

The Relationship between Sex Guilt and Sexual Desire in a Community Sample of Chinese and Euro-Canadian Women

Jane S. T. Woo

Department of Psychology, University of British Columbia

Lori A. Brotto

Department of Obstetrics and Gynecology, University of British Columbia

Boris B. Gorzalka

Department of Psychology, University of British Columbia

Many studies have documented significant differences in sexual desire between individuals of European and Chinese descent, but few have examined the mechanisms that underlie these differences. A recent study of university students found that sex guilt is one mechanism by which culture influences sexual desire among Chinese and Euro-Canadian women. The goal of this study was to examine whether sex guilt also mediates the relationship between ethnicity and sexual desire in a sample that is more representative of women in the general population. Euro-Canadian ($n = 78$; mean age = 42.1 years) and Chinese ($n = 87$; mean age = 42.8 years) women were recruited from the community. Euro-Canadian women reported greater sexual desire and less sex guilt. In the entire sample, sex guilt mediated the relationship between ethnicity and sexual desire such that the Chinese women reported greater sex guilt, which, in turn, was associated with lower sexual desire. Among the Chinese women, sex guilt mediated the relationship between mainstream acculturation (degree of Westernization) and sexual desire such that more Westernized Chinese women reported less sex guilt, which, in turn, was associated with greater sexual desire. These results support recent findings and further suggest that sex guilt may be one mechanism by which ethnicity affects sexual desire.

Research comparing individuals of European and Asian descent on sexuality-related variables has found significant group differences across almost every domain of sexuality that has been examined. However, there has been a remarkable paucity of research on the *causes* of these cultural differences in sexuality, with few studies that have examined variables that may mediate these cultural effects. A better understanding of such mediating variables has important implications for treatment of low desire, the most prevalent of women's sexual functioning concerns (Cain et al., 2003; Laumann et al.,

2005) but a condition with few evidence-based options available. The goal of the current study is to clarify the role of sex guilt as a possible underlying mechanism by which culture influences sexual desire in Euro-Canadian and Chinese women. Rapid growth in the Asian population in North America has prompted greater research interest in the influence of culture on domains of sexuality ranging from sexual knowledge to sexual attitudes, sexual dysfunctions, sexual behaviors, and reproductive health. Much of the research efforts in this area have focused on comparing Asian with Western sexuality. A review of the literature reveals that there are notable differences between the two cultures that span the various dimensions of sexuality that have been studied, with individuals of Asian descent consistently reporting more sexually conservative tendencies than their European descent counterparts. Research in university samples has found that compared to North American norms, Asian individuals possess less accurate sexual knowledge (e.g., Brotto, Chik, Ryder, Gorzalka, & Seal, 2005; Meston, Trapnell, &

This research was supported by a Hampton Fund Research Grant from the University of British Columbia awarded to Lori A. Brotto. Jane S. T. Woo was funded by a Predoctoral Fellowship from the Canadian Institutes of Health Research and a Predoctoral Research Trainee Award from the Michael Smith Foundation for Health Research. We acknowledge Dr. Del Paulhus for his help with the statistical analyses.

Correspondence should be addressed to Lori A. Brotto, Department of Obstetrics and Gynecology, University of British Columbia, 2775 Laurel St., 6th Floor, Vancouver, British Columbia V5Z 1M9, Canada. E-mail: Lori.Brotto@vch.ca

Gorzalka, 1998; Woo, Brotto, & Gorzalka, 2009) and report more conservative sexual attitudes (e.g., Ahrold & Meston, 2010; Higgins & Sun, 2007; Meston, Trapnell, & Gorzalka, 1996; Woo, Brotto, & Gorzalka, 2010a). Asian individuals also report higher rates of sexual difficulties (e.g., Brotto et al., 2005; Woo et al., 2010a), and more acceptance of sexual harassment (Kennedy & Gorzalka, 2002), demonstrate a restricted range of sexual behaviors (e.g., Meston & Ahrold, 2010; Meston et al., 1998; Tang, Lai, & Chung, 1997; Woo et al., 2009), and exhibit lower rates of participation in preventive screening procedures in reproductive health (e.g., Woo et al., 2009). Similar findings have been reported in community-based samples (e.g., Cain et al., 2003; Hislop et al., 2004; Kagawa-Singer & Pourat, 2000; Laumann et al., 2005; Taylor et al., 2002; Tu et al., 2005; Yu, Wu, & Mood, 2005).

In addition to studying ethnic differences as one indicator of cultural effects, some researchers have also examined how acculturation within Asian individuals affects various domains of sexuality. Acculturation refers to the process by which an individual who belongs to an ethnic minority group assimilates aspects of the dominant culture's values, attitudes, and behaviors into their self-identity (Ryder, Alden, & Paulhus, 2000). The individual's self-identity and extent of affiliation with both the culture of origin and the dominant culture are modified to accommodate information about and experiences with the new culture. Thus, studying acculturation is important as a richer understanding of how culture affects sexuality can be gained than by studying the effects of ethnic group alone. Both the degree of affiliation with the culture of origin (heritage culture) and the degree of affiliation with the dominant culture (mainstream culture) will vary among members of an ethnic group, and examining these two dimensions of acculturation separately (i.e., bidimensionally) enables us to study the effects of culture between individuals of the same ethnic group.

Among Asian individuals living in North America, significant associations have been found between acculturation and a number of sexuality-related variables. In female university students, for instance, greater mainstream acculturation has been found to be significantly associated with higher sexual desire and arousal (Brotto et al., 2005), higher sexual arousability (Brotto et al., 2005), more accurate sexual knowledge (Woo et al., 2009), less sex guilt (Abramson & Imai-Marquez, 1982; Woo et al., 2010a), and higher participation rates in sexual psychophysiological research (Woo, Brotto, & Yule, 2010). Similarly, greater heritage acculturation has been found to be associated with lower rates of cervical cancer screening (Woo et al., 2009), more conservative attitudes toward casual sex and gender role traditionality (Ahrold & Meston, 2010), less experience in masturbation and oral sex (Meston & Ahrold, 2010), and older age at sexual debut (Meston & Ahrold, 2010). Similar

findings have been reported among male university students in North America. Greater mainstream acculturation has been found to be associated with greater sexual openness and higher sexual functioning (Brotto, Woo, & Ryder, 2007), less sex guilt (Abramson & Imai-Marquez, 1982; Woo, Brotto, & Gorzalka, 2010b), and higher rates of conducting testicular self-examinations (Woo et al., 2010b). Greater heritage acculturation significantly predicted greater conservatism in attitudes toward casual sex, homosexuality, and gender role traditionality (Ahrold & Meston, 2010). Older age at sexual debut has also been associated with greater heritage acculturation in men (Meston & Ahrold, 2010). Overall, higher mainstream acculturation is associated with greater sexual openness, whereas greater heritage acculturation is linked to greater sexual conservatism.

Thus, there are several studies that have explored ethnic differences between Asian and Western sexuality, as well as a number of studies that have examined the effects of acculturation on sexuality among Asian individuals. In contrast, research on the underlying mechanisms of these cultural differences has lagged behind. Given that cultural differences (both ethnic group and acculturation effects) have been observed and documented in myriad facets of sexuality, and that these differences have been remarkably consistent in nature, a closer exploration of the mechanisms by which culture affects sexuality may improve the understanding of cultural influences on sexuality.

Among the research on cultural differences in sexuality that has explored possible underlying mechanisms, one recent study examined the influence of acculturation and religiosity on sexual attitudes in Euro-American, Asian American, and Hispanic American individuals (Ahrold & Meston, 2010). No mediating effect of acculturation in the relationship between religiosity and sexual attitudes was found.

The role of sex guilt has been explored as a possible underlying mechanism of culture-linked differences in sexual desire among East Asian (Chinese, Japanese, and Korean) and Euro-Canadian female university students (Woo et al., 2010a). Woo et al. (2010a) drew on the definition of sex guilt offered by Mosher and Cross (1971, p. 27): "a general expectancy for self-mediated punishment for violating or for anticipating violating standards of proper sexual conduct. Such a disposition might be manifested by resistance to sexual temptation, by inhibited sexual behavior, or by the disruption of cognitive processes in sex-related situations." Interestingly, Woo and colleagues (2010a) found that sex guilt mediated the relationship between ethnicity and sexual desire, with East Asian ethnicity being significantly associated with greater sex guilt, which, in turn, was associated with less sexual desire. Sex guilt, but not sexual conservatism, was found to mediate the relationship between mainstream acculturation and sexual desire among the East Asian women, such that greater

mainstream acculturation was predictive of less sex guilt, which, in turn, was associated with greater sexual desire. No mediating effect of sex guilt was found in the relationship between heritage acculturation and sexual desire.

With East Asian women consistently reporting lower sexual desire than women of European descent, a greater understanding of the role of sex guilt in sexual desire may represent an important new avenue by which complaints of low sexual desire may be addressed in psychological treatment. However, one of the limitations of the study by Woo et al. (2010a) was the use of a university convenience sample in which participants were, on average, significantly younger than women in the general population (mean age = 20 years). Thus, the vast majority of the women were unmarried, rendering it impossible to ascertain unequivocally the relationships among culture, sex guilt, and sexual desire among East Asian women in the general population. This is of particular significance in studying East Asian sexuality because of the traditional East Asian view that sexual activity is acceptable only in the context of marriage. Parents are highly intolerant of premarital sexual activity, especially in daughters, and children are brought up with strong parental and societal expectations that expressions of sexuality will be reserved for marriage (Lee & Chang, 1999; Youn, 2001).

The purpose of this study was to determine outcomes in the general population by examining sex guilt and sexual desire in a sample of Euro-Canadian and Chinese women recruited from the community, and to examine the possible protective effect of being married. Based on the results of population-based studies that found significant ethnic differences in sex guilt and sexual desire (Abramson & Imai-Marquez, 1982; Cain et al., 2003; Laumann et al., 2005), we hypothesized that the Chinese women would report greater sex guilt and lower sexual desire than their Euro-Canadian counterparts. Among the Chinese women, we hypothesized that greater mainstream acculturation and lower heritage acculturation would be associated with greater sexual desire and less sex guilt. Furthermore, we hypothesized that sex guilt would mediate the relationship between ethnicity and sexual desire in the entire sample, as well as the relationship between acculturation and sexual desire among the Chinese women.

Method

Participants

Chinese and Euro-Canadian women 20 years of age and older were eligible to participate in this study. A total of 165 women participated. Of these, 87 self-identified as Chinese, and 78 self-identified as Euro-Canadian. Participants were recruited from the

community using a variety of methods, including a letter mail campaign and the snowball method. Flyers were also posted in public areas describing the inclusion criteria and providing a brief description of the study. Of the participants in this study, 51 were recruited via a letter mail campaign, 64 were recruited through flyers posted in public places, and 50 were recruited by the snowball method. About 200 letters were mailed out to Euro-Canadian and Chinese women as part of the letter mail campaign.

There were significant ethnic differences in the proportion of participants recruited by the various methods, $\chi^2(2, N = 165) = 29.15, p < .001$. Of the Euro-Canadian women, 51% were recruited by the letter mail campaign, 19% by the snowball method, and 30% by seeing the posted flyers. Of the Chinese women, 13% were recruited by the letter mail campaign, 40% by the snowball method, and 47% by seeing the posted flyers.

There were no significant ethnic differences in age, but the Euro-Canadian women reported living in Canada for a significantly longer period of time than the Chinese women. Demographic data are presented in Table 1.

Procedure

Interested participants telephoned the laboratory and were screened to ensure that they self-identified as either Chinese or Euro-Canadian and met the minimum age requirement. Participants were interviewed in person by trained female psychology students at a time and in a location of the participants' choice. Locations that were commonly selected included the research

Table 1. Demographic Characteristics of Euro-Canadian ($n = 78$) and Chinese ($n = 87$) Participants

Variable	Euro-Canadian	Chinese
Mean age in years (<i>SD</i>)	42.1 (17.2)	42.8 (13.2)
Place of birth (%)*		
Canada or United States	82.1	9.2
China/Hong Kong/Taiwan	1.3	86.2
Southeast Asia	0.0	2.3
Europe	11.5	0.0
Other	5.1	2.3
Years of residency in Canada (<i>SD</i>)*	36.4 (18.6)	12.0 (10.4)
Marital status ^a (%)*		
Unmarried	51.4	23.5
Common-law	8.1	2.9
Married	24.3	58.8
Divorced	13.5	10.3
Widowed	2.7	4.4
Mean acculturation score ^b (<i>SD</i>)		
Mainstream	NA	59.0 (12.7)
Heritage	NA	68.4 (12.8)

^aFigures reported are for the 142 participants who responded to this question.

^bScale ranges from 20–180.

* $p < .001$.

laboratory, participants' homes, cafes, and libraries. All of the Euro-Canadian women were interviewed in English. The Chinese women were interviewed in the language of their choice (English, Cantonese, or Mandarin). The interview consisted of a number of validated measures that were verbally administered. Measures containing items of a more personal nature, such as those relating to sexual functioning, were completed by the participants themselves if they chose. Participants received a monetary honorarium for their participation in this study. All procedures were approved by the university's Behavioural Research Ethics Board.

Measures

Vancouver Index of Acculturation (VIA). The VIA (Ryder et al., 2000) is a self-report questionnaire that assesses heritage and mainstream acculturation on two separate dimensions. "Heritage culture" refers to the individual's culture of birth or upbringing, whereas "mainstream culture" refers to the predominant culture in the individual's new environment. In the context of this study, heritage culture refers to Chinese culture, and mainstream culture refers to Western culture. The VIA consists of 20 items, with two items associated with each of 10 domains, including entertainment preferences and cultural traditions. Higher scores on the mainstream dimension indicate greater Westernization, and higher scores on the heritage dimension demonstrate greater maintenance of Chinese culture and traditions. Examples of items that comprise the heritage dimension include, "I would be willing to marry a person from my heritage culture," and "I enjoy social activities with people from the same heritage culture as myself." Examples of items that comprise the mainstream dimension include, "I am comfortable working with typical North American people," and "I enjoy North American entertainment." Both dimensions were found to have good internal consistency in this sample (Cronbach's $\alpha = .90$ for heritage acculturation and $.89$ for mainstream acculturation).

Female Sexual Function Index (FSFI). The FSFI (Rosen et al., 2000) is a 19-item, self-report questionnaire that assesses six domains of sexual function. In this study, we examined only the desire subscale of the FSFI in which higher scores indicated higher levels of sexual desire over the previous four weeks. The two questions that comprise the desire subscale are, "Over the past 4 weeks, how often did you feel sexual desire or interest?" and "Over the past 4 weeks, how would you rate your level (degree) of sexual desire or interest?" Internal consistency in this sample was high (Cronbach's $\alpha = .91$). Women with hypoactive sexual desire disorder (HSDD) may be differentiated from those without using the FSFI (Wiegell, Meston, & Rosen, 2005). The FSFI desire

domain is relevant for women who have been sexually active over the previous four weeks, as well as those who have not (Meyer-Bahlburg & Dolezal, 2007).

Revised Mosher Guilt Inventory (RMGI). The RMGI (Mosher, 1988) is a self-report questionnaire that measures three dimensions of guilt: sex guilt, hostility guilt, and guilty conscience. It consists of 114 items in a limited comparison format. In this format, items are presented in pairs, and participants are asked to rate their responses on a seven-point Likert scale that ranges from 0 (*not at all true for me*) to 6 (*extremely true for me*) while comparing the degree of trueness within each item pair. As the variable of interest in this study was sex guilt, only the 50 items that comprise the sex guilt subscale were administered: "When I have sexual desires, I enjoy it like all healthy human beings," and "When I have sexual desires, I fight them because I must have complete control of my body." The total score on this subscale ranges from 0 to 300, with higher scores signifying greater sex guilt. Internal consistency for the sex guilt subscale in this sample was high (Cronbach's $\alpha = .95$). The construct, convergent, and discriminant validity of earlier versions of the Mosher Guilt Inventory have been established by various studies (e.g., Abramson & Mosher, 1979; Ruma & Mosher, 1967).

Demographics questionnaire. An investigator-derived questionnaire assessing demographic variables, including relationship and sexual functioning, and experience with various types of sexual activities was also administered.

Statistical Analyses

SPSS Version 13 (SPSS Inc., Chicago, Illinois) was used for all statistical analyses. *T* tests were used in comparisons of the two ethnic groups on self-reported sex guilt and sexual desire. In analyses of the association between ethnicity and sexual variables, the point-biserial statistic was used.

The bootstrap method for mediation analysis recommended by Shrout and Bolger (2002) was used for all mediation analyses. Three thousand samples, with replacement, were used in each mediation analysis. Mediation analyses were conducted using an SPSS macro developed by Preacher and Hayes (2004).

Results

Ethnic Group Comparisons on Basic Demographic Characteristics

There was no significant ethnic difference in age, $t(144) = 0.31, p > .05$ (mean age of Chinese women =

42.84 years, $SD = 13.21$; mean age of Euro-Canadian women = 42.10 years, $SD = 17.15$). There was also no significant ethnic difference in the proportion of women who reported being in a relationship, $\chi^2(1, N = 165) = 1.46, p > .05$. However, a significantly larger proportion of the Chinese women reported having been married (including those who reported being married, divorced, or widowed) than the Euro-Canadian women, $\chi^2(1, N = 142) = p < .01$. There was also a significant ethnic difference in years of education, with the Euro-Canadian women reporting more years of education, $t(163) = 3.73, p < .001$.

Ethnic Group Comparisons on Sexuality Measures

The two groups did not significantly differ in the proportion of women who had engaged in kissing, hugging, or holding hands ($p > .05$). However, the Euro-Canadian women were significantly more likely to have engaged in touching with clothing removed, $\chi^2(1, N = 89) = 11.31, p < .01$; touching partner's genitals, $\chi^2(1, N = 89) = 14.47, p < .001$; performing oral sex on their partner, $\chi^2(1, N =) = 13.14, p < .001$; receiving of oral sex from their partner, $\chi^2(1, N = 88) = 6.56, p < .05$; and sexual intercourse, $\chi^2(1, N = 91) = 6.23, p < .05$. All proportions are presented in Table 2.

We adjusted for large family-wise error rate, applying a Bonferroni correction by dividing the conventional alpha level of .05 by two (the number of comparisons being made). Thus, ethnic differences were considered statistically significant only if $p < .025$

(.05/2 comparisons). Compared to the Chinese women, the Euro-Canadian women scored significantly higher on the desire subscale of the FSFI, indicating that the Euro-Canadian women reported significantly greater sexual desire than the Chinese women in the previous four weeks, $t(155) = 4.21, p < .001$. The Chinese women scored significantly higher on the RMGI compared with the Euro-Canadian women, $t(137) = 13.00, p < .001$, demonstrating that the Chinese women reported significantly higher levels of sex guilt (see Table 3).

Scores on the RMGI and FSFI desire subscale were significantly and negatively correlated in both the Euro-Canadian, $r(63) = -.47, p < .001$; and Chinese women, $r(72) = -.53, p < .001$, indicating that more sex guilt was associated with lower sexual desire.

The Mediating Role of Sex Guilt in the Relationship Between Ethnicity and Sexual Desire

The effect of ethnicity on sex guilt was demonstrated ($B = -75.25, p < .001$), indicating that Chinese ethnicity was associated with significantly greater sex guilt. The effect of sex guilt on sexual desire, holding ethnicity constant, was also significant ($\beta = -0.02, p < .001$), showing that increased sex guilt was linked to less sexual desire. The indirect effect of ethnicity on sexual desire, computed by multiplying the effect of ethnicity on sex guilt with the effect of sex guilt on sexual desire while controlling for ethnicity, was also significant ($ab = 1.29; SE = 0.22; 95\% \text{ confidence interval [CI]} = 0.74, 1.89$).

Table 2. Ethnic Group Differences on Sexual Activity

Variable	Euro-Canadian	Chinese
Who have engaged in hugging, kissing, or holding hands	97.9%	88.9%
Who have engaged in touching with clothing removed**	95.6%	68.2%
Who have touched their partner's genitals***	93.3%	59.1%
Who have performed oral sex on their partner***	68.2%	29.5%
Who have had oral sex performed on them by their partner*	61.4%	34.1%
Who have engaged in vaginal-penile intercourse*	93.3%	73.9%

* $p < .05$. ** $p < .01$. *** $p < .001$.

Table 3. Ethnic Group Differences on Scores from the Desire Subscale of the Female Sexual Function Index (FSFI) and the Revised Mosher Guilt Inventory (RMGI)

Variable	Euro-Canadian		Chinese		t (df)	p	Effect Size ^c
	M	SD	M	SD			
FSFI desire ^a	3.64	1.16	2.82	1.26	4.21 (155)	<.001	0.68
RMGI ^b	69.08	29.41	144.59	39.41	13.00 (137)	<.001	2.17

Note. Higher scores denote greater sexual desire (FSFI) and higher sex guilt (RMGI).

^aBased on $n = 75$ Euro-Canadians and $n = 82$ Chinese.

^bBased on $n = 65$ Euro-Canadians and $n = 76$ Chinese.

^cEffect size (Cohen's d) was calculated as $d = (M_1 - M_2)/s$, where $s = \sqrt{[(n_1 - 1)s_1^2 + (n_2 - 1)s_2^2]/(n_1 + n_2)}$.

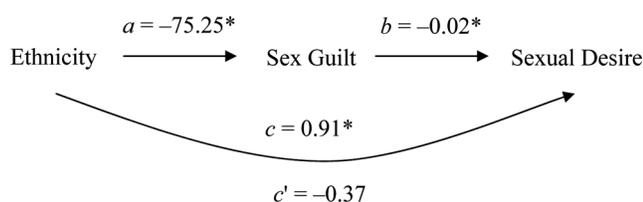


Figure 1. The mediating role of sex guilt in the relationship between ethnicity and sexual desire in Euro-Canadian and Chinese women. *Note.* *a* represents the effect of ethnicity on sex guilt; *b* represents the effect of sex guilt on sexual desire after controlling for the effect of ethnicity; *c* represents the direct effect of ethnicity on sexual desire; and *c'* represents the effect of ethnicity on sexual desire after controlling for sex guilt. * $p < .001$.

Hence, sex guilt mediated the ethnic group difference in sexual desire (see Figure 1).

Effects of Acculturation (Chinese Women Only) on Measures of Sexuality

Mainstream acculturation was not significantly correlated with FSFI desire scores, $r(81) = .10, p > .05$; but was significantly correlated with RMGI scores, $r(75) = -.24, p < .05$, indicating that more Westernized Chinese women reported significantly less sex guilt. Heritage acculturation was not correlated with either FSFI desire or RMGI scores (all $ps > .05$).

The Mediating Role of Sex Guilt in the Relationship between Mainstream Acculturation and Sexual Desire

A mediation analysis to examine whether sex guilt would mediate the relationship between mainstream acculturation and sexual desire was conducted. The effect of mainstream acculturation on sex guilt was not significant at conventional alpha levels ($\beta = -0.67, p = .10$), indicating that mainstream acculturation was not significantly associated with sex guilt. On the other hand, the effect of sex guilt on sexual desire, holding mainstream acculturation constant, was significant ($\beta = -0.02, p < .001$), showing that greater sex guilt was linked to less sexual desire after controlling for the effect of mainstream acculturation. The indirect effect of mainstream acculturation on sexual desire was significant ($ab = 0.01; SE = 0.006; 95\% CI = 0.0004, 0.02$). Hence, sex guilt mediated the relationship between mainstream acculturation and sexual desire in the Chinese women (see Figure 2).

Discussion

Ethnicity and Sexuality

In ethnic group comparisons, the Euro-Canadian women reported significantly greater sexual desire than the Chinese women. This result supported our

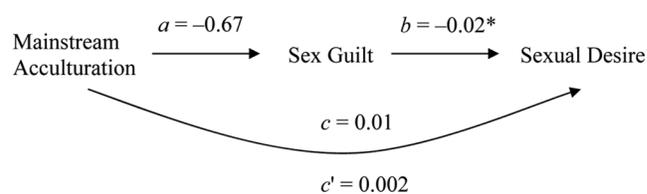


Figure 2. The mediating role of sex guilt in the relationship between mainstream acculturation and sexual desire in Chinese women. *Note.* *a* represents the effect of mainstream acculturation on sex guilt; *b* represents the effect of sex guilt on sexual desire after controlling for the effect of mainstream acculturation; *c* represents the direct effect of mainstream acculturation on sexual desire; and *c'* represents the effect of mainstream acculturation on sexual desire after controlling for sex guilt. * $p < .001$.

hypothesis and is consistent with research showing ethnic differences in general sexual function and in sexual desire particularly (e.g., Brotto et al., 2005; Cain et al., 2003; Laumann et al., 2005; Woo et al., 2009; Woo et al., 2010a).

Analyses of ethnic differences in sex guilt revealed that the Chinese women reported significantly greater sex guilt compared to their Euro-Canadian counterparts. This finding fits with both the results of Woo et al. (2010a), who found less sex guilt among Euro-Canadian individuals, and the results of Abramson and Imai-Marquez (1982), who found significantly higher levels of sex guilt in Japanese American than Euro-American individuals.

Interestingly, mediation analyses revealed that sex guilt mediated the relationship between ethnicity and sexual desire, such that higher levels of sex guilt in the Chinese women accounted for the ethnic disparity in sexual desire. This finding is consistent with the findings of Woo et al. (2010a) in university students, and indicates that sex guilt is a mediator of the relationship between ethnicity and sexual desire even in this sample that was more diverse than the university convenience sample that was studied by Woo et al. (2010a).

These results raise the question of how the Chinese women came to experience higher levels of sex guilt compared to the Euro-Canadian women. There have been three major influences on Chinese thought and culture, with Confucianism having the most profound and widespread impact by far. Confucius was a Chinese thinker and philosopher who lived about 2,500 years ago and whose teachings were perpetuated following his death by his disciples and eventually declared the official state doctrine. Confucius himself viewed sex as positive as long as it did not disrupt interpersonal relationships or cause social instability. Moreover, he considered sexual desire to be beneficial in fulfilling the filial obligation of producing children to carry on the family line. However, Neo-Confucian scholars during the Song Dynasty (960–1276 A.D.) gave the classical Confucian teachings strict interpretations and precipitated the more repressive view of sexuality as

being reserved for marriage and procreation (Ng & Lau, 1990). This is the point of view that has persisted until the present day, with parents conveying their clear expectation to their children, especially daughters, that sexuality is not to be expressed outside of marriage.

Acculturation in Chinese Women and Sexuality

As another index of cultural influences, we examined the effect of bidimensional acculturation on sex guilt and sexual desire. The finding that mainstream acculturation was not significantly correlated with sexual desire stood in contrast to our hypothesis that greater Westernization would be associated with higher levels of sexual desire in Chinese women. This finding is also incongruent with other studies that have found a significant association between mainstream acculturation and sexual desire (e.g., Brotto et al., 2005; Woo et al., 2010a). One possible explanation for this finding is that this study may have been insufficiently powered, limiting our ability to detect a significant effect of mainstream acculturation on sexual desire. We note that this sample of Chinese women is much smaller than that studied by Woo et al. (2010a). On the other hand, mainstream acculturation was found to be significantly correlated with sex guilt such that greater Westernization was associated with less sex guilt—a finding that is consistent with the literature on the effects of acculturation on Chinese sexuality (Woo et al., 2010a).

The results of mediation analyses supported our hypothesis that sex guilt would mediate the relationship between mainstream acculturation and sexual desire among the Chinese women and are in accord with the results of Woo et al. (2010a), who found a similar mediating effect in a sample of female university students. Although mainstream acculturation was not significantly associated with sex guilt, a crucial step in the traditional approach to mediation popularized by Baron and Kenny (1986), the bootstrap approach used in this study indicated that the indirect effect of mainstream acculturation on sexual desire, through the intervening variable sex guilt, was significant. The bootstrap method was used because of the temporally distal nature of the causal process between culture and sexual desire. However, simulation research reveals that this method also has the advantages of greater power and better Type I error control compared to the Baron and Kenny approach (Hayes, 2009).

In contrast to the mediating role that sex guilt plays in the relationship between mainstream acculturation and sexual desire, mediation analyses revealed that sex guilt did not mediate the relationship between heritage acculturation and sexual desire among the Chinese women. This finding did not support our hypothesis that sex guilt would underlie the effect of heritage acculturation on sexual desire, but is consistent with the results of Woo et al. (2010a), who found no mediation effect in the

relationship between heritage acculturation and sexual desire. Jointly, these findings suggest that, although sex guilt is not associated with heritage acculturation and changes in sexual desire, sex guilt plays an important role in accounting for the augmenting effect of Westernization on sexual desire.

Implications

These results were consistent with those of Woo et al. (2010a) in that sex guilt mediated both the relationship between ethnicity and sexual desire in the entire sample, as well as that between mainstream acculturation and sexual desire in the Chinese women. It is interesting to note, however, that the effect of ethnicity on sex guilt is stronger in this study than in the study by Woo et al. (2010a), as indicated by the relevant effect sizes (Cohen's $d = 2.17$ in this study vs. 1.48 in the study by Woo et al., 2010a). Although both effect sizes are large (Cohen, 1992), the relative magnitude of the relationship between ethnicity and sex guilt in the two studies suggests that sex guilt may vary with sample characteristics—that is, younger age and more education may be factors that protect individuals from experiencing greater guilt in sex-related situations. Supporting this proposition, additional data analyses revealed that age was significantly correlated with sex guilt, such that older age was associated with greater sex guilt in both the Euro-Canadian and Chinese women—a finding that may not have been detected in a university sample composed of participants who are largely homogeneous in age. Thus, conclusions about culture and sexuality that are based on research with university samples must be made tentatively and researchers might strive to include a more socioeconomically and demographically diverse sample.

Moreover, that the mediating effect of sex guilt in the relationship between culture and sexual desire was found in this community-based sample may have implications for the psychological treatment of sexual desire difficulties in Chinese women. The limited research on psychological treatments for female HSDD indicate that these interventions are generally effective (Brotto, Basson, & Luria, 2008; Hawton, Catalan, & Fagg, 1991; Hurlbert, 1993; McCabe, 2001; Schover & LoPiccolo, 1982; Trudel et al., 2001), combining elements such as sensate focus, sexual skills training, sexual psychoeducation, mindfulness training, cognitive restructuring, and behavior change. However, the extent to which these interventions are effective in non-European descent groups is unclear, as this has not been studied. Given the significant differences between Chinese and Euro-Canadian individuals across practically every domain of sexuality that has been studied, and the growing evidence that sex guilt plays an important role in Chinese women's level of sexual desire, incorporating a specific focus on reducing sex guilt in psychological interventions may be especially beneficial for Chinese women with complaints of low

sexual desire. For example, thoughts and beliefs that are linked to sex guilt may be identified, challenged, and substituted with more balanced thoughts. Examples of thoughts that may be associated with sex guilt include, “Sex should happen only if a man initiates,” “A good mother must control her sexual urges,” and “Experiencing pleasure during sexual activity is not acceptable in a virtuous woman” (Nobre, Gouveia, & Gomes, 2003).

Limitations

This study has some limitations that must be addressed. First, although this study examined a sample of women who were recruited from the community and who were, therefore, more heterogeneous in their backgrounds compared to a university convenience sample, the sample was not nationally representative, which may limit the generalizability of the findings. Second, it is well-established that volunteer bias—the tendency for those who choose to take part in research studies to differ from those who choose not to take part—is an ongoing concern in sex research (e.g., Plaud, Gaither, Hegstad, Rowan, & Devitt, 1999; Strassberg & Lowe, 1995; Wiederman, 1993; Woo et al., 2010). Thus, the Chinese women who participated in this study may have differed from those who did not participate in their level of acculturation. It is also possible that the women who chose to participate in this study may differ from women in the general population with regard to their level of sex guilt. Given that both acculturation and sex guilt were variables of interest in this study, volunteer bias in these areas may affect the conclusions that can be drawn about the role of sex guilt in the relationship between culture and sexual desire.

Conclusion

The results of this study were consistent with prior research that examined differences in sexual desire and sex guilt in Chinese and Euro-Canadian women. These results were also consistent with those of Woo et al. (2010a), who found that sex guilt is one mechanism by which culture influences sexual desire among Chinese women. Given that sex guilt has been found to play an important role in Chinese women’s low sexual desire in both a university sample and a community-based sample, an interesting extension of this research would be to investigate whether an intervention designed to target sex guilt may be effective in treating Chinese women seeking treatment for complaints of low sexual desire. Furthermore, it is plausible that sex guilt may represent a concern for individuals in other cultural groups. Sustained empirical study of the interrelationships among sex guilt, sexual desire, and culture may further our knowledge of how these

variables interact with one another, as well as provide an evidence base upon which interventions for complaints of low sexual desire may be developed and improved.

References

- Abramson, P. R., & Imai-Marquez, J. (1982). The Japanese-American: A cross-cultural, cross-sectional study of sex guilt. *Journal of Research in Personality, 16*, 227–237.
- Abramson, P. R., & Mosher, D. L. (1979). An empirical investigation of experimentally induced masturbatory fantasies. *Archives of Sexual Behavior, 8*, 27–39.
- Ahrold, T. K., & Meston, C. M. (2010). Ethnic differences in sexual attitudes of U.S. college students: Gender, acculturation, and religiosity factors. *Archives of Sexual Behavior, 39*, 190–202.
- Baron, R. M., & Kenny, D. A. (1986). The moderator–mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology, 51*, 1173–1182.
- Brotto, L. A., Basson, R., & Luria, M. (2008). A mindfulness-based group psychoeducational intervention targeting sexual arousal disorder in women. *Journal of Sexual Medicine, 5*, 1646–1659.
- Brotto, L. A., Chik, H. M., Ryder, A. G., Gorzalka, B. B., & Seal, B. N. (2005). Acculturation and sexual function in Asian women. *Archives of Sexual Behavior, 34*, 613–626.
- Brotto, L. A., Woo, J. S. T., & Ryder, A. G. (2007). Acculturation and sexual function in Canadian East Asian men. *Journal of Sexual Medicine, 4*, 72–82.
- Cain, V. S., Johannes, C. B., Avis, N. E., Mohr, B., Schocken, M., Skurnick, J., et al. (2003). Sexual functioning and practices in a multi-ethnic study of midlife women: Baseline results from SWAN. *Journal of Sex Research, 40*, 266–276.
- Cohen, J. (1992). A power primer. *Psychological Bulletin, 112*, 155–159.
- Hawton, K., Catalan, J., & Fagg, J. (1991). Low sexual desire: Sex therapy results and prognostic factors. *Behaviour Research and Therapy, 29*, 217–224.
- Hayes, A. F. (2009). Beyond Baron and Kenny: Statistical mediation analysis in the new millennium. *Communication Monographs, 76*, 408–420.
- Higgins, L. T., & Sun, C. H. (2007). Gender, social background and sexual attitudes among Chinese students. *Culture, Health & Sexuality, 9*, 31–42.
- Hislop, T. G., Teh, C., Lai, A., Ralston, J. D., Shu, J., & Taylor, V. M. (2004). Pap screening and knowledge of risk factors for cervical cancer in Chinese women in British Columbia, Canada. *Ethnicity & Health, 9*, 267–281.
- Hurlbert, D. F. (1993). A comparative study using orgasm consistency training in the treatment of women reporting hypoactive sexual desire. *Journal of Sex & Marital Therapy, 19*, 41–55.
- Kagawa-Singer, M., & Pourat, N. (2000). Asian American and Pacific Islander breast and cervical carcinoma screening rates and Healthy People 2000 objectives. *Cancer, 89*, 696–705.
- Kennedy, M. A., & Gorzalka, B. B. (2002). Asian and non-Asian attitudes toward rape, sexual harassment and sexuality. *Sex Roles, 46*, 227–238.
- Laumann, E. O., Nicolosi, A., Glasser, D. B., Paik, A., Gingell, C., Moreira, E., et al. (2005). Sexual problems among women and men aged 40–80y: Prevalence and correlates identified in the Global Study of Sexual Attitudes and Behaviors. *International Journal of Impotence Research, 17*, 39–57.
- Lee, O., & Chang, J. (1999). *Women, family, and society*. Seoul, Korea: Seyoungsa.
- McCabe, M. P. (2001). Evaluation of a cognitive behavior therapy program for people with sexual dysfunction. *Journal of Sex & Marital Therapy, 27*, 259–271.

- Meston, C. M., & Ahrold, T. K. (2010). Ethnic, gender, and acculturation influences on sexual behaviors. *Archives of Sexual Behavior, 39*, 179–189.
- Meston, C. M., Trapnell, P. D., & Gorzalka, B. B. (1996). Ethnic and gender differences in sexuality: Variations in sexual behavior between Asian and non-Asian university students. *Archives of Sexual Behavior, 25*, 33–72.
- Meston, C. M., Trapnell, P. D., & Gorzalka, B. B. (1998). Ethnic, gender, and length-of-residency influences on sexual knowledge and attitudes. *Journal of Sex Research, 35*, 176–188.
- Meyer-Bahlburg, H. F., & Dolezal, C. (2007). The Female Sexual Function Index: A methodological critique and suggestions for improvement. *Journal of Sex & Marital Therapy, 33*, 217–224.
- Mosher, D. L. (1988). Revised Mosher Guilt Inventory. In C. M. Davis, W. L. Yarber & S. L. Davis (Eds.), *Sexuality-related measures* (pp. 152–155). Lake Mills, IA: Graphic Publishing.
- Mosher, D. L., & Cross, H. J. (1971). Sex guilt and premarital sexual experiences of college students. *Journal of Consulting and Clinical Psychology, 36*, 27–32.
- Ng, M. L., & Lau, M. P. (1990). Sexual attitudes in the Chinese. *Archives of Sexual Behavior, 19*, 373–388.
- Nobre, P. J., Gouveia, J. P., & Gomes, F. A. (2003). Sexual Dysfunctional Beliefs Questionnaire: An instrument to assess sexual dysfunctional beliefs as vulnerability factors to sexual problems. *Sexual and Relationship Therapy, 18*, 171–204.
- Plaud, J. J., Gaither, G. A., Hegstad, H. J., Rowan, L., & Devitt, M. K. (1999). Volunteer bias in human psychophysiological sexual arousal research: To whom do our research results apply? *Journal of Sex Research, 36*, 171–179.
- Preacher, K. J., & Hayes, A. F. (2004). SPSS and SAS procedures for estimating indirect effects in simple mediation models. *Behavior Research Methods, Instruments, and Computers, 36*, 717–731.
- Rosen, R., Brown, C., Heiman, J., Leiblum, S., Meston, C., Shabsigh, R., et al. (2000). The Female Sexual Function Index (FSFI): Multidimensional self-report instrument for the assessment of female sexual function. *Journal of Sex & Marital Therapy, 26*, 191–208.
- Ruma, E. H., & Mosher, D. L. (1967). Relationship between moral judgment and guilt in delinquent boys. *Journal of Abnormal Psychology, 72*, 122–127.
- Ryder, A. G., Alden, L. E., & Paulhus, D. L. (2000). Is acculturation unidimensional or bidimensional? A head-to-head comparison in the prediction of personality, self-identity, and adjustment. *Journal of Personality and Social Psychology, 79*, 49–65.
- Schover, L. R., & LoPiccolo, J. (1982). Treatment effectiveness for dysfunctions of sexual desire. *Journal of Sex & Marital Therapy, 8*, 179–197.
- Shrout, P. E., & Bolger, N. (2002). Mediation in experimental and nonexperimental studies: New procedures and recommendations. *Psychological Methods, 7*, 422–445.
- Strassberg, D. S., & Lowe, K. (1995). Volunteer bias in sexuality research. *Archives of Sexual Behavior, 24*, 369–382.
- Tang, C. S., Lai, F. D., & Chung, T. K. H. (1997). Assessment of sexual functioning for Chinese college students. *Archives of Sexual Behavior, 26*, 79–90.
- Taylor, V. M., Hislop, T. G., Jackson, J. C., Tu, S. P., Yasui, Y., Schwartz, S. M., et al. (2002). A randomized controlled trial of interventions to promote cervical cancer screening among Chinese women in North America. *Journal of the National Cancer Institute, 94*, 670–677.
- Trudel, G., Marchand, A., Ravart, M., Aubin, S., Turgeon, L., & Fortier, P. (2001). The effect of a cognitive-behavioural group treatment program on hypoactive sexual desire in women. *Sexual and Relationship Therapy, 16*, 145–164.
- Tu, S. P., Jackson, S. L., Yasui, Y., Deschamps, M., Hislop, T. G., & Taylor, V. M. (2005). Cancer preventive screening: A cross-border comparison of United States and Canadian Chinese women. *Preventive Medicine, 41*, 36–46.
- Wiederman, M. W. (1993). Demographic and sexual characteristics of nonresponders to sexual experience items in a national survey. *Journal of Sex Research, 30*, 27–35.
- Wiegel, M., Meston, C., & Rosen, R. (2005). The Female Sexual Function Index (FSFI): Cross-validation and development of clinical cutoff scores. *Journal of Sex & Marital Therapy, 31*, 1–20.
- Woo, J. S. T., Brotto, L. A., & Gorzalka, B. B. (2009). The role of sexuality in cervical cancer screening among Chinese women. *Health Psychology, 28*, 598–604.
- Woo, J. S. T., Brotto, L. A., & Gorzalka, B. B. (2010a). The role of sex guilt in the relationship between culture and women's sexual desire. *Archives of Sexual Behavior*. Advance online publication. doi: 10.1007/s10508-010-9609-0
- Woo, J. S. T., Brotto, L. A., & Gorzalka, B. B. (2010b). Sex guilt and culture-linked barriers to testicular examinations. *International Journal of Sexual Health, 22*, 144–154.
- Woo, J. S. T., Brotto, L. A., & Yule, M. (2010). Do East Asian and Caucasian women differ in sexual psychophysiology research participation? *Journal of Sex Research, 47*, 345–354. doi: 10.1080/00224490902999294
- Youn, G. (2001). Perceptions of peer sexual activities in Korean adolescents. *Journal of Sex Research, 38*, 352–360.
- Yu, M. Y., Wu, T. Y., & Mood, D. W. (2005). Cultural affiliation and mammography screening of Chinese women in an urban county of Michigan. *Journal of Transcultural Nursing, 16*, 107–116.