Sexual Satisfaction and Sexual Health Among University Students in the United States

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Despite the World Health Organization's definition of sexual health as a state of well-being, virtually no public health research has examined sexual well-being outcomes, including sexual satisfaction. Emerging evidence suggests that sexual well-being indicators are associated with more classic measures of healthy sexual behaviors. We surveyed 2168 university students in the United States and asked them to rate their physiological and psychological satisfaction with their current sexual lives. Many respondents reported that they were either satisfied (approximately half) or very satisfied (approximately one third). In multivariate analyses, significant ($P<.05$) correlates of both physiological and psychological satisfaction included sexual guilt, sexual self-comfort, self-esteem (especially among men), relationship status, and sexual frequency. To enhance sexual well-being, public health practitioners should work to improve sexual self-comfort, alleviate sexual guilt, and promote longer term relationships. (*Am J Public Health.* 2011;101:1643–1654. doi:10.2105/AJPH.2011.300154)

The public health field has recently mounted a sustained effort toward more positive approaches to sexuality. Semantically, "sexual health," once the province only of sexually transmitted infections (STIs), unintended pregnancies, and other undesirable consequences, has grown to encompass indicators of sexual well-being.[1] Nowhere is evidence of this trend stronger than in the widely cited definition of sexual health revised by the World Health Organization (WHO) in 2002:

> Sexual health is a state of physical, emotional, mental, and social well-being. . . not merely the absence of disease, dysfunction, or infirmity. Sexual health requires a positive and respectful approach to sexuality and sexual relationships, as well as the possibility of having pleasurable and safe sexual experiences, free of coercion, discrimination, and violence.[2]

Public health's increasing embrace of more positive aspects of sexuality is also evidenced by the explosion of sexual rights discourse, including the right to sexual pleasure,[3] and pleasure-centered sexual health promotion efforts, including the eroticization of safe sex campaigns (http://thepleasureproject.org).[4,5] Despite this trend, strikingly little public health research has examined factors associated with sexual well-being outcomes. An empirical focus on positive sexual indicators is, with a few exceptions, absent for young people (and particularly so for young women) whose sexuality tends to be discouraged in both public health and the larger cultural milieu.[6–8] To address this gap, we assessed the prevalence and correlates of a major indicator of sexual well-being—sexual satisfaction—among a sample of university students in the United States.

Such an assessment is important for several reasons. First, our ability to promote and foster sexual well-being—one of the directives of the WHO definition—will be extraordinarily limited if no data exist concerning how to do so or which groups are most and least advantaged in terms of sexual well-being. Second, a growing body of evidence suggests that positive sexual experiences such as sexual satisfaction are also strongly associated with more classic measures of sexual health (e.g., the ability to protect oneself from disease and unwanted pregnancy).

For example, young women who masturbate are more likely to report consistent contraceptive use and positive communication with their partners than those who have never masturbated.[9] In a recent, nationally representative survey, women who used vibrators currently or had done so in the past were significantly more likely to have had a gynecological examination during the preceding year than women who had never used vibrators.[10] A companion study demonstrated that men who had used vibrators were also more likely to report participation in sexual health–promoting behaviors such as testicular self-examinations.[11] Therefore, because indicators of positive sexual health may be associated not only with the absence of disease but with the presence of sexual flourishing, the public health field would be well served by a thorough documentation of these indicators and their correlates.

WHAT WE KNOW ABOUT SEXUAL SATISFACTION

Although numerous sexuality researchers have documented various aspects and predictors of sexual satisfaction, few public health researchers have integrated this concept into their studies, programs, or policies. Even within the sexuality field, few studies have assessed aspects of sexual satisfaction specific to young adults; most studies have focused on adult populations. Factors consistently associated with satisfaction in adults may not influence sexual satisfaction in the same way for young people just beginning their sexual lives. Such factors include age[12–14]; frequency of sexual activity and orgasm[15–17]; relationship status, stability, and intimacy[15–21]; more permissive sexual attitudes[16]; psychological well-being and depressive symptoms[18,19,22]; and sexual function or dysfunction.[18] Additional factors studied among young people include sexual guilt, especially among young women,[23,24] and goal setting.[25]

Young women in one study cited guilt as the primary reason why their first sexual intercourse was not psychologically satisfying.[23] In

other studies, college women who frequently set goals have reported greater comfort with their sexuality, greater optimism about life, and greater psychological sexual satisfaction.[25]

In addition, studies have failed to document the potential associations between sexual well-being and other more classic sexual health indicators such as condom use. Such data may be especially important in the case of young people who tend to be at an elevated risk of unintended pregnancies and STIs compared to older adults. No studies to our knowledge have assessed whether consistent contraceptive use can help facilitate sexual satisfaction among young adults or whether more sexually satisfied people are more likely to protect themselves against pregnancy and disease, information that could lead to powerful pro-contraception social marketing messages or interventions.

However, even if it is not connected to more traditional sexually healthy behaviors such as use of condoms and other contraceptives, sexual satisfaction deserves increased public health attention. Among adults, satisfying sexual activity is strongly linked to both mental health and relationship stability.[26–28] Among younger adults, positive and satisfying early sexual experiences have the potential to lay an important foundation for sexual and relationship development.[29,30] Learning to experience sexual fulfillment is a vital aspect of how young people achieve the developmental task of becoming sexually healthy adults.[31,32] Unfortunately, research on young people's sexuality still focuses almost entirely on the potential negative outcomes of sexual behavior,[33] especially among young women.[6,7] Adolescent girls' lack of pleasure is considered normative, whereas adult women are assumed to possess desire, and a failure in this regard may lead to a diagnosis of sexual dysfunction.[31,34]

Despite this focus on negative sexual health, several studies of young people and sexual satisfaction do exist.[35] Auslander et al. used a 7-item scale to examine sexual satisfaction among 313 sexually active 14- to 24-year-old participants from an adolescent medicine clinic.[36] They found that the overwhelming majority of participants (85%) were satisfied in their current sexual relationship. Significant correlates of satisfaction included greater relationship quality, more frequent sex, fewer lifetime sexual partners, and a greater proportion of condom-protected sex acts. However, the study's small sample size precluded gender-specific analyses.

A second study focused on young women alone. Impett and Tolman[31] recruited 93% of one school district's entire 12th-grade class to participate in a longitudinal study of sexual health and recruited 116 adolescent girls for a smaller panel study of sexual satisfaction. Similar to the Auslander et al. study, respondents reported widespread satisfaction with their most recent sexual experience: 80% reported that the experience "made me happy," 64% reported that "it was a good experience," 54% reported that "it made me feel closer to the other person," and 43% reported that "I liked how my body felt." Only 13% of the respondents reported no positive results of the sexual experience. This study took a sophisticated approach to young women's unique satisfaction profiles, but its exclusion of adolescent boys warrants a similar exploration of young men; research on sexual satisfaction among young people beyond high school age is also needed.

Finally, a few studies have examined satisfaction at first vaginal intercourse, and most of these studies indicate a substantial gender disadvantage for young women, particularly with respect to physical (as opposed to emotional) satisfaction.[37–39] In 1992, Darling et al. found that only 28% of young college women reported physiological sexual satisfaction at first intercourse and that the same percentage reported psychological sexual satisfaction; the corresponding percentages among men were 81% and 67%.[39] A more recent survey of university students revealed similar differences: only 25% and 38% of young women reported physiological and psychological sexual satisfaction at first intercourse, respectively, compared with 65% and 57% of men.[40] Involvement in a longer term, more established relationship (as opposed to engaging in sex with a more casual partner) helped predict both types of satisfaction among women as well as men.

These studies contribute a strong affective component to our knowledge of (heterosexual) virginity loss, a topic usually explored in public health only epidemiologically (i.e., who is "doing it" and at what age).[41] However, one's first vaginal intercourse experience is likely to be much different in quality and character from later experiences within the context of an ongoing sexual relationship.

The purposes of our study were 4-fold. First, we wanted to assess the prevalence and correlates of sexual satisfaction among a sample of male and female university students in the United States. We agree with Guggino and Ponzetti[42] that ironically, despite more widespread acceptance of young men's sexual pleasure seeking, empirical studies of men's sexual satisfaction, especially young men's, are surprisingly rare. Second, we wanted to explore how young adults compare with adults in their sexual satisfaction profiles and correlates.

Third, we wanted to compare young women and young men, who, for both physiological and sociocultural reasons, are likely to have different expectations and experiences relating to sexual satisfaction. We explored to what degree (if at all) a satisfaction catch-up effect exists among young women once they are more regularly sexually active. Finally, we wanted to examine whether contraceptive use can help facilitate sexual satisfaction, a finding that could greatly improve contraceptive and condom promotion efforts among young people.

METHODS

We derived our data from a survey, conducted in 2000, that focused on the sexual behaviors and attitudes of 3186 students (2030 women and 1155 men) at 4 different universities: public universities in Texas (n=897) and Wisconsin (n=1074), a historically Black university in North Carolina (n=556), and a religiously affiliated private university in North Carolina (n=659). The anonymous survey was administered to students in lower and upper division classes in general education, social sciences, business, and family studies.

Procedures

In the data collection process, the principal survey investigators (J.K.D. Sr and N.B.M.) obtained cooperation from numerous professors at each university. As a means of obtaining representative samples from each university, classes were chosen to reflect a broad range of academic majors and a similar distribution of freshmen, sophomores, juniors, and seniors. A total of 57 faculty members were approached; 53 permitted the investigators to use their classes, and 4 declined as a result of

pending class work during the week they were approached.

During the class period devoted to the survey, students were informed by the investigators that they were conducting a study concerning the sexual attitudes and behaviors of college students that had been approved by the institutional review board on their campus. The investigators assured potential respondents that their participation was voluntary and anonymous. Students were instructed that if they did not wish to participate, they were to return the questionnaire incomplete. No incentives of any kind were offered. After completing the questionnaire, which required approximately 45 minutes, students deposited the surveys into a ballot box at the front of the room. A research assistant monitored the return of the questionnaires. Response rates were in excess of 90%. The higher number of female than male participants was a function of the classes available in which to conduct the survey and not an indication that a greater proportion of men than women declined to participate in the study.

Inclusion and Exclusion Criteria

Given our interest in sexual activity outside the context of marriage, the sample was limited to respondents who had never been married (which resulted in the exclusion of 158 married, divorced, separated, or widowed students, or 5% of the total sample). As a means of creating a typical college sample in terms of class standing and age, respondents older than 25 years (n=156) were also excluded, as were graduate students (n=9) and those who did not respond (n=2) or responded "not applicable" (n=1) to the class standing question. Our research question in this study pertained to satisfaction with one's current sexual life.

At first, we did not limit the sample to those who identified as heterosexual only. However, several of the variables explored pertained exclusively to heterosexual sex (e.g., contraceptive use). Moreover, because of the prohibitively small number of respondents who self-identified as lesbian, bisexual, or gay (n=65, or 2% of the sample), which would have precluded subanalyses according to sexual orientation, we restricted the sample to those students who self-identified as heterosexual. The lack of gay and bisexually identified students in the analysis was unfortunate. However, we decided to proceed given the dearth of data on young adults' sexual satisfaction, particularly within a public health framework. Only students who had engaged in consensual vaginal intercourse at least once were included in the analyses (76% of the total sample). These exclusion and inclusion criteria resulted in a final sample of 2168 students (1351 women and 817 men).

Measures

Sexual satisfaction. Respondents were asked 2 questions about their current physiological and psychological sexual satisfaction: "Regardless of your sexual experience level, how would you rate your overall personal level of physiological (physical) sexual satisfaction?" and "Regardless of your sexual experience level, how would you rate your overall personal level of psychological (emotional) sexual satisfaction?" Response options ranged from very satisfied to very dissatisfied. The survey investigators piloted and created these questions, which were not part of a scale.

In our regression analyses, we focused on the factors that could help predict the highest level of satisfaction (very satisfied) for 2 reasons. First, given the absence of positive sexual health indicators in the literature, we wanted to focus on the presence of satisfaction. Second, the large proportion of respondents who were satisfied on at least some level (well above two thirds of the respondents) warranted our use of a less prevalent condition (very satisfied) as the outcome in our regression models.

Other measures. Except for several recoded or collapsed variables, the other variables assessed (Table 1) do not require additional explanation. Because men experience orgasm more frequently than women and are more likely to reach orgasm during sexual encounters, the orgasm frequency variable for men was dichotomous (always or almost always vs sometimes, rarely, or never). The orgasm frequency variable for women included 3 categories: always or almost always, sometimes, and rarely or never.

As a result of prohibitively small cell sizes that would have prohibited comparisons across all of the categories within our regression models, some of the response categories for the following variables were collapsed: sexual self-comfort; guilt about engaging in sexual intercourse; whether one's sexual decisions are determined by one's own thoughts, feelings, and values; level of self-esteem; frequency of satisfaction with self; and frequency of discussion of sexual topics with one's mother or father. For example, response categories for level of self-esteem were combined so that fair, poor, and very poor were all included in the same category. This reclassification was based on the small percentage of respondents in each of these categories (fair, 11%; poor, 4%; and very poor, 1%). Data on recoded categories are shown in Table 2. Except for the orgasm frequency variable, all recoded variables were identical for women and men.

Statistical Analyses

The significant number of gender interactions warranted separate regressions for women and men. Separate multivariate logistic regression analyses explored which factors could significantly predict current physiological and psychological sexual satisfaction among women and men. We used a backward stepwise selection method so that only those variables associated with the outcome at the $P<.05$ level were retained in each model.

RESULTS

After presenting a descriptive snapshot of the sample, we describe findings from the multivariate analyses exploring the variables most associated with sexual satisfaction.

Sexual, Relational, and Demographic Characteristics

Table 1 contains the percentage distribution for both the satisfaction variables and the majority of the covariates included in the regression models. Other variables tested but not shown in Table 1 included class standing; whether respondents had ever enrolled in a class with sexuality content; respondents' typical level of intoxication when drinking alcohol; quality of parents' marriage; attitudes about whether premarital sex is acceptable with an occasional, regular, and serious partner; length of time between age at first intercourse and current age; whether respondents had ever been fondled or had their clothes removed against their will; whether respondents had ever engaged in sexual

TABLE 1—Distribution of Descriptive Statistics Among University Students, by Gender: United States, 2000

	Total Sample (n = 2168), % or Mean (SD)	Women (n = 1351), % or Mean (SD)	Men (n = 817), % or Mean (SD)
Physiological sexual satisfaction			
Very satisfied	31.9	30.4	34.4
Satisfied	52.1	52.6	51.4
Neither satisfied nor dissatisfied	11.4	12.5	9.6
Dissatisfied	4.0	3.8	4.3
Very dissatisfied	0.6	0.7	0.4
Psychological sexual satisfaction			
Very satisfied	31.9	32.4	31.0
Satisfied	46.7	45.9	48.0
Neither satisfied nor dissatisfied	13.9	13.8	14.0
Dissatisfied	6.1	6.3	5.8
Very dissatisfied	1.5	1.7	1.2
Age, y[a]	20.2 (1.6)	20.2 (1.6)	20.4 (1.7)
Race/ethnicity[a]			
African American	23.0	20.6	26.9
American Indian	0.3	0.3	0.4
Asian	1.2	1.3	1.0
Hispanic	5.0	4.9	5.0
Non-Hispanic White	70.0	72.4	66.2
Multiracial	0.5	0.4	0.5
Other	0.0	0.1	0.0
Current dating status[a]			
Not dating	17.2	15.0	20.9
Casual dating	30.6	27.1	36.5
Exclusive dating	32.8	35.2	28.8
Engaged, preengaged, or cohabiting	19.4	22.7	13.8
Sexual self-concept			
Feel guilty about engaging in sexual intercourse[a]			
Always	1.7	1.6	1.9
Very frequently	2.7	3.2	1.9
Frequently	3.9	4.2	3.4
Occasionally	17.9	19.7	15.0
Seldom	28.4	27.8	29.5
Never	45.3	43.6	48.2
Feel comfortable with own sexuality[a]			
Never	0.3	0.3	0.4
Rarely	1.3	1.7	0.7
Sometimes	10.7	10.8	10.5
Almost always	37.8	39.7	34.6
Always	49.9	47.6	53.8

Continued

intercourse on a date against their will; whether respondents had informed their most recent sexual partner of their number of lifetime partners; how often respondents had asked their current partner about her or his lifetime partners; whether respondents had ever been diagnosed with an STI; and whether respondents had ever been pregnant or gotten a sex partner pregnant.

Data on the variables just described are not included here in the interest of space (more information on these covariates is available from the authors). More details about the sexual health characteristics of this sample can be found in a related article.[43]

Reports of sexual satisfaction were widespread among our respondents. The overwhelming majority of respondents reported that they were satisfied (52% physiologically, 47% psychologically) or very satisfied (32% physiologically, 32% psychologically) with their current sexual lives. Fewer than 5% and 8%, respectively, reported any physiological or psychological dissatisfaction. Notably, neither physiological nor psychological satisfaction differed significantly by gender.

However, significant gender differences marked most of the other variables assessing sexual experiences and attitudes. Men were twice as likely as women to report that they always or almost always experience an orgasm during sexual intercourse (89.0% vs 44.6%), and only 4.8% of men versus 27.3% of women reported rarely or never experiencing an orgasm during sexual intercourse. In keeping with the gendered, socially encouraged sexual expressions of women and men, women also tended to report more conservative sexual attitudes and less sexual comfort than did men. For example, women were significantly less likely than were men to agree that premarital sex is acceptable with a casual acquaintance.

Many respondents indicated that they were very comfortable with their sexuality: overall, 46.1% reported that they never feel guilty about engaging in sexual activities, and 49.9% reported that they always feel comfortable with their sexuality. However, these percentages indicate as well that half or more of the respondents feel guilty at least some of the time, and half do not always feel comfortable with their sexuality. Women were slightly more

TABLE 1—*Continued*

Sexual decisions determined by own thoughts/values/feelings[a]			
Never	0.5	0.4	0.6
Rarely	1.2	0.9	1.8
Occasionally	5.5	4.6	6.9
Frequently	15.7	15.2	16.5
Very frequently	26.2	25.9	26.6
Always	50.9	52.9	47.6
Sexual behaviors and characteristics			
Sexual intercourse frequency (no. of episodes in past y)	101 (102)	101 (93)	102 (117)
Planned to engage in most recent sexual intercourse			
No	41.8	42.2	41.0
Yes	58.2	57.8	59.0
Used contraception during most recent sexual intercourse[a]			
No	21.9	18.7	27.5
Yes	77.3	80.9	71.3
Don't remember	0.1	0.1	0.0
Engage in sexual intercourse without contraception[a]			
Always	3.1	2.8	3.5
Almost always	8.0	6.9	9.9
Sometimes	15.7	13.9	18.8
Rarely	25.5	22.5	30.7
Never	47.7	53.9	37.1
No. of partners in past y[a]			
0	9.4	7.1	13.2
1	51.7	56.9	42.8
2	18.8	19.9	17.1
3	11.0	9.4	13.9
≥4	9.0	6.8	13.0
Perceived likelihood of contracting a sexually transmitted infection[a]			
Very likely	1.8	1.6	2.1
Likely	4.6	4.8	4.3
Somewhat likely	15.5	15.4	15.7
Somewhat unlikely	19.4	17.6	22.4
Unlikely	33.5	33.7	33.1
Very unlikely	25.2	26.9	22.4
Orgasm			
Ever experienced orgasm[a]			
Yes	92.2	89.5	96.7
No	7.8	10.5	3.3
Experience orgasm during sexual intercourse[a]			
Never	12.4	16.4	2.6
Rarely	8.3	10.9	2.2
Sometimes	21.6	28.0	6.1
Almost always	36.4	37.1	34.8
Always	21.3	7.6	54.3

Continued

likely than were men to feel guilty at least some of the time or to not always feel comfortable ($P=.018$).

Many respondents were involved in relationships of some type. Overall, 32.8% of respondents were exclusively dating; 19.4% were "preengaged," engaged, or cohabitating; 30.6% were casually dating; and 17.2% were not currently dating. Men were slightly but significantly more likely than were women to report not dating and to report being involved in more casual dating relationships. Most respondents had either 1 partner (51.7%) or 2 partners (18.8%) in the past year.

Relationships Between Physiological and Psychological Satisfaction

The 2 satisfaction measures were significantly associated ($P<.001$) but not collinear (data not shown). The 2-tailed Pearson correlation for the 2 variables was 0.692, explaining only 48% of the variance. Among those respondents who reported that they were very physiologically satisfied with their current sex lives, 78.6% were also very psychologically satisfied. Similarly, 79.0% of those who were very psychologically satisfied were also very physiologically satisfied.

Multivariate Analyses

Physiological sexual satisfaction. Despite significant univariate associations (data not shown), few variables were significantly predictive of sexual satisfaction in our multivariate models. Among women, both orgasm frequency and sexual intercourse frequency had a strong influence on reports of high levels of physiological satisfaction. Women who always or almost always experienced orgasm during sexual intercourse were 6.6 times as likely as women who never or rarely experienced orgasm to report that they were very physiologically satisfied ($P<.001$). An increase in number of sexual intercourse acts by 10 per year increased the odds of extreme physiological satisfaction by 3% (odds ratio [OR]=1.003, $P<.001$). Sexual self-comfort was also a strong correlate; women who reported that they are always comfortable with their own sexuality were 3.9 times as likely to be very satisfied as women who reported that they are never, rarely, or sometimes comfortable with their own sexuality ($P<.001$).

TABLE 1—*Continued*

Sexual attitudes			
Women should experience orgasm during sexual intercourse[a]			
Strongly disagree	4.4	4.1	5.0
Disagree	15.2	18.7	9.5
Agree	53.3	52.8	54.3
Strongly agree	27.0	24.4	31.2
There should be no sexual intercourse without love[a]			
Strongly disagree	4.8	2.7	8.4
Disagree	32.9	26.2	44.2
Agree	39.0	42.2	33.7
Strongly agree	23.2	28.9	13.7
Premarital sex is acceptable with a casual acquaintance[a]			
Strongly disagree	25.2	33.8	10.9
Disagree	27.8	31.9	21.0
Neither agree nor disagree	27.1	23.3	33.3
Agree	15.1	9.5	24.4
Strongly agree	4.9	1.5	10.4
Self-esteem			
Self-esteem level[a]			
Very poor	0.6	0.6	0.5
Poor	3.1	3.4	2.6
Fair	11.5	13.8	7.8
Good	30.0	32.7	25.6
Very good	36.6	34.6	39.8
Excellent	18.2	14.9	23.7
Satisfied with self[a]			
Never	0.2	0.1	0.5
Rarely	1.9	2.1	1.5
Occasionally	6.7	8.0	4.7
Some of the time	14.0	15.3	11.8
Most of the time	64.8	65.4	63.7
All of the time	12.4	9.0	17.9
Desire more self-respect[a]			
Always	18.2	19.7	15.7
Occasionally	27.0	29.0	23.8
Rarely	34.6	33.8	35.9
Never	20.2	17.5	24.6
Set goals for self[a]			
Never	21.8	18.7	26.9
Frequently	26.9	27.7	25.6
Very frequently	25.7	25.6	25.9
Always	25.6	28.1	21.5
Sexual education and communication			
Level of sex education in school before college[a]			
Inadequate	20.3	18.9	22.6
Neither adequate nor inadequate	9.1	7.6	11.5
Adequate	70.6	73.5	65.9

Continued

The following variables were also significant predictors among women: premeditation of sexual intercourse, with those women who planned to engage in sexual activity at the time of last intercourse being more satisfied than were women who did not (OR=1.6, $P<.01$); self-respect, with those women who rarely wished for more self-respect being more physiologically satisfied than were those who frequently or always wished for more self-respect (OR=2.4, $P<.001$); and relationship status, with women who were involved in exclusive dating relationships being twice as likely as those who were not to be very physiologically satisfied (OR=1.9, $P<.05$).

Except for orgasm frequency and self-respect, all of the significant covariates in the model for women were also significant in the model for men. Similar to women, annual sexual intercourse frequency was important for men (OR=1.003, $P<.001$). Greater sexual self-comfort was also strongly associated with physiological satisfaction among men (OR=3.7, $P<.01$). In addition, as was the case for women, men involved in exclusive dating relationships were significantly more likely to be physiologically satisfied than were men who were not involved in such relationships (OR=1.72, $P<.01$).

Three factors appeared in the men's model that did not emerge for women: sexual guilt, self-esteem, and self-efficacy over one's sexual decisions. Men reporting slight or no guilt were 4.6 times as likely as men reporting considerable or extreme sexual guilt to indicate being very physiologically satisfied ($P<.001$). Men with excellent or very good self-esteem were 4.8 times more likely to be physiological satisfied than were men with fair, poor, or very poor self-esteem ($P<.001$). Finally, men who reported that their sexual decisions are frequently or always determined by their own thoughts, values, and feelings were 2.7 times as likely to be extremely physiologically satisfied as men who reported an absence of self-efficacy over their sexual decisions ($P<.001$).

Psychological sexual satisfaction. As seen with physiological sexual satisfaction, sexual self-comfort, orgasm frequency, and relationship status were significant predictors of high levels of psychological satisfaction among women. Women who always felt sexually comfortable

TABLE 1—*Continued*

Level of sex education from parents[a]			
Inadequate	31.9	31.1	33.1
Neither adequate nor inadequate	13.1	11.6	15.6
Adequate	55.0	57.3	51.2
Frequency of discussion of sexual topics with mother[a]			
Never	17.4	13.1	24.6
Seldom	47.2	45.5	49.9
Occasionally	30.0	34.7	22.3
Frequently	4.3	5.5	2.3
Very frequently	1.1	1.3	0.9
Frequency of discussion of sexual topics with father[a]			
Never	50.0	61.6	30.5
Seldom	34.9	29.6	43.7
Occasionally	12.6	7.9	20.4
Frequently	1.9	0.6	4.0
Very frequently	0.7	0.4	1.4
Religiosity			
Level of religiosity compared to peers[a]			
Less religious	38.5	35.8	43.0
About as religious	49.7	52.5	45.1
More religious	11.8	11.7	12.0
Current religious commitment			
Not devout	30.9	29.3	33.6
Moderately devout	57.2	58.4	55.1
Devout	11.9	12.3	11.3

[a]Gender difference significant at $P<.05$.

were 4.7 times as likely as women who never, rarely, or sometimes felt sexually comfortable to report psychological satisfaction ($P<.001$). Women who always or almost always had orgasms during sexual intercourse were 2.3 times as likely as women who never or rarely had orgasms to report extreme psychological satisfaction ($P<.001$). Women involved in exclusive dating relationships were 3.2 times more likely than were women not currently dating to be psychologically satisfied ($P<.001$). Sexual intercourse frequency (OR=1.002, $P<.05$) and sexual intercourse premeditation (OR=1.5, $P<.01$) were also statistically significant covariates.

Two variables that did not appear in the model for physiological satisfaction among women were unique predictors of high levels of psychological satisfaction: sexual guilt and self-esteem. Women with slight or no guilt were 2.8 times as likely as women with extreme or considerable guilt to be extremely psychologically satisfied ($P<.001$), and, similarly, women with excellent or very good self-esteem were 2.8 times more likely than were women with fair, poor, or very poor self-esteem to report extreme psychological satisfaction ($P<.001$).

Again as with physiological sexual satisfaction, self-esteem, sexual self-comfort, sexual guilt, relationship status, and frequency of sexual intercourse were significant predictors of extreme psychological satisfaction among men. Self-esteem was particularly pronounced. Men with excellent or very good self-esteem were 11.1 times as likely as men with fair, poor, or very poor self-esteem to be very psychologically satisfied ($P<.001$). Men with slight or no sexual guilt were 3.8 times more likely than were men with extreme or considerable sexual guilt to be psychologically satisfied ($P<.001$). Self-efficacy over one's sexual decisions was the only variable that did not remain significant in the model for psychological satisfaction.

DISCUSSION

We found that our study participants demonstrated strong levels of sexual fulfillment, with the overwhelming majority reporting physiological satisfaction (84%) or psychological satisfaction (79%) with their current sex lives. Fewer than 5% of the respondents reported any physiological dissatisfaction, and fewer than 8% reported any psychological dissatisfaction. Given the ubiquity of cultural messages disdaining sexual activity among young people, especially young women, the presence of sexual satisfaction both in this study and in 2 earlier studies of adolescents[31,36] is surprising and encouraging. Despite significant bivariate gender differences across a number of covariates (e.g., orgasm frequency, sexual guilt, self-esteem), both young women and young men in this study who had chosen to engage in partnered heterosexual activity reported considerable enjoyment with their sexual lives.

Given the multitude of factors tested, few covariates remained significant predictors of each type of satisfaction in our multivariate models. However, our findings did support the conceptual and empirical models of sexual satisfaction offered by Bancroft et al.[22] and Carpenter et al.[12] according to which patterns of sexual satisfaction are shaped by the interaction of factors at 3 levels: the individual, the relationship, and the broader culture. Variables from all 3 types of sexual influences emerged here, including self-esteem at the individual level, relationship status at the relationship level, and sexual guilt at the cultural level.

Comparisons With Studies of Adults

Several of the significant predictors of sexual satisfaction observed here (e.g., relationship status, sexual frequency) have also been associated with sexual satisfaction in studies of older adults, suggesting a sexual development trajectory rooted in adolescence and young adulthood.[31] For example, myriad studies of adults demonstrate a connection between relationship stability, intimacy, and sexual satisfaction.[15–21] In addition, a study of young adults in Norway revealed that those who were sexually active and unattached were less satisfied with

TABLE 2—Predictors of Physiological and Psychological Sexual Satisfaction Among University Students (n = 2168), by Gender: United States, 2000

Predictor	Physiological Satisfaction		Psychological Satisfaction	
	Women (n = 1351), AOR (95% CI)	Men (n = 817), AOR (95% CI)	Women (n = 1351), AOR (95% CI)	Men (n = 817), AOR (95% CI)
Current dating status				
Not dating (Ref)	1.00	1.00	1.00	1.00
Casual dating	1.42 (0.79, 2.58)	1.25 (0.86, 1.48)	1.36 (0.73, 2.52)	1.06 (0.57, 1.97)
Exclusive dating (including engaged, preengaged, cohabiting)	1.95* (1.12, 3.39)	1.72** (1.06, 2.65)	3.17*** (1.79, 5.62)	1.90* (1.05, 3.45)
Sexual self-concept				
Current level of sexual guilt				
Extreme or considerable (Ref)		1.00	1.00	1.00
Moderate		2.42** (1.30, 4.53)	1.34 (0.85, 2.10)	1.81 (0.95, 3.46)
Slight or no guilt		4.55*** (2.55, 8.13)	2.77*** (1.86, 4.14)	3.75*** (2.07, 6.79)
Feel comfortable with own sexuality				
Never, rarely, sometimes (Ref)	1.00	1.00	1.00	1.00
Almost always	2.41* (1.20, 4.87)	1.84 (0.71, 4.74)	2.49* (1.18, 5.27)	1.68 (0.61, 4.67)
Always	3.94*** (1.97, 7.87)	3.75** (1.49, 9.45)	4.65*** (2.21, 9.78)	3.16* (1.17, 8.57)
Sexual decisions determined by own thoughts/values/feelings				
Never, rarely, or occasionally (Ref)		1.00		1.00
Frequently or very frequently		1.60 (0.91, 2.83)		1.57 (0.87, 2.85)
Always		2.68*** (1.62, 4.43)		2.60*** (1.53, 4.41)
Sexual behaviors and characteristics				
Sexual intercourse frequency (annual)	1.003*** (1.002, 1.005)	1.003*** (1.001, 1.005)	1.002* (1.000, 1.004)	1.004*** (1.002, 1.005)
Planned to engage in most recent sexual intercourse	1.55** (1.14, 2.11)		1.51** (1.11, 2.06)	
Orgasm				
Orgasm frequency				
Never or rarely (Ref)	1.00		1.00	
Sometimes	1.94** (1.19, 3.17)		0.94 (0.61, 1.45)	
Always or almost always	6.62*** (4.28, 10.24)		2.30*** (1.56, 3.38)	
Self-esteem				
Level of self-esteem				
Fair, poor, or very poor (Ref)		1.00	1.00	1.00
Good		2.34 (0.95, 5.77)	1.75* (1.08, 2.86)	5.63** (1.71, 18.56)
Very good or excellent		4.77*** (2.07, 11.00)	2.79*** (1.75, 4.44)	11.06*** (3.57, 34.29)
Desire more self-respect				
Frequently or always (Ref)	1.00			
Occasionally	1.12 (0.71, 1.77)			
Rarely	1.39 (0.90, 2.16)			
Never	2.38** (1.45, 3.90)			
Nagelkerke R^2	0.306***	0.337***	0.326***	0.325***

Note. AOR = adjusted odds ratio; CI = confidence interval.
*$P < .05$; **$P < .01$; ***$P < .001$.

their sex lives than were those involved in committed, longer lasting relationships.[35] Similarly, we found that involvement in an exclusive dating relationship (as opposed to not being involved in a relationship with one's sexual partner) was associated with both types of sexual satisfaction assessed here among both women and men.

Other factors, such as self-esteem, seemed uniquely connected to the age and life cycle stage of young adults, emphasizing the importance of a life-course perspective on sexuality and underscoring Maslow's contention that satisfaction of basic physiological needs is an inherent part of the self-actualization process.[44]

Self-esteem was significant in all of our models except for physiological sexual satisfaction among women, and this factor seemed especially important for young men.

Few other studies to our knowledge have explored self-esteem's relationship to sexual satisfaction, perhaps because most studies on this topic focus on older adults, among whom lack of self-esteem may be less prevalent than among young people. Literature from developmental psychology suggests that self-esteem is lower among female than among male adolescents but increases more rapidly among women in emerging adulthood, so much so that women and men may demonstrate equal levels of self-esteem by the age of 25 years.[45] Given self-esteem's connection with satisfaction in our study, such a gender convergence may help explain some of the catch-up effect young women experienced related to sexual satisfaction.

Gender Comparisons and Contrasts

In stark contrast to previous research on sexual satisfaction at first vaginal intercourse, this study did not reveal significant gender differences in level of satisfaction with one's current sex life. A marked catch-up effect seemed to occur among young women between their first vaginal intercourse and their current sexual life (among our respondents, the mean interval between age at first intercourse and current age was 3.5 years for women and 4.0 years for men). In a comparable study of first vaginal intercourse experiences, only 8% and 14% of university women reported extreme physiological and psychological sexual satisfaction, respectively,[40] compared with the 32% of women in this study who reported being very physiologically and psychologically satisfied with their current sexual life.

As with overall satisfaction levels, predictors of sexual satisfaction were perhaps more notable for their gender similarities than their gender differences. For example, sexual self-comfort appeared in all 4 of our models. As mentioned, involvement in an exclusive dating relationship was associated with both types of sexual satisfaction among women as well as men. As did Carpenter et al.,[12] we wonder why, despite significant evidence to the contrary, the cultural myth prevails that men's sexual happiness is independent of relationship factors, whereas women's is independent of physical and bodily factors. Our findings dispel widely held popular notions of men's sexual satisfaction as primarily physical in nature and women's as primarily emotional or relationship based; rather, both types of factors were important among both women and men.

For example, in keeping with a study of adults in midlife,[12] orgasm frequency and sexual intercourse frequency were important correlates of physiological satisfaction, particularly for women. In studies of sexual satisfaction among adults, some researchers have suggested that experiencing orgasm may play a minimal role in women's sexual satisfaction,[46] perhaps because women do not expect to have orgasms as easily or frequently as their male partners (which one might expect to be the case with young women especially, given that they are still gaining familiarity with their sexual selves).

Others have found orgasm frequency to be important in women's satisfaction.[47] Cultural norms may be increasingly shifting so that orgasm is perceived as a more normative part of young women's sexual experience. However, a number of obstacles to experiencing orgasm remain for young women, including far lower masturbation rates among young women than among young men,[43] a social climate in which young women are encouraged to rely on male partners alone for sexual gratification,[9,48] and a cultural sexual script in which men's orgasms, but not women's, are seen as integral to sexual encounters.

More emotional issues such as sexual guilt were also strongly associated with both types of sexual satisfaction for men (sexual guilt was associated with psychological satisfaction for women as well). Feminist scholarship has skillfully documented the ways in which girls are socialized to feel ashamed or suspect about their own sexual desires,[6,49] and research indicates that young women with high levels of sexual guilt tend to experience less sexual arousal and less enjoyment in their early sexual encounters.[23] However, few studies have shown a similar effect among young men or have explored the effects of guilt on young men's sexual self-concept and enjoyment. As expected, young men in our sample had significantly lower levels of sexual guilt than did young women (χ^2_2=11.9, P=.003), but those men with the least amount of sexual guilt were much more likely to report both types of satisfaction than were men with the greatest levels of guilt.

Association Between Contraceptive Use and Sexual Satisfaction

We did not find an association between contraceptive use and sexual satisfaction. This finding diverged from a recent analysis of 14- to 24-year-old participants in which a greater proportion of condom-protected acts of sexual intercourse was associated with greater sexual satisfaction.[36] The members of the latter study population may have been more likely to use condoms given that they were recruited from an adolescent medicine clinic, presumably where at least some of them were receiving STI testing and counseling. That said, our findings suggest that use of contraception, including condoms, did not decrease our respondents' satisfaction.

Limitations

Our assessment of sexual satisfaction was based on data derived from 2 closed-ended, categorical questions. Other than the covariates included in our analyses (e.g., relationship status, sexual guilt, number of sexual partners in the preceding year), we know little about the real-time contexts in which participants' sex lives occurred, contexts detailed in much richer detail in previous in-depth qualitative studies of sexual development and debut.[7,50,51] Although our survey items were extensively pilot tested and field tested before the final data were collected, ultimately their interpretation may vary by respondent, which is a limitation of all survey-based research on sexual health (or on public health more broadly, for that matter). Qualitative examinations are needed to augment quantitative work such as ours and to explore variability in young adults' sexual experiences.

Our analyses were restricted to those respondents with a history of vaginal intercourse. As such, we did not explore sexual satisfaction among 2 important groups: those who had chosen to not have vaginal intercourse, at least to the point in their lives at which the survey occurred, and those who had engaged only in

same-sex relationships or activities. Our decision to exclude these groups was based on the measurement of several key survey variables framed in terms of vaginal intercourse (e.g., sexual frequency) as well as the small number of respondents who self-identified as gay or bisexual. Our inability to fully examine sexual satisfaction among gay and bisexually identified young people is unfortunate given that they may have very different satisfaction profiles than do heterosexually identified young people; gender and sexual identity are also likely to interact such that gay women and gay men may have very different satisfaction profiles.

Future work on sexual satisfaction would benefit from including all 3 groups (heterosexually active, same-sex identified, and not yet sexually active, with subanalyses by gender across the 3 groups), not simply those with prior vaginal intercourse experience. For example, young people could be quite satisfied with their sexual lives even as they delay or refrain from vaginal intercourse.[52]

Our focus on vaginal intercourse was also a limitation in terms of our disregard for other types of sexual activities. For example, our orgasm variable focused on orgasm during "sexual intercourse," and many women in particular are more able to achieve orgasm through sexual activities such as oral sex. A greater proportion of women may have reported regular orgasms if we had included other types of sexual stimulation.

Given our use of a nonrandom sample of non-Hispanic White and Black students at 4 universities, our results cannot be extrapolated to all US college students, much less to all young adults in the United States more generally. Although our sample size was larger than were those of previous studies, we nonetheless derived our data entirely from college students, a population relied on too heavily in studies of affective sexual experiences among young people.[37,39,42,48,53] Young people who do not attend college are likely to vary in significant ways from university students, and such social privilege differences are likely to influence sexual experiences and well-being. We encourage researchers conducting future studies of sexual satisfaction to explore whether similar findings would emerge from more representative samples.

Implications for Public Health Practice and Research

Our findings suggest several implications for public health practice and programming as well as future research. Some implications are cultural and structural in nature. For example, to both improve classic sexual health indicators and promote sexual enjoyment and well-being, public health practitioners should work against the cultural and professional norms that stigmatize sexuality among young adults. We found that young people who internalized negative messages about sex while not necessarily refraining from sexual activity were far less satisfied when sexually active. Sexual guilt has also been linked to lower levels of contraceptive use,[23] including condom use,[54,55] among young people.

Working to overcome cultural barriers to women experiencing orgasm is another implication for public health practice. Given that orgasm frequency seems to be such a powerful shaper of both physiological and psychological sexual satisfaction among young women, and given the potential connections between self-pleasure, sexual self-awareness, and other healthy behaviors such as regular gynecological examinations[10] and contraceptive use,[9] we need to continue breaking down the barriers to young women's experience of orgasm. Many younger women may not know how to bring themselves to orgasm during solo masturbation, much less during partnered activity.

Other study implications fall at the individual and partner levels. To facilitate sexual well-being, both young women and young men should be encouraged to create stable, loving relationships to maximize their sexual enjoyment. Those young people who struggle with self-esteem need help in improving their self-regard for the purposes of both well-being more generally and sexual health more specifically. For example, one study of university students showed that lower self-esteem was related to greater psychological discomfort with condom use.[56] Our findings indicate that self-regard may be an important facilitator of sexual enjoyment among young adults.

In terms of research implications, we argue that the field is ripe for more work on the connections between sexuality, pleasure, satisfaction, and the successful prevention of pregnancy and disease.[57,58] Although we did not find an association between contraceptive use and sexual satisfaction, at least one other study has shown that a greater proportion of condom-protected acts of sexual intercourse is associated with greater satisfaction.[36] Much more research in this area is required. If contraceptive use, including condom use, is consistently associated with greater sexual satisfaction in certain circumstances or among certain populations, the potential social marketing messages could be convincing indeed.

Conclusions

Sexual satisfaction, as a critical element of sexual health and as a potential correlate of several other health indicators, deserves attention in public health research. This study is among the first to document physiological and psychological sexual satisfaction among a large sample of university students in the United States. Moreover, although other sexuality researchers have addressed the topic of sexual satisfaction, we are among the first to integrate sexual satisfaction into a public health model of overall sexual well-being.

We found that several of the same individual-level, relationship-level, and cultural-level factors correlated with sexual satisfaction among adults (such as relationship status, frequency of sexual intercourse and orgasm, and sexual guilt) were also correlated with sexual satisfaction in our sample of university students. Other correlates (such as self-esteem) seemed uniquely linked to young adults' satisfaction, reiterating the need for a life-course perspective on sexual health that recognizes the different needs and profiles particular to various stages in the life cycle. Finally, this study contributes to the empirical evidence debunking popular myths about gender, sexual satisfaction, and sexual health, including the myths that relationships matter only to women and that the more physical aspects of sexual activity matter only to men. ■

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J. A. Higgins and M. Mullinax analyzed the data and wrote the article. J. Trussell supervised the data analysis process. J. K. Davidson Sr and N. B. Moore collected the data and provided sexual health expertise. All of the authors edited the final article and tables.

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Human Participant Protection

This study was approved by the institutional review boards of Texas State University, San Marcos; the University of Wisconsin, Eau Claire; Wake Forest University; and North Carolina Agricultural and Technical State University. Participants provided written informed consent before taking part in the study.

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