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# Sex Ideologies in China: Examining Inter-Province Differences

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**Abstract**

In recent decades, premarital sex, extramarital sex, and homosexuality have become increasingly visible in China, leading scholars to claim that a national "sex revolution" is under way. However, China's internal sociocultural diversity calls this nation-level generalization into question. How do sex ideologies vary across China's distinct provinces? To what extent are inter-province variations in sex ideologies associated with distinct macro-level social factors in China? In this research, data from the 2010 China General Social Survey and the 2011 Chinese Statistics Yearbook were analyzed using multilevel models to test four contending theories of inter-province differences in sex ideologies in China: modernization, Westernization, deindustrialization, and the "rice theory." The modernization theory was unsupported by the results, as socioeconomic development is not significantly associated with sex ideologies. Higher levels of deindustrialization and Westernization were associated with less traditional sex ideologies, but the strength of association varied across the domains of premarital sex, extramarital sex, and homosexuality. The rice theory was consistently supported, as the distinction between rice and wheat agriculture explained up to 30% of the province-level variance in sex ideologies. The findings underline the roles of both long-standing geographic differences and recent social changes in shaping China's ideational landscape of sex.

In the past few decades, premarital sex, extramarital sex, and homosexuality have become increasingly visible, if not more widespread, in China. This has led many scholars to claim that a national "sex liberation" movement is under way (Farrer, 2002; Farrer & Sun, 2003), and that China's "sexual revolution" has reached "a point of no return" (Burger, 2012). Indeed, according to a report on sexual health in China, the proportion of Chinese who have had premarital sex increased from 15% in 1989 to 40% in 1994 and 71% in 2012 (Ruan, 2013). Analyzing data from China's 2006 Sexuality Survey, Zhang, Parish, Huang, and Pan (2012) reported that 4.5% of women and 16.5% of men have had extramarital sex. Estimates indicate that approximately 3% to 5% of the Chinese population are homosexual, and that around 11% of unmarried men and 5.8% of married men have had sex with another man (Neilands, Steward, & Choi, 2008). The emergence of "pride" campaigns has also made homosexuality more visible (Cao & Lu, 2014). Ample empirical evidence has been provided of changes in the practice and visibility of nonconventional sexual behavior in China. Nevertheless, it would be problematic to infer ideology from behavior. Due to a lack of up-to-date research that directly examines sex ideologies in China, this research was motivated first by the need to identify the current state of sex ideologies in China. Despite much speculation, the macro-level social forces that help to shape China's ideational landscape of sex have yet to be identified. Modernization theorists, such as Goode (1970) and Inglehart and Norris (2003), have predicted a global convergence toward less traditional family and gender values due to socioeconomic development. Scholars focusing on China have attributed the country's changing sexual ideologies to Westernization in the wake of the open-door policy in late 1970s. For example, Parish, Laumann, and Mojola (2007) argued that "a sexual revolution is occurring in China, reflected by the fact that the sexual behavior of the country's post open-door generation differs significantly from that of earlier generations" (p. 730). Other scholars have argued that China's economic reform—its deindustrialization, its privatization, and the development of its service sector—has resulted in more liberal views of sex (Clifford, 2013).  It is widely believed that modernization, Westernization,

and deindustrialization have not only transformed China's sex ideologies over time but produced an even more conspicuous internal variation in sex ideologies across China's vast geographic span (Parish et al., 2007; Zhang et al., 2012). Accordingly, scholars have found that people from more modernized, Westernized, and deindustrialized provinces hold less traditional attitudes toward patrilineality, filial piety, and conjugality (Cheung & Kwan, 2009; Therborn, 2004; Yan, 2009). Nevertheless, no empirical efforts have yet been made to use nationally representative data to test the extent to which modernization, Westernization and deindustrialization are associated with the differences observed in sex ideologies among Chinese provinces. Because past research has identified an "ideational inconsistency" that distinct domains of sociocultural values may not interact with China's social changes in a unidirectional manner (Hu & Scott, 2014), the need to test explicitly the link among modernization, Westernization, and deindustrialization and inter-province differences in sex ideologies was the second source of motivation for this research.

In addition, these theories foreground recent social processes and are thus predicated on the problematic assumption that Chinese provinces share a homogeneous socioeconomic and cultural origin. Although recent social events may have led to the differences observed in sex ideologies across China, a priori geographic differences may also be responsible for divergent social attitudes (Nisbett, 2010). In a recent publication in Science, Talhelm et al. (2014) tested the "rice theory" and reported that the distinction between rice and wheat agriculture explains large-scale sociopsychological differences in people's social attitudes in China.

They found that distinct modes of agricultural production require varying levels of cooperation and thus cultivate differentiated levels of social tolerance of behaviors such as divorce. As tolerance of nonconventional sexual behavior is central to "sex liberation" (Farrer & Sun, 2003; Parish et al., 2007; Scott, 1998), it is plausible to attribute China's inter-province differences in sex ideologies to preexisting geographic and sociopsychological differences, as specified by the rice theory (Henrich, 2014; Talhelm et al., 2014). Therefore, the third objective of this research was to assess the association between the rice theory and variations in sex ideologies between Chinese provinces.

Why are sex ideologies important? Premarital sex, extra-marital sex, and homosexual sex are increasingly cited in discussion of the risks of teen pregnancy (Wang et al., 2007), sexually transmitted diseases (STDs), and human immunodeficiency virus (HIV)/acquired immunodeficiency syndrome (AIDS) (Neilands et al., 2008). Suffice it to say that social acceptance is closely associated with the ways in which sexual behavior is practiced as well as the degree to which sex education and medical intervention are formalized (Gao, Lu, Shi, Sun, & Cai, 2001; Lou, Zhao, Gao, & Shah, 2006). As noted by Scott (1998), "Attitudes are important indicators of people's tendencies to respond to the opportunities and constraints that are posed by the structural conditions of life" (p. 818). On issues as sensitive as sex, there is likely to be a gulf between attitudes and behavior. However, the importance of understanding sex ideologies does not lie in the ability of ideology to predict behavior. Rather, social attitudes help constitute the normative opinions against which behavior is judged (Farrer & Sun, 2003; Neilands et al., 2008; Tian, Merli, & Qian, 2013).

In this research, I drew on nationally representative data from the 2010 China General Social Survey and the 2011 Chinese Statistics Yearbook to investigate the extent to which modernization, Westernization, deindustrialization, and the rice theory are associated with China's inter-province differences in sex ideologies. I first introduce these four major theories in relation to ideologies pertaining to pre-marital, extramarital, and homosexual sex across Chinese provinces. Next, I describe the characteristics, measurement, and analysis of the data. Finally, I report the results and discuss their implications for future research.

## Theorizing Inter-Province Differences in Sex Ideologies

Sex ideologies in China have evolved over thousands of years and have been influenced by ancient philosophies as well as contemporary political and sociocultural developments (So & Cheung, 2005). Sex was a taboo subject for centuries in feudal and imperial China. Before the founding of the People's Republic of China (PRC) in 1949, Chinese families were governed by pronatalism (Parish et al., 2007). As sex was coupled with marriage and reproduction, marriage was regarded as "the pole around which sexual culture is organized" (Caraël, 1995, p. 6), and premarital sex was strictly forbidden (Zhang, Gao, Dong, Tan, & Wu, 2002). At the same time, Confucianism has long underlined the importance of loyalty and chastity. Despite the prevalence of male polygamy in China's feudal and imperial eras, extra-marital sex was considered immoral, particularly for females, and was subject to legal punishment (Farrer & Sun, 2003). The emphasis placed by Taoism on a balance between yin (female) and yang (male) has also had a significant effect on Chinese people's views of homosexuality as an "incompatible" form of sexual behavior (Neilands et al., 2008).

In the past few decades, however, premarital sex, extra-marital sex, and homosexual sex have all been shown to be on the rise as a result of social changes in China (Burger, 2012; Higgins,

Zheng, Liu, & Sun, 2002; Ruan, 2013). Central to the discourse of a "sexual revolution" is the decoupling of sex from the institution of marriage, as well as the emphasis on individual pleasure over the reproductive function of sex (Yan, 2002). Attempting to identify the social forces that detraditionalize sex ideologies, Bongaarts (1980) highlighted the lower age of puberty and thus the lower age of sexual maturity as responses to socioeconomic development in general and improved nutrition in particular. Meanwhile, modernization theorists have suggested that socioeconomic modernization detraditionalizes values that are core to the formulation of attitudes toward premarital and extramarital sex (Goode, 1970; Inglehart & Norris, 2003). According to Inglehart (1990), attitudes toward homosexuality are closely linked with postmaterialist values that emphasize individual autonomy over and self-expression of sexual and gender identities. Indeed, socioeconomic modernization is closely associated with the detraditionalization of values pertaining to filial piety, patrilineality, and conjugality in China (Therborn, 2004; Yan, 2009). Therefore, it seems likely that modernization theory may predict that socioeconomic development detraditionalizes sex ideologies. As China's 1978 reform prioritized the economic development of urban centers and coastal areas, the extent of China's modernization varies among provinces.

> **H1 (Modernization)**: People from provinces that are more socioeconomically developed have less traditional attitudes toward premarital sex, extramarital sex, and homosexuality than people from less developed provinces.

In addition to socioeconomic modernization, China has under-gone considerable deindustrialization in the past three decades. The early history of the PRC featured a centralized economy composed of heavy industries (Bramall, 2006). In the post-reform era, the mass dissolution of state-owned industries was accompanied by a notable ideological shift from collectivism to individualism (Yan, 2009). The de-anchorage of individuals from collective work units (danwei) fostered a sense of individualism, which has detraditionalized conventional gender roles and enabled the explicit expression of intimacy in public (Yan, 2002). The rise of the (tertiary) service sector in areas such as domestic outsourcing and sex-related services provided a wide array of alternatives to traditional sexual, marital, and familial configurations (Barthel, 1976; Kongar, 2008). As an emphasis on individual pleasure is core to any sexual liberation, the deindustrialization thesis predicts that the development of the (tertiary) service sector[1] results in increasingly liberal sexual attitudes (Barthel, 1976). As deindustrialization has taken place unevenly across China, the following hypothesis can be derived.

> **H2 (Deindustrialization)**: People from more deindustrialized provinces have less traditional sex ideologies than people from less deindustrialized provinces.

Alongside China's economic reform, the open-door policy was instated in the late 1970s, introducing China to the global market after decades of closure to the world. The open-door policy was implemented to boost the country's profile of international trade and commerce. Inevitably, cultural exchange between China and the West has taken place through economic exchange. Based on the widespread assumptions that a dichotomy exists between China and the West, and that the West is more open to sex than China, it has been speculated that the detraditionalization of sex ideologies in China is due to the Westernization of Chinese culture (Farrer, 2002). Like modernization and deindustrialization, the influence of Western culture varies between Chinese provinces, which have been opened up to international trade and commerce to varying degrees.

**H3 (Westernization)**: People from provinces with greater international trade and commerce have less traditional sex ideologies than people from provinces with less international trade and commerce.

Although the proponents of the modernization, deindustrialization, and Westernization theories have attempted to explain the observed geographic variation in sex ideologies in China by focusing on recent social events, the assumption that distinct Chinese provinces share a homogeneous socio-cultural origin is problematic. Indeed, ideological differences may result from a priori differences between regions as well as from recent contingencies (Henrich, 2014; Nisbett, 2010; Talhelm et al., 2014). Based on large-scale sociopsychological experiments, Talhelm et al. (2014) proposed the rice theory, indicating that agricultural mode may have a significant impact on the way people think. The authors found that because growing rice requires more irrigation than growing wheat, people from rice-growing regions demand a higher level of cooperation than their counterparts from wheat-growing regions. It is crucial to note that the need for functional interdependence is substantively different from the ideological collectivism imposed by Chinese traditions. Whereas the former fosters social tolerance of deviant ideologies for the sake of subsistence (Henrich, 2014; Talhelm et al., 2014), ideological collectivism does just the opposite, marginalizing deviant ideations that pose a potential threat to collective ideological aims (Lásźló, 2013). As a result, Talhelm et al. (2014) found that Chinese people from rice-planting regions held less traditional attitudes toward divorce than their counterparts from wheat-growing regions. As social tolerance is also crucial to social attitudes toward nonconventional sexual behavior, the following hypothesis can be derived:[2]

**H4 (Rice Theory)**: People from rice-growing provinces have less traditional sex ideologies than people from wheat-growing provinces.

# Method

## *Data and Sample*

Data from two sources were analyzed. Province-level indicators of modernization, deindustrialization, Westernization, and agricultural mode were extracted from the 2011 Chinese Statistics Yearbook, compiled by the China Statistics Bureau. The yearbook provides comprehensive macro-level indicators of China's economic, social, and cultural development each year (see http://www.stats.gov.cn/tjsj/ndsj/ for more information). The individual-level data were drawn from the 2010 China General Social Survey (CGSS; see http://www.chi nagss.org for more information). Led by China Renmin University and the Hong Kong University of Science and Technology, the CGSS is one of China's most prominent nationally representative social surveys. In the 2010 CGSS, multistage, stratified, probability-proportional-to-size sampling was used to survey 12,000 individuals randomly selected from their respective households from 480 street areas in 125 cities, towns, and villages across mainland China. The response rate to the 2010 CGSS was 73.2%. The survey had a wide coverage, ranging from major cities to remote villages, and from the eastern coast to the western hinterland. To date, the 2010 CGSS is the most up-to-date and nationally representative source of information on Chinese people's sex ideologies.

To construct the analytical sample, I excluded 437 respondents who provided no valid information for key variables (3.6% of the whole 2010 CGSS sample). Statistical tests were conducted, and no significant correlations between missing information and major demographic characteristics such as age and gender were found. The final analytical sample contained 11,563 randomly selected individuals from 30 Chinese provinces and municipalities.[3]

## Measures

### *Dependent Variable*

*Sex Ideologies*. In the 2010 CGSS, respondents were asked the following questions in a self-completion module: "What is your general opinion on a man or a woman having sexual relations before marriage?"; "What is your general opinion on a married man/woman's having sexual relations with a woman/man other than his/her spouse?"; and "What is your general opinion on sexual relations between two adults of the same sex?" The answers for each question were recorded on a 5-point Likert-scale ranging from 1 (Always wrong) to 5 (Always right). As the responses were highly left-skewed, I recoded the responses to each of the three questions into a binomial categorical measure, combining 1 (Always wrong) and 2 (Mostly wrong) into the first category, "disapproval," and combining 3 (Neither right nor wrong), 4 (Sometimes right), and 5 (Always right) into the second category, "approval." Alternative analyses were conducted using the skewed 5-point scales for sex ideologies, and the results were consistent with those using the categorical measures reported in this article.

### *Province-Level Predictors*

As presented in Table 1, a wide variety of indicators were used to measure the levels of modernization, deindustrialization, and Westernization and agricultural mode at province level in China. As the province-level indicators listed in Table 1 may correlate with one another, exploratory factor analysis was conducted to extract distinct factors from the measures listed in Table 1. As presented in Table 2, four distinct factors were identified based on the number of the eigenvalues exceeding 1. These factors were able to explain a majority of the variance observed in the province-level data. Next, Bartlett factor scores were calculated to yield four scales for the four province-level factors. (See the appendix for detailed factor scores for each province.)

[Insert Table 1 and Table 2 Here]

*Modernization*. According to previous research (Inglehart, 1990; Talhelm et al., 2014), the degree of modernization is associated with socioeconomic development, measured by indicators such as per capita gross domestic product (GDP) and level of income. As urbanization is a key part of China's state-guided modernization program (Tian et al., 2013), I also included a measure of the percentage of the population residing in urban areas in each province. As shown in Table 2, the modernization factor accounted for 34.63% of the variance in the original variables. Highly modernized provinces are characterized by a large

urban as opposed to rural population, a high level of individual income, and a high GDP per capita.

*Deindustrialization.* As previous research indicates that the development of the (tertiary) service sector is associated with sociocultural change in Chinese society (Barthel, 1976), I included measures of the proportion of GDP in each province contributed by the industrial sector and the tertiary sector, respectively. The deindustrialization factor accounted for 17.64% of the variance in the original variables. In a more deindustrialized province, the tertiary sector contributes a higher share while the industrial sector contributes a lower share to the GDP than in a less deindustrialized province.

*Westernization.* China's exposure to Western cultural influences can be attributed mainly to the international trade and commerce enabled by the 1978 open-door policy. As the degree of Westernization is closely associated with the volume of international trade and commerce, I included measures of the gross value of international imports, international exports, and foreign direct investment (FDI) in each province. The Westernization factor accounted for 25.49% of the variance in the original variables. A more Westernized province has higher levels of importation, exportation, and FDI than a less Westernized province.

*Mode of Agriculture.* The distinction between rice and wheat agriculture in China is closely related to regional variation in thinking patterns and social tolerance. The percentages of farmland dedicated to rice paddy and wheat, respectively, were used to determine the major mode of agriculture in each province. The agricultural-mode factor accounted for 15.06% of the variance in the original variables. A higher factor score indicates a larger share of farmland dedicated to rice as opposed to wheat.


## *Individual-Level Covariates*

Although macro-level factors are the focus of this research, sex ideologies are also subject to a variety of individual-level influences. Therefore, it is important to control for individual-level factors to assess the four hypotheses. Table 3 presents the descriptive statistics of the individual-level factors.

[Insert Table 3 Here]

*Birth Cohort.* As cohort shift is a major mechanism of ideational change (Scott, 1998), I included a categorical variable measuring respondents' age at the time of the survey: 17 to 24, 25 to 34, 35 to 44, 45 to 54, 55 to 64, or 65 and above. The respondents in the sample were aged between 17 and 96 years old (M = 47.2, SD = 15.7; Median = 46.0).

*Gender.* As men and women in China have distinct roles and different levels of access to power (Therborn, 2004), they are likely to relate to premarital sex, extramarital sex, and homosexuality in different ways. A dummy variable was used to indicate the respondents' gender; 51.9% of the respondents were female.

*Ethnicity.* As China's numerous ethnic minorities may have different cultural customs that affect their sex ideologies, I used a dummy variable to control for the respondents' ethnicity; in other words, whether they belonged to the majority Han ethnic group or an ethnic minority group (8.7% of the respondents).

*Level of Education.* I also included a categorical variable to control for the respondents' level of education, distinguishing between No education (13.6%), Primary school (22.0%), Middle school (29.6%), and High school and above (34.8%).

*Communist Party Membership.* As the Chinese Communist Party (CCP) plays an important role in enforcing sex morality, I included a dummy variable indicating whether the respondents were or were not CCP members. Around 17.3% of the respondents were CCP members.

*Rural or Urban Residence.* Given China's entrenched rural–urban division in sociocultural values, I controlled for the respondents' residential location. Areas under the jurisdiction of an urban neighborhood committee (juweihui) were designated as urban, and those under the jurisdiction of a rural village committee (cunweihui) were designated as rural; 61.1% of the respondents lived in urban areas at the time of survey.

*Migration Status.* As China's internal migration exerts considerable impacts on people's sociocultural values, I created a dummy variable indicating whether each respondent was a rural-to-urban migrant by determining whether their hukou status (as conferred by China's household registration system, which distinguishes between rural and urban hukou) matched their residential location. Around 15% of the respondents were rural-to-urban migrants.

*Socioeconomic Status.* Socioeconomic status was measured using a quartile ranking of annual household income. Missing responses to questions on household income were coded as an additional category separate to the quartile ranking.

*Marital Status.* The respondents' marital status was measured using a categorical variable distinguishing between Never married (9.7%), Currently married (80.2%), and Previously married (10.1%). Widowed and divorced respondents were included in the latter category due to the small number of responses for each.

## Modeling Strategy

As the data were hierarchically structured and the main purpose of the research was to explore province-level variance in sex ideologies, and the dependent variables were binomial categorical (Snijders & Bosker, 2011), binomial multilevel random-intercept logistic regression models were used. As there were only 30 provinces for the higher-level units, I conducted Bayesian Markov-Chain-Monte-Carlo (MCMC) estimation, which uses the actual posterior distributions of model parameters to construct credible intervals without relying on a hypothetical sample distribution posited by conventional estimates based on maximum likelihood (Stegmueller, 2013).

Separate models were fitted for ideologies pertaining to premarital sex, extramarital sex, and homosexuality. In each set of models, Model A comprised the fixed effects of individual-level variables and the random variance parameter at the province level. Model B also included the four province-level factors, namely modernization, deindustrialization, Westernization, and agricultural mode. Comparing the province-level random variance parameters in Model A and Model B allows one to estimate the extent to which province-level variance is explained by the four province-level factors (Snijders & Bosker, 2011). To estimate the explanatory power of each of these factors, I calculated the partial effect size of

each province-level factor K by comparing the difference in the province-level random variance parameters between full models with and without K. The variance inflation factor (VIF) tests were conducted to ensure that there was no considerable multiple collinearity among the four province-level factors; the results showed that the VIF values for the four factors were low (i.e., around 1 for each factor, which are well below the 10 threshold), indicating an extremely low degree of multiple collinearity among the four factors (O'Brien, 2007).

# Results

## *Descriptive Results*

Figure 1 presents the levels of modernization, deindustrialization, and Westernization and differences in agricultural mode across Chinese provinces. To help visualize the data, the factor scores were ranked as quintiles, with darker colors indicating higher quintile ranks. The results are consistent with the findings of past research showing that China's eastern and coastal provinces are more socioeconomically modernized than its western and hinterland provinces. This can be attributed to the fact that China's 1978 economic-reform policy prioritized economic development in eastern coastal areas, as vividly expressed in a quotation from China's former leader Deng Xiaoping: "Let part of the people become rich first." Compared with southern provinces, provinces around China's capital city, Beijing, such as Shanxi and Shandong, remain highly industrial. The results indicate that provinces in central China are least Westernized. Unsurprisingly, given their location on China's borders with other Central and South Asian countries, western and southern provinces such as Xinjiang and Yunnan experience a larger volume of international trade and commerce than central provinces such as Guizhou and Hunan. Whereas rice-growing provinces are concentrated in southern and eastern China, most of the provinces north of the Yellow River grow wheat—with the exception of Liaoning Province in northern China.

[Insert Figure 1 and Figure 2 Here]

Figure 2 presents the inter-province differences in sex ideologies in China. The percentages of approving attitudes toward premarital, extramarital sex and homosexuality were ranked in quintiles, with darker colors indicating higher rates of approval of each of the three types of sexual behavior (see Appendix for detailed statistics). For premarital sex, the rate of "approval" at the province level ranged from 7.0% (in Xinjiang Province) to 53.4% (in Guangdong Province), with a national mean of 27.4% and a median of 28.1%. As shown in the first panel of Figure 2, people from China's southeastern and coastal provinces were found to hold more liberal attitudes toward premarital sex than those from northwestern provinces in the hinterland.

Chinese people were found to hold more traditional attitudes toward extramarital sex than toward premarital sex. On balance, only 8% of Chinese people approved of extramarital sex (with a national median of 6.5%). In the most liberal provinces, such as Hainan Province, 15.1% of people approved of extramarital sex, whereas almost no one in Ningxia Province approved of extramarital sex. The second panel of Figure 2 shows that, similar to the pattern for premarital sex, people from China's coastal and southern provinces held less traditional views on extramarital sex than their counterparts in the hinterland and northern provinces.

However, it is worth noting that people from some provinces in central China, such as Sichuan and Guizhou, held considerably less traditional views on extramarital sex than people from other hinterland provinces.

Chinese people were found to hold more traditional attitudes toward homosexuality than toward premarital sex, but somewhat less traditional attitudes toward homosexuality than toward extramarital sex. On balance, only 12.2% of Chinese people approved of homosexuality, with a national median of 11.7%. Similar to the pattern for premarital sex, people from Guangdong Province held the most liberal attitudes to homosexuality, with an approval rate of 24.1% at the province level, whereas only 2% of people from Xinjiang Province approved of homosexuality.

Notably, attitudes were found to vary across the three domains of sexual behavior. This "ideational inconsistency" between attitudes toward premarital, extramarital sex, and homosexuality supports Widmer, Treas, and Newcomb's (1998) recommendation that researchers treat different sexual practices in their own contexts, as the explanations for changing sexual attitudes may well differ between types of sexual behavior. This recommendation is particularly important to the current research, as modernization, deindustrialization, Westernization, and agricultural mode cannot be assumed to shape attitudes toward premarital sex, extramarital sex, and homosexuality in the same ways or to the same degrees.

## Multilevel Random-Intercept Models

Table 4 presents the results for the binomial multilevel random-intercept logistic regression models for attitudes toward each of the three types of sexual behavior examined in the research. As province-level factors are the main focus of the article, I first report the province-level results, followed by a summary of the individual-level results.

[Insert Table 4 Here]

*Province-Level Results*. The results confirm that attitudes toward premarital sex, extramarital sex, and homosexuality vary considerably among Chinese provinces. In terms of attitudes toward each of the three types of sexual behavior, comparing Model A and Model B reveals that the inclusion of the four province-level factors significantly reduced province-level variance (i.e., the parameter in the random part of the multilevel models). This indicates that the four factors contributed to China's inter-province differences in sex ideologies. Figure 3 more intuitively depicts the percentages of province-level variance in each of the three sex ideologies explained by the four factors for modernization, deindustrialization, Westernization, and agricultural mode, respectively.

Hypothesis 1, which states that socioeconomic modernization predicts less traditional sex ideologies, was unsupported by the results. The findings suggest that modernization is not significantly associated with people's attitudes toward premarital sex, extramarital sex, and homosexuality at province level. As shown in Figure 3, modernization explained only 1.3%, 4.4%, and 0.7% of the province-level variance in attitudes to premarital sex, extramarital sex, and homosexuality, respectively.

Hypothesis 2, which states that deindustrialization is positively associated with liberal sex ideologies, was partly sup- ported. People from provinces with a higher level of development of the tertiary service sector were more likely to approve of premarital sex ($p < .05$) and extramarital sex ($p < .01$) than those from provinces with a lower level of deindustrialization. Meanwhile, deindustrialization explained 8.8% and 27.8% of the province-level variance for premarital and extramarital sex, respectively. Nevertheless, the association between deindustrialization and attitudes toward homo- sexuality was not statistically significant. The level of deindustrialization explained only 0.9% of the province-level variance in attitudes to homosexuality.

The results only partly support Hypothesis 3, which states that a higher level of Westernization is associated with less traditional sex ideologies. On one hand, people from provinces with a higher level of Westernization (as reflected by a larger volume of international trade and commerce) were more likely to approve of premarital sex ($p < .05$) than those from provinces that are less Westernized. As shown in Figure 3, Westernization explained 8.9% of province-level variance in attitudes toward premarital sex. On the other hand, however, Westernization was not found to be significantly associated with attitudes toward either extramarital sex or homosexuality; it explained only 4.7% and 7.2% of the province-level variance in attitudes toward extramarital sex and homosexuality, respectively.

Hypothesis 4, the rice theory, was consistently supported by the results, as the distinction between rice and wheat agriculture was significantly associated with ideologies pertaining to premarital sex, extramarital sex, and homosexuality. The results confirm that people from provinces where a larger share of farmland is devoted to rice as opposed to wheat were more likely to approve of all three types of sexual behavior. Rice theory explained 14.1%, 15.3%, and 29.4% of the province-level variance in attitudes toward premarital sex, extramarital sex, and homosexuality, respectively. I discuss the implications of these results in the Discussion section.

*Individual-Level Results.* The multivariate results also revealed significant associations between various individual-level factors and sex ideologies. Compared with men, women in China were less likely to approve of premarital and extramarital sex. This is not surprising, because the traditional Chinese values of chastity and fidelity are significantly gendered; they tend to regulate the sexual behavior of women rather than men (Burger, 2012; Ruan, 2013). Meanwhile, traditional ideals of femininity and masculinity in China position women as more "vulnerable" than men in relation to nonconventional sexual behavior (Farrer & Sun, 2003). Not until the founding of the PRC did China's Marriage Law entitle women to a larger share of property in divorce disputes when their husbands' extramarital sex was the cause of divorce. Consistent with the findings of studies conducted in the West (e.g., Scott, 1998; Widmer et al., 1998), a significant cohort shift has been observed in attitudes toward sex in China: Younger as opposed to older cohorts have consistently been found to be more likely to approve of premarital sex, extramarital sex, and homosexuality. The results—that better-educated Chinese were less likely to approve of all three types of sexual behavior than those who received no or little education—are different from findings from the United Kingdom and the United States (Scott, 1998). This may be due to the great emphasis placed on moral education in Chinese academic syllabi, which fosters a sense of strict sexual morality among those who are highly educated (Zhang, Li, & Shah, 2007). Similarly, given the role played by the CCP in enforcing sex-related morality, it is unsurprising that CCP members were less likely to approve of extramarital sex than non-CCP members. The results also indicate that urban Chinese were more likely to approve of premarital sex, extramarital sex, and

homosexuality than their rural counterparts, and that married people were less likely to approve of all three sex behaviors than never-married respondents.

## Conclusions and Discussion

To date, nationally representative research on sex ideologies in China has been scarce. Most previous researchers have focused either on specific segments of the Chinese population, such as university students (Ruan, 2013; Zhang et al., 2002), or on specific places, such as Shanghai (Farrer, 2002; Farrer & Sun, 2003) or rural villages (Yan, 2002). The analysis of data from the 2010 CGSS and the 2011 Chinese Statistics Yearbook clearly revealed that most Chinese people disapprove of extra- marital sex and homosexuality. Although attitudes toward pre-marital sex were somewhat less traditional, as many as 71% of Chinese people disapproved of premarital sex. The clear evidence of considerable internal variation in sex ideologies across China also calls into question the generalization that a national "sexual liberation" is under way in China, which is largely based on behavioral observations (Parish et al., 2007; Zhang et al., 2012). Nevertheless, the importance of studying sex ideologies does not lie in the accuracy with which we can infer behavior from ideology. Ideologies not only guide behavior but also provide the moral touchstone against which premarital sex, extramarital sex, and homosexuality are judged.

China's inter-province differences in sex ideologies have often been cited as evidence of the efficacy of China's social changes in recent decades (e.g., Siu-Lun, 1986). This is one of the first studies to systematically explore the macro-level social factors associated with China's inter-province differences in sex ideologies. The results emphasize the importance of both

recent social, cultural, and political events and long-standing regional traditions in helping shape China's landscape of sex ideologies. The assumption that China's provinces are socioculturally homogeneous is called into question. The results also problematize modernization theory, which predicts a global convergence of values pertaining to gender and sexuality (Goode, 1970; Inglehart & Baker, 2000; Inglehart & Norris, 2003). Although it has been cited to explain changing values pertaining to patrilineality, filial piety, and conjugality in China (Siu-Lun, 1986; Yan, 2009), socioeconomic modernization is not significantly associated with sex ideologies.

In contrast, deindustrialization was found to be significantly associated with sex ideologies at province level, particularly ideologies relating to extramarital sex. This is understandable, because China's deindustrialization entailed a significant ideational shift from the collectivism of the pre-1978 centralized state-controlled economy to the individualism of the post-1978 market-guided economy. In the socialist era, the collective organization of the danwei ("work unit") system also played a major role in enforcing an emphasis on marital fidelity (Burger, 2012; Farrer, 2002). As sexual dissatisfaction within marriage and the pursuit of individual sexual pleasure provide the major rationale for extramarital sex (Farrer & Sun, 2003), deindustrialization is likely to lead to less traditional attitudes to extramarital sex.

Although scholars have generally ascribed China's alleged "sex liberation" to the country's exposure to the West after the 1978 open-door policy (Bond & King, 1985; Parish et al., 2007), the results of this study indicate that the significant association between

Westernization and less traditional attitudes toward sex applies to only one type of sexual behavior: premarital sex. A key argument for premarital sex is the decoupling of sex and the institution of marriage. Despite ongoing debate about the "deinstitutionalization" and "privatization" of marriage in Western and Chinese societies alike (Cherlin, 2004; Davis, 2014), it seems that Westernization does little to explain inter-province differences in attitudes toward extramarital sex. Nor are people from provinces that are supposedly more Westernized more likely to approve of homosexuality.

An important contribution of this research to the existing scholarship lies in its attempt to explore China's inter-province differences in sex ideologies in terms of a priori geographic differences in addition to recent social trends. The results lend support to rice theory, as the distinction between rice and wheat agriculture was found to be closely associated with people's attitudes toward premarital sex, extramarital sex, and homosexuality. The results concur with Talhelm et al. (2014), that rice plantation and wheat-based agriculture foster differentiated levels of social tolerance of behaviors such as divorce in China, and that this differentiation is long-lasting and applies not only to people who actually engage in agricultural production but to those who are acculturated in regions that traditionally grow rice or wheat. Therefore, this research supports Nisbett's (2010) argument that observed geographic differences in ideologies should not be understood merely as the outcome of divergent social processes. Rather, geographic differences could be responsible for the production of the observed inter-province differences in sex ideologies.

Major alternative explanations that might operate in parallel to the rice theory were also tested early in this research. For example, because agricultural mode may also be associated with weather and temperature, the pathogen-prevalence theory suggests that diseases are more likely to spread in warmer areas, and people from warmer areas are less likely to engage in activities that pose potential health risks. The inclusion of annual average temperature for each province did not affect the results for sex ideologies, which may be because STDs are spread in different ways from airborne or other direct-contact diseases. Other forms of subsistence theory distinguish between farming and herding agriculture. I experimented with controlling for whether the major agriculture in a given province is herding or farming. The inclusion of this variable neither had a significant influence on the other parameters in the models nor increased model fit, which may be because only a very small number of provinces in China feature herding agriculture.

In this research, cross-sectional data were analyzed, which means the results should be interpreted in terms of association rather than causality. Therefore, it is important to collect com- parable data to examine the over-time change of sex ideologies in China. Efforts should also be made to collect richer longitudinal data to enable researchers to systematically unpack the intricate causal mechanisms of how modernization, deindustrialization, Westernization, and rice theory may operate to transform sex ideologies in China at an individual level. As the CGSS data do not contain information to allow for the test of social desirability, another limitation of this research is that the results may in part reflect the respondents' engagement with perceived social norms pertaining to sexual conduct. Whereas most surveys, such as the CGSS, collect data on either ideology or behavior but not both, it is important to collect data on both aspects to enable future assessment of the consistency and discrepancy between sexual ideologies and behaviors in China. Despite its limitations, this research underlines the importance of examining and understanding China's internal variation in sex ideologies, which is crucial to the development of region-specific policies for sexual health interventions and sex education syllabi.

# Notes

1. Whereas the term tertiary sector is used to refer to the educational and cultural sectors in Western societies, its coverage is wider in China, including all nonagricultural and nonindustrial economies such as education, catering, service provision, and cultural enterprises.

2. Talhelm et al. (2014) confirmed that rice theory applies to border areas between rice-growing and wheat-growing regions.

3. Tibet, Hong Kong, and Macau were not included as they are not covered by the CGSS. These three regions host less than 1% of the Chinese population.

# References

Barthel, D. (1976). Sex roles and work roles in post-industrial society. Journal Sociology and Social Welfare, 4, 1171.

Bond, M. H., & King, A. Y. (1985). Coping with the threat of Westernization in Hong Kong. International Journal of Intercultural Relations, 9(4), 351–364. doi:10.1016/0147-1767(85)90054-9

Bongaarts, J. (1980). Does malnutrition affect fecundity? A summary of evidence. Science, 208(4444), 564–569. doi:10.1126/science.7367878

Bramall, C. (2006). The industrialization of rural China. Oxford, UK: Oxford University Press.

Burger, R. (2012). Behind the red door: Sex in China. Hong Kong, China: Earnshaw Books.

Cao, J., & Lu, X. (2014). A preliminary exploration of the gay movement in mainland China: Legacy, transition, opportunity, and the new media. Signs: Journal of Women in Culture and Society, 39(4), 840– 848. doi:10.1086/675538

Caraël, M. (1995). Sexual behavior. In J. Cleland & B. Ferry (Eds.), Sexual behaviour and AIDS in the developing world (pp. 75–123). London, UK: World Health Organization and Taylor & Francis.

Cherlin, A. J. (2004). The deinstitutionalization of American marriage. Journal of Marriage and Family, 66(4), 848–861. doi:10.1111/ j.0022-2445.2004.00058.x

Cheung, C.-K., & Kwan, A. Y.-H. (2009). The erosion of filial piety by modernisation in Chinese cities. Ageing and Society, 29(2), 179–198. doi:10.1017/S0144686X08007836

Clifford, E. J. (2013). Policing pleasure: Sex work, policy, and the state in global perspective. Contemporary Sociology: A Journal of Reviews, 42(3), 382–383. doi:10.1177/0094306113484702c

Davis, D. S. (2014). Privatization of marriage in post-socialist China. Modern China, 40, 551–577. doi:10.1177/0097700414536528

Farrer, J. (2002). Opening up: Youth sex culture and market reform in Shanghai. Chicago, IL: University of Chicago Press.

Farrer, J., & Sun, Z. (2003). Extramarital love in Shanghai. The China Journal, 50, 1–36. doi:10.2307/3182244

Gao, Y., Lu, Z. Z., Shi, R., Sun, X. Y., & Cai, Y. (2001). AIDS and sex education for young people in China. Reproduction, Fertility, and Development, 13(8), 729–737. doi:10.1071/RD01082

Goode, W. J. (1970). World revolution and family patterns. New York, NY: Free Press.

Henrich, J. (2014). Rice, psychology, and innovation. Science, 344(6184), 593–594. doi:10.1126/science.1253815

Higgins, L. T., Zheng, M., Liu, Y., & Sun, C. H. (2002). Attitudes to marriage and sexual behaviors: A survey of gender and culture differences in China and United Kingdom. Sex Roles, 46(3/4), 75–89. doi:10.1023/A:1016565426011

Hu, Y., & Scott, J. (2014). Family and gender values in China: Generational, geographic and gender differences. Journal of Family Issues. Advance online publication. doi:10.1177/0192513X14528710

Inglehart, R. (1990). Culture shift in advanced industrial society. Princeton, NJ: Princeton University Press.

Inglehart, R., & Baker, W. E. (2000). Modernization, cultural change, and the persistence of traditional values. American Sociological Review, 65, 19–51. doi:10.2307/2657288

Inglehart, R., & Norris, P. (2003). Rising tide: Gender equality and cultural change around the world. Cambridge, UK: Cambridge University Press. Kongar, E. (2008). Is deindustrialization good for women? Evidence from the United States. Feminist Economics, 14(1), 73–92. doi:10.1080/13545700701716680

Lásźló, É. (2013). Individualism, collectivism, and political power: A relational analysis of ideological conflict. The Hague, Netherlands: Springer.

Lou, C., Zhao, Q., Gao, E.-S., & Shah, I. H. (2006). Can the Internet be used effectively to provide sex education to young people in China? Journal of Adolescent Health, 39(5), 720–728. doi:10.1016/j.jadohealth.2006.04.003

Neilands, T. B., Steward, W. T., & Choi, K.-H. (2008). Assessment of stigma towards homosexuality in China: A study of men who have sex with men. Archives of Sexual Behavior, 37(5), 838–844. doi:10.1007/ s10508-007-9305-x

Nisbett, R. (2010). The geography of thought: How Asians and Westerners think differently. New York, NY: Free Press.

O'Brien, R. M. (2007). A caution regarding rules of thumb for variance inflation factors. Quality and Quantity, 41(5), 673–690. doi:10.1007/ s11135-006-9018-6

Parish, W. L., Laumann, E. O., & Mojola, S. A. (2007). Sexual behavior in China: Trends and comparisons. Population and Development Review, 33(4), 729–756. doi:10.1111/j.1728-4457.2007.00195.x

Ruan, F. F. (2013). Sex in China: Studies in sexology in Chinese culture. New York, NY: Springer Science & Business Media.

Scott, J. (1998). Changing attitudes to sexual morality: A cross-national comparison. Sociology, 32(4), 815–845. doi:10.1177/0038038598032004010

Siu-Lun, W. (1986). Modernization and Chinese culture in Hong Kong. The China Quarterly, 106, 306–325. doi:10.1017/S0305741000038595

Snijders, T. A. B., & Bosker, R. J. (2011). Multilevel analysis: An introduction to basic and advanced multilevel modeling. Thousand Oaks, CA: Sage.

So, H.-W., & Cheung, F. M. (2005). Review of Chinese sex attitudes and applicability of sex therapy for Chinese couples with sexual dysfunction. Journal of Sex Research, 42(2), 93–101. doi:10.1080/00224490509552262

Stegmueller, D. (2013). How many countries for multilevel modeling? A comparison of Frequentist and Bayesian approaches. American Journal of Political Science, 57(3), 748–761. doi:10.1111/ajps.2013.57.issue-3

Talhelm, T., Zhang, X., Oishi, S., Shimin, C., Duan, D., Lan, X., & Kitayama, S. (2014). Large-scale psychological differences within China explained by rice versus wheat agriculture. Science, 344

(6184), 603–608. doi:10.1126/science.1246850

Therborn, G. (2004). Between sex and power: Family in the world, 1900-2000. London, UK: Psychology Press.

Tian, F. F., Merli, M. G., & Qian, Z. (2013). Job mobility and extramarital sex in reform-era urban China. Chinese Sociological Review, 46(1), 60–82. doi:10.2753/CSA2162-0555460103

Wang, B., Li, X., Stanton, B., Kamali, V., Naar-King, S., Shah, I., & Thomas, R. (2007). Sexual attitudes, pattern of communication, and sexual behavior among unmarried out-of-school youth in China. BMC Public Health, 7, 189. doi:10.1186/1471-2458-7-189

Widmer, E. D., Treas, J., & Newcomb, R. (1998). Attitudes toward non- marital sex in 24 countries. Journal of Sex Research, 35(4), 349–358. doi:10.1080/00224499809551953

Yan, Y. (2002). Courtship, love, and premarital sex in a north China village. The China Journal, (48), 29. doi:10.2307/3182440

Yan, Y. (2009). The individualization of Chinese society. London, UK: Bloomsbury Academic.

Zhang, L., Gao, X., Dong, Z., Tan, Y., & Wu, Z. (2002). Premarital sexual activities among students in a university in Beijing, China. Sexually Transmitted Diseases, 29(4), 212–215. doi:10.1097/00007435-20020 4000-00005

Zhang, L., Li, X., & Shah, I. H. (2007). Where do Chinese adolescents obtain knowledge of sex? Implications for sex education in China. Health Education, 107(4), 351–363. doi:10.1108/09654280710759269

Zhang, N., Parish, W. L., Huang, Y., & Pan, S. (2012). Sexual infidelity in China: Prevalence and gender-specific correlates. Archives of Sexual Behavior, 41(4), 861–873. doi:10.1007/s10508-012-9930-x

Modernization

Deindustrialization

Westernization
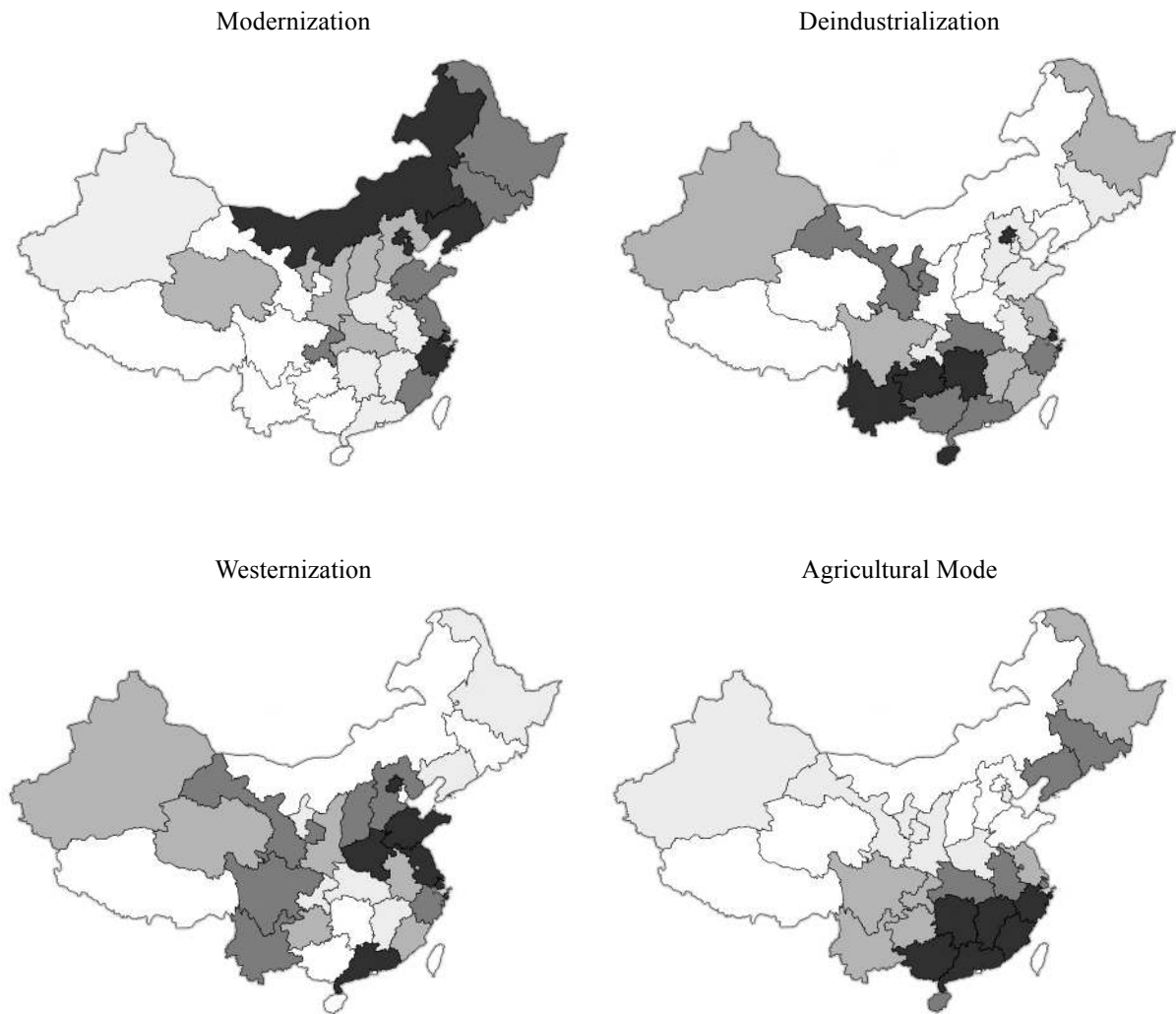
Agricultural Mode



**Figure 1.** Mapping of Bartlett factor scores for province-level factors. To facilitate data visualization, scores were ranked as quintiles, with darker colors indicating higher quintile ranks. For the agricultural mode, darker colors indicate larger proportions of farmland dedicated to rice paddy as opposed to wheat.

Premarital Sex

Extramarital Sex

Homosexuality
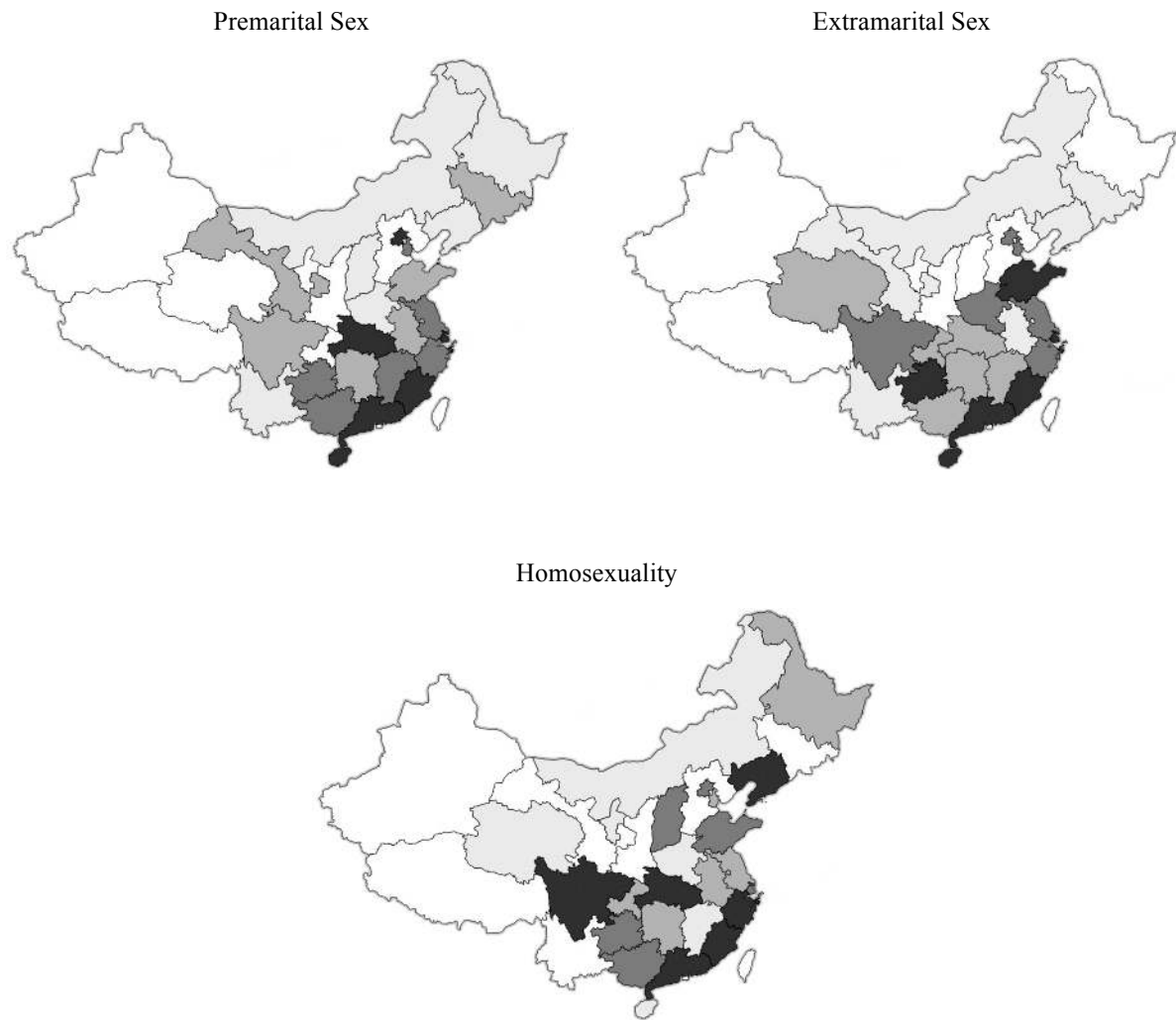


**Figure 2.** Mapping of "approval" attitudes to non-conventional sexual behavior. To facilitate data visualization, percentages of "approval" at province level were ranked as quintiles, with darker colors indicating higher quintile ranks. Higher percentages (i.e., darker colors) indicate less traditional attitudes at province level.
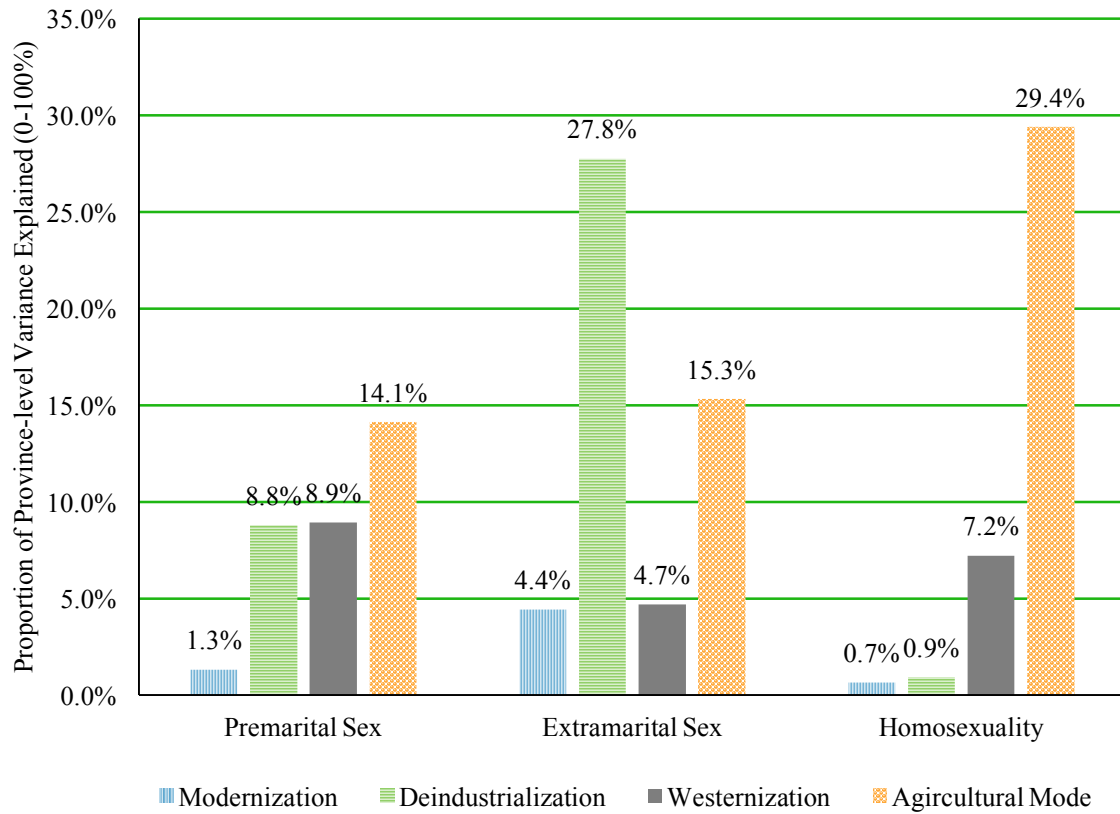
**Figure 3.** Proportion of province-level variance in sex ideologies explained by modernization, deindustrialization, Westernization and the mode of agriculture, controlling for individual-level characteristics. Calculation based on Models 1B, 2B and 3B in Table 4.

**Table 1.** *List of Province-Level Indicators*

| Indicator | Meaning |
|---|---|
| GDPpc | GDP *per capita* |
| Urbperc | Percentage of urban population (%, based on household register hukou) |
| UrbIncome | Net income *per capita* of urban population (RMB) |
| RurIncome | Net income *per capital* of rural population (RMB) |
| GDPind | Percentage of contribution from industrial sector to GDP (%) |
| GDPter | Percentage of contribution from tertiary sector to GDP (%) |
| Export | Gross value of international export |
| Import | Gross value of international import |
| FDI | Total number of Foreign-Direct-Investment enterprises |
| RiceArea | Percentage of farmland dedicated to rice paddy (%) |
| WheatArea | Percentage of farmland dedicated to wheat (%) |

*Note*. Tertiary sector refers to sectors other than agricultural and industrial sectors (e.g. service provision, cultural enterprise, etc.), which is officially cited to indicate the level of deindustrialization in China.

**Table 2.** *Factor Loadings of Province-Level Indicators*

| Indicator | Modernization | Deindustrialization | Westernization | Agricultural mode | $h^2$ |
|---|---|---|---|---|---|
| GDPpc | .95 | | | | .96 |
| UrbPerc | .92 | | | | .92 |
| UrbIncome | .82 | | | | .95 |
| RurIncome | .88 | | | | .95 |
| GDPind | | -.99 | | | .97 |
| GDPter | | .83 | | | .96 |
| Export | | | .92 | | .98 |
| Import | | | .82 | | .97 |
| FDI | | | .89 | | .99 |
| RiceArea | | | | .87 | .81 |
| WheatArea | | | | -.82 | .76 |
| Variance (%) | 34.63 | 17.64 | 25.49 | 15.06 | |

*Note.* Principal component analysis with Varimax rotation. KMO = .757. Bartlett's test of sphericity = 438.89(55), p < .001. Factor loadings < .80 suppressed.

**Table 3.** *Descriptive Statistics of Individual-Level Variables* (*N = 11,563*)

| Parameter | Column percentage |
|---|---|
| Attitudes to premarital sex (% approval attitudes) | 29.1 |
| Attitudes to extramarital sex (% approval attitudes) | 8.0 |
| Attitudes to homosexuality (% approval attitudes) | 12.2 |
| Female | 51.9 |
| Cohort (%) | |
|   17-24 | 7.8 |
|   25-34 | 15.0 |
|   35-44 | 22.7 |
|   45-54 | 21.6 |
|   55-64 | 18.0 |
|   65 and above | 14.9 |
| Ethnic minority | 8.7 |
| Level of education | |
|   No education | 13.6 |
|   Primary school | 22.0 |
|   Middle school | 29.6 |
|   High school and above | 34.8 |
| CCP member | 17.3 |
| Urban residence | 61.1 |
| Rural-to-urban migrant | 14.9 |
| Level of annual household income | |
|   1st quartile | 22.0 |
|   2nd quartile | 23.3 |
|   3rd quartile | 20.6 |
|   4th quartile | 21.9 |
|   N/A (missing, refused, etc.) | 12.2 |
| Marital status | |
|   Never married | 9.7 |
|   Currently married | 80.2 |
|   Previously married | 10.1 |

*Note*. Weighted column percentages may not add up to 100% due to rounding. Quartile ranking calculated on sample excluding cases reporting missing value on annual household income.

**Table 4.** *Binomial Multilevel Random-Intercept Logistic Regression Models Predicting "Approval" Attitudes to Non-Conventional Sexual Behavior (N = 11,563)*

| | Premarital Sex | | Extramarital Sex | | Homosexuality | |
|---|---|---|---|---|---|---|
| | Model 1A | Model 1B | Model 2A | Model 2B | Model 3A | Model 3B |
| Parameter | *Coef. (S.E.)* | *Coef. (S.E.)* | *Coef. (S.E.)* | *Coef. (S.E.)* | *Coef. (S.E.)* | *Coef. (S.E.)* |
| FIXED PART | | | | | | |
| **Individual level** | | | | | | |
| Female (ref=male) | -0.42*** | -0.41*** | -0.63*** | -0.65*** | 0.02 | 0.01 |
| | (0.05) | (0.05) | (0.08) | (0.07) | (0.06) | (0.06) |
| Cohort (ref=17-24) | | | | | | |
| 25-34 | -0.00 | 0.00 | -0.14 | -0.20 | -0.27** | -0.29** |
| | (0.11) | (0.11) | (0.15) | (0.15) | (0.12) | (0.12) |
| 35-44 | -0.76*** | -0.76*** | -0.39** | -0.45*** | -0.84*** | -0.87*** |
| | (0.11) | (0.11) | (0.17) | (0.16) | (0.13) | (0.13) |
| 45-54 | -1.14*** | -1.13*** | -0.50*** | -0.57*** | -0.90*** | -0.93*** |
| | (0.11) | (0.11) | (0.17) | (0.17) | (0.14) | (0.14) |
| 55-64 | -1.48*** | -1.47*** | -1.16*** | -1.25*** | -1.14*** | -1.18*** |
| | (0.12) | (0.12) | (0.19) | (0.19) | (0.15) | (0.14) |
| 65 and above | -1.96*** | -1.95*** | -1.53*** | -1.63*** | -1.33*** | -1.37*** |
| | (0.13) | (0.13) | (0.22) | (0.21) | (0.16) | (0.16) |
| Ethnic minority (ref=no) | 0.05 | 0.05 | 0.26* | 0.21 | 0.05 | 0.02 |
| | (0.10) | (0.10) | (0.14) | (0.14) | (0.12) | (0.12) |
| Education (ref=no) | | | | | | |
| Primary school | -0.20** | -0.20** | -0.67*** | -0.75*** | -0.51*** | -0.54*** |
| | (0.08) | (0.08) | (0.13) | (0.13) | (0.10) | (0.10) |
| Middle school | -0.14* | -0.13 | -0.85*** | -0.94*** | -0.73*** | -0.76*** |
| | (0.08) | (0.08) | (0.14) | (0.13) | (0.11) | (0.10) |
| High school and above | 0.07 | 0.07 | -0.69*** | -0.79*** | -0.58*** | -0.62*** |
| | (0.09) | (0.09) | (0.15) | (0.14) | (0.12) | (0.11) |
| CCP member (ref=no) | -0.07 | -0.07 | -0.18* | -0.20** | 0.17** | 0.16** |
| | (0.07) | (0.07) | (0.10) | (0.10) | (0.08) | (0.08) |
| Urban residence (ref=rural) | 0.32*** | 0.32*** | 0.24** | 0.22** | 0.24*** | 0.23*** |
| | (0.06) | (0.06) | (0.10) | (0.10) | (0.08) | (0.08) |
| Rural-to-urban migrant (ref=no) | -0.16** | -0.16** | -0.18 | -0.19* | -0.33*** | -0.34*** |
| | (0.07) | (0.07) | (0.11) | (0.11) | (0.09) | (0.09) |
| Level of household income (ref=1st quartile) | | | | | | |
| 2nd quartile | -0.08 | -0.08 | -0.27** | -0.31*** | -0.34*** | -0.35*** |
| | (0.07) | (0.07) | (0.11) | (0.11) | (0.09) | (0.09) |
| 3rd quartile | -0.02 | -0.02 | -0.38*** | -0.42*** | -0.23** | -0.25** |
| | (0.07) | (0.07) | (0.12) | (0.12) | (0.10) | (0.10) |
| 4th quartile | 0.20** | 0.20** | -0.03 | -0.07 | -0.06 | -0.08 |
| | (0.08) | (0.08) | (0.12) | (0.12) | (0.10) | (0.10) |
| N/A | 0.11 | 0.11 | -0.02 | -0.08 | -0.06 | -0.09 |
| | (0.09) | (0.09) | (0.13) | (0.13) | (0.11) | (0.11) |
| Marital status (ref=never married) | | | | | | |
| Currently married | -0.29*** | -0.29*** | -0.64*** | -0.66*** | -0.61*** | -0.62*** |
| | (0.14) | (0.14) | (0.15) | (0.15) | (0.10) | (0.10) |
| Previously married | -0.04 | -0.04 | -0.25 | -0.28 | -0.52*** | -0.53*** |
| | (0.14) | (0.14) | (0.20) | (0.20) | (0.17) | (0.17) |
| **Scales for province-level factors** | | | | | | |
| Modernization | | 0.08 | | 0.10 | | 0.04 |

|  |  | (0.12) |  | (0.14) |  | (0.10) |
|---|---|---|---|---|---|---|
| Deindustrialization |  | 0.21* |  | 0.33** |  | 0.05 |
|  |  | (0.13) |  | (0.14) |  | (0.10) |
| Westernization |  | 0.22* |  | 0.14 |  | 0.11 |
|  |  | (0.12) |  | (0.13) |  | (0.09) |
| Mode of agriculture (higher=rice) |  | 0.28** |  | 0.25* |  | 0.23** |
|  |  | (0.12) |  | (0.13) |  | (0.09) |
| RANDOM PART |  |  |  |  |  |  |
| Province-level variance parameter | 0.58*** | 0.39*** | 0.97** | 0.44** | 0.36** | 0.22** |
| **Model fit indices** |  |  |  |  |  |  |
| *Log-likelihood (null)* | -7,367 |  | -3,325 |  | -4,497 |  |
| *Log-likelihood* | -6,113 | -6,108 | -3,016 | -3,011 | -4,042 | -4,039 |
| *Akaike-information-criterion (null)* | 14,737 |  | 6,651 |  | 8,997 |  |
| *Akaike-information-criterion* | 12,414 | 12,440 | 6,218 | 6,247 | 8,271 | 8,302 |

*Note*. Individual-level intercept in the fixed part of the models are not reported in the Table. The province-level variance parameter in Model A indicates the total variance in the data at a province level; the same parameter in Model B indicates the residual province-level variance after accounting for the four province-level factors (Snijders & Bosker, 2011). Monte Carlo standard errors are reported in brackets beneath coefficients. Reference category noted in parentheses.

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

**Appendix 1.** *Descriptive Statistics of Key Variables by Province*

| | Province-level factors (Bartlett factor scores) | | | | Attitudes to non-conventional sexual behavior (% approval attitudes) | | |
|---|---|---|---|---|---|---|---|
| | Modernization | Deindustrialization | Westernization | Agricultural mode | Premarital Sex | Extramarital sex | Homosexuality |
| Beijing | 2.32 | .04 | 3.11 | -1.02 | 37.7 | 12.9 | 13.9 |
| Tianjin | 2.49 | -.87 | -.51 | -.69 | 34.9 | 8.3 | 11.9 |
| Hebei | -.21 | .02 | -.57 | -.82 | 12.2 | 2.4 | 3.1 |
| Shanxi | -.12 | -.17 | -.96 | -.92 | 14.0 | 4.1 | 12.7 |
| Inner Mongolia | .74 | -.56 | -.99 | -.93 | 15.0 | 5.0 | 8.0 |
| Liaoning | .83 | -.52 | -1.00 | 1.12 | 17.9 | 3.5 | 15.9 |
| Jilin | .17 | -.57 | -.63 | .08 | 18.3 | 5.6 | 6.6 |
| Heilongjiang | -.08 | -.32 | -.27 | -.48 | 14.2 | 5.4 | 12.4 |
| Shanghai | 2.34 | .93 | .99 | -.04 | 40.2 | 13.1 | 13.1 |
| Jiangsu | .42 | 2.23 | -.30 | -.49 | 36.8 | 8.4 | 10.2 |
| Zhejiang | 1.25 | -.15 | -.19 | 2.76 | 33.6 | 9.3 | 16.4 |
| Anhui | -.46 | -.23 | -.48 | .06 | 20.1 | 5.9 | 11.5 |
| Fujian | .51 | -.25 | -.21 | 1.37 | 39.1 | 13.6 | 15.6 |
| Jiangxi | -.49 | -.48 | -.34 | 1.19 | 32.7 | 8.2 | 9.1 |
| Shandong | .16 | .93 | -.55 | -1.04 | 39.0 | 6.6 | 13.8 |
| Henan | -.40 | .03 | -1.00 | -.68 | 34.1 | 5.4 | 7.6 |
| Hubei | -.14 | -.41 | -.05 | .19 | 28.7 | 14.3 | 15.2 |
| Hunan | -.47 | -.74 | .34 | 1.60 | 23.6 | 6.9 | 12.0 |
| Guangdong | -.57 | 4.34 | -.16 | 1.15 | 53.4 | 14.8 | 24.1 |
| Guangxi | -.65 | -.71 | -.02 | 2.02 | 32.7 | 11.2 | 13.4 |
| Hainan | -.77 | -.70 | 2.09 | .71 | 50.5 | 15.1 | 10.1 |
| Chongqing | .12 | -.46 | -.57 | -.17 | 27.4 | 2.5 | 11.0 |
| Sichuan | -.64 | .02 | -.33 | -.11 | 32.8 | 8.0 | 17.9 |
| Guizhou | -1.36 | -.18 | 1.50 | -.23 | 40.5 | 12.0 | 15.0 |
| Yunnan | -1.06 | -.15 | .86 | -.18 | 18.3 | 4.2 | 5.7 |
| Shaanxi | -.21 | -.18 | -.73 | -.78 | 9.4 | 2.2 | 5.9 |
| Gansu | -1.09 | -.01 | .23 | -.78 | 17.6 | 5.5 | 6.5 |
| Qinghai | -.36 | -.20 | -1.03 | -.86 | 26.0 | 3.0 | 7.0 |
| Ningxia | -.20 | -.43 | -.01 | -.60 | 13.1 | 0.0 | 7.1 |
| Xinjiang | -.56 | -.18 | -.21 | -.71 | 7.0 | 3.0 | 2.0 |
| **Range** | -1.36-2.49 | -0.87-4.34 | -1.03-3.11 | -1.04-2.76 | 7.0-53.4 | 0.0-15.1 | 2.0-24.1 |

*Note:* Bartlett factor scores have a mean value of 0 and a standard deviation of 1.