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Abstract

This study examines maternal communication at menarche and its effects on early sexual decision-making in young adult women. Drawing on principles from Bandura's social cognitive learning theory and communication privacy management theory, I predicted that certain types of maternal communication at menarche would either promote or inhibit early sexual self-efficacy, with indirect effects on age at first sexual intercourse. I also predicted that maternal communication at menarche would vary in tone or content, depending on age at menarche, with mothers communicating less to daughters who reached the milestone early. A total of 175 sexually active females aged 18 to 26 years completed an anonymous online survey that assessed their menarcheal experience, various attitudes and beliefs, and sexual outcomes. I used binary logistic regression to examine hypothesized relationships between maternal communication at menarche, emerging sexual self-efficacy, and age at first sexual intercourse. Findings supported the prediction that emerging sexual self-efficacy mediated the association between maternal tone and delayed first sexual intercourse. Accordingly, girls who received maternal communication at menarche that was positive in tone were more likely to feel comfortable obtaining sexual health information at sexual debut and therefore more likely to delay sexual initiation. No differences were found in maternal communication associated with age at menarche. However, early-maturing participants were more likely to report that they did not know what to expect at menarche and were uncomfortable obtaining sexual health information when they were first becoming sexually active. Age at menarche was found to moderate the association between maternal communication at menarche and emerging sexual self-efficacy. Accordingly, early-maturing participants whose mothers provided factual content at menarche were more likely to report that they were comfortable obtaining sexual health information at sexual debut compared

to other early-maturing participants who did not get this type of maternal communication. This study extends the social cognitive learning theory to maternal socialization at menarche.

Findings underscore the role of maternal communication in sexual development, especially for early-maturing girls. As such, this study provides new avenues for improving sexual and reproductive health outcomes in those currently worst affected, young adult women.

MATERNAL COMMUNICATION AT MENARCHE:
EVALUATING DIRECT AND INDIRECT EFFECTS ON AGE AT FIRST SEXUAL
INTERCOURSE IN YOUNG ADULT WOMEN

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DISSERTATION

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in Human Development and Family Science

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Acknowledgments

I drew much of the inspiration for this project from the experience of ushering my daughter through puberty. As her mother, I wanted to prepare her for menarche, but doing so presented me with a curious dilemma: how was I to convey to her that having a menstrual cycle was a natural and positive aspect of being female when I had been systematically concealing my own menstruation month after month for over 40 years due to intense and inexplicable shame? I consulted other mothers and realized two things: first, that I was in good company; nearly every woman I spoke with admitted having experienced some degree of shame about menstruation. Second, most women I spoke with seemed eager to do right by their daughters, that is figure out a way to raise them so that their daughters did not have to experience the same kind of shame. As far as I was concerned, keeping silent with my daughter felt duplicitous and irresponsible. Moreover, I determined that keeping silent would render me complicit in further perpetuating menstrual stigma. Inspired by the courage of women who refused to be silenced, even in the face of terrible odds—Rosa Parks, Justice Ruth Bader Ginsburg, Virginia Roberts Giuffre, among others—I decided I would not only speak up, but would make menarche the focus of my doctoral research. The more I learned, the more it became clear that the shame I carried all these years was never mine to carry. Nor should it ever be anyone else's.

Although the results of my study are preliminary, the implications of my findings are significant: what we communicate to girls at menarche can have enduring effects on their physical, emotional, and sexual wellbeing. By shining a light on the learning that takes place at menarche and the value that caregivers can bring to this process, I hope to contribute a measure of comfort and direction to those who care for girls. My greatest hope is that this contribution

will help more young women to make decisions for their bodies that are not only healthful, but pleasurable. Thank you, Beatrice, for giving me the ultimate reason to be a better mom.

I would also like to thank those who provided technical and editorial support to the project, including my committee members, Dr. Ambika Krishnakumar, Dr. Rachel Razza, Dr. Joseph Fanelli, Dr. Sara Vasilenko, and of course, my advisor, Dr. D. Bruce Carter.

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Table of Contents

CHAPTER 1: INTRODUCTION.....	1
CHAPTER 2: LITERATURE REVIEW	5
SEXUAL DECISION-MAKING	5
SEXUAL HEALTH OUTCOMES.....	6
SEXUAL SELF-EFFICACY	10
SEX AND SEXUALITY EDUCATION IN SCHOOL.....	12
SEX AND SEXUALITY EDUCATION AT HOME	15
SOCIALIZATION AT MENARCHE	17
EARLY MENARCHE	22
ETHNIC-RACIAL SOCIALIZATION BY PARENTS.....	24
LIMITATIONS OF PRIOR RESEARCH	27
SUMMARY	29
CHAPTER 3: THEORETICAL FRAMEWORK	31
SOCIAL COGNITIVE LEARNING THEORY	33
COMMUNICATION PRIVACY MANAGEMENT THEORY.....	40
VARIABLE CONCEPTUALIZATION.....	41
<i>MATERNAL COMMUNICATION AT MENARCHE</i>	41
<i>SEXUAL SELF-EFFICACY</i>	43
<i>SEXUAL DECISION-MAKING</i>	46
SUMMARY	47
RESEARCH QUESTIONS	48
CHAPTER 4: METHOD	50
PARTICIPANTS.....	50
PROCEDURE	50
MEASURES	51
ANALYTIC PROCEDURES	68
DEMOGRAPHIC CHARACTERISTICS	71
PRELIMINARY ANALYSES	73
DATA ANALYSIS	73
CHAPTER 5: RESULTS	76
DESCRIPTIVE STATISTICS.....	76
BIVARIATE CORRELATIONS	79
PRELIMINARY ANALYSES	83
RESEARCH QUESTION 1	88
RESEARCH QUESTION 2A.....	94
RESEARCH QUESTION 2B	101
RESEARCH QUESTION 3	103

CHAPTER 6: DISCUSSION	118
MATERNAL TONE AT MENARCHE AND EARLY SEXUAL SELF-EFFICACY	120
EARLY SEXUAL SELF-EFFICACY AS A MEDIATOR	122
AGE AT MENARCHE AND MATERNAL COMMUNICATION	123
MATERNAL TONE AT MENARCHE AND RELIGIOSITY	126
CONCLUSIONS	127
LIMITATIONS	131
RECOMMENDATIONS FOR FUTURE RESEARCH	134
SUMMARY OF KEY FINDINGS	136
APPENDIX A	139
APPENDIX B	141
APPENDIX C	142
APPENDIX D	145
APPENDIX E	178
APPENDIX F	186
CURRICULUM VITAE.....	215

Table of Tables

Table 1.	List of Constructs and Measures.....	54
Table 2.	Demographic Characteristics	72
Table 3.	Descriptive Statistics.....	77
Table 4.	Descriptive Statistics, Sexual Outcomes.....	78
Table 5.	Intercorrelations	80
Table 6.	T-Test Analysis: Maternal Tone and Early Sexual Self-Efficacy	85
Table 7.	Logistic Regression Analysis Predicting Delayed First Sexual Intercourse.....	92
Table 8.	Positive Maternal Tone as a Moderator of Early Sexual Self-Efficacy	96
Table 9.	Negative Maternal Tone as a Moderator of Early Sexual Self-Efficacy	99
Table 10.	T-Test Analysis: Maternal Communication at Menarche and Expectations	104
Table 11.	Age at Menarche as a Moderator of Factual Maternal Content.....	107
Table 12.	Age at Menarche as a Moderator of “Silent” Maternal Content.....	110
Table 13.	Negative Maternal Tone as a Moderator of Religiosity.....	114

List of Figures

<i>Figure 1.</i> Sample construction.....	68
<i>Figure 2.</i> Interaction between positive maternal tone and early sexual self-efficacy	97
<i>Figure 3.</i> Interaction between negative maternal tone and early sexual self-efficacy.....	100
<i>Figure 4.</i> Direct and indirect pathways with early sexual self-efficacy as a mediator.....	102
<i>Figure 5.</i> Interaction between age at menarche and factual maternal content.....	108
<i>Figure 6.</i> Interaction between age at menarche and “silent” maternal content.....	112
<i>Figure 7.</i> Interaction between negative maternal tone and religiosity.....	116

Chapter 1: Introduction

When young people make sexual decisions without understanding the importance of sexual health, they can make mistakes, some of which can be costly. Half of the sexually transmitted infections (STIs) in the United States are diagnosed among young people between the ages of 15 and 24 (CDC, 2018). Of particular concern is early sexual initiation, which has been associated with low or inconsistent safer sex practices, higher risk of causing a pregnancy or becoming pregnant, and higher risk of contracting an STI (Coker et al., 1994; Kugler, Vasilenko, Butera, & Coffman, 2017). Therefore, the purpose of my study was to investigate factors that might contribute to sexual outcomes in young people. Specifically, I examined whether maternal socialization at menarche might indirectly play a role in shaping young women's earliest sexual decisions, resulting in better or worse sexual outcomes.

Because of their anatomy, physiology, and various sociocultural factors, young women are disproportionately at risk of contracting STIs compared to young men (CDC, 2018). Also, unintended pregnancy, besides posing considerable health challenges, can waylay educational ambitions and cause economic hardship (WHO, 2017). In some situations, young women risk their own sexual health in their efforts to preserve relationships with sexual partners (Tschann, Flores, de Groat, Deardorff, & Wibbelsman, 2010).

Of particular concern are women who experience puberty before age 12. According to a large and varied body of research on the subject, early-maturing girls are more likely to experience negative sexual outcomes compared to girls who experience puberty at a normative age. The reasons for this are unclear. Hormonal surges, negative peer influences, and early sexual abuse have all been identified as possible antecedents (Allison & Hyde, 2013; Karapanou & Papadimitriou, 2010; Negriff, Susman, & Trickett, 2011; Skoog, Stattin, Ruiselova, &

Özdemir, 2013; Wise, Palmer, Rothman, & Rosenberg, 2009). However, definitive causal pathways have yet to be fully elucidated. This is especially troubling because of secular declining trends in menarcheal age that have been observed in countries around the world (Song et al., 2015; Yu, Choe, Yun, & Son, 2020).

Despite evidence that youth are capable of making healthy sexual decisions when given the right information and competencies, public health initiatives to combat negative sexual outcomes continue to employ risk reduction measures to dissuade young people from engaging in sexual activity (Vanwesenbeeck, Westeneng, de Boer, Reinders, & van Zorge, 2016). Thankfully, changes to the definition of sexual health (WHO, 2002) have led to a gradual shift in research priorities toward the identification of factors associated with positive sexual outcomes. These factors include personal agency, sexual self-efficacy, sexual entitlement, and sexual subjectivity. Early findings concerning young women indicate that these cognitive factors are associated with safer-sex behavioral competence (Mastro & Zimmer-Gembeck, 2015), increased orgasm frequency (Bond, Morrison, & Hawes, 2020), improved communication with sexual partners (Zimmer-Gembeck, 2013), and lowered odds of performing undesired sexual acts to please a partner (Kettrey, 2018). Much of the current research concerning young women's sexual outcomes has indicated that cognitive constructs serve as a driving mechanism. However, it is still unclear where young women derive these constructs or how these contribute to specific sexual outcomes.

Social cognitive learning theory offers a useful framework for conceptualizing how beliefs are acquired through observational learning. The model, attributed to Albert Bandura, helps to explain how beliefs, once internalized, serve as a guide to action (Bandura, 1986). Bandura studied gender development and acknowledged the importance of socialization effects

between children and same-gendered parents (Bussey & Bandura, 1999). However, he did not examine menarche as a time for girls to be socialized by their mothers, even though most girls preferentially consult their mothers for guidance when they reach the milestone (Rembeck, Möller, & Gunnarsson, 2006; Secor-Turner, Sieving, Eisenberg, & Skay, 2011). Given that communication between mothers and daughters at menarche is often inevitable, most mothers likely do serve as models whether they realize it or not (Hawkey, Ussher, Perz, & Metusela, 2017).

Widespread sociocultural stigma regarding menstruation together with mothers' personal experience likely inform what mothers communicate to daughters at menarche, both verbally and nonverbally (Johnston-Robledo & Chrisler, 2013; White, 2013). Accordingly, in cultures where menstruation is viewed as shameful, mothers may treat their menstruation as a private matter. They might insist that daughters be discreet in discussing or managing their menstrual symptoms. In some cases, mothers might avoid broaching the topic altogether. In cultures where menstruation is viewed as a natural part of being an adult female, mothers might show that they are comfortable, not only in managing and discussing their menstruation, but in how they address these topics with their daughters. Accordingly, mothers might convey to their daughters that there is nothing to hide or be ashamed of and that menarche is a healthy, natural, and exciting milestone. With mothers serving as the most proximal guide in matters concerning menstruation, daughters are likely to interpret what they observe and use those observations to form the basis of beliefs about being female, beliefs that may eventually guide their sexual decisions and behaviors.

Using principles from social cognitive learning theory, I investigated whether social learning occurs at menarche. Specifically, I examined whether the tone and content of maternal

communication during this milestone influence girls' beliefs about their female body in ways that either promote or inhibit healthy sexual decision-making at sexual debut. In my approach, I drew primarily on research from two bodies of literature, research by feminist scholars regarding the internalization of sociocultural norms and research concerning parental communication about race and ethnicity in racial minority families. By separating participants who experienced menarche at a normative age (at around 12 years) from those who experienced menarche early (11 or younger), I was able to assess whether there were two distinct socialization pathways.

Chapter 2: Literature Review

Sexual decisions that are made consciously and autonomously help to determine when, where, and how we behave sexually. Depending on our age, relationship context, and other variables, our sexual behaviors can have long-lasting ramifications, not only for our personal wellbeing (Boislard Pepin & Zimmer-Gembeck, 2011; Johnson, Sieving, Pettingell, & McRee, 2015; Vasilenko, Lefkowitz, & Maggs, 2012; Vasilenko, Lefkowitz, & Welsh, 2014) but also for the public's health at large (CDC, 2018).

In this chapter, I will explore various dimensions of sexual decision-making. For example, in heterosexual encounters such decisions might pertain to condom usage, which can pose distinct challenges for women. I will then review the research literature on young adult women's sexual decision-making, including theoretical approaches to this area of study, contributing factors, and early-socialization pathways in school and home environments. Finally, I will explain how insight gained from research on parental communication about race and ethnicity can be useful when conceptualizing maternal socialization of girls at menarche.

Sexual Decision-Making

Sexual encounters that are consensual present numerous opportunities for making decisions. For example, before engaging with each other sexually, partners might decide to discuss their viral status and whether to use a method of protection against STIs. Partners might decide to talk about contraception and whether birth control precautions are necessary. Once engaged in sexual intercourse, partners might decide to voice what feels good (or bad), so that sexual pleasure can be mutually achieved. As sexual intercourse progresses, partners might decide whether to ascertain if the sexual experience continues to be mutually agreeable so that behaviors can be adjusted, as needed.

Not all consensual sexual encounters involve decision-making. Indeed, in the heat of the moment or when participants are under the influence of psychoactive substances, opportunities to make decisions may be ignored (Ariely & Loewenstein, 2006). Insufficient education about safer sex practices can result in participants not knowing what can harm them. Finally, the lack of access to sexual health products and services due to socioeconomic barriers can result in participants taking more risks than they might otherwise take. (Dehlendorf, Rodriguez, Levy, Borrero, & Steinauer, 2010; Hall, Johnson, & Dalton, 2013). Other types of barriers such as unease around obtaining sexual health information early on could make access to sexual healthcare and services more difficult.

In heterosexual encounters, condom use poses distinct concerns for women. Indeed, women who depend on a condom to guard against pregnancy must obtain their partner's cooperation to ensure that a condom is used. To this end, if the issue of condom use has not been discussed, the female participant must decide when and how to bring up the subject. She may need to explain why a condom is a requirement and then establish whether there is a condom available to use. In cases where a partner does not wish to use a condom, or condoms are unavailable, a woman must then decide whether to decline sex or engage in an unprotected encounter. If she declines unprotected sex, she risks causing a disagreement or losing her partner. If she relents, she may face considerable personal risk in the form of pregnancy or infection (Tschann et al., 2010).

Sexual Health Outcomes

Sexual decisions have both short- and long-term consequences for physical and psychological wellbeing. For young women, these consequences may alter life trajectories. Decisions like delaying first sexual intercourse or resisting unprotected sex when a condom is

refused or unavailable have been found to improve the odds that a young woman will complete her education and become financially self-sufficient (WHO, 2017). Likewise, communicating what feels good (or bad) to a sexual partner can lead to mutually-satisfying sexual relations, enhanced emotional connectivity, and feelings of acceptance (Vasilenko et al., 2014). On the other hand, deciding not to delay first sexual intercourse has been linked to having multiple sexual partners (Kugler et al., 2017; Sandfort, Orr, Hirsch, & Santelli, 2008). Early sexual initiation has also been linked to acquiring an STI (Coker et al., 1994; Kugler et al., 2017), and having further unprotected encounters (Coker et al., 1994; Kugler et al., 2017; O'Donnell, O'Donnell, & Stueve, 2001). Finally, an unplanned pregnancy can derail a young woman's education, thereby increasing the risk of long-term poverty and the risk of having a child who, in turn, will be more likely to experience an unplanned pregnancy (WHO, 2017).

Research on female sexual decision-making and associated health outcomes has burgeoned within the past decade, driven in part by shifting gender norms. A growing awareness of, and intolerance for, gender inequities impacting primarily women is also driving research efforts, yielding new conceptualizations, methodologies, and perspectives in this line of inquiry. A broadening of the definition of sexual health by the World Health Organization [WHO] to include positive dimensions such as pleasure, safety, and consent (WHO, 2002), has also played a role (Kettrey, 2018). Finally, record levels of STIs, which disproportionately affect 19- to 24-year-old women (CDC, 2018), are driving research to elucidate underlying processes and improve outcomes (Curtin, Ward, Merriwether, & Caruthers, 2011; Johnson et al., 2015; Tschann et al., 2010; Valdiserri, Arena, Proctor, & Bonati, 1989; Widman, Golin, Kamke, Burnette, & Prinstein, 2018).

Much of the literature concerning female sexual decision-making positions women within a sociocultural context. Accordingly, norms, attitudes, and expectations are thought to influence how men and women interact socially, professionally, and sexually (Deaux & Major, 1987). This is because gender norms and attitudes establish who holds positions of power and influence, and the extent to which women are valued and treated compared to men (Crawford & Popp, 2003; Landrine & Klonoff, 1997; Tolman & Chmielewski, 2019; Wingood & DiClemente, 2000).

One example of a gender norm that is thought to influence sexual decisions is “the sexual double standard.” In cultures that endorse this norm, males are socially praised and rewarded for having more sexual partners, more frequent sexual contact, and more sexual experience, yet females are disparaged for these same behaviors (Crawford & Popp, 2003; Kreager & Staff, 2009). Accordingly, in cultures where there is a sexual double standard, men might expect to take the lead on decisions about condom use. On the other hand, women who buy and carry their own condoms and who insist on condom use as a condition for sexual intercourse risk being disparaged or shunned for behaving in a way that could be interpreted as sexually experienced or promiscuous (Kettrey, 2018; Tolman & Chmielewski, 2019).

Research investigating whether personal attitudes toward the sexual double standard influence contraceptive use and other forms of sexual decision-making found that female college students who did not endorse the sexual double standard were more likely to provide and suggest using condoms in their heterosexual encounters than were women who endorsed the standard (Caron, Davis, Halteman, & Stickle, 1993). Lefkowitz, Shearer, Gillen, & Espinoza-Hernandez (2014) reported similar findings. In their study, which included both male and female heterosexual college students, male participants who endorsed the sexual double standard tended to have more sexual partners and perceived fewer barriers to condom use compared to males

who did not endorse the standard. For female participants, the opposite was true: those who endorsed the double standard perceived more barriers to condom use than did females who did not endorse the standard. These findings suggest that differences in attitudes about sociocultural norms predict differences in sexual decision-making, both within and between gender groups (Lefkowitz, Shearer, Gillen, & Espinosa-Hernandez, 2014).

The research investigating factors that influence sexual decision-making demonstrates that young people who endorse certain sociocultural norms may be at increased risk for negative sexual health outcomes. However, these studies do not offer much insight into how these norms are conveyed and acquired (e.g., through socialization). Moreover, these studies do not provide insight into why some young people resist sociocultural norms and take steps to protect themselves in sexual encounters, whereas others from the same culture do not.

In addition to personal attitudes, other factors are potential influences in young women's sexual decision-making. For example, self-esteem and self-silencing, i.e., the tendency to withhold one's thoughts and feelings, may exert powerful influences on decision-making in the sexual realm (Jack & Dill, 1992; Longmore, Manning, Giordano, & Rudolph, 2004). In a longitudinal study on factors influencing early sexual initiation in women, Longmore et al. (2004) found that although both low self-esteem and depressive symptoms were significant predictors of early sexual initiation in young women, depressive symptoms were the stronger predictor. Other researchers have reported an association between depressive symptoms and early sexual initiation (Harris, Duncan, & Boisjoly, 2002; Kowaleski-Jones & Mott, 1998; Whitbeck, Conger, & Kao, 1993).

Self-silencing is a term that describes the tendency to withhold one's thoughts and feelings as a strategy for minimizing conflict to preserve one's relationships. Jack and Dill

(1992) were the first authors to operationalize this construct to explain why women have a higher incidence of depression than men. Self-silencing is understood to be a possible strategy for coping in a world of gender inequality. As such, self-silencing may be used by women to align themselves more closely with established gender norms and expectations. However, women who self-silence may do so at significant personal cost. Indeed, research has found that, over time, self-silencing is associated with declines in self-esteem, feelings of “loss of self,” and clinical depression (Jack & Dill, 1992). In the context of sexual decision-making, self-silencing in women may result in difficulty communicating sexual needs and concerns.

Sexual Self-Efficacy

Various theoretical approaches have been used to identify beliefs and convictions driving sexual decisions in young women. In particular, feminist developmental frameworks have been used to explain how patriarchal cultural values are internalized by girls during adolescence, leading to beliefs that are self-objectifying and ultimately, self-defeating (Fine, 1988; Fredrickson & Roberts, 1997; Impett, Schooler, & Tolman, 2006; Rossetto & Tollison, 2017). In a study of female college students, Curtin et al. (2011) found that women who endorsed traditional gender roles, or “femininity ideologies,” reported less sexual risk knowledge, less condom self-efficacy, and were less sexually assertive compared to female college students who endorsed less traditional gender ideologies (Curtin et al., 2011). Curtin et al. also found that endorsement of traditional gender roles was associated with body self-consciousness, which was thought to undermine female sexual pleasure and functioning.

Similarly, Impett, Schooler, and Tolman (2006) found that young women between the ages of 16 and 19 years who endorsed a more traditional femininity ideology, had low sexual self-efficacy, meaning that they did not believe they had any agency in the sexual domain. Impett

et al. found that low sexual self-efficacy was associated with inauthenticity in relationships leading to sexual risk-taking in the form of lower self-protection behavior. The authors surmised that girls who grow up in a culture that objectifies women gradually internalize these sociocultural values (Impett et al., 2006).

More recently, Kettrey (2018) found that college women who perceived themselves as subjects rather than objects in their sexual encounters were more likely to prioritize their pleasure and sexual agency. Such women were also less likely to participate in sexual activities in which they did not want to participate, including performing undesired sexual acts to please their partner and succumbing to verbal pressure for intercourse. Taken together, the research derived from feminist theory shines a light on the association between young women's beliefs about their agency in sexual encounters (sexual self-efficacy) and their sexual behaviors. Specifically, the studies by Curtin (2011), Impett, Schooler, and Tolman (2006), and Kettrey (2018) highlight the connection between young women's endorsement of traditional gender norms that are often objectifying and sexual risk-taking.

Horne and Zimmer-Gembeck (2006) developed a comprehensive construct for capturing a range of self-perceptions involved in sexual health. These include sexual body esteem, entitlement to self-pleasure, entitlement to pleasure from a partner, self-efficacy in achieving desire and pleasure, and sexual self-reflection. Horne and Zimmer-Gembeck's construct, referred to as sexual subjectivity, acknowledges positive dimensions to sexuality that had previously been discounted and offers a useful framework for studying female sexual decision-making.

While most of the research on young women's sexual outcomes offers some insight into the association between wider sociocultural norms and individual behaviors, few have offered a plausible developmental pathway for explaining how or why certain ideologies are internalized

by girls by a certain age. Nor do they explain why some girls develop low sexual subjectivity leading to negative outcomes, whereas others do not. Finally, the literature does not offer any insight into possible antecedents of sexual subjectivity, such as the belief that one is entitled to knowledge about sexual health. It may be that girls who feel comfortable obtaining sexual health information are more likely to obtain it and know what steps to take to be sexually healthy.

Sex and Sexuality Education in School

In a 20-year examination of how young women are socialized to develop sexual subjectivity, Fine et al. (1988, 2006) identified common discourses in sex and sexuality education programs in the United States that could be detrimental to young women. According to Fine, discourses intended to keep youth safe and healthy may disempower young women while promoting heterosexist values (Fine, 1988; Fine & McClelland, 2006). Formal education can present mixed messages about coercion and consent. For example, young women may be told that only adult married women engage in consensual relations. Or they may learn that they are especially vulnerable to victimization at the hands of men who cannot control their needs and desires (Fine, 1988). Young women may interpret these messages to mean that they are helpless and vulnerable.

Fine (1988) and Fine and McClelland (2006) identified a construct they labeled the “discourse of desire,” which they defined as the recognition that people can and should safely satisfy their sexual needs and desires. According to Fine and colleagues, when mixed messages about sex and sexuality are conveyed in the absence of a discourse of desire, women may be left with the impression that they are both helpless and vulnerable in their sexual decisions. Therefore, young women who grow up without a discourse of desire may develop low sexual subjectivity leading to poor sexual decision-making.

Cross-cultural studies of sex and sexuality education programs in school highlight variations in assumptions about adolescents and their sexual behavior. These assumptions may result in different educational practices, which may contribute to disparate youth sexual outcomes (Weaver, Smith, & Kippax, 2005). For example, in The Netherlands, where teen birth rates are low and youth contraceptive use is high compared to other industrialized nations (Sedgh, Finer, Bankole, Eilers, & Singh, 2015), adolescent sexual behavior is generally accepted as a healthy part of human development (Ferguson, Vanwesenbeeck, & Knijn, 2008; Weaver et al., 2005). As a result, sex and sexuality education in The Netherlands acknowledges positive aspects of healthy sex and sexuality, such as pleasure, desire, and sexual feelings within a framework of safer sex and sexuality education (Ferguson et al., 2008). Because sexual experience is expected of adolescents in The Netherlands, national educational approaches to sex and sexuality education focus on skill-building. For example, Dutch students are taught how to negotiate condom use and to resist unprotected sex (Ferguson et al., 2008). These skills build sexual competence as well as sexual agency so that students are more likely to make healthy sexual decisions and achieve positive sexual outcomes.

Sexuality education in the United States is not federally mandated and therefore not standardized. As a result, there are state and local differences in norms and perspectives on adolescent sexual behavior resulting in a wide range of educational curricula (Sedgh et al., 2015). Indeed, not all states mandate sex and sexuality education, and in those that do, tone and content vary widely (Weaver et al., 2005). Many researchers have asserted that the failure to provide positive sexuality education is the source of youth pregnancy, abortion, and birth rates that are among the highest in the industrialized world (Sedgh et al., 2015). The prevailing belief in parts of the United States that adolescent sexual behavior is inappropriate and risky means that

educational approaches tend to focus on negative consequences, warnings, and prevention strategies, with many programs emphasizing sexual abstinence until marriage as a way of curbing adolescent sexual activity. In some states where abstinence is treated as the only option outside of marriage, education about contraceptive use is either severely curtailed or prohibited (Fox, Himmelstein, Khalid, & Howell, 2019; Weaver et al., 2005).

Kirby (2008) conducted a meta-analysis of 56 studies evaluating the impact of abstinence curricula on adolescent sexual outcomes. The meta-analysis revealed that most abstinence programs did not result in improved sexual health outcomes as intended. Indeed, age at first sexual intercourse was not delayed. Moreover, states where abstinence-only education programs received federal funding between 1998 and 2016 showed an increase in adolescent pregnancy and birth rates (Fox et al., 2019). By contrast, comprehensive sexuality education programs were associated with both delayed sexual initiation and higher rates of contraceptive use (Kirby, 2008). Unlike states that received funding for abstinence-focused educational curricula, states that received funding for youth pregnancy prevention and sexuality education showed a decrease in adolescent pregnancy and birth rates (Fox et al., 2019).

Lindberg, Santelli, and Desai (2018) studied factors associated with recent declines in youth pregnancy and birth rates between 2007 and 2014 in the United States. These researchers found that increased contraceptive use, not decreased adolescent sexual activity, explained these declines. Indeed, during that period, sexual activity levels were found to be unchanged (Lindberg, Santelli, & Desai, 2018). While the study did not examine the type of sex and sexuality education participants had received, the finding that sexual activity levels held constant suggests that educational approaches aimed at curbing adolescent sexual behavior were not just ineffectual but might have been exacerbative. Public health indicators on STI rates support this

hypothesis. Despite the overall decline of youth pregnancy and birth rates in the United States since 2016 (CDC, 2018), rates of STIs continue to rise unabated. Indeed, according to the Centers for Disease Control and Prevention (2018), the rates for syphilis, gonorrhea, and chlamydia reached record levels in 2018. Equally troubling is the fact that increasing numbers of these cases have been identified as antibiotic-resistant.

In addition to sexuality education that is taught in school, adolescents learn about sex and sexuality from numerous other sources including their peers, movies, television, books, and other media. The Internet, where pornography, informational websites, and public forums on a wide range of sex- and sexuality-related topics can be easily accessed from the privacy of home, is another major source of sexuality information (Simon & Daneback, 2013). Researchers investigating adolescents' use of the Internet for sexual health information found that despite the frequent use of online resources, many adolescents admit that they generally do not trust the information that it provides (Jones & Biddlecom, 2011). When given a choice, adolescents generally prefer consulting their peers for information about sexuality (Commendador, 2010; Secor-Turner et al., 2011). However, frequent talk with peers has been linked to greater sexual risk-taking (Holman & Kellas, 2015). Moreover, by the time adolescents approach peers about sex topics, they likely will have already learned a considerable amount about sex and sexuality within their own home.

Sex and Sexuality Education at Home

Parents may not be aware that they communicate attitudes and perspectives about sex and sexuality to their young in ways that, just like school sex and sexuality curricula, have been found to result in better or worse sexual health outcomes. These outcomes vary, depending on a large number of factors, among them, parental attitudes about gender roles, beliefs about how

much adolescents should know, the quality of the parent-child relationship, and parental monitoring (Guilamo-Ramos, Jaccard, & Dittus, 2010; Guilamo-Ramos, Jaccard, Dittus, & Collins, 2008; Jaccard, Dodge, & Dittus, 2002; Somers & Paulson, 2000; Zimmer-Gembeck & Helfand, 2008). Other factors in the home environment believed to influence adolescent sexual outcomes are race and ethnicity, family religiosity, family income, family structure, and parental level of education (Zimmer-Gembeck & Helfand, 2008).

Commendador's (2010) review of the literature concerning parental influences on adolescent contraceptive use identified that maternal communication about sex was associated with both delayed first sexual intercourse and increased contraceptive use. Similarly, Miller, Levin, Whitaker, and Xu (1998) found that open communication between adolescents and their mothers about condom usage before the time adolescents became sexually active was associated with greater condom use at the time of first intercourse. Also, DiClemente et al. (2001) found that less frequent sex-related parental communication was associated with contraceptive non-use in a sample of African American adolescent females. Thus, the research literature has established fairly strongly the importance of parental communication about sex and condom usage during adolescence.

Holman and Koenig Kellas (2018) investigated the relationship between adolescents' preferred type of parental communication and sexual outcomes. Adolescents reported that they found comprehensive, safety-focused instructions from their parents to be more helpful than messaging focused on dangers, warnings, and the importance of delaying sexual initiation (Holman & Koenig Kellas, 2018). Consistent with the findings comparing formal educational curricula with sexual outcomes, Homan and Koenig Kellas found that parents' use of comprehensive and safety-focused instructions was more effective than communication that

focused on dangers, risks, and the importance of waiting. Youth who reported having comprehensive and safety-focused conversations were more likely to report low levels of permissive sexual attitudes and sexual risk-taking (Holman & Koenig Kellas, 2018).

Despite the evidence that parental communication can positively influence adolescent sexual outcomes, parents across cultures and backgrounds continue to report that they find it especially difficult to talk with their children about sex and sexuality (Butts et al., 2018; Guilamo-Ramos, Soletti, et al., 2012; Villarruel, Cherry, Cabriaes, Ronis, & Zhou, 2008; Yasin, Shahed, & Iqbal, 2013). This fact may explain why many parents report delaying these conversations and why so many avoid broaching the subject altogether (Holman & Koenig Kellas, 2018; Jerman & Constantine, 2010). Children whose parents avoid having these conversations must rely on information from other sources like school, which, as previously discussed, could be helpful or unhelpful, depending on the sex education provided by their schools or locality.

Socialization at Menarche

Girls' experience of menarche presents an opportunity for parents to educate and socialize their daughters about sex and sexuality. Parents may take advantage of this opportunity to influence their daughters' current and future sexual decision-making. Unlike formal educational curricula and parental "sex talks," socialization at menarche typically can begin long before girls are sexually active. The time leading up to this developmental milestone provides a natural, incremental framework for lessons about the developing female body and the importance of self-care, lessons whose protective benefits could extend to choices made when young women become sexually active.

Menarche is a near-universal marker of puberty in females. Menarche occurs when the uterus sheds its endometrial lining for the first time and serves as irrefutable evidence of the female body's reproductive potential (Karapanou & Papadimitriou, 2010). Menarche is more than just a physiologic marker of puberty, however. In many cultures and contexts, menarche is considered an important developmental, psychological, and sociocultural milestone because it also marks the transition from girlhood to womanhood (Lee, 2008; Paikoff & Brooks-Gunn, 1991; Rembeck et al., 2006; Skoog et al., 2013). Although nearly all girls experience menarche; the interplay of individual, family, and cultural factors may render each girl's experience quite distinct.

Research shows that most girls go to their mothers first for information and emotional support at menarche (Brooks-Gunn & Ruble, 1980; Clarke & Ruble, 1978; Hoerster, Chrisler, & Rose, 2003; Koff & Rierdan, 1995; Lee, 1994, 2008; Logan, 1980; Marván & Molina-Abolnik, 2012; Ruble & Brooks-Gunn, 1982; Teitelman, 2004; Uskul, 2004). Secondary sources of information and support generally include peers, school resources, medical providers, and increasingly, the Internet (Bennett & Harden, 2014; Johnston-Robledo & Chrisler, 2013). The finding that most girls preferentially consult their mothers (or primary female caregivers) for guidance and support at menarche suggests that girls value their mother's firsthand experience and expertise. It also suggests that what girls first learn about menstruation—what it is, what it means, what it implies—is likely to come from mothers, whether they realize this or not (Ruble & Brooks-Gunn, 1982; White, 2013).

Studies investigating the experience of menarche show a clear association between the preparation a girl receives before reaching the milestone and the emotional quality of her menarcheal experience. That is, girls who received some form of preparation in advance

generally reported feeling excited and positive, whereas girls who did not know what to expect reported feeling worried (Allison & Hyde, 2013; Jean et al., 2011; Stubbs, Rierdan, & Koff, 1989; Uskul, 2004; White, 2013). Advanced preparation could include informing girls ahead of time that they will at some point start to menstruate. In addition, girls can be taught the meaning of menstruation, what to expect at menarche, and how to manage menstrual symptoms (Koff & Rierdan, 1995; McKee, Karasz, & Weber, 2004; Rierdan, 1983; Ruble & Brooks-Gunn, 1982).

Variations in cultural as well as maternal attitudes about menstruation are likely to influence whether mothers choose to prepare their daughters for menarche and if so, the tone and content of their messaging (Marván & Molina-Abolnik, 2012; Uskul, 2004). Researchers have found that girls who received no preparation at menarche and therefore did not know what to expect reported that they felt worried, confused, embarrassed, and alone (Kissling, 1996; Uskul, 2004). Hawkey et al. (2017) proposed that the absence of information, or “silent” content, from mothers might be interpreted as concealment of something that mothers perceived as embarrassing, shameful, and unspeakable. Indeed, studies evaluating the long-term effects of “silent” content at menarche suggest that women who reached menarche not knowing what to expect were more likely to describe their menarcheal experience as negative compared to women who reached menarche knowing what to expect (Williams, 1983).

Ruble and Brooks-Gunn (1982) found that women who experienced the milestone not knowing what to expect were more likely to develop negative menstrual attitudes. They were also more likely to report experiencing worse menstrual symptoms compared to women who experienced menarche feeling prepared (Costos, Ackerman, & Paradis, 2002). Finally, negative attitudes resulting from a lack of preparation at menarche were found to persist into middle age (Costos et al., 2002; McPherson & Korfine, 2004).

Schooler, Ward, Merriwether, and Caruthers (2005) investigated the effects of menstrual attitudes on sexual decision-making in a sample of female college students. These researchers found that negative attitudes mediated the relationship between body shame and sexual decision-making. That is women who endorsed negative menstrual attitudes were also more likely to report experiencing shame about their bodies. Moreover, women who endorsed negative menstrual attitudes were likely to report lower levels of sexual assertiveness, sexual experience, and condom use self-efficacy. By contrast, women who endorsed more open attitudes about menstruation were more likely to report more body comfort and more positive sexual outcomes (Schooler, Ward, Merriwether, & Caruthers, 2005). These findings have implications for the effects of menarcheal preparation on sexual decision-making.

As the most proximal role model of womanhood, mothers communicate, both implicitly and explicitly, how well they know, accept, and take care of their body. Mothers convey this by showing how comfortable they are talking about female anatomy and bodily functions, their ability to make health-promoting decisions, their handling of discussions about menstruation and menstrual supplies, and their willingness to answer questions about the adult female body. The degree to which mothers are comfortable discussing these topics and preparing their daughters for menarche likely depends upon their personal experience of menarche. This includes how and where they were raised.

Many cultures stigmatize menstruation (White, 2013). Such stigmatization often leads to taboos, euphemisms, secrecy, and shame about topics related to menstruation and feminine hygiene products (Johnston-Robledo & Chrisler, 2013; White, 2013). In some parts of the world, beliefs about menstruation associate it with filth, impurity, or illness and result in girls being temporarily shunned or barred from entering certain parts of the house or places of worship

during menstruation (Kumar & Srivastava, 2011). Furthermore, in many remote regions of the world, the lack of access to feminine hygiene products and myths about menstruation prevent girls from attending school regularly (Ali & Rizvi, 2010; Chandra-Mouli & Patel, 2017; Guilamo-Ramos, Soletti, et al., 2012). As a result, girls may tend to drop out of school, a circumstance that further isolates them from life opportunities and perpetuates prohibitive norms (Ali & Rizvi, 2010; Hoerster et al., 2003).

Ethnic traditions and religious beliefs may result in menarche signifying different things across cultures. For example, in Sri Lanka menarche is celebrated because it signals the advent of womanhood (Hawkey et al., 2017). In Saudi Arabia, the milestone signals a girl's reproductive vulnerability. Once a Saudi girl reaches the milestone, she is prescribed a set of rules about personal hygiene, diet, dress, and interactions with males (Moawed, 2001). Therefore, depending on where a girl grows up in the world, her menarcheal experience could be treated very differently, either as a celebratory rite of passage or as a personal crisis requiring secrecy and discretion (Hawkey et al., 2017; Uskul, 2004). Research by Costos, Ackerman, and Paradis (2002) determined that negative messaging at menarche tended to occur in patriarchal societies where menstrual shame and stigma were prevalent.

Cultural beliefs and attitudes about menarche are closely tied to how mothers handle their daughters' menarche. Mothers raised in cultures where menstruation is stigmatized are more likely to avoid being open with their daughters about menstruation and are therefore more likely to avoid preparing their daughters for the milestone (Uskul, 2004). As a result, their daughters may grow up thinking the body and its functions are shameful and embarrassing. Therefore, whether they intend to or not, mothers who withhold information or who fail to prepare their

daughters for menarche may perpetuate menstrual taboos and stigma (Johnston-Robledo & Chrisler, 2013). The intergenerational implications of this are important to consider.

Early Menarche

The timing of menarche varies slightly in conjunction with differences in maturational tempo around the world (Karapanou & Papadimitriou, 2010; Parent et al., 2003). However, there is growing evidence that many regions are experiencing age-related declines in the timing of menarche (Herman-Giddens, 2010). Many countries have reported this phenomenon, including India (Pathak, Tripathi, & Subramanian, 2014), Mexico (Marván, Catillo-López, Alcalá-Herrera, & Callejo, 2016), China (Song et al., 2015), and the United States (Krieger et al., 2015). Menarcheal age is thought to be determined primarily by heredity, with maternal menarcheal age being a strong predictor of daughters' menarcheal age (Karapanou & Papadimitriou, 2010).

Age at menarche is an important variable in women's health and well-being. Early menarche, generally defined as occurring before age 12 (Berenson et al., 2002; Karapanou & Papadimitriou, 2010), has been associated with several negative psychological, sexual, and reproductive health outcomes (Biehl, Natsuaki, & Ge, 2007; Downing & Bellis, 2009). For example, in a study of nearly 2,000 high school students, Graber, Lewisohn, Seeley, and Brooks-Gunn (2013) found that early menarche was associated with both a current and lifelong history of adjustment problems and psychological symptoms. Zimmer-Gembeck and Helfand (2008) conducted a meta-analysis of 35 longitudinal studies examining factors associated with age at first sexual intercourse. These authors found that early menarche was a strong predictor of early sexual initiation. Similar results were reported by Ibitoye, Choi, Tai, Lee, and Sommer (2017). In their meta-analysis of research about girls from low- and middle-income countries, early menarche was found to be associated with early sexual initiation, early pregnancy, and a history

of STIs. They also found that early menarche was associated with early marriage. Finally, Beral et al.'s (2012) extensive meta-analysis of over 100 epidemiological studies of women from 35 countries revealed that for every year decrease in age at menarche, breast cancer risk increased by a factor of 1.05.

The findings concerning the association between early menarche and negative sexual health outcomes are incontrovertible. However, the exact mechanism by which early puberty contributes to these outcomes has yet to be fully elucidated. Various models have been proposed to account for these mechanisms. For example, Allison and Hyde (2013) examined data on early menarche outcomes from the United States, Europe, and New Zealand. According to the authors' proposed stress sensitivity moderation model, the stress of reaching menarche and perceiving that experience as non-normative was thought to be exacerbated by increased central nervous system sensitivity induced by pubertal hormones. The authors surmised that this would result in an amplification of stress and the development of negative psychological symptoms (Allison & Hyde, 2013).

Many of the pathways leading to negative sexual outcomes as a result of early menarche are likely to occur because of a cascade of interactions between biological and environmental factors. For example, it is thought that family stress might trigger certain types of gene expression leading to an acceleration of puberty in some girls (Barrios et al., 2015; Magnus et al., 2018). In turn, the experience of early menarche together with the concomitant development of secondary sex characteristics is likely to provoke changes in how early-maturing girls are perceived and treated (i.e., as older than their chronological age) leading to possible negative outcomes (Allison & Hyde, 2013). Moore, Harden, and Mendle (2014) attempted to explain the direction of causality in a study examining the association between early menarche and negative

sexual outcomes. Moore et al. found that girls' perception and interpretation of whether their menarche was early relative to their peers, not the objective timing of their menarche, was the factor leading to negative outcomes (Moore et al., 2014).

What mothers convey to early-maturing daughters in preparation for menarche has yet to be studied as a possible contributor to negative sexual outcomes. Indeed, mothers may shield their young daughters from information out of concern that it might be unsettling or sexualizing. However, because menarche is usually one of the last stages of puberty (Karapanou & Papadimitriou, 2010), girls who reach the milestone have already typically developed secondary sex characteristics. These obvious features are likely to influence how girls are perceived and treated by others. Without adequate preparation, girls may find they are lacking in both awareness about their body's changes and coping skills for managing the attention. Therefore, rather than protecting their early-maturing daughters, mothers who withhold information at menarche may unwittingly put their daughters at increased risk for negative sexual and reproductive health outcomes.

Ethnic-Racial Socialization by Parents

Sexual anatomy and physiology are not easily changed and yet are integral to personal identity. In a world where sociocultural norms and stigma can affect how people are treated, what parents communicate to their children about their features is likely to have an impact on children's ability to cope as they grow older. Research on ethnic-racial socialization by parents of color offers insight into how different types of communication about skin tone and racial identity affect children's ability to cope with discrimination. The findings from this research demonstrate that certain types of parental communication are associated with negative or positive youth outcomes and that parents tailor their communication to match the perceived needs of their

children. This body of literature helps situate the study of maternal socialization at menarche and its effects on young women's sexual outcomes.

In a study on group identity and psychosocial outcomes in African Americans, Hughes, Kiecolt, Keith, and Demo (2015) reported that identification with a group one views favorably is associated with better mental health outcomes, including higher self-esteem and fewer depressive symptoms compared to identification with a group one views unfavorably. A review of the literature by Umaña-Taylor and Hill (2020) showed that group identity was influenced by parents, with some types of communication being more or less promotive than others.

Numerous studies have examined the relationship between the type of communication racial minority parents convey and their children's psychosocial outcomes. For example, Hughes et al. (2006) found that communication promoting cultural, racial, and ethnic pride had a protective effect on children leading to improved self-esteem, academic achievement, and externalizing/internalizing symptoms. This effect was not found for parental communication focused on preparation for bias. Similar results were reported by Reynolds and Gonzales-Backen (2017). In a meta-analysis of 21 studies on African American mental health outcomes, these researchers found that socialization by parents emphasizing culture and racial pride was associated with better outcomes related to children's anger, depression, and self-esteem, compared to socialization emphasizing preparation for bias.

Researchers have found that parents of color may adjust the content and frequency of their communication depending on the age of their children. For example, Hughes and Chen (1997) found that messages regarding the promotion of mistrust and preparation for bias increased with the age of their children, but not messages about cultural socialization. Hughes and Chen surmised that the adjustments were a reflection of parental beliefs concerning what

children of a certain age were and were not capable of understanding. On the other hand, these adjustments were perhaps a reflection of parental beliefs concerning what older children might need in the way of protection against discrimination that would likely intensify (Hughes & Chen, 1997).

Landor et al. (2013) also found evidence that parents of color tailor their messaging about race and ethnicity. Using longitudinal data from a sample of African American families, Landor et al. observed that parents exhibit differential treatment according to their children's gender and skin tone: sons with darker skin received higher-quality parenting (i.e., more warmth, consistent discipline, and monitoring) and more racial socialization promoting mistrust compared to siblings with lighter skin. Furthermore, the gender of the child was found to moderate the association between the caregiver's skin tone and communication promoting mistrust. These findings illustrate how socialization processes can be mutually reciprocal, that is influenced by the characteristics of both the parent and the child (Landor et al., 2013).

Taken together, the body of literature concerning the importance of group identification and the role parents play in socializing their children about race and ethnicity is useful for conceptualizing the role that mothers might play in the socialization of girls at menarche. By conveying information and values concerning culture, history, and heritage, parents of minority youth can foster group identification, promote psychosocial wellbeing, and pass on racial competency skills for handling potential discrimination. Likewise, mothers who prepare their daughters for menarche by providing information and guidance about menstruation may help to normalize the milestone, foster body positivity, and promote sexual self-efficacy, all of which could help girls to make healthy sexual decisions once they become sexually active.

Limitations of Prior Research

Many of the studies to date on menarche and sexual socialization lack a grounding in theory and are often subject to conceptual and methodological limitations. These limitations may be due in part to the challenges posed when measuring intergenerational processes and the sensitivity of the subject. The study of intergenerational communication, such as between mothers and daughters, requires the integration of at least two perspectives, therefore, some studies include both the parent and the child. However, qualitative studies of mother-daughter pairs are susceptible to selection bias. This phenomenon occurs because researchers are more likely to recruit mother-daughter pairs who get along and who are comfortable discussing sensitive topics than mother-daughter pairs who do not get along. As a result, findings from these studies may be difficult to generalize to all mother-daughter pairs.

Qualitative studies in this field are also susceptible to participant bias, especially social desirability bias, due in part to the age of participants as well as to the nature of the parent-child relationship at puberty (Rathunde & Csikszentmihalyi, 2006). The experience of puberty and self-differentiation can sometimes create tension (Gillooly, 2004; Mosavel, Simon, & Van Stade, 2006). However, in the presence of a third party such as a researcher, participants may be more likely to respond to questions in ways that are socially motivated (Krumpal, 2013). Therefore, the perceived quality of the mother-daughter relationship is important to assess, both at menarche and at the time of the study as it could influence participant responses.

Most quantitative studies discussed in this review employed cross-sectional paradigms. These are useful for identifying correlations in support of hypothesized models but cannot provide a model of direct causality. To get around this problem, some researchers have employed longitudinal paradigms. For example, to evaluate the effects of preparation on menarcheal

experience and menstrual attitudes, some researchers surveyed participants twice, once before and once after menarche (Koff & Rierdan, 1996; Koff, Rierdan, & Silverstone, 1978; Rierdan & Koff, 1990).

Socialization effects on long-term outcomes like sexual health are deemed impractical to study longitudinally because of the amount of time they would take to complete. For this reason, many researchers use retrospective designs with an embedded cross-sectional element. However, this type of study requires participants to recall specific details, emotions, and events from the past, such as their experience of menarche. Yet, it has been demonstrated that both the passage of time and intervening life events affect recall of these details (Berney & Blane, 1997). Saliency effects may also affect participant recall. For example, Mather and Sutherland (2011) found that when study participants were asked to recall an unremarkable experience, the event was difficult for them to recall. On the other hand, when participants had a negative experience or one that was emotionally arousing, they could recall it in great detail, even long after the fact (Mather & Sutherland, 2011). The same tendency has been reported for recall of negative mood states such as anxiety, depression, and helplessness. Not only did participants have an easier time recalling their negative mood states, but they recalled them as having been more intense than their positive mood states (Sato & Kawahara, 2011).

Menarche and first sexual intercourse represent two examples of life events that are generally considered exciting and meaningful in many cultures. Despite a slight decline of accuracy with age, Damon and Bajema (1974) found that the accuracy of recalled age at menarche was remarkably accurate. In a separate study, recall of the chronological age was also found to be reliable, but recall of specific details about the experience of the milestone was found to be more challenging (Must et al., 2002). More recently, Siegel et al. (2019) determined that

not only was recalled age at menarche highly reliable, but it continued to be reliable, even 20 years after the fact.

Recalled age at first sexual intercourse is also considered reliable. Using two separate waves of the National Longitudinal Study of Adolescent Health, Goldberg, Haydon, Herring, and Halpern (2012) examined the within-subject reliability of self-reports for age at first vaginal sex across two timepoints spanning seven years. Their findings supported the credibility of respondents' self-reports for this milestone.

Summary

Much of the research concerning female sexual decision-making underscores the importance of sociocultural norms, attitudes, and expectations in shaping early female sexual self-efficacy and identifies common antecedents of sexual behaviors. However, this body of literature does not offer a clear developmental pathway for explaining how young women acquire and internalize early beliefs about their female body. Nor does the research explain how early beliefs drive some young women to make healthy sexual decisions and others to make unhealthy sexual decisions.

The present study shines a light on the experience of menarche as a time when most young women acquire early beliefs about their body from their mothers. Across cultures, when girls experience menarche, they go to their mothers preferentially for information, guidance, and support (Marván & Molina-Abolnik, 2012; Uskul, 2004). Research on the experience of menarche suggests that how mothers handle their daughters' menarcheal milestone, whether consciously or unconsciously, is likely to influence girls' emotional experience of the pubertal event, their life-long attitudes about menstruation, and the degree to which they value their female body into adulthood (Schooler et al., 2005). Therefore, maternal communication at

menarche may play a role in socializing girls about their female body in ways that could either promote or inhibit young women's ability to make healthy sexual decisions. Depending on where and how mothers were raised, the tone and content of their communication to daughters at menarche may vary, leading some mothers to be positive and explicit, some mothers to be negative, and some mothers to be silent.

Research concerning how parents of color socialize their children about race and ethnicity suggests that parents tailor their messaging to match the perceived needs of their children. The same may be true for maternal socialization at menarche. That is what mothers communicate to daughters at menarche may vary as a function of how old their daughters are when they experience the milestone. It may be that early-maturing girls receive less information and preparation from their mothers than girls who reach the milestone at a normative age. As a result, early-maturing girls may lack sexual self-efficacy and run a greater risk of negative sexual outcomes. In the next chapter I will discuss the theoretical framework guiding my research questions and explain how I conceptualized the variables in my study.

Chapter 3: Theoretical Framework

The present study was guided by social learning theory, which grew out of research by Miller and Dollard on stimulus-response theory (Miller & Dollard, 1941) and later, research by Robert Sears et al. on aggression and dependency in children (Sears, Whiting, Nowlis, & Sears, 1953). The first social learning studies focused on children's experiences of family, particularly child-rearing practices and the parent-child relationship. This research was carried out to examine how children internalize values (Cairns & Cairns, 2006; Grusec & Davidov, 2010). Eventually, new advances in family research, such as in-depth interviews and observational techniques, led to a clearer understanding of early socialization processes.

Bandura and Walters (1963) extended social learning principles to include observational learning by children, which challenged the long-held view that anticipated consequences of rewards or punishment were necessary for learning (Grusec & Davidov, 2010). Bandura and colleagues demonstrated that, given certain conditions about the child and the social environment, learning occurred inevitably, even in the absence of anticipated consequences. By advancing the importance of cognitive mechanisms in social learning, Bandura offered a way to conceptualize the efficiency of generalized learning across contexts, including gender-linked conduct, and the role that human beings likely play in their own developmental trajectories (Bandura, 1977a, 1986; Bandura, 2001; Bussey & Bandura, 1984).

According to social learning principles, human behavior is the product of reciprocal interactions between individual, behavioral, and environmental factors (Bandura, 1977b; Bussey & Bandura, 1999). For example, parents' beliefs about childrearing are likely to reflect their own experiences as children and the values of the broader culture (Sigel & McGillicuddy-DeLisi, 2002). During the process of socializing their children, parents transfer both their belief systems

and their values. These principles continue to be borne out in current developmental research. For example, in a study of racial socialization practices in multi-racial families, the values imparted to children by parents regarding anticipated racial discrimination in school were found to vary according to family racial composition (Snyder, 2012). Families in which there was at least one African American parent or guardian tended to more openly address issues of race and discrimination, compared to families of multi-racial children in which there was no African American parent or guardian present (Snyder, 2012). These findings demonstrate that what parents communicate to children in the process known as socialization is often a reflection of parents' personal experience, values, and beliefs, all of which are influenced by the wider culture.

Similarly, what mothers communicate to their daughters at menarche is likely shaped by mothers' direct personal experience of being female and also by the norms and attitudes in the wider culture about gender and menstruation. Daughters, in turn, are likely to make meaning of what their mothers communicate, eventually incorporating this understanding into beliefs, expectations, and convictions about their adult female self. As these young women reach sexual maturity, their self-concept, which includes sexual self-efficacy, i.e., how capable they feel sexually, is likely to influence behaviors related to self-care, entitlement to pleasure, and safer sex practices.

According to Bandura's social learning theory, children are not simply passive objects in the socialization process (Bandura, 1986). Rather, development may occur bidirectionally. That is children play an active role in their own socialization, whether through their biological makeup, temperament, and even their own choices. Bidirectional socialization is a strong determinant of children's developmental trajectory (Bandura, 2001). From this perspective,

bidirectional socialization processes also would occur at menarche. Not only is maternal communication likely to influence a young girl's experience of menarche, but child characteristics, such as how old she is at menarche, may influence what her mother communicates to her. Indeed, mothers may withhold information from early-maturing daughters out of concern that too much information could be troubling or perhaps even sexualizing. However, it is possible that withholding information from early-maturing girls may hamper their ability to make healthy sexual decisions once they become sexually active. As a result, it is possible that withholding information could be more harmful than protective.

In this chapter I will provide an overview of Bandura's social learning theory and explain in more detail how it can be applied to the study of socialization processes at menarche. Next, I will present my research questions and explain how I formulated my hypotheses using social learning principles.

Social Cognitive Learning Theory

Socialization, or the process by which children gain the skills, values, and beliefs necessary for coping in a complex world on their own, is a central and well-studied construct in the field of human development (Cairns & Cairns, 2006; Grusec & Davidov, 2010; Lerner, Lewin-Bizan, & Warren, 2011). While social scientists may disagree about how best to operationalize and measure the process, there is consensus—based on findings from numerous deprivation, adoption, twin, and epigenetic studies (among others)—that both nature *and* nurture play a role (Lerner et al., 2011; Overton, 2006). That is our biological inheritance (nature) has just as much impact on our development as does our experience of the social environment (nurture). My study focuses on the interplay between maternal communication at menarche (nurture) and young women's sexual development within the context of menarche, a universal

and inevitable biological milestone (nature). Because young women generally experience menarche before becoming sexually active, it is possible to study socialization processes according to a natural sequence of events and thus gain a better understanding of factors influencing female sexual development over time.

Social learning theory posits that most human behavior is learned by observing others (Bandura & Walters, 1963). Whether the observation is direct (in person) or indirect (on television, for example), young children enact what they observe, generalizing their learning across contexts and situations, to varying effect. Some of these behaviors may be selectively reinforced through praise, encouragement, or reward, while others may be extinguished, either by being ignored, criticized, discouraged, or punished. Over time, children adapt their understanding and adjust their behavior. According to Bandura, the combination of observational learning and selective reinforcement/extinction offers a more efficient way to learn than simply building on direct *de novo* experience, because rules, once learned, can serve as an internal guide for future behavior (Bandura, 1977b; Bussey & Bandura, 1999). The gradual reinterpretation and internalization of rules about what is acceptable and not acceptable are what distinguishes modeling from simple imitation (Bandura, 1986). Indeed, according to Bandura, the efficiency and iterative nature of social learning make modeling the most likely way that values, attitudes, and beliefs are transmitted (Bandura, 1977a; Bussey & Bandura, 1999).

From this perspective, for girls experiencing puberty, learning what it means to have a mature female body is also most likely transmitted through social learning, with mothers serving as the first and most proximal adult female role model. In the time preceding menarche, a mother's behaviors, her choice of words, attitude, and her handling of questions about the female body are likely to be keenly observed and interpreted by her pubescent daughter. However, just

because a behavioral event is observed does not mean it will necessarily be reproduced (Bandura, 1977b). According to social learning theory, certain conditions must be met for observational learning to occur. These relate to the observer as well as the observed event. The observer must have certain cognitive skills, arousal level, and preconceptions to notice and make sense of the model (Bandura, 1977b). Likewise, the observed event or model must have certain attributes that make it meaningful to the observer and therefore worthy of attention. Finally, according to social learning principles, observers are more likely to pay attention to some models more than others, depending on their perceived functional value (Bandura & Walters, 1963; Bussey & Bandura, 1984).

During puberty, girls experience physiological and morphological changes that may enhance their awareness and acutely prime them to selectively attend to their mothers. Retrospective studies of menarche consistently report that girls universally go to their mothers first to announce the arrival of their first menses and to obtain guidance and support (Amann-Gainotti, 1986; Andrews, 1985; Diiorio, Kelley, & Hockenberry-Eaton, 1999; Koff & Rierdan, 1995; Logan, 1980; Rembeck et al., 2006). These findings suggest that at menarche girls may have the cognitive capacity, arousal level, and preconceptions to be on the lookout for messaging about female maturation. This readiness may direct their attention toward their mothers who are often the most proximal adult with firsthand experience of female puberty.

In addition to the processes that determine whether an observer is emotionally and cognitively primed to take note of certain behaviors, there are also processes governing which aspects of the model will make enough of an impression on the observer to be learned (Bandura, 1977b; Bussey & Bandura, 1999). A variety of characteristics of the model, or stimulus, are important determinants of whether observational learning and retention will take place. These

include salience, affective valence, prevalence, and accessibility. Certain characteristics of the individual are also important for observational learning. These include the individual's ability to perceive and evaluate the functional value of a stimulus (Bandura, 1977b). Each of these characteristics is likely to play an important role in the socialization of girls at menarche.

Salience is one of the important stimulus characteristics described in social learning theory (Bandura, 1977b). A behavioral event that is distinctive, or salient, relative to everything that surrounds it, is more likely to be noticed and remembered. Stimulus salience can be increased in a variety of obvious and nonobvious fashions. For example, actors may call attention directly to their actions. Sometimes, actions may be the only events in the environment at a particular point in time. In some cases, observers may be motivated to attend to particular types, kinds, or forms of information. Within the realm of socialization at menarche, mothers who appear comfortable discussing most subjects, but who take on hushed tones or who appear uncomfortable when discussing topics like menstruation, menstrual products, or the female body, are likely to pique curiosity when in the presence of children who are unfamiliar with the significance of these things or who are seeking to understand the changes their bodies are undergoing during puberty.

A second important stimulus characteristic is affective valence. A behavioral event that provokes an emotional response in the observer is likely to be remembered. For example, a young girl who innocently asks her family to explain a television commercial for sanitary pads might find herself experiencing confusion and shame when her older brothers erupt into laughter and her parents appear embarrassed and tongue-tied. For this young girl, the experience of confusion and shame will likely be associated with the topic of menstruation for some time and discussion of this topic, especially with males, may prove difficult.

A third important stimulus characteristic is prevalence. A behavioral event that is encountered consistently across social contexts, is more likely to be adopted compared to an event that only happens occasionally. Therefore, when messaging at home about menstruation and menarche is the same as messaging received outside of the home (school, peer group, the media), learning will be straightforward. In contrast, when messaging at home is incongruent with information outside of the home, other attentional processes may need to be called upon to determine which messages are the most resonant for learning.

A fourth important stimulus characteristic is its accessibility. A behavioral event is more likely to serve as a model if it is proximal, that is within the immediate, day-to-day sphere of the observer. Even in families with traditional gender role divisions, both girls and boys are more likely to spend considerably more time with female caregivers than male caregivers (Bussey & Bandura, 1999; Tenenbaum & Leaper, 2002). For girls especially, this means that prototypically female behaviors, including what is acceptable and unacceptable to talk about relating to menstruation and the female body, are likely to be readily accessible and therefore reinforced within the home environment (Bussey & Bandura, 1999).

Finally, the perceived functional value of the stimulus is thought to play an important role in observational learning. Observers are more likely to pay attention to the behaviors of some rather than others. For example, children are more likely to attend to and copy the behavior of models who are of the same sex, who are older, or who are more socially powerful than they are (Bandura & Walters, 1963; Bussey & Bandura, 1984). Similarly, observers are more likely to attend to and copy the behavior of models whom they believe to be more effective and ignore models they believe to be ineffectual (Bandura, 1986). Children may prefer to emulate models of the same gender because gender-linked behaviors are generally reinforced. (Bussey & Bandura,

1999; Tenenbaum & Leaper, 2002). However, as children approach puberty, same-gender parents may offer a perspective or behavioral repertoire that is more personally relevant on matters related to maturation, and as such are likely to be perceived as more credible. Pre-pubescent and pubescent girls who are learning about menstruation and menarche may be more likely to selectively attend to their primary female caregiver. Premenarchal girls may perceive that their mothers' firsthand experience of menarche and menstruation makes her an expert deserving of attention in all things related to having an adult female body.

Social learning theory outlines a variety of attentional processes that make some behavioral events more memorable than others. Extrapolating from these theoretical principles, it is clear that in the time leading up to menarche, not only are girls likely to be primed to attend selectively to their mothers, but specific attentional processes will ensure that what mothers communicate about menarche, menstruation, and female sexuality will play important roles in socializing girls about these topics.

Bandura extended social learning theory to explain the roles that more complex cognitive processes, such as motivation and self-efficacy, play in learning and behavior (Bandura, 1977a; Bandura, 2001). According to social cognitive learning theory, what is learned through observation and experience is interpreted and over time is internalized symbolically. These mental representations form the basis of core beliefs (convictions) and serve as guides, consequently exerting a strong influence over choices and behaviors, even in the absence of external reinforcement (Bandura, 1977a, 1986; Bussey & Bandura, 1999). By explaining how cognitive processes become a guide to action in this reconceptualization of social learning, Bandura offers a mechanism for linking observational learning to self-guided behavior. The

same mechanism may be at work when connecting observational learning at menarche with young women's decision-making at sexual debut.

According to social learning theory, daughters experiencing menarche are likely to make meaning of their mother's implicit and explicit communications. Studies of women's menstrual attitudes and experience of menstrual symptoms suggest that early messaging at menarche does have a lasting impact on menstrual attitudes and even the experience of symptoms (McPherson & Korfine, 2004). Women who reported having a positive attitude about menstruation and who experienced menstrual symptoms as non-debilitating recalled having had a positive menarcheal experience, one that typically included advanced preparation. In contrast, women who reported having a negative attitude about menstruation and who experienced menstrual symptoms as debilitating recalled having had a negative experience of menarche, including lack of preparation (McPherson & Korfine, 2004). Because mothers likely play an important role in creating a meaningful menarcheal experience for their daughters, what mothers communicate about menarche and menstruation probably has a lasting impact on daughters' conceptions and experiences of menarche and menstruation.

Social learning theory posits that development occurs in a social context. Accordingly, mothers and daughters are likely to be influenced by more than just each other at menarche. What mothers communicate to their daughters likely reflects mothers' personal experience of menarche, but also the norms and values of the wider culture. For example, menstrual stigma, gender role beliefs, religious convictions, and cultural prescriptions are likely to influence what mothers communicate. Likewise, factors besides maternal communication are likely to act as socializing agents at menarche, including fathers, siblings, peers, the Internet, and other media sources. Because I was interested in understanding the unique contribution of maternal

communication in my study, I considered other variables, including gender role beliefs, menstrual attitudes, cultural prescriptions related to menstruation, religiosity, race and ethnicity, minority status, level of education (mothers' and fathers' educational attainment at the time of menarche and daughters' current level of education), and household income at the time of menarche.

Communication Privacy Management Theory

Every family develops strategies for managing the flow of private communication (Galvin, Braithwaite, & Bylund, 2015). Communication privacy management (CPM) theory was developed by Petronio (2002) as a framework for understanding these strategies. The theory uses metaphors like “boundaries” and “ownership” for conceptualizing how families manage disclosure. “Boundaries” help to contain, or limit, what gets communicated. For example, in some families, permeable boundaries allow information to flow more freely, even to people who are unrelated, whereas in other families, set boundaries help to ensure that information is closely guarded. “Ownership” refers to the proprietary nature of private communication. When family members believe a secret “belongs to them,” it gives them a rationale for guarding it and protecting it (Galvin et al., 2015).

CPM theory offers a way to make predictions about how norms and values in the wider culture might influence boundary-setting and ownership in families (Petronio, 2002). For example, in cultures where menstruation is considered embarrassing, shameful, or taboo, family members may resist talking about it. This might extend to the sharing of information between mothers and daughters at menarche, a time when most girls go to their mothers for guidance and support.

According to CPM theory, families develop unique rules for managing communication of private matters. These rules are used to guide decisions such as how much information to share, who to share it with, when to share it, and finally, what method to employ for communicating it (Galvin et al., 2015). Accordingly, mothers raised in cultures where menstruation is considered taboo or private may find it uncomfortable to talk about menstruation, including their own, and may prefer to keep this information closely guarded.

CPM theory acknowledges the dialectical nature of sensitive communication in families (Petronio, 2002). When privacy boundaries are threatened or called into question, privacy dilemmas can arise leading to confusion or emotional turmoil (“boundary turbulence”). Such privacy dilemmas tend to arise in moments of family transition, change, or crisis, when rules are tested regarding what should or should not be shared (Galvin et al., 2015). Mothers who have daughters nearing menarche, which marks the transition from girlhood to womanhood, may experience a privacy dilemma, especially if they have taken steps to keep their own menstruation private. On the one hand, they may see the value in providing guidance, information, or menstrual supplies to their daughters. On the other hand, they may be reluctant to disclose this aspect of their own adult female experience. How mothers handle this privacy dilemma may yield different maternal communication styles, each of which may contribute to a different type of menarcheal experience.

Variable Conceptualization

Maternal Communication at Menarche

Maternal communication at menarche was the primary focus of my study, given the role it might play in the socialization of girls. Maternal communication at menarche was conceptualized to include primarily information pertaining to menstruation, menarche, and the

female body. It did not include any direct communication about sexual intercourse or safer sex practices.

Drawing on qualitative research concerning women's recollections of menarche, I identified several distinct types of maternal communication conveyed to daughters at this milestone. For example, in one study of mostly U.S. women, eight themes of maternal communication emerged, including: "no talk" (mothers did not discuss menstruation with their daughters at all); "products talk" (mothers only discussed technical aspects of managing menstruation); "secret talk" (mothers went to great lengths to hide their own menstruation and used euphemisms to disguise the topic of menstruation); "sexuality talk" (mothers linked the start of menstruation to sex, including forbidding the use of tampons prior to marriage); "grin-and-bear-it talk" (mothers communicated that menstruation was something to put up with); "not ready talk" (mothers communicated that they were dreading their daughters growing up); "religious taboo talk" (mothers communicated that new religious prescriptions would be imposed during menstruation); and finally, "slapping" (without explanation, mothers would respond to news of their daughter's menarcheal status with a slap across the face (Costos et al., 2002). Costos et al. (2002) found that of all the types of maternal communication that were reported, the "grin-and-bare it" type was associated with mothers' adherence to traditional gender roles.

For my study, I conceptualized maternal communication according to tone (positive and negative) and content (factual or "silent"). Tone refers to the emotions and attitudes mothers might convey to their daughters concerning menstruation and menarche. For example, if mothers believe these to be positive aspects of the female experience, then they might convey that menstruation is natural or positive, or they might express excitement about their daughters' menarche. On the other hand, if mothers believe these aspects of being female are negative, then

they might convey that menstruation is something shameful or problematic, or that this is something adult women have to learn to put up with.

Content refers to the provision of facts, guidance, and supplies. To assess the content of maternal communication, I asked if respondents' mothers had provided information, instructions, and supplies openly and ahead of the milestone (factual), or if, instead, there had been no communication of this sort (silent). Questions about content were more likely to relate strictly to the without any personal values or judgment attached, Maternal tone would also include mothers' transparency with regard to her own menstruation as well as their willingness to discuss menstruation in the presence of others.

In addition to assessing the tone and content of maternal communication, I also assessed the degree to which cultural norms concerning menstruation and menarche were prescribed. These questions addressed the practice of slapping daughters unexpectedly across the face when first menses were announced, prescribing postmenarcheal norms for dressing in public, or requiring that postmenarcheal girls alter their comportment around boys and men. By conceiving of the various types of communication, including a category for silent content, I could examine the effects of each type separately and determine whether each was associated with a different outcome.

Sexual Self-Efficacy

Self-efficacy, one aspect of overall subjectivity, is important to consider when studying socialization at menarche. According to Bandura's (1977a) social cognitive theoretical framework, self-efficacy is the core belief, or conviction, that one can successfully execute a behavior required to achieve a desired outcome. Self-efficacy tends to drive behaviors that fall within the range of one's perceived abilities but may lead to avoidance of behaviors that fall

outside of this range (Bandura, 1977a). As such, self-efficacy plays an important role in guiding our behavior, including sexual behaviors.

Self-efficacy must not be confused with self-esteem. While both are thought to constitute parts of our self-concept, self-efficacy relates to having the conviction that one possesses certain abilities or competencies, while self-esteem relates to one's appraisal of self-worth or the sum of one's negative and positive feelings about the self (Rosenberg, 1965).

In the realm of sexual health, researchers have conceptualized self-efficacy using various frames of reference, most of which have been associated with minimizing sexual risk (Rostosky, Dekhtyar, Cupp, & Anderman, 2008). For example, contraceptive self-efficacy refers to the conviction that using a certain form of contraceptive (usually condoms) will minimize the chance of unwanted pregnancy and protect against STIs. Results of research on contraceptive self-efficacy have indicated that this form of self-efficacy was associated with reported contraceptive use at last intercourse (Kalichman et al., 2002). Another form of self-efficacy has been described as resistive self-efficacy. This refers to the conviction that one can refuse sex. Researchers examining resistive self-efficacy have found it to be associated with participants having fewer sex partners (Mitchell, Kaufman, Beals, Pathways of, & Healthy Ways Project, 2005).

Current definitions of sexual health have shifted from a disease-prevention model toward a model that also includes positive and agentic dimensions of sexuality, such as pleasure, desire, consent, and wellbeing (WHO, 2002). Accordingly, studies of sexual health have shifted their focus away from risk behaviors toward protective behaviors, including sexual agency, sexual competence, sexual learning, and sexual self-efficacy (Fortenberry, 2014; Vasilenko et al., 2014). Along these lines, Horne and Zimmer-Gembeck (2005) developed a construct they termed

sexual subjectivity, which encompasses sexual self-perceptions related to body esteem, sexual self-efficacy, and entitlement to desire and pleasure.

Unlike previous conceptualizations that centered primarily on beliefs about risk behaviors (using a condom, resisting sex), sexual subjectivity captures aspects of sexuality that do not solely depend on sexual behavior, such as body esteem and beliefs about sexual agency (Horne & Zimmer-Gembeck, 2005). Moreover, sexual subjectivity takes into account the full range of self-perceptions that are likely to guide sexual decisions, including shame. Finally, scales developed by Zimmer-Gembeck et al. to measure sexual subjectivity (FSSI; Horne & Zimmer-Gembeck, 2006; MSSSI; Zimmer-Gembeck & French, 2016), offer a means for assessing aspects of normative sexual development associated with personal well-being, such as self-advocacy, autonomy, and entitlement to consensual, non-exploitative, and pleasurable encounters (Mastro & Zimmer-Gembeck, 2015). Accordingly, persons with high sexual subjectivity are more likely to believe that they can successfully take care of their sexual needs and health, just like persons with high self-efficacy have the conviction that they can successfully execute the behaviors required to attain their desired objectives (Bandura, 1977a). Thus, sexual subjectivity, as conceptualized by Horne and Zimmer-Gembeck (2005), appears to align closely with Bandura's construct of self-efficacy.

Emerging sexual self-efficacy, which describes one's earliest beliefs about one's ability to take care of one's sexual needs and health when first becoming sexually active, cannot be measured retrospectively with the FSSI. This is because as young women become sexually experienced they develop both greater sexual competence and confidence, qualities that are reflected as higher scores on the FSSI (Boislard Pepin & Zimmer-Gembeck, 2011; Zimmer-Gembeck & French, 2016). Therefore, to measure emerging sexual self-efficacy, I asked

respondents to recall how comfortable they felt about obtaining sexual health information from those who were close when they were first becoming sexually active. By including this question, I could measure respondents' earliest sense of entitlement to knowledge about sexual health information at sexual debut and this was used to reflect early sexual self-efficacy.

Sexual Decision-Making

Sexual decision-making is an important outcome of the sexual socialization process. According to social learning theory, what girls learn at menarche from their mothers will be internalized over time to form an important basis of core beliefs about the female self, including sexual self-efficacy. According to this social learning perspective, core beliefs such as early sexual self-efficacy are likely to impact young women's ability to make healthy sexual decisions.

In the present study, I conceptualized sexual decision-making using the most recent definition of sexual health as a guide (WHO, 2002). Although earlier research on sexual decision-making used negative outcomes such as unwanted pregnancy and STIs to infer sexual decision-making, contemporary research focuses instead on decisions to increase pleasure, satisfy desires, and maintain physical health (Horne & Zimmer-Gembeck, 2005; Mastro & Zimmer-Gembeck, 2015). The contemporary frame of reference focuses on personal agency, partner communication, and negotiation strategies, all of which require sexual self-efficacy.

Women who grew up in an environment in which menstruation was treated as a natural and important part of being female are likely to be more comfortable obtaining information, discussing their bodies, and advocating for sexual needs as they become sexually active. Such women are likely to have greater access to information and therefore are better positioned to make well-informed sexual decisions, including delaying their first experience of sexual intercourse. In contrast, women who grew up in an environment in which menstruation was

perceived as negative, shameful, or unspeakable, are likely to be uncomfortable advocating for their sexual wellness, especially at sexual debut. They may be uncomfortable discussing sexual and reproductive health concerns with medical professionals. They may be uncomfortable discussing their needs with sexual partners. They may find it difficult to insist upon safer sex practices. Because they grew up feeling uncomfortable about obtaining sexual health information from those who were close, such women may feel cut off from information and services that would otherwise help them to advocate for their health and make healthy sexual decisions. As a result, they may be at increased risk of experiencing negative sexual health outcomes.

Summary

Social learning theory offers a conceptual model for explaining how observational learning leads to the formation of core beliefs, beliefs that, even in the absence of external reinforcement, continue to serve as a guide to action. While Bandura's theoretical work on social learning does touch upon gender development (Bussey & Bandura, 1984, 1999), it does not address the socialization of girls at menarche. Nor does it attempt to explain how early sexual self-efficacy might drive different kinds of sexual decisions. Therefore, the present study was designed to examine whether Bandura's theoretical framework could be extended to the study of socialization of girls at menarche. The conceptual model allowed me to predict direct and indirect effects.

Drawing on principles from CPM theory, I predicted that the experience of menarche would vary depending on how mothers manage their "privacy dilemma" when preparing their daughters for menarche. Cultural stigma and personal beliefs about these aspects of being female would be conveyed through maternal tone and content at menarche. Accordingly, shame about menstruation might lead some mothers to use a negative tone. Through observational learning,

young women would interpret their mothers' handling of the milestone and incorporate this understanding into beliefs about their adult female body, including early sexual self-efficacy. In this way, maternal communication about menstruation would either promote or inhibit the ease with which girls will obtain sexual health information once they need it. Therefore, it is possible that certain types of maternal communication at menarche might moderate the association between early sexual self-efficacy and age at first sexual intercourse. Those who are comfortable would be better positioned to make informed sexual decisions, including whether to delay or engage in first sexual intercourse. Given the importance of reciprocal effects in Bandura's framework, I also anticipated that age at menarche would influence what mothers communicate to their daughters about menarche, menstruation, and sexuality, with possible effects on daughters' emerging sexual self-efficacy.

Research Questions

Drawing on principles from social cognitive learning theory and CPM theory, I sought to answer the following research questions and associated hypotheses:

Research question 1: Is early sexual self-efficacy a significant and independent predictor of delayed first sexual intercourse when controlling for other variables of interest? I predicted that early sexual self-efficacy would be a significant and independent predictor of early first sexual intercourse (hypothesis 1).

Research question 2a: If sexual self-efficacy is a significant and independent predictor of delayed first sexual intercourse, do certain types of maternal communication at menarche moderate that association? Overall, I predicted that certain types of maternal communication at menarche would either promote or inhibit the association between early sexual

self-efficacy and delayed sexual initiation. Specifically, I predicted that high scores on measures of positive tone and factual content would contribute to higher scores on early sexual self-efficacy resulting in delayed sexual initiation (hypothesis 2a).

Research question 2b: Does early sexual self-efficacy mediate the association between certain types of maternal communication and delayed first sexual intercourse? I predicted that positive maternal tone and factual content would act as a mediator (hypothesis 2b).

Research question 3: Is there an association between age at menarche and the type of communication conveyed by mothers at menarche? I predicted that there would be a negative association between age at menarche and maternal communication involving “silent” content. That is early-maturing participants would be more likely to report that their mothers never discussed menstruation and menarche compared to participants who matured at a normative age (hypothesis 3).

Chapter 4: Method

Participants

Once approval was obtained from the Institutional Review Board at Syracuse University (see Appendix A), study participants were recruited via online social networking platforms (Facebook, Twitter, LinkedIn). Participants were also recruited through private, public, and community college courses, where, in some cases, extra credit was offered as an incentive for participating. Participants were also recruited from public health clinics and community-based organizations, such as Planned Parenthood, where study announcements were posted in public waiting areas (see Appendix B).

Procedure

Participants completed a 123-question anonymous survey with questions written at a high-school level of English using the Qualtrics survey platform. I used a web-based approach to reach a maximum number of technologically engaged young adults. My use of this format also helped to guarantee participant confidentiality which I believed would help to ensure more honest responses around highly sensitive topics. To minimize survey abandonment resulting from potential unease around sensitive topics, participants could select “I prefer not to answer,” “Does not apply to me,” or “Neither agree nor disagree.”

Eligibility to participate in the study required that respondents identify as sexually active. I defined this as having experienced at least one act of oral, anal, or vaginal sexual activity. Also, participants were required to have been identified as female at birth and as having experienced menarche. Finally, I required that all participants be at least 18 years old. To gain access to the survey instrument, participants were required to attest that they met all eligibility criteria, then provide informed consent (see Appendix C for informed consent form). The use of an online

survey platform helped to ensure that the survey was accessible from most types of electronic devices. Survey respondents took, on average, 20 minutes to complete the survey. (See Appendix D for the complete survey instrument.)

Measures

Socio-demographic questions included current age, world geographic region of origin (Africa, Americas, Asia, Europe, or Oceania), racial identification (Black/African American, White/Caucasian, Native American/Alaska Native, Asian/Pacific Islander, or Multi-racial), minority status (“Do you identify as a racial or ethnic minority? (*yes or no*)”), religious affiliation (from among 14 options), the highest level of education completed, and current employment status. Respondents who identified as being a racial or ethnic minority were asked to indicate whether their parents had or had not taken steps to raise their awareness of race and ethnicity while they were growing up. Respondents who provided a religious affiliation were asked a question assessing their religiosity, namely whether they considered themselves religious because they “attended a religious service at least once a week, prayed daily, and/or studied religious scriptures (*yes or no*)”.

After these initial demographic questions, respondents were asked to recall information about their family during the time that they experienced menarche. Specifically, respondents were asked to recall the highest level of education each of their parents or primary caregivers had completed at the time participants experienced menarche. Survey respondents were also asked to select an income bracket (from among 12 options) that most closely matched their household income at the time they experienced menarche.

Outcome Variables

For adolescents and young adults, healthy sexual decision-making promotes mental and physical well-being within the sexual domain (Vasilenko et al., 2014). This type of decision-making requires a level of comfort in obtaining, discussing, and acting upon information pertinent to sexuality and reproductive health. Single-item measures were used to assess a range of individual sexual outcome measures. According to Bergkvist and Rossiter (2018), it is acceptable to use single-item measures for constructs that are sufficiently concrete and unidimensional in nature without compromising the predictive validity of the variables. Therefore, I used single-item measures such as age at first sexual intercourse for the sexual outcomes in my study.

Sexual Behavioral Outcomes. I asked survey respondents about their safer-sex behaviors, including their age at first sexual intercourse (8 items). Drawing on research about youth sexual outcomes (Ibitoye et al., 2017; Zimmer-Gembeck & Helfand, 2008), age at first sexual intercourse was recoded as a categorical variable, with 0 = up to and including 15 years of age and 1 = 16 years or older. A higher score on this variable was treated as reflecting delayed sexual initiation, a healthier sexual outcome.

Other items in this section included whether respondents had ever purchased condoms on their own, whether they had ever had a penetrative sexual experience without a condom, and whether they had ever been diagnosed with an STI. I also asked about condom use, including in situations where a sexual partner might resist using one. For these questions, respondents could choose 1 (“Yes”), 0 (“No”), or “Does not apply to me.” Higher scores reflected greater success at acting on personal convictions to promote sexual well-being.

Age at first sex was selected as my study's focal outcome variable because, unlike the other outcome variables, it was the least likely to be influenced by intervening sexual experience (Lauritsen & Swicegood, 1997). Also, this variable, unlike other sexual outcome variables that I included, has had demonstrated consistency of self-report in young adults (Goldberg et al., 2012; Lauritsen & Swicegood, 1997).

Current Level of Comfort Discussing Sexual Health. Survey respondents answered four separate questions to assess their current level of comfort discussing sexual health with medical professionals and sexual partners, including “How comfortable are you talking to medical providers about your genitalia or sexual concerns in the context of discussing your sexual health?,” “How comfortable are you talking to medical providers about testing for sexually-transmitted infections?,” “How comfortable are you talking to your sexual partner about your genitalia?,” and “How comfortable are you telling your sexual partner that you are menstruating?” Response options included: 0 (*Uncomfortable*) or 1 (*Comfortable*). A third response option, “Neither comfortable nor uncomfortable,” was interpreted to mean that respondents were *not* uncomfortable and therefore scored as 1. In this way, the number of response categories could be reduced to two and treated as dichotomous, with 0 = “Uncomfortable” or 1 = “Comfortable.” Higher scores on each of these single-item constructs were interpreted as reflecting a higher current level of comfort discussing each type of personal sexual health.

Predictor Variables

Predictor variables included measures concerning respondents' recollections of past and contemporaneous beliefs and experience. For a complete list of established scales included in my study, see Table 1.

Table 1

List of Constructs, Measures, Sources, Items, and Scoring

Construct	Description	Measure	Source	Items	Scoring
Maternal communication at menarche	Positive tone	Agreement with statements reflecting mother's positive sentiments about menstruation and menarche.		2	1 (<i>strongly disagree</i>) to 4 (<i>strongly agree</i>), scores averaged. High score: more positivity and excitement.
	Negative tone	Agreement with statements reflecting mother's negative sentiments about menstruation and menarche.		6	1 (<i>strongly disagree</i>) to 4 (<i>strongly agree</i>), scores averaged. High score: more shame and negativity.
	Factual content	Agreement with statements reflecting mother's provision of facts, guidance, and supplies related to menstruation.		12	1 (<i>strongly disagree</i>) to 4 (<i>strongly agree</i>), scores averaged. High score: high level of factual communication.
	"Silent" content	Agreement with the following statement: <i>"My mother never discussed menstruation or menarche with me."</i>		1	1 (<i>strongly agree</i>) to 4 (<i>strongly disagree</i>), raw score. High score: no discussion.

Table 1 (*continued*)

Construct	Description	Measure	Source	Items	Scoring
Cultural communication	Prescriptions and customs tied to menarche imposed within the family.	Agreement with statements reflecting the experience of cultural prescriptions related to menstruation and menarche.		5	1 (<i>strongly disagree</i>) to 4 (<i>strongly agree</i>), averaged. High score: more experience of cultural prescriptions.
Mother-daughter relationship	The perceived quality of one's mother-daughter relationship at puberty .	Agreement with statements reflecting closeness at puberty.		6	1 (<i>not at all</i>) to 3 (<i>very</i>), averaged. High score: more close.
	The perceived quality of one's current mother-daughter relationship.	Agreement with statements reflecting current closeness.		6	1 (<i>not at all</i>) to 3 (<i>very</i>), averaged. High score: more close.
Early sexual self-efficacy	The belief that one felt entitled to sexual health knowledge when first becoming sexually active	Agreement with the following statement: " <i>When I was first becoming sexually active, I was comfortable asking for the information that I needed from people I felt close to.</i> "		1	Continuous: 1 (<i>strongly disagree</i>) to 4 (<i>strongly agree</i>), raw score. High score: more comfortable. Categorical: 0 = uncomfortable 1 = comfortable.

Table 1 (*continued*)

Construct	Description	Measure	Source	Items	Scoring
Current sexual subjectivity	The current sense of entitlement to experience self-directed sexual pleasure.	Entitlement to self-pleasure subscale	FSSI; Zimmer-Gembeck & Horne, 2006	3	1 (<i>strongly disagree</i>) to 5 (<i>strongly agree</i>), except for negatively worded items, averaged. High scores: high level of subjectivity
	The current sense of entitlement to receive pleasure from a sexual partner.	Entitlement to pleasure from a partner subscale	FSSI; Zimmer-Gembeck & Horne, 2006	4	1 (<i>strongly disagree</i>) to 5 (<i>strongly agree</i>), except for negatively worded items, averaged. High scores: high level of subjectivity
	The conviction that one currently has the capacity to achieve sexual desire and pleasure.	Sexual self-efficacy subscale	FSSI; Zimmer-Gembeck & Horne, 2006	3	1 (<i>strongly disagree</i>) to 5 (<i>strongly agree</i>), except for negatively worded items, averaged. High scores: high level of subjectivity
Current menstrual attitude	The belief that menstruation is bothersome.	Menstrual Attitude Questionnaire-Menstruation as a Bothersome Event subscale	MAQ-B; Brooks-Gunn & Ruble, 1980	6	1 (<i>strongly disagree</i>) to 7 (<i>strongly agree</i>), except for negatively worded items, averaged. High score: more bothersome
	The belief that menstruation is natural.	Menstrual Attitude Questionnaire-Menstruation as a Natural Event subscale	MAQ-N; Brooks-Gunn & Ruble, 1980	5	1 (<i>strongly disagree</i>) to 7 (<i>strongly agree</i>), except for negatively worded items, averaged. High score: more natural

Table 1 (*continued*)

Construct	Description	Measure	Source	Items	Scoring
Gender role beliefs	Gender role beliefs reflecting a feminist ideology.	Gender Role Beliefs Scale	GRBS; Brown & Gladstone, 2012	10	1 (<i>strongly disagree</i>) to 7 (<i>strongly agree</i>), except for negatively worded items, averaged. High score: more feminist view.
Global self-esteem	Global self-worth.	Rosenberg Self Esteem scale	RSE; Rosenberg, 1965	10	1 (<i>strongly disagree</i>) to 4 (<i>strongly agree</i>), except for negatively worded items, summed. High score: high self-esteem.
Self-silencing	The tendency to inhibit one's self-expression and actions to avoid conflict and possible loss of relationship.	Silencing the Self subscale	STSS; Jack & Dill, 1992	9	1 (<i>strongly disagree</i>) to 5 (<i>strongly agree</i>), except for negatively worded items. High scores: more self-silencing
	The tendency to present a more compliant self than what one truly feels.	Divided Self subscale	STSS; Jack & Dill, 1992	7	1 (<i>strongly disagree</i>) to 5 (<i>strongly agree</i>), except for negatively worded items. High scores: more self-silencing

Maternal Communication at Menarche. The study's focal predictor variable measured verbal maternal communication at menarche as recalled by survey respondents. I assessed maternal communication by asking respondents to recall their preparation for menarche. I also asked about the degree to which they recalled their mother or primary female caregiver being transparent about her menstruation as well as her willingness to discuss menstruation, even in the presence of males. Respondents were asked to recall their mothers' willingness to explain the meaning of menstruation or provide information about it, as well as her willingness to provide supplies and guidance for managing menstrual symptoms. Responses to questions about maternal communication at menarche were categorized according to tone (eight items), and content (seven items). Nonverbal maternal communication, which would include gestures, facial expressions, eye contact, posture, and other ways mothers might communicate without using language, was not assessed.

Maternal Tone. Drawing on research concerning the link between maternal attitudes about menstruation and girls' experience and perceptions of menarche and menstruation (Amann-Gainotti, 1986; Lee, 2009), maternal tone was conceptualized to reflect the positive or negative emotional dimension communicated by mothers. Respondents were asked the degree to which they agreed with statements about their mother's tone when she talked about menstruation. Some statements reflected a positive maternal tone, such as "She made it seem like my first menstrual period was something exciting and positive." Other statements reflected a negative tone, such as "She made it seem like menstruation was shameful." Answers were given on a 4-point Likert scale ranging from 1 (*strongly disagree*) to 4 (*strongly agree*). Once negative items were reverse scored, scores were averaged to create a composite score for positive tone (two items, Cronbach's $\alpha = .90$) and a composite score for negative tone (six items, Cronbach's

$\alpha = .82$). Higher scores for positive tone reflected a more positive tone. Likewise, higher scores for negative tone reflected a more negative tone.

Maternal Content. Drawing on research that identified different themes in maternal messaging conveyed at menarche, including a “products talk” and “no talk” (Costos et al., 2002), maternal content was conceptualized to reflect the amount of factual and technical guidance mothers provided to respondents regarding the meaning and management of menstrual periods in the time leading up to menarche. Respondents were asked the degree to which they agreed with statements about maternal communication being informational, yet emotionally neutral. Using a 4-point Likert scale ranging from 1 (*strongly disagree*) to 4 (*strongly agree*), respondents rated the degree to which they agreed with statements like “She talked to me about various options for managing my menstrual periods, including the differences between pads, tampons, and menstrual cups.” Scores for factual content were averaged to create a composite score (six items, Cronbach’s $\alpha = .93$), with higher scores reflecting more factual content. A single item was included to assess “silent” content, or maternal communication about menstruation that was lacking in content. Using a 4-point Likert scale ranging from 1 (*strongly disagree*) to 4 (*strongly agree*), participants rated the degree to which they agreed with the statement, “My mother or primary female caregiver never communicated to me about menstruation.” Higher scores on this item were interpreted as reflecting content that was lacking in mothers’ communication.

Early Sexual Self-Efficacy. Drawing on research that associated girls’ early menstrual knowledge with subsequent openness to becoming adult women (Rembeck et al., 2006), their body comfort (Schooler et al., 2005), and their subsequent ability to feel responsible for their adult female body (Fingerson, 2005), I asked respondents four questions to assess their level of comfort in obtaining sexual health information when they were first becoming sexually active.

Using a 4-point Likert scale with responses ranging from 1 (*strongly disagree*) to 4 (*strongly agree*), respondents were asked to indicate the degree to which they agreed with the following statements: first, “When I was first becoming sexually active, I was comfortable asking for the information that I needed from health professionals,” second, “When I was first becoming sexually active, I was very comfortable asking for the information that I needed from people I felt close to (mother, or primary female caregiver, sibling, friends),” third, “When I was first becoming sexually active, I was not comfortable asking questions directly, but I found the information that I needed in books, pamphlets, or the Internet,” and lastly, “When I was first becoming sexually active, I saw no need to talk to people or look for information about sexual health, I did what felt right in the moment.”

Based on the findings by Fingerson (2005) showing that girls who had an early understanding of menstruation derived a sense of agency about managing their body’s needs, the following item was used to reflect early sexual self-efficacy: “When I was first becoming sexually active, I was comfortable asking for the information that I needed from people I felt close to (mother or primary female caregiver, sibling, friends).” This item was determined to most accurately reflect the ability to take responsibility for one’s health and wellbeing by making use of proximal resources (mothers, siblings, friends) to obtain information about sexual health.

For analyses investigating the role of early sexual self-efficacy in predicting delayed sexual initiation (hypothesis 1 and hypothesis 2a) or in mediating the relationship between maternal communication and delayed sexual initiation (hypothesis 2b), this variable was treated as a continuous variable. For analyses investigating the interaction of age at menarche and maternal communication on early sexual self-efficacy (hypothesis 3), this variable was treated as a categorical outcome variable. “Strongly Disagree” and “Disagree” responses were collapsed to

create a single response category (0 = uncomfortable). “Strongly Agree” and “Agree” responses were collapsed to create a single response category (1 = comfortable). In this way, it was possible to use binary logistic regression with early sexual self-efficacy as a dichotomous outcome variable.

Age at Menarche. Self-reported age at menarche was used as a single-item measure for predicting early sexual self-efficacy and delayed first sexual intercourse. It was also used as a control variable in some of the analyses. High test-retest reliabilities have been reported for self-reported age at menarche in samples of college students, twins, and siblings (Gilger, Eisele, & Geary, 1991). Researchers (Karapanou & Papadimitriou, 2010) have asserted that recall accuracy may decline with time since menarche. Consistent with research on the timing of menarche (e.g., Karapanou & Papadimitriou, 2010; Opoliner, Carwil, Blacker, Fitzmaurice, & Austin, 2014), I defined early age at menarche as 11 years or younger, and normative as 12 years or older.

Control Variables

Control variables included measures that assessed respondents’ upbringing, their contemporaneous attitudes and experience, as well as their perceptions regarding the quality of their mother-daughter relationship. These variables were included as control variables because of their potential to influence the study’s various outcome measures.

Cultural Communication at Menarche. Drawing on research findings regarding cultural practices associated with menstruation and menarche both in the United States (Stubbs, 2008) and in other countries (Chrisler & Zittel, 1998; Hawkey et al., 2017; Hoerster et al., 2003; Kumar & Srivastava, 2011; WHO, 1981), I assessed the degree to which survey respondents experienced similar cultural prescriptions in their families of origin. Using a 4-point Likert scale ranging from 1 (*strongly disagree*) to 4 (*strongly agree*), respondents indicated the degree to

which they agreed with statements such as “Once I started my period, I was told to follow certain customs every time I was menstruating,” and “At the start of my period, I was required to interact with men and boys in a different way from how I used to before I got my first period.” Scores were averaged to create a single score for cultural communication (five items, Cronbach’s $\alpha = .83$). Higher scores were interpreted as reflecting more experience of cultural prescriptions related to menstruation and menarche.

Current Sexual Subjectivity. For current sexual subjectivity, I used three subscales of the Female Sexual Subjectivity Inventory (FSSI; Zimmer-Gembeck & Horne, 2006). These were formulated to be used as three separate scales. The Entitlement to Self-Pleasure scale (3 items), assessed survey respondents’ sense of entitlement to experiencing self-directed sexual pleasure. A sample item from this subscale was “I believe self-masturbating can be an exciting experience.” The Entitlement to Pleasure from a Partner scale (4 items), assessed respondents’ sense of entitlement to receiving sexual pleasure from a partner. A sample item from this subscale was “If a partner were to ignore my sexual needs and desires, I’d feel hurt.” The Sexual Self-Efficacy scale (3 items), assessed respondents’ current sexual self-efficacy in achieving sexual pleasure. A sample item from this subscale was “I would not hesitate to ask for what I want sexually from a romantic partner.” Using a 5-point Likert scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*) respondents indicated the degree to which they agreed with each statement. After reverse scoring for negatively worded items, scores were averaged to create three separate subscale scores. Higher scores were interpreted as reflecting a higher level of sexual subjectivity.

Horne and Zimmer-Gembeck (2006) reported satisfactory reliability for all three subscales when used in separate samples of young adult women, as follows: Entitlement to Self-

Pleasure subscale (Cronbach's $\alpha = .81$ to $.85$); Entitlement to Pleasure from a Partner subscale (Cronbach's $\alpha = .75$ to $.81$); Sexual Self-Efficacy subscale (Cronbach's $\alpha = .75$ to $.85$). In the present study, Cronbach's alphas were comparable. Cronbach's alpha for the Entitlement to Self-Pleasure subscale was $.80$. Cronbach's alpha for the Entitlement to Pleasure from a Partner subscale was $.79$. Cronbach's alpha for the Sexual Self-Efficacy subscale was $.76$. Thus, I achieved reliability on all three subscales comparable to that of Horne and Zimmer-Gembeck (2016).

Mother-Daughter Relationship Quality, Current. Drawing on research concerning the role of parental support in fostering adolescent development (Rathunde, 2001; Rathunde & Csikszentmihalyi, 2006), I anticipated that the perceived quality of the mother-daughter relationship, at the time respondents took my survey might influence respondents' recollections. Therefore, I assessed respondents' evaluation of their mother-daughter relationship. First, respondents indicated if they were currently in contact by selecting one of the following response options: "We are in contact," "We are not in contact," or "My mother or primary female caregiver is deceased." Respondents who indicated that they were still in contact with their mother were then asked to evaluate the quality of their relationship by answering questions such as, "How easy is it to talk about personal things with her?" and "How often does she show you that she loves you?" Respondents used a 3-point Likert scale that included the following response options: 1 (*Very*), 2 (*Somewhat*), or 3 (*Not at all*). Scores were averaged, with higher scores indicating a closer relationship. This six-item scale exhibited a Cronbach's $\alpha = .90$.

Mother-Daughter Relationship Quality, at Puberty. Drawing on research by Rathunde (2001) demonstrating that children who perceived their parents as supportive and firm were more effective at directing their attention toward achieving important personal goals, the perceived

quality of the mother-daughter relationship during puberty was assessed. Respondents were presented with the same six questions that were used to evaluate the current relationship; however, the questions were posed using the past tense. Respondents used the same response format. Scores were averaged, with higher scores indicating a stronger, closer relationship at puberty. This six-item scale exhibited a Cronbach's $\alpha = .87$.

Menarcheal Experience. When and how a girl experiences her first menstrual period, including whether she expected it, where she found her most helpful information, and who she went to first for support and guidance, is likely to have a long-term impact on her attitude about menstruation in adulthood (McPherson & Korfine, 2004; Stubbs et al., 1989). Drawing on this body of literature, I asked questions that assessed respondents' menarcheal experience. In the present study, respondents reported if they knew what to expect at menarche by indicating a 1 ("Yes, I knew what to expect") or a 0 ("No, I had no idea"). Also, respondents indicated where they got their most helpful information about menstruation growing up, who they went to first to report that they got their first period, and finally, who they went to for guidance. For these questions, respondents could select from several options, including: "My mother (or primary female caregiver)," "My father (or primary male caregiver)," "An older sibling," or "My best friend." Due to the narrow scope of these constructs, items in this category were treated as separate variables.

Menstrual Attitude. To assess menstrual attitude, I included two subscales of the Menstrual Attitude Questionnaire (MAQ; Brooks-Gunn & Ruble, 1980). The first subscale was Menstruation as a Bothersome Event (MAQ-B, 6 items). I used this subscale to assess the degree to which respondents considered menstruation as a bothersome event. Using a seven-point Likert scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*), respondents indicated the degree

to which they agreed with statements like, “Menstruation is something I just have to put up with.” Scores were averaged (after reverse scoring for negatively worded items) and higher scores were interpreted to reflect the attitude that menstruation was bothersome. Internal reliability was found to be satisfactory with Cronbach’s $\alpha = .82$ in a sample of young adult women (Lustyk, Gerrish, Douglas, Bowen, & Marlatt, 2011). In the present study, the MAQ-B had a Cronbach’s $\alpha = .65$.

The second subscale was Menstruation as a Natural Event (MAQ-N, 5 items). I used this subscale to assess the degree to which respondents considered menstruation as natural. Using a seven-point Likert scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*), respondents indicated the degree to which they agreed with statements such as, “Menstruation allows women to be more aware of their bodies.” Scores were averaged (after reverse scoring for negatively worded items) and interpreted to reflect the attitude that menstruation is natural. Internal reliability was found to be satisfactory with Cronbach’s $\alpha = .82$ in a sample of young adult women (Lustyk et al., 2011). In the present study, the MAQ-N had a Cronbach’s $\alpha = .83$.

Gender Role Beliefs. Drawing on research tying gender role beliefs to body esteem (Curtin et al., 2011), safer sex practices (Kettrey, 2018; Lefkowitz et al., 2014), and self-silencing (Watson & Grotewiel, 2016) gender role beliefs were included as a control variable in the analyses. I assessed gender role beliefs using Brown and Gladstone’s (2012) short, 10-item version of the Gender Role Beliefs Scale (Kerr & Holden, 1996). Respondents were asked to indicate the degree to which they agreed with statements such as “Women should have as much sexual freedom as men” and “It is ridiculous for a woman to run a train and a man to sew clothes” using a seven-point Likert scale from 1 (*strongly agree*) to 7 (*strongly disagree*). After reverse-scoring negatively worded items, scores were averaged to form a composite score.

Higher scores were interpreted as reflecting a more feminist gender role ideology. Brown and Gladstone (2012) reported satisfactory internal reliability (Cronbach's $\alpha = .81$) in a study using a diverse sample of 233 adults. In the present study, Cronbach's $\alpha = .86$.

Religiosity. In addition to assessing respondents' religious affiliation, I used the following item to assess religiosity: "Do you consider yourself religious, that is a regular participant in a faith-based religion? (This would include attending service at least once per week, praying daily, and/or studying religious scriptures.)" Participants could answer "yes" or "no" for this item.

Covariates

Two covariates were included because of their potential to influence participants' views on menstruation, their sexual self-efficacy, and their sexual outcomes. These were global self-esteem and self-silencing.

Global Self-Esteem. This variable was measured using the Rosenberg Self-Esteem scale (RSE; Rosenberg, 1965). The 10-item scale measures global self-worth by asking survey respondents to evaluate statements concerning both positive and negative feelings about the self. Using a four-point Likert scale ranging from 1 (*strongly agree*) to 4 (*strongly disagree*), respondents indicated the degree to which they agreed or disagreed with statements such as "I feel I do not have much to be proud of" (negatively worded item) and "I take a positive attitude toward myself" (positively worded item). After reverse-scoring for negatively worded items, scores were summed, with higher scores interpreted as high overall self-esteem.

Studies of self-esteem in young adults using the RSE have consistently found that the instrument has had satisfactory internal reliability in samples from many English-speaking countries. For example, internal reliability was found to be very high using a sample of young

adults from the United States ($N = 73$; Cronbach's $\alpha = .93$) (Sinclair et al., 2010). Before that, a large-scale study with 2,782 U.S. college students, reported a Cronbach's $\alpha = .88$. Similar reliability was obtained in other English-speaking countries. For example, a study of 485 Australian college students reported a Cronbach's $\alpha = .88$. A study using 1,032 Canadian college students obtained a Cronbach's $\alpha = .80$. A study of 327 Maltese college students reported a Cronbach's $\alpha = .88$. Finally, a study of 480 college students from the United Kingdom reported a Cronbach's $\alpha = .90$ (Schmitt & Allik, 2005). In the present study, Cronbach's $\alpha = .90$.

Self-Silencing. This variable was measured using two subscales of The Silencing the Self Scale (STSS; Jack & Dill, 1992). The first subscale was the Silencing the Self subscale (9 items), which assesses the tendency to inhibit one's self-expression and actions to avoid conflict and possible loss of the relationship. Sample items include "I don't speak my feelings in an intimate relationship when I know they will cause disagreement" and "I feel I have to behave in a certain way to please my partner." The second subscale was the Divided Self subscale (7 items), which assesses the tendency to present a more compliant (traditionally feminine) self than what one truly feels. Sample items include "Often I look happy enough on the outside, but inwardly I feel angry and rebellious" and "When I am in a close relationship I lose my sense of who I am." Responses were given using a 5-point Likert scale that ranged from 1 (*strongly disagree*) to 5 (*strongly agree*). After reverse-scoring where indicated, subscale scores were summed, with higher scores reflecting more of each type of self-silencing. Jack and Dill (1992) reported satisfactory internal reliability on the two subscales in three separate samples of young adult women as follows: the silencing the self subscale (Cronbach's $\alpha = .83$; in the present study, $\alpha = .84$) and the divided self subscale (Cronbach's $\alpha = .78$; in the present study, $\alpha = .81$).

Analytic Procedures

Construction of the Sample

Of the 332 participants who took the survey, 237 finished it. I used an independent samples t-test analysis to determine whether there were statistical differences on measures of age, age at menarche, and age at first sexual intercourse between those who completed the survey and those who did not. No differences were observed. Once I eliminated the incomplete surveys, my final sample was 223 women. I divided this sample into a younger cohort aged 18 to 26 years ($n = 175$) and an older cohort, aged 27 to 67 years ($n = 48$) (see Figure 1).

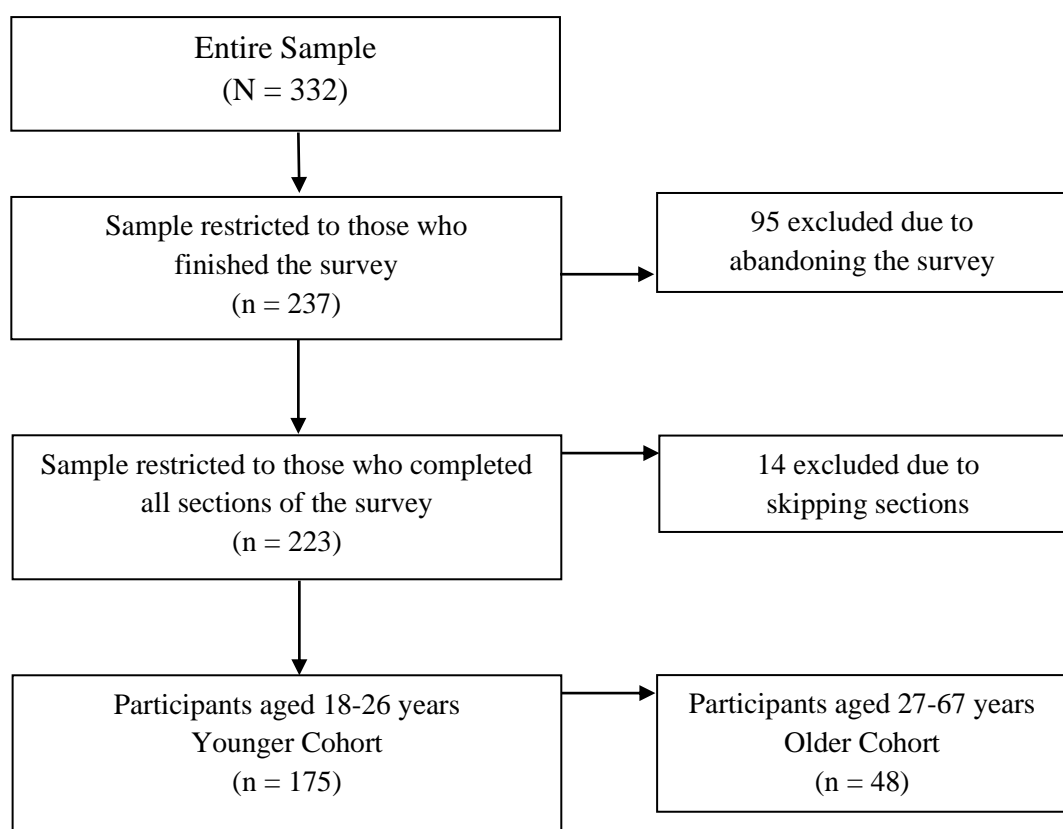


Figure 1. Sample construction.

For my main analyses, I only used data from the younger cohort (aged 18 to 26). I chose this subset of the sample to limit possible effects associated with lived experience beyond sexual initiation, such as being in long-term, committed relationships, bearing children, and menopause. Research suggests that these experiences would likely interfere with recall accuracy (Davis & Zhong, 2017). Zimmer-Gembeck, Ducat, and Boislard-Pepin (2011) asserted that these experiences might also influence sexual self-efficacy and sexual decision-making. I used data from older participants ($n = 48$) to examine whether findings in the younger cohort were also true of the older cohort. In some cases, I used data from the full cohort ($N = 223$) for analyses with low case ratios to avoid complete separation of dichotomous outcomes (religiosity, age at menarche, and minority demographics).

I carried out all preliminary analyses using IBM SPSS, version 24. I tested interaction effects using PROCESS macro for SPSS version 3.5 (Hayes, 2018). First, I screened the data for missing values, and outliers. Then, I transformed variables, as needed. Finally, I tested assumptions in preparation for further analysis.

Data Screening. I did not observe any errors in either the target sample or the older cohort. I checked minimum and maximum values to ascertain that they were within expected ranges. Using a boxplot analysis, I examined possible outliers and chose to retain all data points.

Missing values. Three respondents did not provide their age at menarche. In these cases, I used mean imputation following the guidelines described by Tabachnick and Fidell (2013, p. 67). In all three cases, I substituted the mean age from the data that was available ($M = 12.49$ years). Similarly, one response on the Sexual Subjectivity-Pleasure From a Partner subscale was missing. I imputed the missing value using the sample mean ($M = 4.53$). Finally, 24 respondents

(14%) selected “*I prefer not to answer*” when asked about their household income at menarche. I imputed the sample mean for these missing values.

As I indicated earlier, to minimize survey abandonment resulting from potential unease around sensitive topics, I gave participants opt-out choices for some questions such as, “*I prefer not to answer*,” “*Does not apply to me*,” or “*Neither agree nor disagree*.” In some cases, opt-out responses were coded, then treated, as missing.

Transformations. Some variables were reverse-coded so that composite scores could be computed. In some cases, variables were dichotomized so they could be treated as categorical variables. For example, when asked whether they had ever experienced vaginal or anal sex without a condom, respondents could answer “*yes*,” “*no*,” or “*I’m not sure*.” By treating the third response option as a “*yes*” response, this survey item could be recoded as a dichotomous variable. Similarly, some variables were collapsed into fewer categories. For example, questions about early sexual self-efficacy offered respondents four response options, ranging from 1 (*strongly disagree*) to 4 (*strongly agree*). A categorical variable was created for use in logistic regression analysis by recoding scores with 0 = (“*strongly disagree*,” and “*disagree*”) and 1 = (“*strongly agree*” and “*agree*”).

When testing for independence between two categorical variables, the Chi-square test requires the lowest expected frequency to be five or more (Pallant, 2013). These are the minimum projected frequencies in each cell if the null hypothesis is true. To optimize cell counts, I collapsed my data wherever possible into fewer categories by consolidating response options. For example, the question about household income offered respondents 11 income brackets to choose from. These were consolidated into five income brackets through recoding.

Some string variables were dichotomized. For example, age at menarche was recoded as 0 = early (11 years and below) or 1 = normative (12 years and up). Similarly, age at first sex was recoded as 0 = early (15 years or younger) or 1 = normative (16 years and up). Depending on the nature of specific statistical analyses, these variables were either used as continuous or categorical. For example, when age at first sex was used as a binary outcome variable in logistic regression, its dichotomized form was used.

Demographic Characteristics

Once I screened the data, I computed the means and standard deviations for my continuous demographic variables, as well as the frequencies and percentages of nominal demographic variables. Complete descriptive statistics are presented in Table 2.

Table 2

Demographic Characteristics for Survey Participants (n = 175)

Characteristic		M	SD
Age, years		21.95	2.20
Age at menarche, years		12.49	1.48
		n	%
Region of origin	Americas	144	82.3
	Europe	21	12.0
	Asia	4	2.3
	Africa	3	1.7
	Oceania	3	1.7
Race	White	143	81.7
	Black	10	5.7
	Asian/Pacific Islander	6	3.4
	Native American/Alaska Native	1	0.6
	Multiracial	15	8.6
Minority status	Identified as a racial or ethnic minority	29	16.6
Education completed	Some college or associate degree	84	48.0
	Four-year college degree	54	30.9
	Graduate degree	22	12.5
	High school diploma	15	8.6
Religiosity	Identified as religious	37	21.2

The mean age of participants was 21.95 years (SD = 2.20). Most participants identified as coming from the Americas (82.3%) and as being White/Caucasian (81.7%), with smaller percentages identifying as Black/African American (5.7%), Asian/Pacific Islander (3.4%), Native American/Alaska Native (0.6%), or multi-racial (8.6%). Most reported having attained a level of education beyond high school, including some college (48%). Over half of respondents (59.1%)

reported that their mothers had attended some or completed college by the time respondents experienced menarche. The average household income at menarche was between \$40,000 and \$80,000. Just over one-fifth of respondents (21.2%) identified as religious.

Preliminary Analyses

I computed Pearson bivariate correlations to examine the strength and direction of associations. After ascertaining that I had minimum expected cell frequencies of five or greater, I conducted Chi-square tests of independence to examine differences between expected and observed frequencies for categorical variables. I conducted independent samples t-tests to examine if there were statistical differences between groups on continuous variables of interest. I used Levene's test of equality of variances to determine whether variance between groups was the same. Following recommended guidelines by Pallant (2013), I used Levene's test results to select the appropriate t-value.

Data Analysis

I used direct binary logistic regression to determine the best model for predicting specific dichotomous outcomes. Unlike other statistical techniques, logistic regression has no assumptions about normality (Field, 2013; Tabachnick & Fidell, 2013). Because the outcome is binary, the same probability is maintained across the range of predictor values. Therefore, observations are assumed to be independent of each other (Peng, Lee, & Ingersoll, 2002). Indeed, with logistic regression, predictors do not have to be normally distributed, linearly related to the outcome variable of interest, or of equal variance within each group (Tabachnick & Fidell, 2013). Given the expected non-linear nature of many of the predictor variables in my study, I determined that logistic regression was indicated. I conducted moderation and mediation

analyses using the PROCESS macro for SPSS version 3.5 (Hayes, 2018). This application uses a regression-based path analytic framework.

Statistical Assumptions

I ascertained that at least 80% of the cells had expected counts greater than five. To minimize multicollinearity effects, especially when testing for interactions, I mean-centered all predictor variables (Hayes, 2018; Tabachnick & Fidell, 2013). This was accomplished using the Data Aggregate function, then subtracting the mean from each data point. For each variable, mean-centering resulted in a group mean of zero. After mean-centering, I screened bivariate correlations to see if any exceeded a Pearson correlation of .70. None did.

Univariate Analyses

Before multivariate regression could be computed, I conducted a purposeful univariate analysis of each predictor variable as a preliminary screening method for inclusion (Hosmer, Lemeshow, & Sturdivant, 2013; Tabachnick & Fidell, 2013). For categorical predictor variables, I performed Pearson chi-square tests of independence. I determined effect sizes using the *phi* coefficient. This ranges from 0 to 1, with higher values indicating a stronger association between the two variables. Following Cohen's criteria, .10 was considered a small effect, .30, a medium effect, and .50, a large effect (Cohen, 1988).

For continuous predictor variables, I performed two-sample independent t-tests. I calculated effect sizes using Eta-squared. The resulting value ranges from 0 to 1. According to Pallant (2013), this value represents the proportion of variance in the outcome variable that is explained by the predictor variable. I calculated Eta-squared using a formula described by Pallant (2013, p. 251) and evaluated effect sizes according to Cohen's criteria, where .01 was considered a small effect, .06, a moderate effect, and .14, a large effect (Cohen, 1988).

Variable Inclusion

To determine which predictor variables to include in the regression models, I followed the guidelines described by Hosmer and Lemeshow (2013) and included only variables with a p -value of less than 0.25 in the univariate analyses. Results of the univariate tests for independence are presented in Appendix F. Once variables were retained for inclusion in each model, the models were fine-tuned using the Wald statistic as a guide. Variables with a Wald statistic less than or equal to 0 were deemed of negligible value as predictors in the model and could therefore be eliminated.

Chapter 5: Results

In this chapter, I present descriptive statistics for the variables of interest and preliminary findings. Next, I provide the results of regression analyses performed to determine whether early sexual self-efficacy was a significant and independent predictor of age at first sexual intercourse while controlling for other variables including maternal communication at menarche (research question 1). In cases where I determined that both early sexual self-efficacy and maternal communication were predictors, possible interaction effects were investigated (research question 2a). Results from these analyses led to the examination of a mediation model, for which results are presented (research question 2b). I then provide the results of analyses that were performed to examine the effect of age at menarche on the association between maternal communication at menarche and early sexual self-efficacy (research question 3). Finally, I provide the results of a regression analysis that was conducted to examine the effect of maternal communication at menarche on the relationship between religiosity and delayed sexual initiation. This was a secondary finding.

Descriptive Statistics

I computed descriptive statistics. For a complete list of means and standard deviations, see Table 3.

Table 3

Descriptive Statistics (n = 175)

Measure	<i>M</i>	<i>SD</i>
Maternal communication		
Positive tone	2.49	.82
Negative tone	1.71	.54
Factual content	2.69	.68
“Silent” content	1.92	.92
Cultural communication about menarche	1.55	.55
Comfort obtaining sexual health information from those who were close at sexual debut (early sexual self-efficacy)	2.25	1.02
Mother-daughter relationship		
At puberty	2.18	.54
Current	2.36	.69
Sexual subjectivity (FSSI; Zimmer-Gembeck & Horne, 2006)		
Entitlement to self-pleasure	4.56	.63
Entitlement to pleasure from a partner	4.54	.57
Sexual self-efficacy (current)	4.04	.84
Menstrual attitude (MAQ; Brooks-Gunn & Ruble, 1980)		
Bothersome (MAQ-B)	5.32	.83
Natural (MAQ-N)	4.54	1.24
Gender role beliefs (GRBS; Brown & Gladstone, 2012)	5.89	.87
Global self-esteem (RSE; Rosenberg, 1965)	29.5	5.62
Self-silencing (STSS; Jack & Dill, 1992)		
Silencing the self	21.05	6.82
Divided self	14.70	5.44

The mean age at menarche was 12.49 ($SD = 1.48$). Just over three-quarters of survey respondents (75.4%) reported that their mother was the first person they informed when they got their first menstrual period. A similar proportion was found for the older cohort (79.2%, $n = 48$).

Nearly half (44.6%) of the respondents reported that their most helpful source of information about menstruation prior to their first menses was their mother. Other sources were, in decreasing order, school health class (16.0%), peers (13.7%), the Internet (11.4%), an older sibling (2.9%), a medical professional (2.3%), or father/primary male caregiver (1.1%).

Nearly a quarter of respondents (22.9%) reported that when they got their first menstrual period, they had no idea what to expect. A similar proportion was found in the older cohort, (20.8%, $n = 48$).

The mean age of first penetrative sexual experience was 17.23 years ($SD = 2.23$). A similar proportion was found for the full cohort, which included older respondents ($N = 223$; $M = 17.35$, $SD = 2.51$). Likewise, the same proportion of respondents who reported having had their first penetrative sexual experience before age 16 (25%) was found in both cohorts (see Table 4).

Table 4

Descriptive Statistics, Sexual Outcomes (n = 175)

Outcome Variable	<i>n</i>	%
Were early sexual initiators (before age 16)	43	24.6
Never purchased condoms	70	40.0
Experienced penetrative sex without a condom	143	81.7
Diagnosed with an STI	19	10.9
Currently uncomfortable discussing sexual health with health professionals	30	17.1
Currently uncomfortable discussing STI testing with medical providers	28	16.0
Currently uncomfortable discussing genitalia with sexual partner(s)	24	13.7
Currently uncomfortable discussing menstrual status with sexual partner(s)	5	2.9

Bivariate Correlations

To gain an initial understanding of my data, I computed bivariate correlations for all continuous variables. This allowed me to determine the existence of linear relationships (see Table 5).

Table 5

Intercorrelations Between Study Variables (n = 175)

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.
1. Age at menarche	1	.14	.16	-.01	.08	.07	.01	.06	.08	-.09	.01	-.02	.00	-.08	.08	-.01
2. Maternal ed.		1	.45**	.01	.03	-.05	-.06	.09	.09	-.18*	.12	-.13	-.23**	.14	.07	.11
3. Household inc.			1	-.01	.06	.04	.033	.10	.02	-.02	.02	-.03	-.08	-.03	.17*	.14
4. M-D puberty				1	.49**	-.09	.25**	.32**	.44**	-.27**	.36**	-.17*	.12	-.24**	.18*	-.16*
5. M-D current					1	-.05	.05	.14	.30**	-.11	.19*	-.13	.03	-.12	.25**	-.19*
6. MAQB						1	-.44**	-.14	-.07	-.01	-.09	.11	.03	.19*	-.06	.14
7. MAQN							1	.16*	.18*	-.03	.17*	-.03	.14	-.30**	.05	.02
8. Early SSEff								1	.30**	-.03	.38**	-.18*	-.00	-.16*	.24**	-.14
9. MC-factual									1	-.55	.62**	-.27**	.09	-.11	.11	-.11
10. MC-“silent”										1	-.38	.28**	.14	-.20**	-.03	.04
11. MC-positive											1	-.22	.08	-.15*	.09	-.12
12. MC-negative												1	.43**	-.16*	-.32**	.25**
13. CC													1	-.39**	-.18*	.05
14. GRBS														1	.03	-.02
15. Self-esteem															1	-.39**
16. STSS																1

Note. Bolded typeface indicates significance to * $p < .05$ ** $p < .01$ level.

1. Age at menarche; 2. Maternal education (at menarche); 3. Household income (at menarche); 4. Mother-daughter relationship, puberty; 5. Mother-daughter, current; 6. Menstrual Attitude Questionnaire-Bothersome; 7. MAQ-Natural; 8. Early sexual self-efficacy; 9. Maternal communication, factual content; 10. Maternal communication, “silent” content; 11. Maternal communication, positive tone; 12. Maternal communication, negative tone; 13. Cultural communication; 14. Gender role beliefs (GRBS); 15. Self-esteem (RSE); 16. Self-silencing (STSS)

In cases where a relationship was identified, the strength, direction, and statistical significance were evaluated using Pearson's correlation coefficient, a standardized measure of the strength of the relationship between two variables ranging in value from -1 to 1 (Field, 2013). The effect size was measured using Cohen's (1988) recommended guidelines, as follows: when $r = .10$ to $.29$, this was considered a small effect; when $r = .30$ to $.49$, this was considered a medium effect; and when $r = .50$ to 1.0 , this was considered a large effect (Cohen, 1988).

The Mother-Daughter Relationship at Puberty

I found a medium-sized positive correlation between the mother-daughter relationship at puberty and the current mother-daughter relationship, $r = .49$, $n = 175$, $p < .001$, meaning that participants who felt close to their mothers at puberty were likely to report that they currently felt close to their mothers. There was also a medium-sized, positive correlation between the relationship at puberty and early sexual subjectivity, $r = .32$, $n = 175$, $p < .001$, meaning that participants who had a close relationship with their mother at puberty were also likely to report that they felt comfortable obtaining sexual health information from those who felt close when they were first becoming sexually active. Finally, there was a small-sized, negative correlation between the mother-daughter relationship at puberty and current gender role beliefs, $r = -.24$, $n = 175$, $p = .001$, meaning that participants who had a poor relationship with their mothers at puberty were more likely to endorse traditional gender role beliefs.

Cultural Communication at Menarche

I found a medium-sized negative correlation between cultural communication and the level of education completed by mothers during the time that participants experienced menarche, $r = -.23$, $n = 175$, $p = .002$. That is participants who reported having to abide by certain cultural norms and practices associated with the start of menstruation, such as changing one's

comportment around men and boys or changing one's way of dressing, had mothers who achieved a lower level of education. Likewise, I found a medium-sized positive correlation between cultural communication and negative maternal communication at menarche, $r = .43$, $n = 175$, $p < .001$. That is participants who reported having to abide by certain cultural norms and practices associated with the start of menstruation were more likely to report that they also received messaging from their mothers at menarche that was negative in tone. This type of communication conveyed that menstruation was problematic, embarrassing, and shameful. Finally, there was also a medium-sized negative correlation between cultural communication and current gender role beliefs, $r = -.39$, $n = 175$, $p < .001$, meaning that participants who were expected to abide by certain cultural norms and practices associated with menarche were also more likely to endorse more traditional gender role beliefs.

Self-Esteem

I found a medium-sized negative correlation between current self-esteem and self-silencing, $r = -.39$, $n = 175$, $p < .001$, meaning that participants who had low current levels of self-esteem were also more likely to self-silence. Likewise, there was a medium-sized negative correlation between self-esteem and negative maternal communication, $r = -.32$, $n = 175$, $p < .001$. That is participants who had low self-esteem were also more likely to report that communication from their mothers at menarche was negative in tone.

Self-Silencing

I found a small positive correlation between self-silencing and negative maternal communication at menarche, $r = .25$, $n = 175$, $p = .001$, meaning that participants who tended to self-silence were more likely to report that communication from their mothers at menarche that was negative in tone.

Preliminary Analyses

Between-Group Comparisons

I conducted independent samples t-tests to examine whether there were any differences between groups.

Expectations at Menarche. Participants in my study who reported knowing what to expect at menarche were more likely to report that at the time of their first menses, their mothers had achieved a higher level of education when compared to participants who reported not knowing what to expect. Results from an independent samples t-test indicated significant differences in maternal level of education achieved at first menses (but not paternal education) between those participants who knew what to expect at menarche ($M = 7.43$, $SD = 2.91$) and those who did not ($M = 5.50$, $SD = 3.23$; $t(175) = -3.59$, $p < .001$, two-tailed. The magnitude of the difference in means (mean difference = -1.93 , 95% CI: -2.99 to $-.87$) was a moderate effect ($\eta^2 = .07$).

Participants who reported that they knew what to expect at menarche were also more likely to report that at the time they experienced their first menses they had a higher level of household income compared to participants who reported not knowing what to expect. Results from an independent samples t-test analysis showed a significant difference in household income between those participants who knew what to expect at menarche ($M = 3.03$, $SD = 1.29$) and those who did not ($M = 2.26$, $SD = 1.21$; $t(175) = -3.07$, $p = .003$, two-tailed. The magnitude of the difference in means (mean difference = $-.76$, 95% CI: -1.25 to $-.27$) was a small effect ($\eta^2 = .05$).

Maternal Tone at Menarche. I observed significant differences in maternal tone at menarche between respondents who knew what to expect and those who did not. Specifically,

those who knew what to expect ($M = 2.58$, $SD = .80$) reported receiving more positive maternal communication than those who did not ($M = 2.18$, $SD = .81$, $t(173) = 2.78$, $p = .006$). This was a small effect ($\eta^2 = .04$). There was no significant difference between groups for negative maternal communication.

I also observed significant differences in maternal tone at menarche between respondents who reported feeling comfortable obtaining sexual health information from those who were close when they were first becoming sexually active and those who reported feeling uncomfortable. Specifically, those who felt comfortable reported receiving more positive maternal communication at menarche (a large effect), whereas those who felt uncomfortable reported receiving more negative maternal communication, a small effect (see Table 6).

Table 6

*Independent Samples T-Test Analysis: Maternal Tone at Menarche and Early Sexual**Self-Efficacy (n = 175)*

	Group	<i>n</i>	<i>M</i>	<i>SD</i>	Mean _{diff}	<i>t</i>	<i>p</i>	<i>Eta</i> ²
Positive Tone								
Comfort obtaining sexual health information from those were close at sexual debut	Comfortable	74	2.86	.77	.66	5.70	.00	.16
	Uncomfortable	101	2.21	.74				
Negative Tone								
Comfort obtaining sexual health information from those were close at sexual debut	Comfortable	74	1.59	.54	-.22	-2.68	.00	.04
	Uncomfortable	101	1.81	.53				

Note. Bolded text indicates significance at $p < .01$. I used eta^2 to determine effect size as follows: .01 = small effect, .06 = moderate effect, and .14 = large effect (Cohen, 1988).

I observed significant differences in maternal tone related to participants' current level of comfort discussing sexual health topics. Results from independent samples t-tests showed significant differences in maternal tone at menarche between respondents who reported feeling currently comfortable discussing their menstrual status with sexual partners and those who did not. Specifically, those who felt comfortable ($M = 2.550$, $SD = .82$) reported receiving more positive maternal communication than those who felt uncomfortable ($M = 1.90$, $SD = .22$, $t(173) = -5.10$, $p = .001$). This was a large effect ($eta^2 = .13$). Participants who felt uncomfortable ($M = 2.20$, $SD = .55$) reported receiving more negative maternal communication than those who felt

comfortable ($M = 1.70$, $SD = .54$, $t(173) = 2.05$, $p = .04$). This was a small effect ($\eta^2 = .02$).

I observed significant differences in maternal tone at menarche between respondents who reported feeling currently comfortable discussing their genitalia with sexual partners and those who did not. Specifically, those who were comfortable ($M = 2.54$, $SD = .81$) were more likely to report having received positive communication from their mothers at menarche compared to participants who reported feeling uncomfortable ($M = 2.15$, $SD = .80$, $t(173) = -2.21$, $p = .03$). This was a small effect ($\eta^2 = .03$). There was no difference between groups for negative maternal communication.

Maternal Content at Menarche. Nearly a quarter of respondents (21.2%, $n = 175$) reported that their mother never communicated directly to them about menstruation, a factor that was reflected in the study's measure for "silent" maternal content. For older participants, the proportion was slightly larger (27.1%, $n = 48$). Results from independent samples t-tests showed significant differences in the quality of the content participants received from their mothers at menarche across several outcomes.

I observed that participants who reported that they felt comfortable obtaining sexual health information from health professionals at sexual debut ($M = 2.94$, $SD = .68$) were more likely to report that they received factual maternal communication at menarche compared to participants who felt uncomfortable ($M = 2.56$, $SD = .65$, $t(173) = 3.58$, $p < .001$). This was a moderate effect ($\eta^2 = .07$). I observed no difference in "silent" maternal content between these groups.

I observed significant differences in maternal content related to participants' current level of comfort discussing sexual health topics. Specifically, participants who reported feeling currently comfortable discussing their genitalia and testing with medical providers ($M = 2.31$, SD

= 1.04) were more likely to report that they received more factual content from their mothers at menarche than those who felt uncomfortable ($M = 1.88$, $SD = .80$, $t(36.72) = 2.38$, $p = .02$). This was a small effect ($\eta^2 = .03$). I observed no difference in “silent” maternal content between these groups.

I observed significant differences in maternal content at menarche between respondents who identified as racial and ethnic minorities and those who did not. However, due to low representation (16.6%) and sample size ($n = 175$), associations relating to minority status were examined looking at the full cohort ($N = 223$). Therefore, these results should be interpreted with caution. I found that participants who identified as minorities ($M = 3.08$, $SD = .65$) were more likely to report that they received communication from their mothers at menarche that was informative compared to participants who did not identify as minorities ($M = 2.81$, $SD = .73$; $t(221) = 2.06$, $p = .04$, two-tailed. The magnitude of the difference in means (mean difference = .27, 95% CI: .01 to .52) was a small effect ($\eta^2 = .02$). I observed no difference in maternal tone between these groups.

Age at First Sexual Intercourse. I found that participants who reported initiating sex early (before they turned 16) were more likely to have reached menarche early. Results from independent samples t-tests using age at menarche as a continuous variable and age at first sex as categorical (0 = before age 16, 1 = normative) showed that early sexual initiators ($M = 12.08$, $SD = 1.32$) reported reaching menarche earlier compared to respondents who delayed sexual initiation ($M = 12.62$, $SD = 1.51$, $t(173) = 2.08$, $p = .04$). This was a small effect ($\eta^2 = .02$).

I found that participants who reported delaying their first experience of sexual intercourse were more likely to report that were religious. Due to low representation and sample size, associations relating to religiosity were examined looking at the full cohort ($N = 223$). I found

that, on average, participants who identified as religious were 18.16 years old when they first had sex ($SD = 3.02$) compared to participants who did not identify as religious ($M = 17.08$, $SD = 2.27$), $t(221) = 2.82$, $p = .005$). This was a small effect ($\eta^2 = .03$).

Research question 1: Is early sexual self-efficacy a significant and independent predictor of delayed first sexual intercourse when controlling for other variables of interest?

I used independent samples t-tests to examine the difference between mean scores on my measure of early sexual self-efficacy (continuous) and age at first sex (categorical, 0 = 15 years or younger, 1 = 16 years and up). I found that participants who reported feeling comfortable obtaining sexual health information from those who were close at sexual debut ($M = 1.91$, $SD = .92$) were more likely to delay sexual initiation compared to those who reported feeling uncomfortable ($M = 2.36$, $SD = 1.03$, $t(173) = 2.59$, $p = .01$), a small effect ($\eta^2 = .04$).

Once I determined that participants with high scores on my measure of early sexual self-efficacy were more likely to delay sexual initiation compared to those with low scores, I used logistic regression to examine whether early sexual self-efficacy was a significant predictor of delayed sexual initiation, even while controlling for other variables, including maternal tone and content at menarche.

Logistic regression compares the ratio of cases to non-cases, therefore, extreme disparities between dichotomous outcomes can result in complete separation (Field, 2013). Given the moderate disparity in outcome between early sexual initiators (24.6%) and normative (75.4%), results were confirmed in the full cohort ($N = 223$). To minimize the risk of multicollinearity, I screened correlations between predictors for any that exceeded a Pearson correlation of 0.7. None did (see intercorrelations, Table 5).

Before testing, I conducted univariate analyses to determine which predictor variables to include. All predictor variables were screened following the method recommended by Hosmer, Lemeshow, and Sturdivant (2013). I conducted a chi-square test for independence (with Yates Continuity Correction) to compare the observed proportion of cases that occurred across my two categories of sexual outcome (0 = early, 1 = normative). Categorical predictors were religiosity (0 = non-religious, 1 = religious), age at menarche (0 = 11 years or younger, 1 = 12 years or older), and expectations at menarche (0 = did not know what to expect, 1 = knew what to expect). Following the method proposed by Hosmer, Lemeshow, and Sturdivant (2013), variables significant to $p < .25$ were retained. The only categorical predictor that was significant to $p < .25$ was religiosity $\chi^2(1, n = 175) = 3.90, p = .05, phi = .17$, a small effect. These results are presented in Appendix F.

I conducted independent samples t-tests to compare average scores on continuous predictor variables between participants who delayed sexual initiation and those who did not. Variables significant to $p < .25$ were retained. These results are presented in Appendix F. Following the initial screening, I evaluated variables simultaneously in a logistic regression model and eliminated variables with a Wald statistic smaller than 1. I used direct binary logistic regression to examine a model that included the retained variables together with other variables of interest. The final model contained 11 independent variables: religiosity, gender role belief score, mother-daughter relationship (current), mother-daughter relationship (at puberty), age at menarche (continuous), expectations at menarche, early sexual self-efficacy (continuous), and the four types of maternal communication at menarche (factual content, “silent” content, positive tone, and negative tone).

A power analysis using G*Power v. 3.1.9.4 indicated that the study was adequately powered (alpha = .05, power [1 - β] = 0.80), as a total sample size of 123 would be required to adequately power the present study with 11 predictors. Using the formula put forward by Tabachnick and Fidell for testing individual predictors (2013, p. 123), the minimum number of cases would be $N \geq 104 + (11) = 155$. The target sample size for the present study was 175 participants, which exceeded the recommended range of 123 to 155 and was therefore considered adequate.

All continuous variables were mean-centered before testing the model, as recommended by Field (2013) and Hayes (2018). A test of the full model was statistically significant, $\chi^2 (11, n = 175) = 24.36, p = .01$, indicating that the 11 predictors, as a set, significantly distinguished between participants who were early sexual initiators and those who were not. Results of the Hosmer-Lemeshow Test, $\chi^2 (11, n = 175) = 2.38, p = .967$, indicated that the model was a good fit.

My regression model as a whole explained between 13.0% (Cox and Snell R square) and 19.3% (Nagelkerke R squared) of the variance in age at first sex and correctly classified 77.1% of cases overall (18.6% of early initiators and 96.2% of non-early initiators), compared to the intercept-only model, which correctly classified 75.4% of the cases.

Four of the independent variables made a statistically significant contribution to the model (as measured using standardized regression coefficients), with the strongest predictor being religiosity. The other three, in decreasing order of predictor strength, were gender role beliefs, early sexual self-efficacy, and age at menarche.

All of the significant predictors had odds ratios that were greater than one, indicating that they each individually increased the odds of delaying sexual initiation when controlling all other

variables. Therefore, the odds of a participant who identified as religious delaying first sex were 4.34 times greater than for participants who did not identify as religious. The odds of a participant who endorsed more feminist gender role beliefs delaying first sex were 1.96 times greater than those of participants who endorsed more traditional gender role beliefs. The odds of delayed sexual initiation for participants who reported feeling comfortable obtaining sexual health information from those who were close at sexual debut delaying were 1.69 times greater than for participants who reported feeling uncomfortable. Finally, the odds of delaying sexual initiation for non-early-maturing participants were 1.33 times greater than for early-maturing participants (see Table 7).

Table 7

*Direct Logistic Regression Analysis Predicting the Likelihood of Delaying First Sexual**Intercourse (n = 175)*

Predictor	<i>B</i>	<i>S.E.</i>	Wald	<i>df</i>	<i>p</i>	Odds Ratio	95.0% C.I. for	
							Lower	Upper
Religiosity (categorical, 0 = non-religious, 1 = religious)	1.47	.63	5.38	1	.02	4.34	1.26	15.00
Gender Role Beliefs Score	.67	.27	6.40	1	.01	1.96	1.16	3.29
Mother-daughter relationship, current	.39	.30	1.63	1	.20	1.47	.81	2.66
Mother-daughter relationship, puberty	.16	.46	.13	1	.72	1.18	.48	2.87
Age at menarche (continuous)	.29	.15	3.80	1	.05	1.33	1.00	1.78
Expectations at menarche	.14	.49	.09	1	.77	1.15	.45	2.99
Early sexual self-efficacy (continuous)	.53	.23	5.33	1	.02	1.69	1.08	2.64
Factual maternal content	.13	.47	.08	1	.78	1.14	.46	2.85
“Silent” maternal content	.24	.31	.60	1	.44	1.27	.69	2.33
Positive maternal tone	-.04	.32	.02	1	.90	.96	.51	1.80
Negative maternal tone	.21	.38	.30	1	.59	1.23	.58	2.61
(Constant)	.92	.25	13.94	1	.00	2.50	-	-

Note. Bolded text indicates significance at $p < .05$.

An examination of standardized residuals identified four cases that were less than -2 or greater than 2. In an ordinary sample, one would expect 95% of cases to have standardized residuals within about +/-2 (Field, 2013). My sample was 175, therefore I would have expected to see 9 cases (5% of 175) with residuals outside of these limits. There were no unusually high values of Cook’s Distance, which would otherwise indicate the presence of influential cases

affecting the model. Finally, Leverage values were within the expected range and DFBeta values were less than one. All of these indicated that the model was a good fit for the observed data (Field, 2013).

As mentioned previously, logistic regression, unlike linear regression, has no assumptions about linearity for its predictors. However, there is an assumption about the linear relationship between each continuous predictor and the logit transformation of the dichotomous outcome variable (Tabachnick & Fidell, 2013). A Box-Tidwell approach was used to test this assumption (Tabachnick & Fidell, 2013). This technique entails creating natural logarithms of each predictor in the model, then running the same regression model with interaction terms (predictor x log transformation). The assumption is considered violated if one or more of the added terms are found to be statistically significant (Field, 2013).

In my analysis, the only concern about a possible violation of the linearity of the logit was for negative maternal communication, with a p -value for negative maternal tone x $\ln(\text{negative maternal tone}) = .003$. However, according to Tabachnick and Fidell (2013, p. 477), the recommended criterion for determining significance is [$\alpha = .05/(\text{number of predictors in the new model})$]. In this case, the model included 20 terms (including the interaction terms), or $\alpha = .05/20 = .0025$. Therefore, a negative maternal tone was considered acceptable and the assumption regarding the linearity of the logit for this model was not violated.

The result of the direct logistic regression analysis indicated that my measure of early sexual self-efficacy was a significant predictor of delayed sexual initiation while controlling for other variables of interest. That is participants who reported that they felt comfortable obtaining sexual health information from those who were close when they were first becoming sexually

active were more likely to delay their first penetrative sexual experience compared to participants who reported feeling uncomfortable, even when taking other variables into account.

Research question 2a: Does maternal communication moderate the relationship between early sexual self-efficacy and delayed first sexual intercourse?

I tested a simple moderation model using binary logistic regression with the PROCESS macro for SPSS, model 1 (moderation), to examine the relationship between maternal communication at menarche, early sexual self-efficacy (treated as continuous), and delayed sexual initiation. Covariates included: age at menarche (continuous), mother-daughter relationship current, mother-daughter relationship at puberty, gender role beliefs, religiosity (categorical, 0 = non-religious, 1 = religious), expectations at menarche (categorical, 0 = no idea, 1 = knew what to expect), maternal tone (positive, negative), and maternal content (factual, “silent”).

A power analysis using G*Power v. 3.1.9.4 indicated that the study was adequately powered ($\alpha = .05$, power $[1 - \beta] = 0.80$), as a total sample size of 127 would be required to adequately power the present study with 12 predictors (11 covariates and one interaction term). Using the formula put forward by Tabachnick and Fidell for testing regression (2013, p. 123), the minimum number of cases would be $N \geq 50 + 8*(12 \text{ independent variables}) = 146$. The sample size for the present study ($N = 175$) exceeded the recommended range of 127 to 146 and was therefore considered adequate. Continuous predictors were mean-centered before computing interaction terms and all predictors were entered into the model simultaneously. Given the size of my sample, bootstrapping (5000 bootstrap samples) was performed in the analysis. The PROCESS macro includes percentile bootstrap confidence intervals as a default technique.

I found that maternal tone, not content, moderated the relationship between my focal antecedent, early sexual self-efficacy (categorical), and delayed sexual initiation. As maternal tone increased, the gap between those who felt comfortable and those who felt uncomfortable about obtaining sexual health information at sexual debut widened with more extreme differences in age at sexual initiation.

I observed a significant interaction effect between positive maternal tone and early sexual self-efficacy in a model predicting delayed sexual initiation ($b = 1.20$, $SE = .55$, odds ratio [OR] = 3.32, $p = .03$). These results are presented in Table 8.

Table 8

Direct Logistic Regression Analysis with Positive Maternal Tone as a Moderator of the Association Between Early Sexual Self-Efficacy and Delayed Sexual Initiation (n = 175)

Predictor	<i>B</i>	<i>S.E.</i>	<i>Z</i>	<i>p</i>	95.0% C.I. for	
					Lower	Upper
Age at menarche (continuous)	.29	.15	1.97	.05	.01	.58
Mother-daughter relationship, current	.43	.31	1.39	.17	-.18	1.05
Mother-daughter relationship, puberty	.14	.47	.31	.76	-.77	1.06
Gender role beliefs (GRBS)	.62	.27	2.32	.02	.10	1.15
Religiosity	1.40	.64	2.20	.03	.15	2.66
Expectations at menarche	-.02	.49	-.04	.97	-.97	.93
Factual maternal content	.14	.47	.30	.76	-.78	1.07
“Silent” maternal content	.16	.32	.50	.62	-.47	.78
Negative maternal tone	.10	.41	.23	.82	-.70	.89
Positive maternal tone	-.54	.39	-1.39	.17	-1.30	.22
Early sexual self-efficacy	.70	.44	1.59	.11	-.17	1.57
Positive maternal tone x Early sexual self-efficacy	1.20	.55	2.17	.03	.12	2.29
(Constant)	.51	.46	1.10	.27	-.40	1.41

Note. Bolded text indicates significance at $p < .05$.

To probe the interaction, I computed simple effects coefficients for three values of positive maternal tone at the 16th, 50th, and 84th percentiles of the distribution. I found a significant interaction between positive tone and early sexual self-efficacy such that at high levels of positive tone early sexual self-efficacy was positively associated with delayed sexual initiation, $b = 1.35$, $SE = .51$, $OR = 3.86$, $p = .008$. Therefore, participants who reported receiving high amounts of positive maternal tone at menarche were more likely to report feeling

comfortable obtaining sexual health information at sexual debut, increasing the probability that they would delay their first experience of sexual intercourse. At mean levels of positive tone ($b = .75$, $SE = .44$, $OR = 2.12$, ns) and low levels of positive tone ($b = .15$, $SE = .53$, $OR = 1.16$, ns), there was a non-significant positive relationship between early sexual self-efficacy and age at first sex (see Figure 2).

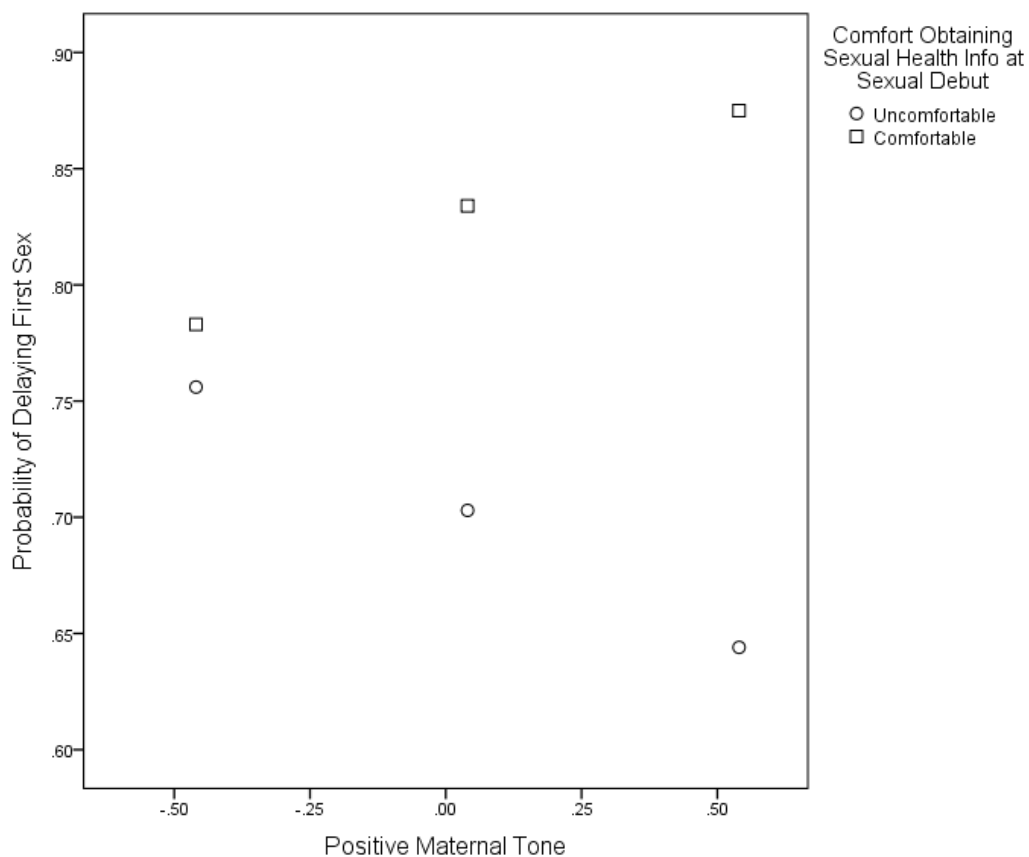


Figure 2. Interaction between positive maternal tone and early sexual self-efficacy in a model predicting delayed first sexual intercourse ($n = 175$).

Results of the Johnson-Neiman analysis offered more detail on the nature of this effect. There was one zone of significance for this model. Starting at .14 of positive maternal tone (where $b = .87$, $SE = .44$, $OR = 2.39$, $p = .05$), I found a significant positive association between early sexual self-efficacy and age at first sex. The association grew in strength and significance to the point where positive maternal tone was 1.54 ($b = 2.55$, $SE = .93$, $OR = 12.81$, $p = .006$).

I also found a significant interaction between negative maternal tone and early sexual self-efficacy in a model predicting delayed sexual initiation ($b = 2.14$, $SE = 1.07$, $OR = 8.50$, $p = .05$). These results are presented in Table 9.

Table 9

Direct Logistic Regression Analysis with Negative Maternal Tone as a Moderator of the Association between Early Sexual Self-Efficacy and Delayed Sexual Initiation (n = 175)

Predictor	<i>B</i>	<i>S.E.</i>	<i>Z</i>	<i>p</i>	95.0% C.I. for	
					Lower	Upper
Age at menarche (continuous)	.31	.15	2.03	.04	.01	.61
Mother-daughter relationship, current	.36	.30	1.19	.24	-.23	.95
Mother-daughter relationship, puberty	.27	.48	.57	.57	-.66	1.20
Gender role beliefs (GRBS)	.73	.28	2.66	.01	.19	1.27
Religiosity	1.33	.61	2.19	.03	.14	2.54
Expectations at menarche	-.08	.0	-.16	.87	-1.05	.89
Factual maternal content	.17	.48	.36	.72	-.76	1.10
“Silent” maternal content	.29	.32	.90	.37	-.34	.91
Positive maternal tone	-.09	.33	-.28	.78	-.74	.55
Negative maternal tone	-.30	.47	-.64	.52	-1.21	.61
Early sexual self-efficacy	1.34	.59	2.29	.02	.19	2.49
Negative tone x Early sexual self-efficacy	2.14	1.07	2.00	.05	.05	4.24
(Constant)	.67	.47	1.42	.16	-.25	1.59

Note. Bolded text indicates significance at $p < .05$.

To probe the interaction, I conducted simple effects coefficients for three values of negative maternal tone at the 16th, 50th, and 84th percentiles of the distribution. There was a significant interaction between negative maternal tone and early sexual self-efficacy such that at mean ($b = 1.14$, $SE = .54$, $OR = 3.13$, $p = .03$) and high ($b = 2.21$, $SE = .90$, $OR = 9.12$, $p = .01$) levels of negative tone, early sexual self-efficacy was positively associated with age at first sex. That is participants who reported receiving mean and high levels of negative maternal tone at menarche were more likely to report feeling uncomfortable about obtaining sexual health

information at sexual debut, increasing the probability that they would initiate sex early. At low levels of negative tone ($b = .07$, $SE = .58$, $OR = 1.07$, ns), there was a non-significant positive relationship between early sexual self-efficacy and age at first sex (see Figure 3).

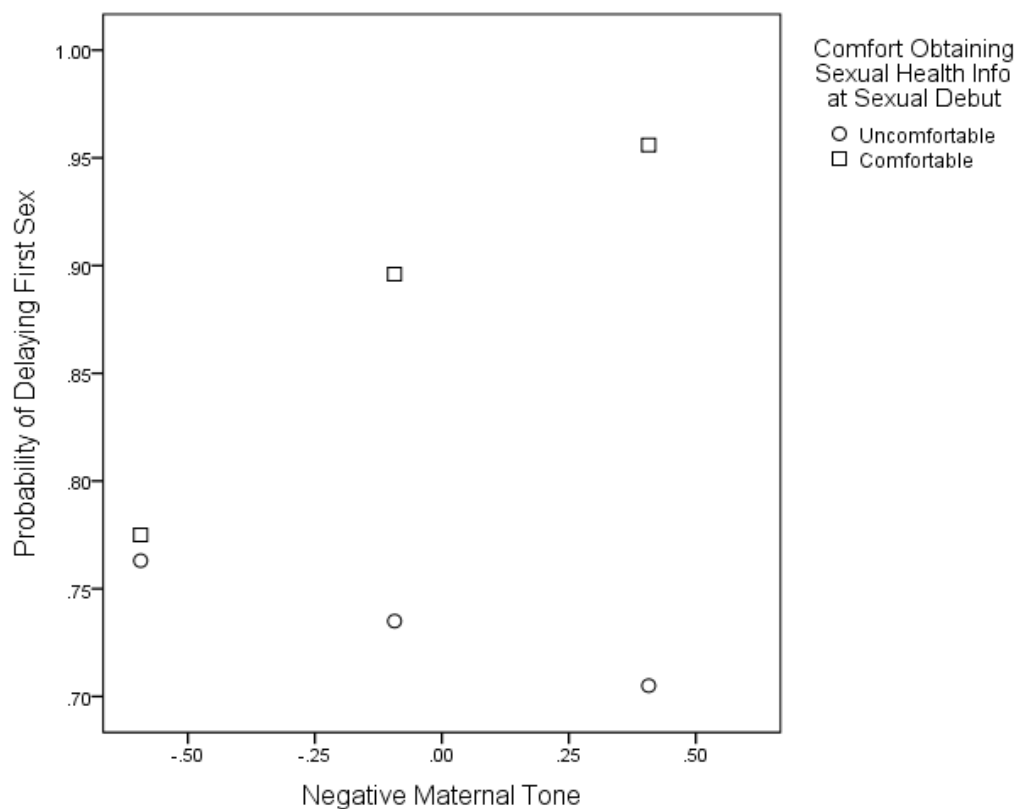


Figure 3. Interaction between negative maternal tone and early sexual self-efficacy in a model predicting delayed sexual initiation ($n = 175$).

Results of the Johnson-Neiman analysis offered more detail on the nature of this effect. There was one zone of significance for this model. Starting at -0.16 of negative maternal tone (where $b = 1.00$, $SE = .51$, $OR = 2.72$, $p = .05$), I found a significant positive association between early sexual self-efficacy and age at first sex. The association grew in strength and significance to the point where negative maternal tone was 1.91 ($b = 5.42$, $SE = 2.42$, $OR = 225.88$, $p = .03$).

When odds ratios were compared, negative maternal tone ($OR = 8.50$) was found to be a stronger moderator of early sexual self-efficacy than positive maternal tone ($OR = 3.32$).

Research question 2b: Does early sexual self-efficacy mediate the association between certain types of maternal communication and delayed first sexual intercourse?

Mediation is a causal process and therefore helps to establish a direction of causal order as well as a possible causal mechanism (Hayes, 2018). Given that menarche generally precedes early sexual self-efficacy and that early sexual self-efficacy precedes age at first sex, a mediation model was tested to see if there was a causal pathway between the communication received from mothers at menarche and age at first sex through early sexual self-efficacy as an intermediary variable. This was accomplished using the PROCESS macro for SPSS (Hayes, 2018), model 4 (mediation). All covariates stayed the same.

A power analysis using G*Power v. 3.1.9.4 indicated that the study was adequately powered ($\alpha = .05$, power $[1 - \beta] = 0.80$), as a total sample size of 123 would be required to adequately power the present study with 11 predictors (no interaction term in this model). Using the formula put forward by Tabachnick and Fidell for testing regression (2013, p. 123), the minimum number of cases would be $N \geq 50 + 8*(11 \text{ independent variables}) = 138$. The sample size for the present study ($N = 175$) exceeded the recommended range of 123 to 138 and was therefore considered adequate.

I mean-centered all continuous predictors and entered them into the model together. Given the size of my sample, bootstrapping (5,000 bootstrap samples) was performed in the analysis. I tested a simple mediation model to examine whether early sexual self-efficacy

mediated the relationship between maternal tone (positive or negative) and delayed sexual initiation.

There was a significant indirect effect of positive maternal tone (but not negative maternal tone) on age at first sex through early sexual self-efficacy. The indirect effect was tested using non-parametric bootstrapping. If the null of 0 were to fall between the lower and upper bound of the 95% confidence interval, then the inference would be that the population indirect effect is 0. On the other hand, if 0 were to fall outside the confidence interval, then the indirect effect would be inferred to be non-zero. (Field, 2013). In this case, the indirect effect ($b = .19$) was statistically significant: 95% CI = (.011, .507). For an illustration of the model, see Figure 4.

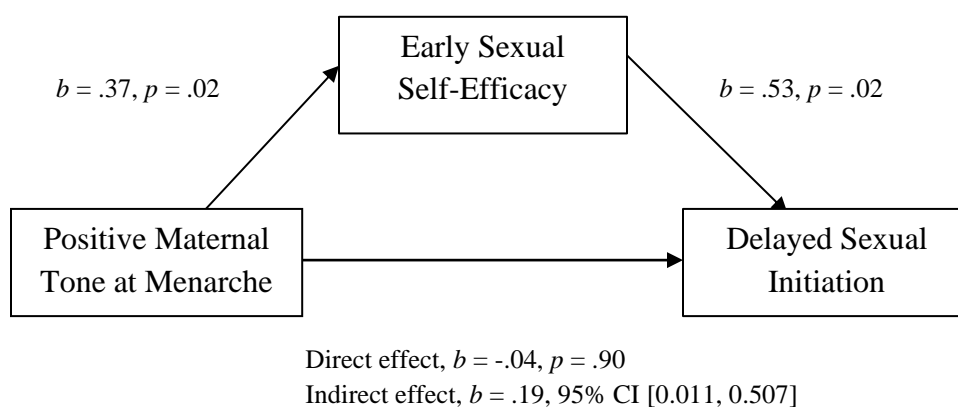


Figure 4. Direct and indirect pathways between positive maternal tone at menarche and delayed sexual initiation with early sexual self-efficacy as a mediator, ($n = 175$).

Research question 3: Is there an association between age at menarche and the type of communication daughters receive from their mothers at menarche?

I conducted independent samples t-tests to determine if an association existed between age at menarche and maternal communication received at menarche (positive tone, negative tone, factual content, “silent” content, and cultural). No statistical associations were observed. However, when independent samples t-tests were performed to examine differences in maternal communication between participants who reported knowing what to expect at menarche and those who reported having no idea, I did observe statistical differences. Indeed, participants who reported not knowing what to expect at menarche were more likely to report having received maternal communication that was lacking in content (“silent”), compared to participants who reported knowing what to expect at this developmental milestone. Positive tone, factual content, and “silent” content varied significantly between these two groups. I found that the strongest effect size was for factual maternal content. No statistically significant differences were observed for cultural communication between these groups (see Table. 10).

Table 10

Independent Samples T-Test Analysis: Maternal Communication at Menarche and Expectations at Menarche (0 = had no idea what to expect, 1 = knew what to expect), (n = 175)

	Group	<i>n</i>	<i>M</i>	<i>SD</i>	Meandiff	<i>t</i>	<i>p</i>	<i>eta</i> ²
Positive Maternal Tone								
Menarche expectations	No idea	40	2.18	.81	.40	2.78	.01*	.04
	Knew	135	2.58	.80				
Negative Tone								
Menarche expectations	No idea	40	1.82	.51	-.13	-1.36	.18	-
	Knew	135	1.68	.55				
Factual Content								
Menarche expectations	No idea	40	2.31	.58	.50	4.23	.001**	.09
	Knew	135	2.81	.67				
“Silent” Content								
Menarche expectations	No idea	40	2.32	.86	-.53	-3.26	.001**	.06
	Knew	135	1.80	.90				
Cultural Communication								
Menarche expectations	No idea	40	1.60	.54	-.07	-.72	.47	-
	Knew	135	1.53	.55				

Note. Bolded text indicates significance at * $p < .05$, ** $p < .01$.

Results from a chi-square test for independence analysis indicated a statistically significant positive relationship between age at menarche (categorical, 0 = 11 years or younger, 1 = 12 years and up) and expectations at menarche (categorical, 0 = had no idea what to expect, 1 = knew what to expect). Participants who reached menarche early were less likely to know what to expect, $\chi^2(1, n = 175) = 4.34, p = .04, phi = .16$. This was a small effect. A similar result was found in the full cohort, $\chi^2(1, N = 223) = 5.80, p = .02, phi = .16$, a small effect.

In addition to not knowing what to expect, early-maturing participants were more likely to report that they felt less comfortable obtaining sexual health information from those they felt close to when they were first becoming sexually active, compared to participants who reached the milestone at a normative age. Results from a t-test analysis indicated that early-maturing participants had lower mean scores for this measure of early self-efficacy. While this result was not statistically significant in the younger cohort ($n = 175$), it was significant in the full cohort ($N = 223$). Indeed, early-maturing participants had lower mean scores on early sexual self-efficacy ($M = 2.02$, $SD = .92$) than participants who reached menarche at a normative age ($M = 2.33$, $SD = 1.01$, $t(221) = 1.97$, $p = .05$), a small effect ($\eta^2 = .02$). This finding indicated that early-maturing participants were more likely to report that they felt less comfortable obtaining sexual health information from those who were close at sexual debut compared to participants who reached menarche at a normative age.

Given that my measure of early sexual self-efficacy was found to mediate the relationship between maternal communication at menarche and delayed sexual initiation (question 2b above), I conducted a direct binary logistic regression analysis to examine the relationship between maternal communication at menarche, age at menarche (continuous), and early sexual self-efficacy as a categorical outcome variable (with 0 = uncomfortable obtaining sexual health information at sexual debut and 1 = comfortable). Due to the relatively small number of participants who were both early maturers *and* early sexual initiators in my target sample, I conducted this analysis using the full cohort ($N = 223$). This helped me to optimize case ratios and avoid complete separation.

Before testing, I conducted univariate analyses for my measure of early sexual self-efficacy to determine which predictors to include following the method recommended by

Hosmer and Lemeshow (2013). First, I conducted t-tests and chi-squared tests to determine if there were any differences for all variables between participants who reported feeling comfortable obtaining sexual health information at sexual debut and those who did not. Those that varied significantly between these two groups to $p < .25$ were retained and were included in the regression model alongside other variables that were relevant to the study.

The final model included the following covariates: gender role beliefs, mother-daughter relationship (at puberty), mother-daughter relationship (current), household income at menarche, religiosity (categorical), cultural communication at menarche, age at first sex (categorical), and menarche expectations (categorical). The focal antecedent, maternal communication at menarche, was treated as a continuous variable. Early sexual self-efficacy, the outcome variable, was treated as a categorical variable, with 0 = uncomfortable and 1 = comfortable.

A power analysis using G*Power v. 3.1.9.4 indicated that the study was adequately powered (alpha = .05, power $[1 - \beta] = 0.80$), as a total sample size of 135 would be required with 14 predictors (13 covariates and one interaction term). Using the formula put forward by Tabachnick and Fidell for regression analysis (2013, p. 123), the minimum number of cases would be $N \geq 104 + 14 \text{ independent variables} = 118$. The sample size for the present study ($N = 223$) exceeded the recommended range of 118 to 135 and was therefore considered adequate. After mean-centering all continuous variables, I tested a simple moderation model for the full cohort ($N = 223$) using the PROCESS macro for SPSS, model 1 (moderation).

I found that age at menarche moderated the relationship between maternal communication at menarche and early sexual self-efficacy while controlling for other variables, including all types of maternal communication at menarche. Specifically, I found a significant interaction effect between age at menarche and factual maternal content, but not maternal tone,

in a model predicting early sexual self-efficacy, $b = -.60$, $SE = .20$, $OR = .55$, $p < .01$. These results are presented in Table 11.

Table 11

Direct Logistic Regression Analysis with Age at Menarche as a Moderator of the Association Between Factual Maternal Content at Menarche and Early Sexual Self-Efficacy (N = 223)

Predictor	B	S.E.	Z	p	95.0% C.I. for	
					Lower	Upper
Gender role beliefs (GRBS)	-.19	.20	-.98	.33	-.58	.19
Mother-daughter, puberty	.89	.38	2.30	.02*	.13	1.6
Mother-daughter, current	-.21	.24	-.89	.37	-.68	.25
Household income at menarche	.29	.14	2.11	.04*	.02	.57
Religiosity (0 = non-religious, 1 = religious)	.57	.41	1.38	.17	-.24	1.37
Cultural communication at menarche	-.34	.36	-1.93	.35	-1.05	.37
Positive maternal tone	.84	.25	3.45	.00**	.35	1.33
Negative maternal tone	-.68	.38	-1.80	.07	-1.42	.06
“Silent” maternal content	.52	.27	1.92	.05	.01	1.04
Expectations at menarche	-.53	.44	-1.22	.22	-1.39	.33
Age at first sex (0 = early, 1 = norm)	.47	.39	1.20	.23	-.30	1.24
Factual maternal content	7.95	2.60	3.07	.00**	2.87	13.04
Age at menarche (continuous)	.20	.11	1.73	.09	-.03	.42
Factual content x Age at menarche	-.60	.20	-2.96	.00**	-.99	-.20
(Constant)	-4.15	1.51	-2.7	.00	-7.12	-1.19

Note. Bolded text indicates significance at * $p < .05$, ** $p < .01$.

To probe the interaction, I computed simple effects coefficients for three values of menarcheal age at the 16th, 50th, and 84th percentiles of the distribution. I found that age at menarche interacted with factual maternal content at menarche such that, at early menarche ($b =$

1.38, $SE = .50$, $OR = 3.97$, $p = .006$), there was a significant positive relationship between factual maternal content at menarche and early sexual self-efficacy (see Figure 5).

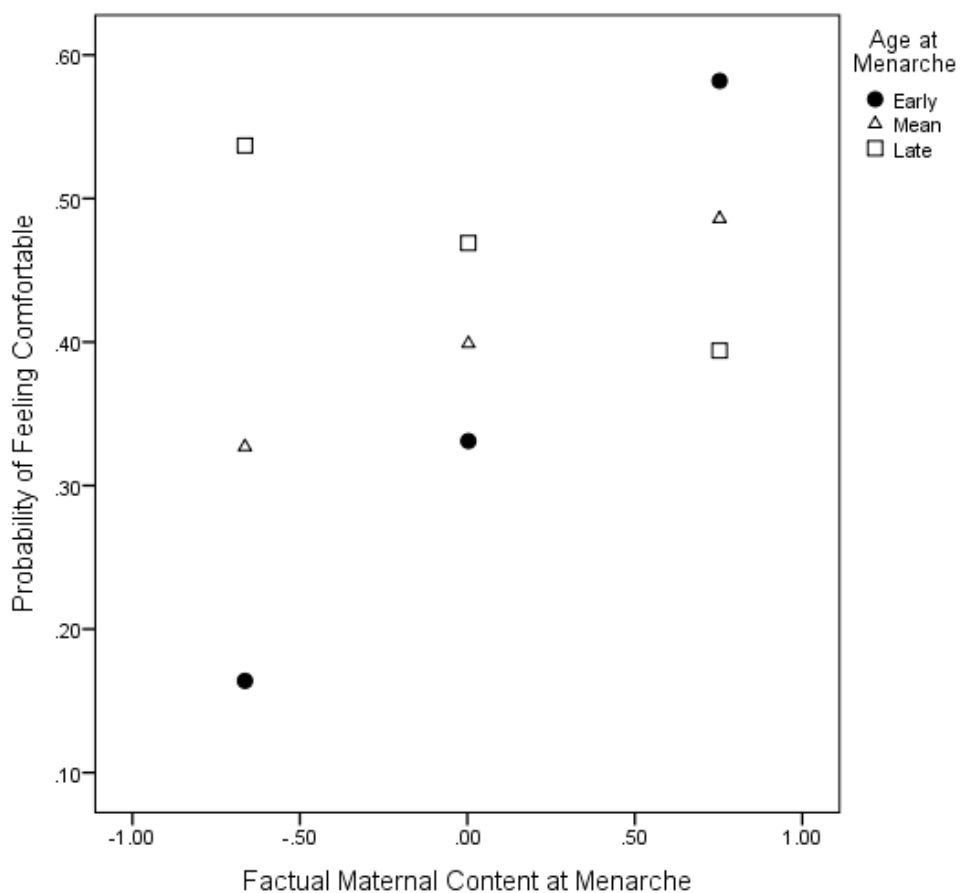


Figure 5. Interaction between age at menarche and factual maternal content at menarche in a model predicting the probability of feeling comfortable about obtaining sexual health information from those who were close at sexual debut ($N = 223$).

Therefore, the effect of factual maternal communication at menarche as a promoter of early sexual self-efficacy was most significant for early-maturing participants. At mean (normative) age at menarche ($b = .47$, $SE = .36$, $OR = 1.60$, $p = ns$) there was a non-significant positive association between factual maternal content at menarche and early sexual self-efficacy. At late maturation ($b = -.41$, $SE = .44$, $OR = .66$, $p = ns$), there was a non-significant negative association between factual maternal content at menarche and early sexual self-efficacy.

Results of the Johnson-Neiman analysis offered more detail on the nature of this effect. There were two distinct zones of significance for this model: at very low levels of the moderator, age at menarche, between 9.00 years (where $b = 2.58$, $SE = .83$, $OR = 13.20$, and $p = <.01$) and 12.06 years (where $b = .75$, $SE = .38$, $OR = 2.12$, $p = .05$), I found a significant positive relationship between factual maternal content at menarche and early sexual subjectivity. The association decreased in both strength and significance as menarcheal age increased. In this zone of significance, very early maturing participants were more likely to feel comfortable about obtaining sexual health information from those they felt close to at sexual debut when they received factual maternal content at menarche.

At late maturation, between 15.48 years (where $b = -1.29$, $SE = .66$, $OR = .3.63$, $p = .05$) and 18.00 years (where $b = -2.80$, $SE = 1.12$, $OR = .06$, $p = .01$), factual maternal communication at menarche became negatively associated with early sexual self-efficacy. In this zone of significance, late-maturing participants were likely to feel comfortable about obtaining sexual health information from those who were close at sexual debut even if they received less factual maternal content at menarche.

I also found that there was an even stronger interaction between age at menarche and “silent” maternal content in a model predicting early sexual self-efficacy, $b = .27$, $SE = .13$, $OR = 1.31$, $p = .04$. These results are presented in Table 12.

Table 12

Direct Logistic Regression Analysis with Age at Menarche as a Moderator of the Association between “Silent” Maternal Content and Early Sexual Self-Efficacy (N = 223)

Predictor	B	S.E.	Z	p	95.0% C.I. for	
					Lower	Upper
Gender role beliefs (GRBS)	-.27	.20	-1.3	.18	-.65	.12
Mother-daughter, puberty	.76	.37	2.06	.04*	.04	1.49
Mother-daughter, current	-.20	.24	-.86	.39	-.67	.26
Household income at menarche	.23	.14	1.70	.09	-.04	.50
Religiosity (0 = non-religious, 1 = religious)	.38	.39	.96	.34	-.39	1.15
Expectations at menarche	-.43	.43	-1.01	.32	-1.27	.41
Age at first sex (0 = early, 1 = norm)	.53	.39	1.37	.17	-.23	1.29
Cultural communication at menarche	-.29	.36	-.81	.42	-.98	.41
Positive maternal tone	.75	.24	3.14	.00**	.28	1.22
Negative maternal tone	-.64	.37	-1.75	.08	-1.36	.08
Factual maternal content	.37	.36	1.02	.31	-.34	1.07
“Silent” maternal content	-3.03	1.4	-1.85	.06	-6.24	.18
Age at menarche (continuous)	.16	.11	1.46	.14	-.06	.38
“Silent” content x Age at menarche	.27	.13	2.03	.04*	.01	.53
(Constant)	-3.58	1.47	-2.43	.02	-6.46	-.69

Note. Bolded text indicates significance at * $p < .05$, ** $p < .01$.

To probe the interaction, I computed simple effects coefficients for three values of menarcheal age, at the 16th, 50th, and 84th percentiles of the distribution. I found that age at menarche interacted with “silent” maternal content such that, at 14 years, where $b = .77$, $SE = .36$, $OR = 2.16$, $p = .03$), there was a significant positive relationship between “silent” maternal content at menarche and early sexual self-efficacy. Therefore, only late-maturing participants whose mothers provided only “silent” content at menarche were likely to feel comfortable about obtaining sexual health information from those who were close at sexual debut.

At mean age at menarche ($b = .37$, $SE = .26$, $OR = 1.45$, ns), there was a non-significant positive association between “silent” maternal content at menarche and early sexual self-efficacy. At 11.00 years ($b = -.05$, $SE = .30$, $OR = .95$, ns), the association between “silent” maternal communication at menarche and early sexual self-efficacy was negative, albeit non-significant. These results suggest that the probability of feeling comfortable about obtaining sexual health information at sexual debut when mothers never discussed menstruation or menarche varied as a function of maturation (see Figure 6).

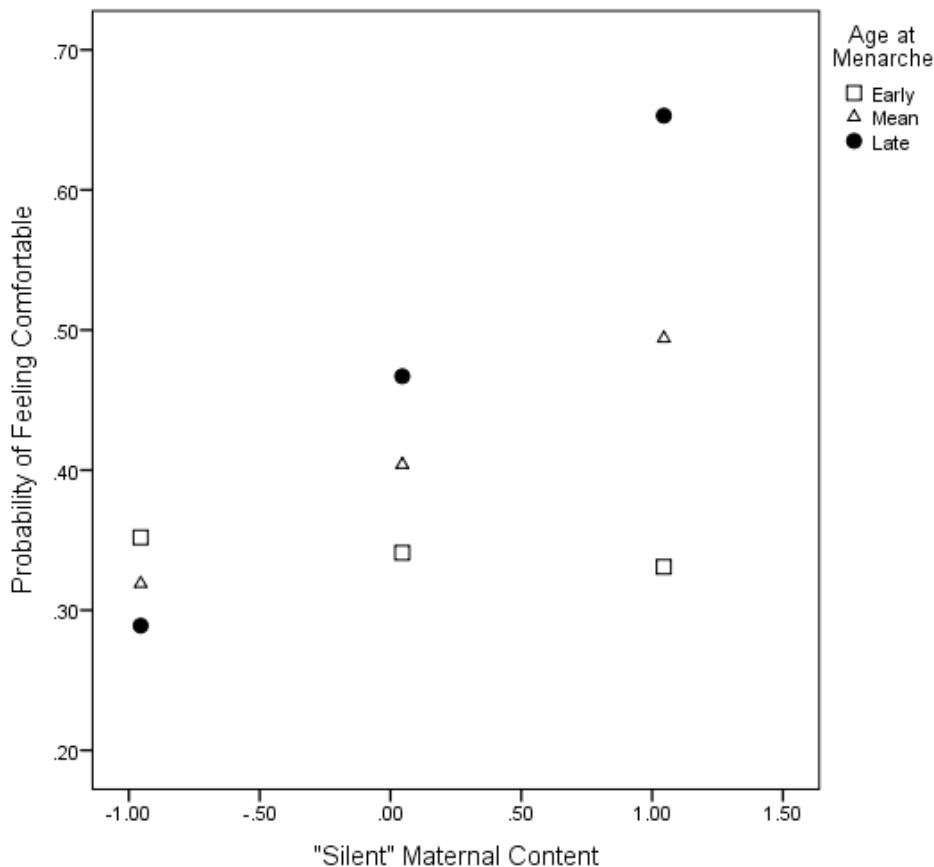


Figure 6. Interaction between age at menarche and “silent” maternal content in a model predicting the probability of feeling comfortable about obtaining sexual health information from those who were close at sexual debut ($N = 223$).

Results of the Johnson-Neiman analysis offered more detail on the nature of these effects. There was one distinct zone of significance for this model: at high levels of the moderator, age at menarche, that is between 13.40 years (where $b = .60$, $SE = .31$, $OR = 1.82$, and $p = .05$) and 16.65 years (where $b = 1.48$, $SE = .66$, $OR = 4.39$, $p = .02$), there was a significant positive relationship between “silent” maternal content at menarche and early sexual self-efficacy. The association increased in both strength and significance as maturity increased. In this zone of

significance, only late-maturing participants were likely to report feeling comfortable about obtaining sexual health information at sexual debut when their mothers never discussed menstruation or menarche. When odds ratios were compared, age at menarche was a stronger moderator in the case of “silent” maternal content ($OR = 1.31$) than in the case of factual maternal content ($OR = .55$).

Secondary Finding

Religiosity and Age at First Sexual Intercourse

Once I identified a significant positive relationship between religiosity and age at first sexual intercourse (see Intercorrelations, Table 5), I tested a moderation model to examine if maternal communication at menarche moderated that relationship. Given the size of the target sample ($n = 175$) and the likelihood of low case ratios for participants who identified as religious *and* who were early sexual initiators, I tested the model using the full cohort ($N = 223$).

After variables were screened (univariate statistics, multi-collinearity) and mean-centered, the final model included the following variables: gender role beliefs (GRBS), mother-daughter relationship at puberty, mother-daughter relationship -current, current sexual self efficacy (FSSI), menstrual attitude-bothersome (MAQ-B), household income, age at menarche (0 = early, 1 = normative), expectations at menarche (0 = no idea, 1 = knew what to expect), early sexual self-efficacy (continuous), factual maternal content, “silent” maternal content. The focal antecedent, religiosity, was treated as categorical (0 = not religious, 1 = religious).

A power analysis using G*Power v. 3.1.9.4 indicated that the study was adequately powered ($\alpha = .05$, power $[1 - \beta] = 0.80$), as a total sample size of 85 would be required to adequately power the present study with 14 predictors (13 covariates and one interaction term).

Using the formula put forward by Tabachnick and Fidell for regression testing (2013, p. 123), the minimum number of cases would be $N \geq 104 + (14) = 118$. The sample size for this analysis was 223 participants, which exceeded the recommended range of 85 to 118 and was therefore considered adequate. Using the PROCESS macro for SPSS, model 1 (moderation), I tested a simple moderation model with data from the full cohort ($N = 223$), using age at first sex as my categorical outcome variable (0 = early, 1 = normative). I found that negative maternal tone moderated the relationship between religiosity and delayed sexual initiation (see Table 13).

Table 13

Direct Logistic Regression Analysis with Negative Maternal Tone as a Moderator of the Association Between Religiosity and Delayed Sexual Initiation (N = 223)

Predictor	B	S.E.	Z	p	95.0% C.I. for	
					Lower	Upper
Gender role beliefs (GRBS)	.26	.21	1.22	.22	-.16	.67
Menstrual attitude, menstruation as bothersome (MAQ-B)	.20	.19	1.07	.28	-.17	.57
Sexual subjectivity (current) (FSSI-sexual self-efficacy subscale)	-.71	.25	-2.84	.00**	-1.20	-.22
Age at menarche, categorical	-.43	.43	-1.02	.31	-1.27	.40
Mother-daughter relationship, puberty	.29	.40	.73	.47	-.49	1.06
Mother-daughter relationship, current	.10	.24	.40	.69	-.37	.57
Early sexual self-efficacy	.60	.21	2.79	.01*	.18	1.01
Religiosity (categorical, 0 = non-religious, 1 = religious)	1.38	.57	2.41	.02*	.26	2.50
Negative maternal tone	.72	.40	1.80	.07	-.07	1.51
Religiosity x Negative maternal tone	-2.21	.78	-2.85	.00**	-3.73	-.69
(Constant)	1.13	.45	2.51	.01	.25	2.02

Note. Bolded text indicates significance at * $p < .05$, ** $p < .01$.

I found that the interaction between negative maternal tone and religiosity was statistically significant, $b = -2.21$, $SE = .78$, $OR = .11$, 95% CI (-3.73, -.69), $p = .004$. To probe the interaction, I computed simple effects coefficients for three values of negative maternal tone at the 16th, 50th, and 84th percentiles of the distribution. I found that religiosity interacted with negative maternal tone such that, at that at low ($b = 2.69$, $SE = .85$, $OR = 14.73$, $p = .002$) and mean ($b = 1.67$, $SE = .61$, $OR = 5.31$, $p = .006$) levels of negative maternal tone, there was a significant positive relationship between religiosity and age at first sex. That is participants who identified as religious were likely to report that they received low and mean amounts of negative maternal tone and that they delayed their first penetrative sexual experience. At high levels of negative tone, there was a non-significant positive relationship between religiosity and delayed sexual initiation, $b = .22$, $SE = .56$, $OR = 1.25$, *ns* (see Figure 7).

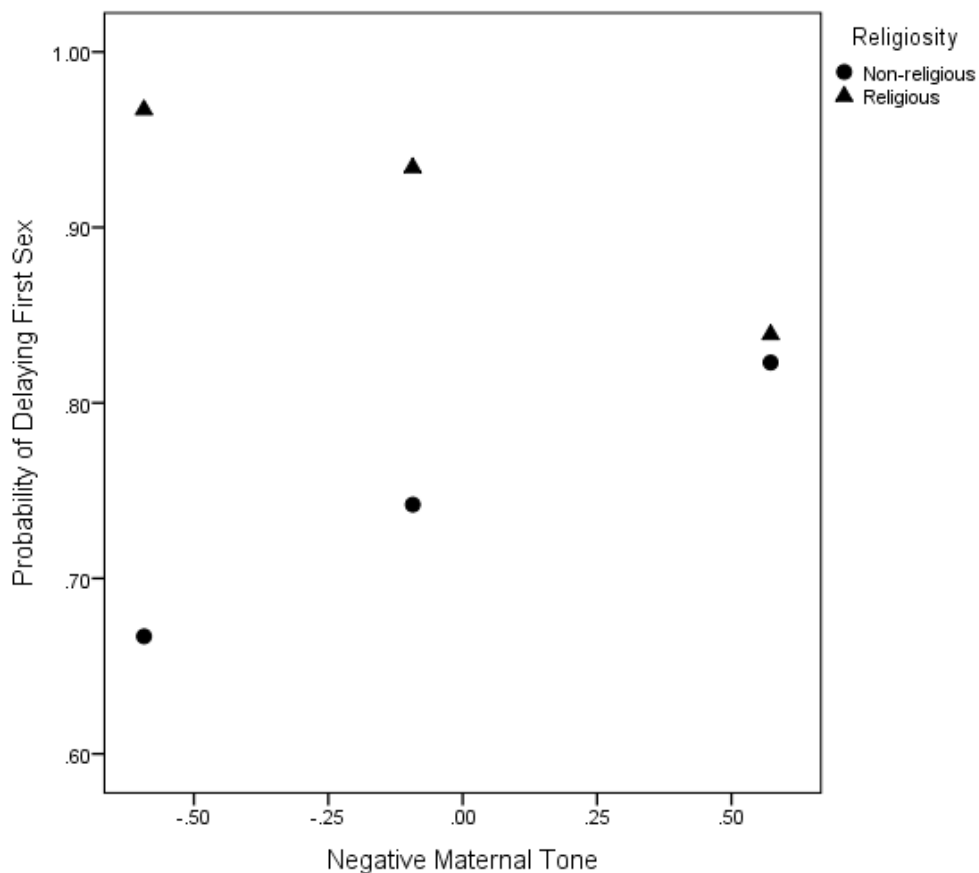


Figure 7. Interaction between negative maternal tone and religiosity in a model predicting delayed sexual initiation ($N = 223$).

Further probing of the interaction using the Johnson-Neiman analysis revealed two distinct zones of significance: as negative maternal tone increased from -0.76 (where $b = 3.06$, $SE = 0.96$, $OR = 21.33$, $p = .001$) to 0.14 (where $b = 1.07$, $SE = 0.54$, $OR = 2.92$, $p = .05$), the positive relationship between religiosity and age at first sex decreased in strength and significance. At the point where negative maternal tone reached 1.77 (where $b = -2.51$, $SE = 1.28$, $OR = 0.08$, $p = .05$), the relationship between religiosity and age at first sex became a significant negative association

that increased in strength and significance until the value of negative maternal tone reached 1.91 (where $b = -2.83$, $SE = 1.38$, $OR = .06$, $p = .04$). This result suggests that religious participants who received very high levels of negative maternal tone at menarche were more likely to be early sexual initiators, whereas religious participants who did not receive this type of maternal communication were more likely to delay their first experience of sexual intercourse.

Chapter 6: Discussion

Just like skin tone, sexual anatomy and physiology are not easily modified or concealed. These aspects of the body and the meanings girls attach to them are likely to inform their self-perceptions and, to varying degrees, how they interact sexually with others as they become sexually active. Using social learning theory as my guide, I anticipated that mothers, as the most proximal female adult with firsthand experience of menstruation, would serve as a model regarding their attitude about being female, their comfort discussing health topics such as menstruation, and their preparation of daughters for menarche. I anticipated that through observational learning, daughters would make meaning of their mothers' messaging, internalizing their mothers' values to form beliefs about their own female body and their sexual self-efficacy, beliefs that would eventually drive sexual decisions.

My study used age at first sexual intercourse as the focal outcome variable. This is because it is widely reported as being a valid and reliable measure compared to other sexual outcomes (Goldberg et al., 2012; Lauritsen & Swicegood, 1997). Whereas much of the research that uses this variable is focused on reducing sexual risk, my study focused instead on identifying factors contributing to sexual competency so that young women can learn how make decisions resulting in healthy, consensual, and pleasurable sex.

Early Sexual Self-Efficacy and Age at First Sexual Intercourse

In my study, early sexual self-efficacy was positively associated with age at first sexual intercourse. That is, study participants who reported they felt comfortable obtaining sexual health information from those who were close when they were first becoming sexually active were more likely to have delayed sexual initiation until they were 16 years or older. In contrast,

participants who reported feeling uncomfortable were more likely to have initiated sexual intercourse early, before they reached the age of 16.

This finding suggests that young women who believe they are entitled to know about sexual health are more likely to obtain it and as a result, are more likely to make healthy sexual decisions, including delaying first sexual intercourse. My finding is consistent with other research tying young women's sexual self-efficacy with safer sex competence. For example, Impett et al. (2006) reported that young women who believed they could act upon their own sexual needs such as enjoying sex, refusing unwanted sex, and insisting on the use of protection were more likely to engage in safer sex behaviors. My findings are also consistent with research concerning formal sex and sexuality education in the United States: students with access to sexual health information in school were more likely to delay sexual initiation and had higher rates of contraceptive use compared to students who were not given factual information or who were instructed to abstain from all sexual activity (Fox et al., 2019; Kirby, 2008; Lindberg et al., 2018).

Early Sexual Self-Efficacy: A Significant and Independent Predictor of Sexual Initiation

I predicted that early sexual self-efficacy would be a significant and independent predictor of delayed sexual initiation in a model that controlled for other variables including the mother-daughter relationship (both current and at puberty), gender role beliefs, religiosity, age at menarche, expectations at menarche, and all four types of maternal communication at menarche (positive tone, negative tone, factual content, and "silent" content). Participants who reported that they felt comfortable obtaining sexual health information when they were first becoming sexually active had significantly greater odds (1.69 times greater) of delaying sexual initiation

compared to participants who reported feeling uncomfortable, even when controlling for all other variables.

This finding is consistent with research concerning youth sexual outcomes and formal education. This body of literature suggests that young people who are given more sexual health information tend to have better sexual outcomes. For example, in a study evaluating the impact of different school curricula on youth sexual outcomes, Kirby (2008) found that youth in states offering comprehensive sex and sexuality education programs were more likely to delay sexual initiation and had higher rates of contraceptive use whereas youth in states offering abstinence-only curricula were more likely to have high pregnancy and birth rates.

The association between young women's early sense of entitlement to knowledge about their body, including sexual health, and age at first sexual intercourse suggests that greater access to information, whether in a formal school setting or at home, may promote better sexual health decisions, including delayed first sexual intercourse.

Maternal Tone at Menarche and Early Sexual Self-Efficacy

I predicted that certain types of maternal communication at menarche, specifically, positive maternal tone and factual content, would moderate the relationship between early sexual self-efficacy and delayed sexual initiation. That is participants whose mothers conveyed a positive tone and factual content at menarche would learn—through observation—the value of becoming an adult female and by extension, the importance of self-care, including obtaining sexual health information at sexual debut. As predicted, I found that the relationship between early sexual self-efficacy and delayed sexual initiation varied as a function of maternal tone at menarche. Moderation was observed even while controlling for other variables, including other types of maternal communication.

I found that the factual content of maternal communication at menarche had no effect on participants' sexual self-efficacy or their age at first sexual intercourse. It may be that in cultures where factual information about women's health and wellbeing is already widely available to girls who are curious, what mothers provide by way of facts at menarche is relatively inconsequential. Indeed, research on the use of online resources by adolescents has found that not only do adolescents consult the Internet for information about sexual health, but they evaluate their sources and use the information they obtain to increase their sexual health knowledge (Simon & Daneback, 2013).

Borrowing terms and principles from social learning theory, it is possible that factual maternal content had low salience relative to the information pubescent girls already had access to outside of the mother-daughter relationship. Participants anticipating the milestone would have had time to research information about what to expect at menarche, and with factual information already widely available, any facts provided by mothers about menstruation or menarche would have seemed redundant and inconsequential.

Both positive and negative maternal tone at menarche had a moderating effect. This finding supported my prediction. Using social learning terms, a positive tone, unlike factual content, would have had high accessibility, high functional value, and high salience, three stimulus characteristics known to increase observational learning (Bussey & Bandura, 1999). Maternal communication conveying that menarche was positive and exciting would stand out (salience) relative to widespread menstrual stigma in the culture at large. Moreover, positive messaging coming from a caregiver who was present in the home day to day (accessibility), and who was considered credible for having firsthand experience of menstruation (functional value), would further increase the likelihood of observational learning.

In my study, I found that a negative tone had an even stronger moderating effect than a positive tone. It may be that when mothers' beliefs and attitudes are negative, these align more closely with menstrual stigma that is commonly prevalent in the wider culture. Prevalence, another stimulus characteristic thought to increase observational learning, would explain why participants were more likely to internalize negative tone as they formed beliefs related to sexual self-efficacy.

Early Sexual Self-Efficacy as a Mediator

According to Hayes (2018), evidence of an association between the antecedent variable and the outcome variable in a mediation model is not required as a precondition for explaining causation. Therefore, even though there was no direct effect observed between positive maternal tone and delayed sexual initiation, I tested a simple mediation model to examine whether early sexual self-efficacy mediated the effect of maternal tone on sexual initiation. I found that early sexual self-efficacy did act as a mediator, even when controlling for other variables.

Mediation offers a causal explanation, a possible mechanism for explaining how maternal tone at menarche promotes or inhibits sexual initiation. As such, the results of my mediation analysis suggest that mothers serve as unwitting agents of their daughters' sexual socialization by promoting or inhibiting their daughters' emerging sexual self-efficacy. For most girls, several years elapse between menarche and first sexual intercourse, therefore the results of this analysis provide evidence that what mothers communicate about menarche being a positive and exciting milestone indirectly affects daughters' decisions regarding when to engage in first sexual intercourse by promoting or inhibiting early sexual self-efficacy.

In my study, the effects of negative maternal tone at menarche on sexual initiation were not mediated by early sexual self-efficacy. Even though participants whose mothers conveyed a

negative tone at menarche reported feeling less comfortable about obtaining sexual health information at sexual debut, the results of mediation analysis suggest that it was not unease about obtaining sexual health information that explained early sexual initiation. Perhaps other factors that were not controlled in this study led these participants to engage in early first sexual intercourse. For example, depressive symptoms experienced at sexual debut might have led these participants to prioritize their partners' sexual satisfaction over their own health in order to preserve their relationships. This explanation would be consistent with research linking depressive symptoms in young women with early sexual initiation. Longmore et al. (2004) identified depressive symptoms as a unique risk factor. More recently, Price and Hyde (2009) identified depressive symptoms as one of several variables linked to early sexual initiation in a proposed model of cumulative risk (Price & Hyde, 2009).

Finally, mediation analysis showed that early sexual self-efficacy did not act as a mediator in the relationship between maternal content at menarche and age at first sexual intercourse. This finding suggests that factual information from mothers about the meaning of menstruation, the risks of pregnancy, or even the act of sex itself may not be necessary for helping daughters to delay sexual initiation. Rather, a positive tone may be sufficient for helping girls to value their changing bodies and feel comfortable about obtaining sexual health information when they need it.

Age at Menarche and Maternal Communication

Consistent with research linking age at menarche and negative sexual outcomes, I observed that early-maturing participants in my study were more likely to initiate sex before age 16, compared to their normative counterparts. However, my findings concerning the type of communication these participants received from their mothers at menarche did not fully align

with my expectations. I predicted that there would be significant differences in maternal communication at menarche between early-maturing and normative participants. Specifically, I predicted that early-maturing participants would report having received “silent” content from their mothers. Instead, I found no measurable differences in maternal communication between early-maturing and normative participants.

Upon closer inspection of the data, I observed that early-maturing participants were more likely to report that they had no idea what to expect at menarche compared to the other participants. This finding suggests that early menarche may catch girls—and their mothers—off-guard. When this happens, mothers may not start offering guidance and support until the milestone is reached. This interpretation would explain why early-maturing participants were more likely to report feeling underprepared.

The research concerning ethnic-racial socialization by parents of color suggests that parents tailor their messaging about race to match the perceived needs of their children. I expected that mothers of early-maturing girls would likewise tailor their messaging to match the perceived maturity of their daughters. What I found suggests that early maturing girls are socialized differently as they transition through puberty compared to girls who reached the milestone with plenty of time to prepare. Early-maturing girls may receive less information and guidance from their mothers in the time leading up to this milestone. However, rather than intentionally withholding information from their daughters, mothers of early-maturing girls may simply find themselves unable to provide timely information due to menarche arriving earlier than expected.

In my study, early-maturing participants were not only more likely to initiate sex early; they were also more likely to report that they were uncomfortable obtaining sexual health

information at sexual debut compared to their normative counterparts. Through logistic regression analysis, I determined that age at menarche moderated the relationship between maternal content at menarche and comfort obtaining sexual health information at sexual debut. Accordingly, maternal communication that was informative helped early-maturing girls to feel more comfortable about obtaining sexual health information once they reached sexual debut. On the other hand, maternal communication that was lacking (“silent” content) was associated with girls feeling uncomfortable. Age at menarche did not have a moderating effect for maternal tone.

Given that most girls consult their mothers first upon reaching menarche, factual information coming from mothers is likely to be especially helpful for early-maturing girls. Borrowing terms from social learning theory, this type of communication coming from a proximal female role model in the absence of any other information would be considered a salient stimulus and therefore, one could expect social learning to take place. Maternal tone would be less relevant to these girls and consequently, social learning would be unlikely. This would explain why age at menarche had a moderating effect on maternal content, but not tone, leading to differences in early sexual self-efficacy.

Researchers on the association between early menarche and negative youth sexual outcomes have identified likely antecedents (Allison & Hyde, 2013; Karapanou & Papadimitriou, 2010; Moore et al., 2014) and put forth several causal pathways (Allison & Hyde, 2013; Moore et al., 2014). However, no studies to date have considered the effects of maternal communication at menarche. Given the link I established between early sexual self-efficacy and delayed sexual initiation, it may be that girls who reach menarche early simply lack factual information that would help them to take better care of themselves, including making healthy sexual decisions. Knowing that facts are helpful for early-maturing girls, caregivers can take

steps to provide communication that is informative as a means of promoting healthy sexual decision-making at sexual debut.

Maternal Tone at Menarche and Religiosity

A secondary finding from my study concerned participants who identified as religious. Consistent with other research on youth sexual outcomes (Lara & Abdo, 2015; McCree, Wingood, DiClemente, Davies, & Harrington, 2003; Miller et al., 1997; Rew, Arheart, Thompson, & Johnson, 2013; Zaleski & Schiaffino, 2000), I found that religiosity had a protective effect on age at first sexual intercourse. That is participants who identified as religious were more likely to delay sexual initiation. Having already established that maternal tone moderated the relationship between early sexual self-efficacy and delayed sexual initiation, I investigated whether negative maternal tone offset the protective effects of religiosity.

I found that the relationship between religiosity and delayed sexual initiation did indeed vary as a function of maternal tone at menarche. Participants whose mothers conveyed that menstruation and menarche were shameful or problematic were more likely to initiate sex early. It may be that young women raised in religious households whose mothers conveyed that menstruation was problematic or shameful inferred from this type of communication that their developing body was shameful. As a result, these young women may have found it more difficult to practice self-care, including obtaining sexual health information when they needed it at sexual debut. Consequently, these young women may have been put at a disadvantage regarding their ability to make healthy sexual decisions. This could explain why they were more likely to initiate sex early compared to other religious participants whose mothers did not use a negative tone at menarche.

Maternal content did not have the same moderating effect. It may be that girls who experience menarche at a normative age already have access to facts about menstruation and menarche through school and the wider culture, whether they are religious or not. My findings, while preliminary, offer a new angle for understanding sexual outcomes for women who identify as religious.

Conclusions

Until recently, research about youth sexual outcomes was focused primarily on identifying antecedents of risk, with solutions directed mostly at dissuading young people from engaging in sexual activity. Rather than educating youth about how to experience sex that is positive and healthy, the majority of formal sex and sexuality education programs in the United States urge youth to avoid or delay sexual activity or risk a potentially negative outcome. The risk framework persists, despite conclusive evidence that in the absence of information about sexual development and sexual health, most youth—even low-risk youth—will initiate sex early and engage in unprotected sexual encounters (Kann et al., 2018; Lowry, Dunville, Robin, & Kann, 2016; Palmer et al., 2016; Vasilenko et al., 2014). Public health statistics indicate that efforts to dissuade youth from engaging in sexual activity are ineffective: rates of STI infections continue to climb, with a growing number of these cases identified as antibiotic-resistant (CDC, 2018).

Thankfully, changes to the definition of sexual health (WHO, 2002) have led to a gradual shift in the way youth sexuality is conceptualized, with research increasingly focused on sexual competency rather than risk (Fortenberry, 2014; Lefkowitz & Vasilenko, 2014; Mastro & Zimmer-Gembeck, 2015). By adopting a competency framework, today's research positions young people at the center of their sexual decision-making (Palmer et al., 2016). As the subjects

rather than the objects of their sexual experience, young people, when given the right tools and information, are capable of making healthy sexual decisions. Indeed, evidence from studies comparing different approaches to sex education (formal and informal), suggests that youth who believe they are capable of making informed sexual decisions are more likely to delay sexual initiation compared to youth who believe they are not capable (Lara & Abdo, 2015; Sedgh et al., 2015; Vanwesenbeeck et al., 2016).

My study offers new insight into early socialization processes that are promotive of sexual competence in young women. I found that certain types of maternal communication at menarche may help young women to feel comfortable about obtaining sexual health information once they become sexually active. Young women whose mothers provided communication that was positive in tone at menarche were more likely to delay sexual initiation. On the other hand, young women whose mothers provided communication that was negative in tone were more likely to initiate sex early. Unlike other studies that assessed current levels of sexual self-efficacy, I used a measure of emerging sexual self-efficacy. This strategy allowed me to assess how comfortable participants felt about obtaining sexual health information in the time preceding sexual initiation. By using a natural temporal sequence of developmental milestones (age at menarche followed by age at first sexual intercourse), I could tentatively infer a causal pathway linking observational learning at menarche and sexual initiation. Finally, by separating different aspects of maternal communication based on tone and content, I was able to pinpoint which types of communication were most beneficial to young women and which types were potentially detrimental.

Results from my study suggest that young women learn, through observing their mothers' handling of menarche, whether developing an adult female body is something to celebrate or

something to be ashamed of. This early determination informs girls' earliest beliefs about sexual self-efficacy, starting with whether they are entitled to know about sexual health at the appropriate time. In my study, young women who felt comfortable about obtaining sexual health information when they were first becoming sexually active were more likely to delay sexual initiation, whereas those who felt uncomfortable were more likely to initiate sex early. These findings demonstrate that principles of social cognitive learning theory do extend to learning at menarche, with mothers playing a pivotal role as models of the adult female experience.

My findings may provide potential new avenues for improving sexual outcomes in young adult women, who are disproportionately affected by STIs (CDC, 2018; Sedgh et al., 2015; UNICEF, 2001). Given the association between early sexual initiation and STI risk, strategies for helping young women to delay sexual initiation can help to mitigate that risk. However, as previously discussed, strategies that are focused exclusively on risk reduction have not been successful. Strategies for promoting sexual self-efficacy may be more effective. Findings from my study suggest that young women who grow up knowing they are entitled to learning about sexual health information will know how to engage in sexual activity that is not only healthy, but pleasurable. My study shows that maternal communication at menarche that is positive in tone can help girls to develop this type of early sexual self-efficacy.

I found that the effects of maternal tone and content at menarche extended even to daughters who reached the milestone early. Most early-maturing participants had no idea what to expect when they experienced menarche. Previous research found that girls without advanced preparation experienced confusion and worry in the short-term. In the long-term, these girls were more likely to have a negative menstrual attitude and suffer worse menstrual symptoms. In my study, early-maturing participants whose mothers did not provide factual information at

menarche were more likely to grow up feeling uncomfortable about obtaining sexual health information when they needed it. As a result, these young women may have had a difficult time accessing information that would help them to make healthy sexual decisions. Given noted declining secular trends in age at menarche, there is every reason to anticipate that more girls will experience negative sexual outcomes without guidance, factual information, and support.

A direct conversation about sexual intimacy can be difficult for adults and awkward for youth, especially around the time of puberty (Guilamo-Ramos et al., 2008; Holman & Kellas, 2015; Holman & Koenig Kellas, 2018). However, findings from my study show that while direct discussion about sex and safer sex practices at menarche could be beneficial, it may not be necessary for promoting healthy sexual development. My study shows that for most girls to feel comfortable about obtaining sexual health information at sexual debut, they need to hear that menstruation and menarche are a positive, natural, and healthy part of being female. Those who do are more likely to pursue answers to questions about sex and sexuality when they feel ready. For example, one could expect that when girls are about to receive their first vaccination against the Human Papilloma Virus (HPV), those whose mothers provided guidance, information, and support at menarche, will be more likely to ask their pediatrician for more information about the vaccine.

Educating mothers about the long-term benefits of providing guidance and support related to menstruation at menarche could improve sexual outcomes for all young women. Effective interventions might involve educating caregivers of girls, especially mothers, about the role they can play in promoting their daughters' healthy sexual development. Well-child visits around the time of puberty could include guidelines and recommendations on the benefits of communication that is both positive and informative at menarche. Likewise, guidance could be

provided on the deleterious effects of conveying shame or withholding information at this milestone.

My findings pertaining to early-maturing girls, while tentative, suggest that early-maturing girls, who are often caught unawares, will benefit from maternal communication that is factual at menarche. Maternal tone for these girls may matter less.

Limitations

There are several limitations to consider before my results can be generalized to all young women. First, my sample was quite small and relatively homogenous. Consequently, my results should be considered preliminary. My sample was comprised primarily of affluent, college-educated, White women who originated predominately from North America. Narrow sampling would have affected measures like maternal education, religiosity, household income, and even cultural prescriptions related to menstruation and menarche. Additionally, a small sample size limited the number of possible analytic techniques to simple moderation and mediation models due to insufficient numbers for subgroups (early sexual initiators, early-maturing, religious). Therefore, future research would benefit from assessing the experience of a much larger and more diverse group of women. This would also permit the use of more complex analytical models.

Due to concerns about low representation and possible separation in logistic regression, I used the full cohort ($N = 223$) for two of the analyses, one concerning early-maturing participants and one concerning participants who identified as religious. The full cohort included participants who were older than 26 and who had more lived experience. Therefore, the results of this analysis should be interpreted with caution. Future research using larger samples of women aged

18 to 26 would be needed to confirm my findings concerning both early menarche and the protective effects of religiosity.

Second, my study relied on self-report. This approach was designed to remove barriers around topics that are sensitive and socially taboo. However, as with most self-report survey methods, there is a risk that participants will respond to survey questions in a manner consistent with social desirability bias, that is in a way that presents them in a more favorable light. To that end, participants in my study might have overreported traits and behaviors that they believed were positive and underreported those they believed were negative.

Third, my study used an online platform that could only be accessed using an electronic device (computer, tablet, cell phone) with access to the Internet. This format was intended as a way of engaging more youth, who are typically accustomed to using these technologies. However, not all young people have access to these technologies or to the Internet. Youth without this type of access—many from lower-income brackets—would have been excluded from my study. Therefore, future research would need to offer a range of methods for accessing the survey so that more participants could be included.

Fourth, my study used a single-item measure to reflect early sexual self-efficacy. Future research would benefit from including more items to more accurately assess and validate this construct.

Fifth, my study aimed to examine socialization processes at menarche between mothers and daughters. However, for convenience, my study relied on daughters as single informants. As a result, my findings are one-sided and may be biased. Future research concerning maternal socialization at menarche should include mother-daughter pairs.

Sixth, I used a retrospective recall method to evaluate age at menarche, age at first sexual intercourse, and menarcheal experience. This involved having participants evaluate their relationship with their mother at puberty as well as the tone and content of communication their mothers conveyed at puberty. Retrospective recall, as a research method, poses several challenges. The accuracy of memory is known to deteriorate with time. However, the degree of accuracy has been found to depend on the item being recalled (Berney & Blane, 1997). Prior research suggests that recall for age at menarche (Must et al., 2002; Siegel et al., 2019) and age at first sexual intercourse (Goldberg et al., 2012; Lauritsen & Swicegood, 1997) are mostly accurate across time. To assess menarcheal experience, I limited most of my analyses to data from participants who were 26 or younger. Their experience of menarche would have been relatively recent and their sexual experience, relatively limited.

Not only can the memory of events deteriorate over time, but recall can be biased by current events and emotional states (Bower, 1981). For example, participants who bickered with their mother just before taking my survey might have assessed their mother-daughter relationship as poor, based on their current relationship issues and their current emotional state, despite their relationship being otherwise satisfactory. Future research would rely on data from mother-daughter dyads so that recollections could be corroborated.

Finally, my research used a cross-sectional methodology to study developmental effects. In general, one cannot infer a direction of causality based on correlations alone without a longitudinal methodology. However, because I followed a natural temporal sequence connecting age at menarche, emerging sexual self-efficacy, and age at first sexual intercourse, I was able to draw tentative inferences and propose a causal pathway.

Recommendations for Future Research

In addition to the recommendations outlined above, future research on young women's sexual outcomes would benefit from examining menarcheal socialization across contexts. For example, one could study how same-sex parents raise their daughters, looking specifically at preparation for menarche in households with two mothers, compared to households with two fathers. This line of research might offer insight regarding whether adult role models without firsthand experience of menstruation can be just as effective in socializing daughters at menarche through the use of positive and factual communication. Similarly, one could study menarcheal socialization processes in ethnic-racial minority families. Parents in these families may anticipate that their children will face multiple simultaneous pressures, like racial *and* gender discrimination. As a result, they might use a different approach to socialize their daughters.

For my study, I chose to focus on age at first sexual intercourse as a measure of sexual decision-making. This is because, unlike other sexual outcomes, it is not affected by previous sexual experience (Lauritsen, 1997) and is widely considered a reliable measure (Goldberg, 2012). However, it would be interesting to know whether early sexual self-efficacy is associated with other types of sexual outcomes, such as condom use behavior, STIs, and comfort discussing sexual health with sexual partners or medical professionals.

My study focused specifically on maternal socialization of girls at menarche. This is because social learning theory offers a clear framework for studying observational learning between children and their same-gendered parent. However, fathers also socialize girls (DelPriore, Schlomer, & Ellis, 2017; Diiorio et al., 1999; Guilamo-Ramos, Bouris, et al., 2012; Rosenthal & Shirley Feldman, 1999). Therefore, it would be interesting to examine the

contributions that fathers make in girls' sexual socialization. In particular, one could examine socialization by fathers raising daughters as single parents or by fathers in tandem with mothers.

My study focused only on female sexual socialization. Not only are females worst affected by negative sexual outcomes, but menarche, as a measurable and near-universal milestone, is an experience that draws girls to their most proximal female caregiver for guidance. This interaction provides a natural paradigm for examining socialization effects for pubescent girls. While boys do not experience a universal milestone equivalent to menarche, they, too, are socialized in ways that likely facilitate or impede their sexual outcomes. Therefore, future studies investigating youth sexual outcomes might focus on identifying unique features of boys' sexual socialization experience.

In my study, I found that factual information (factual content) had no effect on sexual self-efficacy for participants who experienced menarche at a normative age. I rationalized that girls who reached the milestone as expected had time to prepare and that, given the prevalence of information in the wider culture, this would make factual information from mothers redundant. However, my participants were mostly White, affluent, college-educated, and fully engaged in a culture saturated with information about women's health. Future studies might test this rationale and examine whether factual information from mothers at menarche is promotive of early sexual self-efficacy in cultures where access to women's health information is limited. In this type of cultural context, maternal communication at menarche that is informative could prove more meaningful and therefore beneficial to girls.

Summary of Key Findings

The purpose of the present study was to investigate the direct and indirect effects of maternal communication at menarche on early sexual decision-making. The following are key findings based on a sample of 175 young women ages 18 to 26 (unless otherwise indicated):

- ***Nearly half (44.6%) of the participants reported that they went to their mothers preferentially for guidance and support at menarche.*** Those who received positive communication from their mothers at menarche were more likely to report that they were currently comfortable discussing their genitalia and STI testing with medical providers and that they were currently comfortable discussing their menstrual status with sexual partners. Nearly one quarter (22.9%) of the participants reported that they had no idea what to expect when they reached menarche. These participants were more likely to report that they received communication from their mothers that was negative in tone.
- ***Early Sexual Self-Efficacy was Associated with Delayed Sexual Initiation.*** Participants who felt comfortable obtaining sexual health information when they were first becoming sexually active were more likely to delay first sexual intercourse until they were 16 or older. On the other hand, participants who felt uncomfortable about obtaining sexual health information were more likely to engage in their first experience of sexual intercourse before they turned 16.
- ***Early Sexual Self-Efficacy was a Significant and Independent Predictor of Delayed First Sexual Intercourse.*** Using binary logistic regression, I established that early sexual self-efficacy was a significant predictor of delayed sexual initiation, even when controlling for other variables such as age at menarche, the perceived quality of the

mother-daughter relationship, gender role beliefs, and religiosity (among others). Other predictors in this model were gender role beliefs, religiosity, and age at menarche.

- ***Positive Maternal Tone Moderated the Relationship Between Early Sexual Self-Efficacy and Delayed First Sexual Intercourse.*** For participants who reached menarche at a normative age (at around 12), positive maternal communication at menarche was found to moderate the relationship between early sexual self-efficacy and delayed sexual initiation. Maternal communication that was informative (factual content) did not moderate the relationship.
- ***Early Sexual Self-Efficacy was Found to Mediate the Relationship Between Positive Maternal Tone and Delayed First Sexual Intercourse*** Any effects of positive maternal communication on age at sexual initiation were likely due to participants feeling comfortable about obtaining sexual health information from those who were close when they were first becoming sexually active.
- ***Age at Menarche Moderated the Relationship Between Factual Maternal Content and Early Sexual Self-Efficacy in the Full Cohort (N = 223).*** Age at menarche was found to moderate the relationship between maternal factual content and early sexual self-efficacy. Accordingly, early-maturing participants whose mothers provided facts and information at menarche were more likely to report that they felt comfortable obtaining sexual health information from those who were close at sexual debut, whereas early-maturing participants whose mothers never discussed menarche or menstruation (“silent” content) were more likely to report feeling uncomfortable.
- ***Negative Maternal Tone at Menarche Moderated the Relationship Between Religiosity and Delayed Sexual Initiation in the Full Cohort (N = 223).*** Participants who identified

as religious were more likely to delay sexual initiation. However, negative communication from mothers at menarche was found to offset this protective effects of religiosity. When mothers conveyed that menstruation and menarche were embarrassing and shameful, their daughters were more likely to initiate sex before age 16 compared to religious participants whose mothers did not convey this type of communication at menarche.

Appendix A
Institutional Review Board Approvals
Original IRB Approval

SYRACUSE UNIVERSITY



INSTITUTIONAL REVIEW BOARD
 MEMORANDUM

TO: D. Bruce Carter
DATE: May 4, 2018
SUBJECT: Determination of Exemption from Regulations
IRB #: 18-098
TITLE: *Maternal Socialization at Menarche, Sexual Subjectivity, and Sexual Decision-Making Among Women in Early Adulthood*

The above referenced application, submitted for consideration as exempt from federal regulations as defined in 45 C.F.R. 46, has been evaluated by the Institutional Review Board (IRB) for the following:

1. determination that it falls within the one or more of the five exempt categories allowed by the organization;
2. determination that the research meets the organization's ethical standards.

It has been determined by the IRB this protocol qualifies for exemption and has been assigned to category 2. This authorization will remain active for a period of five years from **May 3, 2018** until **May 2, 2023**.

CHANGES TO PROTOCOL: Proposed changes to this protocol during the period for which IRB authorization has already been given, cannot be initiated without additional IRB review. If there is a change in your research, you should notify the IRB immediately to determine whether your research protocol continues to qualify for exemption or if submission of an expedited or full board IRB protocol is required. Information about the University's human participants protection program can be found at: <http://orip.syr.edu/human-research/human-research-irb.html> Protocol changes are requested on an amendment application available on the IRB web site; please reference your IRB number and attach any documents that are being amended.

STUDY COMPLETION: Study completion is when all research activities are complete or when a study is closed to enrollment and only data analysis remains on data that have been de-identified. A Study Closure Form should be completed and submitted to the IRB for review ([Study Closure Form](#)).

Thank you for your cooperation in our shared efforts to assure that the rights and welfare of people participating in research are protected.

Tracy Cromp, M.S.W.
 Director

DEPT: FALK Human Development & Family Science, 144 White Hall

STUDENT: Jennifer King

IRB Addendum Approval

SYRACUSE UNIVERSITY

INSTITUTIONAL REVIEW BOARD
MEMORANDUM

TO: D. Bruce Carter
DATE: September 12, 2018
SUBJECT: Amendment for Exempt Protocol
AMENDMENT#: 1- Change in and/or Addition of Research Instruments/Tools
IRB #: 18-098
TITLE: *Maternal Socialization at Menarche, Sexual Subjectivity, and Sexual Decision-Making Among Women in Early Adulthood*

Your current exempt protocol has been re-evaluated by the Institutional Review Board (IRB) with the inclusion of the above referenced amendment. Based on the information you have provided, this amendment is authorized and continues to be assigned to category 2. This protocol remains in effect from **May 3, 2018** to **May 2, 2023**.

CHANGES TO PROTOCOL: Proposed changes to this protocol during the period for which IRB authorization has already been given, cannot be initiated without additional IRB review. If there is a change in your research, you should notify the IRB immediately to determine whether your research protocol continues to qualify for exemption or if submission of an expedited or full board IRB protocol is required. Information about the University's human participants protection program can be found at: <http://researchintegrity.syr.edu/human-research/> Protocol changes are requested on an amendment application available on the IRB web site; please reference your IRB number and attach any documents that are being amended.

STUDY COMPLETION: The completion of a study must be reported to the IRB within 14 days.

Thank you for your cooperation in our shared efforts to assure that the rights and welfare of people participating in research are protected.

Tracy Cromp, M.S.W.
Director

DEPT: FALK Human Development & Family Science, 144 White Hall

STUDENT: Jennifer King

Appendix B

Recruitment Materials

The Girls to Women Study, led by researchers at Syracuse University, is focused on understanding what young women learn at puberty about being female and how this influences early sexual decisions. By participating, you will be making an important contribution to this understanding!



The Girls to Women Survey takes approximately 20 minutes to complete online and is anonymous. It can be completed on a mobile device or home computer. If you are interested in participating in this study, please click the following link:

<https://bit.ly/2EtqRSI>

Please feel free to share this link if you know other young women who would like to participate. The more participants we have, the better!

Thank you for your interest.

Jenn

*Jennifer King, MS, LMFT
PhD Candidate
Human Development & Family Science
Syracuse University*

Appendix C

Invitation to Participate

The Girls to Women Survey

Start of Block: Consent Form

The Girls to Women Survey

Syracuse University

Department of Human Development &
Family Science

INVITATION TO PARTICIPATE

Dear Prospective Participant:

The following study is designed to investigate various aspects of your experience of puberty and sexual development.

CAN I PARTICIPATE?

In order to participate in the Girls to Women research study, all of the following conditions must be true:

1. You are 18 years of age or older.
2. You were identified as female at birth and experienced menarche (a first menstrual period).
3. You are sexually active (that is, you have had at least one experience of oral, anal, or vaginal sexual activity).

WHAT WILL I BE ASKED TO DO?

You will be asked to complete one online survey. This can be done on a computer or mobile device. The survey includes some basic demographic questions as well as questions about your experience of puberty, your relationship with your mother or primary female caregiver, and your sexual decision-making since you became sexually active. Some of the questions may seem quite personal, but please remember that information will be encoded and kept strictly confidential. All data, once collected, will be used for educational purposes only.

There are no wrong answers. The survey will take approximately 30 minutes to complete and can be completed in multiple sittings.



BENEFITS OF PARTICIPATING

Through this study you will have the opportunity to evaluate your life experience. Any insight gained through your participation in this study may help you to make choices that are beneficial to your well-being. Findings resulting from this study may be useful for helping to improve the experience of puberty and sexual development for future young women. This could lead to a better understanding of how girls are socialized at puberty and ultimately, to improved health outcomes.

RISKS

If you choose to participate, the risk to you is minimal. You may feel some unease or embarrassment answering sensitive questions. Some statements are intentionally provocative in nature and are not a reflection of the researchers' viewpoints or the viewpoints of Syracuse University. As in any online experience, there is a risk that data could be intercepted during the completion or transmission phase. However, this risk will be reduced by using an encryption method typically used for online surveys. Otherwise, we do not anticipate any other risks associated with your participation.

VOLUNTARY PARTICIPATION

Participation in this study is voluntary. You may decide to discontinue participation at any time without penalty.

CONFIDENTIALITY & ANONYMITY

The website that stores your information is password-protected for researchers, and nobody else will have access to the information you provide. We are also unable to link survey answers to survey participants, so participants will remain anonymous.

QUESTIONS

If you have any questions or concerns about this survey, please email Dr. D. Bruce Carter at dbcarter@syr.edu, or Jennifer King at jnking01@syr.edu. If you have questions about your rights as a participant, concerns, or complaints that you wish to address to someone other than the investigators, or if you cannot reach the investigators, contact the Syracuse University Institutional Review Board at (315) 443-3013.

Please print this page for your records.

Syracuse University
Department of Human Development & Family Science

Consent Materials

CONSENT FORM

Girls to Women Survey Department of Human Development & Family Science
Syracuse University

If you are interested in participating in this research study, you must select the “I agree to participate in this research study” option below. If you choose not to participate, select the “I decline participation in this research study” option. Participation is strictly voluntary.

- I agree to participate in this research study.
- I decline participation in this research study.

Appendix D

Complete Survey Questionnaire

Start of Block: Demographics

Q2.1 This first set of questions is about you and your family's demographics. This information will help us to understand you better.

How old are you (in years)?

Q2.2

Please select the region of the world where you come from:

- Africa
- Americas
- Asia
- Europe
- Oceania

Q2.3 What do you identify as your race?

- Asian/Pacific Islander
- Black/African American
- Native American/Alaska Native
- White/Caucasian
- Multi-Racial _____

Q2.4 Do you identify as a racial or ethnic *minority*? [If yes, skip to Q2.5]

- Yes
- No

Q2.5 When you think back on how you were raised, would you say you had at least one parent who took steps to raise your awareness of your race or ethnicity within the wider culture?

- Yes, I had at least one parent provide this kind of education when I was growing up.
- No, my parents never talked about this.

Q2.6

Please select the region of the world where you were primarily raised *prior* to reaching puberty:

- Africa
- Americas
- Asia
- Europe
- Oceania

Q2.7 What is your religious affiliation? [If no affiliation selected, skip to Q2.9]

- Atheist
 - Buddhist
 - Catholic
 - Hindu
 - Jewish
 - Mormon
 - Muslim
 - Orthodox (Greek or Russian)
 - Protestant
 - Roman Catholic
 - Other Religion _____
 - Nondenominational
 - No religious affiliation
-

Q2.8 Do you consider yourself religious, that is, a regular participant in a faith-based religion? (This would include attending service at least once per week, praying daily, and/or studying religious scriptures.)

- Yes
- No
- I prefer not to answer

Q2.9 Please select the highest level of education you completed so far:

- Less than high school
- High school
- Some college
- A two-year degree program (Associate's or equivalent)
- A four-year degree program (BA, BS or equivalent)
- A graduate degree (MA, MS, PhD) or professional degree (DVM, PsyD, JD, MD, etc.)

Q2.10 What is your current educational status?

- I am a full-time student
- I am a part-time student
- I am not currently enrolled as a student

Q2.11 What is your current employment status?

- I work full-time (minimum 40 hours per week)
- I work part-time (under 40 hours per week)
- I am not currently employed.
- I am unable to work

End of Block: Demographics

Start of Block: Demographics at menarche

Q3.1

The following section will ask questions about your family during the time that you were going through puberty.

At the time when I got my first menstrual period, my mother or primary female caregiver (a female adult who was legally responsible for me) had completed:

- Less than high school
- High school
- Some college
- A two-year degree program (Associate's or equivalent)
- A four-year degree program (BA, BS or equivalent)
- A graduate degree program (MA, MS, PhD) or professional degree (DVM, PsyD, JD, MD, etc.)

Q3.2 At the time when I got my first menstrual period, my father or primary male caregiver had completed:

- Less than high school
- High school
- Some college
- A two-year degree program (Associate's or equivalent)
- A four-year degree program (BA, BS or equivalent)
- A graduate degree program (MA, MS, PhD) or professional degree (DVM, PsyD, JD, MD, etc.)

Q3.3 At the time when I got my first menstrual period my household income in US Dollars was approximately [select from 11 income brackets, or I prefer not to answer]

End of Block: Demographics at menarche

Start of Block: Menstrual Attitude Questionnaire

Q4.1

Please rate each statement so that it most accurately reflects your attitude.

Menstruation is something I just have to put up with.

- Strongly agree
- Agree
- Somewhat agree
- Neither agree nor disagree
- Somewhat disagree
- Disagree
- Strongly disagree

Q4.2 In some ways I enjoy my menstrual periods.

- Strongly agree
- Agree
- Somewhat agree
- Neither agree nor disagree
- Somewhat disagree
- Disagree
- Strongly disagree

Q4.3 Men have a real advantage in not having the monthly interruption of a menstrual period.

- Strongly agree
- Agree
- Somewhat agree
- Neither agree nor disagree
- Somewhat disagree
- Disagree
- Strongly disagree

Q4.4 I hope it will be possible someday to get a menstrual period over within a few minutes.

- Strongly agree
- Agree
- Somewhat agree
- Neither agree nor disagree
- Somewhat disagree
- Disagree
- Strongly disagree

Q4.5 The only thing menstruation is good for is to let me know I'm not pregnant.

- Strongly agree
 - Agree
 - Somewhat agree
 - Neither agree nor disagree
 - Somewhat disagree
 - Disagree
 - Strongly disagree
-

Q4.6 Menstruation is a re-occurring affirmation of womanhood.

- Strongly agree
- Agree
- Somewhat agree
- Neither agree nor disagree
- Somewhat disagree
- Disagree
- Strongly disagree

Q4.7 Menstruation allows women to be more aware of their bodies.

- Strongly agree
- Agree
- Somewhat agree
- Neither agree nor disagree
- Somewhat disagree
- Disagree
- Strongly disagree

Q4.8 Menstruation provides a way for me to keep in touch with my body.

- Strongly agree
- Agree
- Somewhat agree
- Neither agree nor disagree
- Somewhat disagree
- Disagree
- Strongly disagree

Q4.9 Menstruation is an obvious example of the rhythmicity which pervades all of life.

- Strongly agree
- Agree
- Somewhat agree
- Neither agree nor disagree
- Somewhat disagree
- Disagree
- Strongly disagree

Q4.10 The recurrent monthly flow of menstruation is an external indication of a woman's general good health.

- Strongly agree
- Agree
- Somewhat agree
- Neither agree nor disagree
- Somewhat disagree
- Disagree
- Strongly disagree

End of Block: Menstrual Attitude Questionnaire

Start of Block: Mother-Daughter Relationship

Q5.1 Which of the following best describes your current relationship with your mother, or primary female caregiver (assuming she is still alive)?

- We are in contact
- We are *not* in contact
- My mother or primary female caregiver is deceased.

Q5.2 Please think about your current relationship with your mother or primary female caregiver when answering these questions:

	Very	Somewhat	Not at all
How close are you?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
How easy is it to talk about personal things with her?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
How often do you seek out her opinion, advice, or guidance?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
How often do you go out of your way to spend time with her?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
How often does she show you that she loves you?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
How much does she influence your decisions?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q5.3 Please think about your relationship with your mother or primary female caregiver *during the time you were going through puberty* and answer the following questions:

	Very	Somewhat	Not at all
How close were you during puberty?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
How easy is was it to talk about personal things when you were going through puberty?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
How often did you seek out her opinion, advice, or guidance when you were going through puberty?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
How often did you go out of your way to spend time with her when you were going through puberty?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
How often did she show her love toward you through puberty?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
How much did she influence your decisions at puberty?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

	Strongly Agree	Agree	Somewhat Agree	Undecided	Somewhat Disagree	Disagree	Strongly Disagree
Men should continue to show courtesies to women such as holding open the door or helping them on with their coats.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It is ridiculous for a woman to run a train and a man to sew clothes.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Women should be concerned with their duties of child-rearing and house-tending, rather than with the desires for professional and business careers.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Swearing and obscenity is more repulsive in the speech of a woman than a man.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

End of Block: Gender Role Beliefs

Start of Block: Menarche Questions

Q7.1 In the following section you will be asked about your experience of menarche, or the moment you got your first menstrual period. There are no right or wrong answers.

Where did you receive the most helpful information about menstruation when you were a young girl?

- | | |
|--|---|
| <input type="radio"/> My mother, or primary female caregiver | <input type="radio"/> My doctor |
| <input type="radio"/> My father, or primary male caregiver | <input type="radio"/> My school's health/nurse's office |
| <input type="radio"/> An older sibling | <input type="radio"/> The Internet |
| <input type="radio"/> My friend(s) | <input type="radio"/> None of these |
| <input type="radio"/> My school health class | |

Q7.2 How old were you when you got your first menstrual period (in years)?

Q7.3 Did you know what to expect *before* you got your first menstrual period?

- Yes, I knew what to expect, based on information I was given beforehand.
- No, I had no idea.

Q7.4 Where did you receive information about menstruation *before* you got your first menstrual period?

- | | |
|--|---|
| <input type="radio"/> My mother, or primary female caregiver | <input type="radio"/> My school health class |
| <input type="radio"/> My father, or primary male caregiver | <input type="radio"/> My doctor. |
| <input type="radio"/> An older sibling | <input type="radio"/> My school's health/nurse's office |
| <input type="radio"/> My friends | <input type="radio"/> The Internet |
| | <input type="radio"/> None of these |

Q7.5 Who was the first person you told when you got your first menstrual period?

- | | |
|--|---|
| <input type="radio"/> My mother, or primary female caregiver | <input type="radio"/> My best friend |
| <input type="radio"/> My father, or primary male caregiver | <input type="radio"/> I never told anyone |
| <input type="radio"/> An older sibling | <input type="radio"/> None of these |

Q7.6 Who was the first person you went to for guidance when you got your first menstrual period?

- My mother, or primary female caregiver
- My father, or primary male caregiver
- An older sister
- My best friend
- Nobody. I never told anyone
- None of these

End of Block: Menarche Questions

Start of Block: Maternal Communication at Menarche

Q8.1

The following questions will ask about what you learned about menstruation from your mother or primary female caregiver when you were going through puberty. Please rate the following statements so that they most closely reflect what you experienced. There are no right or wrong answers.

My mother or primary female caregiver talked about menstruation in general terms, even before I got my first menstrual period.

- Strongly Agree
- Agree
- Disagree
- Strongly Disagree

Q8.2.1 She talked to me before I got my first period, so that I would know what to expect.

- Strongly Agree
- Agree
- Disagree
- Strongly Disagree

Q8.2.2 She gave me tips on what to do when I got my first period.

- Strongly Agree
- Agree
- Disagree
- Strongly Disagree

Q8.2.3 She gave me information about how to manage my symptoms.

- Strongly Agree
- Agree
- Disagree
- Strongly Disagree

Q8.2.4 She talked to me about the female body and the meaning of menstruation.

- Strongly Agree
- Agree
- Disagree
- Strongly Disagree

Q8.2.5 She talked to me about how I could possibly get pregnant, now that my cycle had started.

- Strongly Agree
 - Agree
 - Disagree
 - Strongly Disagree
-

Q8.2.6 She talked to me about sex and contraception, because my menstrual cycle was a sign that I could get pregnant if I had sex without contraception.

- Strongly Agree
- Agree
- Disagree
- Strongly Disagree

Q8.3 She made sure supplies (pads, tampons) were available around the house for anyone to use.

- Strongly Agree
- Agree
- Disagree
- Strongly Disagree

8.4 She never communicated directly to me about menstruation.

- Strongly Agree
- Agree
- Disagree
- Strongly Disagree

Q8.5 She talked to me about various options for managing my menstrual periods, including the differences between pads, tampons, and menstrual cups.

- Strongly Agree
- Agree
- Disagree
- Strongly Disagree

Q8.6 She conveyed to me that menstruation was a bad thing (dirty, embarrassing, problematic).

- Strongly Agree
- Agree
- Disagree
- Strongly Disagree

Q8.7 She made it clear to me that menstruation was something very private that one should never discuss.

- Strongly Agree
- Agree
- Disagree
- Strongly Disagree

Q8.8 She offered to give me instructions on how to use sanitary products, including tampons and menstrual cups.

- Strongly Agree
- Agree
- Disagree
- Strongly Disagree

Q8.9 She made it seem like menstruation was shameful.

- Strongly Agree
- Agree
- Disagree
- Strongly Disagree

Q8.10 She talked about her own menstruation, menstruation in general, or menstrual products *in front of male family members* when I was growing up.

- Strongly Agree
- Agree
- Disagree
- Strongly Disagree

Q8.11 She discouraged me from using tampons.

- Strongly Agree
- Agree
- Disagree
- Strongly Disagree

Q8.12 She made it seem like my first menstrual period was something exciting and positive.

- Strongly Agree
- Agree
- Disagree
- Strongly Disagree

Q8.13 She made it seem like menstruation made being female a disadvantage.

- Strongly Agree
- Agree
- Disagree
- Strongly Disagree

Q8.14 She made it seem like my first menstrual period was something to celebrate.

- Strongly Agree
- Agree
- Disagree
- Strongly Disagree

Q8.15 She made it seem like menstruation was embarrassing.

- Strongly Agree
- Agree
- Disagree
- Strongly Disagree

Q8.16 She talked about her own menstruation when I was growing up.

- Strongly Agree
- Agree
- Disagree
- Strongly Disagree

End of Block: Maternal Communication at Menarche

Start of Block: Cultural Communication about Menarche

Q9.1.1

Many cultures around the world have beliefs relating to menstruation and the start of one's menstrual periods. Please rate the following statements in a way that best reflects how you experienced cultural norms in your family. There are no right or wrong answers.

Once I started getting my period, I was told to follow certain customs every time I was menstruating.

- Strongly Agree
- Agree
- Disagree
- Strongly Disagree

Q9.1.2 At the start of my periods, I was required to start dressing in a different way from how I dressed before I got my periods.

- Strongly Agree
- Agree
- Disagree
- Strongly Disagree

Q9.1.3 At the start of my periods, I was required to interact with men and boys in a different way from how I used to before I got my periods.

- Strongly Agree
- Agree
- Disagree
- Strongly Disagree

Q9.1.4 I grew up with cultural norms and customs that menstruating women are expected to follow.

- Strongly Agree
- Agree
- Disagree
- Strongly Disagree

Q9.1.5 When my mother or primary female caregiver found out I had my first period, she slapped me, as a family tradition.

- Strongly Agree
- Agree
- Disagree
- Strongly Disagree

End of Block: Cultural Communication about Menarche

Start of Block: Female Sexual Subjectivity Inventory

Q10.1 *The following section will assess your general feelings, opinions, and values about sexual behaviors and relationships. The statements in this section do not assume that you have had any particular experience. If you are not currently in a relationship, answer questions as they relate to your most recent partner. Select the answer that most closely reflects the extent to which you agree or disagree with each statement. There are no right or wrong answers.*

Q10.2 It is okay for me to meet my own sexual needs through self-masturbation.

- Strongly agree
- Somewhat agree
- Neither agree nor disagree
- Somewhat disagree
- Strongly disagree

Q10.3 If a partner were to ignore my sexual needs and desires, I'd feel hurt.

- Strongly agree
- Somewhat agree
- Neither agree nor disagree
- Somewhat disagree
- Strongly disagree

Q10.4 I would not hesitate to ask for what I want sexually from a romantic partner.

- Strongly agree
- Somewhat agree
- Neither agree nor disagree
- Somewhat disagree
- Strongly disagree

Q10.5 I believe self-masturbating can be an exciting experience.

- Strongly agree
- Somewhat agree
- Neither agree nor disagree
- Somewhat disagree
- Strongly disagree

Q10.6 It would bother me if a sexual partner neglected my sexual needs and desires.

- Strongly agree
- Somewhat agree
- Neither agree nor disagree
- Somewhat disagree
- Strongly disagree

Q10.7 I am able to ask a partner to provide the sexual stimulation I need.

- Strongly agree
- Somewhat agree
- Neither agree nor disagree
- Somewhat disagree
- Strongly disagree

Q10.8 I believe self-masturbation is wrong.

- Strongly agree
- Somewhat agree
- Neither agree nor disagree
- Somewhat disagree
- Strongly disagree

Q10.9 I would expect a sexual partner to be responsive to my sexual needs and feelings.

- Strongly agree
- Somewhat agree
- Neither agree nor disagree
- Somewhat disagree
- Strongly disagree

Q10.10 If I were to have sex with someone, I'd show my partner what I want.

- Strongly agree
- Somewhat agree
- Neither agree nor disagree
- Somewhat disagree
- Strongly disagree

Q10.11 I think it is important for a sexual partner to consider my sexual pleasure.

- Strongly agree
- Somewhat agree
- Neither agree nor disagree
- Somewhat disagree
- Strongly disagree

End of Block: Female Sexual Subjectivity Inventory

Start of Block: Self-Esteem Block

Q11.1

In the following section, please select the answer that best describes how you feel about each statement.

On the whole, I am satisfied with myself.

- Strongly Agree
- Agree
- Disagree
- Strongly Disagree

Q11.2 At times I think I am no good at all.

- Strongly Agree
- Agree
- Disagree
- Strongly Disagree

Q11.3 I feel that I have a number of good qualities.

- Strongly Agree
- Agree
- Disagree
- Strongly Disagree

Q11.4 I am able to do things as well as most other people.

- Strongly Agree
- Agree
- Disagree
- Strongly Disagree

Q11.5 I feel I do not have much to be proud of.

- Strongly Agree
- Agree
- Disagree
- Strongly Disagree

Q11.6 I certainly feel useless at times.

- Strongly Agree
- Agree
- Disagree
- Strongly Disagree

Q11.7 I feel that I am a person of worth, at least on an equal plane with others.

- Strongly Agree
- Agree
- Disagree
- Strongly Disagree

Q11.8 I wish I could have more respect for myself.

- Strongly Agree
- Agree
- Disagree
- Strongly Disagree

Q11.9 All in all, I am inclined to feel that I am a failure.

- Strongly Agree
 - Agree
 - Disagree
 - Strongly Disagree
-

Q11.10 I take a positive attitude toward myself.

- Strongly Agree
- Agree
- Disagree
- Strongly Disagree

End of Block: Self-Esteem Block

Start of Block: Silencing the Self Scale

Q12.1 I don't speak my feelings in an intimate relationship when I know they will cause disagreement.

- Strongly disagree
- Somewhat disagree
- Neither agree nor disagree
- Somewhat agree
- Strongly agree

Q12.2 I find it is harder to be myself when I am in a close relationship than when I am on my own.

- Strongly disagree
- Somewhat disagree
- Neither agree nor disagree
- Somewhat agree
- Strongly agree

Q12.3 When my partner's needs and feelings conflict with my own, I always state my mind clearly.

- Strongly disagree
- Somewhat disagree
- Neither agree nor disagree
- Somewhat agree
- Strongly agree

Q12.4 I feel I have to act in a certain way to please my partner.

- Strongly disagree
- Somewhat disagree
- Neither agree nor disagree
- Somewhat agree
- Strongly agree

Q12.5 Instead of risking confrontations in close relationships, I would rather not rock the boat.

- Strongly disagree
- Somewhat disagree
- Neither agree nor disagree
- Somewhat agree
- Strongly agree

Q12.6 I speak my feelings with my partner, even when it leads to problems or disagreements.

- Strongly disagree
- Somewhat disagree
- Neither agree nor disagree
- Somewhat agree
- Strongly agree

Q12.7 Often, I look happy enough on the outside, but, inwardly, I feel angry and rebellious.

- Strongly disagree
- Somewhat disagree
- Neither agree nor disagree
- Somewhat agree
- Strongly agree

Q12.8 In order for my partner to love me, I cannot reveal certain things about myself to him/her.

- Strongly disagree
- Somewhat disagree
- Neither agree nor disagree
- Somewhat agree
- Strongly agree

Q12.9 When my partner's needs or opinions conflict with mine, rather than asserting my own point of view, I usually end up agreeing with him/her.

- Strongly disagree
- Somewhat disagree
- Neither agree nor disagree
- Somewhat agree
- Strongly agree

Q12.10 When I am in a close relationship, I lose my sense of who I am.

- Strongly disagree
- Somewhat disagree
- Neither agree nor disagree
- Somewhat agree
- Strongly agree

Q12.11 When it looks as though certain of my needs can't be met in a relationship, I usually realize that they weren't very important anyway.

- Strongly disagree
 - Somewhat disagree
 - Neither agree nor disagree
 - Somewhat agree
 - Strongly agree
-

Q12.12 My partner loves and appreciates me for who I am.

- Strongly disagree
- Somewhat disagree
- Neither agree nor disagree
- Somewhat agree
- Strongly agree

Q12.13 I rarely express my anger at those close to me.

- Strongly disagree
- Somewhat disagree
- Neither agree nor disagree
- Somewhat agree
- Strongly agree

Q12.14 I feel that my partner does not know my real self.

- Strongly disagree
- Somewhat disagree
- Neither agree nor disagree
- Somewhat agree
- Strongly agree

Q12.15 I think it is better to keep my feelings to myself when they do conflict with my partner's.

- Strongly disagree
- Somewhat disagree
- Neither agree nor disagree
- Somewhat agree
- Strongly agree

Q12.16 I try to bury my feelings when I think they will cause trouble in my close relationship(s).

- Strongly disagree
- Somewhat disagree
- Neither agree nor disagree
- Somewhat agree
- Strongly agree

End of Block: Silencing the Self Scale

Start of Block: Sexual Decision-Making

Q13.1

This section will ask about decisions related to sexual health and sexual activity. There are no right or wrong answers. For each statement, select the answer that most closely matches your experience:

When I was first becoming sexually active, I was comfortable asking for the information that I needed from health professionals.

- Strongly Agree
- Agree
- Disagree
- Strongly Disagree

Q13.2 When I was first becoming sexually active, I was very comfortable asking for the information that I needed from people I felt close to (mother or primary female caregiver, sibling, friends).

- Strongly Agree
- Agree
- Disagree
- Strongly Disagree

Q13.3 When I was first becoming sexually active, I was *not* comfortable asking questions directly, but I found the information that I needed in books, pamphlets, or the Internet.

- Strongly Agree
- Agree
- Disagree
- Strongly Disagree

Q13.4 When I was first becoming sexually active, I saw no need to talk to people or look for information about sexual health. I did what felt right in the moment.

- Strongly Agree
- Agree
- Disagree
- Strongly Disagree

Q13.5

The following section will ask questions about your sexual decision-making and sexual health.

How old were you when you lost your virginity (had sexual intercourse for the first time)?
Please enter a number to represent the age in years:

Q13.6 To your knowledge, have you ever contracted a sexually transmitted disease or infection?

- Yes
- No
- I prefer not to answer

Q13.7 If you have experienced heterosexual intercourse (vaginal or anal), did you make sure your partner used a condom *every time*?

- Yes
- No
- Does not apply to me

Q13.8 Have you ever purchased condoms on your own?

- Yes
- No
- Does not apply to me

Q13.9 Have you ever had sex (vaginal or anal) without a condom?

- Yes
- No
- I'm not sure.

Q13.10 If you were about to engage in heterosexual vaginal intercourse, would you always insist that your partner use a condom, even if you were already on some form of birth control (pill, patch, implant, shots, IUD)?

- Yes
- No
- Does not apply to me

Q13.11 How comfortable are you talking to health professionals about your genitalia or sexual concerns in the context of discussing your sexual health?

- Comfortable
- Neither comfortable nor uncomfortable
- Uncomfortable

Q13.12 How comfortable are you talking to health professionals about testing for sexually-transmitted infections?

- Comfortable
- Neither comfortable nor uncomfortable
- Uncomfortable

Q13.13 How comfortable are you talking to your sexual partner about your genitalia?

- Comfortable
- Neither comfortable nor uncomfortable
- Uncomfortable

Q13.14 How comfortable are you telling your sexual partner that you are menstruating?

- Comfortable
- Neither comfortable nor uncomfortable
- Uncomfortable

Q13.15 How likely are you to insist that your partner get tested for sexually transmitted diseases *before* you have sex?

- Very likely
- Neither likely nor unlikely
- Very unlikely

Q13.16 If you have sexual intercourse, how comfortable are you insisting on the use of protection (condom, dental dam, condom over a sex toy), even when your partner is *not* in favor?

- Very likely
- Neither likely nor unlikely
- Very unlikely

Q13.17 You have reached the end of the Girls to Women Survey. Are you taking the survey for extra credit?

- Yes
- No, exit survey

Appendix E

Survey feedback

Following are observations from students who took the Girls to Women Survey for extra credit at SUNY Oswego, Counseling and Psychological Services Department, Oswego, New York. These observations have not been edited.

As I was doing this survey, I felt as if I had forgotten what my first experiences was like, whether it was a sexual experience or my first menarche. I felt as if I really had to think about some of these questions because these events happened when I was much younger. But I did realize that I was very comfortable answering these questions and I believe I felt comfortable because I knew that the questions were confidential, and my name is not included in the survey. For some of the questions, I did think that there were some options that should have been included, especially for the agree or disagree questions. Participating in this survey also helped me realized of what I should do if and when I have female children in the future. It helped me realize that I would not want my daughter to have the same experience as me. I would like to make sure that she has all the knowledge she needs to make this a smooth experience for her. I also realized that maybe it was also because I grew up in a different time that that could be the reason why my mother was not open about discussing a first menstrual period. I also concluded that maybe it was because of the way she grew up. Overall, I kind of had flashbacks when I was reading some of these questions because I have forgotten about some of these experiences, especially since they were not bad experiences.

Initially I didn't know what to expect from the study. I thought it would mainly discuss my menstrual cycle and things I experienced. What stood out to me was that the requirements were that you needed to be sexually active. Currently, I've decided to be abstinent until marriage. I wish there was an option for people who were not sexually active. My parents didn't go to college but they went to trade school. There wasn't an option for trade schools. There were many statements that resonated with me. My mother is from Ghana and the culture at the time was traditional. My parents don't really talk about sex besides the standard saying "Don't have sex because it goes against the teachings of the bible and you will become pregnant". They never mentioned contraceptives or ways to practice safe sex. There was never an open dialogue growing up about these issues. Practically my whole life that's all I heard and as their child I've been conditioned to deny my own sexual urges. I was told that sex before marriage was an abomination in the culture. I was expected to be careful around boys because they're a distraction and to focus on school. They weren't being realistic about relationships and even till this day, I find it difficult to express myself on that area. Many of my information on sex came from school and other sources such as friends. My mom only allowed us to use pads because tampons were considered bad.

I found the online study regarding sexuality research to be truly thought-provoking. In fact, I was thinking about the survey for a few days after completing it. Even though we are not allowed to discuss specifics here, I was unaware of some of the proposed links between mother-daughter connection and sexuality. It made me think about how my upbringing, and my conversations and connections to the women in my family directly affected my views on sexuality. I became aware of how I was socially constructed by the women in my family— particularly my maternal grandmother, mother and older sister.

Personally, I was not bothered by taking this survey. In fact, none of the questions asked made me feel uncomfortable at all. However, it did make me wonder how my perception of sexuality was also shaped by the messages I am receiving from society. For instance, I think women are becoming increasingly aware of societal stereotypes, and we are actively shifting away from them. Previous stereotypes would indicate that women who liked sex were promiscuous. Whereas, many women are now more open about sexuality and pleasure. In fact, women are increasingly conscious about not "slut-shaming" anymore, which is something both men and women partook in.

Participating in this study was an interesting experience for me. I was in the middle of puberty ten years ago, so it was a little difficult to recall information from that time. In my mind, my childhood and adolescence are comprised of foggy memories with little to no detail. An embarrassing event here, a traumatic experience there, but for the most part I believe that I swept everything under the rug. Interestingly enough, in my recent therapy sessions I have been working through some of my more upsetting memories and subsequent issues involving my parents.

In terms of my sexual education, I believe that I had more advantages than most. I had taken health classes where I learned about safe sex, and in high school I participated in an after school program where I eventually became a certified safe sex educator. I am thankful that I was able to rely on my education for information regarding sex and manstruation.

Completing the survey made me realize different attitudes about becoming a woman and sexual experiences that may follow. I realized that I myself have been affected by certain unspoken rules in society that people shouldn't talk openly about certain topics without embarrassing themselves in front of others. I definitely believe that there is a double standard between males and females and I'm interested in comparing the results of this survey with the results of a survey completed by males about their experiences and attitudes during and following puberty. Overall, I'm curious about the results this study will find. Also, if the study does reveal a trend of negative, shameful attitudes what can be done to change that.

As I was doing this survey, I felt as if I had forgotten what my first experiences was like, whether it was a sexual experience or my first menarche. I felt as if I really had to think about some of these questions because these events happened when I was much younger. But I did realize that I was very comfortable answering these questions and I believe I felt comfortable because I knew that the questions were confidential, and my name is not included in the survey. For some of the questions, I did think that there were some options that should have been included, especially for the agree or disagree questions. Participating in this survey also helped me realized of what I should do if and when I have female children in the future. It helped me realize that I would not want my daughter to have the same experience as me. I would like to make sure that she has all the knowledge she needs to make this a smooth experience for her. I also realized that maybe it was also because I grew up in a different time that that could be the reason why my mother was not open about discussing a first menstrual period. I also concluded that maybe it was because of the way she grew up. Overall, I kind of had flashbacks when I was reading some of these questions because I have forgotten about some of these experiences, especially since they were not bad experiences.

The first section of the survey asked about my current experiences about my period, it was difficult for me to answer some of those questions because I no longer get my period because of my health issues. When my answers didn't relate to the given choices I went neutral, there wasn't an option of other. Filling out the survey brought back a memory about a time that I was at a sleepaway camp and I got unfortunately got my period. When the questions about being embarrassed or uncomfortable talking about getting a period or buying supplies from them, I remembered that I wasn't sure how to ask my dad that I needed supplies, so instead of going up to him I wrote him a note and put it on his steering wheel. When he wants to embarrass me in front of my friends, he always brings it up. Overall, I didn't feel uncomfortable answering any of the questions, one thing that I did get out of from taking the survey is that my mom educating me on most things about periods but I mostly learned more during health class in middle school.

I found this survey quite interesting. Some of the questions were quite uncomfortable to answer, but it made me realize that perhaps my history regarding sexual and puberty education could have been handled better. I think that the results of the survey will be very beneficial to see how educated women are about their own sexual health and how well women are taught before they experience puberty. I think sexual education is very important and wish I had learned more about it before I entered puberty. Women should have information about their own bodies before they experience everything that puberty brings with it. I know that it is an uncomfortable subject to discuss with your children, but if parents could do better in educating their kids beforehand, I think it could prevent a lot of teen pregnancy and STDs. A lot of people I grew up with had a lot of confusion surrounding the topic of puberty and sex, and that could fall on the school's sexual health education system too. One particular question that stood out to me was about the level of sexual freedom women should have compared to men. It touches on the double-standard surrounding men and women and how their sexualities should differ, which I thought was interesting. Overall, I think the results of this survey will vary greatly, but the data will be very compelling.

While taking this survey, I personally found it interesting on how the questions were in order.

The range went from pre-puberty to post- menstruation to being sexually active. This made me think how I was educated in these different topics and how much my mindset has changed.

Comparing to the past, I was mildly informed of my women body. My culture upbringing made an impact on how I was educated about this topics. Since, I took the time to educate myself of my personal health and now I am more aware of my body than before. I also noticed that there may be a relationship between mother influence and these important women topics. I think if more people talk more openly about a woman's body and the different tactics on how to maintain a women health.

Participating in this study was quite interesting to me. Growing up, my mother always talked openly to me about puberty. There was never a negative stigma towards this in my household so there was nothing to be ashamed of when I finally started menstruating. Some of these questions shocked me as I got further into this study, because it made me aware of the alternative ways some females look at puberty and menstruation. It made me a little upset reading some of the answers indicating that having your period was something to hide and be embarrassed about and how it's not fair that women need to go through this. I agree that sometimes it isn't the most pleasant thing, but the fact that we do menstruate and are able to bear children because of this is a pretty amazing thing. To think that some females were raised to not think this way makes me sad. There are so many things that hold us back as women in this society, like the way people view us to be more sensitive or the weaker sex. This negativity is diminishing, but can still be seen in some areas of the world and various settings. For us to hold these views ourselves, like thinking menstruating is a disadvantage, just weakens our self views even more and adds to the things that holds us back. I'm very grateful for the way I was raised and think that it is important to be able to see both genders in a more equal way.

I just took the survey given by Syracuse University. I think it's vital that the type of information from the questions asked be studied to better understand the reality of how cultures discuss puberty and menstruation for women. In my own experience, it is a difficult topic to talk about because my family culture does not include comfortable discussions around these types of topics. I really felt like the researchers did a great job of covering an expansive amount of experiences in a relatively short survey. I can imagine that the survey will reach a lot of people and bring about interesting analysis surrounding the different demographics they outlined in the first part of the questions. Taking the survey was briefly uncomfortable but it better helped me to understand how I currently conceptualize menstruation and sexual health. This is a topic that will likely come up in my work with students so it is helpful to continue to talk about and become more comfortable.

Overall, I appreciated the survey because I feel as though the topics of sex, menstruation, and gender roles for women are not discussed enough in a productive way. Some of the questions were difficult to answer because they contain sensitive information; however, I think that air of embarrassment and sensitivity comes from our society which doesn't talk about these issues. I feel as though the topics of sex (and not the glorified media version), menstruation, and gender roles get swept under the rug because they're messy and involve people challenging their internal beliefs and values. They also do not apply to everyone in the same way, so that adds to the challenge of creating a dialogue. For instance, a man can discuss the medical side of menstruation, but would not have the personal empathy that richly adds to the discussion.

Something that has been on my mind a lot recently (though I'm not exactly sure why) is how I will one day broach the conversations of sex with my children. My first thought is, I definitely want to do better than my parents did. My second thought is, I feel as though I'm on a different page with how I want to approach this than my husband is. How do I then give my children what I think they need without breaking the trust of my relationship? Within that confusion, I feel as though the topic may get swept under the rug simply because I can't figure out how to navigate through my personal stuff, which is a disservice to my future kids. Maybe this too contributes to the lack of discussion.

Generally, I like the way that society is moving—bringing traditionally taboo topics to light. It is uncomfortable and will be a bumpy ride for many involved; however, in the long run, the payoffs will greatly outweigh the costs. I do wonder if we will see drastic changes within this lifetime, or if the course of change needs to span multiple generations. Regardless, opportunities for exploring these “caves” of society will always evoke interest and can produce widespread benefits if they are truly considered.

The Girls to Women survey was very interesting. When I was studying at the University at Buffalo in undergrad, the newspaper would put out a similar survey each year. The responses would then be anonymously printed in the next issue. It was interesting because men and women were able to see similarities in sexual behaviors among peers. Also, the article disregarded the “taboo” idea of sex. In the same sense, this survey does the same thing. I really appreciate that it asked for information from a woman’s childhood to current day. It’s important to take all of these factors into consideration in identifying similarities and differences in sexual health. It’s not uncommon for a young girl to grow up without guidance at home or school about menstruation or sex. These factors could really influence their outlook on sexual health and menstruation as they grow up. I think sex is not discussed enough in educational systems. When it is discussed, it tends to be more of a negative conversation than informational. If this is true, students may think of sex as an unnatural part of life, resulting in an incongruence between body and mind. I really appreciated this survey and what this researcher is looking into. This subject definitely needs to be talked about more.

I honestly enjoyed taking this survey. At first, I was surprised with how personal the questions got throughout the survey. It really brought back memories of high school health class and how important it was to be educated on all of these topics in school, as many people are not educated in their homes about it. Taking this survey was definitely an uncomfortable thing to do, but the interesting questions kept the survey enjoyable. In the section about self-worth, it definitely made me step back and take a look at myself. It really made me reflect and think how I view myself, and made it tough to rate myself solely through agree/disagree categories with no explanation. I think I enjoyed this part of the survey the most because I learned a lot about myself through it. Overall, this survey was very interesting. I think this survey could eventually become very useful in the world, as I think there is a stigma about keeping these topics personal and not necessarily talking about them. Hopefully the research in this survey works to take steps towards a more comfortable world discussing these topics in women!

Appendix F

Variable Selection

In order to build parsimonious models for binary logistic regression, I conducted a purposeful selection of covariates. Following guidelines by Hosmer et al. (2013). I retained variables with a significance of $p < 0.25$. For continuous variables, I conducted independent samples t-tests. For categorical variables, I used Chi-square tests of independence.

Independent Samples T-Tests, Summary Table

Grouping Variable: Age at First Sex (0 = 15 and below and 1 = 16 and up), (n = 175)

Covariate	<i>t</i>	<i>p</i>	<i>eta</i> ²
Sexual Subjectivity-Partner (FSSI)	-.39	.69	-
Sexual Subjectivity-Self (FSSI)	.16	.87	-
Current Self-Efficacy (FSSI)	3.06	.00*	.05
Early sexual self-efficacy	-2.59	.01*	.04
Age at menarche, continuous	-2.08	.04*	.02
Menstrual attitude, bothersome (MAQ-B)	-.90	.37	-
Menstrual attitude, natural (MAQ-N)	.02	.98	-
Gender role beliefs (GRBS)	-1.22	.22*	.01
Maternal level of education at menarche	-.26	.80	-
Household income at menarche	-.90	.37	-
Self-silencing (STSS)	.13	.90	-
Self-esteem (RSE)	-.84	.40	-
Mother-daughter relationship, current	-1.81	.07*	.02
Mother-daughter relationship, at puberty	-.95	.34	-
Positive maternal tone at menarche	-.51	.61	-
Negative maternal tone at menarche	.15	.88	-
Factual maternal content at menarche	-.94	.35	-
“Silent” maternal content at menarche	.08	.93	-
Cultural communication	-.40	.69	-

Note. Following recommended guidelines by Pallant (2013), I used Levene’s test results to select the appropriate t-value. *Eta*² = effect size, .01 = small effect, .06 = moderate effect, and .14 = large effect (Cohen, 1988). Similar results were obtained in the full cohort ($N = 223$).

*Denotes a significance of $p < .25$, the threshold for retention.

Independent Samples T-Tests, Summary Table

Grouping Variable: Early Sexual Self-Efficacy (comfort obtaining sexual health information from those who were close at sexual debut, 0 = uncomfortable and 1 = comfortable), ($n = 175$)

Covariate	<i>t</i>	<i>p</i>	<i>eta</i> ²
Sexual Subjectivity-Partner (FSSI)	.17	.86	-
Sexual Subjectivity-Self (FSSI)	1.15	.25*	.01
Current Self-Efficacy (FSSI)	-.36	.72	-
Menstrual attitude, bothersome (MAQ-B)	1.23	.22*	.01
Menstrual attitude, natural (MAQ-N)	-1.94	.05*	.02
Gender role beliefs (GRBS)	2.06	.04*	.02
Maternal level of education at menarche	-1.09	.28	-
Household income at menarche	-1.27	.21*	.01
Self-silencing (STSS)	2.78	.01*	.04
Self-esteem (RSE)	-3.49	.00*	.07
Mother-daughter relationship, current	-1.28	.20*	.01
Mother-daughter relationship, at puberty	-4.73	.00*	.11
Positive maternal tone at menarche	-5.70	.00*	.16
Negative maternal tone at menarche	2.68	.01*	.04
Factual maternal content at menarche	-3.96	.00*	.08
“Silent” maternal content at menarche	1.52	.13*	.01
Cultural communication	.10	.92	-

Note. Following recommended guidelines by Pallant (2013), I used Levene’s test results to select the appropriate t-value. I used *eta*² to determine effect size as follows: .01 = small effect, .06 = moderate effect, and .14 = large effect (Cohen, 1988).

*Denotes a significance of $p < .25$, the threshold for retention.

Chi-Square Tests, Summary Table

Grouping Variable: Age at First Sex (0 = 15 and below and 1 = 16 and up), (n = 175)

Covariate	χ^2	<i>p</i>	<i>phi</i> ¹
Religiosity (0 = non-religious, 1 = religious)	4.79	.03*	.17
Age at menarche (0 = early, 1 = normative)	.24	.2	-
Expectations at menarche (0 = no idea, 1 = knew)	.82	.36	-

¹ I used phi to determine effect size as follows: .01 = small effect, .30 = medium effect, and .50 = large effect (Cohen, 1988).

*Denotes a significance of $p < .25$, the threshold for retention.

Chi-Square Tests, Summary Table

Grouping Variable: Early Sexual Self-Efficacy (comfort obtaining sexual health information from those who were close at sexual debut, 0 = uncomfortable and 1 = comfortable), (n = 175)

Covariate	χ^2	<i>p</i>	<i>phi</i> ¹
Religiosity (0 = non-religious, 1 = religious)	1.58	.21*	.10
Age at menarche (0 = early, 1 = normative)	2.04	.15*	.11
Expectations at menarche (0 = no idea, 1 = knew)	.00	.98	-

¹ I used phi to determine effect size as follows: .01 = small effect, .30 = medium effect, and .50 = large effect (Cohen, 1988).

*Denotes a significance of $p < .25$, the threshold for retention.

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- physical, mental, and social health. In E. S. Lefkowitz & S. A. Vasilenko (Eds.), *Positive and negative outcomes of sexual behaviors* (No. 144, pp. 3-19). San Francisco, CA: Jossey-Bass.
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- Zimmer-Gembeck, M. J., Ducat, W. H., & Boislard-Pepin, M.-A. (2011). A prospective study of young females' sexual subjectivity: associations with age, sexual behavior, and dating. *Archives of Sexual Behavior*, 40(5), 927-938. doi:10.1007/s10508-011-9751-3
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- Zimmer-Gembeck, M. J., & Helfand, M. (2008). Ten years of longitudinal research on U.S. adolescent sexual behavior: Developmental correlates of sexual intercourse, and the importance of age, gender and ethnic background. *Developmental Review*, 28(2), 153-224. doi:10.1016/j.dr.2007.06.001

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Curriculum Vitae

EDUCATION

- 2020 Ph.D., Human Development and Family Science
Syracuse University, Falk College, Syracuse, New York
Dissertation: *Maternal communication at menarche: Evaluating direct and indirect effects on age at first sexual intercourse in young adult women*
Advisor: D. Bruce Carter, Ph.D.
- 2009 M.S., Marriage and Family Therapy
University of Rochester School of Medicine & Dentistry, Rochester, New York
Thesis: *Collaborative mapping in marriage and family therapy*
Thesis advisor: Pieter leRoux, D. Litt. et Phil.
- 2003 M.S., Clinical Psychology
Millersville University, Millersville, Pennsylvania
- 1990 B.A., Psychology, Philosophy, *Magna Cum Laude*
Cornell University, College of Arts & Sciences, Ithaca, New York
Honors Thesis: *Idazoxan's effects on memory retrieval in the rat*

CREDENTIALS

AAMFT-Approved Supervisor

Designation issued in July 2018 by the American Association for Marriage & Family Therapy.

Licensed to practice marriage and family therapy in:

- **Maine**, License no.: MF5113, issued 09/27/2018
- **New York**, License no.: 000791, issued 11/04/2009
- **New Hampshire**, License no.: 226, issued 10/22/2018

GRANTS, HONORS, AND AWARDS

- 2018 Nominated to the Excellence in Supervision Award
Marriage and Family Therapy Training Program
University of Rochester, Rochester, New York
- 2017 Dean Edith Smith Dissertation Grant
Department of Human Development and Family Science
Syracuse University, Syracuse, New York

PUBLICATIONS

Unterwald, E. M., **Horne-King, J.**, Kreek, M. J. (1992). Chronic cocaine alters brain *mu* opioid receptors, *Brain Research*, 584, 314-318.

CONFERENCE PRESENTATIONS

King, J. H. & Carter, D. B. (2016, October). *Socialization strategies in sexual-minority families: How gay and lesbian parents prepare their children to cope with anticipated secondary stigmatization*. Poster presented at the Gender Development Research Conference, San Francisco, CA.

TEACHING EXPERIENCE

2019-Present	Undergraduate Instructor, Department of Psychology PSY 329 Child and Family Counseling and Psychopathology University of Maine at Farmington, Farmington, Maine
Summer 2018	Course Instructor <i>So, you think you want to be a mental health professional?</i> Rochester Scholars Program, Pre-college program for grades 9-12 University of Rochester, Rochester, New York
Fall 2017	Guest Lecture <i>Violence in the family</i> CFS 479 Power, Conflict, Violence and the Family (Ying Zhang) Human Development and Family Science Department Syracuse University, Syracuse, New York
2016-2018	Clinical Associate Instructor, Department of Marriage & Family Therapy Practicum Reflection Group for Advanced Clinical Master's Students Graduate Program, Marriage & Family Therapy University of Rochester School of Medicine, Rochester, New York
2016-2017	Adjunct Instructor, Department of Human Development and Family Science CFS 389 Leading Human Sexuality Discussion Groups Syracuse University, Syracuse, New York
Spring 2016	Guest Lecture <i>Social Cognitive Factors</i> CFS 387 Intimate Relationships and Gender (Prof. D. Bruce Carter) Syracuse University, Syracuse, New York
Spring 2016	Guest Lecture <i>Stress in Relationships</i> CFS 387 Intimate Relationships and Gender (Prof. D. Bruce Carter) Syracuse University, Syracuse, New York
2015-2017	Teaching Assistant CFS 388 Human Sexuality (Prof. Joseph Fanelli) Syracuse University, Syracuse, New York

RESEARCH EXPERIENCE

- Spring 2015 Research assistant to Prof. Jaipaul Roopnarine
Jack Reilly Institute for Early Childhood and Provider Education
Syracuse University, Syracuse, New York
- Fall 2014 Research assistant to Prof. Kamala Ramadoss
Child and Family Studies Department
Syracuse University, Syracuse, New York
- Fall 2014 Research assistant to Prof. Robert Moreno
Child and Family Studies Department
Syracuse University, Syracuse, New York

CLINICAL EXPERIENCE

- 2010-2018 Founder, Clinical Director
Brockport Marriage & Family Therapy, P.C.
Brockport, New York
- 2017-2018 Clinical Associate, Department of Psychiatry, Institute for the Family
Graduate Program, Marriage & Family Therapy
University of Rochester School of Medicine, Rochester, New York
- 2017-2018 Clinical Supervisor, Department of Marriage & Family Therapy
Doctoral Program, Marriage & Family Therapy
Northcentral University, Scottsdale, Arizona
- 2016-2018 AAMFT Supervisor Candidate
Monroe Community Hospital, Rochester, New York
University of Rochester School of Medicine
Supervisor: Dr. Carol Podgorski

PROFESSIONAL SERVICE

- January 2020 **Board Member, appointed by the Governor of Maine**
State of Maine Board of Counseling Professionals Licensure
Augusta, Maine
Appointed for a three-year term of service.
- November 2017 **Guest Panelist**
High School Health Careers Academy
University of Rochester School of Medicine, Rochester, New York
- May 2017 **Workshop Facilitator**, Annual Conference, Hamilton, New York
Future Professoriate Program (Syracuse University Chapter)
Workshop title: *“Scaffolding a syllabus for maximum impact”*
- May 2016 **Workshop Co-Facilitator**, Annual Conference, Hamilton, New York
Future Professoriate Program (Syracuse University Chapter)
Workshop title: *“Engaging students in a diverse learning environment:
Borrowing a page from child and family studies”*

PROFESSIONAL SERVICE, CONT'D.

Spring 2016

Organizer and Moderator

Topic: *“What search committees are really looking for in the social sciences”*
Interdisciplinary faculty discussion panel, FPP, Syracuse University

MEMBERSHIPS AND BOARD POSITIONS

- Member, State of Maine Board of Counseling Professionals Licensure, since January 2020.
- Site Visitor, Committee on Accreditation for Marriage and Family Therapy Education, since 2019.
- Clinical Fellow, American Association for Marriage and Family Therapy, since 2007.
- Abstract Reviewer, 2017 AAMFT Annual Meeting, 2018 AAMFT Annual Meeting.
- Member, Future Professoriate Program, Syracuse University, 2015 - 2018.
- Member, National Council on Family Relations, since August 2015.
- Member, Association for Family Therapy and Systemic Practice United Kingdom, since 2010.
- Member, Rochester Area Counselors' Group, 2011 - 2018.
- Treasurer, Genesee Valley Chapter for Marriage and Family Therapy, Jan. 2010- Dec. 2012.
- Member, Brockport Mental Health Professionals Association, 2015 - 2020.