representative survey, 66% of females and 67% of males have engaged in sexual intercourse by their 19th birthdays (Finer & Philbin, 2013). Thus, to have power to detect a significant moderated-mediation effect once we removed virgins from the sample, 660 participants were needed.

**Missing Data.** The setup of the survey required that no items be skipped. The main strength of this approach is that there was a complete data set for every participant. Given the sensitive nature of several of the survey items, it was anticipated that if items were allowed to be skipped, the data would be Missing Not At Random (MNAR). That is, participants would be more likely to skip items pertaining to sexual behaviors than they would other items. While it is possible to create a complex model for MNAR data, the methodology can be problematic, relying on untestable assumptions (e.g., Enders, 2011). Instead, in order to account for the fact that some items would not be applicable to all participants (i.e., items about sexual intercourse for participants who indicated they
had never had sex), skip patterns were created within the survey. Thus, there were no missing data for any of the participants.
Figure 2.1: Relationship self-efficacy as mediator between type of sexuality education and condom use with partners in a reasonably permanent relationship, with gender moderating this relationship.
CHAPTER 3
RESULTS

A total of 940 unique entries were recorded between December 2, 2013 and April 30, 2014. Of these, 660 surveys were complete. However, after sorting the data by IP address and date, it became evident that several students either: a) completed the survey twice \( (n = 8) \) or b) misrepresented their year in school in order to become eligible for the survey \( (n = 42) \). Those who misrepresented their year in school were evidenced by individuals with the same IP address and the same birthday who responded to “What is your year in college?” with “sophomore,” “junior,” or “senior,” became ineligible for the survey, and then within minutes logged into the survey again and responded to “What is your year in college” with “freshman.” These individuals were removed from analyses.

Those who took the survey to completion twice in a row were also evidenced by the same IP address and birthday. In these cases, only the first set of answers was used for analyses.

Altogether, 696 individual responses met eligibility criteria. One hundred and two individuals accounted for the 244 responses that did not meet criteria. Eighty-five people (113 unique entries) were removed because the person was ineligible by not being a freshman or not graduating from high school in 2013. Of these individuals, 62 accessed the survey once, 19 accessed the survey twice, two accessed the survey three times, and two accessed the survey four times. As explained above, an additional 42 individuals (108 unique entries) who were initially not eligible signed back into the survey and
altered their demographic information to become eligible. Of these individuals, 24 accessed the survey once more, 13, twice more, four, threentimes more, and one individual accessed the survey four times more. Of the remaining 23 entries that did not meet study criteria, one individual declined to consent. Eight surveys were removed due to double completion, and an additional eight were removed because the individual started the survey, exited, and then restarted and completed the survey. In this case, the second, complete data was used. Finally, four individuals who were otherwise eligible and completed the survey, but were younger than 18, were removed from the analyses.

Of the 696 individual responses that met eligibility criteria, 610 completed the survey (87.64%). Of the 86 individuals who were eligible but did not complete the survey, 41 (47.67%) consented to the survey but did not begin answering items. Forty-five individuals completed at least part of the survey.

T-tests were computed comparing demographic variables for those who completed the survey and those who started the survey but did not complete it. No statistically significant differences emerged between age, gender, university attended, race, political affiliation, or religious affiliation for completers versus non-completers.

Correlations

Correlations were computed between condom use with vaginal sexual intercourse partners in reasonably permanent and infrequent relationships, birth control use with vaginal partners in reasonably permanent and infrequent relationships, and potential control variables, including religiosity, perceived peer norms, age at first intercourse, relationship self-efficacy, and number of sources from which participants received sexuality education. The four sexual behavior variables were significantly and positively
correlated. Age at virginity loss was significantly correlated with condom use with partners in a reasonably permanent relationship. The older individuals were when they first engaged in consensual sexual intercourse, the more likely they were to use condoms with partners in a reasonably permanent relationship. Perceived peer norms was significantly correlated with birth control use with partners in a reasonably permanent relationship as well as with condom use with partners in infrequent relationships. In particular, the more participants perceived their peers engaging in vaginal intercourse without a condom, the less likely they were to report using any type of birth control with partners in a reasonably permanent relationship or to use condoms with partners in infrequent relationships. Relationship self-efficacy was significantly positively correlated with not using condoms with partners in relatively permanent relationships, but significantly negatively correlated with not using condoms with infrequent partners. As participants felt more comfortable managing their day to day relationships, they were less likely to use condoms with permanent partners, but more likely to use condoms with infrequent partners. Neither religiosity nor number of sources from which participants received sexuality education was significantly correlated with any of the sexual behavior items. All correlation results are presented in Table 3.1.

**Demographics**

Of the 610 participants who were eligible and completed the survey, 161 were male (26.4%) and 447 were female (73.3%). Two participants (.3%) reported being transgender. Over half of the participants attended the University of South Carolina at Columbia (n = 341, 55.9%). One hundred and seventy-one attended Western Michigan University (28.0%), 90 attended the University of Montana at Missoula (14.8%), and
eight reported attending another university (1.3%). Participants ranged from 18.01 to 21.69 years of age (\(M = 18.96, SD = .41\)), and the majority (550, 90.2%) reported living on campus. Participants were predominantly Caucasian (\(n = 526, 86.2\% \)). Fifty-one participants said that they were of African-American heritage (8.4%), and twenty-five were of Hispanic/Latino heritage (4.1%). Most participants reported that the highest level of education achieved by at least one of their parents was either a college degree (\(n = 215, 35.2\% \)) or a master’s degree (\(n = 140, 23\% \)). Three-fourths of respondents said that they lived with both of their parents during high school (\(n = 450, 73.8\% \)), and almost half were raised in suburban environments (\(n = 365, 49.8\% \)). The majority of participants attended public high school (\(n = 510, 83.6\% \)).

Four-fifths of male participants reported being only attracted to females (\(n = 128, 79.5\% \)), and 8.1% reported being mostly or solely attracted to males (\(n = 13\)). Among females, 395 (88.4%) reported being only attracted to males, and 1.6% (\(n = 7\)) said that they were only or mostly attracted to females. One-third of participants were Catholic (\(n = 206, 33.8\% \)), and nearly one-fifth were Protestant (\(n = 113, 18.5\% \)). Nearly half of participants said that their religious faith was either moderately or very strong (\(n = 282, 46.3\% \)). In terms of political affiliation, 181 participants said that they identified as Democrats (29.7%), and 251, as Republicans (41.1%).

With regards to relationship status, 58 participants reported that they had never dated (9.5%), while 183 (30.0%) said that they were not currently dating or involved in a romantic relationship, but had been so in the past. Two hundred and ten said that they were in a committed, monogamous romantic relationship (34.4%), while an additional 100 participants reported being in a casual dating or sexual relationship (16.4%). Of the
individuals currently in monogamous relationships, significantly more females than males reported having a partner who was over the age of 18 (67.9% versus 47.5%). Scores on relationship self-efficacy ranged from 35 to 315 ($M = 257.24, SD = 49.42$). All demographic information is presented in Table 3.2.

**Sexuality Education**

Participants attended high school in 33 states and Guam. The majority of participants reported having sexuality education in high school ($n = 529, 86.7$%). Of the 81 participants who said they did not have sexuality education in high school, 42 said they had sexuality education in middle school (51.9%). Thirty-nine participants (6.4%) reported having no sexuality education in either middle or high school.

Of the 571 participants who said that they had at least some secondary sexuality education in schools, 189 reported that their sexuality education classes began in elementary school (33.1%). An additional 155 reported having sexuality education beginning in 6th grade (27.1%), and 100 said their sexuality education began in 7th grade (17.5%). Nearly half of participants said that their sexuality education classes were taught by either a coach or a gym teacher ($n = 276, 48.3$%), while nearly one-third said classes were taught by a trained health educator ($n = 186, 32.6$%). Two hundred and sixty-nine participants reported that their sexuality education classes were mixed sex (47.1%), with similar numbers reporting that their sexuality education was either single sex ($n = 143, 25$%) or some of each ($n = 157, 27.5$%). Over half of participants said that the time dedicated to teaching sexuality education was between 1 – 10 hours ($n = 307, 53.8$%), with an additional 20.8% reporting 11 – 20 hours of sexuality education ($n = 119$). The most commonly discussed topic reported by participants was abstinence from
sexual activity \((n = 561, 91.2\%)\), followed by sexually transmitted infections (STIs) and HIV \((n = 518, 90.7\%)\), pregnancy and reproduction \((n = 487, 85.3\%)\), and puberty and adolescent development \((n = 485, 85.1\%)\). Least commonly reported topics were homosexuality \((n = 170, 29.8\%)\), gender roles \((n = 224, 39.2\%)\), and media’s influence on sexuality \((n = 269, 41.1\%)\). All sexuality education topics are listed in Table 3.3.

Participants reported receiving education about sex and sexuality from an average of 4.39 different sources. While most participants said that they received sexuality education in school, only one-fifth of participants said that school and/or teachers was their primary method of sexuality education \((n = 125, 20.5\%)\). Over one-third reported that their primary method of sexuality education was through their peers \((n = 217, 35.6\%)\), and an additional one-fifth said their primary method was through their parents \((n = 130, 21.3\%)\). When asked where else they received sexuality education, 427 \((70.0\%)\) said the media, 376 \((61.6\%)\) said their peers, 352 \((57.7\%)\) said their parents, and 324 \((53.1\%)\) said the Internet. More than half of participants said that they engaged in ongoing conversations about sexuality with their parents growing up \((n = 330, 54.1\%)\), and one quarter reported that they had never spoken with their parents about sex \((n = 156, 25.6\%)\). All sexuality education data is presented in Table 3.4.

Based on the criteria outlined previously, 206 participants reported receiving abstinence-only sexuality education \((33.8\%)\), and 333 reported receiving comprehensive sexuality education \((54.6\%)\). Thirty-two participants \((5.2\%)\) said that they did not receive any information about either abstinence or using condoms and/or other types of birth control. Significant differences emerged between the topics discussed in abstinence-only sexuality education courses and comprehensive sexuality education
courses. In addition to how to properly use condoms and other forms of birth control, even after applying a Bonferroni correction to account for an inflated Type 1 error, individuals who received comprehensive sexuality education in middle and/or high school were also more likely to report learning about abortion; birth control; communication with romantic partners; communication with parents; contraceptive failure rates; dating violence; different types of birth control; how to refuse sexual intercourse; gender roles; homosexuality; how to decide if you are ready to have sex; media’s influence on sexuality; pregnancy and reproduction; puberty and adolescent development; sexual assault; sexually transmitted infections and HIV; understanding your own personal values about sexual relationships; and where to seek reproductive health services (all \( p < .002 \)).

**Sexual Behaviors**

Two hundred and fifty-three participants (41.5%) reported having engaged in psychologically risky sex, and 194 (31.8%) reported having engaged in physically risky sex.

Examples of psychologically risky sex included “cheating,” “sex before I was ready,” “sex with my ex-boyfriend/girlfriend,” and having sex with someone “I didn’t trust” or “didn’t feel emotionally comfortable with.” Examples of physically risky sex included “didn’t use a condom,” “drunk sex,” “rough sex,” and “no birth control.” Chi-square analyses revealed no differences in endorsement of these items among individuals who received abstinence-only sexuality education versus comprehensive sexuality education.

Four hundred and thirty-six participants reported having engaged in consensual sexual intercourse (71.5%); results pertaining to sexual behaviors use only data from
these individuals. Four hundred and twenty-five reported that their first consensual sexual experience was with someone of the opposite sex. Nearly 40% of sexually active participants said that they first had consensual intercourse at age 16 or 17, and half said that their first time was with a steady romantic partner. About half of participants reported that they engaged in sexual intercourse with one opposite sex partner since the beginning of freshmen year, and one-third of participants said they had sex with more than one opposite sex partner since the beginning of freshmen year. On average, participants reported having nearly two opposite sex partners since the beginning of freshmen year ($m = 1.79$, $sd = 1.88$) and just over four opposite sex partners during their lifetimes ($m = 4.16$, $sd = 4.55$). More than half (54.6%) of participants reported engaging in sexual intercourse with a partner with whom they had sex once or infrequently since the beginning of freshmen year, and three-fifths of participants (61.7%) said they engaged in sexual intercourse with a partner in a reasonably permanent relationship since the beginning of freshmen year. The majority of participants (86.3%) said that they had sexual intercourse with at least one partner in a reasonably permanent relationship during their lifetime, and 75.9% said that they had sexual intercourse with at least one partner in an infrequent relationship during their lifetime.

On average, since the beginning of freshmen year, participants reported having vaginal sex without a condom with a partner in a reasonably permanent relationship approximately ten and one-half times, and with a partner with whom they had sex once or infrequently nearly two times. Participants reported using drugs or alcohol just before engaging in sexual intercourse an average of six times since the beginning of freshmen year. All count data of sexual behaviors is presented in Table 3.5.
Frequencies of sexual behaviors were also examined. One-fifth (21.3%) of participants reported that they always use condoms when engaging in sexual intercourse with a partner in reasonably permanent relationships, while nearly half (46.5%) of participants reported that they always use condoms with partners in infrequent relationships. Far fewer participants reported that they never use condoms in reasonably permanent or infrequent relationships; 12.0% and 7.9%, respectively. Over half of participants reported that they always use some sort of pregnancy prevention when engaging in sexual intercourse with both reasonably permanent and infrequent partners (52.1% and 58.1%, respectively), while approximately 10% of participants said that they never use any protection against pregnancy when engaging in sexual intercourse with either reasonably permanent or infrequent partners.

Participants were more likely to report using condoms while engaging in vaginal, oral, and anal sex with partners with whom they only had sex once or infrequently than they were with partners in a reasonably permanent relationship. Participants were least likely to use condoms during oral sex with partners in a committed relationship and most likely to use condoms during anal sex with partners with whom they had sex once or infrequently. On average, participants reported that they “seldom” engaged in sexual intercourse willingly and then regretted it or engaged in sexual intercourse with someone they did not know well or just met. All frequency data of sexual behaviors is presented in Table 3.6.

**Gender, Sexuality Education, & Sexual Behaviors**

Because we predicted an interaction of sexuality education by gender, sexual behavior statistics were further examined by dividing the sample into the following
categories: 1) males who reported receiving abstinence-only sexuality education, 2) males who reported receiving comprehensive sexuality education, 3) females who reported receiving abstinence-only sexuality education and 4) females who reported receiving comprehensive sexuality education. Chi-square analyses revealed no significant differences between any of the groups on prior engagement in psychologically or physically risky sex. However, a chi-square analysis did reveal significant differences between the groups in regards to prior engagement in sexual intercourse, \( \chi^2(3, N = 539) = 10.191, p < .05 \). Males who received abstinence-only sexuality education were significantly less likely to report having engaged in consensual sexual intercourse than individuals in all three other categories \((n = 27, 57.4\%)\), while males who received comprehensive sexuality education were significantly more likely to have had sex \((n = 72, 82.8\%)\) than individuals in all three other categories. There were no significant differences for females regardless of type of sexuality education received. Females who received abstinence-only education were no less likely to have had sex than women who received comprehensive sexuality education \((71.1\% \text{ versus } 73.2\%\), respectively). Overall, males were significantly more likely to report lifetime physical assault within a relationship than were females \((14.3\% \text{ vs. } 6.9\%), \chi^2(1, N = 608) = 7.903, p < .01\), while females were significantly more likely to report lifetime sexual assault than were males, \((11.29\% \text{ vs. } 19.09\%), \chi^2(1, N = 608) = 5.165, p = .027\).

ANOVAs were computed comparing groups on the twenty-one sexual behavior count items using a Bonferroni corrected significance value \(.05/21 = .002\). Four variables emerged significant - number of lifetime opposite sex partners, number of lifetime opposite sex partners with whom participants had sex once or infrequently,
number of opposite sex partners with whom participants had sex once or infrequently since the beginning of freshmen year, and sex with someone participants did not know well or just met. Males who received comprehensive sexuality education reported significantly more lifetime opposite sex partners than males who received abstinence-only sexuality education and females in both sexuality education conditions, \( F(3, 386) = 6.964, p < .002 \). Males who received comprehensive sexuality education also reported a significantly higher number of partners with whom they had sex once or infrequently both in their lifetimes and since the beginning of freshmen year than individuals in any of the three other groups (\( F(3, 387) = 5.728, p < .002 \) and \( F(3, 388) = 5.263, p < .002 \), respectively). Females who received comprehensive sexuality education reported significantly more lifetime opposite sex partners than women who received abstinence-only sexuality education. Regardless of type of sexuality education, males reported more instances of having sex with someone they did not know well or had just met than did women (\( F(3, 380) = 6.265, p < .002 \)). All count data by gender and type of sexuality education is presented in Table 3.7.

ANOVAs were also computed comparing groups on the twelve sexual behavior frequency variables. After applying a Bonferroni correction (12/.05 = .004), three variables emerged significant - oral sex without a condom with partners with whom participants had sex once or infrequently, sex with someone participants did not know well or just met, and drugs or alcohol use before sex. Males who received comprehensive sexuality education were significantly less likely to use condoms during oral sex with infrequent partners, \( F(3, 321) = 5.389, p < .004 \), more likely to have sex with individuals they did not know well or just met, \( F(3, 385) = 4.507 \ p < .004 \), and more
likely to use drugs or alcohol before having sex than females who received abstinence-only sexuality education, $F(3, 385) = 4.603 \ p < .004$. No significant differences emerged for any other group. All frequency data by gender and type of sexuality education is presented in Table 3.8.

**Moderated-Mediation Analyses**

Four separate moderated-mediation models were run using the procedures outlined by Hayes (2013) and explicated in Figure 1. As previously described, moderation and mediation effects were analyzed simultaneously in order to understand how the effects work both separately and together. For all models, relationship self-efficacy was the mediator and gender was the moderator. Control variables varied by model and were selected based on results from the correlational data. For each model, we controlled for variables found to be significantly associated with the dependent variable.

**Condom Use during Vaginal Intercourse with Reasonably Permanent Partners**

The first model tested moderated-mediation for type of sexuality education, gender, and type of sexuality education by gender, on condom use with vaginal partners in reasonably permanent relationships ($n = 327$) after controlling for race, primary method of sexuality education, relationship status, and age at first consensual sexual intercourse. The A path model was significant $F(7, 319) = 10.58, \ p < .001, \ R = .43$. Along with the covariates, type of sexuality education, gender, and the interaction of sexuality education and gender accounted for 18.85% of the variance in relationship self-efficacy. Several of the control variables emerged as unique predictors of relationship self-efficacy. Individuals in romantic relationships reported higher relationship self-
efficacy than those who were not currently involved in romantic relationships (B = 36.30, SE = 4.84, \( p < .001 \)). If participants reported that their primary method of sexuality education was through school, they also reported higher levels of relationship self-efficacy (B = -12.46, SE = 5.98, \( p < .05 \)).

When breaking down the A path model, only the A_2 path emerged significant. Relationship self-efficacy was significantly higher among females than males (B = 36.30, SE = 4.84, \( p < .001 \)). There was no significant relation between type of sexuality education and relationship self-efficacy or the interaction of sexuality education and gender on relationship self-efficacy. The B path model was not significant. There was no relation between relationship self-efficacy and condom use with vaginal partners in a reasonably permanent relationship.

The overall indirect effect model (C') was significant, \( F(8, 318) = 4.104, \ p < .001, \ R^2 = .31 \). Controlling for relationship self-efficacy, the covariates, gender, sexuality education, and the interaction of gender and sexuality education accounted for 9.36% of the variance in condom use with vaginal partners in reasonably permanent relationships. However, the significance was driven solely by the covariates. Individuals currently involved in romantic relationships were less likely to use condoms during vaginal intercourse with reasonably permanent partners than were individuals who were not currently sexually involved with a reasonably permanent partner, but had been earlier in their freshmen year (B = .51, SE = .16, \( p < .01 \)). If participants reported that their primary method of sexuality education was through school, they reported more frequent condom use with vaginal partners in reasonably permanent relationships (B = .40, SE = .19, \( p < .05 \)). Finally, the older participants were when they first engaged in consensual
sexual intercourse, the more likely they were to use condoms with partners in a reasonably permanent relationship ($B = -.17, SE = .06, p < .01$). Finally, the overall C path was not significant. No direct effects were found for any of the three predictor variables on condom use with vaginal partners in a reasonably permanent relationship.

**Condom Use during Vaginal Intercourse with Infrequent Partners**

The second model tested moderated-mediation for type of sexuality education, gender, and type of sexuality education by gender on condom use with vaginal partners in infrequent relationships ($n = 329$) after controlling for race, primary method of sexuality education, relationship status, and peer norms. The A path model was significant $F(7, 321) = 11.61, p < .001, R = .45$. In addition to the covariates, type of sexuality education, gender, and the interaction of sexuality education and gender accounted for 20.20% of the variance in relationship self-efficacy. Several of the covariates were significantly related to condom use during vaginal intercourse with infrequent partners. Again, individuals in romantic relationships reported higher relationship self-efficacy than those who were not currently involved in romantic relationships ($B = 38.06, SE = 5.01, p < .001$). If participants reported that their primary method of sexuality education was through school, they reported higher levels of relationship self-efficacy ($B = -17.47, SE = 6.23, p < .01$).

When breaking down the A path model, only the $A_2$ path emerged significant. As anticipated, relationship self-efficacy was significantly higher among females than males ($B = 23.70, SE = 9.93, p < .05$). There was no significant relation between type of sexuality education and relationship self-efficacy or the interaction of sexuality education and gender on relationship self-efficacy.
The B path model was significant. Relationship self-efficacy was positively related to using condoms with partners in infrequent sexual relationships \( (B = -0.003, SE = 0.002, p < .05) \).

The overall indirect effect model \( (C') \) was significant, \( F(8, 320) = 3.0789, p < .01, R^2 = .27 \). Controlling for relationship self-efficacy, the covariates, gender, type of sexuality education, and the interaction of gender and sexuality education accounted for 7.15% of the variance in condom use with vaginal partners in infrequent relationships. Again, the significance was driven solely by the covariates. Individuals currently involved in romantic relationships were more likely to use condoms during vaginal intercourse with infrequent partners since the beginning of freshmen year than were individuals who were not currently involved in a romantic relationship \( (B = -0.31, SE = 0.15, p < .05) \). In addition, individuals who were more likely to believe that their peers did not use condoms during vaginal intercourse were less likely to use condoms with partners in infrequent relationships \( (B = -0.23, SE = 0.10, p < .05) \). Finally, the overall C path was not significant. No direct effects were found for any of the three predictor variables on condom use with vaginal partners in an infrequent sexual relationship.

*Vaginal Intercourse with Reasonably Permanent Partners without any Protection against Pregnancy*

The third model tested moderated-mediation for type of sexuality education, gender, and type of sexuality education by gender on vaginal intercourse with reasonably permanent partners without any protection from pregnancy \( (n = 344) \) after controlling for race, primary method of sexuality education, relationship status, and peer norms. The A path model was significant \( F(7, 336) = 13.57, p < .001, R = .47 \). Along with the
covariates, type of sexuality education, gender, and the interaction of sexuality education and gender accounted for 22.04% of the variance in relationship self-efficacy. Several of the covariates emerged significant. As in the previous models, individuals in romantic relationships reported higher relationship self-efficacy than those who were not currently involved in romantic relationships (B = 38.44, SE = 4.72, p < .001). Additionally, if participants reported that their primary method of sexuality education was through school, they reported higher levels of relationship self-efficacy (B = -15.04, SE = 5.75, p < .01). Peer norms was also significant (B = 6.92, SE = 3.26, p < .05). As relationship self-efficacy increased, participants were more likely to believe that their peers were using condoms during vaginal intercourse.

When breaking down the A path model, again only the A2 path emerged significant. Relationship self-efficacy was significantly higher among females than males (B = 22.84, SE = 9.42, p < .05). There was no significant relation between type of sexuality education and relationship self-efficacy or the interaction of sexuality education and gender on relationship self-efficacy. The B path model was not significant. There was no relation between relationship self-efficacy and condom use with vaginal partners in a reasonably permanent relationship.

The overall indirect effect model (C’) was also not significant, $F(8, 335) = 2.22, p = .29$. Controlling for relationship self-efficacy, there was no impact of gender, type of sexuality education, or the interaction of gender and sexuality education on protection against pregnancy with partners in reasonably permanent relationships. Finally, the overall C path was not significant. No direct effects were found for any of the three
predictor variables on protection against pregnancy with vaginal partners in a reasonably permanent relationship.

*Vaginal Intercourse with Infrequent Partners without any Protection against Pregnancy*

The final model tested moderated-mediation for type of sexuality education, gender, and type of sexuality education by gender, on condom use with vaginal partners in infrequent relationships \((n = 336)\) after controlling for race, primary method of sexuality education, and relationship status. The A path model was significant \(F(6, 329) = 13.31, p < .001, R = .44.\) Along with the covariates, type of sexuality education, gender, and the interaction of sexuality education and gender accounted for 19.54% of the variance in relationship self-efficacy. Again, individuals currently in romantic relationships reported higher relationship self-efficacy than those who were not currently involved in romantic relationships \((B = 38.65, SE = 4.95, p < .001)\). If participants reported that their primary method of sexuality education was through school, they reported higher levels of relationship self-efficacy \((B = -13.50, SE = 6.00, p < .05)\).

When breaking down the A path model, only the \(A_2\) path emerged significant. As anticipated, relationship self-efficacy was significantly higher among females than males \((B = 24.85, SE = 9.85, p < .05)\). There was no significant relation between type of sexuality education and relationship self-efficacy or the interaction of sexuality education and gender on relationship self-efficacy.

The B path model was not significant. Relationship self-efficacy was unrelated to pregnancy prevention with partners in infrequent sexual relationships. The overall indirect effect model \((C')\) was also not significant, \(F(7, 328) = 1.40, p = .21,\) nor was the
overall C path. No direct effects were found for any of the three predictor variables on protection against pregnancy with vaginal partners in an infrequent relationship.

**Simple Mediation Models**

Given that females reported higher levels of relationship self-efficacy than males, we re-ran our four moderated-mediation models separately by gender in order to see if relationship self-efficacy mediated the relation between type of sexuality education and sexual behavior. Eight simple mediation models were run by which the independent variable (type of sexuality education) was hypothesized to impact the dependent variable (sexual behavior) through relationship self-efficacy. As with the moderated-mediation models, inter-correlations were computed among the variables of interest, demographic items, and relationship items in order to determine covariates for the models. No significant mediation was found for males or females on any of the four sexual behavior variables.

**Follow Up Advisory Surveys**

Once all analyses were completed in accordance with the research questions, the follow-up advisory survey, which can be found in Appendix B, was created. For purposes of these analyses, participants were first asked what, if anything, they knew about the research regarding the effectiveness of abstinence-only sexuality education versus comprehensive sexuality education on sexual behaviors. They were next informed that there were no significant differences between the sexuality education by gender groups on eight of the thirty-four sexual behaviors surveyed, and were then presented with a more nuanced explanation of the results. Finally, participants were asked about potential avenues for future research pertaining to the topics of sexuality education and
sexual behaviors as well as what policy implications – if any – they thought stemmed from our results.

Eighteen individuals clicked on the link for the follow up survey and agreed to participate. Of these, 15 filled out at least some of the items, and eight completed the entire survey (44.4%). Of the completers, three were males and five were female. An equal number of participants reporting receiving abstinence-only sexuality education as reported receiving comprehensive sexuality education. Participants’ prior knowledge regarding the research on effectiveness of abstinence-only versus comprehensive sexuality education was generally consistent; 75% of respondents knew that on whole, prior research indicates that comprehensive sexuality education is more effective than abstinence-only in preventing risky sexual behaviors. One participant called abstinence-only education “damaging,” while others \((n = 2)\) said that they did not know anything about the research on sexuality education.

In response to the item pertaining to the differences on the 34 sexual behaviors, participant reactions varied. Some reported being surprised. One respondent wrote, “I believe abstinence only education [is] ineffective.” Another agreed, surmising “[Participants] could be receiving sexual education from other sources.” However, other participants felt the findings made sense because “Students don’t learn about sex from a class. They learn about it from the environment they’re in.” Others echoed this sentiment. “I think sexual behavior is influenced more by the predominant (or perceived) cultural norms within a certain group,” one participant said. In general, participants felt that parents and peers play a larger role in sexuality education than school.
Participants’ reactions to the more specific discussion of the eight sexual behaviors that emerged significant between groups were similar. Overall, participants were “Not shocked” by the results, though some indicated that they thought the results would more strongly favor comprehensive sexuality education. Nonetheless, gender and culture emerged as salient themes. One participant wrote that “[Differences in sexual behavior stem from] gender differences and inequality.” Another agreed, noting “Men are different sexually than women.” Participants also commented on the influence of environment and culture. “[Students’] behavior could be an artifact of their high-school and college environment. Abstinence-only education is more common in Christian areas, so those students were probably influenced by input from family and church in addition to school based sex ed.” Another participant explained “I think that those males who received abstinence only education probably come from a similar household whose parents believe in abstinence.”

Participants identified several avenues for future research, including “Where students learn morals about sexuality in their environment,” “Teen pregnancy,” and whether discussing “Homosexual behavior” in middle and high school sexuality education courses has an impact on the safety and knowledge of LGBT youth. Other participants touched upon the importance of sexuality education and sexual behavior in college. One wrote that she would like to see research on how to “Encourage safe sex practices in college students without being awkward or condescending,” while others identified the critical knowledge gap between sexuality education in high school and sexual behavior in college. For example, one participant would like to see “More
extensive studies on groups of people following them past middle and high school” to
better understand how type of sexuality education impacts future behavior.

When asked about policy implications stemming from the results, participants
stressed the importance of teaching comprehensive sexuality education. Responses
included, “Only comprehensive sexual education,” “More funding for comprehensive
sexuality education,” and “[Comprehensive] sexuality education earlier than high school
years.” One student wrote, “[There should be an] equal kind of sex education;” that is,“[Sex education should be a] national decision” not a state decision, “Because religion
and politics shouldn’t decide what students learn.”
Table 3.1

**Correlations among the variables of interest**

<table>
<thead>
<tr>
<th></th>
<th></th>
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<th></th>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Vaginal reasonably permanent – no condom</td>
<td>1</td>
<td>.261**</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vaginal once/infrequently – no condom</td>
<td></td>
<td>.375**</td>
<td>.492**</td>
<td>1</td>
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<td></td>
<td></td>
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<td></td>
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<tr>
<td>Vaginal reasonably permanent – no birth control</td>
<td></td>
<td></td>
<td>.240**</td>
<td>.723**</td>
<td>.736**</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Vaginal once/infrequently – no birth control</td>
<td></td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>Religiosity</td>
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<td>.035</td>
<td>-.023</td>
<td>-.066</td>
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<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Age at virginity loss</td>
<td>-.154**</td>
<td>-.053</td>
<td>-.095</td>
<td>-.097</td>
<td>.081</td>
<td>1</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Peer norms – oral</td>
<td>.002</td>
<td>.013</td>
<td>.016</td>
<td>-.029</td>
<td>.048</td>
<td>.010</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Peer norms – vaginal</td>
<td>-.026</td>
<td>-.127*</td>
<td>-.147**</td>
<td>-.085</td>
<td>-.096*</td>
<td>-.033</td>
<td>.123*</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Peer norms – anal</td>
<td>-.033</td>
<td>-.063</td>
<td>-.006</td>
<td>-.070</td>
<td>-.101*</td>
<td>.024</td>
<td>.235**</td>
<td>.260**</td>
<td>1</td>
<td></td>
<td></td>
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<tr>
<td>Other sex ed sources</td>
<td>.006</td>
<td>.063</td>
<td>.027</td>
<td>.042</td>
<td>.058</td>
<td>-.025</td>
<td>-.048</td>
<td>.123*</td>
<td>-.004</td>
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<td></td>
</tr>
<tr>
<td>Relationship SE</td>
<td>.151**</td>
<td>-.174**</td>
<td>.023</td>
<td>-.058</td>
<td>.091</td>
<td>.051</td>
<td>.038</td>
<td>.142**</td>
<td>.042</td>
<td>.001</td>
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<td></td>
</tr>
</tbody>
</table>

*correlation is significant at the .05 level

**correlation is significant at the .01 level
Table 3.2

**Demographics for entire sample and divided by sex**

<table>
<thead>
<tr>
<th></th>
<th>Total</th>
<th>Males</th>
<th>Females</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>N</strong></td>
<td>610</td>
<td>161 (26.4%)</td>
<td>447 (73.3%)</td>
</tr>
<tr>
<td><strong>School</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Montana:</td>
<td>90 (14.8%)</td>
<td>Montana: 26 (16.1%)</td>
<td>Montana: 64 (14.3%)</td>
</tr>
<tr>
<td>USC:</td>
<td>341 (55.9%)</td>
<td>USC: 84 (25.8%)</td>
<td>USC: 255 (57.0%)</td>
</tr>
<tr>
<td>Michigan:</td>
<td>171 (28.0%)</td>
<td>Michigan: 46 (28.6%)</td>
<td>Michigan: 124 (27.7%)</td>
</tr>
<tr>
<td>Other:</td>
<td>8 (1.3%)</td>
<td>Other: 4 (2.5%)</td>
<td>Other: 4 (0.9%)</td>
</tr>
<tr>
<td><strong>Age</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>M =18.96, SD=.41</td>
<td>M=19.07, SD=.47</td>
<td>Mean=18.92, SD=.37</td>
<td>Mean=18.92, SD=.37</td>
</tr>
<tr>
<td>Min=18.01, Max=21.69</td>
<td>Min=18.21, Max=21.69</td>
<td>Min=18.01, Max=20.24</td>
<td>Min=18.01, Max=20.24</td>
</tr>
<tr>
<td><strong>Housing</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>On campus:</td>
<td>550 (90.2%)</td>
<td>On campus: 144 (89.4%)</td>
<td>On campus: 404 (90.4%)</td>
</tr>
<tr>
<td>Off campus:</td>
<td>25 (4.1%)</td>
<td>Off campus: 10 (6.2%)</td>
<td>Off campus: 15 (3.4%)</td>
</tr>
<tr>
<td>Sorority/Frat:</td>
<td>2 (.3%)</td>
<td>Sorority/Frat: 0 (0.0%)</td>
<td>Sorority/Frat: 2 (0.4%)</td>
</tr>
<tr>
<td>Living with parents:</td>
<td>31 (5.1%)</td>
<td>Living with parents: 7</td>
<td>Living with parents: 24</td>
</tr>
<tr>
<td>Other:</td>
<td>2 (0.3%)</td>
<td>Other: 0 (0.0%)</td>
<td>Other: 2 (0.4%)</td>
</tr>
<tr>
<td><strong>Race</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alaskan/AI:</td>
<td>11 (1.8%)</td>
<td>Alaskan/AI: 2 (1.2%)</td>
<td>Alaskan/AI: 9 (2.0%)</td>
</tr>
<tr>
<td>Caucasian:</td>
<td>526 (86.2%)</td>
<td>Caucasian: 134 (83.2%)</td>
<td>Caucasian: 391 (87.5%)</td>
</tr>
<tr>
<td>African American:</td>
<td>51 (8.4%)</td>
<td>African American: 13</td>
<td>African American: 38</td>
</tr>
<tr>
<td>Asian:</td>
<td>13 (2.1%)</td>
<td>Asian: 8 (5.0%)</td>
<td>Asian: 5 (1.1%)</td>
</tr>
<tr>
<td>Hispanic/Latino:</td>
<td>25 (4.1%)</td>
<td>Hispanic/Latino: 7</td>
<td>Hispanic/Latino: 17</td>
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<tr>
<td>Biracial:</td>
<td>11 (1.8%)</td>
<td>Biracial: 3 (1.9%)</td>
<td>Biracial: 8 (1.8%)</td>
</tr>
<tr>
<td>Native Hawaiian/Pacific Island:</td>
<td>4 (7%)</td>
<td>Native Hawaiian/PI: 1</td>
<td>Native Hawaiian/PI: 3</td>
</tr>
<tr>
<td>Other:</td>
<td>10 (1.6%)</td>
<td>Other: 2 (1.2%)</td>
<td>Other: 8 (1.8%)</td>
</tr>
<tr>
<td><strong>Sexual Orientation</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Only attracted to females:</td>
<td>132 (21.6%)</td>
<td>Only attracted to females: 128 (79.5%)</td>
<td>Only attracted to females: 3 (7.7%)</td>
</tr>
<tr>
<td>Mostly attracted to females:</td>
<td>17 (2.8%)</td>
<td>Mostly attracted to females: 13 (8.1%)</td>
<td>Mostly attracted to females: 4 (9.9%)</td>
</tr>
<tr>
<td>Equally attracted to both sexes:</td>
<td>13 (2.1%)</td>
<td>Equally attracted to both sexes: 7 (4.3%)</td>
<td>Equally attracted to both sexes: 5 (1.1%)</td>
</tr>
<tr>
<td>Mostly attracted to males:</td>
<td>46 (7.5%)</td>
<td>Mostly attracted to males: 8 (5.0%)</td>
<td>Mostly attracted to males: 38 (8.4%)</td>
</tr>
<tr>
<td>Only attracted to males:</td>
<td>400 (65.6%)</td>
<td>Only attracted to males: 5 (3.1%)</td>
<td>Only attracted to males: 395 (88.4%)</td>
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<tr>
<td>Not sure:</td>
<td>2 (0.3%)</td>
<td>Not sure: 0 (0.0%)</td>
<td>Not sure: 2 (0.4%)</td>
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<tr>
<td><strong>Parental education</strong></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Some elementary, middle, or high school:</td>
<td>7 (1.1%)</td>
<td>Some elementary, middle, or high school: 3 (1.9%)</td>
<td>Some elementary, middle, or high school: 4 (9.9%)</td>
</tr>
<tr>
<td>High school graduate:</td>
<td>71 (11.6%)</td>
<td>High school graduate: 26 (16.1%)</td>
<td>High school graduate: 45 (10.1%)</td>
</tr>
<tr>
<td>GED:</td>
<td>1 (.2%)</td>
<td>GED: 1 (.2%)</td>
<td>GED: 1 (.2%)</td>
</tr>
<tr>
<td>Vocational school:</td>
<td>6 (1.0%)</td>
<td>Vocational school: 15</td>
<td>Vocational school: 6</td>
</tr>
<tr>
<td>Some college:</td>
<td>115</td>
<td>Some college: 25</td>
<td>Some college: 90</td>
</tr>
<tr>
<td>Type of High School</td>
<td>Coed: 584 (95.7%)</td>
<td>Coed: 150 (93.2%)</td>
<td>Coed: 432 (96.6%)</td>
</tr>
<tr>
<td>--------------------</td>
<td>------------------</td>
<td>------------------</td>
<td>------------------</td>
</tr>
<tr>
<td></td>
<td>All male: 11 (1.8%)</td>
<td>All male: 11 (6.8%)</td>
<td>All male: n/a</td>
</tr>
<tr>
<td></td>
<td>All female: 15 (2.5%)</td>
<td>All female: n/a</td>
<td>All female: 15 (3.4%)</td>
</tr>
<tr>
<td>Religious affiliation</td>
<td>Catholic: 206 (33.8%)</td>
<td>Catholic: 48 (29.8%)</td>
<td>Catholic: 158 (35.5%)</td>
</tr>
<tr>
<td></td>
<td>Protestant: 113 (18.5%)</td>
<td>Protestant: 28 (17.4%)</td>
<td>Protestant: 85 (19.0%)</td>
</tr>
<tr>
<td></td>
<td>Episcopal: 24 (3.9%)</td>
<td>Episcopal: 6 (3.7%)</td>
<td>Episcopal: 18 (4.0%)</td>
</tr>
<tr>
<td></td>
<td>Jewish: 8 (1.3%)</td>
<td>Jewish: 3 (1.9%)</td>
<td>Jewish: 5 (1.1%)</td>
</tr>
<tr>
<td></td>
<td>Muslim: 4 (0.7%)</td>
<td>Muslim: 2 (1.2%)</td>
<td>Muslim: 1 (0.2%)</td>
</tr>
<tr>
<td></td>
<td>Buddhist: 4 (0.7%)</td>
<td>Buddhist: 3 (1.9%)</td>
<td>Buddhist: 1 (0.2%)</td>
</tr>
<tr>
<td></td>
<td>Atheist: 47 (7.7%)</td>
<td>Atheist: 23 (14.3%)</td>
<td>Atheist: 23 (5.1%)</td>
</tr>
<tr>
<td></td>
<td>Other: 204 (33.4%)</td>
<td>Other: 48 (29.8%)</td>
<td>Other: 156 (34.9%)</td>
</tr>
<tr>
<td>Political affiliation</td>
<td>Democrat: 181 (29.7%)</td>
<td>Democrat: 43 (26.7%)</td>
<td>Democrat: 137 (30.6%)</td>
</tr>
<tr>
<td></td>
<td>Republican: 251 (41.1%)</td>
<td>Republican: 60 (37.3%)</td>
<td>Republican: 190 (42.5%)</td>
</tr>
<tr>
<td></td>
<td>Independent: 79 (13%)</td>
<td>Independent: 23 (14.3%)</td>
<td>Independent: 56 (12.5%)</td>
</tr>
<tr>
<td></td>
<td>Libertarian: 47 (7.7%)</td>
<td>Libertarian: 20 (12.4%)</td>
<td>Libertarian: 27 (6.0%)</td>
</tr>
<tr>
<td></td>
<td>Green: 7 (1.1%)</td>
<td>Green: 3 (1.9%)</td>
<td>Green: 4 (0.9%)</td>
</tr>
<tr>
<td></td>
<td>Other: 45 (7.4%)</td>
<td>Other: 12 (7.5%)</td>
<td>Other: 33 (7.4%)</td>
</tr>
</tbody>
</table>
### Relationship status

<table>
<thead>
<tr>
<th>Never dated</th>
<th>Not currently dating</th>
<th>I go out on dates</th>
<th>Currently involved in casual relationship</th>
<th>Committed monogamous relationship</th>
</tr>
</thead>
<tbody>
<tr>
<td>58 (9.5%)</td>
<td>183 (30%)</td>
<td>59 (9.7%)</td>
<td>100 (16.4%)</td>
<td>210 (34.4%)</td>
</tr>
<tr>
<td>22 (13.7%)</td>
<td>57 (35.4%)</td>
<td>13 (8.1%)</td>
<td>30 (18.6%)</td>
<td>39 (24.2%)</td>
</tr>
<tr>
<td>36 (8.1%)</td>
<td>126 (28.2%)</td>
<td>45 (10.1%)</td>
<td>70 (15.7%)</td>
<td>170 (38.0%)</td>
</tr>
</tbody>
</table>

### Relationship Self-Efficacy (RSE) – Mutuality

<table>
<thead>
<tr>
<th>M: 120.54, SD: 23.67</th>
<th>M: 114.11, SD: 26.18</th>
<th>M: 122.89, SD: 22.25</th>
</tr>
</thead>
<tbody>
<tr>
<td>Min: 16, Max: 144</td>
<td>Min: 16, Max: 144</td>
<td>Min: 16, Max: 144</td>
</tr>
</tbody>
</table>

### RSE - Differentiation

<table>
<thead>
<tr>
<th>M: 35.31, SD: 8.09</th>
<th>M: 33.79, SD: 8.47</th>
<th>M: 35.88, SD: 7.86</th>
</tr>
</thead>
<tbody>
<tr>
<td>Min: 5, Max: 45</td>
<td>Min: 5, Max: 45</td>
<td>Min: 5, Max: 45</td>
</tr>
</tbody>
</table>

### RSE - Emotional Control

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Min: 4, Max: 36</td>
<td>Min: 4, Max: 36</td>
<td>Min: 4, Max: 36</td>
</tr>
</tbody>
</table>

### RSE - Total

<table>
<thead>
<tr>
<th>M: 257.24, SD: 49.42</th>
<th>M: 245.72, SD: 53.98</th>
<th>M: 261.46, SD: 46.91</th>
</tr>
</thead>
<tbody>
<tr>
<td>Min: 35, Max: 315</td>
<td>Min: 35, Max: 315</td>
<td>Min: 35, Max: 315</td>
</tr>
</tbody>
</table>

### Sex Ed

<table>
<thead>
<tr>
<th>Abstinence only: 207 (33.9%)</th>
<th>Abstinence only: 47 (29.2%)</th>
<th>Abstinence only: 159 (35.6%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Comprehensive: 333 (54.6%)</td>
<td>Comprehensive: 87 (54.0%)</td>
<td>Comprehensive: 246 (55.0%)</td>
</tr>
<tr>
<td>No abstinence or contraceptives: 31 (5.1%)</td>
<td>No abstinence or contraceptives: 9 (5.6%)</td>
<td>No abstinence or contraceptives: 21 (4.7%)</td>
</tr>
<tr>
<td>None: 39 (6.4%)</td>
<td>None: 18 (11.2%)</td>
<td>None: 21 (4.7%)</td>
</tr>
</tbody>
</table>
Table 3.3
*Sexuality education topics endorsed by number of (percentage) participants*

<table>
<thead>
<tr>
<th>Topic</th>
<th># of participants endorsed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abortion</td>
<td>276 (48.3%)*</td>
</tr>
<tr>
<td>Abstinence from Sexual Activity</td>
<td>521 (91.2%)**</td>
</tr>
<tr>
<td>Anatomy and Physiology</td>
<td>409 (71.6%)</td>
</tr>
<tr>
<td>Birth Control Pills</td>
<td>357 (62.5%)*</td>
</tr>
<tr>
<td>Communication with a romantic partner</td>
<td>345 (60.4%)*</td>
</tr>
<tr>
<td>Communication with parents</td>
<td>309 (54.1%)*</td>
</tr>
<tr>
<td>Contraceptive failure rates</td>
<td>367 (64.3%)*</td>
</tr>
<tr>
<td>Dating violence</td>
<td>394 (69.0%)*</td>
</tr>
<tr>
<td>Different types of contraceptive options</td>
<td>354 (62.0%)*</td>
</tr>
<tr>
<td>Drugs and alcohol</td>
<td>464 (81.3%)</td>
</tr>
<tr>
<td>Gender Roles</td>
<td>224 (39.2%)*</td>
</tr>
<tr>
<td>Homosexuality</td>
<td>170 (29.8%)*</td>
</tr>
<tr>
<td>How to decide if you are ready to have sex</td>
<td>258 (45.2%)*</td>
</tr>
<tr>
<td>How to properly use a condom</td>
<td>310 (54.3%)*</td>
</tr>
<tr>
<td>How to properly use other forms of birth control (other than condoms)</td>
<td>248 (43.4%)*</td>
</tr>
<tr>
<td>How to refuse sexual intercourse</td>
<td>360 (63.0%)*</td>
</tr>
<tr>
<td>Media’s influence on sexuality</td>
<td>269 (41.1%)*</td>
</tr>
<tr>
<td>Peer negotiation skills</td>
<td>228 (39.9%)</td>
</tr>
<tr>
<td>Pregnancy and reproduction</td>
<td>487 (85.3%)*</td>
</tr>
<tr>
<td>Puberty and adolescent development</td>
<td>485 (85.1%)*</td>
</tr>
<tr>
<td>Sexual assault</td>
<td>322 (56.4%)*</td>
</tr>
<tr>
<td>Sexually transmitted infections (STIs) and HIV</td>
<td>518 (90.7%)*</td>
</tr>
<tr>
<td>Understanding your own personal values about sexual relationships</td>
<td>268 (46.9%)*</td>
</tr>
<tr>
<td>Where to seek reproductive health services</td>
<td>282 (49.4%)*</td>
</tr>
<tr>
<td>Other</td>
<td>7 (1.2%)</td>
</tr>
</tbody>
</table>

* Comprehensive > abstinence only, $p < .002$

** Abstinence only > comprehensive, $p < .002$
Table 3.4

Frequencies and percentages for sexuality education data

<table>
<thead>
<tr>
<th>Variable</th>
<th># endorsed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sexuality education during high school ((n = 610))</td>
<td>Yes: 529 (86.7%)</td>
</tr>
<tr>
<td></td>
<td>No: 81 (13.3%)</td>
</tr>
<tr>
<td>Grade began ((HS))</td>
<td>K-5: 176</td>
</tr>
<tr>
<td></td>
<td>6: 145</td>
</tr>
<tr>
<td></td>
<td>7: 85</td>
</tr>
<tr>
<td></td>
<td>8: 59</td>
</tr>
<tr>
<td></td>
<td>9: 47</td>
</tr>
<tr>
<td></td>
<td>10: 13</td>
</tr>
<tr>
<td></td>
<td>11: 3</td>
</tr>
<tr>
<td></td>
<td>12: 1</td>
</tr>
<tr>
<td>Time allotted ((HS))</td>
<td>1-10: 278</td>
</tr>
<tr>
<td></td>
<td>11-20: 113</td>
</tr>
<tr>
<td></td>
<td>21-30: 66</td>
</tr>
<tr>
<td></td>
<td>31-40: 25</td>
</tr>
<tr>
<td></td>
<td>41-50: 16</td>
</tr>
<tr>
<td></td>
<td>50+: 31</td>
</tr>
<tr>
<td>Additional time ((MS))</td>
<td>1-10: 297</td>
</tr>
<tr>
<td></td>
<td>11-20: 92</td>
</tr>
<tr>
<td></td>
<td>21-30: 44</td>
</tr>
<tr>
<td></td>
<td>31-40: 15</td>
</tr>
<tr>
<td></td>
<td>41-50: 10</td>
</tr>
<tr>
<td></td>
<td>50+: 11</td>
</tr>
<tr>
<td></td>
<td>N/A: 60</td>
</tr>
<tr>
<td>Who taught? ((HS))</td>
<td>Coach: 261</td>
</tr>
<tr>
<td></td>
<td>Teacher: 86</td>
</tr>
<tr>
<td></td>
<td>Trained Educator: 172</td>
</tr>
<tr>
<td></td>
<td>Other: 10</td>
</tr>
<tr>
<td>Sex breakdown ((HS))</td>
<td>Single sex: 128</td>
</tr>
<tr>
<td></td>
<td>Mixed sex: 253</td>
</tr>
<tr>
<td></td>
<td>Some of each: 148</td>
</tr>
<tr>
<td>Sexuality education during middle school ((n = 81))</td>
<td>Yes: 42 (51.9%)</td>
</tr>
<tr>
<td></td>
<td>No: 39 (48.1%)</td>
</tr>
<tr>
<td>Grade began ((MS))</td>
<td>K-5: 13</td>
</tr>
<tr>
<td></td>
<td>6: 10</td>
</tr>
<tr>
<td></td>
<td>7: 15</td>
</tr>
<tr>
<td></td>
<td>8: 4</td>
</tr>
<tr>
<td>Variable</td>
<td># endorsed</td>
</tr>
<tr>
<td>----------------------------------------------------</td>
<td>------------</td>
</tr>
<tr>
<td>Time allotted (MS)</td>
<td></td>
</tr>
<tr>
<td>1-10: 29</td>
<td></td>
</tr>
<tr>
<td>11-20: 6</td>
<td></td>
</tr>
<tr>
<td>21-30: 1</td>
<td></td>
</tr>
<tr>
<td>31-40: 0</td>
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</tr>
<tr>
<td>41-50: 3</td>
<td></td>
</tr>
<tr>
<td>50+: 3</td>
<td></td>
</tr>
<tr>
<td>Who taught? (MS)</td>
<td></td>
</tr>
<tr>
<td>Coach: 15</td>
<td></td>
</tr>
<tr>
<td>Teacher: 11</td>
<td></td>
</tr>
<tr>
<td>Trained Educator: 14</td>
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<tr>
<td>Other: 2</td>
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</tr>
<tr>
<td>Sex breakdown (MS)</td>
<td></td>
</tr>
<tr>
<td>Single sex: 17</td>
<td></td>
</tr>
<tr>
<td>Mixed sex: 16</td>
<td></td>
</tr>
<tr>
<td>Some of each: 9</td>
<td></td>
</tr>
<tr>
<td>Primary method for receiving sexuality education</td>
<td></td>
</tr>
<tr>
<td>Parents: 130 (21.3%)</td>
<td></td>
</tr>
<tr>
<td>Peers: 217 (35.6%)</td>
<td></td>
</tr>
<tr>
<td>Media: 46 (7.5%)</td>
<td></td>
</tr>
<tr>
<td>Siblings: 16 (2.6%)</td>
<td></td>
</tr>
<tr>
<td>School/Teachers: 125 (20.5%)</td>
<td></td>
</tr>
<tr>
<td>Religious official: 4 (.7%)</td>
<td></td>
</tr>
<tr>
<td>Internet: 55 (9.0%)</td>
<td></td>
</tr>
<tr>
<td>Boyfriend or girlfriend: 12 (2.0%)</td>
<td></td>
</tr>
<tr>
<td>Other: 5 (.8%)</td>
<td></td>
</tr>
<tr>
<td>Where else did you receive information about sex and sexuality</td>
<td></td>
</tr>
<tr>
<td>Parents: 352 (57.7%)</td>
<td></td>
</tr>
<tr>
<td>Peers: 376 (61.6%)</td>
<td></td>
</tr>
<tr>
<td>Media: 427 (70.0%)</td>
<td></td>
</tr>
<tr>
<td>Siblings: 150 (24.6%)</td>
<td></td>
</tr>
<tr>
<td>Religious official: 83 (13.6%)</td>
<td></td>
</tr>
<tr>
<td>Internet: 324 (53.1%)</td>
<td></td>
</tr>
<tr>
<td>First boyfriend or girlfriend: 228 (37.4%)</td>
<td></td>
</tr>
<tr>
<td>First semester college course: 75 (12.3%)</td>
<td></td>
</tr>
<tr>
<td>First semester college event: 41 (6.7%)</td>
<td></td>
</tr>
<tr>
<td>Other: 12 (2.0%)</td>
<td></td>
</tr>
<tr>
<td>How did your parents talk to you about sex?</td>
<td></td>
</tr>
<tr>
<td>It was an ongoing conversation: 330 (54.1%)</td>
<td></td>
</tr>
<tr>
<td>They sat me down for a single talk: 124 (20.3%)</td>
<td></td>
</tr>
<tr>
<td>My parents have never talked to me about sex: 156 (25.6%)</td>
<td></td>
</tr>
<tr>
<td>How comfortable do you feel talking to your parents about sex? (1 = not at all; 7 = extremely)</td>
<td></td>
</tr>
<tr>
<td>1: 117 (19.2%)</td>
<td></td>
</tr>
<tr>
<td>2: 110 (18.0%)</td>
<td></td>
</tr>
<tr>
<td>3: 107 (17.5%)</td>
<td></td>
</tr>
<tr>
<td>4: 106 (17.4%)</td>
<td></td>
</tr>
<tr>
<td>5: 86 (14.1%)</td>
<td></td>
</tr>
<tr>
<td>6: 45 (7.4%)</td>
<td></td>
</tr>
<tr>
<td>7: 39 (6.4%)</td>
<td></td>
</tr>
<tr>
<td>Variable</td>
<td>N(^*)</td>
</tr>
<tr>
<td>-----------------------------------------------</td>
<td>---------</td>
</tr>
<tr>
<td>Opposite sex partners - this year</td>
<td>431</td>
</tr>
<tr>
<td>Opposite sex partners – lifetime</td>
<td>430</td>
</tr>
<tr>
<td>Opposite sex partners – reasonably permanent – this year</td>
<td>428</td>
</tr>
<tr>
<td>Opposite sex partners – reasonably permanent – lifetime</td>
<td>431</td>
</tr>
<tr>
<td>Opposite sex partners – once/infrequently – this year</td>
<td>432</td>
</tr>
<tr>
<td>Opposite sex partners – once/infrequently - lifetime</td>
<td>431</td>
</tr>
<tr>
<td>Sex with someone you didn’t trust – this year</td>
<td>431</td>
</tr>
<tr>
<td>Sex with someone you didn’t trust – lifetime</td>
<td>431</td>
</tr>
<tr>
<td>Vaginal-no condom- reasonably permanent</td>
<td>313/363 (86.2%)</td>
</tr>
<tr>
<td>Vaginal-no condom- reasonably permanent</td>
<td>359/364 (98.6%)</td>
</tr>
<tr>
<td>Anal-no condom- reasonably permanent</td>
<td>322/324 (99.4%)</td>
</tr>
<tr>
<td>Anal-no condom-one/infrequently</td>
<td>321/321 (100%)</td>
</tr>
<tr>
<td>Oral-no condom- reasonably permanent</td>
<td>302/377 (80.1%)</td>
</tr>
<tr>
<td>Oral-no condom-one/infrequently</td>
<td>335/359 (93.3%)</td>
</tr>
<tr>
<td>Vaginal-no protection- reasonably permanent</td>
<td>364/382 (95.3%)</td>
</tr>
<tr>
<td>Vaginal-no protection- once/infrequently</td>
<td>363/371 (97.8%)</td>
</tr>
<tr>
<td>Sexual intercourse – regret</td>
<td>425/432 (98.4%)</td>
</tr>
<tr>
<td>Sexual intercourse – no discussion of history</td>
<td>419/432 (97.0%)</td>
</tr>
<tr>
<td>Sexual intercourse – don’t know/just met</td>
<td>427/432 (98.8%)</td>
</tr>
<tr>
<td>Sexual intercourse – alcohol/drugs</td>
<td>396/432 (91.7%)</td>
</tr>
<tr>
<td>Emergency Contraception</td>
<td>431/432 (99.8%)</td>
</tr>
</tbody>
</table>
Table 3.6

*Frequencies of sexual behavior for the full sample*

<table>
<thead>
<tr>
<th>Variable</th>
<th>N*</th>
<th>Mean</th>
<th>SD</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vaginal-no condom - reasonably permanent</td>
<td>363 (84.0%)</td>
<td>2.78</td>
<td>1.40</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>Vaginal-no condom - once/infrequently</td>
<td>364 (83.3%)</td>
<td>1.90</td>
<td>1.28</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>Anal-no condom - reasonably permanent</td>
<td>324 (74.3%)</td>
<td>1.42</td>
<td>1.10</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>Anal-no condom - once/infrequently</td>
<td>321 (73.6%)</td>
<td>1.25</td>
<td>.91</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>Oral-no condom - reasonably permanent</td>
<td>377 (86.5%)</td>
<td>3.64</td>
<td>1.58</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>Oral-no condom - once/infrequently</td>
<td>359 (82.3%)</td>
<td>2.70</td>
<td>1.69</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>Vaginal-no protection - reasonably permanent</td>
<td>382 (87.6%)</td>
<td>1.93</td>
<td>1.37</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>Vaginal-no protection - once/infrequently</td>
<td>371 (85.1%)</td>
<td>1.72</td>
<td>1.29</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>Sexual intercourse – regret</td>
<td>432</td>
<td>2.04</td>
<td>1.25</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>Sexual intercourse – no discussion of history</td>
<td>432</td>
<td>2.26</td>
<td>1.46</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>Sexual intercourse – don’t know/just met</td>
<td>432</td>
<td>1.90</td>
<td>1.23</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>Sexual intercourse – alcohol/drugs</td>
<td>432</td>
<td>2.41</td>
<td>1.19</td>
<td>1</td>
<td>5</td>
</tr>
</tbody>
</table>

*number for whom item was relevant (total percentage of participants for whom item was relevant)
### Table 3.7

*Count data for all sexual behaviors by type of sexuality education and gender*

<table>
<thead>
<tr>
<th></th>
<th>Males – Abstinence</th>
<th>Males – Comprehensive</th>
<th>Females – Abstinence</th>
<th>Females – Comprehensive</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>N</strong></td>
<td>47 (8.7%)</td>
<td>87 (16.1%)</td>
<td>159 (29.5%)</td>
<td>246 (45.6%)</td>
</tr>
<tr>
<td><strong>Have you ever had consensual sexual intercourse?</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>27 (57.4%)</td>
<td>72 (82.8%)</td>
<td>Yes: 113 (71.1%)</td>
<td>Yes: 180 (73.2%)</td>
</tr>
<tr>
<td>No</td>
<td>20 (42.6%)</td>
<td>No: 15 (17.2%)</td>
<td>No: 46 (28.9%)</td>
<td>No: 66 (26.8%)</td>
</tr>
<tr>
<td><strong>At what age did you first have consensual sexual intercourse?</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>≤13</td>
<td>2 (7.4%)</td>
<td>≤13: 3 (4.2%)</td>
<td>≤13: 3 (2.7%)</td>
<td>≤13: 0 (0%)</td>
</tr>
<tr>
<td>14</td>
<td>1 (3.7%)</td>
<td>14: 5 (6.9%)</td>
<td>14: 3 (2.7%)</td>
<td>14: 7 (3.9%)</td>
</tr>
<tr>
<td>15</td>
<td>3 (11.1%)</td>
<td>15: 13 (18.1%)</td>
<td>15: 20 (17.7%)</td>
<td>15: 28 (15.6%)</td>
</tr>
<tr>
<td>16</td>
<td>4 (14.8%)</td>
<td>16: 16 (22.2%)</td>
<td>16: 27 (23.9%)</td>
<td>16: 55 (30.6%)</td>
</tr>
<tr>
<td>17</td>
<td>10 (37.0%)</td>
<td>17: 17 (23.3%)</td>
<td>17: 34 (30.1%)</td>
<td>17: 53 (29.4%)</td>
</tr>
<tr>
<td>18</td>
<td>7 (25.9%)</td>
<td>18: 16 (22.2%)</td>
<td>18: 23 (20.4%)</td>
<td>18: 33 (18.3%)</td>
</tr>
<tr>
<td>≥19</td>
<td>0 (0%)</td>
<td>≥19: 2 (2.8%)</td>
<td>≥19: 3 (2.7%)</td>
<td>≥19: 4 (2.2%)</td>
</tr>
<tr>
<td><strong>Was the first time with a …</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Steady romantic partner</td>
<td>19 (70.4%)</td>
<td>Steady romantic partner: 41 (56.9%)</td>
<td>Steady romantic partner: 90 (79.6%)</td>
<td>Steady romantic partner: 125 (69.4%)</td>
</tr>
<tr>
<td>Friend or acquaintance</td>
<td>3 (11.1%)</td>
<td>Friend or acquaintance: 22 (30.6%)</td>
<td>Friend or acquaintance: 17 (15.0%)</td>
<td>Friend or acquaintance: 42 (23.3%)</td>
</tr>
<tr>
<td>Someone you just met</td>
<td>4 (14.8%)</td>
<td>Someone you just met: 6 (8.3%)</td>
<td>Someone you just met: 3 (2.7%)</td>
<td>Someone you just met: 11 (6.1%)</td>
</tr>
<tr>
<td>Other</td>
<td>1 (3.7%)</td>
<td>Other: 3 (4.2%)</td>
<td>Other: 3 (2.7%)</td>
<td>Other: 1 (1.1%)</td>
</tr>
<tr>
<td><strong>Was this person …</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Same sex</td>
<td>3 (11.1%)</td>
<td>Same sex: 5 (6.9%)</td>
<td>Same sex: 1 (9%)</td>
<td>Same sex: 1 (6.6%)</td>
</tr>
<tr>
<td>Opposite sex</td>
<td>24 (88.9%)</td>
<td>Opposite sex: 67 (93.1%)</td>
<td>Opposite sex: 112 (99.1%)</td>
<td>Opposite sex: 179 (99.4%)</td>
</tr>
<tr>
<td><strong>Psychologically Risky Sex?</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>20 (42.6%)</td>
<td>Yes: 49 (56.3%)</td>
<td>Yes: 59 (37.1%)</td>
<td>Yes: 99 (40.2%)</td>
</tr>
<tr>
<td>No</td>
<td>27 (57.4%)</td>
<td>No: 38 (43.7%)</td>
<td>No: 100 (62.9%)</td>
<td>No: 147 (59.8%)</td>
</tr>
<tr>
<td><strong>Physically Risky Sex?</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>16 (34.0%)</td>
<td>Yes: 42 (48.3%)</td>
<td>Yes: 47 (29.6%)</td>
<td>Yes: 64 (26.0%)</td>
</tr>
<tr>
<td>No</td>
<td>31 (66.0%)</td>
<td>No: 45 (51.7%)</td>
<td>No: 112 (70.4%)</td>
<td>No: 182 (74.0%)</td>
</tr>
<tr>
<td><strong>Opposite sex partners - this year</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>M</td>
<td>1.44, SD: 1.65</td>
<td>M: 2.38, SD: 2.71</td>
<td>M: 1.55, SD: 1.54</td>
<td>M: 1.68, SD: 1.65</td>
</tr>
<tr>
<td>Min, Max</td>
<td>0, 6</td>
<td>Min: 0, Max: 16</td>
<td>Min: 0, Max: 10</td>
<td>Min: 0, Max: 12</td>
</tr>
<tr>
<td></td>
<td>Males – Abstinence</td>
<td>Males – Comprehensive</td>
<td>Females – Abstinence</td>
<td>Females – Comprehensive</td>
</tr>
<tr>
<td>--------------------------</td>
<td>-------------------</td>
<td>-----------------------</td>
<td>---------------------</td>
<td>-------------------------</td>
</tr>
<tr>
<td>Opposite sex partners - lifetime</td>
<td>M: 2.65, SD: 2.86</td>
<td>M: 5.94, SD: 7.37</td>
<td>M: 3.02, SD: 3.20</td>
<td>M: 4.25, SD: 3.64</td>
</tr>
<tr>
<td></td>
<td>Min: 0, Max: 12</td>
<td>Min: 0, Max: 42</td>
<td>Min: 0, Max: 10</td>
<td>Min: 0, Max: 20</td>
</tr>
<tr>
<td>Opposite sex partners – reasonably permanent – this year</td>
<td>M: .46, SD: .51</td>
<td>M: .50, SD: .68</td>
<td>M: .77, SD: .59</td>
<td>M: .75, SD: .70</td>
</tr>
<tr>
<td></td>
<td>Min: 0, Max: 1</td>
<td>Min: 0, Max: 3</td>
<td>Min: 0, Max: 3</td>
<td>Min: 0, Max: 6</td>
</tr>
<tr>
<td>Opposite sex partners – reasonably permanent - lifetime</td>
<td>M: 1.52, SD: 1.23</td>
<td>M: 1.61, SD: 1.59</td>
<td>M: 1.41, SD: 1.06</td>
<td>M: 1.74, SD: 1.24</td>
</tr>
<tr>
<td></td>
<td>Min: 0, Max: 4</td>
<td>Min: 0, Max: 10</td>
<td>Min: 0, Max: 6</td>
<td>Min: 0, Max: 6</td>
</tr>
<tr>
<td>Opposite sex partners – once/infrequently – this year</td>
<td>M: .81, SD: 1.00</td>
<td>M: 1.57, SD: 2.17</td>
<td>M: .81, SD: 1.20</td>
<td>M: .89, SD: 1.22</td>
</tr>
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<td>Males – Comprehensive</td>
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<td>Females – Comprehensive</td>
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<td>Emergency contraception</td>
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Table 3.8

*Frequency of sexual behaviors by gender and type of sexuality education*

<table>
<thead>
<tr>
<th></th>
<th>Males – Abstinence</th>
<th>Males – Comprehensive</th>
<th>Females – Abstinence</th>
<th>Females – Comprehensive</th>
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<tr>
<td>N</td>
<td>47 (8.7%)</td>
<td>87 (16.1%)</td>
<td>159 (29.5%)</td>
<td>246 (45.6%)</td>
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<td>Vaginal-no condom- reasonably permanent</td>
<td>M: 2.32</td>
<td>M: 2.63</td>
<td>M: 2.73</td>
<td>M: 2.92</td>
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<td></td>
<td>SD: 1.09</td>
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<tr>
<td>Vaginal-no condom- once/infrequently</td>
<td>M: 1.64</td>
<td>M: 2.13</td>
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<tr>
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<td>SD: 1.19</td>
<td>SD: 1.37</td>
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<td>Anal-no condom- reasonably permanent</td>
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<td>Anal-no condom-once/infrequently</td>
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<td>M: 3.57</td>
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<td>Oral-no condom-once/infrequently</td>
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<td>M: 2.23*</td>
<td>M: 2.68</td>
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<td>M: 1.94</td>
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<tr>
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<td>M: 2.09</td>
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<td>SD: 1.26</td>
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CHAPTER 4
DISCUSSION

The purpose of this study was to explore the following: a) What content do first-year college students report receiving in their middle and high school-based sexuality education courses; b) In what sexual behaviors first-year college students report engaging and does prevalence of behaviors vary according to gender or type of sexuality education received; c) Whether relationship self-efficacy mediates the relation between type of school-based sexuality education and sexual behaviors during the first year in college; and d) Whether gender moderates the path between type of sexuality education and relationship self-efficacy and type of sexuality education and sexual behaviors. While there is significant research on school-based sexuality education and sexual behavior in high school, research regarding the impact of sexuality education on college behavior is limited. No prior research has examined the role of relationship self-efficacy or gender as they relate to sexuality education and sexual behaviors.

Sexuality Education Content

Nearly 95% of our sample reported receiving sexuality education in either high school, middle school, or both. Over half of participants said that they received comprehensive sexuality education which included learning how to properly use condoms and/or birth control, while one-third of participants said that they received abstinence-only education without any discussion of using condoms and/or birth control. On whole, participants were more likely to report learning about knowledge-based topics
such as sexually transmitted infections (STIs) and HIV, pregnancy and reproduction, and puberty and adolescent development than skill-based topics such as peer negotiation skills, how to decide if you are ready to have sex, where to seek reproductive health services, and how to use condoms and other contraceptives. However, while previous research found that only 21% of middle school teachers and 39% of high school sexuality education teachers taught students how to correctly use a condom (CDC, 2011), our study found higher rates; 54% of students reported learning how to correctly use a condom during their school-based sexuality education courses.

Striking differences emerged between individuals who received abstinence-only sexuality education and individuals who received comprehensive sexuality education in relation to other topics taught in school-based sexuality education courses. With the exception of anatomy and physiology, peer negotiation skills, and drugs and alcohol, individuals who received comprehensive sexuality education were significantly more likely to report learning about all other sexuality education topics surveyed than individuals who received abstinence-only education. This finding adds to previous literature on school-based sexuality education, suggesting that comprehensive sexuality education courses are not only providing students with information about safer sex practices, but also helping them in developing the tools needed to explore their own values about sex as well as their options for engaging in safer sexual practices, including broadening their understanding of dating violence and sexual assault.

Consistent with previous research (e.g., CBC, 2011), participants reported limited time devoted to sexuality education in school; they most commonly reported receiving between one and ten hours of sexuality education in middle and or/high school. Only
one-fifth of participants reported that they received the majority of their information on sexuality from a school-based class. In addition, nearly half of participants said that their sexuality education class was taught by a gym teacher or coach, while just a third reported that their class was taught by a trained health educator. Given that research suggests that trained health educators have higher levels of self-efficacy and comfort in teaching sexuality education than do non-trained educators (LaChausse et al., 2013), the high numbers of students reporting that they were instructed by a non-trained teacher is concerning. Although participants reported on which topics they learned about in their sexuality education classes, the quality of the teaching and the medical accuracy of the material remain unclear.

Males were significantly more likely to report that they had been hit or slapped by a romantic partner than were females, while females were significantly more likely to report being forced to engage in sexual contact against their will than were males. This finding is reflective of prior research, which suggests that men are more likely to be victims of physical assault, while women are more likely to be victims of sexual assault (Saewyc, Brown, Plane, Mundt, Zakletskaia, Wiegel et al., 2009; US Department of Justice, 2003). However, while nearly 70% of participants reported learning about dating violence and 56% about sexual violence during their sexuality education classes, it is unclear how much gender played a role in these discussions; only two in five participants said they learned about gender roles during sexuality education classes. Most school-based programs neglect to address the differential impact of violence on males versus females (Tutty et al., 2005). The differences in physical and sexual assault rates found in our study further indicate that sexuality education courses would benefit from a more
nuanced discussion of the way gender socialization, stereotyping, and expectations may disproportionately influence risk.

Sexual Behaviors

First-year college students reported engaging in a wide variety of risky sexual behaviors, including inconsistent condom use, use of drugs or alcohol before sex, and having sex with multiple casual partners. Consistent with previous research suggesting that approximately four out of five college students have had sex with a casual partner (England et al., 2007; Paul et al., 2000), we found that 75.9% of participants in our sample had engaged in sexual intercourse with at least one partner in an infrequent relationship during their lifetime. Nonetheless, a greater percentage of students reported that they had sexual intercourse with a partner in a reasonably permanent relationship since the beginning of freshmen year than with a partner in an infrequent relationship (62% vs. 55%),

Regardless of type of sexual activity, on average, participants reported a higher number of sexual encounters without condoms with partners with whom they had sex once or infrequently than with partners in a reasonably permanent relationship. Participants reported six times as many vaginal encounters, four and one half times as many anal encounters, and three times as many oral encounters without the use of condoms with reasonably permanent partners than infrequent partners since the beginning of freshmen year. These numbers are reflected in the frequency data, as well. On average, participants reported that they “sometimes” engage in sexual activities with partners in a reasonably permanent relationship without the use of condoms or any type of protection from pregnancy, while they “seldom” do so with infrequent partners.
Nonetheless, a sizable portion of our sample – approximately 10% - still reported that they never used condoms or any type of protection against pregnancy with either reasonably permanent or infrequent partners. Given the direct and indirect costs associated with unintended pregnancy and STIs - including medical treatment, psychological distress (e.g. DiClemente et al. 2001; Weinstock et al. 2004) and diminished quality of life (e.g. DiClemente et al. 2001) - this is a particularly concerning statistic. While any inconsistent contraceptive use can result in unwanted outcomes, individuals who never use condoms or contraceptives are placing themselves – and their partners – at an elevated risk for unintended pregnancy and STIs.

*Gender & Sexuality Education on Sexual Behavior*

We predicted that males would engage in riskier sexual behavior than females, but that individuals who received abstinence-only education would be less likely to use condoms or contraceptives than individuals who received comprehensive sexuality education. This hypothesis was partially confirmed. Overall, males tended to engage in riskier sexual behavior than females; however, there were no significant differences in condom or contraceptive use between those who received abstinence-only sexuality education and those who received comprehensive sexuality education.

Overall, there were few differences in sexual behavior between individuals across the four gender by type of sexuality education groups. However, males who received abstinence-only sexuality education were significantly more likely to report that they had not engaged in prior sexual intercourse than males who received comprehensive sexuality education. This contrasts with previous research suggesting that abstinence-only education does not delay the initiation of sex (Trenholm et al., 2007). Nevertheless, this
finding should be interpreted with caution and within context. First, our sample of males who received abstinence-only sexuality education was relatively small (n = 47). Second, we did not assess whether participants in the study were virgins by choice or by circumstance. It is possible that males who received abstinence-only education are choosing to remain virgins as a result of religious or cultural beliefs bolstered by an abstinence-only education. Conversely, given that comprehensive sexuality education courses were more likely to teach communication skills, contraceptive options, and values clarification, it is possible that males who received abstinence-only sexuality education lack the knowledge or skills associated with behavior necessary to acquiring a sexual partner. Compounding this, regardless of gender, individuals who received comprehensive sexuality education were significantly more likely to report that they were currently involved in a monogamous romantic relationship, suggesting these individuals may have more opportunities for consensual sexual intercourse.

After comparing the four groups across twenty-one count variables and twelve frequency variables, no differences were found between the groups on 26 of the sexual behaviors. However, four count variables and three frequency variables emerged significant. Of the count variables, males who received comprehensive sexuality education reported higher numbers of lifetime opposite sex partners, lifetime partners with whom they had sex once or infrequently, and freshmen year partners with whom they had sex one or infrequently than individuals in all three other groups. Females who received comprehensive sexuality education reported higher numbers of lifetime opposite sex partners than females who received abstinence-only education, and regardless of type of sexuality education, males reported higher numbers of sexual partners who they did
not know or had just met. In terms of the frequency variables, males who received comprehensive sexuality education were more likely to engage in oral sex with a partner in an infrequent relationship without a condom than were females who received abstinence-only sexuality education. They were also more likely to have sex with someone they did not know or had just met and to use drugs or alcohol than were females who received abstinence-only sexuality education. Taken together, results imply that gender plays a critical role in understanding the sexual behavior of college freshmen. Consistent with prior research, males appear to engage in riskier sexual behaviors than females (Vollrath, Knoch, & Cassano, 1999). However, this finding is qualified by type of sexuality education; males who received comprehensive sexuality education tended to engage in riskier sexual behaviors than females who received abstinence-only education. Furthermore, while some differences were found in sexual behaviors across the four groups studied, these differences were minimal. In fact, even when clear differences emerged between groups, a more complicated picture develops. For example, compared to males who received abstinence-only sexuality education, males who received comprehensive sexuality education reported more infrequent partners both during their lifetimes and since the beginning of freshmen year. However, there were no significant differences in frequency of condom or contraceptive use with these partners, nor with the frequency of engaging in sexual behavior that was later regretted. It is possible, then, that males in our study who received comprehensive sexuality education are more accepting of casual sexual intercourse than males who received abstinence-only education, while the two groups place equal importance on using protection during sex. No differences emerged that suggested a significant advantage for either comprehensive
or abstinence-only sexuality education. Thus, future research needs to better disentangle the ways in which type of sexuality education may differentially impact males versus females.

**Moderated-Mediation Models**

We examined whether relationship self-efficacy mediated and gender moderated the relation between type of sexuality education received in middle/high school and four sexual behaviors: lifetime opposite sex partners in a reasonably permanent relationship, lifetime opposite sex partners in an infrequent relationship, freshmen year opposite sex partners in a reasonably permanent relationship, and freshmen year opposite sex partners in an infrequent relationship, as well as predicted that this effect would be stronger for those who received comprehensive sexuality education. We found no significant mediation or moderated-mediation in any of the four models. That is, relationship self-efficacy did not mediate the path between type of sexuality education in secondary school and sexual behaviors in college for either gender.

However, several other significant findings emerged. First, gender appears to have a stronger influence on relationship self-efficacy than does the type of sexuality education one receives. We found no relation between type of sexuality education and relationship self-efficacy, which is notable given that individuals who received comprehensive sexuality education were significantly more likely to learn about communication with a romantic partner. However, even after controlling for relationship status, females reported significantly higher relationship self-efficacy than did males regardless of type of sexuality education. While it is possible that college-aged women feel more successful in managing their day to day romantic relationships, it is also
possible that our measure of relationship self-efficacy, which assesses mutuality, emotion control, and differentiation, taps into qualities that are typically found to be stronger in women. For example, women are more likely to report using a wider variety of emotion regulation strategies than are men (Nolen-Hoeksema & Aldal, 2011), including reappraisal and problem-focused coping (Tamres et al., 2002). They also express emotions more frequently than men (Brody, 1993), and are more interpersonally oriented (Hyde et al., 2008). Thus, it may be that other, unmeasured factors play a larger role in men feeling efficacious in managing their romantic relationships.

Second, with the exception of condom use with partners in infrequent relationships, relationship self-efficacy was not significantly related to sexual behavior. This may be in part because participants varied in regard to whom they were answering the items on the relationship self-efficacy scale. Some participants answered items as they related to a monogamous partner, while others answered about an infrequent partner or a hypothetical partner, though we controlled for relationships status to try to minimize the impact of this dynamic. However, the finding that relationship self-efficacy is related to condom use with infrequent partners is worth exploring. As relationship self-efficacy increased, participants reported a greater frequency of condom use during these encounters; this finding was consistent across genders. Although participants answered items on our measure of relationship self-efficacy as they related to a specific individual, this finding suggests that relationship self-efficacy may transfer into other types of dating and sexual relationships. Furthermore, it is noteworthy that relationship self-efficacy did not relate to either of the sexual behavior variables with partners in a reasonably permanent relationship. It may be that other factors, such as length of relationship or
degree sexual satisfaction, play a role in decision making around safer sex practices with partners in reasonably permanent relationships.

Finally, while we expected to find a relation between type of sexuality education and sexual behaviors in college, we found limited evidence in support of this finding. While there is significant research suggesting that, in comparison to abstinence-only sexuality education, comprehensive programs show positive effects on sexual behavior (Kirby, 2007; Kohler et al., 2008), the effect sizes are small, and the students are not typically followed past high school to measure the robustness of the findings (Kirby, 2007; McLelland & Fine, 2008). Thus, results from this study suggest that once teenagers are in college, secondary school-based sexuality education may not play as much of a role in students’ sexual behavior as it may have in high school.

Once students are in college, several other factors may play a role in students’ decision making around sexual behavior. Previous research has identified several variables shown to relate to risky sexual behavior in college samples, including substance use (Cooper, 2002; Fly, Quadagno, Harrison, Eberstein & Riehman, 1997), sensation seeking, (Hoyle, Fejfar, & Miller, 2000), and religious beliefs, race, and family background (Davidson, Moore, Earle, & Davis, 2008). In our study, we found that belief that one’s peers were not using condoms during vaginal intercourse was significantly associated with not using condoms oneself. Furthermore, as students enter college, they are both exposed to several novel situations and given greater freedom to explore new behaviors than they might have in high school, under parental monitoring. Lastly, college culture may also impact students’ sexual beliefs and practices; for example, a less
religious or more liberal environment may have more permissive norms regarding sexual behaviors for students (e.g., Dworkin, 2005).

Furthermore, on average, participants in our study reported learning about sex from four different sources, and only one-fifth reported that school-based sexuality education was the primary method through which they learned about sex. This indicates that the impact of sexuality education on sexual behavior may be secondary to other factors. What’s more, individuals who reported that their primary method of sexuality education was through schools had lower levels of relationship self-efficacy, but more frequent condom use with committed partners. This finding may be reflective of research indicating the school-based sexuality education tends to focus more on specific sexual acts rather than the larger context in which these acts occur (e.g., Schalet, 2011).

Another possibility is that sexuality education does play a role in future sexual behavior, but only for certain individuals. Approximately 94% of our sample reported receiving some type of sexuality education in middle or high school. In contrast, over one-third of teenagers who receive no sexuality education live in households with annual yearly incomes below $20,000, and the majority of teenagers who receive no sexuality education come from low-income, rural areas with a high concentration of African Americans (Kohler et al., 2008). Of the ten school-based programs for which the Office of Adolescent Health will offer funding, nine of the initial research trials used primarily African American and/or Latino samples, and the majority also targeted low income students (Schmidt et al., unpublished manuscript). In contrast, our study sample was primarily Caucasian, and most students’ parents had obtained at least a college degree, translating to a higher level of socioeconomic status. Given that minority and low
income teenagers are more likely to be impacted by teenage pregnancy and STIs (Santelli, Lowry, Brener, & Robin, 2000), it is possible that the benefits of comprehensive sexuality education for this group are disproportionate to the benefits of these classes for college-bound middle to upper middle class teenagers. Future research could better disentangle the potential relations between race, socioeconomic status, and type of sexuality education on future sexual behavior.

**Follow Up Advisory Surveys**

Overall, participants in the follow up advisory surveys reported that they were not surprised by the results of this study. In particular, they felt that gender, culture, and parental values have a stronger impact on sexual behavior than does school-based sexuality education. However, some students were surprised that the findings were not more in line with research findings indicating comprehensive sexuality education to be more effective in preventing risky sexual behavior than abstinence-only sexuality education. In fact, despite no evidence indicating the superiority of comprehensive sexuality education over abstinence-only sexuality education as it relates to college sexual behavior, participants continued to stress the importance of funding comprehensive sexuality education programs. That participants’ suggested policy implications had little to do with the study’s findings may be a window into why the debate over comprehensive versus abstinence-only sexuality education is so divisive, inspiring strong opinions and wrought with moral, ethical and political implications. Lastly, an additional finding to emerge from the survey is that several of those who received abstinence-only sexually education said that they thought abstinence-only education was less effective for them, and that only comprehensive sexuality education
should be taught in schools. This suggests that while there may not have been explicit behavioral differences between those who received abstinence-only versus comprehensive sexuality education, these individuals may differ on other critical variables. For instance, Walcott and colleagues (2011) found that it was not type of sexuality education that predicted safer sex practices with infrequent partners in college, but perceived helpfulness of sexuality education. Though it is outside the scope of this particular study, we also collected qualitative data that examined students’ perceptions of the strengths and weaknesses of their school-based sexuality education programs, in addition to perceived helpfulness of these programs in preparing them for college. Future policy decisions may benefit from a more nuanced evaluation of these data.

Strengths & Limitations

This study is the first to examine potential relations between topics learned in secondary school sexuality education classes and sexual behaviors during the first year of college, as well as the potential roles of relationship self-efficacy and gender in mediating and moderating these relations, respectively. Strengths of the study include a large, geographically diverse sample, no missing data, and items drawn from previously validated surveys of sexual behaviors. In cases where no prior validated measures existed (i.e., the sexuality education survey), items were pilot tested and revised before being used in the wider study.

Despite the study’s strengths, several limitations must be noted. First, we examined sexuality education retrospectively. Though we limited our study to first-year students who graduated within the previous year in order to minimize recall bias, for many of the students surveyed, it had been several years since they received school-based
sexuality education. Given that students reported learning about sexuality from several different sources, it is possible that they misremembered the specifics of the topics they learned in their school-based sexuality education classes. Furthermore, although we controlled for other sources from which students received sexuality education, there is no way to control for what participants learned from these other sources. That is, there is no way to specifically attribute sexual behaviors in college to material learned in school-based sexuality education classes. Moreover, while our findings suggest some relation between type of sexuality education and sexual behaviors during the first year in college – particularly when studying the sample according to gender – we cannot draw causal inferences. Future longitudinal, prospective research in this area is needed in order to clarify the magnitude of the effect between type of sexuality education in secondary school and sexual behaviors during the first year in college.

Second, sexual behavior is a notoriously challenging construct to assess accurately (Catania et al. 1990; Shroeder et al. 2003). Self-report measures are subject to both recall bias and memory errors. It is also possible that there are limits to what people are willing to disclose; research suggests that while men tend to over-report their rates of sexual behavior, women tend to under-report their rates of sexual behavior (Kost & Forrest 1992). Though we minimized potential bias by using an anonymous, computerized response format, which has shown to possess the highest validity and disclosure rate for measuring private behavior, (Supple, Aquilino, & Wright, 1999), there is no way to eradicate bias completely.

Third, our study is susceptible to selection bias, as participation was voluntary. Students who agree to answer questions on a survey pertaining to sexuality education and
sexual behaviors may be meaningfully different on unmeasured variables than students who do not agree to answer questions on a survey.

Finally, while our final sample contained 436 individuals who reported having sex, one more than was needed to achieve 80% power for moderated-mediation, we were underpowered for our analyses for two reasons--first, not all sexual behaviors were applicable for each individual, and second, we had to remove several individuals from the database for not meeting selection criteria. It is possible that with a larger sample size, we could have established more significant results with our moderated-mediation models.

**Implications and Conclusion**

Altogether, it appears as though type of sexuality education has a minimal impact on sexual behavior in college. What’s more, when significant differences in sexual behavior emerged among individuals who received abstinence-only versus comprehensive sexuality education do emerge, they were qualified by gender. This suggests that whether one is male or female is just as important – if not more so – than sexuality education in impacting one’s future sexual behaviors.

Nevertheless, it would be naïve to fully discount the impact of formative sexuality education. While we were able to assess which topics participants studied in their sexuality education courses, we were unable to examine the quality of the content, including whether it was medically accurate. It was also unfeasible to determine the quality and the accuracy of the information about sexuality that participants received elsewhere. One-quarter of our sample said that they had never discussed sex with their parents. Furthermore, many participants reported receiving information about sexuality from peers and the media, both sources that can be notoriously inaccurate. It is possible
that we found minimal differences between groups on sexual behavior not because abstinence-only and comprehensive sexuality education have equal merit, but because in their current forms they were insufficient; the curricula too brief and taught by untrained instructors.

With the creation of the National Sexuality Education Standards, now may be the ideal time for a longitudinal study comparing the effectiveness of abstinence-only versus comprehensive sexuality education. This approach would define comprehensive sexuality education not just as the inclusion of material pertaining to condoms and contraceptives, but as taking a more holistic approach to sexuality, providing high quality, medically accurate information and taught by trained health educators. As implied by our results, this approach should also include a discussion of the impact of gender on sexuality and sexual behavior that avoids directly stereotyping males and females. Lastly, longitudinal research on this topic would not only allow us to better understand if there are differences in effectiveness of abstinence-only versus comprehensive sexuality education on future sexual behavior, but also for whom. If indeed the benefits of comprehensive sexuality education for low income, minority students are disproportionate to the benefits for middle to upper class students, greater resources and culturally competent instructional materials and methodologies should be allocated to ensuring these students are appropriately educated in topics of sexuality.
REFERENCES


Schmidt, S.C., Wandersman, A., & Hills, K. (unpublished manuscript). Evidence-Based Sexuality Education Programs in Schools: Do they align with the National Sexuality Education Standards?


APPENDIX A

SEXUALITY EDUCATION & SEXUAL BEHAVIOR SURVEY

DEMOGRAPHICS

1) What is your date of birth?

Month ____ Day _____ Year ____

2) What is your year in college?
   o Freshman
   o Sophomore (SKIP TO END)
   o Junior (SKIP TO END)
   o Senior (SKIP TO END)

3) In what year did you graduate high school?
   o 2013
   o 2012 (SKIP TO END)
   o 2011 (SKIP TO END)
   o 2010 or earlier (SKIP TO END)

4) What university do you attend? _______________________________

5) Do you presently reside
   o In on campus housing
   o In off campus housing
   o With your parents

6) What is your gender?
   o Male
   o Female
   o Transgendered

7) How would you describe yourself? (choose one or more)
   o American Indian or Alaska Native
8) What is the highest level of education that your mother or father has completed? (select whichever is higher)

- Some elementary, middle, or high school
- High school graduate
- GED
- Vocational school
- Some college
- College graduate
- Master’s degree
- Doctorate
- Professional degree such as MD, JD, Nursing

9) While you were attending high school, with whom did you reside?

- Both your mother and your father (biological or adoptive)
- Primarily your mother
- Primarily your father
- Grandparents
- Other ________________________

10) In what state did you attend high school? (If you attended high school in more than one state, indicate the state in which you attended school for the longest)

(drop down menu of 50 states + DC)

11) In what type of residence did you attend high school?

- Urban
- Suburban
- Rural

12) What type of high school did you attend?

- Public
- Religiously-based private school
13) Was your high school

- Co-ed
- All boys
- All girls

14) People vary in their sexual attraction to other people. Which of these statements best describes your feelings? Are you

- Only attracted to females
- Mostly attracted to females
- Equally attracted to females and males
- Mostly attracted to males
- Only attracted to males
- Not sure

15) What is your religious affiliation?

- Catholic
- Protestant
- Episcopalian
- Jewish
- Muslim
- Buddhist
- Atheist
- Other ________

16) In general, would you consider your religious faith to be:

- None
- Very weak
- Moderately weak
- Moderately strong
- Very strong

17) Which of the following best represents your political affiliation?

- Democrat
- Republication
- Independent
- Libertarian
- Green
- Other ________
SEXUALITY EDUCATION

1) Did you receive any type of sexuality education during high school?
   o Yes   b. No

If b, SKIP TO Q. 7 and THEN TO SEXUAL BEHAVIORS

2) What grade were you in when you first started receiving sexuality education?
   o Elementary School (K – 5)
   o Middle School (6 – 8)
   o 9th grade
   o 10th grade
   o 11th grade
   o 12th grade

3) Approximately how much time was dedicated to sexuality education in high school?
   o 1-10 hours
   o 11-20 hours
   o 21-30 hours
   o 31-40 hours
   o 41-50 hours
   o 51 hours +

4) Who taught your sexuality education class
   o Coach/Gym Teacher
   o Teacher of another subject
   o Trained health educator
   o Other: __________

5) Was your sexuality education class?
   o Single sex b. mixed sex c. some of each

6) At any point in your high school sexuality education classes, were you taught about the following? (check all that apply)
   o Abortion
   o Abstinence from sexual activity
   o Anatomy and Physiology
   o Birth control pills
   o Communication with a romantic partner
o Communication with parents
o Contraceptive failure rates
o Dating violence
o Different types of contraceptive options
o Drugs and alcohol
o Gender roles
o Homosexuality
o How to decide if you are ready to have sex
o How to properly use a condom
o How to properly use other forms of birth control (other than condoms)
o How to refuse sexual intercourse
o Media’s influence on sexuality
o Peer negotiation skills
o Pregnancy and reproduction
o Puberty and adolescent development
o Sexual assault
o Sexually transmitted infections (STIs) and HIV
o Understanding your own personal values about sexual relationships
o Where to seek reproductive health services
o Other __________________________

7) **What is the primary method through which you received information pertaining to sexuality?**

   o Parents
   o Peers
   o Media
   o Siblings
   o School/Teachers
   o Religious official
   o Internet
   o Boyfriend or girlfriend
   o Other ____________

8) **Where else did you receive information pertaining to sexuality?** (check all that apply)

   o Parents
   o Peers
   o Media
   o Siblings
   o Religious official
   o Internet
   o First boyfriend or girlfriend
   o First semester college course
   o First semester college event
   o Other ____________
9) **How did your parents talk to you about sex?**
   - It was an ongoing conversation
   - They sat me down for a single talk
   - My parents have never talked to me about sex

10) **How comfortable do you feel talking to your parents about sex?**
    1 = Not at All  2  3  4  5  6  7 = Extremely

11) **What do you perceive to be the strengths of your high school-based sexuality education?**

12) **What do you perceive to be the weaknesses of your high school-based sexuality education?**

13) **How helpful was your high-school based sexuality education in preparing you for college? Explain.**

14) **What should sexuality education programs in schools teach?**

15) **What are barriers preventing schools from teaching what you think they should?**

**SEXUAL BEHAVIORS**

*Unless otherwise specified, for purposes of this survey, sexual intercourse is defined as vaginal, anal, or oral sex.*

1) **Have you ever engaged in psychologically risky sex?**
   - Yes
   - No
   
   If yes, describe.

2) **Have you ever engaged in physically risky sex?**
   - Yes
   - No
   
   If yes, describe.

3) **Have you ever had sexual intercourse?**
Yes
No (SKIP TO Q7; then to Q24)

4) At what age did you first have consensual sexual intercourse?
   o ≤13
   o 14
   o 15
   o 16
   o 17
   o 18
   o ≥19

5) Was the first time you had consensual sexual intercourse: (choose one)
   o With a steady romantic partner
   o With a friend or acquaintance with whom you were not in a romantic relationship
   o With someone you just met

6) Was this person
   o Of the same sex as you
   o Of the opposite sex as you

7) At what age did you begin puberty? (For females: beginning of menstruation; for males: deepening of voice, beginning of facial hair growth)
   o 10 or under
   o 11
   o 12
   o 13
   o 14
   o 15
   o 16 or older

The following items ask you about various behaviors in which you may or may not have engaged.

8) How many opposite sex partners have you had sexual intercourse with:

   Since the beginning of your freshmen year in college: ___
   In your lifetime, including this year: ____

   a) How many of these were your partner in a committed or stable relationship?
Since the beginning of your freshmen year in college: ___
In your lifetime, including this year: ______

b) How many of these were a partner with whom you had sex once or infrequently?
Since the beginning of your freshmen year in college: ___
In your lifetime, including this year: ____

9) How many same sex partners have you had sexual intercourse with?

a) How many of these were your partner in a committed or stable relationship?
Since the beginning of your freshmen year in college: ___
In your lifetime, including this year: _____

c) How many of these were a partner with whom you had sex once or infrequently?
Since the beginning of your freshmen year in college: ___
In your lifetime, including this year: _____

10) How many partners have you had sex with that you didn’t trust?
Since the beginning of your freshmen year in college: ___
In your lifetime, including this year: _____

Since the beginning of your freshmen year in college:

11) How many times have you had vaginal intercourse without a condom with partners in a committed or stable relationship? ______

Is this number
○ Never
○ Seldom
○ Sometimes
○ Most times
○ Always
○ I have never had vaginal intercourse with a partner in a committed or stable relationship
○ I have had vaginal intercourse with a partner in a committed or stable relationship, but not during my freshmen year of college
12) How many times have you had vaginal intercourse without a condom with partners with whom you had sex once or infrequently? _____

Is this number

- Never
- Seldom
- Sometimes
- Most times
- Always
- I have never had vaginal intercourse with a partner with whom I had sex once or infrequently
- I have had vaginal intercourse with a partner with whom I had sex once or infrequently, but not during my freshmen year in college

13) How many times have you had anal intercourse without a condom with partners in a committed or stable relationship? _____

Is this number

- Never
- Seldom
- Sometimes
- Most times
- Always
- I have never had anal intercourse with a partner in a committed or stable relationship
- I have had vaginal intercourse with a partner in a committed or stable relationship, but not during my freshmen year of college

14) How many times have you had anal intercourse without a condom with partners with whom you had sex once or infrequently? _____

Is this number

- Never
- Seldom
- Sometimes
- Most times
- Always
- I have never had anal intercourse with a partner with whom I had sex once or infrequently
- I have had anal intercourse with a partner with whom I had sex once or infrequently, but not during my freshmen year in college

15) How many times have you had oral intercourse without a condom with partners in a committed or stable relationship? _____

Is this number
Never
Seldom
Sometimes
Most times
Always
I have never had oral intercourse with a partner in a committed or stable relationship
I have had oral intercourse with a partner in a committed or stable relationship, but not during my freshmen year of college

16) How many times have you had oral intercourse without a condom with partners with whom you had sex once or infrequently? ____

Is this number
Never
Seldom
Sometimes
Most times
Always
I have never had oral intercourse with a partner with whom I had sex once or infrequently
I have had oral intercourse with a partner with whom I had sex once or infrequently, but not during my freshmen year in college

17) How many times have you had vaginal intercourse without any protection against pregnancy with partners in a committed or stable relationship? ____

Is this number
Never
Seldom
Sometimes
Most times
Always
I have never had vaginal intercourse with a partner in a committed or stable relationship
I have had vaginal intercourse with a partner in a committed or stable relationship without any protection against pregnancy, but not during my freshmen year in college

18) How many times have you had vaginal intercourse without any protection against pregnancy with partners with whom you had sex once or infrequently? ____

Is this number
Never
19) How many times have you had sexual intercourse that you engaged in willingly but later regretted? ______

Is this number
  o Never
  o Seldom
  o Sometimes
  o Most times
  o Always

20) How many times have you had sexual intercourse with a new partner before discussing sexual history, IV drug use, disease status and other current sexual partners? ______

Is this number
  o Never
  o Seldom
  o Sometimes
  o Most times
  o Always

21) How many times have you had sexual intercourse with someone you don’t know well or just met? ______

Is this number
  o Never
  o Seldom
  o Sometimes
  o Most times
  o Always

22) How many times did you drink alcohol or use drugs before you had sexual intercourse?

Is this number
23) How many times have you or your partner(s) used emergency contraception? (“morning after pill”)? _____

24) In your lifetime, how many times has your boyfriend or girlfriend hit, slapped, or physically hurt you on purpose? ___

   a. When was the first time this happened?
      o Middle school or earlier
      o High school
      o First year of college
      o This has never happened to me

   b. When was the last time this happened?
      o Middle school or earlier
      o High school
      o First year of college
      o This has never happened to me

25) In your lifetime, how many times have you been forced to engage in any kind of sexual contact when you did not want to? ______

   a. When was the first time this happened?
      o Middle school or earlier
      o High school
      o First year of college
      o This has never happened to me

   b. When was the last time this happened?
      o Middle school or earlier
      o High school
      o First year of college
      o This has never happened to me

26) For women only: how comfortable do you feel asking a sexual partner to wear a condom?

   Not at all    Somewhat    Often    Extremely    n/a I’m a male
27) For men only: how willing would you be to wear a condom if a sexual partner asked you to?

Not at all  Somewhat  Often  Extremely  n/a I’m a female

28) Within the last 30 days, how often do you think the typical student at your school has had: (place a checkmark in the appropriate box)

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<th>3-4</th>
<th>5-6</th>
<th>7-8</th>
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<th>11+</th>
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<tr>
<td>Oral Intercourse</td>
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<td>Vaginal Intercourse</td>
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</table>

29) Within the last 30 days, how often do you think the typical student at your school has used a condom during:

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<th></th>
<th>Never</th>
<th>Rarely</th>
<th>Sometimes</th>
<th>Mostly</th>
<th>Always</th>
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<td>Oral Intercourse</td>
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<td>Vaginal Intercourse</td>
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<td>Anal Intercourse</td>
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RELATIONSHIP STATUS

1) Which of the following best describes your dating, sexual, or romantic relationship status?

- Never dated (SKIP TO Relationship Self-Efficacy Scale)
- Not currently dating or involved in a romantic or sexual relationship
- I go out on dates but I’m not in a sexual or romantic relationship
- I am currently involved in a casual dating or sexual relationship
- I am in a committed, monogamous romantic relationship

   a) Have you ever been in a monogamous romantic relationship?
Yes, previously (SKIP TO Q3)
Yes, currently (SKIP TO Q2)
No (SKIP TO Relationship Self-Efficacy Scale)

2) If you are currently in a committed relationship:
   a) How long has that relationship lasted?
      o <3 months
      o 3 – 6 months
      o 6 – 12 months
      o 12 – 18 months
      o 18 – 24 months
      o >24 months
   
   b) What is the gender of your partner?
      o Male
      o Female
      o Transgender
   
   c) What is the age of your partner?
      o ≤18
      o 19
      o 20
      o 21
      o 22
      o 23
      o 24
      o ≥25

SKIP TO Relationship Self-Efficacy Scale

3) If you are not currently in a committed relationship:
   a) What is the duration of your longest monogamous relationship?
      o <3 months
      o 3 – 6 months
      o 6 – 12 months
      o 12 – 18 months
      o 18 – 24 months
      o >24 months
   
   b) What was the gender of this partner?
      o Male
      o Female
      o Transgender
   
   c) How old were you when you began this relationship?
d) How old was your partner when you began this relationship?
   - 4 + years younger than you
   - 1-3 years younger than you
   - The same age as you
   - 1-3 years older than you
   - 4 + years older than you

**Relationship Self-Efficacy Scale**

Instructions: Carefully read the question below and then respond to each item using the rating scale on the right side of this page. Circle only one number per item.

a) Please answer the below items as they pertain to one individual. About whom will you be answering these items:
   - Current monogamous partner
   - Current casual dating or sexual partner
   - Prior monogamous partner
   - Prior casual dating or sexual partner
   - Never dated – answering about a hypothetical partner

b) Is this person:
   - The same sex as you
   - The opposite sex as you

**Question:** “Within you’re the relationship specified above, how confident are YOU in YOUR ability to do each of the following?”

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<thead>
<tr>
<th>How confident are YOU that YOU can…</th>
<th>I’m not sure at all</th>
<th>Somewhat Sure</th>
<th>I’m completely Sure</th>
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<tbody>
<tr>
<td>1. Deal with important disagreements openly and directly</td>
<td>1 2 3 4 5 6 7 8 9</td>
<td></td>
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<tr>
<td>2. Openly express your personal wishes and needs</td>
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123
3. Share equally with your partner in planning activities together

4. Tell your partner when you feel hurt or upset with him or her

5. Be a good sex partner

6. Express openly to your partner your hopes for the future of the relationship

7. Let your partner take care of you when you are ill

8. Admit your personal mistakes to your partner when they occur

9. Deal with your partner when he or she is angry or upset with you

10. Comfort your partner when he or she is angry or upset with someone else

11. Tell your partner when you would prefer to be alone

12. Express affection to your partner freely and comfortably

13. Accept your partner’s affection freely and comfortably

14. Express your views and preferences regarding sex to your partner

15. Offer criticism to your partner without hurting his or her feelings

16. Accept criticism from your partner without attacking/challenging him or her

17. Tell your partner when you would
125

prefer to spend time with other friends

18. Comfort your partner when he or she is “down” or depressed

19. Put time into developing shared interests with your partner

20. Be available to your partner when he or she needs you

21. Control your temper when angry or frustrated with your partner

22. Settle any moral or religious differences you may have with your partner

23. Avoid temptations to “cheat” on your partner

24. Control feelings of jealousy you may have about your partner

25. Find ways to work out “everyday” problems with your partner

26. Anticipate when your partner needs your support

27. Accept your partner’s support when you are “down” or depressed

28. Avoid criticizing your partner when he or she makes mistakes

29. Allow your partner to “take charge” of things when you are feeling upset or confused

30. Accept your partner’s desire to do things
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<td>his or her own way</td>
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<tr>
<td>31. Tell your partner when you feel you are unable to solve a personal problem</td>
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<td>32. Accept your partner’s desire to spend time with other people</td>
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<td>33. Stay calm when you and your partner are having a serious argument</td>
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<td>34. Show respect to your partner when you disagree with his or her opinions</td>
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<tr>
<td>35. Allow your partner to calm you down when you feel stressed</td>
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APPENDIX B

FOLLOW UP ADVISORY SURVEY

Definitions
Please keep these definitions in mind as you answer the questions below.

Abstinence-Only Sexuality Education: A group comprised of individuals who reported receiving “abstinence from sexual activity” but did NOT report learning “how to properly use a condom” or “how to properly use other forms of birth control” during their school-based sexuality education classes.

Comprehensive Sexuality Education: A group comprised of individuals who reported receiving information on “how to properly use a condom” or “how to properly use other forms of birth control,” regardless of whether or not they were also taught about abstinence.

Sexual Intercourse: Unless otherwise specified, for purposes of this study, sexual intercourse was defined as vaginal, anal, or oral sex.

Introductory Question:

1) What, if anything, do you know about the research regarding the effectiveness of abstinence-only sexuality education versus comprehensive sexuality education on sexual behaviors (e.g., delaying sexual intercourse, using condoms, sexually transmitted infections (STIs), and teen pregnancy)?

PAGE 2

In order to examine our data, we divided participants into the following four categories:

1) Males who reported receiving abstinence-only sexuality education, 2) males who reported receiving comprehensive sexuality education, 3) females who reported receiving abstinence-only sexuality education and 4) females who reported receiving comprehensive sexuality education.

Based on the definitions outlined above, which category would you fall into?

1) Males who reported receiving abstinence-only sexuality education
2) Males who reported receiving comprehensive sexuality education  
3) Females who reported receiving abstinence-only sexuality education  
4) Females who reported receiving comprehensive sexuality education.  
5) Other (write in) 

Are there any demographic characteristics (e.g., race, income, religiosity, political affiliation) that you think may have an impact on sexual behavior? How so?

PAGE 3

Results:
• We looked at differences between the four aforementioned groups across 34 different sexual behaviors. We found significance for 8 of these behaviors. This means that on 26 sexual behavior variables, there were no differences between males who received abstinence-only sexuality education, males who received comprehensive sexuality education, females who received abstinence-only sexuality education, and females who received comprehensive sexuality education.

Does this finding surprise you? Why or why not?

PAGE 4

Here are the eight behaviors that differed between at least two of the groups.
1) Ever had sex; 2) number of lifetime opposite sex partners; 3) number of lifetime opposite sex partners that participants had sex with once or infrequently 4) number of opposite sex partners that participants had sex with once or infrequently since the beginning of freshmen year 5) number of times participants had sex with someone they did not know well or had just met 6) frequency of using condoms with partners participants had sex with once of infrequently 7) frequency of having sex with someone participants did not know well or just met and 8) frequency of using drugs or alcohol before having sex.

Results
• Males who received abstinence-only sexuality education were significantly less likely to report having engaged in consensual sexual intercourse, while males who received comprehensive sexuality education were significantly more likely to have had sex before.
There were no significant differences for females regardless of type of sexuality education received. This means that females who received abstinence-only education were no less likely to have had sex before than women who received comprehensive sexuality education.

Males who received comprehensive sexuality education reported that they had more opposite sex partners during their lifetimes than males who received abstinence-only education, and females in both sexuality education conditions.

Males who received comprehensive sexuality education also reported a significantly higher number of partners with whom they had sex only once or infrequently both in their lifetimes and since the beginning of freshmen year than individuals in any of the three other groups.

Females who received comprehensive sexuality education reported significantly more lifetime opposite sex partners than women who received abstinence-only education.

Regardless of type of sexuality education, males reported more instances of having sex with someone they did not know well or had just met than did women.

Males who received comprehensive sexuality education were significantly less likely to use condoms during oral sex with infrequent partners, more likely to have sex with individuals they did not know well or just met, and more likely to use drugs or alcohol before having sex than females who received abstinence-only education. There were no differences for males who received abstinence-only education or for females who received comprehensive sexuality education on these behaviors.

What are your immediate reactions to the results? Do they seem consistent or inconsistent with what you already know or believe about sexuality education and sexual behavior? About gender and sexual behavior?

PAGE 5

Research suggests that, in comparison to teenagers receiving abstinence-only education, individuals receiving comprehensive sexual education have a lower likelihood of engaging in unprotected sex and have fewer sexual partners. Another study found that only one-third of reviewed abstinence-only programs showed any significant positive effects on sexual behavior. In contrast, two-thirds of the comprehensive programs reviewed showed positive effects on sexual behavior, including delaying the initiation of sexual intercourse, and increasing condom and contraceptive use.

Our results suggest that, on whole, there are not a lot of differences in the sexual behaviors of college freshmen who received abstinence-only sexuality education versus those who received comprehensive sexuality education. When there are differences in behavior, these differences tend to suggest that males who received comprehensive sexuality education are engaging in riskier behaviors than males who received abstinence-only education.
abstinence-only sexuality education, as well as females, regardless of the type of sexuality education they received.

Why might our results differ from those of other studies measuring school-based sexuality education and sexual behavior?

PAGE 6
Studies examining the relationship between sexuality education and sexual behaviors typically do not collect data on their participants past high school. Does knowing this alter your answer to the previous item in any way?

______________________________


Given the results we found, what avenues for future research on the topics of sexuality education and sexual behaviors should be explored?

________________________________________________________________

PAGE 7
Since 2009, the U.S. Department of Health and Human Services (HHS) has contracted with Mathematica Policy Research and its partner, Child Trends, to conduct an independent systematic review of the evidence base on programs to reduce teen pregnancy, STIs, and associated sexual risk behaviors. The review identifies, assesses, and rates the rigor of program impact studies and describes the strength of evidence supporting different program models. Findings are used to identify program models meeting the criteria for the HHS List of Evidence-Based Teen Pregnancy Prevention Programs. There are 31 programs in this database: 28 are comprehensive and 3 are abstinence-only; 30 programs are mixed sex and 1 program is for girls only (pregnant/parenting teen mothers). The 31 programs on this list are the only programs for which the U.S. government will offer grant funding for school-based research. You can find more information here: http://www.hhs.gov/ash/oah/oah-initiatives/teen_pregnancy/db/tpp-searchable.html

What policy implications – if any – do you think stem from our results?

________________________________________________________________

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Thank you very much for your participation in the follow up survey!
If we have any further questions, may we contact you by phone?
Yes
No
Please enter your phone number: __________________

Can we leave a message on your machine?
Yes
No