



Not Who You Are, But Who You Are With: Re-examining Women's Less Satisfying Sexual Debuts

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Abstract

Gender differences in appraisals of first intercourse are among the largest in sexuality research, with women indicating less satisfying “sexual debuts” than men. Dispositional or “actor-level” explanations for this gender gap are pervasive, yet research has largely examined heterosexual debuts in which actor gender and partner gender are confounded. We assessed whether women’s less satisfying sexual debuts are better explained by actor gender or partner gender, comparing experiences of women who debuted with men (WDM) with those of men and women who debuted with women (MDW, WDW). Retrospective accounts of sexual debut were collected from 3033 adults. At first intercourse, we found that WDW had equal physical and emotional satisfaction to MDW, and more satisfaction than WDM, suggesting satisfaction gaps owing to partner gender, not actor gender. This pattern did not extend to a comparison event (first masturbation), where WDW and WDM had similar satisfaction, but less satisfaction than MDW, suggesting an actor gender gap. To identify sources of satisfaction gaps, we probed for corresponding differences in the circumstances of sexual debut. Sexual circumstances were more strongly implicated than nonsexual ones, with relative deprivation of glans stimulation explaining relative dissatisfaction at first intercourse, but not first masturbation, and orgasm explaining it at both. Findings challenge the view that the satisfaction gap at first intercourse reflects an inherent difference between genders. Indeed, they demonstrate similarities when partner gender does not differ and suggest strategies for ensuring equal sexual satisfaction—and equal sexual rights realization—at (hetero) sexual debut.

Keywords Sexual debut · First intercourse · Gender similarities · Gender differences · Sexual satisfaction

Introduction

“Being a woman is a terribly difficult trade, since it consists principally of dealings with men.”—Joseph Conrad (ca. 1913).

The transition to sexual intercourse is an all but universal life event (Haydon et al., 2014), a hallmark of sexual development (Diamond et al., 2015), and a rite of passage across cultures (Robotjazi et al., 2016), but it is far from a uniform experience. A meaningful (Carpenter, 2005) and memorable transition for many (Hearn et al., 2003), it is often cast as one’s “sexual debut” (Hawes et al., 2010), yet gaps in subjective experience of it are wide. Conventional wisdom holds that the widest of these gaps are between genders, and the evidence to date would seem to bear this difference out.¹ In describing their sexual debut, women tend to use more negative language than men, such as “disenchanted” and “disappointing” (Carpenter, 2005; Holland et al., 2010; Vasilenko et al., 2015). Similarly, in rating its affective quality, women tend to endorse more

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¹ In this article, “gender” is used to refer to gender/sex, denoting biological features distinguishing male and female, as well as social, cultural, and psychological traits linked to males and females through particular social contexts.

negative emotions than men, including greater feelings of guilt, fear, confusion, embarrassment, and exploitation ($d_s = 0.5$ to 1.2 ; Barnett et al., 2016; Higgins et al., 2010; Schwartz & Coffield, 2020; Smiler et al., 2005; Sprecher, 2014). Differences in positive affective experience are larger still ($d_s = 1.0$ to 1.3), with women often recalling less pleasure, happiness, excitement, and relief at this event than men (Barnett et al., 2016; Eriksson & Humphreys, 2014; Schwartz & Coffield, 2020; Smiler et al., 2005; Sprecher, 2014). Although gender differences at sexual debut have narrowed over the past half-century in some objective domains (e.g., its age of onset; Petersen & Hyde, 2010), there has been little concomitant convergence in subjective domains. For example, the gender gap in pleasure at sexual debut has remained stable over three decades, and larger ($d = 1.1$) than gender gaps in feelings of guilt ($d = 0.6$) or anxiety ($d = 0.5$). Indeed, the gap in pleasure surpasses some of the largest known gender differences in sexuality (e.g., masturbation, $d = 0.5$; casual sex attitudes, $d = 0.5$; Petersen & Hyde, 2010). Given the size and stability of gender differences in positive and negative affect at sexual debut, it has been proposed that affective experience of this event constitutes an exception to the Gender Similarities Hypothesis (Sprecher, 2014)—which posits that men and women are similar in most psychological and sexuality variables, despite stereotypes to the contrary (Hyde, 2005).

A Gender Gap in Sexual Debut Satisfaction

In addition to affective experience, satisfaction at sexual debut may pose another exception to the gender similarities hypothesis, albeit one that includes an evaluative component, and could be said to reflect a global appraisal of the positive and negative aspects of sexual experience (Lawrance & Byers, 1995). It could also be said to reflect a sexual rights gap (World Health Organization, 2010). When measured in this global sense, women indicate less satisfying sexual debuts than men ($d_s = 0.5$ to 1.0 ; Barnett et al., 2016; Eriksson & Humphreys, 2014; Guggino & Ponzetti, 1997; Ruiz-Muñoz et al., 2013; Schwartz & Coffield, 2020). Similarly, when measured along separate physical and emotional dimensions, women report less physical satisfaction than men ($d_s = 0.8$ to 1.1 ; Darling et al., 1992; Higgins et al., 2010; Marván et al., 2018; Sawyer & Smith, 1996; Smith & Shaffer, 2013; Tsui & Nicoladis, 2004) and, in some studies, less emotional satisfaction as well (Darling et al., 1992; Higgins et al., 2010; but see Sawyer & Smith, 1996; Smith & Shaffer, 2013; Tsui & Nicoladis, 2004). Like the gender gap in pleasure at sexual debut, the gender gap in satisfaction is large and stable across cohorts (e.g., Guggino & Ponzetti, 1997; Schwartz & Coffield, 2020) and cultures (Schwartz, 1993), suggesting a fundamental difference between women and men.

Explaining the Gender Gap in Sexual Debut Satisfaction

Several explanations have been offered for women's lower satisfaction at sexual debut. These span from physiological to cultural and are well-described within an ecological systems framework (Bronfenbrenner et al., 1994) adapted to sexual satisfaction (Henderson et al., 2009). In this framework, sexual satisfaction is the product of an interplay of systems that extend beyond the individual, and are organized into four levels: individual characteristics, immediate interpersonal conditions, distal interpersonal conditions, and broader cultural conditions. Although factors at each level impact recent sexual satisfaction (del Mar Sánchez-Fuentes et al., 2015; Henderson et al., 2009), explanations for the gender gap at sexual debut have focused on the individual.

One widely proposed explanation for women's lower satisfaction at sexual debut is that sexual satisfaction is structured differently for women and men. Specifically, the relationship context of sexual debut tends to be a committed one across genders (Guggino & Ponzetti, 1997; Humphreys, 2013; Tsui & Nicoladis, 2004), but women may be more sensitive to this context than men (DeLamater, 1987). The “nativist” view holds that these different sensitivities arise within the individual, from sex-differentiated mating strategies that vary with evolutionary investment in offspring (Buss & Schmitt, 1993), and make the relationship dynamics of sex more salient for women than for men. In contrast, the “empiricist” position holds this difference originates externally, from gendered norms for sexual behavior that are acquired from the broader culture and incorporated into the individual (Gagnon & Simon, 1973; Wiederman, 2005). For instance, shared “scripts” for virginity loss mandate that women treasure their virginity, manage it carefully, and “gift” it only in a committed relationship, yet place no such restrictions on men (Carpenter, 2001; Humphreys, 2013). It follows that women's satisfaction at sexual debut may be more connected to, and constrained by, its relationship context than men's.

The literature on recent sexual satisfaction would seem to support this explanation, with women's being more impaired by unfavorable relationship circumstances than men's (e.g., low relationship stability, low relationship satisfaction; Kim & Jeon, 2013; McClelland, 2014; Pedersen & Blekesaune, 2003; Waite & Joyner, 2001a, 2001b; but see Carpenter et al., 2009). However, tests of this difference at sexual debut have yielded conflicting results. Some reports indicate that satisfaction at sexual debut (Higgins et al., 2010), as well as pleasure (Guggino & Ponzetti, 1997) and positive affect (Schwartz & Coffield, 2020), are improved by a committed relationship context for women,

and more so than for men. Yet, others suggest that a loving and committed relationship at sexual debut enhances pleasure and satisfaction across genders, and to a similar degree (Darling et al., 1992; Sprecher et al., 1995), raising the possibility that sexual satisfaction's determinants are not necessarily gendered at sexual debut, and might not contribute to women's lower sexual satisfaction.

Another commonly advanced explanation for the satisfaction gap emphasizes gender differences in the circumstances of sexual debut rather than different sensitivities to them. Specifically, it centers on the gender gap in orgasm at this event—which is commonplace for men (range of 62% to 84%) but rare for women (range of 6% to 12%; Reissing et al., 2012; Sawyer & Smith, 1996; Schwartz & Coffield, 2020; Sprecher et al., 1995; Tsui & Nicoladis, 2004). Nativists contend this “orgasm gap” originates internally—from sexually differentiated bodies that are differently equipped to achieve orgasm during intercourse (Lloyd, 2009) and predispose men, but not women, toward this outcome at sexual debut (DeLamater, 1987). Empiricists contend, instead, that this orgasm gap originates externally, from cultural frameworks for intercourse that are learned, internalized, and enacted during sexual encounters. In the traditional (hetero)sexual script, for example, men's orgasm is an integral part of intercourse—and ejaculation marks its end—but women's orgasm is not called for at any juncture (Hite, 1976, 1982). Thus, rather than being less able to achieve orgasm at sexual debut, women might feel less entitled to orgasm, and less motivated to achieve it in turn.

There is some evidence supporting a role of orgasm in the satisfaction gap at sexual debut. Although lower entitlement to orgasm among women might also imply their sexual satisfaction is less contingent on it (McClelland, 2010), occurrence of orgasm at sexual debut has been linked to greater pleasure (Sprecher et al., 1995) and positive affect for men and women alike (Schwartz & Coffield, 2020). Indeed, sexual satisfaction has sometimes been equated with orgasm (McCarthy et al., 2004; Wallin, 1960). At the same time, occurrence of orgasm at sexual debut only partly accounts for the gender gap in pleasure (Sprecher et al., 1995; but see Woody et al., 2003). Another possible contributor might be pleasurable genital stimulation, which can be satisfying in itself, even when it does not result in orgasm (Blair et al., 2018; Galinsky, 2012). Glans stimulation, in particular, is central to sexual arousal (Levin, 2020) and orgasm (Herbenick et al., 2018; Shirazi et al., 2018)—and is a staple of solitary sexual activity (e.g., Towne, 2019). Yet, in partnered contexts, a gender gap is often found, with women experiencing glans stimulation less often than men (Blair et al., 2018; Frederick et al., 2018). In part, this discrepancy might originate from the conventional (hetero)sexual script, which historically (Hite, 1976, 1982), and more recently (Barnett et al., 2017; Byers

et al., 2009; Hans & Kimberley, 2011), defines intercourse as penile-vaginal intercourse and mandates glans stimulation for men (i.e., penetration and thrusting that directly stimulate the glans penis) but not women (i.e., oral or manual genital contact that directly stimulates the glans clitoris).² Glans stimulation, for women, is instead positioned as “build up” to intercourse, and intercourse is no less intercourse without it. Because definitions of “virginity loss” generally adhere to this script (Trotter & Alderson, 2007), women might not be less interested or able to achieve physical satisfaction at sexual debut, but less enabled to achieve it.

Although gender differences at the individual or “actor” level have been prioritized in the sexual debut literature, factors at the immediate interpersonal or “partner” level are also gendered—and suggest alternative explanations for women's lower satisfaction.³ Receipt of glans stimulation is one such circumstance that is likely to be gendered, and often depends on one's partner, but has been absent from the sexual debut literature. Nevertheless, those who have never had sex are most likely to define it in traditional terms, without activities that provide direct glans stimulation to women (Byers et al., 2009; Sanders & Reinisch, 1999). They may thus be less willing to provide it at sexual debut. Receipt of orgasm is another such circumstance that depends on one's partner, and may be highly gendered at this event. Often, orgasm has been positioned as a personal rather than dyadic aspect of sexual satisfaction (e.g., Pascoal et al., 2014), and as one that is “achieved” rather than “received.” However, the orgasm gap between genders is narrowed during masturbation (Dekker & Schmidt, 2003), suggesting its size during intercourse—including first intercourse—originates with the partner. Indeed, the orgasm gap between sexually experienced men and women is widest when they are not yet sexually acquainted, and not yet skilled at bringing each other to orgasm (i.e., during first-time hookups; Armstrong et al., 2010)—suggesting it may be wider still at sexual debut. Women's lower physical satisfaction at sexual debut might, therefore, be explained by the gendered sexual circumstances of this event—that is, by women's partners being less likely to provide pleasurable and orgasmic genital stimulation.

Another partner-focused explanation for women's lower satisfaction at sexual debut centers on circumstances of this event that are not sexual but are nevertheless gendered.

² It should be acknowledged that penile-vaginal penetration can involve indirect glans stimulation for women, as well as some incidental direct stimulation (O'Connell et al., 2008)—even when not accompanied by direct manual stimulation of the glans clitoris.

³ Interpersonal conditions more often refer to relationship characteristics than partner characteristics, but ecological models of sexual satisfaction include one's intimate relationship and the partner it is with within this same level of analysis (i.e., immediate interpersonal conditions within the mesosystem).

Although sexual autonomy (Kiefer & Sanchez, 2007) and mutuality are integral to sexual satisfaction (Pascoal et al., 2014), more women than men indicate that their partner took the lead in initiating sexual debut (Tsui & Nicoladis, 2004; Woody et al., 2003). Thus, even when it is engaged in willingly, this event may be less “wanted” for women, and less emotionally satisfying. Love dynamics between partners, such as mutual commitment, have been related to a more wanted sexual debut (Houts, 2005). However, power dynamics between partners are more likely to be gendered. Women’s sexual debut partners tend to be older (Darling et al., 1992; Guggino & Ponzetti, 1997; Higgins et al., 2010; Smiler et al., 2005; Sprecher et al., 1995; Tsui & Nicoladis, 2004; but see Eriksson & Humphreys, 2014), which has been linked to greater partner pressure at this event (McCarthy-Jones et al., 2019; Wight et al., 2008). Men, as compared with women, also tend to have more sexual experience by the time of sexual debut, with respect to both partnered and solitary sexual practices (Peragine et al., 2022a; Schwartz & Coffield, 2022), which could conceivably detract from mutual sexual decision-making. It follows that women’s lower emotional satisfaction at sexual debut might be explained by the gendered, but not necessarily sexual, circumstances of this event—that is, by women’s partners being older, more practiced at intercourse, and more involved in initiating sexual debut.

It is crucial to highlight that gender differences in the circumstances of sexual debut generally conform to gendered scripts for intercourse and virginity loss, and that these scripts include another important stipulation at the partner level: that sexual debut involves a heterosexual dyad. For all of the attention to gender at sexual debut, the role of *partner* gender in women’s lower satisfaction has rarely been discussed. This omission is notable, and a curious blind spot because, in a largely heterosexual literature, every difference in subjective experience attributed to actor gender could just as easily be attributed to partner gender.

A Partner Gender Gap in Sexual Debut Satisfaction

As with research on recent sexual satisfaction (McClelland, 2010), research on satisfaction at sexual debut has largely been limited to heterosexual samples. Women who debuted with women (WDW) have generally been unacknowledged (i.e., combined with heterosexual women; Darling et al., 1992; Eriksson & Humphreys, 2014; Guggino & Ponzetti, 1997; Humphreys, 2013; Sawyer & Smith, 1996) or excluded—either directly (Barnett et al., 2016; Higgins et al., 2010; Schwartz & Coffield, 2020; Smith & Shaffer, 2013) or indirectly (Marván et al., 2018; Tsui & Nicoladis, 2004; Walsh et al., 2011; Woody et al., 2003). Indeed, sexual debut is increasingly defined broadly and inclusively by researchers (e.g., as first vaginal or anal penetration with a partner;

Bowring et al., 2019; Coleman & Testa, 2007, 2008; Dickson et al., 2019; Tsuyuki et al., 2019; Vancour & Fallon, 2017), but it has traditionally been operationalized in narrow and hetero-exclusive terms (e.g., as first penile-vaginal intercourse of first “heterosexual” intercourse).⁴ Women’s lower satisfaction at sexual debut may, therefore, be an overgeneralization that reflects lower satisfaction among women who debuted with men (WDM).

There is also some evidence to suggest the circumstances of sexual debut diverge for WDW and WDM. Lesbian women, for example, report higher rates of orgasm than heterosexual women during intimate sexual encounters (Frederick et al., 2018; Garcia et al., 2014). Likewise, at sexual debut, orgasm features more often in the stories of WDW than WDM (Carpenter, 2005; Kinsey et al., 1953; Masters & Johnson, 1966; Thompson, 1995). This orgasm gap between women could, conceivably, reflect an actor-level difference. That is, women with same-gender attractions may be more able to achieve orgasm than women with other-gender attractions. Alternatively, they may be less amenable to (hetero)sexual scripts and feel more entitled to achieve it. Indeed, women who partner with women express less ambivalence toward partnered orgasm than heterosexual women (Goldey et al., 2016), and more often include orgasm in their definition of intercourse (Ho & Sim, 2014). At the same time, women with same- versus other-gender partners do not differ in their rates of orgasm when they engage in genital self-stimulation (Blair et al., 2018), pointing to a role of the partner. Indeed, during intimate sexual encounters, women with same-gender partners report more frequent receipt of glans stimulation than women with other-gender partners (Blair et al., 2018), and, at sexual debut, the accounts of WDW have included glans stimulation as well (e.g., cunnilingus; Brumberg, 1997; Carpenter, 2005; Thompson, 1995; Tolman, 1994). Additionally, the sexual debut accounts of WDW have less often included sexual compliance than those of WDM (Brumberg, 1997; Carpenter, 2005; Thompson, 1995; Tolman, 1994). It follows from these observations that women’s lower satisfaction at sexual debut may not be an exception to the Gender Similarities Hypothesis at all. Rather, it may reflect a difference of circumstance that depends on the gender of one’s partner.

⁴ In addition to including sexual minorities, this definition includes sexual firsts that are limited to unidirectional genital stimulation but could nevertheless be argued to indicate the onset of sexual activity (e.g., first oral, manual, and object-assisted penetration with a partner). Indeed, unidirectional genital stimulation with a partner tends to precede bidirectional genital stimulation (Schwartz & Coffield, 2022), and might better reflect one’s sexual debut.

The Current Study

We revisited the gender gap in satisfaction at sexual debut, considering both actor and partner gender. Like others, we compared WDM and MDW on physical and emotional satisfaction at sexual debut and extended our analysis to WDW as well. As a further extension of previous work, we examined sexual satisfaction at dyadic sexual debut (first intercourse) and at a comparison event, solitary sexual debut (first masturbation).⁵ These were compared to clarify whether satisfaction gaps were restricted to the partnered context or generalized to a solitary one, implicating partners or actors, respectively. We hypothesized that satisfaction at solitary sexual debut would vary with actor gender, but satisfaction at dyadic sexual debut would, instead, vary with partner gender. Thus, beyond seeking to replicate satisfaction gaps between WDM and MDW, our unique predictions were twofold: (1) WDW should equal MDW in satisfaction at dyadic sexual debut, but (2) at solitary sexual debut, WDW should equal WDM.

In addition to characterizing physical and emotional satisfaction, we probed the source of any satisfaction gaps identified. Adopting a gender similarities approach, we tested whether differences in satisfaction among MDW, WDM, and WDW might be explained by differences in the circumstances of sexual debut. We thus compared groups on the sexual circumstances of dyadic sexual debut, defined as receipt of glans stimulation and orgasm from one's partner, as well as on the sexual circumstances of solitary sexual debut, defined as self-administered glans stimulation and orgasm. We also compared groups on the nonsexual circumstances of dyadic sexual debut, defined as the balance of love and power dynamics between partners (commitment, age, sexual experience, involvement in initiating sexual debut). As for satisfaction at sexual debut, we hypothesized that the circumstances of this experience would vary with partner gender in dyadic contexts, but, in solitary ones, would instead vary with actor gender. Thus, beyond seeking to replicate differences between WDM and WDM, we further predicted that: WDW should match MDW in the (3) sexual circumstances and (4) nonsexual circumstances of dyadic sexual debut, yet (5), at solitary sexual debut, WDW should match WDM. Last, we tested whether partner gender-linked circumstances mediate satisfaction gaps at dyadic sexual debut, and whether actor gender-linked circumstances mediate satisfaction gaps at solitary sexual debut. We also assessed whether particular circumstances (e.g., sexual versus nonsexual, glans stimulation versus orgasm) more strongly account for particular satisfaction gaps (e.g., physical versus emotional). Because

mediation analyses were novel and exploratory, no specific predictions were made.

Method

Participants

Participants were recruited during the Spring of 2017 from undergraduate psychology research pools at three Canadian universities (University of Toronto St. George, University of Toronto Mississauga, and University of Guelph) and via online advertisements targeting Canadian residents for a "Sex Survey for Science." Inclusion criteria were English competency, adult age (at least 18 years), previous sexual experience (dyadic and solitary), no childhood (before age 10) dyadic sexual debut, no missing data on variables of interest; and, to achieve a more uniform interpretation of dyadic sexual debut, no non-consensual dyadic sexual debut—which a minority of individuals, and fewer women than men, equate with virginity loss (Carpenter, 2001). Because mismatch between one's sexual orientation and sexual debut partner may itself detract from satisfaction with this event, only respondents with more than occasional attraction to the gender of their sexual debut partner were included in analyses (see Supplemental Table S1 for group-contingent exclusion criteria and numbers excluded, and Supplemental Section SA for analyses without exclusions). Participants each gave informed consent, completed a 45-min web-based survey, and were compensated with course credit or prize draw entry. All procedures were approved by the institutional review board of the last author.

Participants were 3033 men ($n = 937$) and women ($n = 2096$) drawn from a larger study on sexual debut experience and adult sexual health. Sample demographics are presented in Table 1. The mean (*SD*) age of participants was 23.83 (4.46) years, and age at dyadic sexual debut was 17.31 (2.31) years. Participants were generally secular/non-religious (60.9% atheist or agnostic) and well-educated, with the majority holding a postsecondary degree (56.4%). Ethnic background was predominantly European (83.1%), followed by East Asian (9.0%), Indigenous (6.9%), South Asian (6.0%), Caribbean (2.9%), Latin (2.8%), African (1.6%), and Oceanic (0.6%) origins. Most participants were currently involved in a romantic relationship (68.9%) and self-identified as heterosexual (86.0%, Kinsey 0–1), with a significant minority indicating bisexual (12.9%, Kinsey 2–4) or homosexual identity labels (1.1%, Kinsey 5–6; Kinsey Heterosexual–Homosexual Scale; Kinsey et al., 1948).

Measures

Demographics collected included sex designated at birth, gender identity, age, ethnicity, education level, religion,

⁵ To our knowledge, no efforts have previously been made to quantify satisfaction at solitary sexual debut or to compare it across genders.

Table 1 Sample demographics by group

Variable	MDW	WDM	WDW	Test statistic	df	Effect size
N	937	2033	63			
Age, years				13.94*** ^c	23,030	.01
M (<i>SD</i>)	24.44 (5.01) ^d	23.59 (4.18) ^e	22.71 (3.31) ^e			
Education, n(%)				2.38	2	.03
Less than high school	2 (0.2)	5 (0.2)	0 (0.0)			
Some high school	9 (1.0)	36 (1.8)	1 (1.6)			
High school diploma	377 (40.2)	862 (42.4)	27 (42.9)			
College or trade	251 (26.8)	336 (16.5)	8 (12.7)			
University, Bachelor's	247 (26.4)	613 (30.2)	25 (39.7)			
University, Master's	30 (3.2)	124 (6.1)	2 (3.2)			
Post-graduate degree	11 (1.2)	45 (2.2)	0 (0.0)			
Other professional degree	10 (1.1)	12 (0.6)	0 (0.0)			
Ethnicity^a, n(%)				2.98	2	.03
European	795 (84.8)	1673 (82.3)	52 (82.5)			
East Asian	74 (7.9)	191 (9.4)	8 (12.7)			
South Asian	50 (5.3)	125 (6.1)	6 (9.5)			
Indigenous	57 (6.1)	145 (7.1)	8 (12.7)			
Latin	24 (2.6)	59 (2.9)	3 (4.8)			
Caribbean	12 (1.3)	74 (3.6)	1 (1.6)			
African	8 (0.9)	41 (2.0)	1 (1.6)			
Oceanic	8 (0.9)	11 (0.5)	0 (0.0)			
Religion, n(%)				8.45*	2	.05*
Atheist/Agnostic	591 (63.1)	1210 (59.5) ^e	47 (74.6) ^d			
Roman Catholic	137 (14.6)	324 (15.9)	2 (3.2)			
Protestant	63 (6.7)	103 (5.1)	1 (1.6)			
Christian	35 (3.7)	68 (3.3)	1 (1.6)			
Muslim	11 (1.2)	33 (1.6)	1 (1.6)			
Jewish	6 (0.6)	36 (1.8)	1 (1.6)			
Buddhist	11 (1.2)	35 (1.7)	2 (3.2)			
Other	83 (8.9)	224 (11.0)	8 (12.7)			
Sexual orientation^b, n(%)				1787.73***	4	.54***
Heterosexual	896 (95.6) ^d	1744 (84.2) ^e	–			
Bisexual	41 (4.4) ^e	322 (15.8) ^d	39 (61.9) ^d			
Homosexual	–	–	34 (54.0) ^d			
Relationship status, n(%)				21.63***	2	.08***
Married	108 (11.5)	156 (7.7)	0 (0.0)			
Common Law	67 (7.2)	163 (8.0)	4 (6.3)			
Exclusive cohabiting	104 (11.1)	291 (14.3)	12 (19.0)			
Exclusive non-cohabiting	285 (30.4)	791 (38.9)	25 (39.7)			
Non-exclusive	27 (2.9)	54 (2.7)	3 (4.8)			
Single	346 (36.9) ^d	578 (28.4) ^e	19 (30.1)			
Age at dyadic sexual debut, years				0.93	23,030	0
M (<i>SD</i>)	17.30 (2.31)	17.30 (2.29)	17.70 (2.65)			

MDW = men who debuted with women; WDM = women who debuted with men; WDW = women who debuted with women. For all variables, groups were compared using independent *t*-tests or chi-square analysis, with Cohen's *d* or Cramer's *V* calculated as indicators of effect size

^aValues may not sum to 100 as multiple ethnicities were allowed

^bCombined scores of the Kinsey Heterosexual–Homosexual Scale, with values of 0–1 categorized as heterosexual, values of 2–4 categorized as bisexual, and values of 5–6 categorized as homosexual

^cEqual variances not assumed due to violation of Levene's test

^dSignificantly higher scores ($p < .05$) or more individuals than expected in this category (Standardized residuals > 1.96)

^eSignificantly lower scores ($p < .05$) or fewer individuals than expected in this category (Standardized residuals > -1.96)

* $p < .05$, *** $p < .001$

relationship status, and sexual orientation. Participants were asked whether they had ever engaged in sexual intercourse, defined as “vaginal or anal penetration with a partner” as well as whether they had ever engaged in “masturbation.” Sexual intercourse was defined broadly so as not to privilege penile-vaginal penetration and exclude WDW, or to preclude manual, oral, or object-assisted vaginal penetration, which sexual minority women are more likely to interpret as intercourse and virginity loss than heterosexual women (Carpenter, 2001; Dion & Boislard, 2020; Ho & Sim, 2014). Our definition was also inclusive of non-vaginal penetration (i.e., anal intercourse). It is important to highlight that this definition of intercourse is increasingly used in the sexual debut literature, particularly when comparing the experiences of sexual minority and majority individuals (e.g., Bowring et al., 2019; Coleman & Testa, 2007, 2008; Dickson et al., 2019; Tsuyuki et al., 2019; Vancour & Fallon, 2017). At the same time, it is worth acknowledging that some respondents may have interpreted intercourse as an act that necessarily involves penile-vaginal penetration, and some WDW may have self-excluded as a result. Others may have self-excluded due to the primacy of penetration in our definition of intercourse, which is a defining element of virginity loss in most (Carpenter, 2001; Ho & Sim, 2014; Trotter & Alderson, 2007), but not all studies of WDW (Dion & Boislard, 2020). Following confirmation that sexual intercourse and masturbation had occurred, participants completed retrospective questions on first occurrences of sexual intercourse and masturbation, providing measures of dyadic and solitary sexual debut experience, respectively.

Satisfaction at Sexual Debut

Sexual satisfaction in physical and emotional domains was assessed separately for dyadic and solitary sexual debut using single-item assessments from Higgins et al. (2010): “Think back to the first time you [had sexual intercourse/masturbated]: Was the experience physiologically (i.e., Did it feel good?) satisfying for you?” (i.e., physical satisfaction); and “Was the experience psychologically (i.e., emotionally) satisfying for you?” (i.e., emotional satisfaction). Participants rated their physical and emotional satisfaction along a 5-point scale (0 = *not at all*, 1 = *slightly*, 2 = *moderately*, 3 = *considerably*, and 4 = *extremely*), with higher scores indicating more satisfaction.

Circumstances of Sexual Debut

Sexual circumstances were assessed at both dyadic and solitary sexual debut. These were operationalized as experience (or non-experience) of orgasm (“Did you have an orgasm?”; e.g., Sprecher et al., 1995) and glans stimulation (“What genital stimulation did you and your partner employ?”),

respectively. For each sexual debut, participants completed single-item assessments of their personal experience of orgasm (coded 1 = “yes”, 0 = “no” or “unsure”), and of genital stimulation employed, with responses of “vaginal penetration only”, “vaginal penetration and clitoral stimulation”, “anal penetration only”, and “anal penetration and clitoral stimulation” (coded 0 = “no glans stimulation”, 1 = “glans stimulation”) where all options indicated glans stimulation for men but only “vaginal penetration and clitoral stimulation” or “anal penetration and clitoral stimulation” indicated glans stimulation for women.

Nonsexual circumstances were assessed at dyadic sexual debut only. These were operationalized as the partner’s involvement in initiating this event (“Who initiated intercourse?”; e.g., Montemurro & Riehm-Murphy, 2019), as well as their relative age (“What age was your partner?”; Sprecher et al., 1995), coital experience (“Was it your partner’s first experience of sexual intercourse?”; e.g., Sprecher et al., 1995), and level of commitment (“What type of relationship did you and your partner have?”; e.g., Higgins et al., 2010). Participants specified whether intercourse was (1) “partner-initiated”, (2) “self-initiated”, or (3) “mutual” (coded 0 = “partner-initiated”, 1 = non-partner-initiated [“self-initiated” or “mutual”]). They also indicated whether their partner was (1) “older”, (2) “same age”, or (3) “younger” (coded 0 = “older”, 1 = “younger” or “same age”), and whether their partner had previous experience of intercourse, with responses of (1) “Yes”, (2) “No”, and (3) “Not sure” (coded 0 = “Yes”, 1 = “No” or “Not Sure”). Last, participants categorized the nature of their relationship with their sexual debut partner” as (1) “committed love relationship”, (2) “steady dating”, (3) “occasional dating”, (4) “friend”, (5) “casual acquaintance”, (6) “stranger”, or (7) “other (e.g., sibling, parent relative, authority figure)” (coded 1 = committed [“committed love relationship” or “steady dating”], 0 = uncommitted [“occasional dating”, “friend”, “casual acquaintance”, “stranger”, or “other”]).

Analytic Approach

First, we conducted independent *t*-tests to assess whether gender differences in satisfaction at dyadic sexual debut were replicated in our sample, and to test whether they extended to solitary sexual debut. To determine whether satisfaction might vary with partner gender instead of actor gender, we then assessed group differences (MDW, WDM, WDW) in satisfaction at dyadic and solitary sexual debut using one-way analyses of variance (ANOVAs). Next, we conducted one-way ANOVAs (continuous outcomes) and chi-square tests (categorical outcomes) to probe whether the circumstances of dyadic sexual debut vary with partner gender or actor gender, and to clarify which differences extend to solitary sexual debut. Where omnibus tests were significant, we made

pairwise comparisons with ASR (categorical variables), and Fisher's Least Significant Difference (LSD) or Games–Howell test where equal variances were not assumed due to a violation of Levene's test (continuous variables). Effect sizes were calculated using Cramer's V (φ_c), partial eta-squared (η_p^2) or Cohen's d , as appropriate. Analyses were conducted using SPSS (version 28) with critical $\alpha = 0.05$.

We next explored whether the circumstances of sexual debut mediated satisfaction gaps between groups (WDM, WDW, MDW) at this event. For example, can differences in satisfaction between WDM and WDW be accounted for in part by greater likelihood to orgasm (see Hayes & Preacher, 2014; Hayes, 2018, Chapter 6). Although one can examine indirect effects in the absence of "criteria" for mediation being met (e.g., Zhao et al., 2010), we sought to limit the number of mediators examined, and the number of relative indirect effects tested. Thus, rather than including all examined variables in mediation tests, we sought a more parsimonious model by examining zero-order correlations to identify which variables were likely to serve as mediators. Specifically, we examined: (1) whether partner gender (woman) and actor gender (man) at dyadic and solitary sexual debut correlated significantly and positively with sexual circumstances (glans stimulation, orgasm), and (2) whether sexual circumstances correlated significantly and positively with satisfaction outcomes. Also probed at dyadic sexual debut were significant and positive correlations between partner gender (woman) and nonsexual circumstances (non-initiating partner, younger/same-age partner, non-experienced partner, committed partner), as well as between nonsexual circumstances and satisfaction. Where the premise for mediation analysis was met, we examined the relative indirect effects of group via (1) sexual circumstances (dyadic and solitary sexual debut) and (2) nonsexual circumstances (dyadic sexual debut only) on satisfaction outcomes. When ANOVA tests revealed that one group diverged from others in satisfaction at sexual debut, it was set as the reference group in the corresponding mediation model in order to identify the source of satisfaction gaps at sexual debut.

Given its advantages for mediation analyses over regression methods (Iacobucci et al., 2007), mediational pathways were tested using structural equation modeling (Kline, 2011). Specifically, we conducted multivariate multiple mediation in R (R Core Team, 2021) with the *lavaan* package (Rosseel, 2012) and critical $\alpha = 0.05$, allowing effects of each proposed mediator to be tested while accounting for effects of other mediators on multiple outcome variables. Two multivariate mediation models with multiple mediators and dependant variables were specified (Model 1: Dyadic sexual debut; Model 2: Solitary sexual debut). Each model was run using maximum-likelihood estimation with all parameters of direct and indirect paths and bias-corrected 95% confidence intervals (of the standardized estimate) estimated on 5000

bootstrapped samples (Lai, 2018). If the CIs of any of the relative indirect effects of group membership on satisfaction did not include 0, we interpreted that the effect of group membership on satisfaction was significantly mediated by the given mediator (see Hayes, 2018, Chapter 6). For example, a significant relative indirect effect of orgasm mediating the effect of group differences in satisfaction between MDW and WDM would indicate that the greater likelihood of orgasm for MDW versus WDM accounted for greater satisfaction observed for MDW compared to WDM. If the CI of the relative indirect effect of group membership on satisfaction included zero, this suggests the mediator did not account for the group membership differences in satisfaction. Within each of the two outcome variables, we further conducted planned contrasts for the relative indirect effects to compare the strength of the mediators (orgasm versus glans stimulation; younger/same-age partner versus non-initiating partner).

Results

Sample Characteristics

Participants were 2033 WDM, 937 MDW, and 63 WDW. Sample demographics by group are shown in Table 1. Groups were demographically similar on education level (% post-secondary degree), ethnicity (% European origins), and age at dyadic sexual debut. However, they significantly differed with respect to current age, secularity/non-religiosity (% atheist or agnostic), relationship status (% partnered), and sexual orientation.

Actor Gender and Partner Gender Gaps at Sexual Debut

Sexual Debut Satisfaction. To ascertain whether women's lower satisfaction at dyadic sexual debut was replicated in our sample, we tested for gender differences in satisfaction when WDM and WDW were combined, summarized in Fig. 1 (Panels A and C) and Table S2. Consistent with previous studies, women indicated less physical and emotional satisfaction at first intercourse than men (all $ps < 0.001$). We next turned to testing our unique prediction: that satisfaction of WDW would resemble that of MDW rather than WDM (Prediction 1). The pattern of results when women were stratified by the gender of their sexual debut partner are illustrated in Fig. 1 (Panels B and D) and summarized in Table 2. One-way ANOVAs revealed significant effects of group on physical satisfaction and emotional satisfaction at dyadic sexual debut (all $ps < 0.001$; see Table 2). Post hoc comparisons revealed differences according to partner gender, not actor gender. WDM differed from other groups (partly supporting

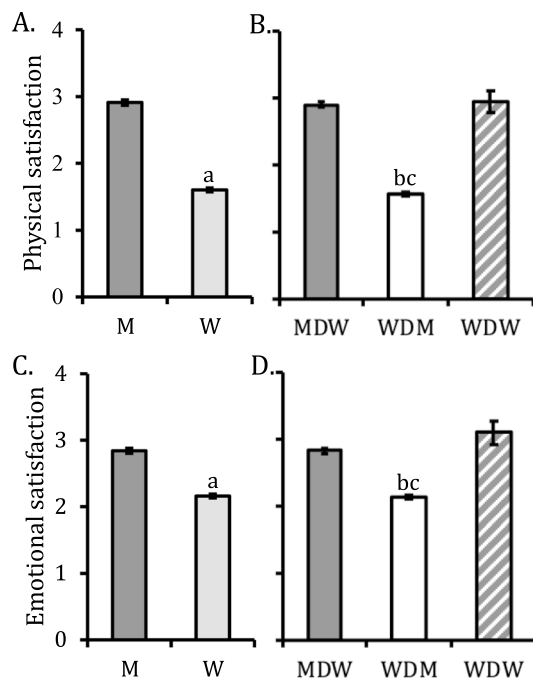


Fig. 1 Satisfaction at dyadic sexual debut varies with partner gender, not actor gender. When stratified by actor gender, women (W) had significantly less physically (Panel A) and emotionally satisfying (Panel C) dyadic sexual debuts than men (M). However, when partner gender at this event was considered, women (WDW) and men who debuted with women (MDW) were significantly more physically (Panel B) and emotionally satisfied (Panel D) than women who debuted with men (WDM). Results are expressed in raw scores, with mean ± standard error of the mean. a = $p < .001$ significantly different from men; b = $p < .001$ significantly different from men who debuted with women; c = $p < .001$ significantly different from women who debuted with women (WDW)

Prediction 1) and reported significantly less satisfaction than those who debuted with women in physical (all $ps < 0.001$; MDW: $d = 1.09$, WDW: $d = 1.15$) and emotional domains

(all $ps < 0.001$; MDW: $d = 0.58$, WDW: $d = 0.78$), irrespective of actor gender. Further, WDW reported high physical satisfaction and emotional satisfaction, similar to MDW (all $ps > 0.05$), fully supporting Prediction 1.

To clarify whether partner gender gaps in satisfaction at dyadic sexual debut are unique to the partnered context, we also probed differences at solitary sexual debut, summarized in Fig. 2 and Table S2. As at dyadic sexual debut, women reported significantly less physically and emotionally satisfying solitary sexual debuts when WDM and WDW were combined (all $ps < 0.05$; see Fig. 2, Panels A and C, and Table S2). We next tested our prediction that WDW would report similar satisfaction to WDM rather than MDW (Prediction 2). Results are illustrated in Fig. 2 (Panels B and D) and summarized in Table 2. One-way ANOVAs revealed significant effects of group on physical satisfaction and emotional satisfaction at solitary sexual debut (all $ps > 0.05$), with post hoc comparisons indicating differences according to actor gender, not partner gender. Women did not diverge at this event, with WDW reporting low physical and emotional satisfaction similar to WDM (all $ps > 0.05$); partly supporting Prediction 3. Additionally, women scored significantly below MDW on physical satisfaction: (WDM: $d = 0.16$, WDW: $d = 0.35$) and emotional satisfaction at solitary sexual debut (WDM: $d = 0.24$, WDW: $d = 0.32$), irrespective of partner gender at dyadic sexual debut (all $ps < 0.01$), fully supporting Prediction 3.

Sexual Debut Circumstances. To ascertain whether gender differences in the circumstances of sexual debut extended to the present sample, we conducted comparisons of WDM and MDW, and summarize results in Table 3. At dyadic sexual debut, we also tested our predictions that WDW would resemble MDW, rather than WDM, in the sexual (Prediction 3) and nonsexual circumstances of this event (Prediction 4). Chi-square analysis confirmed that sexual circumstances differed by group, including experience of orgasm and glans

Table 2 Descriptive statistics and effects sizes for satisfaction at sexual debut by group

Variable	MDW (n=937)	WDW (n=63)	WDM (n=2033)	Test statistic	Effect size
Dyadic sexual debut					
Physical satisfaction	2.91 (1.18)	2.95 (1.11)	1.56 (1.30)	380.55****a	.20
Emotional satisfaction	2.84 (1.28)	3.11 (1.08)	2.13 (1.41)	95.09****a	.06
Solitary sexual debut					
Physical satisfaction	3.04 (0.94)	2.67 (1.14)	2.88 (1.03)	9.78****a	.01
Emotional satisfaction	2.46 (1.20)	2.08 (1.20)	2.17 (1.23)	18.25****	.01

MDW = men who debuted with women; WDW = women who debuted with women; WDM = women who debuted with men. Absolute range is 0 to 4 for physical satisfaction and emotional satisfaction. Higher scores indicate more physical and emotional satisfaction. For all variables, groups were compared using one-way analyses of variance (ANOVAs) with partial eta squared (η_p^2) denoting effect size, and means and standard deviation are displayed. Degrees of freedom were (2,3030) for all tests

^aEqual variances not assumed due to violation of Levene’s test

*** $p < .001$

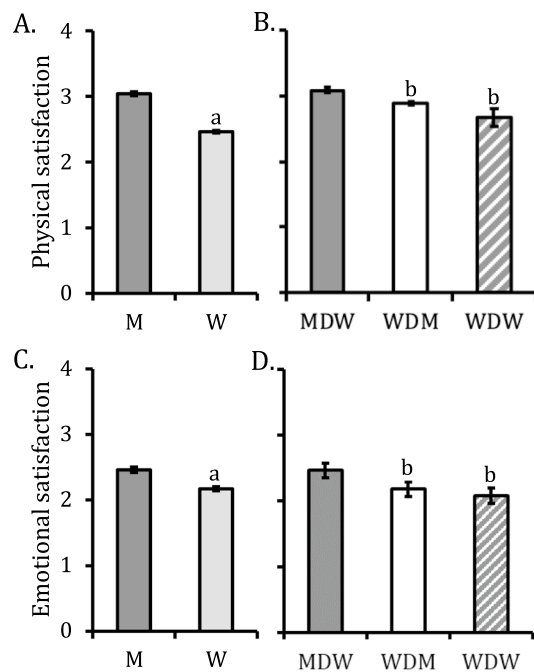


Fig. 2 Satisfaction at solitary sexual debut varies with actor gender, not partner gender. When stratified by actor gender, women (W) were significantly less physically (Panel A) and emotionally satisfied (Panel C) at solitary sexual debut than men (M), and this difference persisted when partner gender at dyadic sexual debut was considered. Whether they debuted with men (WDM) or women (WDW), women had less physically (Panel B) and emotionally satisfying (Panel D) solitary sexual debuts than men. Results are expressed in raw scores, with mean \pm standard error of the mean. a = $p < .001$ significantly different from men. b = $p \leq .01$ significantly different from men who debuted with women (MDW)

stimulation (all $ps < 0.001$). Post hoc comparisons revealed that receipt of glans stimulation was overrepresented among MDW (100.0%) and WDW (96.8%) but was underrepresented among WDM (40.6%), partly supporting Prediction 3. Likewise, occurrence of orgasm was overrepresented among MDW (72.1%) and underrepresented among WDM (8.6%). However, occurrence of orgasm was neither over- or underrepresented for WDW (36.5%) relative to MDW (partly supporting Prediction 3) or WDM (partly refuting Prediction 3).

We conducted similar comparisons for the nonsexual circumstances of dyadic sexual debut. Chi-square tests revealed that partner involvement in initiating this event differed between groups ($p < 0.001$; see Table 3), as well as partner's relative age ($p < 0.001$), and commitment ($p = 0.012$), but not sexual experience ($p > 0.05$). Consistent with previous studies, partners who took the lead in initiating this event were overrepresented among WDM (36.4%) and underrepresented among MDW (27.3%). Likewise, older partners were overrepresented among WDM (49.5%) and underrepresented among MDW (22.3%). In contrast and supporting previous studies, committed partners were overrepresented among

WDM (68.5%) and underrepresented among MDW (63.0%) and WDM (68.5%). However, no nonsexual circumstance was over- or underrepresented for WDW relative to MDW (partly supporting Prediction 4) or WDM (partly refuting Prediction 4).

To clarify whether partner gender differences in the circumstances of dyadic sexual debut were unique to the partnered context, we also probed differences at solitary sexual debut, and summarize results in Table 3. Specifically, we tested our prediction that WDW would more closely resemble WDM than MDW in the sexual circumstances of this event (Prediction 5). Chi-square analysis revealed that sexual circumstances differed by group, for both experience of orgasm and glans stimulation (all $ps < 0.001$). Occurrence of orgasm was overrepresented among MDW (69.8%) and underrepresented among WDM (41.1%) and WDW (30.2%; partly supporting Prediction 5). Glans stimulation was also, statistically, overrepresented among MDW (100%) and underrepresented among WDM and WDW (fully supporting Prediction 5). Nevertheless, the vast majority of WDM (98.0%) and WDW (95.2%) had such experience at solitary sexual debut.

Mediation Analyses: Satisfaction in Relation to Circumstances at Sexual Debut

Satisfaction gaps at dyadic debut (Model 1): Satisfaction gaps at dyadic sexual debut were examined in Model 1, incorporating all mediating variables suggested by preliminary correlational analyses (see Table 4 and Supplemental Section SB). That is, all sexual circumstances of this event (glans stimulation, orgasm) and some nonsexual circumstances (younger/same-age partner, non-initiating partner) were examined as mediators (but not having a non-experienced partner or a committed partner). Because this model was developed to explain satisfaction gaps between groups, and ANOVAs tests revealed those who debuted with men (WDM) diverged from groups who debuted with women (MDW, WDW), WDM served as the reference group. Thus, the low satisfaction group at this event (WDM) was separately compared with high-satisfaction groups (MDW, WDW), such that partner gender, not actor gender, differentiated the reference group from comparators. In this model, c-path coefficients denote greater (+) or lesser (−) satisfaction among men (MDW) and women (WDW) who debuted with women relative to the reference group (WDM).

In this model, predictor variables representing “group” were specified through dummy-coded (MDW vs. WDM and WDW vs. WDM variables), physical satisfaction and emotional satisfaction were outcome variables, and we specified four mediator variables reflecting sexual circumstances (M1: orgasm, M2: glans stimulation) and nonsexual circumstances at dyadic sexual debut (M3: younger/same-age partner, and M4: non-initiating partner). We also included a covariance

Table 3 Descriptive statistics and effect sizes for sexual debut circumstances by group

Variable	Group			Test statistic	Effect size
	MDW (n = 937)	WDM (n = 2033)	WDW (n = 63)		
Dyadic sexual debut					
<i>Sexual circumstances</i>					
Orgasm					
n(%)	676 (72.1) ^a	175 (8.6) ^b	23 (36.5)	1264.14***	.65
Glans stimulation					
n(%)	937 (100.0) ^a	825 (40.6) ^b	61 (96.8) ^a	980.57***	.57
<i>Nonsexual circumstances</i>					
Non-initiating partner					
n(%)	681 (72.7) ^a	1293 (63.6) ^b	37 (58.7)	25.31***	.09
Younger/same-age partner					
n(%)	728 (77.7) ^a	1027 (50.5) ^b	43 (68.3)	198.41***	.26
Non-experienced partner					
n(%)	412 (44.0)	833 (41.0)	28 (44.0)	2.52	.03
Committed partner					
n(%)	590 (63.0) ^b	1393 (68.5) ^a	42 (66.7)	8.91*	.05
Solitary sexual debut					
<i>Sexual circumstances</i>					
Orgasm					
n(%)	654 (69.8) ^a	835 (41.1) ^b	19 (30.2) ^b	221.54***	.27
Glans stimulation					
n(%)	937 (100.0) ^a	1992 (98.0) ^b	60 (95.2) ^b	23.18***	.09

MDW = men who debuted with women; WDM = women who debuted with men; WDW = women who debuted with women. For all variables, groups were compared using chi-square analysis, with Cramer’s V calculated as an indicator of effect size. Degrees of freedom were 2 for all tests

^aSignificantly more individuals than expected in this category (Standardized residuals > 1.96)

^bSignificantly fewer individuals than expected in this category (Standardized residuals > - 1.96)

*p < .05, ***p < .001

Table 4 Bivariate correlations between satisfaction and circumstances of dyadic sexual debut

Variable	1	2	3	4	5	6	7	8	9
1. Physical satisfaction									
2. Emotional satisfaction	.67***								
3. Gender/actor ^a	.45***	.24***							
4. Gender/partner ^a	-.43***	-.22***	-.95***						
5. Orgasm ^b	.56***	.30***	.64***	-.64***					
6. Glans stimulation ^b	.46***	.31***	.57***	-.55***	.47***				
7. Non-initiating partner ^b	.18***	.27***	.08***	-.09***	.10***	.08***			
8. Younger/same-age partner ^b	.10***	.10***	.25***	-.25***	.16***	.13***	.11***		
9. Non-experienced partner ^b	.04*	.16***	.03	-.03	.02	-.01	.23***	.28***	
10. Committed partner ^b	.05**	.23***	-.05**	.05**	.01	-.02	.18***	.12***	.38***

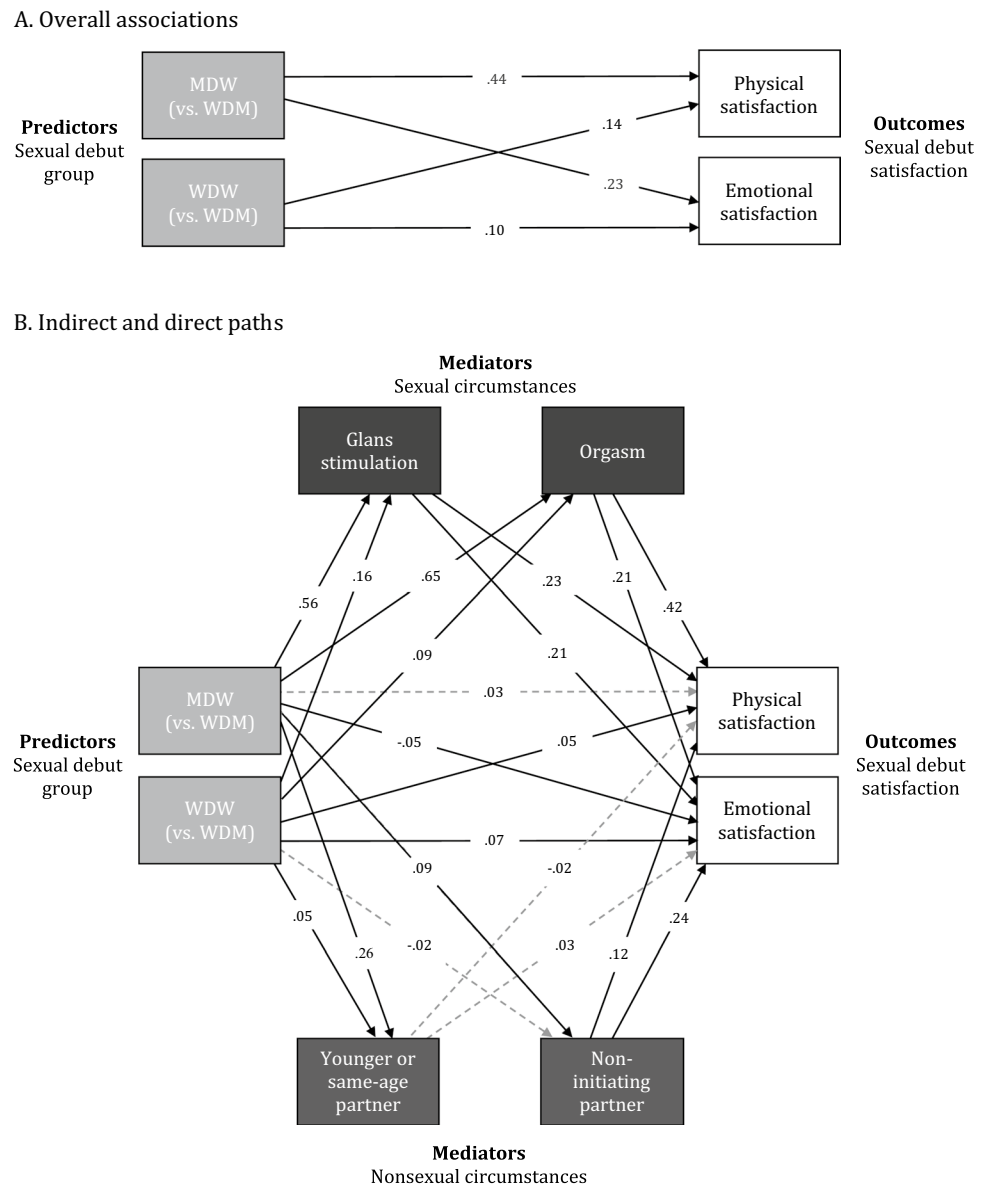
Higher scores indicate more physical satisfaction, more emotional satisfaction, female gender/sex of actor, female gender/sex of partner, receipt of orgasm, receipt of glans stimulation, non – initiating sexual debut partner (self- or mutually initiated), younger or same-age sexual debut partner, non-experienced sexual debut partner (“virgin”) and committed sexual debut partner

^aBinary variable with a higher value (1) indicating Man and a lower value (0) indicating Woman

^bBinary variable with a higher value indicating (1) Yes and a lower value indicating No/Unsure (0)

*p < .05, **p < .01, ***p < .001

Fig. 3 Path diagrams depicting multivariate multiple mediation of partner gender gaps in satisfaction via the circumstances of dyadic sexual debut. Panel A: Overall associations between group and physical and emotional satisfaction for men (MDW; $n=937$) and women who debuted with women (WDW; $n=63$) relative to women who debuted with men in Model 1 (WDM; $n=2033$). Panel B: Direct associations between group and satisfaction outcomes with sexual and nonsexual circumstances as mediators. Dashed lines indicate non-significant paths. Values indicate standardized beta coefficients



term for the two mediator variables reflecting sexual circumstances, as well as for the two mediator variables reflecting nonsexual circumstances, as these were highly correlated with each other (Preacher & Hayes, 2008). We tested all 16 relative indirect effects depicted in Fig. 3 and summarized in Table 5. Additionally, four primary contrasts of these relative indirect effects compared the strength of the effects between sexual paths (orgasm-glans stimulation) and between nonsexual paths (younger/same-age partner-non-initiating partner) for each of the two outcome variables (i.e., eight contrasts total). These contrasts allowed us to infer whether the relative indirect effect through the sexual circumstances of dyadic sexual debut was stronger for orgasm versus glans stimulation, and whether the relative indirect effects through the nonsexual circumstances of this event was stronger for younger/same-age partner versus non-initiating partner.

Table 5 Bivariate correlations between satisfaction and circumstances at solitary sexual debut

Variable	1	2	3	4
1. Physical satisfaction				
2. Emotional satisfaction	.60***			
3. Gender/actor ^a	.07***	.11***		
4. Orgasm ^b	.47***	.33***	.27***	
5. Glans stimulation ^b	.06***	.07***	.43***	.13***

Higher scores indicate more physical satisfaction, more emotional satisfaction, male gender/sex of actor, occurrence of orgasm, and occurrence of glans stimulation

^aBinary variable with a higher value (1) indicating Man and a lower value (0) indicating Woman

^bBinary variable with a higher value (1) indicating Yes and a lower value (0) indicating No/Unsure

*** $p < .001$

Table 6 Relative indirect effects of group on satisfaction via the circumstances of dyadic sexual debut (Model 1)

	β	<i>p</i>	CI (of standardized estimate)
Sexual Circumstances			
<i>Outcome 1: Physical Satisfaction</i>			
MDW versus WDM → Orgasm → Physical Satisfaction	0.274	<.001	.247, .301
MDW versus WDM → Glans stimulation → Physical Satisfaction	0.128	<.001	.107, .148
WDW versus WDM → Orgasm → Physical Satisfaction	0.037	<.001	.021, .053
WDW versus WDM → Glans stimulation → Physical Satisfaction	0.037	<.001	.031, .044
<i>Outcome 2: Emotional Satisfaction</i>			
MDW versus WDM → Orgasm → Emotional Satisfaction	0.134	<.001	.106, .161
MDW versus WDM → Glans stimulation → Emotional Satisfaction	0.12	<.001	.098, .142
WDW versus WDM → Orgasm → Emotional Satisfaction	0.018	<.001	.010, .027
WDW versus WDM → Glans stimulation → Emotional Satisfaction	0.035	<.001	.028, .042
Nonsexual Circumstances			
<i>Outcome 1: Physical Satisfaction</i>			
MDW versus WDM → Younger/same-age partner → Physical Satisfaction	-0.006	0.145	-.013, .002
MDW versus WDM → Non-initiating partner → Physical Satisfaction	0.011	<.001	.006, .016
WDW versus WDM → Younger/same-age partner → Physical Satisfaction	-0.001	0.205	-.003, .001
WDW versus WDM → Non-initiating partner → Physical Satisfaction	-0.002	0.442	-.006, .003
<i>Outcome 2: Emotional Satisfaction</i>			
MDW versus WDM → Younger/same-age partner → Emotional Satisfaction	0.007	0.128	-.002, .015
MDW versus WDM → Non-initiating partner → Emotional Satisfaction	0.021	<.001	.012, .030
WDW versus WDM → Younger/same-age → Emotional Satisfaction	0.001	0.194	-.001, .003
WDW versus WDM → Non-initiating partner → Emotional Satisfaction	-0.004	0.438	-.012, .005

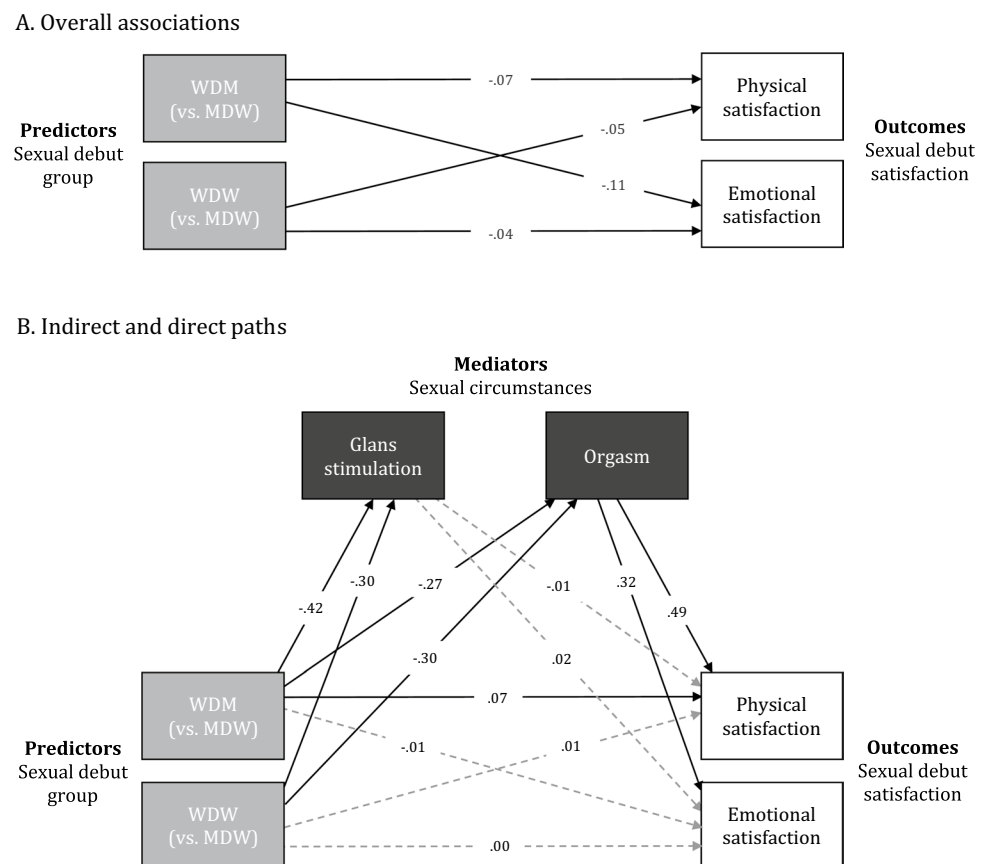
A dummy-coding system was used in which the reference group (WDM: women who debuted with women) was assigned a value of 0 for each of the two dummy-coded variables (i.e., MDW = 1 for men who debuted with women; WDW = 1 for women who debuted with women), effectively turning each variable into a contrast between that group and the reference group (e.g., West, et al., 1996). All coefficients are standardized estimates. All confidence intervals (CI) are reported at the 95% level

We direct readers to supplementary material (SM) pages 5 to 7 for complete results, which are summarized in Fig. 3 and Table 6. All eight relative indirect effects of group on physical satisfaction and emotional satisfaction through each sexual circumstance were significant. For nonsexual circumstances, significant relative indirect effects were found for MDW versus WDM on physical satisfaction ($p < 0.001$) and emotional satisfaction ($p < 0.001$) through non-initiating partner. However, all (six) other relative indirect effects of group on physical satisfaction and emotional satisfaction through nonsexual circumstances were not statistically significant. After adding our proposed mediators to the model, the relative direct effect of MDW versus WDM on physical satisfaction became non-significant ($p = 0.10$), suggesting complete mediation of this satisfaction gap between MDW and WDM. Moreover, the relative direct effect of MDW versus WDM on emotional satisfaction became significant in the reversed direction ($\beta = -0.05$, $SE = 0.02$, 95% CI = [-0.095, -0.004], $p = 0.034$), suggesting the possible presence of suppression. Suppression, in this instance, implies that the zero-order relationship indicating MDW have greater emotional satisfaction than WDM may be somewhat illusory.

Rather, once group differences in the circumstances of dyadic sexual debut are accounted for, WDM actually experience more emotional satisfaction than MDW. In contrast, relative direct effects of WDW versus WDM on physical satisfaction ($b = 0.69$, $\beta = 0.07$, $SE = 0.01$, 95% CI = [0.044, 0.096], $p < 0.001$) and emotional satisfaction ($b = 0.48$, $\beta = 0.05$, $SE = 0.01$, 95% CI = [0.022, 0.076], $p = 0.001$) were reduced, but remained significant after adding our proposed mediators to the model, suggesting only partial mediation of satisfaction gaps between women with different gendered partners.

We next examined planned contrasts for dyadic sexual debut to compare the strength of the two sexual circumstance mediators for the indirect paths from MDW versus WDM to physical satisfaction. Results revealed a stronger effect of orgasm versus glans stimulation ($p < 0.001$), meaning the orgasm more so than glans stimulation accounted for the difference in physical satisfaction between MDW and WDM. However, this contrast did not reach significance for WDW versus WDM, suggesting orgasm and glans stimulation contribute equally to the physical satisfaction gap between women. For nonsexual circumstances, the planned contrast

Fig. 4 Path diagrams depicting multivariate mediation of gender gaps in satisfaction via the circumstances of solitary sexual debut. Panel A: Overall associations between group and physical and emotional satisfaction for women who debuted with men (WDM; $n=2033$) and women (WDW; $n=63$) relative to men who debuted with women in Model 2 (MDW; $n=937$). Panel B: Direct associations between group and satisfaction outcomes with sexual circumstances as mediators. Dashed lines indicate non-significant paths. Values indicate standardized beta coefficients



testing the relative indirect paths from MDW versus WDM to physical satisfaction between the two mediators was also significant ($p=0.001$), whereby the significant relative indirect effect of MDW versus WDM through non-initiating partner was significantly stronger than the non-significant relative indirect effect through younger/same-age partner. No other planned contrasts reached significance. Thus, at dyadic sexual debut, satisfaction gaps between genders were mediated by both sexual and nonsexual circumstances; orgasm contributed more than glans stimulation, and partner initiation—but not partner age—explained the less satisfying experiences of WDM than MDW. By contrast, satisfaction gaps between women were mediated by sexual circumstances only; orgasm and glans stimulation contributed similarly to the less satisfying dyadic sexual debuts of WDM than WDW.

Satisfaction gaps at solitary debut (Model 2): In Model 2, we examined satisfaction gaps at solitary sexual debut, incorporating all mediating variables suggested by preliminary correlational analyses (see Table 5 and Section SA). That is, all sexual circumstances of this event (glans stimulation, orgasm) were examined as mediators. Because this model was developed to explain satisfaction gaps between groups, and ANOVAs tests revealed that men (MDW) diverged from

groups comprised of women (WDM, WDW), MDW served as the reference group, with c-path coefficients denoting greater (+) or lesser (−) satisfaction among women who debuted with men (WDM) and women (WDW). Thus, while satisfaction gaps at this event differed from those in Model 1, such that actor gender, not partner gender, differentiated the reference group from comparators, groups with low satisfaction (WDM, WDW) were still separately compared to those with high-satisfaction (MDW).

Here, predictor variables representing “group” were specified through dummy-coded WDM versus MDW and WDW versus MDW variables, physical satisfaction and emotional satisfaction were outcome variables, and we specified two mediator variables reflecting sexual circumstances (M1: orgasm, M2: glans stimulation), with a covariance term included for these two sexual circumstance mediator variables (Preacher & Hayes, 2008). We tested all 8 relative indirect effects depicted in Fig. 4 and summarized in Table 6. Additionally, two primary contrasts of these relative indirect effects were computed to compare the strength of effects between sexual paths (orgasm-glans stimulation) for each of the two outcome variables (i.e., four contrasts total). These contrasts were made to clarify whether the relative

Table 7 Relative indirect effects of group on satisfaction via the circumstances of solitary sexual debut (Model 2)

	β	<i>p</i>	CI (of standardized estimate)
Sexual Circumstances			
<i>Outcome 1: Physical Satisfaction</i>			
WDM versus MDW → Orgasm → Physical Satisfaction	-.132***	<.001	-.150, -.113
WDM versus MDW → Glans Stimulation → Physical Satisfaction	-.01	.173	-.025, .005
WDW versus MDW → Orgasm → Physical Satisfaction	-.055***	<.001	.072, -.038
WDW versus MDW → Glans Stimulation → Physical Satisfaction	-.007	.172	-.018, .003
<i>Outcome 2: Emotional Satisfaction</i>			
WDM versus MDW → Orgasm → Emotional Satisfaction	-.087***	<.001	-.101, -.072
WDM versus MDW → Glans Stimulation → Emotional Satisfaction	-.01	.213	-.026, .006
WDW versus MDW → Orgasm → Emotional Satisfaction	-.36***	<.001	-.048, -.024
WDW versus MDW → Glans Stimulation → Emotional Satisfaction	-.007	.212	-.019, .004

A dummy-coding system was used in which the reference group (MDW: men who debuted with women) was assigned a value of 0 for each of the two dummy-coded variables (i.e., WDM = 1 for women who debuted with men; WDW = 1 for women who debuted with women), effectively turning each variable into a contrast between that group and the reference group (e.g., West et al., 1996). All coefficients are standardized estimates. All confidence intervals (CI) are reported at the 95% level

indirect effects through sexual circumstances were stronger for orgasm versus glans stimulation.

We direct readers to SM pages 8 to 12 for complete results, which are summarized in Fig. 4 and Table 7. All relative indirect effects of group on physical satisfaction and emotional satisfaction through orgasm were significant (four out of four relative indirect effects). However, none of the relative indirect effects of group on physical satisfaction and emotional satisfaction through glans stimulation reached significance (four out of four relative indirect effects); suggesting glans stimulation did not account for satisfaction differences between groups. After adding proposed mediators to the model, the relative direct effect of WDM versus MDW on physical satisfaction via orgasm became significant in the reversed direction ($\beta = 0.07$, $SE = 0.02$, 95% CI = [0.034, 0.105], $p < 0.001$), suggesting a suppressor effect. In this instance, suppression implied that once the orgasm gap at solitary sexual debut is accounted for, WDM indicate more physical satisfaction than MDW. All other relative direct effects (i.e., WDM versus MDW on emotional satisfaction via orgasm, and WDW versus MDW on physical and emotional satisfaction via orgasm) became non-significant after adding proposed mediators to the model (all $ps > 0.52$), suggesting complete mediation of satisfaction gaps between genders.

Not surprisingly, orgasm was stronger than glans stimulation in all four planned contrasts testing the relative indirect paths from group to physical and emotional satisfaction at solitary sexual debut via the sexual circumstances of this event (all $ps < 0.001$). Thus, at solitary sexual debut, actor gender gaps in satisfaction were mediated by sexual circumstances; and specifically, orgasm, but not glans stimulation,

explained the lower physical and emotional satisfaction of women (WDM and WDW) relative to men (MDW).

Discussion

The present study was designed to disentangle effects of actor gender and partner gender on women's satisfaction at sexual debut—where gender gaps are well-established and have narrowed little over the past half-century. Like others, we found that women were less satisfied at first intercourse than men; however, when the gender of women's partners was considered, those who debuted with women matched men on both physical and emotional satisfaction. We further found that differences in the sexual circumstances of first intercourse mirrored differences in satisfaction. Namely, individuals who debuted with women were more likely to receive glans stimulation and orgasm than those who did not, and their lack contributed to women's lower satisfaction when they debuted with men (relative to either men or women who debuted with women). Some limited differences in nonsexual circumstances were also observed but only contributed to satisfaction gaps between genders (i.e., between WDM and MDW). Importantly, we found that differences between women, both in satisfaction and the circumstances of sexual debut, were specific to the partnered context. At solitary sexual debut, satisfaction and sexual circumstances varied with actor gender instead, and experience of orgasm, but not glans stimulation, explained satisfaction gaps. Taken together, results suggest that the oft-described gender gap in satisfaction at first intercourse might be better understood as a partner gender gap, and that explanations for it may need

refining—looking not within the individual, but outside of them—to the gendered circumstances of their sexual debut.

A Gender Gap in Sexual Debut Satisfaction

When actor and partner gender were confounded, and WDM were compared to MDW, we replicated gender differences in appraisals of first intercourse that date back to the 1970s (e.g., Eastman, 1972). At dyadic sexual debut, WDM were less physically satisfied than MDW, and this difference was large ($d = 1.1$), as in prior studies ($ds = 0.8$ to 1.1 ; Eriksson & Humphreys, 2014; Sawyer & Smith, 1996; Schwartz & Coffield, 2020; Smith & Shaffer, 2013). Additionally, we, like some others (Darling et al., 1992; Higgins et al., 2010), found this difference extended from physical to emotional satisfaction ($d = 0.6$), and that effect sizes for each exceed known exceptions to the Gender Similarities Hypothesis ($d = 0.5$; Petersen & Hyde, 2010).

A novel finding was that satisfaction gaps were wider in partnered than non-partnered contexts. At solitary sexual debut, WDM had less physical and emotional satisfaction than MDW, but effect sizes were small (both $ds = 0.2$). Thus, although sexual debut has traditionally been conceptualized as partnered, comparing experiences that are not partnered—but also mark the onset of sexual activity (Schwartz & Coffield, 2022)—may uncover gender similarities. It is also worth noting that convergence between genders at solitary sexual debut, and the dissolution of satisfaction gaps from dyadic sexual debut, appeared to be driven by women. That is, WDM appeared to be more physically satisfied with solitary sexual debut than dyadic sexual debut. Yet, the same did not appear to hold for MDW. Because within-group differences were not tested, this observation should be taken with caution. It may nevertheless add to a wealth of evidence that women's sexual response is more "plastic", or amenable to circumstance, than men's (Baumeister, 2000; Diamond, 2008). It also suggests that, beyond the presence of a committed partnership at sexual debut, the presence of a partner may warrant consideration in and of itself.

In addition to confirming satisfaction gaps between WDM and MDW, we were also able to replicate differences in the circumstances of first intercourse. Regarding circumstances that are not sexual per se, we, like others (Guggino & Ponzetti, 1997; Humphreys, 2013; Tsui & Nicoladis, 2004), found the majority of men and women have a committed partner at this event. Also like others, we found that partners of WDM were more likely to be committed than those of MDW (Darling et al., 1992; Humphreys, 2013; Reissing et al., 2012; Sawyer & Smith, 1996; Sprecher et al., 1995), to be older in age (Darling et al., 1992; Smiler et al., 2005; Tsui & Nicoladis, 2004; Woody et al., 2003), and to initiate sexual debut (Tsui & Nicoladis, 2004; Woody et al., 2003), but these differences were not large ($\varphi_c \leq 0.03$). Differences

in sexual circumstances were more sizeable ($\varphi_c > 0.6$). Compared with WDM, MDW were roughly eight times as likely to have an orgasm at dyadic sexual debut, and more than twice as likely to receive glans stimulation. These data confirm a wider orgasm gap at first intercourse (6% to 12% of women versus 62% to 84% of men; Reissing et al., 2012; Sawyer & Smith, 1996; Schwartz & Coffield, 2020; Sprecher et al., 1995; Tsui & Nicoladis, 2004) than recent intercourse (63% of women versus 85% of men; Garcia et al., 2014), and inequality not only of orgasm, but of the stimulation most likely to trigger it (see also Model S1). Because WDM were four times more likely to experience orgasm at solitary, compared to dyadic, sexual debut, its lack in partnered contexts is unlikely to reflect a lack of ability or interest. More likely, its absence reflects a lack of opportunity, as glans stimulation was equally likely for men in a partnered context, but only half as likely for women.

A key finding was that the gendered circumstances of dyadic sexual debut explained satisfaction gaps between genders. With respect to sexual circumstances, lack of orgasm and glans stimulation each contributed to the physical satisfaction gap between WDM and MDW. Additionally, and somewhat surprisingly, they also contributed to the emotional one. While unexpected, this result is consistent with reports that emotional satisfaction can vary with bodily experiences, including orgasm (Carpenter et al., 2009). It also agrees with our finding that sexual circumstances accounted for emotional—as well as physical—satisfaction gaps at solitary sexual debut. We should, nevertheless, stress that lack of orgasm, but not glans stimulation, explained WDM's lower satisfaction at solitary sexual debut relative to MDW. However, deprivation of both explained WDM's lower satisfaction at dyadic sexual debut—in both physical and emotional domains. That these made unique, as well as additive, contributions to satisfaction gaps was confirmed by serial mediation analysis (see Model S1) and corroborates reports that glans stimulation facilitates orgasm (Herbenick et al., 2018; Shirazi et al., 2018), is satisfying in itself, and produces more satisfying orgasms than vaginal stimulation alone (Blair et al., 2018).

That satisfaction gaps at sexual debut were explained by sexual circumstances supports some studies (Sprecher et al., 1995), but not others (Woody et al., 2003). It is, however, important to note that previous studies accounted only for experience of orgasm and did not assess satisfaction per se. Consistent with our results, Sprecher et al. (1995) found the gender difference in pleasure was partly mediated by occurrence of orgasm, and that women and men who experienced orgasm at sexual debut reported similar levels of pleasure. In contrast, Woody et al. (2003) found that women were less "pleased" at sexual debut, irrespective of orgasm. Although these findings seem contradictory, "pleased" may have different connotations than "pleasure." It is also possible that

women's lower satisfaction at sexual debut does not arise from a difference in orgasm per se, but from a difference in expectation fulfillment. That is, from a greater discrepancy between expectation of orgasm and experience of it for women than men. Although a priori expectations of orgasm were not assessed in the current study, women's do not appear to be inaccurate at first intercourse (11% expect to experience orgasm)—and no less accurate than men's (58% expect to experience orgasm; Tsui & Nicoladis, 2004). Rather, expectations that one's partner will experience orgasm tend to be inaccurate, and less accurate for women (28% expect their partner to orgasm) than they are for men (22% expect their partner to orgasm; Tsui & Nicoladis, 2004). Because women's partners are not twice as likely to experience orgasm, but 5 to 12 times as likely, they may not be dissatisfied by a sexual debut lacking in orgasm, but by one lacking in orgasm equality.

Although their contributions were more limited than those of sexual ones, the nonsexual circumstances of dyadic sexual debut were also implicated in satisfaction gaps between genders. That these contributed to emotional, as well as physical, satisfaction gaps between WDM and MDW was not expected. Nor did we expect that partner-initiation of sexual debut would be the sole nonsexual circumstance to be implicated in the satisfaction gap between WDM and MDW. One possible explanation for the limited contribution of these circumstances is suggested by shifts in the correlates of sexual satisfaction over the life course (Heiman et al., 2011; Kim & Jeon, 2013; Træen & Schaller, 2010). It might be that nonsexual circumstances have little bearing on satisfaction gaps at sexual debut but gain influence as sexual experience accumulates. Indeed, from an intimate justice perspective (McClelland, 2010), an absence of rewarding sexual exchanges in women's earliest sexual encounters could lessen feelings of entitlement to, and satisfaction from, sexual rewards—increasing the importance of relational ones. Although nonsexual circumstances have been prioritized in the sexual debut literature, our findings suggest the sexual circumstances of this event may have greater relevance to gender gaps in sexual satisfaction, and to gender gaps in what is deemed satisfying or “good enough” in later sexual encounters (McClelland, 2009).

A “Man-Made” Gap in Sexual Debut Satisfaction

When not just actor gender, but partner gender, was considered, satisfaction gaps at sexual debut took on new meaning. Supporting Prediction 1, women had more physically ($d = 1.2$) and emotionally ($d = 0.8$) satisfying first intercourse experiences when they debuted with women relative to debuting with men. They also had equal satisfaction to men, and differences from WDM were as sizeable as those between MDW and WDM. These results are consistent with

our proposal that satisfaction at sexual debut is not an exception to the Gender Similarities Hypothesis after all. Rather, it may reflect a gender similarity that depends on the gender of one's partner. We should also stress that women did not differ in satisfaction at solitary sexual debut, supporting Prediction 2. In this context, both WDM and WDW were less satisfied than men. Because satisfaction gaps between women (who debuted with women versus men) were only observed in partnered contexts, these gaps would seem to originate with the partner, rather than from some partner-linked trait within the individual (e.g., sexual orientation).

As with satisfaction, we found some sexual debut circumstances differed for women, depending on the gender of their partner. The nonsexual circumstances of dyadic sexual debut were similar for WDW and WDM (refuting Prediction 4), but the sexual circumstances were not (supporting Prediction 3). WDW were more than twice as likely to receive glans stimulation than WDM—and did not diverge from men in this regard. Further, when women debuted with men, descriptive statistics indicated they were four times less likely to achieve orgasm. In this respect, our findings align with reports that the sexual debuts of lesbian women include activities that directly stimulate the glans clitoridis (e.g., oral intercourse; Carpenter, 2005; Kinsey et al., 1953; Masters & Johnson, 1966; Thompson, 1995), and are more likely to be orgasmic (Frederick et al., 2018; Richters et al., 2006) and satisfying than penile-vaginal intercourse (Blair et al., 2018). Our findings also corroborate reports of a narrower orgasm gap between men and lesbians than heterosexual women (Frederick et al., 2018). That the circumstances of solitary sexual debut did not differ across women supports Prediction 5, and lends credence to the possibility that WDM are not less able to achieve orgasm at sexual debut, but less enabled to by their partners.

A notable finding was that the circumstances of dyadic sexual debut helped explain satisfaction gaps between women. Yet, there were subtle differences from comparisons across genders. In contrast to comparisons with men, nonsexual circumstances were not implicated in the greater satisfaction of WDW. Only sexual circumstances contributed to the greater physical and emotional satisfaction of WDW relative to WDM. As with satisfaction gaps between genders, orgasm and glans stimulation each contributed to satisfaction gaps between women (who debuted with women versus men). At the same time, and in contrast to comparisons with men, glans stimulation was just as strongly implicated as orgasm in the more satisfying sexual debuts of WDW relative to WDM. Thus, WDM's lower satisfaction might be traced, in each case, to application of the (hetero)sexual script at sexual debut. However, different elements of this script might drive satisfaction gaps within women versus across genders.

It is also worth noting that the circumstances of first intercourse completely accounted for satisfaction gaps between

genders (as indicated by the presence of significant relative indirect effects), but some variance in satisfaction between women remained unexplained. One possible reason is that sexual activity (Ybarra et al., 2016) and orgasm tend to occur earlier for sexual minority women (Træen et al., 2016). As such, WDW may be more rehearsed at sexual debut compared to WDM, and more adept at satisfying their sexual needs. To some extent, this could also be true of their partners, who might be more knowledgeable and practised in women's sexual pleasure than those of WDM. Indeed, beyond reporting more frequent glans stimulation during intercourse, women in same-gender relationships report being more satisfied by it (Blair et al., 2018). Another possibility is that WDW adopt different virginity scripts than WDM, which offer better returns on its "loss." Rather than framing virginity loss as a gift exchange with distal and uncertain relationship returns, WDW tend to frame it as a learning process—with immediate, guaranteed returns of new knowledge (Carpenter, 2005). Even in the absence of such returns, sexual debut may be identity affirming for WDW (Morgan, 2014) and, thus, satisfying.

Strengths and Limitations

This study was unique in its sample size and appreciation of physical dimensions of sexual debut beyond orgasm. It is also among the first to move beyond a unitary concept of sexual debut satisfaction and quantify gaps at both dyadic and solitary sexual debut. It was not, however, without limitations. First, a retrospective self-report design was used, relying on honest and accurate recall of respondents. Although every effort was made to have participants recount their feelings *at the time* of sexual debut, they were nevertheless asked to comment on a dyadic sexual debut event occurring an average of 6.5 years prior, with solitary sexual debut likely occurring even earlier. Accounts of sexual debut may, therefore, have been colored by recall errors, subsequent experiences (e.g., break-ups) with sexual debut partners, and the current sexual lives of participants. Second, although our sample was large and not limited to college students, participants were primarily White, college-aged individuals with some postsecondary education in psychology. Whether their feelings and experiences mirror those of the general population remains to be seen. It is also important to note that groups were not balanced in size, our sample of WDW was relatively small, and adults without masturbatory experience were not examined. Nor did we examine individuals who debuted with a non-preferred partner, limiting generalizability. We should also stress that non-sexual determinants of satisfaction were examined at dyadic sexual debut, but not at solitary sexual debut. Yet, solitary sexual experience may be satisfying for reasons beyond sexual pleasure—such as stress relief, self-affirmation, and new self-knowledge (Bowman, 2014;

Carvalho & Leal, 2013; Fahs & Frank, 2014). It is worth noting, as well, that sexual determinants of satisfaction were examined at both dyadic and solitary sexual debut, but they may not have been wholly comparable across events. Some reports suggest, for example, that experience of orgasm may be qualitatively different in partnered versus non-partnered contexts (Bensman, 2011; Goldey et al., 2016; Levin, 2007; Mah & Binik, 2005; Sierra et al., 2022), and so might make qualitatively different contributions to satisfaction. Expectations for orgasm and other outcomes may also differ across events, and ratings of satisfaction along with them, but we can only speculate as to how. Reliance on one-item measures of sexual satisfaction was another limitation, although one item measures tend to converge with multi-item measures (e.g., Mark, 2014), and we replicated differences between genders, providing some assurance of construct validity.

Finally, as with all analyses, we may have neglected important confounds. For example, intercourse was broadly defined, and its interpretation likely varied across groups—with WDW defining it more broadly than heterosexuals (Carpenter, 2001; Dion & Boislard, 2020; Ho & Sim, 2014). It follows that sexual satisfaction at first cunnilingus might match that of WDW in the current sample, even if experienced with a man. It is also possible that, despite our best efforts to use inclusive wording, some WDW may have interpreted "intercourse" as necessitating penile-vaginal penetration, and self-excluded as a result. Future research should test this possibility and characterize sexual debut satisfaction beyond the gender binary. Most importantly, it should provide a complete account of partner gender gaps at sexual debut. Though not included in our sample, men who debuted with men sometimes report painful (Dewaele et al., 2017; Kubicek et al., 2010), unpleasant (Kubicek et al., 2010), and unsatisfying sexual debuts (Arrington-Sanders et al., 2016), and future work might clarify whether the current results extend to this population.

Conclusions and Implications

This research demonstrates that the gender gap in satisfaction at first intercourse is large enough to qualify as an exception to the gender similarities hypothesis. Yet, it also demonstrates that this gap is more nuanced than often represented and is perhaps better described as a gender similarity that depends on the gender of one's partner. Indeed, although the satisfaction gap at sexual debut exceeds other exceptions to Hyde's (2005) hypothesis ($d = 0.5$; Petersen & Hyde, 2010), the largest gender difference in sexuality is not what women and men like in bed, but who they like in bed ($d > 6.0$; Hines, 2015), and, for every gender difference in (hetero)sexuality, there is an equal (but often unspoken) partner gender difference. With respect to differences at sexual debut, our findings point to the traditional

heterosexual script (Hite, 1976, 1982) as a source of dissatisfaction among women. Although efforts have been made to update this script to include glans stimulation and orgasm for women, its most common reading still restricts these to men (Barnett et al., 2017; Byers et al., 2009; Hans & Kimberley, 2011). In fact, readings that neglect clitoral stimulation appear to be becoming more, not less, common, and still cast women as supporting actors in heterosexual sex, including their own sexual debuts (Hans et al., 2010).

To close the satisfaction gap at sexual debut, sex education should strike a balance between risk and pleasure, equipping young people not just for sexual health, but for healthy sex (Fortenberry, 2014). Healthy sexual debuts, in particular, might hinge on a missing curriculum of sexual pleasure (Allen & Carmody, 2012; Fine, 1988) that fosters cliteracy and encourages young people to go “off-script” at sexual debut, transcending the limits of penile-vaginal sex. If sexual satisfaction is a human right (Kismödi et al., 2017), sex education must strive toward full and equal realisation of this right, including equal opportunities for satisfaction at sexual debut. Understanding why this event is (or is not) a satisfying one for young people is of growing importance given mounting evidence that a satisfying sexual debut is itself a source of sex education—and one with ties to sexual beliefs (Reissing et al., 2012), desires (Peragine et al., 2022b), and satisfaction years later (Smith & Shaffer, 2013). First experiences are powerful lessons, and first intercourse is no exception (Pfaus et al., 2012). If the lessons it provides are lasting ones, “virginity loss” could indeed reflect a loss for many women. Not a loss of purity, but of expectations of pleasure from sex, and of conviction one deserves, and is entitled to, it.

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Data and material availability The anonymized raw data used for this study is available upon request.

Code availability The code used for this study is available upon request.

Declarations

Conflict of interest The authors declare they have no competing interests.

Ethical approval All procedures performed in studies involving human participants were in accordance with the ethical standards of the insti-

tutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Informed consent Informed consent was obtained from all individual participants included in the study and ethics approval was received from the University Research Ethics Board of the first author.

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