ACQUIESCENCE AT SEXUAL DEBUT AND SEXUAL FUNCTION IN OLDER ADULTS

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ABSTRACT

Despite growing scholarly attention to the importance of sexual health in older adults, little is known about the ways in which early sexual experiences shape sexual behavior and well-being in later life. This dissertation identifies acquiescence – or participation in sex without concomitant desire – at sexual debut as one such factor that may contribute to sexual dysfunction in older adulthood. Utilizing survey data from the National Social Life, Health, and Aging Project (NSHAP), the dissertation examines the relationship between acquiesced first sex and three measures of sexual function: sexual quality, including both physical pleasure and emotional satisfaction (n=1780), sexual problems (n=1678), and prevalence of masturbation in the past year (n=2105). Regression models and tests of predicted probabilities were used to analyze both the main effect of first-sex acquiescence and potential interaction effects with gender. The dissertation finds that acquiesced first sex is associated with lower levels of both physical pleasure ($OR = 0.67$, $p < 0.01$) and emotional satisfaction ($OR = 0.66$, $p < 0.01$) with sex. Additionally, acquiesced sexual debut is associated with a higher likelihood of experiencing several sexual problems, including experiencing pain during sex ($OR = 1.55$, $p < 0.05$), not finding sex pleasurable ($OR = 1.75$, $p > 0.05$), and lacking interest in sex ($OR = 1.33$, $p < 0.05$). There was no significant relationship between acquiesced first sex and likelihood of reporting masturbating within the past year. Regarding the effects of gender, significant interaction effects were only found with levels of physical pleasure, with the deleterious effect of acquiesced first sex being stronger on female respondents than on males. These results bring attention to the importance of a complete sexual history in physicians' understandings of sexual dysfunction and long-term sexual well-being. Additionally, findings suggest that educating adolescents on sexual

consent and healthy sexual boundaries to prevent experiences of acquiesced first sex may be a point of intervention for improving sexual wellness throughout the life course.

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INTRODUCTION

Over the last decade, sexual health and well-being has become a greater topic of discussion amongst researchers, activists, and healthcare professionals alike. Sexual health has been declared an international human right by the World Health Organization, who defines sexual health as a "holistic" concept that is "about [sexual] well-being, not merely the absence of disease," and "is relevant throughout the individual's lifespan, not only to those in the reproductive years" (WHO n.d.).

Despite this greater level of attention to the role of sexuality and sexual health as a component of general health and well-being, our understanding of social determinants of sexual health remains incomplete. More specifically, little is known about the effects of negative early sexual experiences on long-term sexual function, especially beyond the reproductive years and into older adulthood. While research has shown that the conditions of one's first sexual experience can significantly shape one's attitudes towards sex and sexuality, most of this work has been focused on adolescents and college-aged adults.

A variety of components of one's sexual debut contribute to individuals' long term sexual well-being. The majority of literature on the topic has focused on the timing of sexual debut as a contributing factor to sexual health outcomes such as sexual risk-taking (Sandfort et al 2011), contraceptive use (Magnusson et al 2012), sexual guilt, and expectations for sexual pleasure (Thorpe et al 2021). Less attention, however, is paid to the consensuality of one's sexual debut; in other words, whether one's first sexual experience is forced, coerced, acquiesced, or wanted.

Discussions of consensuality are usually focused on forced sex and sexual coercion. Forced sex, or rape, is generally defined as "the penetration, no matter how slight, of the vagina or anus with any body part or object, or oral penetration by a sex organ of another person,

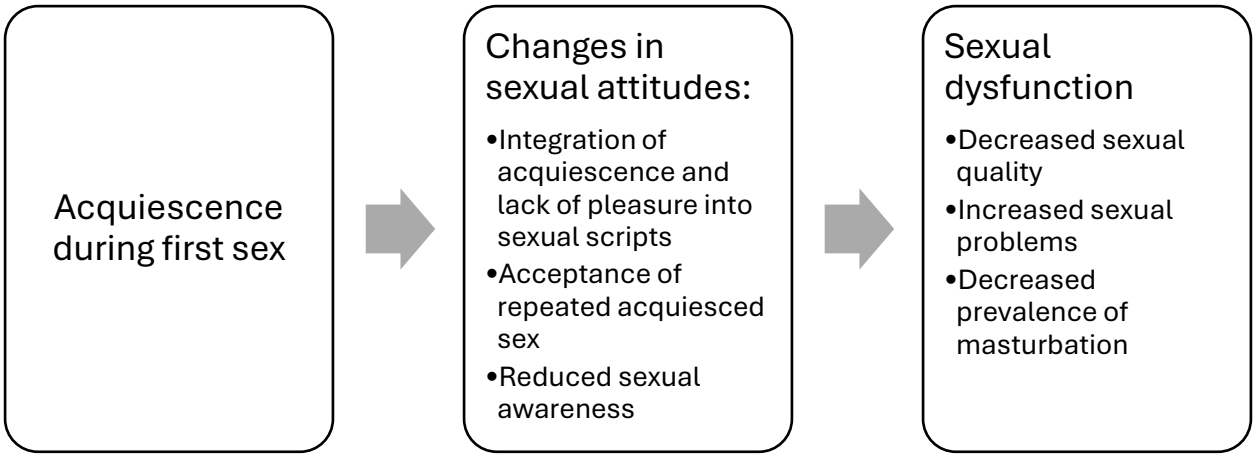
without the consent of the victim." (US Dept of Justice 2012). Sexual coercion may be defined the use of threats, manipulation, or other forms of non-physical force to pressure another individual to participate in unwanted sexual activity. The use of drugs or alcohol to facilitate otherwise unwanted sexual contact is considered rape in some socio-legal contexts, while in others it is considered to be a form of sexual coercion.

While it is certainly important to study the long-term impacts of outright sexual violence – forced or coerced sex – it is also necessary to bring attention to other negative sexual experiences that are not as well-represented, both in academic literature and popular understandings of sex and sexuality. As such, I have chosen to focus specifically on the effects of a sexual debut that is *acquiesced*: situations in which an individual consents to a sexual act without experiencing concomitant desire. Those who acquiesce 'go along with,' rather than actively choose to participate in, sex.

Acquiescence to sex is a relatively common phenomenon, especially at the time of sexual debut. While estimates vary amongst studies, research suggests that in the United States between a quarter to a half of women – and up to a third of men – felt ambivalence about the wantedness of their first intercourse (Abma et al 1998, Martinez et al 2011). These estimates illustrate that acquiescence likely occurs at a significantly higher rate than outright sexual violence: in the same descriptive study, Martinez et al (2011) found that approximately 11% of women and 5% of men had a first sexual experience that was overtly unwanted. A more recent nationally-representative study similarly estimated that approximately 6.5% of women experienced forced first sex (Hawks et al 2019). Given the fact that acquiescence at sexual debut is so common, it is surprising that there has been little investigation into its effects on sexuality throughout the life course.

This dissertation aims to contribute to sociological knowledge on sexuality by generating a deeper understanding of the long-term impact of sexual acquiescence on sexual health and well-being. Figure 1 illustrates a general overview of the theoretical basis for the dissertation:

Figure 1: Proposed Mechanisms



Please note that this figure is but a brief introduction: the contents will be addressed in more detail within the literature reviews of the dissertation. In summary, I propose that acquiescence at sexual debut results in changes in sexual attitudes that remain salient throughout the life course, eventually leading to sexual dysfunction in older adulthood.

The dissertation, which is organized into three individual chapters, utilizes a life course perspective to identify the relationship between acquiescence at sexual debut and dysfunction in older adults' sexual relationships. Chapter one examines the effects of early sexual acquiescence on both physical and emotional sexual satisfaction in older adulthood. Chapter two then explores whether acquiescence at sexual debut impacts the risk of experiencing sexual problems in older adulthood. Finally, chapter three discusses the impact of acquiescence at sexual debut on older

adults' non-partnered sexual behavior – more specifically, prevalence of masturbation. The three chapters, therefore, provide a comprehensive overview of first-sex acquiescence's potential impacts on late-life sexual quality and sexual function.

In addition, each of the chapters examines how the effects of first-sex acquiescence differ by gender. People who were socialized as 'male' are bound to different expectations and have different experiences with sex and sexuality than those who were socialized as 'female.' I not only statistically account for the effects of gender, but also interpret my findings with an understanding of the ways in which definitions of sexual quality and sexual function are influenced by (cis)heteronormativity.

CHAPTER ONE: SEXUAL SATISFACTION

Sexual activity and satisfaction in older adulthood is thought to be a significant marker of successful aging and an indicator of the overall well-being of older men and women. There is evidence that high sexual satisfaction is associated with better self-assessments of successful aging, despite age-related declines in physical health and some cognitive abilities (Thompson et al 2011). Research on this subject has grown significantly in recent years, with emphasis on the impacts of sexuality and sexual function on the mental, emotional, and physical health of older adults.

There is still, however, a paucity of research on the ways in which sexual satisfaction among older adults is shaped by those adults' early sexual experiences. I have identified *sexual acquiescence* – or participation in sex without concomitant desire – as one such experience with the potential to contribute to dysfunction in older adults' sexual relationships. While research has shown that the conditions of one's first sexual experience can significantly shape one's attitudes towards sex and sexuality, most of this work has been focused on adolescents and college-aged adults (ages 18-25). I propose that acquiescence at sexual debut continues to shape attitudes towards and experiences of sex over time, eventually leading to worsened sexual satisfaction in older adulthood.

Using data from wave 2 of the National Social Life, Health, and Aging Project (NSHAP), I present one of the first population-based studies on the effects of acquiescence at sexual debut on sexual satisfaction in later life. To do so, I address two research questions: first, is acquiescence during one's first sexual experience associated with lower levels of sexual satisfaction in later life? Second, does this association differ by gender? Understanding the relationship between early sexual acquiescence and sexual satisfaction in late life may inform

policies or clinical practice aimed at understanding and improving sexual satisfaction amongst older adults.

Background:

Sexual Satisfaction in Older Adulthood:

Despite the prevalence of the stereotype that people become asexual as they age, scholars have noted that many older adults not only remain sexually active, but consider sexuality and sexual relationships to be important for their well-being. Studies across various countries have shown that many people remain sexually active well into older adulthood, with some continuing to have sex even into their 90s (see Steckenrider 2023). Additionally, older adults consider sex to be important even if they themselves may not be sexually active: a recent study from the National Poll on Healthy Aging found that, while only approximately 40% of surveyed older adults reported being currently sexually active, 76% agreed that sex is an important part of a romantic relationship at any age (Solway et al 2018).

Aging does, of course, result in hormonal and physiological changes that affect sexual function: most notably, those with vaginas are more likely to experience vaginal dryness and pain with sex, and those with penises are more likely to have problems with getting or maintaining an erection. However, many older adults learn to adapt to physiological changes and redefine the ways in which they experience intimacy and sexuality. When compared to middle-aged adults, older adults tend have more congruent experiences of sex and are more likely to emphasize the importance of emotional intimacy in their sexual relationships (Lodge and Umberson 2012). Sexual satisfaction, therefore, remains a salient component of older adults' overall health and well-being.

Impact of Acquiescence at Sexual Debut on Sexual Satisfaction

Sexual satisfaction is a multifaceted concept that may be affected by a variety of individual and relational factors: it is known to be related to physical health conditions, religious beliefs, relationship quality, and social support, among others (see Sanchez-Fuentes et al 2014). One's experiences with and interpretations of sex are also shaped by their sexual history, informed by experiences throughout the life course.

Trajectories of sexual behavior begin relatively early on in the lifespan, and remain salient from childhood through old age. In general, sexual activities are guided by a set of 'sexual scripts,' culturally constructed messages which define what types of activities are considered sexual encounters, as well as what types of behaviors are to be performed during sex (Gagnon and Simon 1973). Much of sexual scripts are learned – from media, from peers, or from adults – before sexual debut; however, these scripts are malleable and are shaped by instances of sexual interaction. There is evidence that broader cultural understandings of sex are incorporated to partnered sexual behavior in heterogenous ways, depending on dyadic and individual experiences (Masters et al 2013).

Partnered sexual debut, therefore, represents a significant point in the sexual life trajectory, that has implications for shaping expectations for future sexual interactions. Despite this, there is relatively little known about the long-term impacts of the conditions of sexual debut (e.g. whether first sex was forced, coerced, acquiesced or consensual), with the majority of existing research focusing on timing of sexual debut.

The literature that does exist on the topic implies that negative experiences at sexual debut have lasting effects – both physically and emotionally – throughout the life course. For example, Katz et al (2015) find that women who reported higher levels of discomfort with their

first sexual experience were more likely to comply with unwanted casual sex as adults. Experiences of sexual guilt and low self-esteem, which are both associated with acquiesced or coerced first sex, have also been shown to be related to worsened sexual satisfaction (Higgins et al 2011). An interview-based study of Irish women found that women whose sexual debut involved force or coercion had worsened physical and psychological health at the time of the interviews, and also had a higher lifetime prevalence of STIs than their counterparts whose first sexual experience was wanted (McCarthy-Jones et al 2019). There is also some evidence that individuals with vaginas who had negative experiences at sexual debut were more likely to experience vulvodynia – chronic vulvar pain and discomfort – as adults (Lamont et al 2001). Acquiescence during one's first sexual experience, therefore, has the potential to permanently affect an individual's experiences of sexual pleasure and desire. With these considerations in mind, I propose a hypothesis:

Hypothesis 1: Acquiesced first sex will be associated with reduced sexual satisfaction in older adulthood.

Gendered Differences in Sexual Satisfaction:

The hegemonic culture of heteronormativity and misogyny in society creates gendered differences in the ways that individuals experience both sexual desire and sexual pleasure. Homophobia and male dominance inform highly gendered sexual scripts, where men are expected to experience high levels of arousal and initiate sexual encounters, while women are expected to submit to receiving penile-vaginal penetration. Women's arousal and desire is conspicuously absent from this sexual script, which is centered around the pleasure of men. This directly affects sexual behavior: especially in more causal sexual encounters, both men and

women report that men are typically not concerned with women's pleasure (Armstrong et al 2012).

As such, those who have been socialized as female have often internalized sexual scripts that do not account for their own sexual desire and pleasure in sexual relationships. Instead, they are often expected to participate in sex even if it is not pleasurable. Cisgender heterosexual women, in particular, are likely to experience discrepancies in sexual desire (Moor et al 2020) while also contending with the fact that refusal of sex is a violation of normative heterosexual communication patterns. Many women, therefore, perceive sex not as an activity centered on their own desire and satisfaction, but as a form of care work or domestic 'labor' that is undertaken for the sake of their partner's wellbeing (Braksmajer 2017).

Due to the pre-existing normalization of ignoring women's desire in (hetero)sexual scripts, it may be easier for women who experience acquiesced first sex to accept un-pleasurable sex as an expected component of partnered sexuality. This brings forth an additional hypothesis:

Hypothesis 2: The effect of acquiesced first sex on sexual satisfaction in later life will be stronger for female respondents than for males.

Data and Methods:

Sources of Data:

This study utilized data from the National Social Life, Health, and Aging Project (NSHAP), a nationally representative longitudinal study of community-dwelling adults between the ages of 57-85, performed by the NORC at the University of Chicago. To date, there are three waves of NSHAP data available for use by researchers. In addition, the NORC conducted a special COVID-19 sub-study in 2020-2021. Because data on conditions of first sexual experience was only collected during Wave 2 of NSHAP, analysis will be performed on Wave 2,

which was collected between August 2010 and May 2011. Wave 2 of NSHAP collected additional data from the Wave 1 respondents, and extended the sample to include cohabiting spouses and romantic partners of Wave 1 respondents. NORC reports an overall unconditional response rate of 74% for Wave 2[1]. Wave 2 includes data from 3,196 total respondents (NORC, n.d.).

Sexual Satisfaction:

NSHAP respondents who reported being in a current (or recent) sexual relationship were presented with two questions to assess the physical pleasure and emotional satisfaction associated with that relationship. Each of these variables will be assessed independently, to determine whether a history of acquiescence at sexual debut has different effects on emotional and physical aspects of sex and sexual relationships. Individuals who did not respond to both the physical pleasure and emotional satisfaction prompts were excluded from the analysis.

Physical pleasure – respondents were asked: "How physically pleasurable did/do you find your relationship with [current/recent partner] to be?" Physical pleasure was measured on a scale of 0-4 in which 0 = "not at all" pleasurable and 4 = "extremely" pleasurable.

Emotional Satisfaction – respondents were asked: "How emotionally satisfying did/do you find your relationship with [current/recent partner] to be?" Emotional satisfaction was measured on a scale of 0-4 in which 0 = "not at all" satisfying and 4 = "extremely" satisfying.

The distribution of responses was skewed towards the higher end of both physical and emotional sexual quality, with a significant proportion of respondents reporting 'very' or 'extremely' physically and emotionally pleasurable sexual relationships. As such, several of the categories had a very limited number of responses. To account for low frequency in certain

[1] NORC reports a conditional response rate of 89% for Wave 1 respondents, a conditional response rate of 84% for partners, and a conversion rate of 26% for Wave 1 non-responders.

categories, as well as for clearer interpretation of results, data on both physical pleasure and emotional satisfaction were recoded into a more condensed scale, in which 0 = not at all/slightly pleasurable, 1 = moderately pleasurable, and 2 = very/extremely pleasurable.

Acquiescence at Sexual Debut:

NSHAP respondents were asked to retrospectively recall: "At this first [sexual] occasion, is this something you wanted at the time, went along with, or were forced into?" Conditions of sexual debut were coded into two categories: 0 = no acquiescence/force ("wanted [sex] at the time"), 1 = acquiescence ("went along with [sex]"). Those who reported experiencing a forced sexual debut were excluded from the sample, both due to my focus on the specific effects of acquiescence and concerns about lack of statistical power. Respondents missing data on the conditions of their first sexual experience were also dropped from the sample.

Covariates:

Basic sociodemographic characteristics were controlled in these analyses. Age was measured as a categorical variable, in which respondents were separated into three cohorts: ages 62-69, 70-79, and 80-91[2]. Gender[3] was measured as a binary variable in which 0 = male and 1 = female. Race-ethnicity included three categories: non-Hispanic White (reference), non-Hispanic Black, and 'other' (including Hispanic, Asian, Pacific Islander, and Native American). Education was measured as a binary variable in which 0 = education less than college level and 1 = education of 'some college' or higher.

It stands to reason that frequency of sexual activity and sexual quality differ depending on an individual's relationship status. Additionally, preliminary studies determined that there

[2] Cohort groupings were adapted from other studies using Wave 2 of NSHAP – see for example Vasilopoulos et al 2014

[3] Please note here that I choose to use the term "gender" in order to avoid confusion with multiple meanings of the word "sex" (e.g. 'assigned sex' vs. 'the act of sex').

was a significant difference in likelihood of being in a married/cohabiting relationship between those who had experienced acquiesced first sex and those who had not. As such, marital status was included as a covariate in these analyses. Marital status was measured as a binary variable in which 0 = not currently married/cohabiting with a partner (including divorced, widowed, separated, and never married) and 1 = currently married/cohabiting with a partner.

Religiosity and importance of religion in one's daily life have been shown to impact the likelihood of displaying patriarchal attitudes, and this association exists amongst a variety of religious beliefs including Islam (Acevedo and Shah 2015), Christianity (Mikolajcak and Pietrzak 2014), and others (see Parales and Bouma 2019). While an imperfect measure, religiosity may thus serve as a proxy for measuring an individual's adherence to patriarchy and hegemonic gender norms. As such, a measure of religiosity on attitudes and behavior was included as a covariate. Respondents were asked how much they agreed with the statement: "I try hard to carry my religious beliefs over into all my other dealings in life." Responses were coded into a binary variable in which 0 = 'disagree' or 'strongly disagree,' and 1 = 'agree' or 'strongly agree'.

Given that research has suggested a relationship between childhood adversity and conditions of sexual debut (see, for example, Hillis 2001), several measures of childhood adversity were controlled. These covariates included whether the respondent had the following experiences between ages 6 and 16: lived with both parents (1 = no, 0 = yes); family was well off (1 = no, including not very well off at all and not so well off, 0 = yes, including above average, fairly well off, and very well off); experienced violence (1 = yes, 0 = no); witnessed violence (1 = yes, 0 = no); and poor health (1 = yes, including poor or fair health, 0 = no, including good, very good, or excellent health).

Missing Data:

Table 1 shows the number of cases dropped from the analysis due to missing data:

Table 1: Missing Data

Category, listed in order of when missing data was dropped	**# of dropped cases due to missing data**
Independent variable (acquiesced first sex)	245
Dependent variable (physical satisfaction, emotional satisfaction)	715
Demographic variables (gender, age, race, education, religiosity, marital status)	344
Childhood adversity variables	112

The initial dataset included 3,196 respondents. For the final sample used in analysis, n = 1,790. The majority of missing data was from individuals who did not report being currently sexually active, and thus did not respond to questions regarding physical or emotional sexual satisfaction.

It is important to note, here, that excluding those who are not currently sexually active may have implications for interpretation of results: while initial analysis of the data showed that acquiesced first sex does not appear to significantly impact one's likelihood of being sexually active[4], there may be underlying differences in the effect of acquiescence on those who remain sexually active in older adulthood and those who do not. For example, it is possible that some of the missing individuals may be abstinent from sex secondary to an extremely low level of satisfaction with sexual activity.

[4] See Appendix A for results of logistic regression

Statistical Strategy:

The association between acquiescence at sexual debut and sexual satisfaction was tested by using ordered logistic regression models, with physical pleasure and emotional satisfaction as separate dependent variables. For each dependent variable, two models were created: Model 1 assessed the main effects of acquiesced first sex on sexual satisfaction, and Model 2 tested the moderating effect of gender. Both models controlled for sociodemographic covariates, marital status, religiosity, and childhood adversity.

To further evaluate the potential moderating effect of gender, predicted probabilities of experiencing a particular level of physical pleasure or emotional satisfaction were estimated amongst four groups:

1. Male respondents who experienced acquiesced first sex
2. Male respondents who did not experience acquiesced first sex
3. Female respondents who experienced acquiesced first sex
4. Female respondents who did not experience acquiesced first sex

Testing estimates of first and second difference in predicted probabilities, along with analysis of the coefficients in regression models, is thought to provide a more complete estimation of interaction effects and aid in interpretation of these effects in models with categorical / nonlinear outcomes (see Mize 2019).

Results:

The following tables present descriptive statistics for all analytic variables. Table 2 presents descriptive statistics for the dependent and independent variables, stratified by gender, and Table 3 presents descriptive statistics for all covariates:

Table 2: Descriptive Statistics for Dependent and Independent Variables

N = 1780		
Variable	**Female (n=794)**	**Male (n=986)**
First Sex		
Wanted	534 (67%)	836 (85%)
Acquiesced	260 (33%)	150 (15%)
Physical Pleasure		
Not at all / Slightly	83 (10%)	75 (7%)
Moderately	182 (23%)	144 (15%)
Very / Extremely	529 (67%)	767 (78%)
Emotional Satisfaction		
Not at all / Slightly	69 (9%)	57 (6%)
Moderately	169 (21%)	142 (14%)
Very / Extremely	556 (70%)	787 (80%)

In this sample, 33% of women and 15% of men reported that their first sexual experience was acquiesced. When reporting physical pleasure, respondents variably described their sexual relationships with the majority (67% of women, 78% of men) reporting relationships that were very/extremely pleasurable. When reporting emotional satisfaction, respondents variably described their sexual relationships with the majority (70% of women, 80% of men) reporting relationships that were very/extremely satisfying.

Table 3: Descriptive Statistics for Covariates

N = 1780	
Gender	
Male	**986 (55.4%)**
Female	**794 (44.6%)**
Age	
62-69	**780 (43.8%)**
70-79	**715 (40.2%)**
80-91	**285 (16.0%)**
Religiosity	
Disagree	**373 (21.0%)**
Agree	**1,407 (79.0%)**
Race	
White	**1,485 (83.4%)**
Black	**181 (10.2%)**
Other	**114 (6.4%)**
Marital Status	
Not married/cohabiting	**200 (11.2%)**
Married/cohabiting	**1,580 (88.8%)**
Education	
No college	**674 (37.9%)**
Some college or greater	**1,106 (62.1%)**
Family Well Off Financially	
Yes	**981 (55.1%)**
No	**799 (44.9%)**
Lived with Both Parents	
Yes	**1,526 (85.7%)**
No	**254 (14.3%)**
Healthy as a Child	
Yes	**1,676 (94.2%)**
No	**104 (5.8%)**
Experienced Violence	
No	**1,636 (91.9%)**
Yes	**144 (8.1%)**
Witnessed Violence	
No	**1,601 (89.9%)**
Yes	**179 (10.1%)**

The sample was mostly White (83.4%) and just under half of the respondents (44.6%) were female. Respondents ranged in age from 62yrs to 90yrs, with a mean age of 71.9yrs. A majority of respondents, 88.8%, were currently married or cohabiting with a partner. Over half of the respondents, 62.1%, had attended at least some college. With regard to childhood adversity measures, 85.7% of respondents lived with both parents while growing up; 44.9% reported their family was not at all or not so well off during childhood; 10.1% reported witnessing violence during childhood; 8.1% reported experiencing a violent event during childhood, and 5.8% rated their childhood health as poor or fair compared to same-age peers. A large majority (79.4%) of respondents agreed that they tried to carry their religious beliefs into their daily lives.

Physical Pleasure – Model 1 (Main Effects of Sexual Acquiescence)

Table 4 presents the results of an ordered logistic regression model relating acquiesced first sex to rating of physical pleasure in respondents' sexual relationships:

Table 4: Main Effects on Physical Pleasure

N = 1780		
Physical Pleasure	Odds ratio	P
Acquiesced First Sex	**0.6698049**	**0.001**
Female	**0.5712103**	**0**
Age		
70-79	**0.7460093**	**0.013**
80-91	**0.7393428**	**0.059**
Religiosity	**1.584744**	**0**
Race		
Black	**0.8032621**	**0.222**
Other	**0.4499675**	**0**
Married / Cohabiting	**0.7476982**	**0.1**
College	**1.049346**	**0.668**
Family Not Well Off	**0.8705202**	**0.214**
Did Not Live With Both Parents	**1.091699**	**0.581**
Poor Childhood Health	**0.7707947**	**0.227**
Experienced Violence	**0.8553864**	**0.463**
Witnessed Violence	**1.018878**	**0.925**

The results show that when sociodemographic covariates, childhood adversity, marital status, and religiosity are controlled, individuals whose first sex was acquiesced reported significantly lower levels of physical pleasure in their sexual relationship (OR=0.67, $p<0.01$)

Physical Pleasure – Model 2 (Interaction Effects of Gender and Sexual Acquiescence)

Table 5 presents the results of an ordered logistic regression model relating acquiesced first sex to rating of physical pleasure in respondents' sexual relationships, while also accounting for the interaction between gender and first sex acquiescence:

Table 5: Interaction with Gender

N = 1780		
Physical Pleasure	Odds ratio	P
Acquiesced First Sex	**0.9356567**	**0.751**
Female	**0.651421**	**0.001**
Acquiescence#Female	**0.5892797**	**0.042**
Age		
70-79	**0.753839**	**0.017**
80-91	**0.7474913**	**0.07**
Religiosity	**1.575175**	**0**
Race		
Black	**0.8028693**	**0.221**
Other	**0.4415253**	**0**
Married / Cohabiting	**0.7527826**	**0.108**
College	**1.049498**	**0.668**
Family Not Well Off	**0.866598**	**0.2**
Did Not Live With Both Parents	**1.099382**	**0.551**
Poor Childhood Health	**0.7741545**	**0.235**
Experienced Violence	**0.8617043**	**0.484**
Witnessed Violence	**1.008891**	**0.965**

At first glance, it appears that there may be a significant interaction effect between gender and acquiesced first sex.

To further illustrate the potential interaction effect of gender, tables 6-8 present the predicted probabilities of reporting to be in each level of the physical pleasure scale (from 'not at all' to 'extremely' pleasurable), for the various combinations of gender and acquiesced first sex:

Table 6: Not at all/slightly pleasurable

	Predicted probability	**First difference (acquiesced – wanted)**	**Second difference (male – female)**
Male, not acquiesced	0.066	0.004	-0.060**
Male, acquiesced	0.070		
Female, not acquiesced	0.097	0.065***	
Female, acquiesced	0.161		

*p ≤ 0.05, **p ≤ 0.01, ***p ≤ 0.001

Table 7: Moderately pleasurable

	Predicted probability	**First difference (acquiesced – wanted)**	**Second difference (male – female)**
Male, not acquiesced	0.151	0.007	-0.061*
Male, acquiesced	0.158		
Female, not acquiesced	0.199	0.068***	
Female, acquiesced	0.267		

*p ≤ 0.05, **p ≤ 0.01, ***p ≤ 0.001

Table 8: Very/extremely pleasurable

	Predicted probability	First difference (acquiesced – wanted)	Second difference (male – female)
Male, not acquiesced	0.783	-0.011	0.121*
Male, acquiesced	0.772		
Female, not acquiesced	0.704	-0.133***	
Female, acquiesced	0.571		

*p ≤ 0.05, **p ≤ 0.01, ***p ≤ 0.001

These results show that amongst female respondents, those whose first sex was acquiesced were significantly more likely to report sexual relationships that were 'not at all/slightly,' or 'moderately' physically pleasurable, and less likely to report that their sexual relationships were 'very/extremely' physically pleasurable when compared to those whose first sex was wanted. Amongst male respondents, on the other hand, there were no significant differences between those whose first sex was acquiesced and those whose first sex was wanted. This was true at all levels of reported physical pleasure.

In addition, the test of second difference was significant across all values of physical pleasure, indicating that the strength of the effect of acquiescence on physical pleasure is stronger in women than it is for men. Taken together, this confirms that gender has a significant interaction effect with acquiescence in this case.

Emotional Satisfaction – Model 1 (Main Effects of Sexual Acquiescence)

Table 9 presents the results of an ordered logistic regression model relating acquiesced first sex to rating of emotional satisfaction in respondents' sexual relationships:

Table 9: Main Effects on Emotional Satisfaction

N = 1780		
Emotional Satsifaction	Odds ratio	P
Acquiesced First Sex	**0.6637684**	**0.001**
Female	**0.5961209**	**0**
Age		
70-79	**0.8331488**	**0.134**
80-91	**0.9348287**	**0.689**
Religiosity	**1.599707**	**0**
Race		
Black	**0.9104482**	**0.612**
Other	**0.542298**	**0.003**
Married / Cohabiting	**1.285535**	**0.14**
College	**1.330292**	**0.013**
Family Not Well Off	**0.942715**	**0.611**
Did Not Live With Both Parents	**0.9048351**	**0.529**
Poor Childhood Health	**0.72508**	**0.144**
Experienced Violence	**0.8501669**	**0.462**
Witnessed Violence	**1.107705**	**0.629**

The results show that when sociodemographic covariates, childhood adversity, marital status, and religiosity are controlled, individuals whose first sex was acquiesced reported significantly lower levels of emotional satisfaction in their sexual relationship (OR=0.66, $p<0.01$)

Emotional Satisfaction – Model 2 (Interaction Effects of Gender and Sexual Acquiescence)

Table 10 presents the results of an ordered logistic regression model relating acquiesced first sex to rating of emotional satisfaction in respondents' sexual relationships, while also accounting for the interaction between gender and first sex acquiescence:

Table 10: Interaction Effect of Gender

N = 1780		
Emotional Satisfaction	Odds ratio	P
Acquiesced First Sex	**0.8075607**	**0.312**
Female	**0.6457589**	**0.001**
Acquiescence#Female	**0.7316887**	**0.239**
Age		
70-79	**0.837185**	**0.145**
80-91	**0.9414809**	**0.72**
Religiosity	**1.594642**	**0**
Race		
Black	**0.9099248**	**0.61**
Other	**0.5354112**	**0.002**
Married / Cohabiting	**1.289824**	**0.135**
College	**1.329276**	**-0.53**
Family Not Well Off	**0.9405715**	**0.014**
Did Not Live With Both Parents	**0.9091313**	**0.598**
Poor Childhood Health	**0.7236866**	**0.142**
Experienced Violence	**0.8541808**	**0.475**
Witnessed Violence	**1.10192**	**0.647**

While the interaction effect does not appear significant in this initial regression test, further investigation into the effect is still warranted.

To confirm or deny the potential interaction effect of gender, tables 11-13 present the predicted probabilities of reporting to be in each level of the emotional satisfaction scale (from 'not at all' to 'extremely' satisfying), for the various combinations of gender and acquiesced first sex:

Table 11: Not at all/slightly satisfying

	Predicted probability	**First difference (acquiesced – wanted)**	**Second difference (male – female)**
Male, not acquiesced	0.052	0.011	-0.035
Male, acquiesced	0.063		
Female, not acquiesced	0.078	0.046**	
Female, acquiesced	0.124		

*p ≤ 0.05, **p ≤ 0.01, ***p ≤ 0.001

Table 12: Moderately satisfying

	Predicted probability	**First difference (acquiesced – wanted)**	**Second difference (male – female)**
Male, not acquiesced	0.142	0.023	-0.042
Male, acquiesced	0.165		
Female, not acquiesced	0.191	0.065***	
Female, acquiesced	0.256		

*p ≤ 0.05, **p ≤ 0.01, ***p ≤ 0.001

Table 13: Very/extremely satisfying

	Predicted probability	First difference (acquiesced – wanted)	Second difference (male – female)
Male, not acquiesced	0.807	-0.035	0.077
Male, acquiesced	0.772		
Female, not acquiesced	0.731	-0.111***	
Female, acquiesced	0.620		

*p ≤ 0.05, **p ≤ 0.01, ***p ≤ 0.001

These results show that amongst female respondents, those whose first sex was acquiesced were significantly more likely to report sexual relationships that were 'not at all/slightly,' or 'moderately' emotionally satisfying, and less likely to report that their sexual relationships were 'very/extremely' emotionally satisfying when compared to those whose first sex was wanted. Amongst male respondents, on the other hand, there were no significant differences between those whose first sex was acquiesced and those whose first sex was wanted. This was true at all levels of reported emotional satisfaction.

The test of second difference was not statistically significant for any value of emotional satisfaction, indicating that the strength of the effect of acquiescence on emotional satisfaction is not any stronger in women than it is for men (i.e. there is no statistically significant interaction effect between gender and acquiesced first sex). This does not mean that gender has no effect – it is clear that the predicted probabilities are different for women and men in the tests of first differences – but the effects of gender and acquiesced first sex on emotional satisfaction are additive rather than interactive. In other words, acquiesced first sex is related to worsened emotional satisfaction, and so is being female, so females whose first sex was acquiesced have the lowest overall emotional satisfaction.

Discussion:

Sexual satisfaction is known to be important for the health and well-being of older adults. However, there is still much to be learned about the ways in which early sexual experiences, including sexual acquiescence, contribute to physical and emotional sexual satisfaction in older adulthood. After analyzing data from wave 2 of NSHAP to investigate the long-term consequences of first sex acquiescence on sexual satisfaction, two major findings have been revealed:

First, those whose first sex was acquiesced reported lower levels of both physical pleasure and emotional satisfaction than others whose first sex was wanted. This finding is consistent with Hypothesis 1, as well as previous studies that have suggested detrimental effects of acquiescence on sexual health more generally. The current study adds to the broader evidence that acquiesced first sex has lifelong impacts that extend into older adulthood (see Liu et al 2022), and is the first to specifically assess the long-term effects of acquiescence on sexual satisfaction.

Second, results of testing for interaction effects reveal some gendered differences in the ways that sexual acquiescence affects sexual satisfaction in older adulthood. In a manner consistent with Hypothesis 2, the study finds a significant gender interaction in the effect of acquiesced first sex on physical pleasure: the effect is larger for women than it is for men. Additionally, women were more likely to report sex that was “not at all/slightly” or “moderately” pleasurable, and less likely to report sex that was “very/extremely” pleasurable. This finding is also consistent with what we know about socialization and the development of sexual scripts, leading to gendered inequalities in the experience of sexual pleasure (Hall 2019, Laan 2021);

additionally, it implies that experiencing acquiesced first sex may possibly exacerbate heteronormative dynamics in which women's sexual pleasure is largely ignored.

It is also important to note that, while there did appear to be additive effects where both being female and experiencing acquiesced first sex were associated with lower emotional sexual satisfaction, there was not a significant interaction effect between gender and first sex acquiescence. This finding is not consistent with the original hypotheses, but may be explained by the fact that emotional satisfaction is thought to be dependent on other factors such as relationship context (i.e. whether the sex is casual or within the context of a committed relationship, see Mark et al 2015) or partner supportiveness (Hirayama and Walker 2011). It is possible that these additional factors 'buffer' the effects of acquiesced first sex on emotional satisfaction, creating a more equal effect size amongst male and female respondents.

This study had several limitations. First, NSHAP does not provide data on recurrent sexual acquiescence beyond the point of sexual debut. While evidence suggests that those who experience acquiesced first sex are more likely to experience sexual acquiescence in the future (Katz et al 2015), it is unclear whether or not this is true for the population being studied. This limited information makes it difficult to know for certain whether acquiesced first sex is a significant isolated event with long-term effects, or the catalyst to a series of repeated incidents of sexual acquiescence over time. Future studies on the long-term effects of early sexual acquiescence may benefit from a longitudinal design that tracks the prevalence of sexual acquiescence over time. Second, the study is limited in its focus on heterosexual and cisgender older adults: while researchers have paid greater attention to the health and wellbeing of sexual and gender minority (SGM) older adults in recent years, this population is still largely underrepresented in research on aging and sexuality more generally. It would be valuable for

future research to evaluate the long-term effects of acquiesced first sex on the sexual satisfaction in non-(cis)heterosexual relationships.

Conclusion:

Despite increased attention to the sexuality and sexual well-being of older adults, the relationship between early sexual experiences and late-life sexual health is not well understood. This study presents one of the first population-based studies on the effects of acquiescence at sexual debut on sexual satisfaction – both physical and emotional – in later life. I found that those whose first sexual experience was acquiesced were likely to report lower levels of both physical pleasure and emotional satisfaction than those whose first sexual experience was wanted. Additionally, I found that the effect of early sexual acquiescence on late-life physical pleasure is stronger in women than in men – this interaction effect was not present for emotional satisfaction. These results bring attention to the role of early sexual history in long-term sexual well-being, as well as the role of gendered sociocultural influences on experiences of sexual desire and pleasure. Educating adolescents on sexual consent and healthy sexual boundaries to prevent experiences of acquiesced first sex may be a point of intervention for policies aimed at improving sexual wellness throughout the life course.

CHAPTER TWO: SEXUAL PROBLEMS

Age-related physiologic changes are known to affect sexual function over time; however, research has shown that older adults consider sexual activity and sexual functioning to be important components of their lives, with impacts on their health and well-being. As such, sexual problems are associated with poorer mental health, life satisfaction, and overall lower quality of life (Jackson et al 2019). With these impacts in mind, research to aid in identification and treatment of sexual dysfunction among older adults has increased in recent years.

There is still, however, a paucity of research on the effects of early sexual experiences on sexual functioning throughout the life course and into old age. I have identified *sexual acquiescence* – or participation in sex without concomitant desire – as one such experience with the potential to contribute to older adults' sexual problems. Much of the literature on acquiescence at sexual debut is focused on acquiescence's effect on sexual behaviors amongst adolescents and young adults; as such, very little is known about the long-term effects of acquiescence on sexual function. I propose that acquiescence at sexual debut may act as a catalyst for chronic sexual stressors, eventually leading to sexual dysfunction in older adulthood.

Using data from wave 2 of the National Social Life, Health, and Aging Project (NSHAP), I present one of the first population-based studies on the effects of acquiescence at sexual debut on sexual dysfunction in later life. To do so, I address two research questions: first, is acquiescence during one's first sexual experience associated with a higher likelihood of experiencing sexual problems later life? Second, do these associations differ by gender? Identifying relationships between early sexual acquiescence and sexual problems in late life may inform clinical practices that aim to identify and address sources of sexual dysfunction in older adulthood.

Background:

Defining 'Sexual Function':

Heteronormative sexual scripts often equate "sexual function" to the capacity to have heterosexual, penile-vaginal penetrative sex, and define "sexual problems" as an inability to participate in this type of sex . Centering interventions on the sexual functioning and desire of men reinforces heteronormative and patriarchal concepts of sexuality, where male pleasure and satisfaction take priority; thus, a more appropriate definition of sexual function is: "one's ability to engage in sexual expression and sexual relationships that are rewarding, and the state of one's physical, mental, and social well-being in relation to his or her sexuality." (DeLamater 2012, p.127). With this definition in mind, this paper seeks to identify not only physical sexual problems, but mental and emotional ones as well.

Overview of Sexual Problems:

Sexual functioning is known to change over time, as aging is associated with significant alteration of physiological and hormonal processes. Those with a uterus undergo menopause, usually around the age of 50, where menses cease and estrogen production significantly declines. As estrogen plays a significant role in many metabolic processes, this decrease is associated with a variety of symptoms, including hot flashes, depression, increased risk of coronary artery disease, and osteoporosis. Additionally, the lack of hormonal stimulation often causes *vaginal atrophy*, a thinning of the vaginal walls associated with vaginal dryness, irritation, and dyspareunia (Greendale et al 1999). In those with a penis, aging is associated with progressive decline in testosterone that may reduce libido and capacity to achieve orgasm (Morales et al 2000). Additionally, vasculogenic changes secondary to aging may also lead to erectile dysfunction and other sexual difficulties. The physiologic changes associated with aging make

sexual problems relatively common amongst older adults: it is estimated that approximately half of sexually active older adults experience one or more bothersome sexual problems (Lindau et al 2007).

Sexual problems, however, are not necessarily an inevitable consequence of aging. Many older adults continue to have satisfying sexual lives, with some individuals remaining sexually active into their 90s (see Steckenrider 2023). Additionally, not all sexual dysfunction is necessarily secondary to a simple physiologic cause. Sexual problems have been shown to be associated with a host of social-emotional factors including depression (Atlantis and Sullivan 2012) and financial, family, or spousal stress (Lau et al 2005, Bodenmann et al 2006).

It is possible that those whose first sexual experience was acquiesced may have an increased risk of experiencing sexual dysfunction in future sexual interactions, as sexual acquiescence may act as a catalyst for a host of detrimental physical and/or emotional changes. There is some evidence, for example, that individuals with vaginas who had negative experiences at sexual debut were more likely to experience vulvodynia – chronic vulvar pain and discomfort – as adults (Lamont et al 2001). In addition, recent research has shown that those who experienced acquiesced first sex tended to have worsened physical and mental health than their counterparts whose first sexual experience was wanted (McCarthy-Jones et al 2019, Liu et al 2022). Acquiescence during one's first sexual experience, therefore, has the potential to have long-term deleterious effects on various contributors to sexual dysfunction.

With the aforementioned information in mind, I propose a hypothesis:

Hypothesis 1: Acquiesced first sex will be associated with a higher likelihood of experiencing sexual problems in older adulthood.

Gendered Differences in Sexual Problems:

Gendered sexual norms have often been framed through a constructionist perspective, in which people actively reproduce and enforce those norms by "doing gender" or "doing sexuality" (West and Zimmerman 1987). However, socially appropriate ways to perform one's gender are frequently associated with youthful virility and (hetero)sexual desirability. As such, when people age, they lose the capacity to 'do gender' in a socially appropriate way. In general, violation of gendered norms causes social stress and can deteriorate relationships. Because of the fact that gender norms are constructed at a macro level, and are frequently policed by others, this stress may occur regardless of one's own level of commitment to gender norms. Research has shown that even couples who are ideologically gender-egalitarian within their own relationships may undergo social stress from violating social norms, especially in more gender conservative cultures (Gonalons-Pons and Gangl 2021).

More specifically, the influence of gender norms manifests as a secondary sexual double standard of aging: because ideals of feminine beauty and sexual attractiveness are based on youthful physical traits, aging women are thought to lose their sexual value over time. Men, however, do not experience an equivalent loss of sexual value with age (England and McClintock 2009). Because women's sexuality is largely viewed as passive, a woman's self-perceptions of her own sexual desirability is largely based on whether or not she receives sexual advances from men.

The sexual changes associated with aging, therefore, may significantly impact one's own view of themselves as a sexual being. As Cooley (1902) elaborated through his concept of the "looking glass self," individuals' identities are shaped significantly by the way in which they feel they are perceived by others. As such, feelings that one's partner is sexually unresponsive or does

not view them as sexually desirable poses a significant threat to sexual identity. Loss of libido and other sexual dysfunction, while common with aging, may come to be seen as problematic because of these threats to sexual confidence and self-perceptions.

The sexual double standard of aging may play a role in the gender disparities in the detrimental mental health effects of sexual dysfunction. Researchers have found significant association between feeling bothered by partner's sexual problems and worsened mental health, particularly amongst women. Studies show consistently strong correlation between women's perceived sexual problems and stress, anxiety, depression, and poor mental health more generally. This association is far less consistent in men (Laumann et al 2008).

Given the gendered differences in both sexual aging and frequency of sexual problems, I propose an additional hypothesis:

Hypothesis 2: The effect of acquiesced first sex on the likelihood of experiencing sexual problems will be greater in female respondents than in males.

Data and Methods:

Sources of Data:

This study utilized data from the National Social Life, Health, and Aging Project (NSHAP), a nationally representative longitudinal study of community-dwelling adults between the ages of 57-85, performed by the NORC at the University of Chicago. To date, there are three waves of NSHAP data available for use by researchers. In addition, the NORC conducted a special COVID-19 sub-study in 2020-2021. Because data on conditions of first sexual experience was only collected during Wave 2 of NSHAP, analysis was performed on Wave 2, which was collected between August 2010 and May 2011. Wave 2 of NSHAP collected additional data from the Wave 1 respondents, and extended the sample to include cohabiting

spouses and romantic partners of Wave 1 respondents. NORC reports an overall unconditional response rate of 74% for Wave 2[5]. Wave 2 includes data from 3,196 total respondents (NORC, n.d.).

Sexual Problems:

To assess prevalence of various sexual problems, NSHAP respondents were asked a series of questions: "during the last 12 months there has ever been a period of several months or more when you..."

- Lacked interest in having sex? (0 = no, 1=yes)
- Were unable to climax/experience an orgasm? (0 = no, 1=yes)
- Came to a climax/experienced orgasm too quickly? (0 = no, 1=yes)
- Experienced pain during sex? (0 = no, 1=yes)
- Did not find sex pleasurable, even if it was not painful? (0 = no, 1=yes)
- Felt anxious just before having sex about your ability to perform sexually? (0 = no, 1=yes)
- Experienced a physical/physiological difficulty in sexual arousal
    - In male respondents: "during the last 12 months, has there ever been a period of several months or more when you had trouble getting or maintaining an erection?" (0 = no, 1 = yes)
    - In female respondents: "during the last 12 months, has there ever been a period of several months or more where you had trouble lubricating?" (0 = no, 1 = yes)

The structure of the NSHAP questionnaire led to data in which male and female respondents responded to slightly different questions regarding sexual function and sexual arousal. Responses

[5] NORC reports a conditional response rate of 89% for Wave 1 respondents, a conditional response rate of 84% for partners, and a conversion rate of 26% for Wave 1 non-responders.

to questions about erectile and lubrication difficulties were combined into a single 'physiologic dysfunction' variable.

Acquiescence at Sexual Debut:

NSHAP respondents were asked to retrospectively recall: "At this first [sexual] occasion, is this something you wanted at the time, went along with, or were forced into?" Conditions of sexual debut were coded into two categories: 0 = no acquiescence/force ("wanted [sex] at the time"), 1 = acquiescence ("went along with [sex]"). Those who reported experiencing a forced sexual debut were excluded from the sample, both due to my focus on the specific effects of acquiescence and concerns about lack of statistical power. Respondents missing data on the conditions of their first sexual experience were also dropped from the sample.

Covariates:

Basic sociodemographic characteristics were controlled in these analyses. Age was measured as a categorical variable, in which respondents were separated into three cohorts: ages 62-69, 70-79, and 80-91[6]. Gender[7] was measured as a binary variable in which 0 = male and 1 = female. Race-ethnicity included three categories: non-Hispanic White (reference), non-Hispanic Black, and 'other' (including Hispanic, Asian, Pacific Islander, and Native American).. Education was measured as a binary variable in which 0 = education less than college level and 1 = education of 'some college' or higher.

It stands to reason that frequency of sexual activity and sexual quality differ depending on an individual's relationship status. Additionally, preliminary studies determined that there was a significant difference in likelihood of being in a married/cohabiting relationship between

[6] Cohort groupings were adapted from other studies using Wave 2 of NSHAP – see for example Vasilopoulos et al 2014

[7] Please note here that I choose to use the term "gender" in order to avoid confusion with multiple meanings of the word "sex" (e.g. 'assigned sex' vs. 'the act of sex').

those who had experienced acquiesced first sex and those who had not. As such, marital status was included as a covariate in these analyses. Marital status was measured as a binary variable in which 0 = not currently married/cohabiting with a partner (including divorced, widowed, separated, and never married) and 1 = currently married/cohabiting with a partner.

Religiosity and importance of religion in one's daily life has been shown to impact the likelihood of displaying patriarchal attitudes, and this association exists amongst a variety of religious beliefs including Islam (Acevedo and Shah 2015), Christianity (Mikolajcak and Pietrzak 2014), and others (see Parales and Bouma 2018). While an imperfect measure, religiosity may thus serve as a proxy for measuring an individual's adherence to patriarchy and hegemonic gender norms. As such, a measure of religiosity on attitudes and behavior was included as a covariate. Respondents were asked how much they agreed with the statement: "I try hard to carry my religious beliefs over into all my other dealings in life." Responses were coded into a binary variable in which 0 = 'disagree' or 'strongly disagree,' and 1 = 'agree' or 'strongly agree'.

Given that research has suggested a relationship between childhood adversity and conditions of sexual debut (see, for example, Hillis 2001), several measures of childhood adversity were controlled. These covariates included whether the respondent had the following experiences between ages 6 and 16: lived with both parents (1 = no, 0 = yes); family was well off (1 = no, including not very well off at all and not so well off, 0 = yes, including above average, fairly well off, and very well off); experienced violence (1 = yes, 0 = no); witnessed violence (1 = yes, 0 = no); and poor health (1 = yes, including poor or fair health, 0 = no, including good, very good, or excellent health).

Missing Data:

Table 14 shows the number of cases dropped from the analysis due to missing data:

Table 14: Missing Data

Category, listed in order of when missing data was dropped	**# of dropped cases due to missing data**
Independent variable (acquiesced first sex)	245
Dependent variables (sexual dysfunction variables)	814
Demographic variables (gender, age, race, education, religiosity, marital status)	353
Childhood adversity variables	106

The initial dataset included 3,196 respondents. For the final sample used in analysis, n = 1,678. The majority of missing data was from individuals who did not report being currently sexually active, and thus did not respond to questions regarding sexual problems.

It is important to note that excluding those who are not currently sexually active may have implications for interpretation of results: while initial analysis of the data showed that acquiesced first sex does not appear to significantly impact one's likelihood of being sexually active[8], there may be underlying differences in the effect of acquiescence on those who remain sexually active in older adulthood and those who do not. For example, it is possible that some of the missing individuals may be abstinent from sex secondary to extreme sexual problems that entirely prevent them from participating in partnered sex.

[8] See Appendix A for results of logistic regression

Statistical Strategy:

The association between acquiescence at sexual debut and sexual problems was tested using logistic regression models for each individual sexual problem. Using this form of analysis – rather than combining the variables to create a scale of sexual dysfunction – allows for more specific identification of which dimensions of sexuality are impacted. For each dependent variable, two models were created: Model 1 assessed the main effects of acquiesced first sex on the sexual problem, and Model 2 tested the moderating effect of gender. Both models control for sociodemographic covariates, marital status, religiosity, and childhood adversity.

To further evaluate the potential moderating effect of gender, predicted probabilities of experiencing each sexual problem were estimated amongst four groups:

1. Male respondents who experienced acquiesced first sex
2. Male respondents who did not experience acquiesced first sex
3. Female respondents who experienced acquiesced first sex
4. Female respondents who did not experience acquiesced first sex

Testing estimates of first and second difference in predicted probabilities, along with analysis of the coefficients in regression models, is thought to provide a more complete estimation of interaction effects and aid in interpretation of these effects in models with categorical / nonlinear outcomes (see Mize 2019).

Results:

The following tables present descriptive statistics for all analytic variables. Table 15 presents descriptive statistics for the dependent and independent variables, stratified by gender, and Table 16 presents descriptive statistics for all covariates:

Table 15: Descriptive Statistics for Dependent and Independent Variables

N = 1678		
Variable	**Female (n=807)**	**Male (n=871)**
First Sex		
Wanted	526 (65%)	742 (85%)
Acquiesced	281 (35%)	129 (15%)
Sexual Problems		
Lack of Interest In Sex (=1)	418 (53%)	284 (29%)
Inability to Reach Climax (=1)	265 (33%)	264 (27%)
Reached Climax Too Quickly (=1)	49 (6%)	192 (19%)
Pain During Sex (=1)	101 (13%)	17 (2%)
Lack of Pleasure from Sex (=1)	139 (18%)	82 (8%)
Anxious About Performance (=1)	81 (10%)	241 (24%)
Physiologic Difficulties (=1)	214 (27%)	368 (37%)

In this sample, 35% of women and 15% of men reported that their first sex was acquiesced. The prevalence of sexual problems varied, with the lowest frequency being pain during sex (13% of females and 2% of males). For female respondents, the most common sexual problem was lacking interest in sex (53%), and in males, the most common problem was erectile difficulties (37%).

Table 16: Descriptive Statistics for Covariates

N = 1678	
Gender	
Male	**871 (51.9%)**
Female	**807 (48.1%)**
Age	
62-69	**731 (43.6%)**
70-79	**654 (39.0%)**
80-91	**293 (17.5%)**
Religiosity	
Disagree	**335 (20.0%)**
Agree	**1,343 (80.0%)**
Race	
White	**1,359 (81.0%)**
Black	**200 (11.9%)**
Other	**119 (7.1%)**
Marital Status	
Not married/cohabiting	**407 (24.3%)**
Married/cohabiting	**1,271 (75.7%)**
Education	
No college	**659 (39.3%)**
Some college or greater	**1,019 (60.7%)**
Family Well Off Financially	
Yes	**912 (54.4%)**
No	**766 (45.6%)**
Lived with Both Parents	
Yes	**1,423 (84.8%)**
No	**255 (15.2%)**
Healthy as a Child	
Yes	**1,567 (93.4%)**
No	**111 (6.6%)**
Experienced Violence	
No	**1,532 (91.3%)**
Yes	**146 (8.7%)**
Witnessed Violence	
No	**1,503 (89.6%)**
Yes	**175 (10.4%)**

The sample was mostly White (81%) and just under half of the respondents (48.1%) were women. Respondents ranged in age from 62yrs to 90yrs, with a mean age of 72yrs. A majority of respondents, 75.7%, were currently married or cohabiting with a partner. Over half of the respondents, 60.7%, had attended at least some college. With regard to childhood adversity measures, 84.8% of respondents lived with both parents while growing up; 45.6% reported their family was not at all or not so well off during childhood; 10.4% reported witnessing violence during childhood; 8.7% reported experiencing a violent event during childhood, and 6.6% rated their childhood health as poor or fair compared to same-age peers. A large majority (80%) of respondents agreed that they tried to carry their religious beliefs into their daily lives.

Model 1: Main Effects of Sexual Acquiescence

Table 17[9] presents the results of logistic regression models relating acquiesced first sex to each of the sexual problems:

Table 17: Main Effects for Sexual Problems

	Odds ratio
Pain during sex	1.55*
Did not find sex pleasurable	1.75***
Inability to climax	0.83
Climax too quickly	1.02
Anxious about ability to perform sexually	0.94
Lack interest in sex	1.33*
Physiologic difficulties	0.80

*p ≤ 0.05, **p ≤ 0.01, ***p ≤ 0.001

[9] Odds ratios in table 17 adjusted for covariates including gender, age, race, religiosity, marital status, education, and childhood adversity variables

The results show that when sociodemographic covariates, childhood adversity, marital status, and religiosity are controlled, those who experienced acquiesced first sex were significantly more likely to experience pain during sex (OR=1.55, $p<0.05$), not find sex pleasurable (OR=1.75, $p<0.001$), and lack interest in sex (OR=1.33, $p<0.05$) when compared to their counterparts whose first sex was wanted.

There was no significant association between acquiesced first sex and reporting an inability to climax, climaxing too quickly, or experiencing physiologic difficulties in sexual activity (erectile or lubrication difficulties). There was also no significant association between first sex acquiescence and anxiety regarding sexual performance.

Model 2: Interaction Effect of Gender

Table 18[10] presents the results of logistic regression models relating acquiesced first sex to each of the sexual problems, including an interaction term for gender:

Table 18: Interaction Effects of Gender

	Odds ratio
Pain during sex#gender	2.11
Did not find sex pleasurable#gender	1.16
Inability to climax#gender	1.16
Climax too quickly#gender	0.76
Anxious about ability to perform sexually#gender	1.8
Lack interest in sex#gender	1.18
Physiologic difficulties#gender	1.04

*p ≤ 0.05, **p ≤ 0.01, ***p ≤ 0.001

[10] Odds ratios in table 18 adjusted for covariates including gender, age, race, religiosity, marital status, education, and childhood adversity variables

From these logistic regressions, there appears to be no significant interaction effect between gender and acquiesced first sex among any of the sexual problems. To confirm or deny the potential interaction effect of gender, tests of second difference were performed for each dependent variable.

Table 19 presents the value of the 'second differences,' or the differences in predicted probabilities of experiencing each sexual problem for males whose first sex was acquiesced, and females whose first sex was acquiesced:

'Second difference' = (pr $Female_{acquiesced}$ – pr $Female_{wanted}$) - (pr $Male_{acquiesced}$ – pr $Male_{wanted}$)

Table 19: Results of Tests of Second Difference

	'Second difference'
Pain during sex	0.04
Did not find sex pleasurable	0.05
Inability to climax	0.02
Climax too quickly	-0.03
Anxious about ability to perform sexually	0.09
Lack interest in sex	0.05
Physiologic difficulties	0.02

*p ≤ 0.05, **p ≤ 0.01, ***p ≤ 0.001

The results of these tests confirm that there is no significant interaction between acquiesced first sex and gender.

Discussion:

Sexual problems may be a significant source of distress for older adults, who consider sexual activity to be an important component of their relationships and overall well-being. It is important, then, to continue to identify potential factors that contribute to a variety of sexual problems in older adulthood. After analyzing data from wave 2 of NSHAP to investigate the long-term consequences of acquiesced first sex on sexual problems, two major findings have been revealed:

First, those whose first sex was acquiesced were significantly more likely to have problems surrounding their ability to experience sexual pleasure. First sex acquiescence was associated with a greater likelihood of experiencing pain during sex, not finding sex pleasurable, and lacking interest in sex when compared to counterparts whose first sex was wanted. This is consistent with Hypothesis 1. However, the findings also illustrate that early sexual acquiescence does not cause a global increase in risk of experiencing sexual problems: acquiesced first sex did not appear to have significant effects on physiologic functioning, including not only function of the genitals themselves (erectile dysfunction and lubrication difficulties) but also one's capacity for experiencing orgasm and not having orgasms too early. This first set of findings implies that the effects of acquiescence at sexual debut have a direct effect on one's attitudes towards sex and capacity for experiencing desire and pleasure. Additionally, while acquiescence is known to have detrimental effects on mental or physical health (see Liu et al 2022), these effects do not appear to translate into meaningful physiological differences in sexual function.

It is curious that while acquiesced first sex was associated with one's desire for and enjoyment of sex, it did not appear to have an impact on the likelihood of experiencing anxiety surrounding the ability to perform sexually. This is somewhat consistent with the fact that people

may participate in sex for reasons outside of their own desire: for example, it is thought that many women view sex as a form of care work or domestic 'labor' that is undertaken for the sake of their partner's wellbeing (Braksmajer 2017). While those whose first sex was acquiesced may be less likely to enjoy sex, they do not seem to lack confidence in their capacity to perform sexually for their partner.

A second finding is that there did not appear to be any interaction effect between gender and acquiesced first sex, across all of the tested sexual problems. This finding is somewhat surprising, and is not consistent with the initial hypothesis on the effect of gender. However, it is not wholly inconsistent with our understandings of how those who are socialized as male may experience acquiesced sex. Because men are expected to have constant, high levels of desire and be sexually aggressive, men may have a lower capacity for sex refusal efficacy (Gavey 2005). Additionally, some research has noted that sexual compliance occurs in relatively similar proportions among men and women, though findings in this area have been somewhat mixed (Flack et al 2007, Katz et al 2015). The lack of gendered differences in the effects of acquiescence help to bring attention to the fact that (cis)heteronormative expectations surrounding sexual activity, resulting in experiences of sexual acquiescence, cause harm to men.

This study had several limitations. First, data on sexual problems was only collected for those who were currently sexually active. It is therefore possible that a proportion of the individuals who were not sexually active at the time of the study abstained from sex as a result of a severe sexual problem, and some individuals with sexual problems were excluded from the analysis. Second, the study is limited in its focus on heterosexual and cisgender older adults. This is a problem with discussions of sexual function and sexual problems more generally, where 'sexual problems' are frequently defined as the inability to comfortably participate in

heterosexual, penile-vaginal sex. It would be valuable for future research to evaluate the long-term effects of acquiesced first sex on the sexual function of non-(cis)heterosexual individuals.

Conclusion:

While research on the sexuality and sexual well-being of older adults is growing, we still have an incomplete understanding of the relationship between early sexual experiences and late-life sexual functioning. This study presents one of the first population-based studies on the effects of acquiescence at sexual debut on the likelihood of experiencing a variety of sexual problems in later life. I found that those whose first sexual experience was acquiesced had a greater likelihood of experiencing pain during sex, not finding sex pleasurable, and lacking interest in sex when compared to counterparts whose first sex was wanted. Early acquiescence, however, did not appear to affect erectile function, vaginal lubrication, ability to experience orgasm, or anxiety surrounding sexual performance. Additionally, there was no significant interaction between gender and acquiesced first sex, implying that male and female respondents experienced equally negative effects on sexual function when their first sex was acquiesced.

These results call attention to the significance of obtaining a sexual history in order to further evaluate the causes of sexual dysfunction. A 2011 survey showed that, while the vast majority of surveyed geriatricians (96.7%) believed that the sexual problems of older adults were important and should be managed further, the practice of taking a sexual history was relatively uncommon: 42.5% of the survey respondents admitted to ‘never’ taking a sexual history, and none of the respondents claimed to ‘routinely’ take a sexual history (Balami 2011). Given the role of the conditions of one’s sexual debut in their risk of experiencing future sexual problems, discussion of a complete sexual history may be a valuable tool for clinical management of sexual dysfunction in older adults.

CHAPTER THREE: MASTURBATION PREVALENCE

While older adults frequently face stereotypes of being asexual or having low levels of sexual desire, there is evidence that people continue to participate in sexual behavior – including masturbation – as they age. According to an analysis of the 2009 National Survey of Sexual Health Behavior (NSSHB), 28% of men and 12% of women over the age of 70 reported solo masturbation in the prior month, and masturbation was found to be more common than partnered sexual activity in older age (Herbenick et al 2010). Masturbation is thus an important component of sexual expression in older adulthood.

Masturbation, however, remains a largely understudied component of human sexuality, particularly amongst older adults. We know relatively little about the ways in which early sexual experiences may shape sexual behaviors, including masturbation, throughout the life course. I have identified *sexual acquiescence* – or participation in sex without concomitant desire – as one such experience with the potential to affect older adults' masturbatory behaviors. I propose that acquiescence at sexual debut may lead to changes in sexual attitudes and awareness of one's own sexual desires, impacting masturbation frequency into old age.

Using data from wave 2 of the National Social Life, Health, and Aging Project (NSHAP), I present one of the first population-based studies on the effects of acquiescence at sexual debut on masturbation frequency in later life. To do so, I address two research questions: first, is acquiescence during one's first sexual experience associated with lower prevalence of masturbation behavior amongst older adults? Second, does this association differ by gender? Exploring the relationship between acquiesced first sex and masturbation behaviors allows for a deeper understanding of the long-term impacts of sexual acquiescence on sexual desire and function, even amongst those who may not be actively participating in partnered sex.

Background:

Masturbation as a Measurement of Sexual Function:

Studying the effects of first-sex acquiescence on masturbation allows inclusion of the sexual behaviors of those who do not have a sexual partner, or cannot participate in acts traditionally considered to be 'partnered sex.' There is evidence that masturbation is correlated with sexual desire more generally: for example, Herbenick et al (2023) find that amongst both men and women, desire for increased frequency of partnered sex was associated with significantly higher frequency of masturbation. Frequency of masturbation may thus serve as a proxy indicator of one's level of sexual desire and capacity for sexual functioning outside of partnered sex.

Masturbatory behaviors are shaped in a variety of ways by one's attitudes towards sex. For example, older adults have been found to be more likely to masturbate if they have higher levels of disapproval towards casual partnered sex, or sex 'without love' (Fischer et al 2022). This same study also noted that older individuals who believed that sexual activity was good for their health were more likely to masturbate. With this in mind, it makes sense that frequency of masturbation may also be reflective of one's sexual attitudes and sexual awareness.

Sexual Acquiescence, Sexual Awareness, and Masturbation:

There is some evidence indicating that masturbation habits become internalized during adolescence, and remain relatively unchanged throughout the lifespan: a longitudinal study of masturbation habits in four european countries from 1971-1996 found that masturbation behaviors remained relatively stable despite aging and changes in relationship status (Kontula and Haavio-Mannila, 2013). This evidence implies that early sexual experiences have the capacity to shape both partnered and unpartnered sexual expression throughout the lifespan.

Masturbation behaviors, therefore, may be linked to development of sexual awareness before and during one's sexual debut. The concept of *sexual awareness* was initially developed as an instrument for self-reporting individuals' attention to internal sexual cues, awareness of others' evaluations of one's sexuality, and self-reliance in decision-making surrounding sex (Snell et al 1991). Amongst women, higher levels of sexual awareness have been shown to be associated with greater self-esteem and higher capacity for self-advocacy in sexual situations (Horne and Zimmer-Gembeck 2006). Men with better sexual awareness have been shown to have more favorable attitudes towards condom use, both out of concern for themselves and their sexual partners (Snell and Wooldridge 1998).

Sexual awareness is developed through experiences with sexual activity, both partnered and unpartnered. There is evidence that masturbation is also important for the development of sexual awareness: becoming comfortable with discussing and participating in masturbation is associated with improved understanding of the sexual self and more positive evaluation of subsequent sexual activity (see, for example, Hogarth and Ingham 2009). Exposure to satisfying sexual experiences allows one to have a better understanding of their own desires, as well as become more comfortable with their own bodies and further improving sexual satisfaction.

On the other hand, exposure to negative sexual experiences, including sexual acquiescence, may reduce one's sexual awareness. Participation in acquiesced sex uncouples the act of sex itself from internal feelings of sexual desire and arousal, making it more difficult for individuals to develop awareness of their own sexual selves. There is little research on the long-term changes to sexual quality and sexual function associated with acquiesced first sex, but it is highly plausible that these changes may be – at least in part – due to dysfunctional development of sexual awareness in one's early sexual life.

Taken together, the literature provides evidence that masturbation is an important measurement of sexual function across the lifespan, including in older adulthood. Additionally, the significance of early sexual experiences and sexual attitudes for determining masturbation behaviors highlights masturbation prevalence as a potential indicator of sexual dysfunction secondary to experiences of sexual acquiescence. Given our understanding of masturbation and its potential relationship to acquiesced sex, I propose a hypothesis:

Hypothesis 1: Older adults whose first sex was acquiesced will be less likely to masturbate than those whose first sex was not acquiesced.

Gendered Differences in Masturbation Behaviors:

To begin to understand the role of gender in masturbation behaviors, it may be valuable to first discuss (hetero)sexual norms as viewed through the lens of Connell's (1987) concepts of hegemonic masculinity and emphasized femininity. Under hegemonic masculinity, men achieve cultural superiority through dominance, strength, and virility; as such, men are expected to experience high levels of arousal and initiate sexual encounters. Women, on the other hand, are bound by the norms of emphasized femininity, based in compliance and subordination to the interests of men. Femininity is associated with sexual submission and receiving penile-vaginal penetration, even in the absence of arousal and desire. These common scripts contribute to a 'sexual double standard' in which men are expected to be sexually assertive, while women are expected to be sexually passive or even resistant to sex (Crawford and Popp 2003, Katz and Schneider 2015).

Narratives surrounding masturbation largely reflect these (cis)heterosexual power dynamics, where discussions of masturbation behavior are largely centered either on male masturbation or depictions of female masturbation through a male-fantasy lens. Female

masturbation remains - if not openly stigmatized - hidden from popular understandings of sexuality and sexual behaviors. As such, women's experiences with masturbation are shaped by internalization of stereotypical sexual scripts that largely neglect, and sometimes even vilify, the sexual pleasure of women (Fahs and Frank 2014, Laan 2021).

Older women, in particular, face stigma for continuing to view themselves as sexually desirable and sexually active in a culture that associates female aging with a loss of sexual value. Men, however, do not experience an equivalent loss of sexual value with age (England and McClintock 2009). As such, women may be more susceptible to the stereotype of the "sexy oldie" or "sexy senior," which pokes fun at older adults who are open about their sexuality, implying that it is laughably inappropriate for them to do so (Gott 2005, Marshall 2010).

Given the gendered differences in the social and cultural acceptance of masturbation, which may theoretically exacerbate the deleterious effects of acquiesced first sex on sexual awareness, I propose an additional hypothesis:

Hypothesis 2: The effects of acquiesced first sex on prevalence of masturbation will be greater for female respondents than for males.

Data and Methods:

Sources of Data:

This study utilized data from the National Social Life, Health, and Aging Project (NSHAP), a nationally representative longitudinal study of community-dwelling adults between the ages of 57-85, performed by the NORC at the University of Chicago. To date, there are three waves of NSHAP data available for use by researchers. In addition, the NORC conducted a special COVID-19 sub-study in 2020-2021. Because data on conditions of first sexual experience was only collected during Wave 2 of NSHAP, analysis was performed on Wave 2,

which was collected between August 2010 and May 2011. Wave 2 of NSHAP collected additional data from the Wave 1 respondents, and extended the sample to include cohabiting spouses and romantic partners of Wave 1 respondents. NORC reports an overall unconditional response rate of 74% for Wave 2[11]. Wave 2 includes data from 3,196 total respondents (NORC, n.d.).

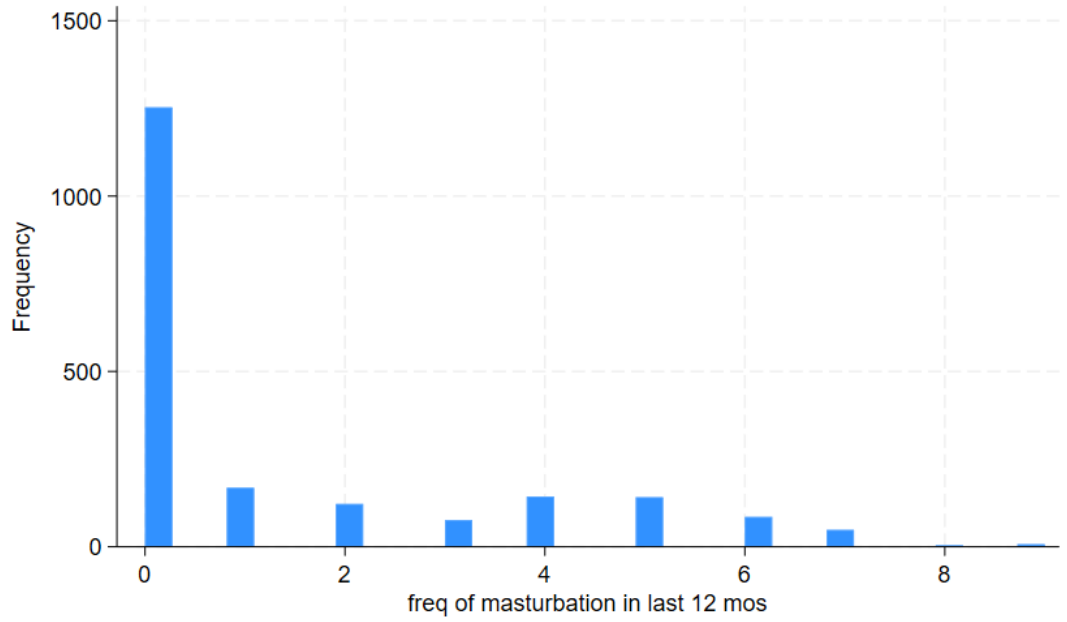
Frequency of Masturbation:

NSHAP respondents were asked: "on average, in the past 12 months, how often did you masturbate [stimulate your genitals for sexual pleasure, not with a sexual partner]?" Originally, frequency was measured on a scale of 0-9 where 0 = not at all this year, 1 = 1-2 times per year, 2 = 3-5 times per year, 3 = every other month, 4 = once a month, 5 = 2-3 times per month, 6 = once per week, 7 = several times per week, 8 = every day, and 9 = more than once per day.

The distribution of responses was skewed towards the lower end of masturbation frequency, with a significant proportion of respondents reporting no masturbation within the past year. As such, several of the categories had a very limited number of responses:

[11] NORC reports a conditional response rate of 89% for Wave 1 respondents, a conditional response rate of 84% for partners, and a conversion rate of 26% for Wave 1 non-responders.

Figure 2: Distribution of Masturbation Frequency



To account for the low frequency in certain categories, as well as for clearer interpretation of results, data on masturbation was recoded into a binary variable where 0 = did not masturbate at all this year, 1 = masturbated at least once this year.

Acquiescence at Sexual Debut:

NSHAP respondents were asked to retrospectively recall: "At this first [sexual] occasion, is this something you wanted at the time, went along with, or were forced into?" Conditions of sexual debut were coded into two categories: 0 = no acquiescence/force ("wanted [sex] at the time"), 1 = acquiescence ("went along with [sex]"). Those who reported experiencing a forced sexual debut were excluded from the sample, both due to my focus on the specific effects of acquiescence and concerns about lack of statistical power. Respondents missing data on the conditions of their first sexual experience were also dropped from the sample.

Covariates:

Basic sociodemographic characteristics were controlled in these analyses. Age was measured as a categorical variable, in which respondents were separated into three cohorts: ages 62-69, 70-79, and 80-91[12]. Gender[13] was measured as a binary variable in which 0 = male and 1 = female. Race-ethnicity included three categories: non-Hispanic White (reference), non-Hispanic Black, and 'other' (including Hispanic, Asian, Pacific Islander, and Native American). Education was measured as a binary variable in which 0 = education less than college level and 1 = education of 'some college' or higher.

It stands to reason that frequency of sexual activity and sexual quality differ depending on an individual's relationship status. Additionally, preliminary studies determined that there was a significant difference in likelihood of being in a married/cohabiting relationship between those who had experienced acquiesced first sex and those who had not. As such, marital status was included as a covariate in these analyses. Marital status was measured as a binary variable in which 0 = not currently married/cohabiting with a partner (including divorced, widowed, separated, and never married) and 1 = currently married/cohabiting with a partner.

Religiosity and importance of religion in one's daily life has been shown to impact the likelihood of displaying patriarchal attitudes, and this association exists amongst a variety of religious beliefs including Islam (Acevedo and Shah 2015), Christianity (Mikolajcak and Pietrzak 2014), and others (see Parales and Bouma 2018). While an imperfect measure, religiosity may thus serve as a proxy for measuring an individual's adherence to patriarchy and hegemonic gender norms. As such, a measure of religiosity on attitudes and behavior was

[12] Cohort groupings were adapted from other studies using Wave 2 of NSHAP – see for example Vasilopoulos et al 2014

[13] Please note here that I choose to use the term "gender" in order to avoid confusion with multiple meanings of the word "sex" (e.g. 'assigned sex' vs. 'the act of sex').

included as a covariate. Respondents were asked how much they agreed with the statement: "I try hard to carry my religious beliefs over into all my other dealings in life." Responses were coded into a binary variable in which 0 = 'disagree' or 'strongly disagree,' and 1 = 'agree' or 'strongly agree'.

Given that research has suggested a relationship between childhood adversity and conditions of sexual debut (see, for example, Hillis 2001), several measures of childhood adversity were controlled. These covariates included whether the respondent had the following experiences between ages 6 and 16: lived with both parents (1 = no, 0 = yes); family was well off (1 = no, including not very well off at all and not so well off, 0 = yes, including above average, fairly well off, and very well off); experienced violence (1 = yes, 0 = no); witnessed violence (1 = yes, 0 = no); and poor health (1 = yes, including poor or fair health, 0 = no, including good, very good, or excellent health).

Missing Data:

Table 20 shows the number of cases dropped from the analysis due to missing data:

Table 20: Missing Data

Category, listed in order of when missing data was dropped	**# of dropped cases due to missing data**
Independent variable (acquiesced first sex)	245
Dependent variable (masturbation)	264
Demographic variables (gender, age, race, education, religiosity, marital status)	446
Childhood adversity variables	136

The initial dataset included 3,196 respondents. For the final sample used in analysis, n = 2,105.

Statistical Strategy:

The association between acquiescence at sexual debut and masturbation prevalence was tested using logistic regression models, with masturbation prevalence as the dependent variable. Two models were created: Model 1 assessed the main effects of acquiesced first sex on masturbation, and Model 2 tested the moderating effect of gender. Both models controlled for sociodemographic covariates, marital status, religiosity, and childhood adversity.

To further evaluate the potential moderating effect of gender, predicted probabilities of masturbating within the past year were estimated amongst four groups:

1. Male respondents who experienced acquiesced first sex
2. Male respondents who did not experience acquiesced first sex
3. Female respondents who experienced acquiesced first sex
4. Female respondents who did not experience acquiesced first sex

Testing estimates of first and second difference in predicted probabilities, along with analysis of the coefficients in regression models, is thought to provide a more complete estimation of interaction effects and aid in interpretation of these effects in models with categorical / nonlinear outcomes (see Mize 2019).

Results:

The following tables present descriptive statistics for all analytic variables. Table 16 presents descriptive statistics for the dependent and independent variables, stratified by gender, and Table 21 presents descriptive statistics for all covariates:

Table 21: Descriptive Statistics for Dependent and Independent Variables

N = 2105		
Variable	**Female (n=1,092)**	**Male (n=1,013)**
First Sex		
Wanted	698 (64%)	863 (85%)
Acquiesced	394 (36%)	150 (15%)
Masturbated Within the Past Year		
No	784 (72%)	510 (50%)
Yes	308 (28%)	503 (50%)

In this sample, 36% of women and 15% of men reported that their first sex was acquiesced. Regarding prevalence of masturbation, the majority of women (72%) reported that they had not masturbated within the past year. Amongst men, half (50%) reported masturbation in the past year.

Table 22: Descriptive Statistics for Covariates

N = 2105	
Gender	
Male	**1,013 (48.1%)**
Female	**1,092 (51.9%)**
Age	
62-69	**825 (39.2%)**
70-79	**845 (40.1%)**
80-91	**435 (20.7%)**
Religiosity	
Disagree	**397 (18.9%)**
Agree	**1,708 (81.1%)**
Race	
White	**1,731 (82.2%)**
Black	**242 (11.5%)**
Other	**132 (6.3%)**
Marital Status	
Not married/cohabiting	**596 (28.3%)**
Married/cohabiting	**1,509 (71.7%)**
Education	
No college	**844 (40.1%)**
Some college or greater	**1,261 (59.9%)**
Family Well Off Financially	
Yes	**1,135 (53.9%)**
No	**970 (46.1%)**
Lived with Both Parents	
Yes	**1,795 (85.3%)**
No	**310 (14.7%)**
Healthy as a Child	
Yes	**1,967 (93.4%)**
No	**138 (6.6%)**
Experienced Violence	
No	**1,928 (91.6%)**
Yes	**177 (8.4%)**
Witnessed Violence	
No	**1,898 (90.2%)**
Yes	**207 (9.8%)**

The sample was mostly White (82.2%) and just over half of the respondents (51.9%) were female. Respondents ranged in age from 62yrs to 90yrs, with a mean age of 72.8yrs. A majority of respondents, 71.7%, were currently married or cohabiting with a partner. Over half of the respondents, 59.9%, had attended at least some college. With regard to childhood adversity measures, 85.3% of respondents lived with both parents while growing up; 46.1% reported their family was not at all or not so well off during childhood; 9.8% reported witnessing violence during childhood; 8.4% reported experiencing a violent event during childhood, and 6.6% rated their childhood health as poor or fair compared to same-age peers. A large majority (81.1%) of respondents agreed that they tried to carry their religious beliefs into their daily lives.

Model 1 – Main Effects

Table 23 shows the results of a logistic regression model relating acquiesced first sex to masturbation within the past year:

Table 23: Main Effects on Masturbation

N = 2105		
Masturbation in Past Year	Odds ratio	P
Acquiesced First Sex	**0.8007599**	**0.06**
Female	**0.3900152**	**0**
Age		
70-79	**0.5775012**	**0**
80-91	**0.274594**	**0**
Religiosity	**0.7393352**	**0.014**
Race		
Black	**0.6057575**	**0.003**
Other	**0.6537813**	**0.043**
Married / Cohabiting	**0.7837091**	**0.04**
College	**2.211434**	**0**
Family Not Well Off	**0.8667163**	**0.156**
Did Not Live With Both Parents	**0.696631**	**0.015**
Poor Childhood Health	**1.041385**	**0.844**
Experienced Violence	**1.172235**	**0.411**
Witnessed Violence	**1.332848**	**0.109**

After controlling for sociodemographic covariates, childhood adversity, marital status, and religiosity, the results show that those whose first sex was acquiesced were only marginally significantly less likely to report masturbating within the past year (OR 0.80, $p<0.1$).

Model 2 – Moderating Effect of Gender

Table 24 presents the results of an ordered logistic regression model relating acquiesced first sex to masturbation within the past year, while also accounting for the interaction between gender and first sex acquiescence:

Table 24: Interaction with Gender

N = 2105		
Masturbation In Past Year	Odds ratio	P
Acquiesced First Sex	**0.7992353**	**0.241**
Female	**0.3897598**	**0**
Acquiescence#Female	**1.003091**	**0.99**
Age		
70-79	**0.5774831**	**0**
80-91	**0.2745804**	**0**
Religiosity	**0.7393413**	**0.014**
Race		
Black	**0.6057872**	**0.003**
Other	**0.6538164**	**0.043**
Married / Cohabiting	**0.7837574**	**0.04**
College	**2.211432**	**0**
Family Not Well Off	**0.8667258**	**0.156**
Did Not Live With Both Parents	**0.6965719**	**0.015**
Poor Childhood Health	**1.04135**	**0.844**
Experienced Violence	**1.172208**	**0.411**
Witnessed Violence	**1.332846**	**0.109**

While the interaction effect does not appear significant in this initial regression test, further investigation into the effect is still warranted.

To confirm or deny the potential interaction effect of gender, table 25 presents the predicted probabilities of masturbation within the past year, for the various combinations of gender and acquiesced first sex:

Table 25: Tests of First and Second Difference

	Predicted probability	**First difference (acquiesced – wanted)**	**Second difference (male – female)**
Male, not acquiesced	0.506	-0.072†	-0.015
Male, acquiesced	0.434		
Female, not acquiesced	0.305	-0.057*	
Female, acquiesced	0.248		

†p≤0.1, *p ≤ 0.05, **p ≤ 0.01, ***p ≤ 0.001

The results show that female respondents whose first sex was acquiesced have a significantly lower probability of reporting masturbation in the past year (0.248) than those whose first sex was wanted (0.305; $\Delta = 0.057$, $p<0.05$). Amongst male respondents, there was only a marginally significant difference between those whose first sex was acquiesced and those whose first sex was wanted.

The test of second difference was not statistically significant, indicating that the strength of the effect of acquiescence on masturbation is not any stronger in women than it is for men (i.e. there is no statistically significant interaction effect between gender and acquiesced first sex). Rather than there being gendered differences in the strength of the effect of acquiesced first sex, it appears that differences are simply driven by gender, where the women in this sample were less likely to masturbate than their male counterparts.

Discussion:

Masturbation is known to be an important component of sexuality amongst older adults. However, the social and cultural contributors to the prevalence of masturbation in this population is still largely unknown. Utilizing data from wave 2 of NSHAP, this study aimed to investigate the potential role of acquiesced first sex on masturbatory behaviors in older adulthood. Two major findings were elucidated by this study:

First, it appeared that acquiesced first sex only had a marginally significant effect on older adults' likelihood of masturbating within the past year. This finding is inconsistent with my initial hypotheses, but may still provide valuable insights into the ways that masturbation and partnered sexuality are – or in this case, are not – connected. In fact, it seems promising that negative early sexual experiences, such as acquiesced first sex, do not necessarily hamper one's capacity for participating in non-partnered sexual activity. This may be due to the fact that adolescents tend to begin masturbating before they participate in partnered sex for the first time (Astle et al 2020), and habits surrounding masturbation are cemented prior to one's partnered sexual debut.

Second, while there were gendered differences in frequency of masturbation – with women being significantly less likely to masturbate than men – there was not a significant interaction effect between acquiesced first sex and gender. This finding is also inconsistent with my original hypotheses, though it is encouraging that acquiesced first sex does not appear to uniquely affect the masturbatory behaviors of older women.

This study had several limitations. First, NSHAP does not gather information about the timing or conditions of individuals' first experience with masturbation. Given the null findings of this study, it may be valuable to identify individuals who have participated in partnered sex

before masturbating for the first time, to test whether the order in which one has those sexual experiences matters when considering the effects of acquiesced first sex. Second, NSHAP does not provide data on perceived quality of – or satisfaction with – masturbation. People may masturbate for a variety of reasons aside from sexual pleasure: a 2013 study of masturbation activity of Portuguese women, for example, found that 34.3% of respondents reported masturbating "to cope with stress," and 32.3% "to fall asleep" (Carvalheira and Leal 2013). Simply measuring masturbation prevalence does not account for the possibility that some people may feel that their masturbatory behaviors do not bring them much pleasure, or that they are masturbating for reasons other than their own internal sexual desire.

Conclusion:

Despite the fact that masturbation is a common sexual practice throughout the life course, it remains a largely understudied component of human sexuality. This study presents one of the first population-based studies on the effects of acquiescence at sexual debut on the 1-year prevalence of masturbation in older adults. Interestingly, I found only a marginally significant relationship, implying that masturbation behaviors in late life are largely independent of the conditions of sexual debut. These results illustrate that, while acquiesced first sex is associated with deleterious effects in other areas of older adults' lives (see for example Liu et al 2022), it does not significantly affect their capacity to participate in non-partnered sexual behavior. This finding draws attention to the need for further investigation of masturbation behaviors throughout the life course, as masturbation may be a valuable way for individuals to develop a sense of their sexual selves independently of their partnered sexual history.

CONCLUSION

Despite being a relatively common experience, sexual acquiescence is an understudied social phenomenon, whose long-term effects on sexual health and well-being are largely unknown. This dissertation has begun to fill our gap in knowledge by investigating the relationship between acquiesced first sex and sexual function in older adulthood: Chapter one has shown that early sexual acquiescence has deleterious effects on both physical and emotional sexual satisfaction in older adulthood, and that the effect on physical pleasure is significantly stronger in female respondents than in males. Chapter two then demonstrated that acquiescence at sexual debut increases the likelihood of experiencing several sexual problems in older adulthood, including experiencing pain during sex, not finding sex pleasurable, and lacking interest in sex. Finally, chapter three discussed the impact of acquiescence at sexual debut on older adults' non-partnered sexual behavior – more specifically, prevalence of masturbation – finding that acquiescence is only marginally significantly related to the likelihood of reporting masturbation in the past year.

Synthesis of Major Findings:

Taken together, the findings of the three chapters give three key insights into the long-term effects of acquiesced sexual debut. First, it is apparent that experiences of acquiescence at sexual debut have long-term effects on both desire for and satisfaction with sexual activity: those whose first sex was acquiesced experience lower sexual quality, and are more likely to lack interest in sex altogether.

Second, the findings illustrate that acquiesced sexual debut does not appear to affect physiologic components of sex, nor does it affect one's likelihood of participating in sexual

activity[14], including masturbation. While these may be considered 'null' findings, they are still provide an important insight; despite the fact that previous work has indicated that acquiesced sexual debut is associated with worsened mental and physical health in older adulthood (Liu et al 2022), the findings of this dissertation suggest that those health effects do not correspond to a notable decrease in physiologic capacity for sexual activity.

Finally, there is a surprising lack of gendered differences in the effect of acquiesced first sex on sexual function. For all dependent variables – with the exception of physical pleasure – there was no significant interaction effect between gender and acquiescence. As such, it appears that acquiescence affects males and females similarly.

Scholarly Implications:

This dissertation represents the first population-level study examining the relationship between first sex acquiescence and sexual dysfunction in older adults. As such, the findings have several implications for continued scholarly work on the subject.

Acquiescence, while technically a form of 'consensual' sex, has been shown to be a form of sexual manipulation with long-lasting effects on one's desire for and enjoyment of sex. This indicates that acquiesced sex should be considered – along with rape and sexual coercion, which are more commonly studied – in scholarly work on the effects of sexual violence on health and well-being. Additionally, while acquiescence is a common sexual experience, the findings of this dissertation indicate that it is far from a benign one. Therefore, it may be valuable for future studies of sexual violence to make distinctions between desired and acquiesced 'consensual' sex to make more accurate comparisons to those for whom sex was forced or coerced.

[14] See Appendix A for regression model relating acquiesced first sex to sexual activity

It is also important to note, here, that male and female respondents experienced relatively similar negative effects of acquiescence. This finding provides a bit of clarity amongst mixed findings regarding acquiescence and sexual compliance in men (see Flack et al 2007, Katz et al 2015), and brings attention to the need for further investigation into the effects of sexual acquiescence on men. The majority of research on acquiescence collect data only from samples of cisgender, heterosexual women. Given the fact that women do not appear to be uniquely affected by sexual acquiescence, further research on the topic should ideally include participants of all genders, including men and non-binary / gender non-conforming individuals.

Clinical Implications:

While this dissertation is not focused on clinical data, it is important to discuss the ways in which the findings may inform clinical practice. There is a distinct lack of sexual education and reproductive health messaging targeted towards older adults, and physicians are less likely to routinely ask older adults questions about sexual function and behaviors. Women, in particular, are often embarrassed to discuss sexual problems, especially with younger male physicians (Sinkovic et al 2019). Many older adults also view declines in sexual function as a normal component of aging rather than a pathological process. As such, while sexual problems are relatively common in older adults, few people who experience these problems seek professional help to deal with them (Moreira et al 2005). Even fewer are asked for details about their sexual history when discussing sexual dysfunction (Balami 2011).

Erectile dysfunction is a poignant exception to the general lack of medicalization of older adult sexuality. While this may be partly explained by the fact that erectile dysfunction is seen as a more easily and safely pharmacologically modifiable problem than other aging-associated

changes (Moreira et al 2005), it is also rooted in heteronormative sexual scripts that equate "sexual function" to the capacity to have heterosexual, penile-vaginal penetrative sex.

The findings of this dissertation illustrate that the sexual history, including sexual debut, may be a significant source of information for understanding and managing a variety of sexual difficulties. Additionally, the findings suggest that decreased sexual desire and reduced enjoyment of sex are related not only to current physiologic and hormonal problems, but to social and interpersonal problems throughout the entirety of one's sexual life. As such, pharmaceutical management such as hormone replacement or erectile dysfunction medication is insufficient for fully addressing sexual problems amongst older adults; for those whose sexual problems stem from previous sexual trauma, other interventions such as talk therapy may be more appropriate. Clinicians, therefore, should be more proactive in discussing sexual dysfunction in all forms, while considering holistic management of sexual problems.

Policy Implications:

Given its significance as a predictor of future sexual well-being, these findings suggest that sexual debut may be a point of intervention for reducing the likelihood of experiencing sexual problems in later life. This dissertation may be used to inform policy aimed at improving sexual education and lowering the rates of acquiesced (or forced/coerced) first sex.

Sex education in the United States is widely considered to be inadequate and inconsistent. In all, sex education programs appear to be in decline both in prevalence and in quality (see Hall et al 2016). A 2016 overview of sex education practices in the US found that only thirteen states mandate that instruction be medically accurate, only eight specify that information cannot have racial or gender bias, and only eight must be inclusive of sexual orientation (Guttmacher Institute 2016).

Even when comprehensive sex education is provided, public understandings of consent remain insufficient. As previously discussed throughout the dissertation, sexual scripts and the normative nature of sexual compliance may make it difficult to clearly define which sexual acts within a heterosexual relationship are consensual, and which are not. While surveying adults of various ages about sexual consent, Graf and Johnson (2021) found significant variability in definitions of consent, and noted that over 40% of participants failed to identify core elements of the definition of consent. Centering consent in sex education, as well as specifically naming and defining sexual acquiescence as a form of sexual manipulation, could be valuable for preventing the long-term deleterious effects of negative early sexual experiences.

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APPENDIX

The following table presents a logistic regression to test the relationship between acquiesced first sex and whether a participant reports having sex in the past 3 months. Those missing data on the dependent variable, independent variable, and covariates were dropped from the sample.

Table 26: Regression of Acquiesced First Sex and Sexual Activity in Past Three Months

N = 2,293		
Sexually Active in Last 3 Months	Odds ratio	P
Acquiesced First Sex	**0.9522098**	**0.676**
Female	**0.5908583**	**0**
Age		
70-79	**0.4771035**	**0**
80-91	**0.222322**	**0**
Religiosity	**0.9756507**	**0.840**
Race		
Black	**0.9264917**	**0.644**
Other	**1.03372**	**0.865**
Married / Cohabiting	**6.34115**	**0**
College	**1.427391**	**0**
Family Not Well Off	**0.9079889**	**0.335**
Did Not Live With Both Parents	**1.156112**	**0.306**
Poor Childhood Health	**0.8753829**	**0.523**
Experienced Violence	**0.7550128**	**0.157**
Witnessed Violence	**1.012101**	**0.585**