



**Social, Emotional, and Relational Distinctions  
in Patterns of Recent Masturbation Among  
Young Adults:**

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## Abstract

Data from the New Family Structures Study, a 2012 survey which interviewed nearly 3,000 Americans aged 18-39, reveal notable social predictors of masturbation patterns. We find that men remain more likely to report masturbation than women, as well as consistently more recent masturbation. We also note rising self-reported rates of recent masturbation when compared to most previous studies. Besides a predictable link with both pornography and elevated sexual desire, past-day and past-week masturbation reports are associated with greater personal and relational dissatisfaction, anxiety, and unhappiness, especially among men.

## Introduction

In recent years, notably more research has been undertaken to measure national rates of sexual behavior of America's adolescents and adults (Herbenick et al. 2010a; Laumann et al. 1994; Regnerus and Uecker 2011). Experience with vaginal intercourse, number of sexual partners, oral sexual experience, and condom usage are commonly studied, while other sexual practices remain overlooked. Masturbation is one such behavior. Historically, masturbation has been considered an embarrassing subject of the study of sexual behavior, despite its common occurrence in human experience.

While the Kinsey reports were the first to collect and publish figures on masturbation in the U.S. population, Kinsey's study was far from nationally representative. It wasn't until the National Health and Social Life Survey (NHSL) of 1992 that nationally-representative data was collected about Americans' masturbation practices. Drawing upon a probability sample of 18-60 year olds, the NHSL reported that 61 percent of men and 38 percent of women masturbated in the past year (Das 2007). Subsequent studies in other countries found comparable rates. For example, the Australian Study of Health and Relationships (ASHR) reported that 65 percent of 16-59-year-old men and 35 percent of women masturbated in the past year (Richters et al. 2003). And in Britain's National Survey of Sexual Attitudes and Lifestyles II (NATSAL II), 86 percent of men and 57 percent of women reported masturbating within the past year (Gerressu et al. 2008). But annual rates are not very helpful in analyzing what is often far more regular patterned behavior. Nor is clustering of an entire sample together by comparing the masturbation habits of 20-year-olds with those of 60-year-olds among whom sex drive may have notably diminished.

Using data from just under 3,000 young adults in the New Family Structures Study (NFSS) of 2011, we explore at considerable length the demographic, social, and emotional traits associated with recent masturbation using nationally-representative data collected from a large probability sample of American young adults ages 18-39. In particular, we're most interested in the general questions surrounding masturbation: What factors predict variation in recent masturbation? Are gender distinctions still visible and strong? Does access to a stable sexual partner diminish recent masturbation reports, or not? Does interpersonal social media usage (e.g., time on Facebook) stimulate it? While masturbation is not popularly considered to be an unhealthy activity, does regular masturbation characterize healthy (and happy) people? Is there reason to suggest that masturbation as a practice might be increasing? The study is meant to bring a seldom-discussed but common sexual practice further into the light, and provide current survey data about it.

## Demographic and Social Patterns in Previous Masturbation Estimates

While not a common question on national surveys, masturbation has not been entirely overlooked, as noted above. The two most obvious things known about masturbation patterns are its associations with age and gender. Young adult men in their mid-20's and 30s are the most likely to report masturbation in both the past year and the previous 90 days (Reece et al., 2010; Richters et al., 2003). Rates of masturbation increase during adolescence, peak in young adulthood, and then decrease throughout the rest of the life course.

Among 20-24 year olds in the 2009 National Survey of Sexual Health and Behavior, 83 percent of men and 64 percent of women report solo-masturbation in the past year, which increases to 84 percent of men and 72 percent of women ages 25-29, and dips slightly to 80 percent and 63 percent, respectively, among 30-39 year olds (Herbenick et al., 2010a). Nearly two decades ago, the NHSLS similarly reported a slightly nonlinear distribution in masturbation frequencies (Laumann et al., 1994). Annual rates, however, are much less helpful than weekly rates. The NHSLS conducted in 1992, noted that 29 percent of men aged 18-24 masturbate at least once a week, compared with 9 percent of 18-24-year-old women (Laumann et al. 1994).

Masturbation is thus notably a gendered behavior, both in its incidence and frequency. Indeed, in meta-analyses of gender differences in sexual behaviors, the largest distinctions are consistently observed in incidence of masturbation, exceeded only by pornography use among men (Hald 2006; Oliver and Hyde 1993; Petersen and Hyde 2010). When considering frequency of masturbation in the past month and past year, masturbation is “strikingly more prevalent among men than women” for all age cohorts (Herbenick et al., 2010a:263). The cohort with the highest rates of masturbation (25-29 year-old men and women) still display obvious gender distinctions, with 44 percent of men reporting masturbating two or more times per week while only 13 percent of women say the same (Reece et al., 2010; Herbenick et al., 2010b). A large, nationally-representative study of Swedish sexual life reports that for adults who have masturbated in the past 30 days, men did so an average of 4.5 times, and women an average of 1.5 times (Brody and Costa 2009). While these differences are occasionally offered as evidence of repressive societal sexual scripts that constrain women's pursuit of physical pleasure, or explained by social stigmas that hinder women from reporting their actual (presumably higher) rates of masturbation, others critique such arguments as simplistic and consider the data simply evidence for a stably-higher male sex drive (Leitenberg et al., 1993; McCormick 1994; Shulman and Horne, 2003; Petersen and Hyde, 2010; Baumeister et al., 2001).

Masturbation practices also appear to vary by race/ethnicity, education, and other demographic variables. Black men and women report lower annual rates of masturbation than non-Hispanic white adults (Das 2007). Among Asian-American women, the emphasis that is placed on sexual modesty, restraint, the importance of following social codes, and a marital context for sexual expression likely influence the lower rates of masturbation reported (Okazaki 2002). Even though black women were the most likely to have *not* masturbated in the past year in the 1992 NHSLS, they were also the most likely to have masturbated at least once a week. There was a similar pattern for Asian men. After black men, they were the most likely to say they have *not* masturbated in the past year, but when one considers general frequency, Asian American men were the most likely to masturbate at least once a week (Laumann et al., 1994).

While others have noted conservative sexual scripts in Hispanic populations, it is not clear how their masturbation rates compare to Asian-American and White populations. In his analysis of the 1992 NHSLS data, Das (2007) made no reference to the masturbation rates of

Hispanic men and women. Similarly, the 2009 NSSHB isolated Hispanic and Black adults in their study of masturbation and race/ethnicity, but left masturbation rates for Non-Hispanic White and Asian-American populations absent from their report (Dodge et al., 2010). Thus data comparing masturbation patterns *across* a variety of different race/ethnicities is uncommon.

Reported incidence and frequency of masturbation appear to increase with education. For example, among men and women in the 1992 NHSLs who did *not* complete high school, the majority said they had not masturbated in the past year (55 percent men and 75 percent women). But men and women who had completed graduated degrees displayed a far different pattern: only 20 percent of such men and 40 percent of women said they had not masturbated in the past year (Laumann et al., 1994). Those with a college degree or higher not only displayed the highest frequency of masturbation, they also reported the most pleasure while doing so. Indeed, 95 percent of men and 87 percent of women with at least some graduate education experience an orgasm every time they masturbate, while in comparison only 60 percent of men and 46 percent of women without a high school degree said the same (Laumann et al., 1994). The strong association between education and masturbation among Americans has been replicated in international studies as well (e.g., Das 2007; Gerressu, et al., 2008; Richters et al., 2003). Why the link? Some suggestions include the internalization of more permissive sexual scripts or greater embeddedness in more sexually-permissive peer networks (Das 2007). Additionally, more educated persons have greater access to public debate, information, and sex education, which may help reduce fears and guilt, or may simply be more likely to report the behavior (Gerressu et al., 2008, Kontula and Haavio-Mannila 2002).

While proscriptions against masturbation have commonly stemmed from religious sources, there has been surprisingly little research examining the association between religion and masturbation patterns in national data sets. (Indeed, the subject goes entirely unexamined in the NSSHB and the Australian Study of Health and Relationships). When masturbation practices are evaluated by religious affiliation, analyses are typically limited to Christian denominations, despite the fact that other major traditions, such as Judaism and Islam, also contain teachings concerning the practice of masturbation (Laqueur 2003; Inhorn 2007). Nevertheless, women—but not men—who report that their religious beliefs are at least fairly important and attend religious meetings or services minimally once a month, are significantly less likely to report masturbating in the past four weeks, one study concluded (Gerressu et al., 2008). When comparing Catholics and Protestants with adults reporting no religious affiliation, evangelical, conservative Protestants reported both the lowest incidence and frequency of masturbation in the NHSLs study (Laumann et al., 1994).

While collecting data about masturbation has seldom been a longitudinal effort, there is nevertheless some evidence that rates of masturbation may be increasing. The 1992 NHSLs reported that 70 percent of 25-29 year old men and 42 percent of women masturbated in the past year, while in the more recent NSSHB's same-age cohort, 84 percent of men and 72 percent of women said the same (Laumann et al., 1994; Herbenick et al., 2010b; Reece et al., 2010). More data is needed to corroborate this possibility, as well as to understand the relationship between masturbation and well-being outcomes, and how variables like race/ethnicity, education, and religion shape patterns of its practice. It remains possible that only the comfort level of self-reporting masturbation has increased, not the behavior itself.

## Masturbation and Emotional Well-Being

The relationship of masturbation to personal well-being—including self-esteem, sexual adjustment, happiness, life satisfaction, and health—is challenging to discern. Masturbation is often popularly lauded for its positive impact on sexual health and pleasure. Compared to non-masturbating women, masturbating late-adolescent women appear to feel more entitled to sexual pleasure both from themselves and their partners (Horne and Zimmer-Gembeck 2005). Similarly, adolescents that masturbate report being more comfortable with their sexuality, feeling good about their sexual behavior, and are more confident in their ability to sexually satisfy a partner (Smith et al., 1996). Masturbation is recurrently praised as a way to discover what one finds sexually pleasurable, and medical professionals occasionally recommend masturbation as an effective way of treating anorgasmia—the inability to achieve orgasm—in women (Coleman 2002; Meston et al., 2004). Some research has shown a positive relationship between married women’s practice of masturbation and greater marital and sexual satisfaction, and Kinsey’s foray in this field found that women were more likely to experience orgasm in marriage if they had masturbated to orgasm before marriage than if they had never masturbated at all (Hurlburt and Whittaker 1991; Kinsey et al., 1953).

Other studies, however, suggest concern about the effects of masturbation. Sweden’s Sexuality and Health Project found that although high rates of intercourse were associated with better health and increased sexual and life satisfaction, high rates of masturbation were associated with decreased satisfaction with sexual life and with life in general (Langstrom and Hanson 2006). When comparing outcomes associated with frequency of vaginal intercourse, oral sex, anal sex, and masturbation, there were large, significant correlations between vaginal intercourse and satisfaction with sex life for both men and women, and small to moderate positive correlations with satisfaction with the relationship, mental health, and life in general (Brody and Costa 2009). Conversely, although there were only small or medium effect sizes, masturbation was negatively associated with satisfaction on all measures: sex life, relationship, mental health, and life in general. This was true even when controlling for frequency of penile-vaginal intercourse. Research into orgasms notes that prolactin—a hormone that serves to diminish arousal and provide sexual satiety—is released following intercourse at a rate five times that following masturbation (Brody and Krüger 2006). Thus masturbation doesn’t tend to be preferred as a replacement to intercourse, and does not satisfy—physically, psychologically, and emotionally—as amply as intercourse does (Levin 2007; Langstrom and Hanson 2004).

Furthermore, in the NHSLs there is a negative association between masturbation in the past year and both men’s and women’s self-reported happiness: 62 percent of the sample that never masturbated reported being “extremely or very happy,” while only 11 percent said they were unhappy (Das 2007). For respondents who masturbated more than once a month, less than half reported being extremely or very happy (48 percent) and just under 20 percent considered themselves unhappy. Other studies, however, have found no relationship between masturbation and happiness (Horne and Zimmer-Gembeck 2005).

## Analytic Approach: Data, Measures, and Methods

### Data Source

The New Family Structures Study completed full surveys with 2,988 Americans between the ages of 18 and 39. The initial screener and full survey instrument is available at the NFSS

homepage, located at: [www.prc.utexas.edu/nfss](http://www.prc.utexas.edu/nfss). It is a weighted probability sample, from which meaningful statistical inferences and interpretations can be drawn.

The data collection was conducted by Knowledge Networks (or KN), a research firm with a very strong record of generating high-quality data for academic projects. Knowledge Networks recruited the first online research panel, dubbed the KnowledgePanel<sup>®</sup>, that is representative of the U.S. population. Members of the KnowledgePanel<sup>®</sup> are randomly recruited by telephone and mail surveys, and households are provided with access to the Internet and computer hardware if needed. Unlike other Internet research panels sampling only individuals with Internet access who volunteer for research, the KnowledgePanel<sup>®</sup> is based on a sampling frame which includes both listed and unlisted numbers, those without a landline telephone and is not limited to current Internet users or computer owners, and does not accept self-selected volunteers. As a result, it is a random, nationally-representative sample of the American population. At last count, over 350 working papers, conference presentations, published articles, and books have used data collected from this source. More information about it, including panel recruitment, connection, retention, completion, and total response rates, are available from KN. The typical within-survey response rate for a survey using its panel is 65 percent. Each case in the NFSS sample was assigned a weight based on the sampling design and their probability of being selected, ensuring a sample that is nationally representative of American adults aged 18-39. These sample weights were used in every statistical procedure displayed herein unless otherwise noted. Appendix A presents a comparison of age-appropriate summary statistics from a variety of socio-demographic variables in the NFSS, alongside the most recent iterations of the Current Population Survey, the National Longitudinal Study of Adolescent Health, and the National Survey of Family Growth—all recent nationally-representative survey efforts. Such statistics suggest the NFSS compares very favorably with other nationally-representative datasets. Appendix B details data quality checks performed. The remainder of the paper employs a strategy to manage data quality that we believe to be best. However employing different data quality control strategies did not substantially change results.

## Measures and Analytic Approach

The KnowledgePanel<sup>®</sup> is also the source of the widely-cited 2009 Indiana University NSSHB sex study—data which have not yet been made public—which included a measure of masturbation that assessed how often the respondent masturbates, on average. The NFSS, however, measured frequency a bit differently, by asking the respondent, “When did you last masturbate?” (Respondents were first screened beforehand by a question that asked whether they had ever masturbated). Answer options were: today, yesterday, 2-4 days ago, 5-6 days ago, 1 to 2 weeks ago, 3-4 weeks ago, over one month ago, over six months ago, or over a year ago. While this approach may not be preferable as a measure of *average* masturbation frequency, it is likely a more valid measure, given that the question is specific rather than general and thus likely subject to less recall bias. It nevertheless remains, overall, an adequate measure of frequency. After all, a respondent who typically masturbates about once every six months is not likely—on average—to have done so yesterday. Our findings are in step with findings from other studies that choose to measure frequency of masturbation by asking respondents to recall overall frequency rather than the last time they masturbated.

Since masturbation is a fairly common self-reported behavior, we distinguish respondents who indicated they masturbated within the past day (today or yesterday), and those who said they

had done so within the past week (or more specifically, at some point in the previous six days), from those who did not so report. Apart from documenting several correlates of reporting *never* having masturbated, we do not spend time evaluating this subgroup, although they are a part of comparison categories for persons reporting past-day and past-week masturbation.

Using both simple statistics and multiple logistic regression analyses, we evaluate the association of a number of independent variables with masturbation, including basic demographics like age, gender, race/ethnicity, education (a 1-5 measure from which we created dichotomous variables), and marital/relational status, as well as a variety of other traits and practices, including importance of religion (1-5), political liberalism (1=very conservative, to 5=very liberal), heterosexual orientation (1=100% heterosexual, 0=all else), frequency of pornography use (0=never, to 5=every day or almost every day, from which an average per month use estimate was generated), daily time spent on social networking websites (0=not at all, to 6=four hours or more), self-reported overall happiness (1=very unhappy, to 5=very happy), the respondent's reported frequency of intercourse in the previous two weeks (measured in number of times the person reports having sex), and their stated desire for more (or less) frequent sex (1=wants more sex, 0=satisfied or wants less sex). Attachment anxiety is the sole index variable here, and was constructed by asking respondents to rate their general feelings about romantic relationships, both past and present, in response to six items. Response categories ranged from "not at all characteristic of me" (1) to "very characteristic of me" (5). The six items were coded and summed into a relationship anxiety scale ( $\alpha=0.82$ ), with higher scores denoting greater anxiety in close relationships, in keeping with the original Adult Attachment Scale developed by Collins and Read (1990). The measures employed were: "I do not worry about being abandoned," "In relationships, I often worry that my partner does not really love me," "I find that others are reluctant to get as close as I would like," "In relationships, I often worry that my partner will not want to stay with me," "I want to merge completely with another person," and "My desire to merge sometimes scares people away." Relevant Summary Statistics for all variables used in regression analyses can be found in Table 1.

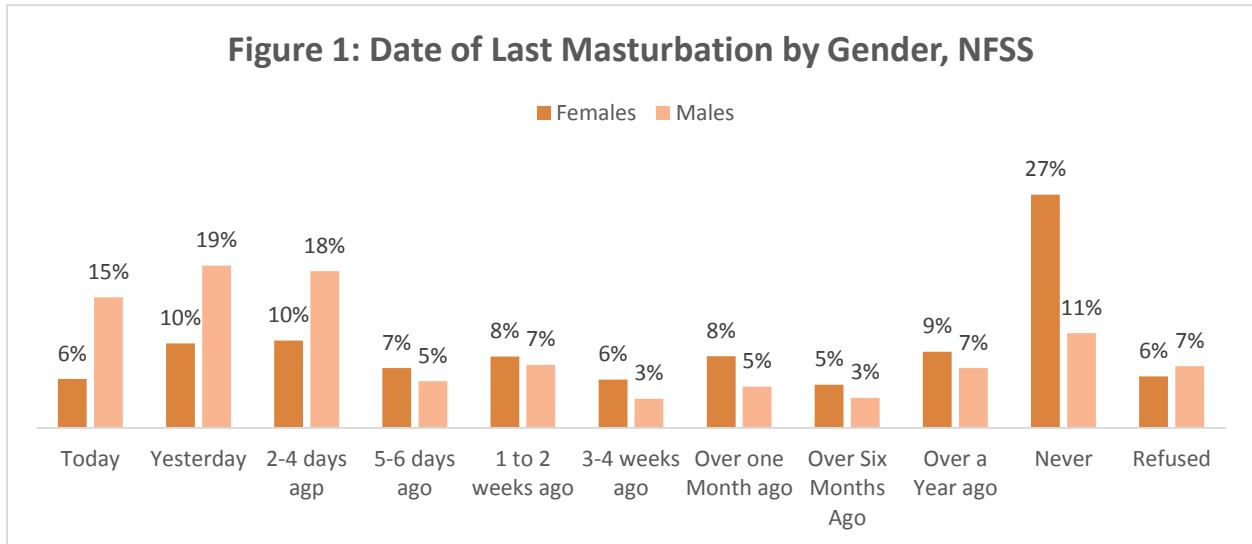
The NFSS is not a longitudinal study, and therefore cannot attempt to broach questions of causation. It is a cross-sectional study, and collected data from respondents at only one point in time, when they were between the ages of 18 and 39. Thus our analytic intention is more modest than explaining causality; rather, it is to evaluate masturbation self-reports and how they co-vary with a variety of social and demographic factors that commonly vary among respondents. In other words, this is intended to give an overview of what types of people masturbate more or less frequently.

## Results

Figure 1 displays the (rounded) weighted percentage of 18-39-year-old Americans who report last masturbating on given dates, sorted by gender and beginning with the date (i.e., today) the survey was administered. (Note: Figure 1 does not exclude those who refused to answer the question or other questions analyzed, or the 14 cases flagged for data quality issues. Further analysis does so, and thus percentages may not match figure 1 exactly.) Predictably, men report higher percentages of very recent masturbation, with their modal answer being yesterday (19 percent), followed closely by 2-4 days ago (18 percent), and today (15 percent). For women, the distribution of answers is far flatter over time, with modest percentages at all dates. Their modal

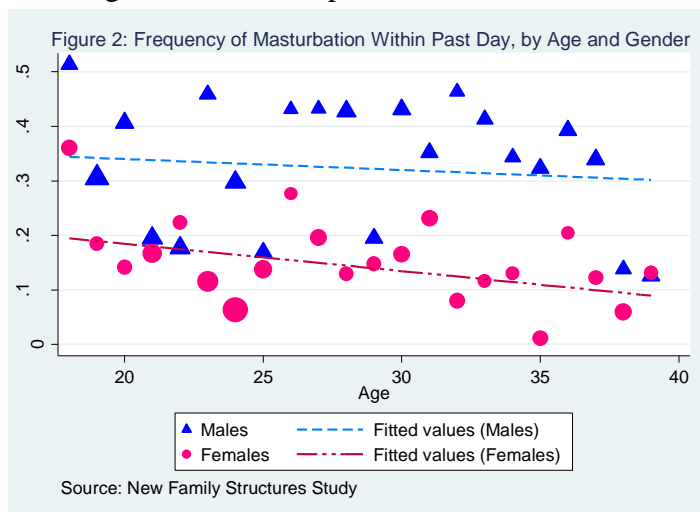


answer is never (27 percent), followed by yesterday as well as 2-4 days ago (10 percent each). While the data suggest notable gender distinctions, they are not likely as pronounced as some might expect.



A few characteristics are worth noting about the population who responded to the question with “never.” Besides being weighted toward women, they are also more likely to report being: Pentecostal (28 percent of whom said they had never masturbated), “traditional” Catholics (25 percent), those who identify politically as “very conservative (30 percent), and those who have never had sexual intercourse (34 percent). We do not, however, give extended consideration to this group, seeking instead to better understand the population and (especially frequency) of those who indicate that they have and do masturbate.

Among both men and women, the peak age at reporting having masturbated in the past day (either today or yesterday) was age 18, with 51 percent of men and 36 percent of women concurring. After age 18, however, notable drop-offs are evident: 31 percent of 19-year-old men and 18 percent of 19-year-old women report masturbating in the past day. More important than assessing individual data points, however, is the trend line. Figures 2 and 3 display both average values for having masturbated in the past day and week, respectively, by age and gender. Each figure includes gender-specific fitted values lines to assess men’s and women’s masturbation trends as they age. Age distinctions are slightly more gradual among men than women, but both older men and women are less apt to report masturbating in the past day or week. Overall, however, men consistently display a higher proclivity: 35 percent of all 18-39-year-old men said they had masturbated in the past day, compared with 17 percent of women. If we extend



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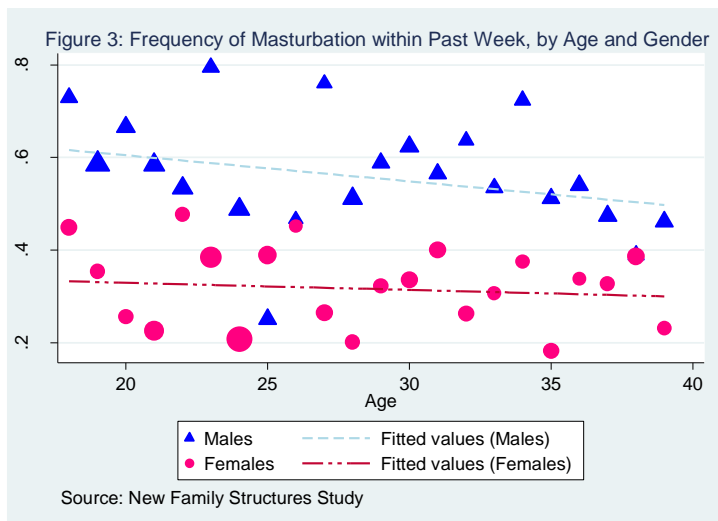
the time frame to a week, 61 percent of men report masturbating in that period, compared with 36 percent of women.

Divorcees display high rates of masturbation in the past day: 39 percent indicated that they had, compared with 25 percent of persons who self-identified as separated and 21 percent of married respondents (results not shown). Gender differences emerge here as well: whereas 47 percent of divorced men reported masturbating in the past day, 31 percent of divorced women so reported—each well above average.

Frequent pornography use has come to be equated with masturbation, and the NFSS data bear this out as well.

Indeed, the bivariate relationship is powerful: among 18-39-year-old men who said they “never” view pornographic material, 18 percent reported masturbating in the past day. As frequency of porn use increased, so did masturbation: 48 percent of men who said they viewed porn “1 or 2 days a week” reported masturbating in the past day, as did 92 percent of men who reported viewing porn “every day or almost every day” (results not shown).

Pornography usage has long been considered a gendered behavior, and that remains true. Ancillary examination of the NFSS data, however, suggests suggest that women, especially young women, are consumers, albeit infrequent ones, of pornographic material. While 67 percent of women report never viewing pornography, three percent of 33-39-year-old women report viewing pornographic material 1-2 days a week (or more often), the same is true of six percent of 24-32-year-old women and 12 percent of 18-23-year-old women (compared with 25, 25, and 31 percent of same-age men, respectively). In other words, pornography is not absent among women, and is more popular with the youngest sample of women in the data.



## Masturbation and Recent Sexual Intercourse

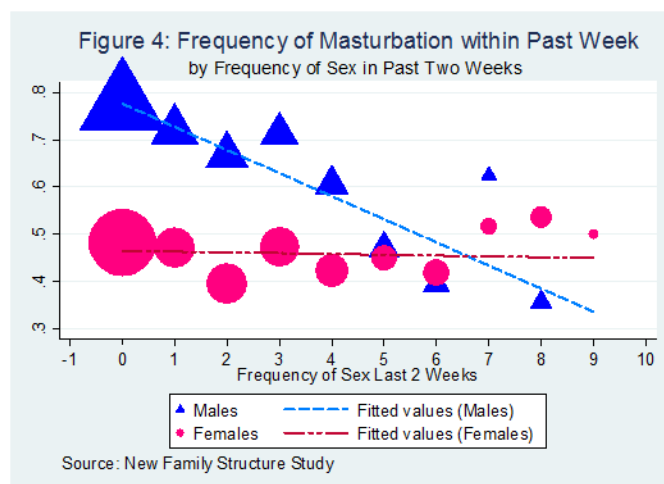
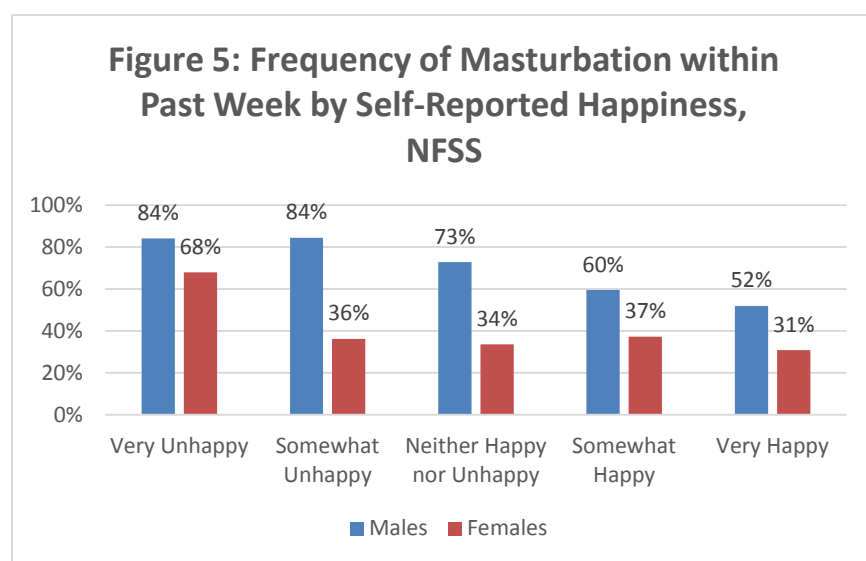


Figure 4 evaluates the basic association between masturbation and recent frequency of sexual intercourse, sorted by gender. While the gender distinction in recent masturbation remains obvious, the data suggest evidence of a far stronger link between recent frequency of intercourse and last masturbation for men than for women. The fitted values line for men suggests their likelihood of reporting having masturbated in the past week diminishes by over half as they move from no intercourse to a report of frequent

(near-daily) intercourse in the past two weeks. Women, on the other hand, display a near-flat trajectory, with slightly higher likelihood of past-week masturbating at the end of the distribution (i.e., among those who self-report the highest levels of recent sexual intercourse). At a simple level, then, it appears men are more apt to recently masturbate when sexual intercourse is unavailable or rare, and less apt to masturbate when recent sexual frequency is elevated, suggesting a “replacement” theory of sexual activity here. Women, however, do not appear to replace less frequent intercourse with more recent masturbation.

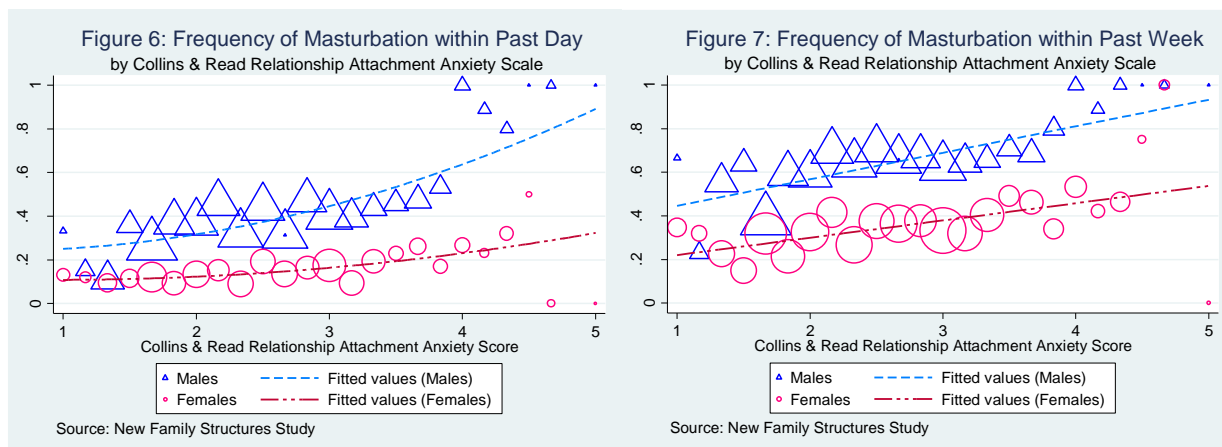
### Masturbation and Emotion Wellbeing

So, how happy are respondents who masturbate recently when compared with those who have not? Figure 5 reveals that among those respondents who reported being “very unhappy” with their life these days, 68 percent of women and 84 percent of men said they had masturbated

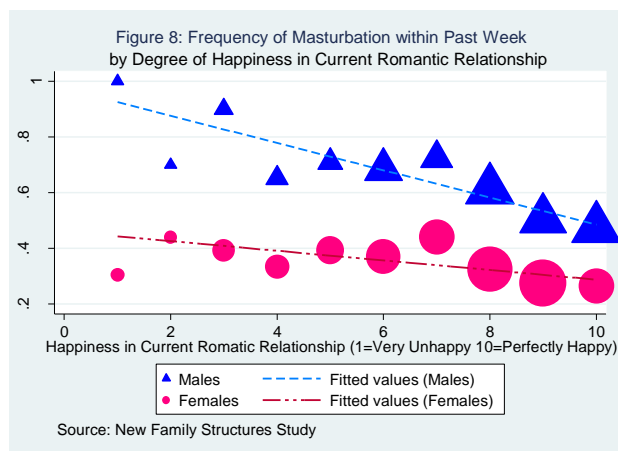


within the past week. The modest association with unhappiness appears linear among men, but not women. Past-week masturbation reports drop off notably among all other women except those who reported being “very unhappy.” On the other end of the happiness spectrum, among those who reported being “very happy” with their life these days, 31 percent of women and 52 percent of men said that

they had masturbated within the past week. Our point is not to suggest that masturbation *makes* people unhappy. It may, but the cross-sectional nature of the data does not allow us to evaluate this. However, it is empirically accurate to say that men who claim to be happy are somewhat less apt to report masturbating recently than unhappy men.



Masturbation is also associated with reporting feelings of inadequacy or fear in relationships and difficulties in navigating interpersonal relationships successfully. Past-day and past-week masturbators exhibit significantly higher relationship anxiety scale scores than do respondents who did not report masturbating in the past day or in the past week. Figure 6 plots the averages and fitted values of respondents' scores on the Collins-Read Anxiety Scale, sorted by gender, in predicting masturbation within the past day. Since the distribution is not linear, a quadratic fitted-value line was plotted. In other words, as relationship attachment-anxiety scores increased, the percentage of men and women reporting masturbation in the past week also increased, but at a higher rate (especially among men). The fitted-values line for men curves more rapidly than among women, suggesting the link with relationship attachment anxiety is more pronounced for men than for women. A more linear link appears in Figure 7, where the same association is plotted with past-week masturbation. There is, by either outcome, a connection between greater relationship anxiety and recent masturbation. Those respondents who feel more such anxiety are also more apt to recently masturbate.



While Figure 5 plotted personal, overall happiness, Figure 8 portrays the association with past-week masturbation fitted to self-reported levels of relationship happiness among respondents currently in romantic relationships. Consistent with the anxiety link, men's masturbation reports seem more sensitive to well-being than women's. Whereas the majority of all respondents indicate elevated relational happiness, men who do not report such happiness are notably more apt to report recent masturbation. Again, the order of influence here is not discernible,

and we are left to report the common co-occurrence of each, while noting that plenty of men and women report recent masturbation as well as relationship contentedness.

## Multivariate Analyses

Table 2 displays odds ratios from logistic regression models predicting having masturbated in the past day, split by gender. We explore three different models for each outcome, adding a pair of

emotional well-being measures to a baseline model of demographics, religiosity, and political and sexual orientation, and then adding a set of controls for recent sexual intercourse frequency, online behavior (both social networking and porn use) as well as self-reported satisfaction with frequency of sex. In the baseline models predicting past-day masturbation, predictors are sparing. Among men, only race and political liberalism are significantly different from a null effect, with African American men less apt to report masturbating in the past day and politically-liberal men more apt to do so. For women, only sexual orientation mattered: self-reported (100%) heterosexual women reported odds of past-day masturbation that are just over half that of all other orientations. In other words, controlling for other demographic, educational, political, and religious measures, non-heterosexual women were more apt to recently masturbate. While other odds ratios notably varied, none were so robust as to be statistically significant. Moreover, sexual orientation is not significant after controlling for relationship anxiety and happiness. Indeed, women's recent masturbation appears largely due to personal or relational well-being. The greater their attachment anxiety, the more likely women were to report past-day masturbation. In the third model, we see further evidence of how connected masturbation is to women's recent sexual experience and desire for more sex. Unlike among men, more intercourse predicted more rather than less masturbation in the past day for women. Porn use is an independent and robust predictor for both men and women's past-day masturbation. Indeed, porn use displays the statistically strongest association with recent masturbation among men.

Despite baseline gender differences, men's and women's predictors of past-day masturbation are more closely aligned than might be expected. A few distinctions remain: relationship anxiety is a consistent predictor of past-day masturbation for men, but for women appears channeled through their sexual experience and desire. Greater self-reported happiness corresponds with a lower likelihood of past-day masturbation, an effect mitigated by the addition of recent sexual experience, desire for more sex, and porn use. Interestingly, being African American (when compared with being white) and self-identifying as a political liberal remain robust predictors of past-day masturbation in models that are otherwise tightly centered around sexual desire and porn use predictors.

Table 3 displays odds ratios from logistic regression models predicting self-reported masturbation within the past week, an outcome allowing for notably greater variation than past-day masturbation (57 percent of men and 32 percent of women). What do we learn that is new, and what from Table 2 is reinforced here? To begin, there are more numerous predictors when we expand the time frame out to one week. Among men, we see an age effect appear, suggesting stably lower odds of past-week masturbation as men age. Additionally, a college degree (but not post-baccalaureate education) boosts odds of past-week masturbation when compared with high-school graduates. Political liberalism remains robust, like in Table 2, as does a diminished likelihood among African American men compared with white men. Prior to controlling for relationship anxiety and happiness, marriage is associated with about half the odds of past-week masturbation when compared with never-married men. Apart from these, however, much of Table 3 appears like Table 2 when considering variation in past-week masturbation among men. Sexual desire and pornography use remain paramount predictors, while sexual frequency in the past two weeks is strongly negatively associated with both outcomes among men.

Among women, sexual experience also matters, as does desire for more sex and porn use. Other associations come into view when evaluating past-week rather than past-day masturbation,

including a positive association with frequency of time spent on online social networking, a stable association with the relationship anxiety index, and the revelation of a possible connection with divorce (when compared with never-married women), controlling for all of these other influences. Political liberalism emerges among women as a significant predictor as well in all but the final model, while self-reported heterosexual orientation is inversely associated with past-week masturbation—quite dramatically so (with odds ratios of 0.29 to 0.44, depending on the model).

## Discussion

### What Seems Stable

The results suggest some stability in what is known about masturbation patterns among young Americans. They also hint at possible new developments in those patterns. First, the stabilities: men remain notably more apt to report recent masturbation—in the past day or the past week—than women. The distinction is a very reliable one (Hald 2006; Herbenick et al. 2010a; Oliver and Hyde 1993; Petersen and Hyde 2010). The fitted-values lines in Figures 2 and 3 suggest that despite a modest age decline among men, the end of the age distribution among them—their lowest likelihood of past-week and past-day masturbation—still exceeds the beginning of the age distribution among women, their point of highest likelihood.

While masturbation has often been portrayed as a “replacement” behavior for men, meaning men who don’t have sex regularly are *more* likely to report elevated rates of masturbation, the same is not true of women: women who have not had sex recently are slightly less likely to report recent masturbation. For each, however, the presence of desire for more sex corresponded with more recent masturbation self-reports.

More education has long been associated with higher masturbation frequency (Das 2007; Gerressu, et al., 2008; Laumann et al. 1994; Richters et al., 2003). In the NFSS, however, a much less robust educational distinction was noted; indeed, the association was only present among men and only when evaluating past-week masturbation. Additionally, the association was only present among college-educated men in comparison with high-school educated men; no such association was apparent among those with post-baccalaureate educations. In consonance with Das’s (2007) study of the NHLS, black men (but not black women) were less apt to report masturbation than non-Hispanic white adults. No religiosity association was noted, although we did not perform a strong evaluation of the connection either, choosing instead to simply control for religious salience rather than attendance or denominational distinctions.

In contrast to popular accounts of the health benefits of masturbation, the results herein suggest a more cautious approach to any pronouncements about its benefits. This is not to suggest that masturbation *causes* relational or emotional problems. It may be the reverse—that people with relational or emotional difficulties seek out masturbation to self-medicate. Other scholars of young-adult sexual behavior have not been so guarded in their claims about directionality, however. Denise Hallfors and her colleagues, using longitudinal data from the Add Health study, found that depression did *not* predict sexual behavior among adolescent women, but rather that sexual activity patterns came before depression (Hallfors et al. 2005). While not a study of masturbation, their careful documentation of effects is worth noting here. In a study of college women, psychologists note that women with depressive symptoms were more

likely to masturbate than pursue paired sex, further suggesting that depression doesn't cause young women to (socially) seek out sexual partners (Frolich and Meston 2002).

Regardless of directionality, there is little evidence to suggest that recent masturbation corresponds to, or reflects, relational and emotional well-being in American young adults. The findings herein are instead consonant with those noted in the Sexuality and Health Project, which found masturbation rates were associated with decreased satisfaction with sexual life and with life in general (Langstrom and Hanson 2006). The same is true of analyses in the 1992 NHSLs (Das 2007). In other words, not all sexual acts are equal: masturbation does not appear to capture the positive effects of penile-vaginal intercourse that have been widely documented. Indeed, elsewhere masturbation is noted to be mildly negatively associated with satisfaction with one's sex life, relationship, mental health, and life in general even when controlling for frequency of penile-vaginal intercourse (Brody and Costa 2009). We did the same, and found the same.

### What May Be Changing

Although the NFSS does not track respondents over time, and did not ask the key question in quite the same manner as the 1992 NHSLs or the 2010 Indiana University sex study, there is nevertheless reason to believe that the frequency of masturbation among young adults is increasing. Here's why: the NHSLs data noted that 29 percent of men aged 18-24 reported masturbating at least once a week. The NFSS, meanwhile, finds that 35 percent of 18-24-year-old men report having masturbated *in the past day*—either today or yesterday. When expanded to encompass the past six days, that figure rises to 68 percent. Although the measures are not directly comparable—and social desirability concerns may have diminished some over the past 20 years—it nevertheless suggests not a mere uptick in masturbation but rather a possible surge in the practice among men.

Something similar has likely occurred among women as well. Whereas nine percent of 18-24-year-old women reported masturbating an average of once a week in the 1992 NHSLs, past-week masturbation was reported by 36 percent of same-age women in the NFSS. To be sure, some portion of this may be due to increasing comfort in admitting masturbation, but to suggest that a 300-percent-increase is due solely to ease of admission seems unlikely, especially given the tight association of now-ubiquitous pornography use noted in the regression tables. In 1992, there simply was no online pornography. While bona fide demand for masturbation *could* have increased in 20 years, the technological stimulation and social encouragement of demand certainly *has* increased.

While previous research has noted inverse associations between pornography and religiosity as well as church attendance and masturbation (e.g., Baćak and Štulhofer 2011), no such association appears in the NFSS, possibly due to the number of controls in the regression models or our decision to include a religious salience measure rather than an attendance one. (In simple correlations, an inverse association remains.)

### Conclusion

Given the inverse associations documented here and elsewhere between masturbation and emotional and relational well-being, evidence of increasingly-frequent (rather than sporadic) masturbation ought to give us pause. While masturbation boasts no apparent public health risks, it yields no widespread emotional and relational benefits, and may possibly extract costs.

Discerning the causal order of which occurs first does not much matter, actually, since they likely foster and reinforce each other, and—from the numbers—are co-occurring in greater numbers of young adults than ever. Indeed, heightened pornographic stimulation and concomitant masturbation—both obvious in the NFSS—are increasingly being realized not simply as social facts of the 21<sup>st</sup> century but as new challenges to human flourishing. Some theorists assert that these correlated twins foster a state once identified as “acedia,” a listlessness or apathy more often found in solitary acts that yield boredom, sadness, and a rejection of the personal and social goods typically located and experienced within relationships (and, by extension, within sexual intercourse). Although survey data limits our ability to explore this, the evidence presented herein hints in such a direction.

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Table 1: Unweighted Summary Statistics by Gender

## Males

Variable	Mean	Std.	Min	Max
Masturbated Past Week	0.63	0.48	0	1
Masturbated Past Day	0.39	0.49	0	1
100% Heterosexual	0.88	0.33	0	1
Black	0.12	0.32	0	1
Latino	0.17	0.37	0	1
Other Race	0.10	0.30	0	1
Age	28.45	6.43	18	39
Married	0.41	0.49	0	1
Cohabiting	0.15	0.36	0	1
Divorced	0.02	0.15	0	1
Less Than High School	0.08	0.27	0	1
Some College	0.36	0.48	0	1
Bachelor's Degree	0.21	0.41	0	1
Post-Bachelor's Education	0.10	0.30	0	1
Politically Liberal	0.27	0.44	0	1
Importance of Religion	2.89	1.31	1	5
Collins-Read Relationship Attachment				
Anxiety Score	2.48	0.72	1	4.67
Self-Reported Happiness	3.95	1.03	1	5
Frequency of Sex Past 2 Weeks	2.54	3.46	0	25
Wants More Sex	0.57	0.50	0	1
Frequency of Pornography Usage Past Month	5.21	7.86	0	28
Time Per Day Spent on Social Networks	1.10	1.29	0	5

## Females

Variable	Mean	Std.	Min	Max
Masturbated Past Week	0.35	0.48	0	1
Masturbated Past Day	0.15	0.36	0	1
100% Heterosexual	0.76	0.43	0	1
Black	0.14	0.35	0	1
Latino	0.15	0.36	0	1
Other Race	0.08	0.28	0	1
Age	28.13	6.34	18	39
Married	0.41	0.49	0	1
Cohabiting	0.18	0.39	0	1
Divorced	0.03	0.17	0	1
Less Than High School	0.07	0.26	0	1
Some College	0.42	0.49	0	1
Bachelor's Degree	0.21	0.41	0	1
Post-Bachelor's Education	0.10	0.30	0	1

Politically Liberal	0.25	0.43	0	1
Importance of Religion	3.25	1.26	1	5
Collins-Read Relationship Attachment				
Anxiety Score	2.59	0.77	1	5
Self-Reported Happiness	3.93	1.07	1	5
Frequency of Sex Past 2 Weeks	2.67	3.36	0	25
Wants More Sex	0.38	0.49	0	1
Frequency of Pornography Usage Past Month	1.12	3.34	0	28
Time Per Day Spent on Social Networks	1.44	1.46	0	5

Table 2: Odds Ratios from Logistic Regressions Predicting Masturbation Within the Past Day, NFSS

VARIABLES	Males			Females		
	(1)	(2)	(3)	(1)	(2)	(3)
<i>Demographic Characteristics</i>						
“100% Heterosexual”	0.626	0.760	1.115	0.560**	0.665	0.877
Black	0.413**	0.372**	0.470*	1.357	1.328	1.150
Hispanic	1.157	1.072	1.457	0.916	0.867	0.814
Other Race	0.541	0.465	0.601	0.527	0.475	0.362
Age	1.000	0.981	0.986	0.978	0.976	0.987
Married	0.710	1.110	1.927*	0.757	0.856	0.719
Cohabiting	0.727	0.864	1.205	1.017	0.972	0.815
Divorced	1.195	1.272	1.577	2.432	2.184	2.101
<i>Education</i>						
Less Than High School	1.100	0.858	0.716	0.479	0.484	0.330
Some College	0.997	1.016	0.756	1.253	1.393	1.289
Undergraduate Degree	1.161	1.435	1.145	0.790	0.941	0.864
Post-Undergraduate Education	0.907	1.253	0.866	0.483	0.514	0.552
<i>Attitudes and Behaviors</i>						
Political Liberalism	1.966**	1.994**	1.790*	1.155	1.127	1.088
Importance of Religion	0.967	0.990	1.050	0.891	0.906	0.951
Collins-Read Relationship		1.965***	1.558**		1.453**	1.293
Attachment Anxiety						
Self-Reported Happiness		0.765**	0.823		0.970	0.982
Frequency of Sex Past 2 Weeks			0.910**			1.091***
Wants More Sex			1.760**			2.371***
Frequency of Porn Use Past Month			1.135***			1.069**
Social Network Use			1.033			1.117
<i>Model Fit Statistics</i>						
Pseudo R-Squared	.0492	.0749	.1740	.0529	.0563	.0854
Observations	839	839	839	1,777	1,777	1,777

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

**Table 3: Odds Ratios from Logistic Regressions Predicting Masturbation Within the Past Week, NFSS**

VARIABLES	Males			Females		
	(1)	(2)	(3)	(1)	(2)	(3)
<i>Demographic Characteristics</i>						
“100% Heterosexual”	0.678	0.858	1.147	0.289***	0.337***	0.443***
Black	0.479**	0.444**	0.643	1.060	1.061	0.934
Hispanic	1.264	1.185	1.606	1.052	1.015	0.961
Other Race (Non-White)	0.811	0.703	0.941	0.518*	0.484**	0.420**
Age	0.970	0.955**	0.952**	1.007	1.008	1.025
Married	0.541**	0.784	1.419	0.754	0.842	0.716
Cohabiting	0.738	0.873	1.324	1.011	0.987	0.875
Divorced	2.927	2.828	3.162	2.351*	2.211*	2.078
<i>Education</i>						
Less Than High School	0.718	0.565	0.534	1.153	1.193	0.927
Some College	1.218	1.224	0.880	1.155	1.273	1.170
Undergraduate Degree	2.159**	2.630***	2.310**	1.047	1.211	1.109
Post-Undergraduate Degree	1.389	1.831	1.132	0.787	0.804	0.891
<i>Attitudes and Behaviors</i>						
Political Liberalism	3.607***	3.643***	3.247***	1.614**	1.604**	1.485
Importance of Religion	0.858*	0.894	0.927	0.912	0.927	0.965
Collins-Read Relationship Attachment Anxiety		1.782***	1.270		1.597***	1.380**
Self-Reported Happiness		0.734**	0.808		1.066	1.091
Frequency of Sex Past 2 Weeks			0.876***			1.066**
Wants More Sex			2.244***			2.652***
Frequency of Porn Use Past Month			1.258***			1.090***
Social Network Usage			1.058			1.229***
<i>Model Fit Statistics</i>						
Pseudo R-Squared	0.0739	0.0939	0.2084	0.0744	0.0766	0.1155
Observations	839	839	839	1,777	1,777	1,777

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Appendix A: Comparison of Weighted NFSS Results with Parallel National Survey Results on Selected Demographic and Lifestyle Variables, U.S. Adults, Ages 18-39 (In percentages)

	<i>NFSS</i> 2011 N=762 (18-23)	<i>NSYR</i> 2007-8 N=2,520 (18-23)	<i>NFSS</i> 2011 N=925 (24-32)	<i>Add</i> <i>Health</i> 2007-8 N=15,701 (24-32)	<i>NFSS</i> 2011 N=2,503 (18-39)	<i>NSFG</i> 2006-10 N=22,682 (18-39)	<i>CPS</i> <i>ASEC</i> 2011 N=204,983 (18-39)
<b>Gender</b>							
Male	54.8	48.3	47.5	50.3	50.0	49.8	50.4
Female	45.2	51.7	52.5	49.4	50.0	50.2	49.6
<b>Age</b>							
18-23					28.2	28.6	28.2
24-32					42.0	40.6	42.1
33-39					29.8	30.9	29.8
<b>Race/Ethnicity</b>							
White, NH	56.7	68.3	61.6	69.2	17.3	61.6	59.6
Black, NH	11.7	15.0	12.9	15.9	21.3	13.3	13.2
Hispanic	24.3	11.2	19.5	10.8	37.0	18.6	19.5
Other (or multiple), NH	7.3	5.5	6.0	4.2	24.4	6.5	7.8
<b>Region</b>							
Northeast	19.0	11.8	16.5		17.3		17.5
Midwest	20.0	25.6	23.3		21.3		21.2
South	34.1	39.1	39.6		37.0		37.0
West	26.9	23.5	20.6		24.5		24.4
<b>Mother's Education (BA or above)</b>	27.0	33.3	24.8	21.9	25.1	22.2	
<b>Respondent's Education (BA or above)</b>	4.5	3.8	33.0	30.0	25.7	24.2	
<b>Household Income (current)</b>							
Under \$10,000	19.9		9.0	5.6	11.4	9.5	5.7
\$10,000-\$19,999	13.8		8.5	6.9	9.1	13.1	7.4
\$20,000-\$29,999	11.0		10.5	10.1	10.3	13.5	9.5
\$30,000-\$39,999	6.7		11.3	11.1	9.6	13.4	9.4

\$40,000-\$49,999	7.3		13.3	11.8	10.4	8.5	9.1
\$50,000-\$74,999	16.4		23.3	24.3	20.4	19.5	20.3
\$75,000 or more	24.9		24.2	30.2	28.8	22.7	38.6
<b>Ever had sex</b>	69.0	75.6	90.1	93.9	86.3	91.2	
<b>Never been married</b>	89.8	92.8	46.5	50.0	52.2	52.3	54.4
<b>Currently married</b>	7.5	6.9	43.9	44.6	40.0	39.2	37.9
<b>Ever been divorced</b>					8.2	10.1	
<b>Church attendance</b>							
Once a week or more	16.8	20.2	21.6	16.0	21.7	26.2	
Never	31.5	35.6	30.8	32.1	31.1	25.8	
<b>Not religious</b>	20.7	24.7	22.4	20.2	21.9	21.7	
<b>Self-reported health</b>							
Poor	1.7	1.5	0.8	1.2	1.4	0.7	
Fair	5.9	9.2	11.1	7.9	9.9	5.3	
Good	29.4	26.7	38.8	33.5	34.9	24.9	
Very Good	42.4	37.5	35.4	38.2	38.0	40.9	
Excellent	20.6	25.2	14.0	19.1	15.9	28.3	
<b>Never drinks alcohol</b>	28.5	21.9	22.6	26.1	24.9		

## Appendix B: Data Quality Checks

Surveys are inherently imprecise measures. As such we recognize the need to check data quality. We instituted several mechanisms through which to check data quality. As we will detail, a specific data management scheme was implemented in this paper, and all estimates are based on this scheme with the exception of Figure 1 and related text, which by design provide an overview of responses including refusal within the sample. Although we cannot try all possible data management schemes, all of the different combinations of data management schemes we tried produced results that were not significantly different, and that did not affect the main results presented herein.

Respondents refusing to answer any of the questions used in any of the logistic regressions presented herein were eliminated from the sample. Inclusion of these respondents in regressions for which they had no refusals did not significantly change regression results.

Second we used 10 implausibility checks. We identified survey questions and responses that were either logically impossible or improbable. Doing so ought to eliminate those who may have not paid close attention to the questions, or who knowingly give outlandish answers. We realize however that well-meaning survey takers may have made honest errors on the occasional

question. Since many of these quality checks are not used in our analysis we do not wish to throw out data because of honest errors. Therefore for each implausibility check that a respondent failed we flagged the response. A second (or third) flag was given for a second or third failure to give a plausible answer, or for given answers whose coexistence is implausible.

Respondents were flagged for any of the following answers:

- 1) More than 25 sex acts within the past 2 weeks
- 2) Simultaneously reporting being unemployed and actively seeking work and yet not having looked for work within the past 4 weeks.
- 3) Over 5 current paying jobs
- 4) Over 15 previous non-marital cohabiting partners
- 5) First Occurrence of Penile-Vaginal Intercourse before age 3 (because of the implausibility of remembering the act), or first occurrence of penile-vaginal intercourse before age 10 without reporting ever having been forced to have sex against one's will, or touched sexually by a parent or adult caregiver.
- 6) First Menstruation reported before age 8 or after age 18
- 7) Simultaneously reporting having thought seriously about committing suicide within the past 12 months and feeling very happy with one's current life.
- 8) Reporting watching TV at least 4 hours daily on a typical day but never for 3 consecutive hours within the past year, or reporting watching TV for an hour or less on a typical day, but watching TV for 3 consecutive hours every day or almost every day over the course of the past year.
- 9) Reporting illegal drug use within the past year, but having never used illegal drugs over the course of their lifetime.
- 10) Reporting weight and height that give a Body Mass Index less than 15 or over 50.

We recognize that while unlikely, some of these outcomes are entirely possible although not plausible. When we use these data quality flags 203 cases were flagged on one or more of these measures. Meanwhile only 14 cases (about 0.5%) were flagged more than once. These cases were excluded from analysis. Exclusion of these cases did not significantly change results. Because frequency of sex within the past 2 weeks was used in the analysis, cases that failed this data quality check (reporting having sex more than 25 times in the last two weeks) were also dropped from analysis (10 cases, or about 0.4%). Inclusion of these cases did not significantly change results. We decided to include cases with only 1 data quality flag in our analysis because we believe these may represent either honest mistakes, or may represent real answers that are improbable but not impossible. When we run the same analysis excluding these respondents we do not get significantly different results, and indeed we find a more robust relationship between masturbation and happiness and political liberalism among men, as well as between divorce and frequency of sex and masturbation among women. We see slightly weaker cases for the link between masturbation and sexual orientation and political liberalism among women, and the connection between wanting more sex and masturbation among men. None of these changes reversed the sign of the coefficients, only the statistical significance.