

## ORIGINAL RESEARCH—PSYCHOLOGY

# Age of First Sexual Intercourse and Acculturation: Effects on Adult Sexual Responding

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### ABSTRACT

**Introduction.** Although age of first intercourse and the emotional aspects of that experience are often a target in assessment because they are thought to contribute to later sexual functioning, research to date on how sexual debut relates to adult sexual functioning has been limited and contradictory.

**Aim.** The goal of this study was to explore the association between age of first intercourse and adult sexual function in a sample of Euro-Canadian and Asian Canadian university students. In addition, culture-based comparisons of sexual complaints were made to clarify the role of culture in sexual response.

**Methods.** Euro-Canadian (N = 299) and Asian Canadian (N = 329) university students completed the Golombok-Rust Inventory of Sexual Satisfaction and the Vancouver Index of Acculturation.

**Main Outcome Measures.** Self-reported sexual problems and bidimensional acculturation.

**Results.** Ethnic group comparisons revealed that Asians reported more sexual complaints including sexual avoidance, dissatisfaction and non-sensuality. Among the women, Asians reported higher scores on the Vaginismus and Anorgasmia subscales whereas the ethnic groups did not differ on the male-specific measures of sexual complaints. In the overall sample, older age of first intercourse was associated with more sexual problems as an adult, including more sexual infrequency, sexual avoidance, and non-sensuality. Among the Asian Canadians, less identification with Western culture was predictive of more sexual complaints overall, more sexual noncommunication, more sexual avoidance, and more non-sensuality. For Asian women, acculturation interacted with age of first intercourse to predict Vaginismus scores.

**Conclusions.** Overall, these data replicate prior research that found that a university sample of individuals of Asian descent have higher rates of sexual problems and that this effect can be explained by acculturation. Earlier sexual debut was associated with fewer sexual complaints in adulthood. **Woo JST, and Brotto LA. Age of first sexual intercourse and acculturation: Effects on adult sexual responding. J Sex Med 2008;5:571–582.**

**Key Words.** Age of First Intercourse; Sexual Debut; Acculturation; Culture; East Asian Culture; Sexual Function

### Introduction

Age of first sexual intercourse has long been a subject of great interest not only within the scientific and public health communities but also in popular culture and is probably among the most documented statistics in sexuality research [1]. Despite this, ongoing national surveys of sexuality-related behaviors in Canada have focused predominantly on negative sexual outcomes of early sexual debut such as sexually transmitted infec-

tions (STIs) and teenage pregnancy. Unlike countries such as the United States, the United Kingdom, and France, comprehensive nationwide studies of normative sexual and reproductive behavior are not regularly conducted in Canada, severely limiting the ability to study trends in Canadian sexual practices [2–6].

At present, the 1996 National Population Health Survey (NPHS) provides the clearest picture of long-term trends in age at first intercourse [7]. The NPHS is a longitudinal study

launched in 1994 in which extensive information on a wide range of health-related topics was collected from approximately 17,000 randomly selected Canadians every 2 years. Evidence from this study revealed a long-term trend of declining median age at first intercourse for both men and women who were 15 to 54 years of age at the time of the study, falling from 18 to 17 years of age for men, and from 20 to 17 years of age for women over the course of 40 years [2]. Of particular interest are the convergence in age at first intercourse between the genders, and the subsequent reversal of historical patterns in the cohort born between 1977 and 1981 in which a greater proportion of women than men reported having experienced intercourse by age 15 (25.6% vs. 19.5%) [2]. In fact, 13.4% of women reported having had their first intercourse experience before age 15, compared with 10.5% of men [2].

The implications of these findings are of great concern for many reasons. First, there is uncertainty about whether young teenagers have reached the level of emotional maturity necessary to foster good sexual health [8,9]. The working definition of sexual health used by the World Health Organization states that among other elements, "sexual health is a state of physical, emotional, mental, and social well-being related to sexuality" [10]. Because intense emotions are intimately and inextricably linked to intercourse except under unusual circumstances, one might conclude that it would be beneficial for young adolescents to delay intercourse until they possess the capacity to understand the possible consequences of intercourse and the ability to make reasoned decisions based on sound information regarding sex [11,12].

Apropos concerns regarding the capacity of young teenagers to cope with the emotions that usually accompany sexual behavior and the increasing proportion of girls experiencing their first intercourse before the age of 15, research indicates that affective responses to the experience of first intercourse may be more negative for women than men [13]. To date, empirical research on affective responses to first intercourse has focused mostly on women and the results have been remarkably consistent across studies and across time, notwithstanding the significant sexuality-related sociocultural changes that have occurred in the past few decades. Although positive reactions such as pleasure have been reported, women's affective reactions to first intercourse have been predominantly negative, with disenchantment, disappointment, fear, guilt, anxiety, and embarrass-

ment among the reactions that have been reported in earlier research [14–22]. In contrast, the handful of studies that have surveyed men's affective reactions to first intercourse have found that men generally view their first intercourse experience positively and that the experience is commonly associated with satisfaction, excitement, thrill, and happiness [18,19,23,24]. These findings have also been borne out in more recent studies that directly compared the reactions of men and women to first intercourse, with women found to experience significantly more guilt, fear, embarrassment, sadness and nervousness, and less pleasure, satisfaction, and excitement than men [25–28].

One particular concern regarding the declining age at first intercourse is linked to the well-researched negative outcomes of early intercourse debut. The occurrence of first intercourse in girls before the age of 16 has been associated with a host of problems such as a significantly higher incidence of unintended pregnancies, a higher probability of becoming a teenage mother, and increased substance abuse compared with girls whose first intercourse occurs after the age of 16 [29–32]. From a population health perspective, age at first intercourse can be used as a proximate indicator of the number of sexually active teenagers in the population, which is useful information in planning sex education curricula in view of the sobering pattern of STIs in Canada. The most recent data on STIs indicate that young people in the 15–24-year-old age group are disproportionately affected by chlamydia and gonorrhoea, the two most commonly reported STIs in Canada; individuals within this age group accounted for about two-thirds of the reported cases of chlamydia and almost half of the reported cases of gonorrhoea in 2004 [33].

While much research has framed age at first intercourse within the context of negative outcomes of sexuality such as incidence of STIs, unwanted pregnancies, and interventions to prevent such outcomes, there is a dearth of knowledge on how age at first intercourse relates to adult sexual functioning [29,34–48]. Given that a number of studies have found a link between sex guilt and sexual function shortly after the experience and that guilt is one of the emotions frequently associated with first intercourse, it is possible that any deleterious effects of first intercourse on sexual function may persist in the longer run if the individual is unable to effectively work through the experience and thus experiences guilt [26,49–52]. Moreover, what mediating role other emotions such as fear, anxiety, nervousness, and

lack of pleasure play in adult sexual functioning is also largely unclear. In addition, we were unable to locate any published research exploring the impact of first intercourse on adult problems with sexual function. In clinical practice, age of first intercourse and the emotional and cognitive dimensions of that experience are often a target in assessment as they are thought to contribute to later sexual functioning; however, empirical data supporting this assertion are largely absent.

This paucity of research on the relationship between age at first intercourse and adult sexual function has resulted in a fundamental shortcoming in the knowledge of the correlates of sexual dysfunction. With reference to a recent study that found that 37% of sexually active women and 28% of sexually active men in five Anglophone countries reported at least one sexual dysfunction, it is clear that enrichment of the understanding of the predisposing factors related to sexual dysfunction, such as age at first intercourse, has the potential to improve the sexual lives of untold numbers of people globally [53].

A review of the literature uncovered just two studies that have examined age at first intercourse and sexual dysfunction [13,52]. Koch used an unpublished measure, the Koch's Sexual Functioning Concerns Scale, to assess the frequency and impact of concerns about sexual functioning that arose with the most recent sexual partner [13]. Women whose first intercourse occurred at a later age had significantly more difficulty reaching orgasm, and men who experienced first intercourse at a later age subsequently had significantly more difficulty maintaining an erection. In another study, Else-Quest et al. used seven questions in forced-response (i.e., yes/no) format to assess sexual disinterest, inability to reach orgasm, reaching orgasm too quickly, painful intercourse, not experiencing sexual pleasure, performance anxiety, and difficulty maintaining an erection for men or difficulty with lubrication for women [52]. One point was allotted for each question to which the answer was "yes" and the points were summed to create an index of sexual dysfunction for each subject. Higher scores on this index (up to a maximum of 7) indicated more domains of sexual dysfunction. No significant effects of age at first intercourse on sexual dysfunction were found, although this may likely be an artifact of the manner in which age at first intercourse was analyzed: instead of using the raw data given by participants regarding the age at which they first had intercourse, participants were grouped into three categories according to their

reported age at first intercourse. The imprecision and increased standard error introduced by discarding information may have compromised statistical power in this study.

Thus, the limited research to date on age at first intercourse and how this may be linked to adult sexual function is contradictory, and our understanding of this relationship remains decidedly lacking. The purpose of the current study was to further explore this connection in a sample of university students. An added dimension of this study, beyond comparing the genders, was to compare Euro-Canadian with Asian Canadian participants because the existing literature on this topic has focused almost exclusively on Caucasian samples and because recent studies have found differences in sexual attitudes, beliefs, and behaviors between these cultural groups in a manner that may be related to their age of sexual debut [54–57]. Two measures of culture have been included in the current study: (i) self-declared ethnic group and (ii) level of acculturation. The latter has been described as the process by which an individual who moves to a new culture incorporates aspects of the new culture into their self-concept, value system, and personality [58]. With a bidimensional model of acculturation, it is postulated that acculturating individuals may assimilate aspects of the new culture (mainstream culture) while continuing to embrace facets of their culture of origin (heritage culture) [58]. Recently published studies on the effects of bidimensional acculturation on sexuality-related attitudes, beliefs, and behaviors highlight the importance of attending to acculturation because it more accurately predicts sexual beliefs and behaviors than ethnic group membership or length of residency in Canada [54,55]. Building on the work of Koch, we hypothesize that later age at first intercourse will be predictive of greater problems in adult sexual response and that gender, acculturation, and ethnicity may impact this relationship [13].

## Methods

### Participants

Undergraduate students enrolled in psychology classes at a large Canadian university were eligible to participate in this study. Subjects received course credit for their participation. Data were collected from a total of 668 subjects; of these, 299 self-identified as Euro-Canadian and 329 self-identified as Asian. The remaining subjects self-identified as other ethnicities and were thus

**Table 1** Demographics of study population

Variable	Euro-Canadian (N = 170)	Asian (N = 131)
Mean age in years ( <i>SD</i> )*	20.8 (3.7)	20.1 (2.2)
Place of birth (% of each group)***		
Canada or United States	88.8%	30.2%
East Asia	1.2%	64.3%
Southeast Asia	0%	4.7%
Europe	5.9%	0%
Mean years in Canada ( <i>SD</i> )***	20.6 (25.0)	11.9 (6.1)
Education in years ( <i>SD</i> )**	13.6 (1.5)	13.1 (1.2)
Marital status		
Unmarried	95.9%	99.2%
Common-law	1.2%	0
Married	2.4%	0
% currently in a relationship	64.3%	65.9%
% ever in a relationship*	99.4%	96.1%
Longest relationship duration in months†	21.1 (18.4)	22.5 (17.2)
Age at first sexual intercourse	17.1 (1.6)	17.4 (2.0)

Significant group differences at \* $P < 0.05$ , \*\* $P < 0.01$ , \*\*\* $P < 0.001$ .

†For individuals reporting ever having had a relationship.

excluded from all analyses. Only the data from Euro-Canadian and Asian subjects who were non-virgins were analyzed in the current study. Among the Asian participants, those of Chinese ancestry comprised the largest group (80.5%), followed by Southeast Asian (5.8%), Korean (5.5%), Japanese (4.0%), Vietnamese (1.5%), and various Asian mixes (2.4%).

Demographic data are presented in Table 1. The Euro-Canadian participants were significantly older ( $t[293] = 1.964$ ,  $P < 0.05$ ; mean difference = 0.72 years), had spent more years in Canada ( $t[294] = 3.90$ ,  $P < 0.001$ ; mean difference = 8.76 years), and had significantly more education than the Asian participants ( $t[275] = 3.19$ ,  $P < 0.01$ ; mean difference = 0.53 years). The two ethnic groups did not differ on the proportion currently in a relationship ( $\chi^2[1] = 0.08$ ,  $P > 0.05$ ), but a significantly higher proportion of the Euro-Canadian participants had ever been in a relationship ( $\chi^2[1] = 4.09$ ,  $P < 0.05$ ). Of those who had ever been in a relationship, the length of the longest relationship did not differ between the Euro-Canadian and the Asian participants ( $t[288] = -0.65$ ,  $P > 0.05$ ).

### Procedure

Announcements were made in several sections of an introductory psychology course to publicize this study and consent forms and questionnaire packages were distributed to students who were interested in participating. Participants completed the questionnaires at home and returned them

to the research laboratory in sealed envelopes. Only the age at first sexual intercourse, sexual function, and acculturation data were included in this article. Data on the other questionnaires were the subject of another publication. All participants provided written informed consent and received course credit for their participation. All procedures were approved by the university's research ethics board.

### Measures

#### Golombok Rust Inventory of Sexual Satisfaction (GRISS) for Men

The male GRISS was administered to measure the existence and degree of sexual dysfunction experienced in men [59]. It contains 28 items with a 5-point Likert response format comprising seven subscales: Impotence, Premature Ejaculation, Male Non-Sensuality, Male Avoidance, Male Dissatisfaction, Infrequency, and Noncommunication. Split-half reliability for the overall male GRISS is 0.87 and test-retest reliability is 0.76. Internal consistency of the subscales ranges from 0.61 for Noncommunication to 0.78 for Impotence and Premature Ejaculation, and test-retest reliability ranges from 0.52 for Noncommunication to 0.84 for Premature Ejaculation. The male GRISS effectively discriminates between men with and without sexual dysfunction, with a scaled score greater than 5 denoting a significant sexual problem [60].

#### GRISS for Women

The female GRISS was administered to measure the existence and degree of sexual dysfunction experienced in women [59]. Like the male GRISS, the female GRISS contains 28 items with a 5-point Likert response format comprising seven subscales, two of which are unique to women: Vaginismus, Anorgasmia, Female Non-Sensuality, Female Avoidance, Female Dissatisfaction, Infrequency, and Noncommunication. Standardization data for the overall female GRISS indicate that split-half reliability is 0.94 and test-retest reliability is 0.65. Internal consistency of the subscales ranges from 0.61 for Noncommunication to 0.83 for Anorgasmia, and test-retest reliability ranges from 0.47 for Female Dissatisfaction to 0.82 for Vaginismus. The female GRISS effectively discriminates between women with and without sexual dysfunction, with a scaled score greater than 5 denoting a significant sexual problem [60]. The Non-Sensuality, Avoidance, Dissatisfaction, Infrequency, and Noncom-

munication subscales of the male and female GRISS are shared [60].

#### Vancouver Index of Acculturation (VIA)

The VIA was administered to measure individuals' acculturation to the Heritage and Mainstream cultures separately, consistent with a bidimensional model of acculturation [58]. Items were originally derived from a list provided by J.W. Berry, then subsequently modified and tested using three different samples of undergraduate students: individuals of Chinese, non-Chinese East Asian, and non-English-speaking (excluding Chinese and East Asian) descent.

The VIA consists of 20 items that are paired and keyed to the Heritage and Mainstream acculturation dimensions in 10 domains as follows: cultural traditions, marriage partner, social activities, comfort working with people, entertainment, behavior, practices, values, humor, and friends. Each item is rated on a 9-point Likert scale ranging from *strongly disagree* (1) to *strongly agree* (9). Higher scores on the Mainstream dimension reflect greater adaptation to the individual's current cultural setting (North American culture, in the present study), and higher scores on the Heritage dimension reflect greater affiliation with the values and traditions of the individual's culture of origin.

Internal consistency as assessed by Cronbach's alpha was 0.91 for the Heritage dimension and 0.89 for the Mainstream dimension. Factorial validity was obtained using a principal-components analysis with promax rotation performed on two Chinese groups, one East Asian group, and one miscellaneous group; orthogonal factors corresponding to the Heritage and Mainstream dimensions were clearly extracted for all four groups.

A demographic questionnaire developed by the authors for this study assessed age, education, age at first sexual intercourse, self-identified ethnicity, current and past relationship ages and durations, and other measures of health not examined in this study.

#### Results

One hundred seventy (56.9%) of the Euro-Canadians and 131 (39.8%) of the Asians had ever had sexual intercourse. Age of first intercourse did not significantly differ between the two ethnic groups,  $F(1, 296) = 1.98$ , nor between the genders,  $F(1, 296) < 1$ , and there was no ethnic group by

gender interaction,  $F(1, 296) < 1$ , all  $P_s > 0.05$ . The mean age of first intercourse was 17.3 years for males and 17.2 years for females. Pearson product-moment correlations were used to explore the relationship between age at first intercourse and GRISS subscale scores among the full sample of nonvirgin participants. Age at first intercourse was significantly correlated with the GRISS total score ( $r[183] = 0.19$ ,  $P < 0.01$ ), the Infrequency subscale ( $r[190] = 0.17$ ,  $P < 0.05$ ), and the Non-Sensuality subscale ( $r[188] = 0.14$ ,  $P < 0.05$ ), such that older age of sexual debut was associated with more sexual problems as an adult.

#### Effects of Ethnicity, Gender, and Age at First Intercourse on Sexual Problems

To evaluate the effects of ethnicity, gender, and age at first intercourse on sexual complaints, a series of regressions were conducted, with ethnic group, gender, and age at first intercourse as predictor variables and GRISS subscale scores as separate dependent variables. As males and females were included in this analysis together, we omitted GRISS subscales that were gender specific (e.g., Vaginismus and Anorgasmia in women, Premature Ejaculation and Impotence in men). Results are presented in Table 2.

**Table 2** Regression results with GRISS scores as dependent variables and ethnicity, gender, and age at first intercourse as predictor variables

Variables	B	SE B	$\beta$	P
Dependent variable: Total GRISS				
Ethnicity	1.05	0.27	0.27	0.000
Gender	-0.78	0.28	-0.20	0.005
Age at first intercourse	0.16	0.08	0.14	0.052
Dependent variable: GRISS Infrequency				
Ethnicity	0.58	0.30	0.14	0.055
Gender	0.04	0.31	0.01	0.903
Age at first intercourse	0.18	0.09	0.15	0.042
Dependent variable: GRISS Avoidance				
Ethnicity	0.72	0.26	0.19	0.007
Gender	0.92	0.28	0.23	0.001
Age at first intercourse	0.15	0.08	0.14	0.050
Dependent variable: GRISS Noncommunication				
Ethnicity	0.18	0.27	0.05	0.516
Gender	0.34	0.28	0.09	0.228
Age at first intercourse	0.13	0.08	0.12	0.119
Dependent variable: GRISS Dissatisfaction				
Ethnicity	0.37	0.16	0.16	0.024
Gender	-0.34	0.17	-0.15	0.042
Age at first intercourse	-0.03	0.05	-0.04	0.558
Dependent variable: GRISS Non-Sensuality				
Ethnicity	1.09	0.34	0.23	0.001
Gender	-0.02	0.35	-0.003	0.964
Age at first intercourse	0.16	0.10	0.11	0.114

GRISS = Golombok Rust Inventory of Sexual Satisfaction.

Ethnic group and gender were significant predictors of the total GRISS score (both  $P < 0.01$ ), such that being Asian and male were associated with higher total GRISS scores (i.e., more sexual problems). Later age at first intercourse was also associated with higher total GRISS scores, although this result was only marginally significant ( $P = 0.052$ ). Age at first intercourse significantly predicted GRISS Infrequency, with individuals who were older at first intercourse having less frequent intercourse ( $P < 0.05$ ). Ethnic group, gender, and age at first intercourse were all significantly associated with GRISS Avoidance (all  $P < 0.05$ ), such that being Asian, female, and older at first intercourse was predictive of more sexual avoidance. Ethnic group and gender were significant predictors of GRISS Dissatisfaction, with Asian ethnicity and being male predicting higher sexual dissatisfaction (both  $P < 0.05$ ). Ethnic group was also a significant predictor of GRISS Non-Sensuality ( $P < 0.05$ ), with Asians scoring higher on this subscale.

#### Effects of Acculturation, Gender, and Age at First Intercourse on Sexual Problems

To assess the effects of acculturation, gender, and age at first intercourse on sexual complaints in the Asian sample only, a series of regressions were conducted with VIA-Mainstream, VIA-Heritage, gender and age at first intercourse as predictor variables, and GRISS subscale scores as separate dependent variables. As males and females were included in this analysis together, we omitted GRISS subscales that were gender specific (e.g., Vaginismus and Anorgasmia in women, Premature Ejaculation and Impotence in men). Results are presented in Table 3.

Gender, VIA-Mainstream, and age at first intercourse were significant predictors of total GRISS score, such that being male, less acculturated to the mainstream culture, and older at the time of first intercourse were associated with higher total GRISS scores (all  $P < 0.05$ ). GRISS Noncommunication was significantly predicted by VIA-Mainstream, with individuals who were less acculturated to the mainstream culture scoring higher on this subscale ( $P = 0.05$ ). Age at first intercourse was significantly associated with GRISS Infrequency such that individuals who were older at first intercourse had less frequent intercourse ( $P < 0.05$ ). Gender was a significant predictor of GRISS Dissatisfaction in that being male was associated with increased sexual dissatisfaction ( $P < 0.05$ ). Gender, VIA-Heritage, VIA-Mainstream, and age at first intercourse were all

**Table 3** Regression results with GRISS scores as dependent variables and VIA-Mainstream, VIA-Heritage, gender, and age at first intercourse as predictor variables

Variables	B	SE B	$\beta$	P
Dependent variable: Total GRISS				
Gender	-0.95	0.28	-0.24	0.001
VIA-Heritage	0.15	0.10	0.10	0.143
VIA-Mainstream	-0.45	0.12	-0.26	0.000
Age at first intercourse	0.16	0.08	0.15	0.039
Dependent variable: GRISS Noncommunication				
Gender	0.26	0.29	0.07	0.368
VIA-Heritage	0.07	0.10	0.05	0.514
VIA-Mainstream	-0.23	0.12	-0.14	0.050
Age at first intercourse	0.12	0.08	0.11	0.142
Dependent variable: GRISS Infrequency				
Gender	0.01	0.32	0.003	0.965
VIA-Heritage	0.06	0.12	0.04	0.584
VIA-Mainstream	-0.07	0.13	-0.04	0.606
Age at first intercourse	0.20	0.09	0.16	0.026
Dependent variable: GRISS Dissatisfaction				
Gender	-0.38	0.17	-0.16	0.031
VIA-Heritage	0.05	0.06	0.06	0.417
VIA-Mainstream	-0.08	0.07	-0.09	0.228
Age at first intercourse	-0.02	0.05	-0.03	0.672
Dependent variable: GRISS Avoidance				
Gender	0.79	0.28	0.20	0.005
VIA-Heritage	0.24	0.10	0.16	0.023
VIA-Mainstream	-0.32	0.12	-0.19	0.008
Age at first intercourse	0.16	0.08	0.14	0.05
Dependent variable: GRISS Non-Sensuality				
Gender	-0.17	0.35	-0.04	0.621
VIA-Heritage	0.12	0.13	0.06	0.373
VIA-Mainstream	-0.46	0.15	-0.22	0.003
Age at first intercourse	0.17	0.10	0.13	0.080

GRISS = Golombok Rust Inventory of Sexual Satisfaction; VIA = Vancouver Index of Acculturation.

significantly associated with GRISS Avoidance, with female gender ( $P < 0.01$ ), high affiliation with the Heritage culture ( $P < 0.05$ ), low affiliation with the Mainstream culture ( $P < 0.01$ ), and older age at first intercourse ( $P = 0.05$ ) being predictive of higher Avoidance. GRISS Non-Sensuality was significantly predicted by VIA-Mainstream, with lower Mainstream acculturation being predictive of higher scores on this subscale ( $P < 0.01$ ).

#### Gender-Specific Measures of Sexual Problems

##### Females

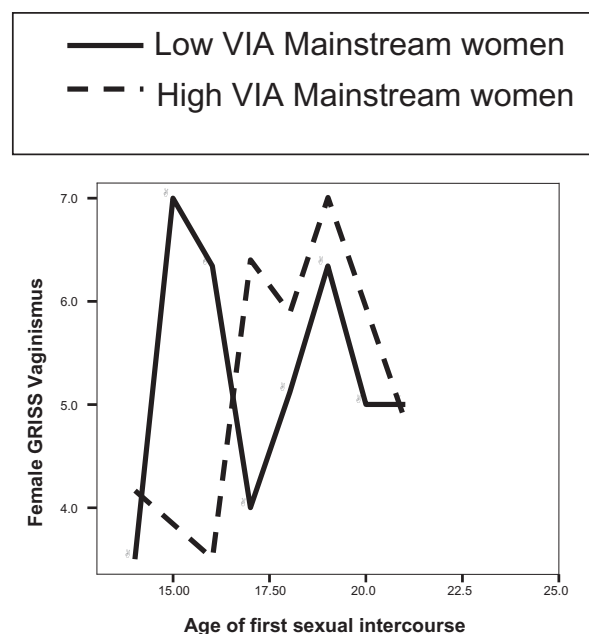
To evaluate the effects of ethnicity and age of first intercourse on GRISS Vaginismus and Anorgasmia scores, a multivariate ANOVA (MANOVA) was conducted. The overall MANOVA was significant for age of first intercourse,  $F(2, 115) = 4.069$ ,  $P < 0.05$ , and for ethnic group,  $F(2, 115) = 17.308$ ,  $P < 0.001$ . A later age of sexual debut was associated with greater Vaginismus scores ( $P < 0.01$ ). Asian women were more likely than their Euro-Canadian peers to report higher Vaginismus ( $P < 0.001$ ) and Anorgasmia ( $P < 0.05$ ) ratings.

To evaluate the role of acculturation on GRISS Vaginismus and Anorgasmia scores, as well as the interaction of acculturation and age of first intercourse, a separate MANOVA was conducted for the Asian women only. Neither the overall MANOVA for VIA-Mainstream scores,  $F(2, 66) = 2.358$ ,  $P > 0.05$ , nor the overall MANOVA for VIA-Heritage scores,  $F(2, 66) = 1.216$ ,  $P > 0.05$ , were significant. However, the interaction between age of first intercourse and VIA-Mainstream scores was significant,  $F(2, 50) = 3.610$ ,  $P < 0.05$ , for Vaginismus ( $P < 0.05$ ) and marginally significant for Anorgasmia ( $P = 0.057$ ). The interaction between age of first intercourse and VIA-Heritage scores was not significant,  $F(2, 50) = 2.575$ ,  $P > 0.05$ . To help interpret this interaction, Pearson product moment correlations were run on the association between age of first intercourse and GRISS Vaginismus scores in women with low vs. those with high VIA Mainstream scores. (The latter was determined by dichotomizing the mean VIA-Mainstream scores and assigning those above the mean to the “high VIA-M” group and assigning those below the mean to the “low VIA-M” group.) The association between age of first intercourse and GRISS Vaginismus scores was not significant among women with low levels of mainstream acculturation; however, among women with high levels of mainstream acculturation, these variables were positively associated such that a later age of sexual debut was related to more complaints of Vaginismus. This is displayed graphically in Figure 1.

### Males

To evaluate the effects of ethnicity and age of first intercourse on GRISS Premature Ejaculation and Impotence scores, a MANOVA was conducted. Neither the overall MANOVA for age of first intercourse,  $F(2, 63) = 0.085$ ,  $P > 0.05$ , nor the overall MANOVA for ethnic group,  $F(2, 63) = 1.892$ ,  $P > 0.05$ , were significant.

To evaluate the role of acculturation on GRISS Premature Ejaculation and Impotence scores, a separate MANOVA was conducted on the Asian males only. The overall MANOVA was significant for VIA-Mainstream scores,  $F(2, 48) = 7.725$ ,  $P < 0.001$ , such that greater mainstream acculturation was associated with fewer complaints of erectile problems ( $P < 0.001$ ). The overall MANOVA for VIA-Heritage scores was not statistically significant,  $F(2, 48) = 2.485$ ,  $P > 0.05$ . Neither the interaction between age of first intercourse and VIA-Mainstream scores,  $F(2, 27) = 2.646$ , nor the



**Figure 1** The interaction between age of first intercourse and GRISS Vaginismus scores for women who had either low or high levels of mainstream acculturation. VIA = Vancouver Index of Acculturation; GRISS = Golombok Rust Inventory of Sexual Satisfaction.

interaction between age of first intercourse and VIA-Heritage scores,  $F(2, 27) = 2.556$ , were significant, both  $P$ s  $> 0.05$ .

### Discussion

In the overall sample, we found that ethnic group and gender significantly predicted several domains of sexual problems. Specifically, Asian ethnicity was associated with more sexual problems as indicated by a higher total GRISS score, increased sexual avoidance, higher sexual dissatisfaction, and higher non-sensuality, replicating the findings of other studies that have examined the prevalence of sexual problems across ethnic groups [61,62]. Interestingly, male gender was linked to more sexual problems and higher sexual dissatisfaction whereas female gender was predictive of more sexual avoidance.

Because acculturation has previously been shown to significantly influence several aspects of sexuality in Asian samples, we then examined the effects of Heritage and Mainstream acculturation on sexual complaints in the Asian sample only [54,55]. Lower affiliation with the Mainstream (i.e., Western) culture was associated with a host of sexual complaints, including more overall sexual problems,

higher sexual noncommunication, more sexual avoidance, and higher non-sensuality. In addition, a higher level of affiliation with the Heritage culture was connected to increased sexual avoidance. These data suggest that affiliation with Western culture, among Asian individuals, and losing one's Heritage cultural traditions is linked with improved sexual function. It is possible that this relationship is explained by a third variable, however, in that Westernization is associated with more sexual experiences, and via such experiences, discomfort around sexuality may be reduced [54].

Among the gender-specific measures, we found that Asian women were more likely to experience vaginismus as well as a persistent delay or absence of orgasm, consistent with the literature [61,62]. Among Asian women, using acculturation as a measure of cultural affiliation, we found an interesting interaction with age of first intercourse on Vaginismus and a near significant interaction effect for Anorgasmia. Among women with a relatively low affiliation to Western culture, age at sexual debut was not associated with complaints of vaginismus; however, among women who identified relatively highly with Western culture, older age at first intercourse was associated with more vaginismus problems. For men, ethnicity as a categorical variable was not associated with either ejaculation or erectile complaints. However, when acculturation was used as a measure of cultural affiliation, those men who affiliated more strongly with Western culture reported fewer erectile difficulties, a result that replicates another recent finding [55]. Interestingly for men, there was no interaction between age of first intercourse and acculturation on male-specific measures.

The findings for age of sexual debut revealed that an earlier age of first intercourse was associated with fewer sexual problems, including higher frequency of sexual intercourse and less sexual avoidance. This effect appeared to be accounted for by the females in the study given that when the genders were examined separately, later age of first intercourse was related to more reports of vaginismus in women but was not associated with any of the male-specific measures of sexual response. Another interpretation, however, may be that whereas age of first intercourse affects sexual behaviors in men (in the form of frequency and avoidance), overt sexual response is unaffected. Qualitative data aimed at understanding the sexual experiences of men and the impact of

their intercourse debut may help shed light on this issue.

The group differences in sexual response among the Euro-Canadian and Asian participants replicates prior research that finds higher levels of sexual difficulties in Asian university students [54,55]. In addition, that the measure of acculturation was a more sensitive measure of culture because it also predicted sexual noncommunication, whereas ethnic group composition did not, suggests that studies exploring culture and ethnicity might lead to more comprehensive findings if measures of bidimensional acculturation are employed instead of proxy measures such as length of residency or self-reported ethnic group. This is especially important in light of rapidly growing immigration from Asia. Between 1990 and 2000, the Asian population in the United States grew 48%, far outstripping the total population growth during this time of 13% [63]. Among the foreign-born living in the United States, 25% were born in Asia [64]. With increased immigration, it can be expected that the proportion of the population who will adopt values from both the heritage and mainstream cultures will also continue to grow.

What are the mechanisms by which an earlier age of first intercourse is associated with fewer sexual problems? It is possible that a later age of first intercourse is associated with fewer sexual experiences and less time for sexual development, which may result in more negative sexual experiences (e.g., less sensuality, less sexual frequency, more avoidance). However, the direction of causation may also be reversed such that one's personal characteristics (e.g., more socially avoidant/fearful) may trigger sexual avoidance, which accounts for the later age of first intercourse. Another possibility is that those with an earlier sexual debut have more body awareness than those with a later sexual debut, presumably because sexual contact increases one's awareness of his/her body. Recent research in women has found that experimentally induced increases in body awareness may facilitate self-report ratings of sexual response [65]. Future studies might aim to measure body awareness in exploring the link between sexual debut and adult sexual function. Because measures of personality and psychopathology were not included in this study, these suggestions remain only speculative. Research on the effects of early masturbation reveal beneficial effects on adult sexual arousability, but no effect on adult sexual satisfaction or difficulties [66]. This suggests that perhaps the interpersonal nature of



intercourse may have specific relevance for adult sexual responding in a manner that sole-sexual activity does not.

The significant interaction between acculturation and age of first intercourse for female Asians but not male Asians deserves some exploration. Among women with high levels of mainstream acculturation, a later age of sexual debut was associated with more vaginistic problems. On the other hand, among women with low levels of mainstream acculturation, there was no relationship between age of first intercourse and vaginismus. This suggests that acculturation to Western norms may have exposed these women to the range of sexual symptoms and by incorporating Western values and norms, this may have exposed women to a certain degree of hypersensitivity that made those with later sexual onsets more aware of genital tightness and pain. However, if a woman was not highly acculturated to Western norms and theoretically then was not exposed to Western beliefs about tight or painful first intercourse, there was no relationship between the onset of sexual debut and complaints of vaginismus. Notably, for Asian men there was no interaction between acculturation and age of first intercourse, suggesting that exposure to Western norms does not influence the relationship between early sexual experiences and adult sexual responding. These findings suggest that the effects of intercourse onset on later sexual responding is not linear and that exploring one's acculturation is necessary for interpreting the findings, particularly for women and perhaps not necessarily for men.

A potential limitation of this study is that because it was conducted in a university sample, the average age of the subjects is very young and a considerable proportion had not yet had sexual intercourse at the time these data were collected. These results are therefore predicated on a relatively narrow range of ages at sexual debut, and the relationship between age at first intercourse and adult sexual responding may change in any direction as the proportion of sexually experienced individuals increases. Future research could shed more light on how age of sexual debut relates to adult sexual response by using samples with a wider range of ages.

## Conclusions

Overall, this study replicates prior research findings that Asian men and women have higher rates of sexual problems, and that this effect can be

explained by acculturation. Moreover, there was an overall relationship between early sexual debut and fewer sexual problems. For women, this effect was mediated by level of acculturation whereas for men acculturation did not play a role. The clinical implications of the findings are worth exploring. First, the data argue that early sexual debut does not have detrimental effects on adult sexual responding and suggest that individuals should be asked not only about the quality of their first intercourse, but about the age at which they began to be sexually active. The results of this study suggest that all other things being equal, those whose first intercourse experience occurred at an earlier age may have higher levels of adult sexual functioning. Second, the data suggest that internalization of Western attitudes about first intercourse may have negative effects. It is associated with later onset of sexual activity and more sexual problems as an adult. Conveying accurate knowledge about sexuality and expectations about first intercourse may be particularly important among immigrant individuals. These findings may provide the basis for a prospective study that aims to track the sexual experiences and simultaneous incorporation of Western values among Asian individuals, with the goal of reducing long-term negative sexual outcomes.

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