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UNDERSTANDING CHINESE COUPLES: AN EXPLORATION OF HOUSEWORK TIME, LEISURE AND SLEEP GAPS, AND MENTAL HEALTH

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To my parents, I couldn't have done this without your support.

献给我最亲爱的父母。

Аав ээждээ маш их баярлалаа.

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Abstract

This dissertation examines the allocation of housework time, the leisure and the sleep gaps, and the mental health among married couples in China. Using one of the very first panel data about Chinese families, this dissertation makes three principal contributions. First, I examine the interpretational power of the major housework theories in explaining housework time allocation in a non-western social context. The findings suggest that wives and husbands show different patterns in allocating housework time. Wives' housework time follow the gender display hypothesis. For husbands, individual income plays a decisive role in determining the time spent on housework.

Second, detailed time-use information is analyzed to better understand the leisure and the sleep gaps between spouses in China. I use the housework theories to explain spousal leisure and sleep gaps. The findings show that gender traditionalism among spouses affects their leisure gap. The sleep gap between spouses is affected by the share of income. A curvilinear relationship is found between wives' share of couple's total income and the sleep gap between wives and husbands.

Third, I examine the mental health among married couples in China, and find that factors affecting depression for wives and husbands are different. A curvilinear relationship between the division of housework and the depression is found among wives. For husbands, a curvilinear relationship between the share of couple's total labor and the depression is identified.

Chapter 1: Introduction and Overview

Statement of the Problem

Family is the bedrock of any society. However, family can take various forms in different societies. The power dynamics within families vary across time and space. The decision-making process between spouses, therefore, varies across societies, as it is the reflection of the family power dynamics. How couples allocate their time spent on housework, leisure, and sleep, and how such time allocation affects their mental health, therefore, vary across societies. Numerous studies have been conducted in recent years to address these questions (e.g. Aguiar and Hurst 2007; Beblo 2001; Beck and Arnold 2009; Bianchi 2011; Bittman and Wajcman 2000; Brines 1994; Greenstein 2000; Gupta 2006). However, the majority of them focuses on couples in Western societies. The prevalent theories that are used to explain these questions are all based on the sample from families in the West. The interpretational power of these theories in explaining the time spent on housework, leisure, and sleep, and the mental health of married couples in non-Western societies remains a question.

In this dissertation, I examine the interpretational power of the Western culture-based theories in explaining the family dynamics pertaining to various time-use activities and mental health among married couples in China, a country that has a distinctive cultural heritage, tradition, and level of economic development. Indeed, despite the common functions of the family as a social institution, Chinese

families are quite "unique" on several dimensions compared to the families elsewhere. One the other hand, the family in China is organized around the long-lasting Confucius tradition, which prioritizes the continuation of the family line and, therefore, tends to ignore the differences in individual needs (Chu 1991; Tu 1998). Under the Confucius tradition, women are required to follow "San Cong Si De" (three obedience and four virtues for women), which essentially forces women to be submissive and domestic.

On the other hand, China is somewhat unusual compared to the other Confucius cultures for that it experienced more than 60 years of Communist rule and the Culture revolution, which attempted to eradicate the influence of Confucius ideas from Chinese families and Chinese society at large (Goldman 1975). Additionally, the communist government also launched the campaign to foster gender equality in China in the past decades, however, such efforts seemed to work well only in the public sphere (Evans 2002). Regardless of women's high labor force participation rates, the economic disparities between women and men persist in China (Chen 2005). Moreover, the latent influence of the patriarchal gender ideology still plays an important role in the Chinese society. For instance, Chinese women are still expected to comply with the traditional gender norms at home, despite the improvement of their economic condition (Pimentel 2006).

With the recent economic development, does the improvement in Chinese wives' economic positions lead to greater gender equality within families? Or do Chinese husbands benefit more from the

economic boom, thereby relegating women to an even more inferior position? With these questions in mind, I explore the generalizability of the established theoretical frameworks in explaining the housework time allocation, the spousal leisure and sleep gaps, and the mental health among married Chinese couples.

Specifically, I address three major topics in this dissertation. First, I examine the five major theoretical frameworks in explaining the allocation of housework time: the time availability model, the relative resource theory, the gender ideology model, the gender display perspective, and the women's individual income perspective. I explore whether these theories apply to a non-Western society by examining the effects of spouses' share of income, individual income, paid work time, and gender ideology on the time spent on housework among married couples in China.

Second, using the major theories about housework allocation between spouses, I investigate how resources, available time, gender ideology, and housework divisions affect the leisure and the sleep gaps between wives and husbands in China. Previous studies about time-use focus predominantly on married couples in the West, and rarely provide theoretical explanations for the leisure and the sleep gaps between spouses. Few studies about leisure and sleep among Chinese adults addresses the difference in the leisure and the sleep patterns between wives and husbands (Dong and An 2012; Qi, An and Dong 2012; Zhou et al. 2012). I posit that housework theories can be used to explain the leisure and the sleep gaps between spouses, because if spouses tend to

avoid doing housework, they should seek more leisure and sleep. Based on such an assumption, I provide the theoretical explanations for the leisure and the sleep gaps between wives and husbands in China.

Third, I assess the effect of the total labor and the housework divisions, and the various roles of each spouse on the mental health of married couples in China. I adopt three theoretical models to examine the depression of both wives and husbands. The equity model focuses on the equal distribution of total labor on each spouse's depression. The basic assumption is that the distribution of total labor between spouses is related to their perception of equity, thereby affecting spouses' depression. The role accumulation theory assumes that having multiple roles increases both spouses' mental health, as the roles provide the basis for mutual understanding between spouses. The workload perspective emphasizes the effect of the workload on depression, assuming that workload increases wives' depression. Using the data from the Chinese population, I apply the aforementioned theories to the mental health of the married couples in China.

Overview of Dissertation

In the subsequent chapters of this dissertation, I address unanswered questions in the previous studies by providing a more nuanced examination of the allocation of housework, and the leisure and the sleep gaps between spouses in China. In addition, I also explore the effect of the divisions of total and household labor, and the roles of each spouse on the mental health of married couples in China.

In chapter 2, I address the methodological issues by discussing the data, the variables, and the methods that are used in this dissertation. I begin by proving a thorough description of the data being used in the analyses. I then focus on the statistical procedures of identifying spousal relationships. This dissertation examines the allocation of housework, the leisure and the sleep gaps, and the mental health of married couples in China. However, the data being used in this dissertation do not readily provide the spousal relationships. To facilitate my research, I use multiple procedures to identify married spouses. I then outline the measurement of the dependent variables for the three research topics. I also describe the independent variables of the analyses. I conclude this chapter by discussing the analysis plan for each research topic respectively.

In chapter 3, I examine the applicability of the prevalent theoretical models in explaining the allocation of housework among married couples in China. I begin with a review of the previously established theories on housework allocation. I discuss the time availability model, the relative resource theory, the gender ideology model, the gender display perspective, and the women's individual income perspective. I also propose hypotheses based on the aforementioned theoretical models. I then present the descriptive statistics, and the multivariate OLS regression results. At the end of this chapter, I discuss the regression results and limitations of the current study.

In chapter 4, I assess the explanatory power of the housework theories in explaining the leisure and the sleep gaps between spouses in China. I postulate that if spouses actively seek to avoid doing housework, which is perceived as devalued labor, they may enjoy more leisure and sleep, thereby influencing the leisure and the sleep gaps between them. I begin by reviewing the housework theories and discussing how they can be applied to explaining spousal leisure and sleep gaps. Some hypotheses are proposed accordingly. I then provide the descriptive statistics and the multivariate OLS regression results. I evaluate the findings and the limitations of the current research at the end of this chapter.

In chapter 5, I investigate the mental health of married couples in China, focusing on the effect of the time-use activities, including housework, leisure, and sleep time, and the various roles of both spouses on their depression. First, I review the three theoretical models in this chapter: the equity model, the role accumulation theory, and the workload perspective. I also advance three hypotheses based on the aforementioned theories. I then present the descriptive statistics and the multivariate OLS regression results. The chapter concludes with a discussion of the results and the limitations of the analysss.

In chapter 6, I summarize the empirical findings presented in chapter 3, 4, and 5. Specifically, I address how my findings support the theoretical models that are used in this dissertation. Particular attention is given to the findings that suggest the gendered patterns in the allocation of housework time, the leisure and the sleep gaps, and the

depression among married couples in China. Following this, I conclude this dissertation by discussing the significance of my research, and the implications of my findings for the wellbeing of married individuals and their families in China. A summary of the hypothesis testing results is also provided in Table 6.1 at the end of this chapter.

Chapter 2: Methodology

Data

My data come from the two pilot waves of the China Family Panel Studies (CFPS). Administered by the Institute of Social Science Survey (ISSS) of Peking University in China, the CFPS is a national probability sample survey. The two pilot waves of the CFPS were conducted in 2008 and 2009, in both urban and rural areas of Beijing, Shanghai, and Guangdong Province, which are the three most economically developed regions in China. The 2008 wave contained interviews with 7211 adults; in 2009, 5489 were interviewed.

The CFPS data contains rich information on social status, including educational attainment, income for both spouses, and House Registration (*Hukou*) Status, the time-use for multiple work and family-related activities, and psychological wellbeing. The official waves starting from 2010 are more representative for that they surveyed more than sixteen thousand households from 25 Chinese provinces. However, housework time for adults are only measured in the first two pilot waves. In the absence of more representative data, the first two pilot waves of the CFPS provide a set of valuable items that can be used to construct measures of housework time, leisure and sleep gap, and mental health. Hence, it allows me to examine the interpretational power of major theoretical models in explaining the allocation of housework time, the leisure and sleep gap between spouses, and the mental health of spouses in China.

Identifying Spousal Relationships

The first two pilot waves of the CFPS contain information on marital status; however, relationship identifiers, such as spouse or sibling, are missing. That is, the relationship between individuals within families is not readily presented in the data. Since this dissertation focuses primarily on couples' time spent on household labor, the leisure and sleep gap, and the mental health of married couples, knowing the marital relationship is necessary for the analyses. Therefore, I use multiple procedures to identify marital relationships in the 2008 wave. If the spouses were still married in 2009, I retained them in my sample.

First, the CFPS provides family ID, and each family ID is unique in the data. After using the family ID to identify each family, I use marital status as the second filter. Those not married in 2008 are then excluded from the data. Next, I use age as a filter because some underage respondents reported being married. Twelve respondents who reported being married were under age 16 in wave 2008, and one respondent who was 2 years old was labeled as married in wave 2009. To facilitate my study, I exclude all married respondents under age 16.

The next step is to match the married couples. To match them, I split the data into married male (MM) and married female (MF) datasets. Using the loop command to combine the MM and MF datasets based on family ID presents all possible marital relationships within each family. The majority of families have only one married couple. However, some families have more than one couple. I then use the marriage year information contained in the CFPS data to rule out mismatches. That is,

if the possible couples were not married in the same year, they are excluded from the analysis. After the above steps, only a few marital relationships are still not clear as some families have more than one pair of spouses marrying in the same year. I then use parental status as a filter. If there are more than two respondents in one family married in the same year, those who reported having children are matched. Those who reported not having children are either matched with another respondent who does not have children or excluded.

As in all longitudinal data, sample attrition is inevitable. The CFPS data also suffer from panel attrition. The original 2008 wave dataset contains 7211 respondents, and the original 2009 wave dataset contains 5489 respondents. After the above steps, there are 4236 respondents (2118 couples) in the in 2008 dataset. The loss of cases at this point mainly results from the exclusion of unmarried individuals. I link the two waves of data based on the following standards: (1) the respondents finished both surveys in 2008 and 2009, and (2) the couples were married in both waves. After the merge, there are 1406 couples in the analytical sample. The sample loss after the merge is about 30%. Previous studies suggest that in the absence of better data with lower attrition rates, such an attrition rate is acceptable in the Chinese context (Liang 2011). Moreover, such an attrition rate should not post serious threat to internal validity and thereby severely biasing the inferential statistics (Chen 2005; Fitzgerald, Gottschalk and Moffit 1998). However, it should be noted, reporting errors may still exist due to the attrition.

As mentioned earlier, three research topics will be examined in this dissertation by designating a set of variables to be included in the analyses. To retain as many cases as possible, I keep time 1 independent variables and time 2 dependent variables instead of keeping all relevant variables from both waves. For research topic one, 1004 couples are included. Research topic two includes 949 couples, and 700 couples are included in the research topic three analysis.

Dependent Variables

This dissertation has three major research topics: time spent on housework, leisure and sleep gaps, and the mental health of married couples in China. For the first two research topics, self-reported time spent on housework, leisure, and sleep are used in constructing dependent variables. For the third research topic, I use a set of time-use activities as independent variables to predict mental health. The time spent on various activities are obtained from self-reported survey questions. Although the time dairy methods are preferred, it is not always practical to use such methods in surveys with a large sample (Chen 2005). Moreover, previous research indicates that self-reported time-use data produce similar results to time-dairy data (Baxter and Bittman 1995).

For topic one, the dependent variable is *time 2 housework time*. As Gupta (2007) suggests, using the proportional measure of housework time makes it difficult to determine if the increase in a spouse's share of housework is led by the increase in his or her individual housework time or the decrease in his or her spouse's individual housework time, or both.

Using the individual housework time as the dependent variable avoids such a problem. In the CFPS, respondents were asked about their average time spent on housework on weekdays (whw) and weekends (wdhw) separately. To facilitate my research, I construct an average housework time (ahw) by using the following formula: $ahw = \frac{[(whw*5)+(wdhw*2)]}{7}$.

For topic two, the dependent variables are *leisure* and *sleep gap* at time 2. Besides work-related time expenditures, respondents were asked about their average time spent watching TV, playing games, exercising, surfing online, and sleeping, on weekdays and weekends. These items, except for sleep, are all considered leisure in this dissertation. Using a formula similar to that for average housework time, I construct average leisure and sleep times. I then construct two variables that measure the gaps in leisure and sleep between spouses by subtracting husband's leisure and sleep time from that of wife's.

For topic three, the major dependent variable is *time 2 depression*. Depression scores are the average of six items that measure individuals' psychological wellbeing. Respondents were asked to respond to six questions by using a Likert scale ranging from never (=1), sometimes (=2), half the time (=3), very often (=4) to almost every day (=5). The six questions are: (1) "Last month, how often did you feel depressed?" (2) "Last month, how often did you feel nervous?" (3) "Last month, how often did you feel restless?" (4) "Last month, how often did you feel hopeless?" (5) "Last month, how often did you feel that it was hard to do

anything?" (6) "Last month, how often did you feel that life was meaningless?" (The CFPS uses a modified version of Radloff's (1977) self-report depression scale). Since these six questions all measure psychological wellbeing, I combine them to create a new depression measure. Cronbach's alpha among men is 0.80 in the 2008 wave and 0.81 in 2009 wave. Among women, Cronbach's alpha is 0.85 in the 2008 wave and 0.84 in 2009 wave.

Key Independent Variables

The major independent variables for all three research topics include income, paid work time, and gender ideology. The CFPS data contain multiple income items: basic salary, floating wages, overtime fees, other subsidies, awards, self-employed profits, and private sector hired income, part-time job income, pension, non-work related income, and "other income." Because these indicators do not overlap, I could construct a new total income variable by adding all the income items together.

Spouses' share of total income: to measure the relative resources of spouses, I follow Bittman et al. (2003) to construct a spouse's share of total income variable. I add both spouses' income together first; then divide the spouses' total income by each spouse's individual income. In my analyses, I use both the linear and the squared forms of the spouse's share of couple's total income to examine whether a curvilinear relationship exists between a spouse's share of income and his or her time spent on housework.

Paid work time: respondents were asked about their average time spent on paid work during weekdays (wpw) and on weekends (wdpw) in the last month. I create an average paid work time (apw) variable using the following formula: $apw = \frac{[(wpw*5)+(wdpw*2)]}{7}$. Commuting time (both weekday and weekend) between home and workplace was also included in the CFPS data. Using a similar formula, I construct an average commute time measure. I add the average paid work and the average commute time together to create a new paid work time variable.

Gender traditionalism: the CFPS data do not contain direct measures of gender traditionalism. However, in the 2008 wave of CFPS data, respondents were asked about the importance of carrying on the family line. Given that Chinese society is still under the influence of its long lasting patriarchal and patrilineal tradition, emphasizing the importance of carrying on the family implies men's superiority over women (Attané 2013; Chu, Xie and Yu 2011; Xie 2013). In traditional Chinese social norms, sons are the ones to carry on the family line, care for old parents, and inherit family properties. Therefore, this measure could serve as a proxy of gender ideology, in the absence of a better measure. In the survey, respondents were given a Likert scale ranging from not important (=1) to very important (=5). Those who chose 1 are considered to have a more liberal gender ideology. Choosing 5 suggests that respondents have a very traditional gender ideology. It should be noted that since this measure is not directly related to household labor allocation and/or time spent on leisure or sleep, it should be cautious

when interpreting the results to avoid possible overgeneralization. This measure, however, may directly affect spouses' depression, especially those spouses who do not have children. According to the Confucianism, to have descendants is one of the utmost important family obligations for every married couples (Cheng 1988). Hence, childless couples may be more depressed than couples who have children in China.

Control Variables

Some important control variables are also included in the analyses, such as education, age, residential status, house registration status, self-perceived physical health, and parental status.

Education: Education is coded into seven ordinal categories from "no formal education" to "graduate degree," with a mode of 3 for both spouses, indicating that the average educational attainment for both spouses is junior high school.

Age: Age is measured in years. Among women, it ranges from 22 to 88 in 2008 with a mean of 48.54 (SD=12.38). Among men, it ranges from 21 to 87 in 2008 with a mean of 50.63 (SD=12.67).

Residential Status: In the CFPS data, respondents were asked if their families were agricultural families. Given that a relatively large urban/rural gap persists in China, residential status may affect the time spent on housework, the leisure and sleep gaps, and the mental health of Chinese couples (Lai 1995; Pimentel 2006; Zhang and Treiman 2013). In the sample, 35% of couples reported living in agricultural families in 2008.

House registration (hereafter, *Hukou*) *status*: *Hukou* status is a unique social status in China that is an important determinant of access to various social resources and opportunities. In the CFPS data, respondents were asked to report their *Hukou* status. The two major categories of *Hukou* status are the agricultural (rural) and the non-agricultural (urban), but there are some "other" *Hukou* statuses as well, such as the military and the blue-print urban *Hukou* status. As the amount of cases in the "other" category is too few, and these *Hukou* statuses function similar to urban *Hukou* status, I merge them with the urban *Hukou* status category. To facilitate my analyses, I recode *Hukou* status into two categories: rural and urban *Hukou* status.

Self-perceived physical health: I use self-perceived physical health condition to predict depression of both spouses. In the CFPS data, respondents were given a Likert scale to evaluate their health condition, with responses ranging from very good (=1) to very bad (=5).

Having children: The CFPS data do not have information on the number and/or the age of children; the survey only indicates if the respondents have children. Therefore, I code the variable of having children into two categories: Yes and No. Childcare is not measured in this research because of the absence of the number and/or the age of children. Since childcare remains a feminine job in China, excluding such a measure may lead to underestimate of wives' time spent on housework.

Analysis Plan

To take advantage of the CFPS's panel structure, and thereby strengthen the causal relationships that can be concluded from my

findings, I conducted a series of Ordinary Least Squares (OLS) lagged dependent variable regressions. Including lagged dependent variables in regression models reduces the occurrence of autocorrelation arising from model misspecification (Finkel 1995). In other words, by controlling the prior values of the dependent variable, my regression models are able to account for the effect of the focal independent variables on the dependent variable changes.

For research topic one, I used spouses' share of total income, spouses' individual income, paid work time, gender traditionalism, time 1 housework time, and the control variables to predict the time spent on housework at time 2. For research topic two, I completed two sets of regression models on the leisure and sleep gaps at time 2, respectively. Additional to the independent variables in the topic one analysis, I added spousal housework divisions, the individual time spent on housework for both spouses, in the regression models. For research topic three, I used the share of total (paid work and housework combined) and household labor, the individual time spent on various time-use activities, such as housework, leisure, and sleep, the various forms of income, and social status, such as educational attainment and *Hukou*s status, to predict depression of married couples in China.

Chapter 3: Housework Time Allocation

Literature Review

Under most circumstances, wives do the majority of housework at home (Bittman et al. 2003). Despite the improvements in women's educational and occupational attainments in the past decades, domestic labor remains a wives' responsibility (Bianchi 2011; Bianchi and Mattingly 2003; Bianchi et al. 2000; Bianchi, Robinson and Milkie 2006; Milkie, Raley and Bianchi 2009). Numerous studies have been conducted to understand how couples allocate time to household work. However, the majority of them focuses on families in Western societies, which tend to be more economically developed, urbanized, and individualistic than many Asian societies (Chu and Yu 2009; Yu and Xie 2011). The few studies that examine housework theories in Asian societies have generated divergent results, so it is not clear if these theories can explain the time spent on housework within Asian countries (Chu and Yu 2009; Kamo 1994; Yu and Xie 2011). For example, Kamo (1994) finds that although the time availability and relative resource model hold true in both American and Japanese families, the housework divisions among Japanese couples are more rigid than among American couples, suggesting that unlike American families, in which couples divide housework more "rationally," traditional divisions of household labor based on gender plays a significant role in Japanese families. According to Kamo (1994), the models that have been used to explain housework divisions among American couples have less interpretational power in

explaining how Japanese couples divide household labor. He further suggests that the theories that have been used to explain housework divisions in Western societies might be less relevant in explaining the allocation of household labor in societies with strong family traditions (Kamo 1994).

In their studies about housework divisions among families in Taiwan and China, Chu and Yu (2009) find that although the relative resource model is supported in both social settings, the association between wives' housework load and their resources is much stronger in Chinese families than in Taiwanese families. Yu and Xie (2011) find supportive results for a gender display model among Taiwanese and rural Chinese couples. However, such model is not supported among urban Chinese couples. Moreover, they find that the effect of gender display varies across regions. These findings suggest that the interpretational power of the established housework theories needs to be thoroughly examined in social settings other than Western societies.

To test the applicability of the previously established housework theories in explaining time spent on housework among married couples in China, I review the major theoretical frameworks developed to interpret the allocation of time to housework in Western families, as well as studies about spousal time spent on housework in China. I also advance hypotheses based on these theoretical frameworks.

The Time Availability Model

According to the time availability model, the time devoted to housework by both women and men is constrained by their available

time (Coltrane and Ishii-Kuntz 1992; Silver and Goldscheider 1994). The basic assumption is that domestic labor is rationally divided based on the available time for both spouses and the amount of housework and childcare that needs to be done (Bianchi and Milkie 2010; Davis and Greenstein 2004; Shelton 1992). This model proposes that women and men are capable of maximizing the benefits of their time use (Cubbins and Vannoy 2004; South and Spitze 1994). Hence, whoever spends more time on paid labor is expected to do less domestic work. Correspondingly, the partner who spends less time on paid labor is expected to do more domestic work. Based on this model, I hypothesize that:

> Hypothesis 3.1: Spouses' time spent on paid work will reduce their time spent on housework.

The Relative Resource Model

The relative resource model focuses on the power dynamics at home, suggesting that the allocation of household labor is indeed a reflection of power relations between men and women in a relationship (Davis and Greenstein 2004; Greenstein 2000). The resources a spouse brings to a relationship, relative to the other spouse's, affect that spouse's time spent on housework. In other words, the spouse with greater resources (earnings, social capital, education, prestige, etc.) will have a better bargaining position in the negotiation of housework (Brines 1994; Greenstein 2000; Kroska 1994, 1997). According to this theory, spouses will actively seek to translate their resources into domestic power to avoid doing housework, as housework is presumably perceived as

devalued labor when compared to paid labor (Bianchi et al. 2000; Davis and Greenstein 2004; Shelton and John 1996).

As Brines (1994) suggests, the basic assumption of this model is that one spouse agrees to provide household labor in return for economic support from the other spouse. According to this assumption, most married women continue to do more housework because they earn less than their husbands and depend on their husbands' financial support. The information about respondents' and their spouses' personal income and educational attainment in the CFPS datasets facilitates the examination of this model. Thus, I propose the following hypotheses:

> Hypothesis 3.2: Spouses' share of the couple's total income will reduce their housework time.
> Hypothesis 3.3: High relative educational attainment, operationalized as the difference between the respondent's and his or her spouse's educational attainment, will reduce the respondent's housework time.

Another unique resource, Household Registration status, should be considered in this case study about China. Numerous studies have suggested that *Hukou* status plays an important role in determining social status in China. As a policy to control rural-to-urban migration, the *Hukou* system has profound effects on Chinese society. By dividing the population into "agricultural/rural" and "non-agricultural/urban" sectors, *Hukou* status strongly affects access to social welfare, health care services, educational opportunities, housing, and free migration (Jiang, Lu and Sato 2012; Liu 2005; Wu and Treiman 2004; Wu and Treiman 2007; Zhang and Treiman 2013). Before the economic reforms of the late 1970s, rural-to-urban migration was severely restricted (Wu and Treiman 2004).

As a result, access to various social resources for individuals who held rural *Hukou* status was severely limited as these resources were most likely provided in urban areas. Although the Chinese government has continuously relaxed its control on the *Hukou* system since the 1980s, *Hukou* conversion is still difficult for rural *Hukou* holders (Zhang and Treiman 2013). *Hukou* status is still somewhat a symbol of one's social status. As previous studies suggest, *Hukou* status is an ascribed status, which is very difficult to change (Wu and Treiman 2004; Zhang and Treiman 2013). Through marrying an urban *Hukou* spouse, rural *Hukou* individuals gain access to social resources previously restricted from them. Therefore, based on the relative resource model, I hypothesize that:

> Hypothesis 3.4: For spouses with different *Hukou* status, the one with urban *Hukou* status will do less housework.

The Gender Ideology Perspective

The gender ideology perspective emphasizes the effects of gender-related attitudes on people's behavioral patterns. More specifically, attitudes about gender are expected to affect the allocation of housework between spouses (Greenstein 1996a, 2000; Gupta 1999; Kroska 2004). According to this perspective, gender attitudes are the predictors of spousal housework time (Bianchi et al. 2000). Couples with more egalitarian gender attitudes tend to divide housework more equitably than couples with traditional gender attitudes (Kroska 2004). Most empirical findings are consistent with the gender ideology hypothesis; however, the strength of the association between gender attitudes and household labor varies across studies (Greenstein 2000;

Shelton and John 1996). Generally speaking, the association between gender ideology and housework time is stronger among men than it is among women (Greenstein 2000).

Gender ideology in Chinese society has been changing in the past decades. Between the 1950s and 1970s, sometimes referred to as the revolutionary era, women's labor force participation was encouraged and viewed as the great liberation (Evans 2002). However, such liberation was not complete for multiple reasons. The liberation only emphasized women's greater labor force participation in public spheres. It did not reduce women's responsibility for taking care of families. Chinese women were placed in a difficult position: they were expected to work in a "genderless" way in public and be a caring, servicing, and supportive wife and mother at home (Evans 2002).

Since the 1980s, referred to as the reform era, women have had more choices. Some of them stayed in the labor force, some stayed home taking care of in-laws, husbands, and children. However, the standards for being a good wife have not changed much. That is, women shoulder the major responsibility for taking care of husbands, children, and families, regardless of the women's own needs (Attané 2013; Evans 2002). In other words, although Chinese women's public image has been changing, the core of gender ideology has remained stable (Leung 2003). Women are still expected to put their interests after those of their husbands. It is "natural" for women to do the majority of household labor. Thus, I hypothesize that:

Hypothesis 3.5: Conservatism among wives will increase their housework time.
Hypothesis 3.6: Conservatism among husbands will decrease their housework time.

Note that the CFPS data do not include a direct measure of gender ideology; however, the dataset contains attitudinal variables that can be used to measure social attitudes including attitudes toward gender issues. The variable that I used to measure gender attitude is the importance of carrying on the family line. Emphasizing the importance of carrying on the family line implies the superiority of men over women; in Chinese families, sons are the ones to carry on the family lines, take care of parents when they are old, and inherit family property (Attané 2013). In the survey, respondents were asked about the importance of carrying on the family line; five response categories were possible, ranging from 1 (not important at all) to 5 (very important). This variable served as the indicator of gender ideology on the assumption that individuals who consider carrying on the family line to be very important are conservative on gender issues.

The Gender Display Perspective

Although the previous models have shown explanatory power in spousal housework divisions, gender itself is still a strong determinant of individuals' housework time. Women tend to do the majority of housework even when other variables are controlled (Berk 1985; Greenstein 2000; Kroska 2004; Parkman 2004; South and Spitze 1994). The gender display perspective has been advanced to explain the uneven division of housework. More specifically, this perspective has been

adopted to explain the patterns that the relative resource model fails to explain: in some cases, women who out-earn their male partners do more housework, and men who earn less than their female partners do less housework. Despite the higher earning power and tighter time constraints, women who earn more than their husbands still tend to do more housework. According to the gender display perspective, women affirm their femininity by providing domestic services to their families, while men affirm their masculinity by receiving those services (Berk 1985; Fenstermaker et al. 1991).

Based on the gender display perspective, the relative income of wives reduce their housework time, but only up to the equity point where both spouses contribute the same amount of income to the family (Brines 1994; Greenstein 2000; Yu and Xie 2011). When women earn more than their husbands, they need to do more housework to make up for their "violation" of traditional gender norms, which prescribe housework as a feminine symbol and more closely related to women rather than men (Bianchi et al. 2000; Brines 1994; Greenstein 2000). Since the traditional gender norms prescribe that men should take the breadwinner or provider role, whereas women should take good care of their husbands, children, and families, doing more housework might be a way to neutralize the deviated gender roles within the family (Greenstein 2000; Yu and Xie 2011). The basic assumption here is that wives will do more housework than their husbands even when paid work time and earnings are controlled. Hence, based on the gender display model, I hypothesize that:

Hypothesis 3.7: As wives' earnings begin to exceed their husbands', their housework time increases.

Women's Absolute Income Perspective

In addition to the four established models, scholars have also examined the allocation of housework time from a new angle recently. Some studies suggest that absolute earnings serve as a better predictor of wives' time spent on housework (Gupta 2006, 2007; Gupta and Ash 2008; Killewald and Gough 2010). Gupta (2006, 2007) argues that the previously established models overlook the possibility of women being economically independent in their households. He suggests that women's absolute income plays a decisive role in determining how much housework responsibility they will undertake in a relationship. That is, women's own income has an effect on housework time independent of their relative income (i.e., their earnings relative to their husbands'). According to Gupta (2006, 2007), as women's income increases, they might be able to outsource the tedious and unpleasant housework. He also notes that although the increase in income empowers women in housework negotiation, the greater bargaining power of women does not increase men's housework. Therefore, I hypothesize that:

Hypothesis 3.8: Wives' absolute income will reduce their housework time.

Results

[Insert Table 3.1]

Descriptive Statistics

Research Question One examines the applicability of the previously established theoretical models in explaining housework time among married couples in China. Table 3.1 presents the descriptive statistics for variables in the statistical models. Because the CFPS data contain information from both spouses, I included the means and standard deviations for wives and husbands in the table. The nature of panel data allows me to investigate the effect of time 1 variables on time 2 housework time. Therefore, in the multivariate regression models of this research, the dependent variable is the time spent on housework at time 2 for both wives and husbands. On average, wives' housework time at time 2 is 149.52 minutes per day, and husbands' housework time at time 2 is 74.37 minutes per day.

The independent variables are predictors at time 1. Wives' average housework time is 162.79 minutes per day; husbands' average housework time is 80.19 minutes per day. Wives' average income is 12,730 Chinese *yuan*; husbands' is 21,230 Chinese *yuan*. The share of couple's total income is 39.88% for wives and 60.12% for husbands. Couple's average total income at time 1 is 33960 Chinese *yuan*. The average paid work time per day is 312.26 minutes for wives and 370.54 minutes for husbands. Wives and husbands tend to reflect similar gender ideology. About 40% of spouses have traditional gender ideology. 60% of them have relatively liberal gender ideology.

I also included a set of control variables in the analyses. Both the linear and the squared forms of age are included, as previous research finds a curvilinear relationship between age and housework time (South

and Spitze 1994). On average, wives' age is about 47 years; husbands are about 2 years older. Education is also included as a control variable. Education has 7 categories (no formal education, elementary school, junior high, senior high, vocational school and associate degree, college, and graduate). Ranging from no formal education at 1 to graduate degree at 7, wives' average education score is 3.13, and husbands' is 3.44. In terms of *Hukou* status, 53.49% of wives and 48.71% of husbands have Rural (Agricultural) status, while 46.51% of wives and 51.29% of husbands have Urban (non-Agricultural) status. A great majority of wives (95.72%) and husbands (95%) have children. The discrepancy in having children between wives and husbands is due to the remarried cases in the data. Out of 1004 couples, 39.44% are from agricultural families, and the rest of them are from non-agricultural families. Geographically speaking, 34.06% of couples live in Beijing; 29.88% live in Shanghai; and 36.06% live in Guangdong Province.

In the regression models of wife's housework time, I add two interaction terms between age and traditional gender ideology and childless, respectively. The interaction effects of these two terms are not reported in the models of husband's housework time, as the effects are not statistically significant.

Analytic Strategy

I included five panels in the analyses for both spouses' housework time. Panel 1 of displays the results of the relative resource and gender display models. To examine the consistency of the regression results, I modified panel 1 by removing couple's total income in panel 2, and by

replacing couple's total income with their individual income in panel 3. In panel 4, I replicated Gupta's (2007) analysis on the effect of individual income on wife's time spent on housework by removing the linear and squared forms of wife's and husband's income in panel 3. To determine which model is a better-fitting model, I compared the BIC values. As a general rule, a smaller BIC score indicates a better-fitting model. Therefore, panel 2 in the models for wives' housework time (as shown in Table 3.2) and panel 4 in the models for husbands' housework time (as shown in Table 3.3) are the two better-fitting models in my analyses. To crystalize the effect of the focal predictors on the time spent on housework for both spouses, I included panel 5 in Table 3.2, which is trimmed based on panel 2, in analysis for wives' housework time. I also included a trimmed model (panel 5) in Table 3.4 based on panel 4 in the analysis for husbands' housework time. In the trimmed models, I removed the gender traditionalism and the inter-*Hukou* marriage variables, which are consistently nonsignificant across all panels, and several control variables.

[Insert Table 3.2 and 3.3]

Multivariate Results

I present the multivariate OLS regression results in Tables 3.2 and 3.3. According to Hypothesis 3.1, which is based on the time availability model, a spouse's time in paid work will reduce that spouse's time spent on housework. As shown in Tables 3.2 and 3.4, the coefficients of paid work time for both spouses are nonsignificant across panels, suggesting

that there is no evidence that paid work time affects housework time for spouses in China. Therefore, Hypothesis 3.1 is not supported.

The coefficients of both the linear and the squared forms of wife's share of couples' total income are significant at the .05 level across panels (1, 2, 3, and 5). Such results suggest that there is a curvilinear relationship between wife's share of couple's total income and her housework time, indicating that wives who earn more than their husbands spend more time on housework than other wives. Such results are consistent with the gender display hypothesis (Hypothesis 3.7), which proposes that as wives' earnings begin to exceed their husbands', their housework time increases. Figures 3.1 and 3.2 display such curvilinear relationships with the lowest point at about 50% on the horizontal axis, suggesting that when wives' contributions to the couples' total income exceeds their husbands', wives' housework time increases. Note that the effect of wife's share of couple's total income on her housework time is quite robust, as the coefficients of the linear and squared forms of wife's share of couple's total income do not vary much under alternative specifications. It is also notable that such a curvilinear relationship is not found between the husbands' share of income and their housework time. As shown in Table 3.3, both the linear and the squared forms of husband's share of couple's total income are nonsignificant, showing that the curvilinear relationship is not found in the data.

Based on Gupta's (2006; 2007) absolute income model focusing on the effect of individual income on wives' housework time, I

hypothesized that wives' absolute income would reduce their housework time (Hypothesis 3.8). As shown in panels 3 and 4 of Table 3.2, wives' absolute income does not affect their housework time. Therefore, Hypothesis 3.8 is not supported. However, as shown in panels 3, 4, and 5 of Table 3.3, husbands' absolute income reduces their housework time. For every one Chinese *yuan* increase in husbands' income, their housework time decreases by approximately .2 minutes per day.

To examine if spouses' absolute income matters more than the magnitudes of their earnings compared to their spouses, I replaced the couple's total income with their respective absolute income. Panel 3 in Table 3.2 shows that when spouses' individual income is added to the model, both the linear and the squared forms of wife's share of couple's total income remain significant at the .05 level, suggesting that the gender display effect of wives persists and is robust. Moreover, the coefficient of wife's share of couple's total income increases.

Hypothesis 3.4, which states that in inter-*Hukou* marriages, the spouse with Rural *Hukou* status will do less housework, is not supported for either spouses. As shown in Tables 3.2 and 3.3, when compared to couples with same *Hukou* status, being in inter-*Hukou* marriages does not affect spousal housework time. In another analysis of this study that is not reported, I included both wives' and husbands' *Hukou* statuses in the model. I find that the coefficient of wives with Rural *Hukou* status is positively significant at the .01 level, suggesting that rural wives in general do more housework than urban wives do. This, perhaps, is

because urban wives are more likely to outsource their household labor. Also, urban wives are more likely to utilize home appliances in housework, which could reduce their housework time. It is notable that *Hukou* status does not affect husbands' housework time in either inter-*Hukou* or same-*Hukou* marriages.

Both the educational attainment of each spouse (analysis is not reported) and the difference in educational attainment between spouses (Hypothesis 3.3) are nonsignificant in models for housework time of both spouses. This suggests that Hypothesis 3.3, which proposes that high relative educational attainment will reduce the respondent's housework time, is not supported.

In the analyses with no interaction terms (not reported), I find that the gender ideology hypotheses - that conservatism among wives will increase their housework time (Hypothesis 3.5) and that conservatism among husbands will decrease their housework time (Hypothesis 3.6), are not supported in any models for either wives' or husbands' housework time.

However, the interaction effect between age and traditional gender ideology is statistically significant at .05 level across panels for wife's housework time. As panel 5 in Table 3.2 shows, for wives with traditional gender ideology, one year increase in age leads to 1.098 minutes increase in their time spent on housework per day. For wives with less traditional gender ideology, one year increase in age results in 1.906 more minutes spent on housework per day. Multiple factors could contribute to such a difference between traditional and less traditional

wives. For instance, as traditional women get older, they may pass their homemaker duty down to their daughters-in-law, as is expected by the traditional gender ideology. Less traditional women may not be constrained by such gender ideology, therefore increase more in housework time as they age. Since the interaction effect between age and traditional gender ideology for husband's housework time is not statistically significant, it is not reported.

In addition to the focal independent variables, the coefficients of the control variables are also noteworthy. Table 3.3 shows the effect of age on husband's housework time. A one year increase in age leads to about a one minute increase in housework per day for husbands. Since the coefficients of the squared form of age are nonsignificant in models for both spouse' housework time, I excluded it in the analysis results reported in this study.

Residential status affects wives' time spent on household labor but not that of husbands'. As shown in Table 3.2, the coefficient of living in a non-agricultural family is significant at the .1 level. Wives who live in non-agricultural families spend less time on housework than wives who live in agricultural families. Specifically, living in non-agricultural families reduces wives' time spent on housework by about 9 minutes per day (see panel 5). However, residential status does not affect husbands' housework time.

Parental status, as suggested in previous studies, affects the time spent on housework (Greenstein 1996b, 2000). The CFPS data do not contain information on the number of children; however, they contain

information on the respondents' parental status. Therefore, I included the binary variable childless in both models for wives and husbands. In the analyses with no interaction terms (not reported), I find that the childless coefficient is significant across all panels, suggesting that childless wives spend less time on housework than do wives with children, although the effect is only marginally significant. As shown in Table 3.3, parental status does not affect husbands' housework time, as the coefficient of childless is nonsignificant across all panels in the model for husbands' housework time.

Table 3.2 shows the interaction effect between age and childlessness for wife's housework time. As shown in panel 5 of Table 3.2, for childless wives, when their age increases by a year, the expected housework time per day decreases by .21 minutes. For wives who have children, one year increase in age leads to 1.906 minutes increase in their time spent on housework per day. The interaction effect between age and childlessness for husbands are not reported as it is not statistically significant. Such results suggest that childcare may remain a wife's job in China, as parental status does not affect husband's housework time in both models with and without the interaction term between age and childlessness. It should be noted that the age and the gender of children is not controlled in the analyses.

Looking at the geographical pattern, I find that there is no significant difference in housework time among wives in Beijing, Shanghai, and Guangdong Province. However, there are differences in housework time among husbands across regions. As shown in panel 1 of

Table 3.3, husbands in Shanghai on average spend ten more minutes on housework every day than do husbands in Beijing. Husbands in Guangdong Province, on the other hand, spend less time on housework than do husbands in Beijing. This could be due to a variety of factors. Although gender traditionalism is controlled in both models, as discussed above, this measure is a proxy of traditional gender ideology, as the CFPS data do not contain direct measures of gender ideology. Therefore, such a pattern may be caused by the prevalent patriarchal gender ideology in Guangdong Province (Attané 2013). Indeed, Attané (2013) finds that people in Guangdong Province favor boys over girls; this area has the most unbalanced sex ratio at birth in China (Attané 2013). This suggests that traditional gender ideology still has a strong impact on people in Guangdong Province. By contrast, Beijing and Shanghai are the two largest metropolitan areas in China, and people in metropolitan areas generally hold more liberal gender attitudes than those in non-metropolitan areas. Between Beijing and Shanghai, Shanghai is a more westernized coastal city, where people might hold more egalitarian gender attitudes, whereas in Beijing, the capital of China located in the north, where masculinity is highly valued, people may hold more traditional gender attitudes. Indeed, husbands in Shanghai on average spend more time on household labor than do husbands in Beijing.

As discussed above, I compared the BIC scores of each panel to determine which model is a better-fitting model. Panel 5 in the models for both spouses' housework time displays the trimmed models of the

selected better-fitting models based on the BIC scores. Therefore, the following discussion focuses mainly on the results of panel 5 in both models.

Discussion

Previous research has advanced several models to explain housework time. However, those models were based on data mainly from Western societies. This research adopts data from the China Family Panel Studies (CFPS) dataset examining the applicability of previously established models in explaining spousal time spent on housework in the Chinese context. Moreover, past research on housework focuses predominantly on wives. By including detailed information from both spouses, the CFPS data enable us to examine time spent on housework for both wives and husbands. Additionally, the results from previous studies on housework vary, leaving a debate on what factors have greater effects on spousal housework time. My study contributes to the discussion by situating household labor in a social setting with distinctive culture, political system, and levels of economic development, and focusing on both spouses' housework time in China.

Which theoretical model is more convincing in explaining household labor in China? The results of my study show that wives and husbands may react differently to the factors influencing housework time. The hypothesis based on the time availability argument (Hypothesis 3.1), is not supported. Paid work time does not affect either spouse's time spent on housework. Given that China has one of the highest female labor force participation rates in the world, if both

spouses work full time, there should not be much variation in their daily schedules (Shu and Bian 2003). This pattern may reduce the effect of paid work time on couple's housework time.

The gender ideology hypotheses are not supported. This could result from a variety of factors. As discussed above, the CFPS data do not contain direct measures of gender ideology, and I use attitudes toward the importance of carrying on the family line as an indicator of gender ideology. Although attitudes toward the importance of carrying on the family line could serve as an indicator, the absence of additional gender ideology indicators in the CFPS data limits the possibility of examining the effects of gender ideology on housework time among couples in China.

My investigation shows that the effects of income on housework time for wives and husbands vary. Wives and husbands respond differently to the effect of income in my analyses. The gender display hypothesis (Hypothesis 3.7) is supported. The effect of wives' relative resources on their housework time is limited. Wives' share of income reduces their housework time, but only up to the point at which they contribute about the same amount of money to the total income as their husbands do. When wives' share of income exceeds that of their husbands, their housework time increases. Such an effect might be due to the influence of traditional gender ideology on people's behavioral patterns within families as shown in other studies (Brines 1994; West and Zimmerman 1987). Although income may reduce wives' time spent on household labor, when this reduction impacts the power dynamics

within the family, which prescribe that wives be the homemakers, and husbands be the breadwinners, wives might choose to compensate for their violation of traditional gender norms by spending more time on housework.

In their study on gender display in China and Taiwan, Yu and Xie (2011) find that gender display exists among wives in rural China, but not urban China. Using the general sample, which contains cases from both rural and urban samples, my study finds that gender display exists in China in general. To further explore if the time spent on housework differs among spouses in rural and urban areas in China, I constructed a rural and an urban dataset of residential status, which asks if the respondents live in agricultural families. Then I used the same analytical strategy to examine housework time in both rural and urban samples. I find that, in contrast to Yu and Xie's (2011) findings, the coefficients of both the linear and the squared forms of wife's share of couple's total income are statistically significant at the .05 level in the urban sample, but not in the rural sample (see Appendixes A1 and A2).

It should be noted that there are several differences between Yu and Xie's (2011) and my studies. The differences in findings between their and my research may be due to these differences in data. The data used for both studies are not nationally representative. Yu and Xie (2011) use a single wave of data from the Panel Study of Family Dynamics (PSFD), which covers cases from three southeast coastal regions of China: Shanghai, Fujian Province, and Zhejiang Province. My study uses data from the first two pilot waves of the China Family Panel Studies (CFPS),

which cover Beijing (north), Shanghai (east coast), and Guangdong Province (south coast). Out of 1973 couples in Yu and Xie's (2011) study, 484 are urban couples, and 1489 are rural couples. In my study, 608 couples report that they live in non-agricultural families, and 396 report that they live in agricultural families.

Additionally, Yu and Xie (2011) focus only on wives' time spent on housework in China. My study analyzes the housework time for both spouses, and finds that unlike their wives, there is no curvilinear relationship between husband's share of couple's total income and their housework time. The individual income, however, reduces husbands' housework time. Unlike previous studies, which focus mainly on the effect of individual income on wives' housework time and find that women's absolute income decreases their time spent on housework, my finding suggests that the effect of individual income on housework may be gender neutral (Gupta 2006, 2007).

My findings suggest that both the time availability and gender ideology models may be limited by contextual factors. In societies where both men and women have similarly high labor force participation rates, such as China, the effects of available time on housework time are minimized, as both spouses tend to have relatively rigid schedules if they work full time. Also, in societies with little variation in gender attitudes, the applicability of the gender ideology model in explaining housework is questionable.

There are several limitations of my study due to limitations in the data. As discussed above, I used a proxy measure of gender

traditionalism in the analyses, as it is not directly measured in the CFPS data. According to the traditional family values in China, sons are the ones expected to continue the family line (the last name of the family). Although emphasizing the importance of carrying on the family line could indicate gender traditionalism since it implies men's superiority over women, it does not necessarily affect the power dynamic between spouses, thereby affecting the time spent on housework. Therefore, even if the effects of the gender ideology on the time spent on housework are not significant, especially among husbands. It should be cautious when interpreting such results. Future research should consider using a better measure of gender ideology if possible.

Chinese families, unlike families in Western societies, are more likely to live with extended families, especially in rural areas. Co-residing with the paternal extended family has long been considered an ideal family form in China (Chu, Xie and Yu 2011). In urban areas, even if the predominant living arrangements follow the form of the nuclear family, parents often reach out to help manage their adult children's daily lives (Chen, Short and Entwisle 2000). Therefore, the role of grandparents in determining the housework time of both spouses might be significant. The absence of such a predictor could lead to misunderstanding of how housework is done among Chinese couples. Future research is needed to explore the effects of living arrangements on spousal housework time.

Childcare and elderly care are not discussed in my study, as such information is not offered in the CFPS data. However, previous research

finds that childcare and elderly care could significantly affect spousal housework time, especially if the children are young (Sullivan 2010; Zhan and Montgomery 2003). It should be noted that since both labor remains a "women's job," missing such information could bias my regression results downwardly. It would be beneficial for future studies to analyze the effects of childcare and elderly care on couples' housework time in China.

As suggested in previous studies, the effect of income on housework allocation could be expressed by empowering wives in the negotiation of housework, thereby influencing spousal housework time (Brines 1994; Greenstein 2000). Or it might enable spouses who have higher income to outsource their household labor (Gupta 2006, 2007). By outsourcing household labor, spouses are able to reduce their housework time without changing the family power dynamics. To this end, it is reasonable to assume that having live-in nannies or hourlies may affect the time spouses spend on housework. However, due to the limitation of the data, I am unable to analyze the effects of having non-spousal help on couples' housework time in China.

Additionally, as is shown in the regression results, time spent on housework for husbands varies by region. Future research should consider studying the effect of residential areas on spouses' housework time allocation when more representative data are available. The effects of different career expectations and trajectories for couples in China should also be considered when studying the allocation of household labor in China, especially the effects on childcare and elderly care. The 30

year long one-child policy has placed a great number of Chinese families in a difficult predicament. On one hand, Chinese couples tend to have one child, which might alleviate their childrearing responsibility, or might not since parents might then pay more attention to childrearing. On the other hand, couples from one-child families must take care of four parents (Short et al. 2001). Time spent on childcare and elderly care might vary by gender (Zhan and Montgomery 2003). Given that China officially ended its one-child policy in 2016, it is not clear how Chinese couples will cope with such changes, especially for those couples that are at the childbearing age and planning to have a second child. How they will allocate the potential increase in childcare and elderly care remains a question. For scholars who are interested in studying how time spent on childcare varies between gender, class, and generations, China provides a great research site.

Tables and Figures for Chapter 3

Table 3.1 Descriptive Statistics of Housework Time (*N*=1004)

	Wife		Husband	
	Mean	SD	Mean	SD
Dependent variable				
Housework time at time 2	149.52	80.36	74.37	71.40
Explanatory variables (time 1)				
Housework time	162.79	114.70	80.19	86.24
Individual income	12.73	16.31	21.23	30.77
Share of income	39.88	25.01	60.12	25.01
Couple's total income	33.96	40.33	33.96	40.33
Paid work time	312.26	252.56	369.27	239.58
Traditional gender ideology	.40	.49	.39	.40
Education gap (w-h)	-.31	1.02	-.31	1.02
Inter-*Hukou* Marriage				
Urban wife with rural husband	.03	.18	.03	.18
Rural wife with urban husband	.08	.28	.08	.28
Age	47.01	12.22	49.00	12.57
Education	3.12	1.37	3.43	1.28
Childless	.04	.20	.04	.21
Non-agricultural family	.60	.49	.60	.49
Region (Omitted: Beijing)				
Shanghai	.30	.46	.30	.46
Guangdong	.36	.48	.36	.48

Table 3.2 OLS Regression of Wife's Housework Time at Time 2 (*N*=1004)

Independent variables at time 1	Wife's housework time at time 2				
	1	2	3	4	5
Wife's housework time	.223***	.223***	.223***	.228***	.224***
	(.023)	(.023)	(.023)	(.023)	(.023)
Wife's share of total income	-.643*	-.643*	-.707*		-.655*
	(.265)	(.264)	(.287)		(.264)
Wife's share of total income squared	.007*	.006*	.007*		.007*
	(.003)	(.003)	(.003)		(.003)
Couple's total income	.007				
	(.067)				
Wife's income			.113	-.041	
			(.196)	(.172)	
Husband's income			-.032	.018	
			(.100)	(.100)	
Wife's paid work time	.055	.055	.034	-.197	.085
	(.743)	(.741)	(.743)	(.735)	(.740)
Wife's traditional gender ideology	33.140†	33.110†	33.380†	32.440†	33.990†
	(19.000)	(18.960)	(18.990)	(19.020)	(18.800)
Education gap	-.165				
	(2.600)				
Inter-*Hukou* Marriage					
Urban wife with rural husband	-14.420	-14.500	-14.360	-15.620	
	(12.510)	(12.480)	(12.510)	(12.520)	
Rural wife with urban husband	.358	.342	.505	1.067	
	(8.389)	(8.368)	(8.384)	(8.396)	
Control variables					
Wife's age	1.887***	1.886***	1.889***	1.791***	1.906***
	(.294)	(.293)	(.294)	(.292)	(.289)
Wife's education	.145	.143	-.115	-.223	.234
	(2.631)	(2.180)	(2.321)	(2.325)	(2.173)
Childless	46.000	46.110	45.440	38.430	49.780
	(33.960)	(33.780)	(33.840)	(33.790)	(33.570)
Husband's	-.034	-.034	-.033	-.037	-.033

housework time	(.029)	(.029)	(.029)	(.029)	(.029)
Husband's paid	.011	.014	.012	.057	.019
work time	(.769)	(.767)	(.769)	(.757)	(.766)
Non-agricultural	-11.140†	-10.930†	-11.270†	-11.740†	-11.080†
family	(6.340)	(6.130)	(6.309)	(6.317)	(6.126)
Region					
Shanghai	-.402	-.320	-.588	-2.563	-.133
	(6.061)	(5.983)	(6.062)	(6.017)	(5.978)
Guangdong	-7.009	-6.908	-7.121	-8.545	-6.581
	(6.089)	(5.995)	(6.088)	(6.073)	(5.982)
Interaction effects					
Age X traditional	-.792*	-.793*	-.798*	-.786*	-.808*
gender ideology	(.388)	(.388)	(.388)	(.389)	(.384)
Age X childless	-1.995*	-1.996*	-1.984*	-1.824†	-2.116*
	(.969)	(.965)	(.967)	(.967)	(.959)
R^2	.222	.222	.222	.217	.221
Adjusted R^2	.207	.208	.207	.204	.209
BIC	11668.280	11654.450	11667.940	1166.430	1164.990

Note: a. Standard errors in parentheses. b. † p<.1, * p<.05, ** p<.01, *** p<.001 (two-tailed tests).

Figure 3.1 Housework Time by the Share of Total Income for Wives

Panel 1

Lowest point of the curve=49.350

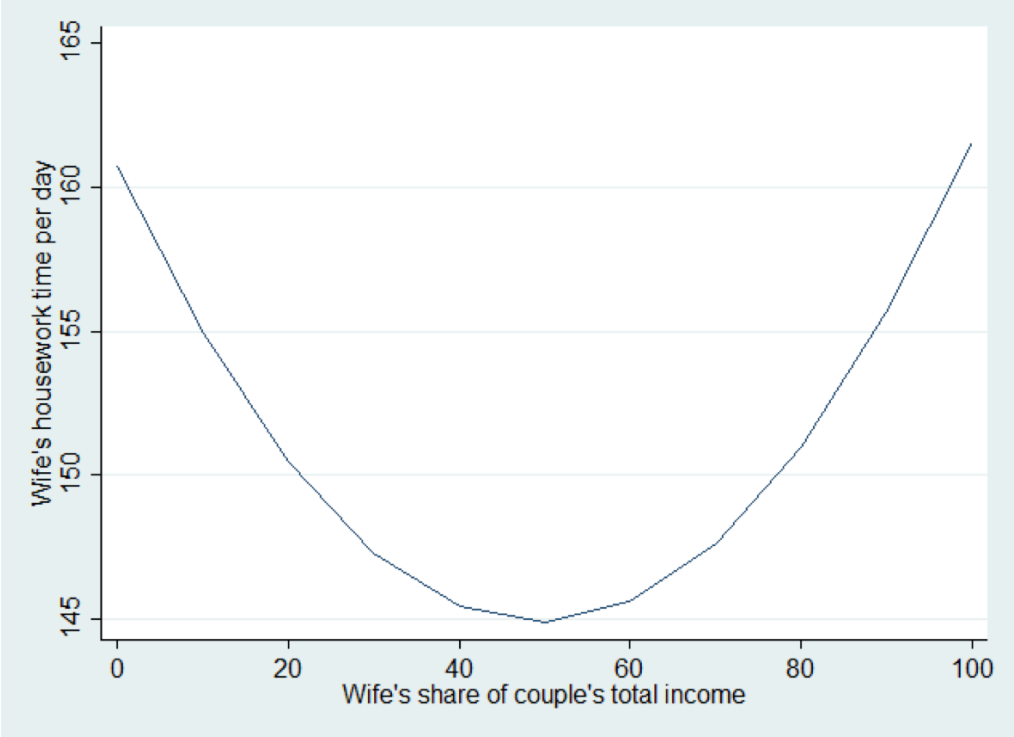


Figure 3.2 Housework Time by the Share of Total Income for Wives

Panel 5

Lowest point of the curve =49.442

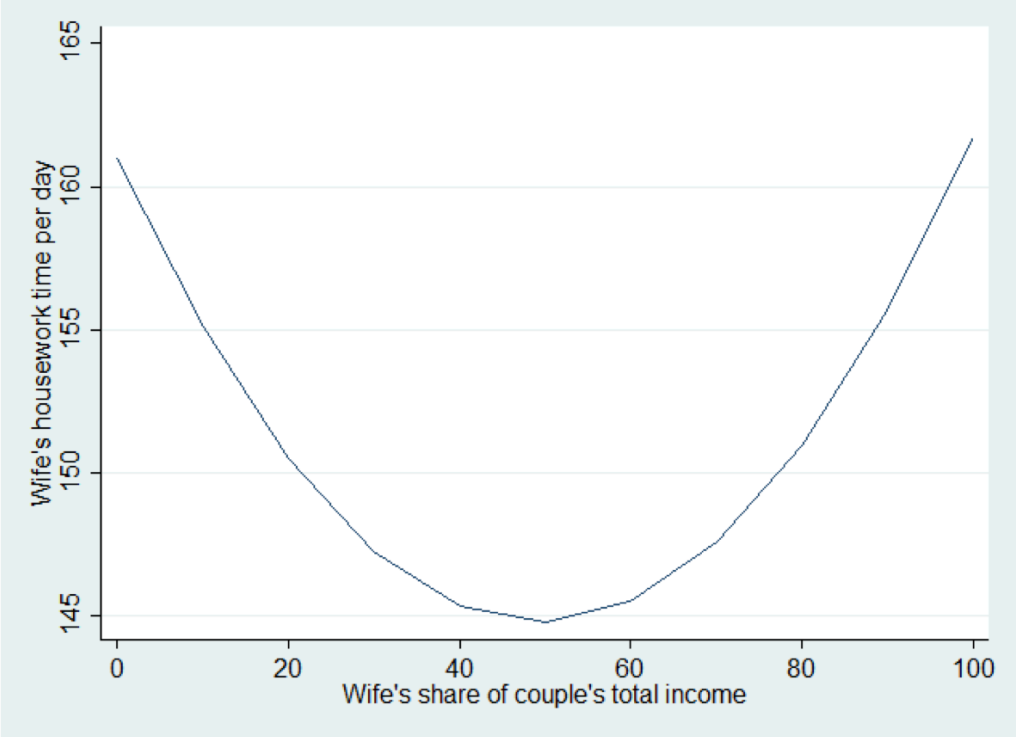


Table 3.3 OLS Regression of Husband's Housework Time at Time 2 (*N*=1004)

Independent variables at time 1	Husband's housework time at time 2				
	1	2	3	4	5
Husband's housework time	.257***	.258***	.258***	.256***	.255***
	(.026)	(.026)	(.026)	(.026)	(.026)
Husband's share of total income	-.260	-.289	-.265		
	(.291)	(.290)	(.291)		
Husband's share of total income squared	.002	.002	.003		
	(.002)	(.002)	(.003)		
Couple's total income	-.070				
	(.060)				
Husband's income			-.197*	-.167*	-.167*
			(.086)	(.076)	(.076)
Wife's income			.300†	.216	.220
			(.172)	(.149)	(.148)
Husband's paid work time	-.406	-.469	-.416	-.372	-.361
	(.695)	(.693)	(.693)	(.679)	(.678)
Husband's traditional gender ideology	-8.528*	-8.440*	-8.600*	-8.642*	-8.742*
	(4.288)	(4.288)	(4.280)	(4.278)	(4.263)
Education gap	2.148				
	(2.366)				
Inter-*Hukou* Marriage					
Urban wife with rural husband	-.582	-.251	-.289	-.733	
	(11.130)	(11.120)	(11.110)	(11.100)	
Rural wife with urban husband	-3.309	-3.224	-3.203	-2.913	
	(7.446)	(7.421)	(7.423)	(7.416)	
Control variables					
Husband's age	1.200***	1.158***	1.169***	1.131***	1.140***
	(.213)	(.206)	(.206)	(.204)	(.203)
Husband's education	1.369	-.286	-.002	-.010	-.032
	(2.317)	(1.909)	(1.998)	(1.995)	(1.991)
Childless	.602	.597	-.402	-1.058	-1.341
	(10.410)	(10.410)	(10.400)	(10.380)	(10.350)
Wife's housework	-.025	-.024	-.025	-.022	-.022

time	(.021)	(.020)	(.020)	(.020)	(.020)
Wife's paid work	.241	.232	.195	.080	.077
time	(.663)	(.662)	(.662)	(.654)	(.654)
Non-agricultural	-2.447	-2.974	-2.433	-2.691	-2.722
family	(5.684)	(5.403)	(5.596)	(5.585)	(5.575)
Region					
Shanghai	10.390†	8.799†	9.137†	8.347	8.275
	(5.368)	(5.224)	(5.252)	(5.194)	(5.186)
Guangdong	-9.106†	-11.120*	-10.440*	-10.980*	-10.960*
	(5.412)	(5.152)	(5.180)	(5.154)	(5.146)
R^2	.210	.208	.213	.212	.211
Adjusted R^2	.196	.196	.200	.200	.201
BIC	11429.720	11417.740	11425.560	11413.400	11399.710

Note: a. Standard errors in parentheses. b. †p<.1, * p<.05, ** p<.01, *** p<.001 (two-tailed tests).

Chapter 4: Leisure and Sleep Gaps between Spouses

Literature Review

Although time-use has been investigated in numerous studies, very few have focused on non-Western and developing countries, such as China. This may be due to a lack of proper data, given that national representative time-use surveys are scarce in developing countries. Nonetheless, a number of studies on time-use among couples in China have been conducted in the past several years (Chang, MacPhail and Dong 2011; Dong and An 2012; Qi, An and Dong 2012; Zhou et al. 2012). It is also notable that very few of these studies focused on non-work time-use. The majority of the time-use studies focus on paid and unpaid work time. For example, in a study about unpaid work among Chinese adults, Dong and An (2012) find that although women spend less time than men on paid work, when adding paid and unpaid work together, women spend more hours working than do men. Zhou and her colleagues (2012) investigated work and non-work time-use among Chinese adults. However, they focused on the general time-use patterns of Chinese adults, and no attention was paid to the leisure and sleep gaps among married couples.

Hence, for the second research topic, to bridge the aforementioned gaps, I examine how couples allocate leisure and sleep time in contemporary China. More specifically, I will test the five housework theories reviewed earlier as explanations for the differences in leisure and sleep time between spouses.

The Time Availability Model

According to the time availability model, individuals' time spent on various daily activities is constrained by their available time (Coltrane and Ishii-Kuntz 1992; Silver and Goldscheider 1994). Given that the total available time for each individual is equal and constant, and each individual has multiple competing roles, to fulfill their needs, individuals have to negotiate their roles and make various time-use arrangements based on their priorities.

When making time-use decisions, individuals must fulfill mandatory time demands before they spend time on leisure and sleep. Paid work time is relatively rigid, as most workers do not have control over their working time. Unpaid work time is not as rigid; however, to maintain a well-organized lifestyle, individuals have to spend a certain amount of time on unpaid work, such as housework. Hence, when working long hours and taking care of homes are required, individuals might choose to squeeze their non-work time, such as leisure and sleep. Based on the time availability model, I hypothesize that:

> Hypothesis 4.1: A wife's paid and unpaid work time will reduce her leisure time relative to her husband's.
> Hypothesis 4.2: A wife's paid and unpaid work time will reduce her sleep time relative to her husband's.

The Relative Resource Model

The relative resource model assumes that spouses use their socioeconomic resources to negotiate their time spent on housework (Davis and Greenstein 2004; Greenstein 2000). The spouse with more resources will have more power in the decision-making process.

Resources can be used in exchange for more enjoyable and pleasant tasks and to avoid more tedious, unpleasant, and unwanted tasks, such as housework. Similarly, the spouse with more resources might have a better bargaining position in the negotiation of leisure and sleep time.

Previous research finds that resources, such as personal income and educational attainment, affect time-use patterns. In a study based on a British sample, Chatzitheochari and Arber (2012) find that high-income and low-income workers are more likely than mid-income workers to experience time shortage. However, since they have greater time-autonomy, high-income workers are more likely to compensate for their time deprivation by flexibly choosing where, when, and how to work. In their study about time-use in China, Dong and An (2012) find class differences in time-autonomy for women. They find that Chinese women have longer total work time than men, suggesting that women are more likely to suffer from time deficit and less likely to trade market work for housework. However, women with higher income and higher educational attainment have greater time-autonomy compared to low-income and less-educated women. Although these studies do not target gender differences in time-use between couples, they suggest that individuals can translate their resources into decision-making power, and therefore affect time-use. Hence, I propose the following hypotheses:

> Hypothesis 4.3: A wife's share of income will increase her leisure time relative to her husband's.
> Hypothesis 4.4: A wife's share of income will increase her sleep time relative to her husband's.
> Hypothesis 4.5: The education gap between wife and husband will increase wife's leisure time relative to her husband's.

Hypothesis 4.6: The education gap between wife and husband will increase wife's sleep time relative to her husband's.

As noted earlier, *Hukou* status, as an ascribed social status, serves as a determinant of access to various social resources in China. Functioning as a social prestige indicator, *Hukou* status might affect sleep and leisure gaps in the same way it affects the allocation of housework among Chinese couples. Therefore, I hypothesize that:

Hypothesis 4.7: For spouses with different *Hukou* status, wife's urban *Hukou* status will increase her leisure time relative to her husband's; wife's rural *Hukou* status will decrease her leisure time relative to her husband's.
Hypothesis 4.8: For spouses with different *Hukou* status, wife's urban *Hukou* status will increase her sleep time relative to her husband's; wife's rural *Hukou* status will decrease her sleep time relative to her husband's.

The Gender Ideology Model

The gender ideology model postulates that gender ideology impacts individuals' behaviors within families (Greenstein 1996a; Kroska 2004). The decision-making process within families is likely to be affected by spouses' gender attitudes (Bianchi et al. 2000). According to this model, couples with more egalitarian gender attitudes tend to have more equitable division of housework than do couples with more traditional gender attitudes (Kroska 2004). Traditional gender ideology stresses "separate spheres" for men and women. That is, men should work outside their families, whereas women should stay home and take care of their families (Greenstein 1996a, 1996b). Similarly, according to the traditional gender ideology, women are expected to stay home and have few connections with people outside their families under the traditional gender ideology in China (Xie 2013).

Although a large number of women in China today work full-time outside of their families, they still perform the majority of housework (Zuo and Bian 2001). Similar to many other societies, in China, women also suffer from the "dual burden" or the "second shift" (Hochschild 1989; Pimentel 2006). To meet the needs of their families, women may reduce their non-work time. As compared to women, men, who have been traditionally viewed as the providers, tend to experience lower pressure to take care of children and families. Hence, I hypothesize that:

> Hypothesis 4.9: A wife's conservatism will decrease her leisure time relative to her husband's.
> Hypothesis 4.10: A wife's conservatism will decrease her sleep time relative to her husband's.
> Hypothesis 4.11: A husband's conservatism will increase his leisure time relative to his wife's.
> Hypothesis 4.12: A husband's conservatism will increase his sleep time relative to his wife's.

The Gender Display Perspective

The gender display perspective suggests that women's housework time is negatively related to their share of income until they earn more than their husbands (Greenstein 2000; Yu and Xie 2011). It postulates that in families where women out-earn men, men affirm their gender by not doing or doing less housework than men that earn more than their wives, and women affirm their gender by doing more housework than women who earn less than their husbands (Bianchi and Milkie 2010; Bianchi et al. 2000). When breadwinner women do more housework, they are at a greater risk of squeezing their sleep time and free time. Also, since men who earn less than their wives tend to do less

housework, they might have more sleep and leisure time. Therefore, I hypothesize that:

> Hypothesis 4.13: As a wife's earnings begin to exceed her husband's, her leisure time relative to her husband's increases.
> Hypothesis 4.14: As a wife's earnings begin to exceed her husband's, her sleep time relative to her husband's increases.

Women's Absolute Income Perspective

According to women's absolute income perspective, women's absolute income plays a more decisive role in the allocation of housework (Gupta 2006, 2007; Gupta and Ash 2008; Killewald and Gough 2010). This perspective suggests that women's earnings increase their independence as well as their decision-making power (Gupta 2006, 2007). Women may choose to outsource some household labor as their earnings increase. Purchasing services from professional housework service providers may not only free women from doing more housework but also give them more discretionary time. This is likely to increase their sleep and leisure time. Hence, I hypothesize that:

> Hypothesis 4.15: A wife's absolute income will increase her leisure time relative to her husband's.
> Hypothesis 4.16: A wife's absolute income will increase her sleep time relative to her husband's.

Results

[Insert Table 4.1]

Descriptive Statistics

Using the theoretical models that have been developed to explain housework time of spouses, I explore factors affecting the leisure and sleep gaps within married couples in China. Table 4.1 displays the descriptive statistics for the statistical models. To examine the leisure

and sleep gaps between spouses, I constructed two variables by using husbands' leisure time subtracted from wives' leisure time and husbands' sleep time subtracted from wives' sleep time, respectively. As shown in Table 4.1, on average, the leisure gap at time 2 is -20.46 minutes per day, suggesting that wives' average leisure time per day is less than that of their husbands'. The average sleep gap between spouses at time 2 is relatively small with a difference of .48 minutes per day between wives and husbands, suggesting that wives sleep more than their husbands.

The independent variables are predictors at time 1. The leisure gap between wives and husbands at time 1 is -17.27 minutes per day, suggesting that on average, wives' leisure is 17.27 minutes shorter than that of their husbands'. Wives' leisure time at time 1 is 189.31 minutes per day, whereas husbands' leisure time at time 1 is 206.58 minutes per day. Time 1 sleep gap is 3.91 minutes per day. The average sleep time is 486.40 minutes per day for wives, and 482.49 minutes per day for husbands.

On average, wives' individual income is 12,730 Chinese *yuan*; husbands' income is 20,790 Chinse *yuan*; and couple's total income is 33,520 Chinese *yuan*. The share of couple's total income is 39.71% and 60.29% for wives and husbands, respectively. Average paid work time is 310.01 minutes per day for wives, and 369.94 minutes per day for husbands. Both spouses have similar gender ideology, with a mean of 3.7 for the gender traditionalism variable. Ranging from the most liberal at 1 to the most conservative at 5 in gender ideology, the mean of 3.7 suggests that both spouses are moderately conservative.

Some important control variables are also included in the analyses. On average, wife's age is 47 years, and husbands are about two years older. As discussed earlier, education has seven categories, ranging from 1 = no formal education to 7 = graduate degree. A mean of 3 suggests that the average educational attainment for both spouses is junior high school. I constructed a variable measuring the difference in educational attainment between spouses by subtracting husbands' educational attainment from wives'. The mean of the gap between wives' and husbands' educational attainment is -.33, suggesting that wives' average educational attainment is lower than that of their husbands'.

Among the couples in the sample, 3% are in an inter-*Hukou* marriage between an urban wife and a rural husband, 8% are in an inter-*Hukou* marriage between a rural wife and an urban husband. In terms of parental status, about 5% of wives and 4% of husbands do not have children. 60% of spouses are from non-agricultural families. Out of 949 couples in the data, 34% are from Beijing; 31% are from Shanghai; and 35% are from Guangdong Province.

Analytic Strategy

I conducted two sets of analyses for spousal leisure and sleep gaps. As shown in Tables 4.2 and 4.3, each analysis includes four panels. Panel 1 displays the results of the models derived from the relative resource and gender display models for housework. I modified panel 1 by replacing the couple's total income with both spouses' individual incomes in panel 2 to examine the consistency of the regression results. To investigate the effects of both spouses' individual incomes on the

leisure and sleep gaps, I removed the linear and squared forms of wife's share of couple's total income in panel 3.

To determine which is the better-fitting model, I compared the BIC scores of the three aforementioned models. As a general rule, a smaller BIC indicates a better-fitting model. Panel 4 shows the trimmed model with the smallest BIC among the first three panels. As shown in Table 4.2, in the analysis for spousal leisure gap, panel 4 is a modification of panel 3, removing husband's sleep time, both spouses' paid work time, and the nonsignificant control variables. As shown in Table 4.3, panel 1 has the smallest BIC among the first three panels. Therefore, I modified panel 1 by removing couple's total income, and gender traditionalism for both spouses, and the control variables that are consistently nonsignificant across all panels. I show the regression results in panel 4.

[Insert Table 4.2]

Multivariate Results

Spousal leisure gap

I present the multivariate OLS regression results for the leisure gap between spouses in Table 4.2. Hypothesis 4.1, which is based on the time availability model, proposes that wife's paid and unpaid work time will reduce her leisure time relative to that of her husband's. As shown in Table 4.2, both wife's housework and paid work time are nonsignificant across panels 1,2, and 3, which fails to support Hypothesis 4.1.

Hypothesis 4.3, which proposes that wife's share of couple's total income will increase her leisure time relative to that of her husband's, is

also not supported. As shown in panels 1 and 2 of Table 4.2, wife's share of couple's total income reduces the leisure gap between spouses. Holding all else constant, a one percent increase in wife's share of couple's total income reduces her leisure time relative to her husband's by about 1 minute per day in panel 1 and .5 minutes per day in panel 2. In unreported analyses, I found that wife's housework time does not mediate the relationship between wife's share of couple's total income and spousal leisure gap.

According to Hypothesis 4.5, the education gap between wife and husband will increase wife's leisure time relative to that of her husband's. As shown in Table 4.2, the education gap coefficient is nonsignificant across panels, suggesting that the education gap does not affect the leisure gap. Hence, Hypothesis 4.5 is not supported. It should be noted that in unreported analyses, I examined the effects of the time 1 predictors on leisure time for both spouses. The coefficients for both spouses' educational attainment are positive and statistically significant, suggesting that educational attainment increases individual leisure time for both spouses.

Hypothesis 4.7 postulates that for spouses with different *Hukou* statuses, wife's urban *Hukou* status will increase the leisure gap between wife and husband; wife's rural *Hukou* status will decrease the leisure gap between spouses. As shown in Table 4.2, the leisure gap between spouses with different *Hukou* statuses is not statistically different from the gap between spouses with same *Hukou* status. Therefore, Hypothesis 4.7 is not supported. Note that in the unreported analyses, the coefficient

of having urban *Hukou* status is positive and significant for both spouses, suggesting that having urban *Hukou* status increases leisure time for both spouses.

Hypotheses 4.9 and 4.11 focus on the effect of gender ideology on the leisure gap between spouses. According to Hypothesis 4.9, conservatism among wives will decrease their leisure time relative to that of their husbands'. As shown in Table 4.2, the coefficient of wife's gender traditionalism is negative and statistically significant at the .001 level across all panels, consistent with Hypothesis 4.9. More specifically, as shown in panel 4 of Table 4.2, one unit increase in wife's gender traditionalism reduces the leisure gap between spouses by 12.11 minutes per day.

Hypothesis 4.11 proposes that conservatism among husbands will increase their leisure time relative to that of their wives'. Because I constructed the leisure gap by using husband's leisure time subtracted from wife's leisure time, if Hypothesis 4.11 was supported, the coefficient of husband's gender traditionalism should be negative and statistically significant. However, as shown in Table 4.2, the coefficient is positive and significant across all panels, suggesting that conservatism among husbands increases their wives' leisure time relative to that of their own. Or, worded differently, conservatism among husbands decreases their leisure time relative to that of their wives. Therefore, Hypothesis 4.11 is not supported. The coefficients of both spouses' gender traditionalism change little across panels, showing that the effect

of gender ideology on the leisure gap is quite robust under alternative specifications.

The gender display hypothesis (Hypothesis 4.13) proposes that as compared to women who earn less than their husbands, women who earn more than their husbands have less leisure time relative to that of their husbands, whereas men who earn less than their wives have more leisure time relative to that of their wives' compared to men who earn more than their wives. As shown in Table 4.2, the coefficient of the squared form of wife's share of couple's total income is nonsignificant in panel 1. Such result suggests that there is not a quadratic relationship between wife's share of couple's total income and the leisure gap between spouses. Hence, Hypothesis 4.13 is not supported.

To examine the effect of individual income on the spousal leisure gap, I hypothesize that wife's absolute income will increase her leisure time relative to that of her husband's (Hypothesis 4.15). As shown in Table 4.2, the coefficient of wife's income is nonsignificant across panels, which fails to support Hypothesis 4.15. I also examine the effect of husband's income on the leisure gap between spouses. In panel 2 of Table 4.2, the coefficient of husband's income is negative and statistically significant at .05 level, suggesting that one Chinese *Yuan* increase in husband's individual income reduces wife's leisure time relative to that of her husband by .440 minutes per day. However, such a result is not found in panel 3 and 4.

In addition to the key independent variables, the coefficient of wife's sleep time is worth noting. I controlled for sleep time of both

spouses in the models. As shown in Table 4.2, the coefficient of wife's sleep time is positive and significant, suggesting that wife's sleep time increases her leisure time relative to that of her husband's.

As displayed in Table 4.2, the coefficients of the other control variables are all nonsignificant. In other words, there is no evidence that parental status (childless vs. having children), and residential status (agricultural vs. non-agricultural family), and little evidence that living areas (Beijing, Shanghai, and Guangdong Province) affect the leisure gap between spouses.

[Insert Table 4.3]

Spousal sleep gap

Table 4.3 shows the multivariate OLS regression results for the sleep gap between spouses. Based on the time availability model, I hypothesize that wife's paid and unpaid time will reduce her sleep time relative to that of her husband's (Hypothesis 4.2). As shown in Table 4.3, the coefficients for both wife's housework and paid work time are nonsignificant across panels. Therefore, Hypothesis 4.2 is not supported.

The gender display hypothesis (Hypothesis 4.14), which proposes that as a wife's earnings begin to exceed her husband's, her sleep time relative to her husband's increases, is supported. As shown in Table 4.3, the coefficients of both the linear and the squared forms of wife's share of couple's total income are significant, suggesting that there is a curvilinear relationship between wife's share of couple's total income and her sleep time relative to her husband's. Figures 4.1 and 4.2 show such a curvilinear relationship. When wives are totally dependent on

their husbands' financial resources (wife's share of couple's total income=0), the average sleep gap between wives and husbands is about -20 minutes per day, suggesting that wives with no income on average sleep about 17 minutes per day less than their husbands. The sleep gap between spouses increases when wife's share of couple's total income increases, and peaks at the point where both spouses contribute approximately the same to their total income (see Figures 4.1 and 4.2). For wives who out-earn their husbands, their share of couples' total income reduces their sleep time relative to that of their husbands. As shown in Figure 4.2, when both spouses contribute about 49% to the total income, the curve peaks, favoring the wives (sleep gap=8 minutes per day). For the very few wives who contribute 100% to the total income, the sleep gap is about -19 minutes per day, favoring the husbands.

Hypothesis 4.6, which proposes that the education gap between spouses will increase wife's sleep time relative to that of her husband's, is supported. As shown in panels 3 and 4 of Table 4.3, the coefficient of the education gap between wife and husband is positive and significant at the .1 level. More specifically, one unit increase in the education gap increases wife's sleep time relative to her husband's by about 5 minutes per day, holding all other variables constant.

Hypothesis 4.8 states that for spouses with different *Hukou* status, wife's urban *Hukou* status will increase her sleep time relative to that of her husband's, and wife's rural *Hukou* status will decrease her sleep time relative to that of her husband. The hypothesis is not supported. As shown in panels 1, 2, and 3 of Table 4.3, there is no statistical difference

in spousal sleep gap between spouses with different and same *Hukou* statuses.

The gender ideology hypotheses (Hypotheses 4.10 and 4.12), which propose that conservatism among wives and husbands will decrease and increase their relative sleep time, respectively, are not supported. As shown in Table 4.3, the coefficients of gender traditionalism for both spouses are nonsignificant across panels.

According to Hypothesis 4.16, wife's absolute income will increase her sleep time relative to that of her husband's. As shown in panels 2 and 3 of Table 4.3, the coefficient of wife's absolute income is nonsignificant, suggesting that there is no evidence that wife's individual income affects her sleep time relative to that of her husband's. Therefore, Hypothesis 4.16 is not supported. Note that, as shown in Table 4.3, I also control for husband's individual income, and find the coefficient nonsignificant.

It should be noted that the coefficient of wife's age is negative and significant at the .05 level across panels in Table 4.3, suggesting that a one year increase in wife's age reduces her sleep time relative to her husband's by about 2 minutes per day, holding all other variables constant.

The rest of the control variables are nonsignificant. There is no evidence that the sleep gap varies by parental status (childless vs. having children), residential status (agricultural vs. non-agricultural family), or living area (Beijing, Shanghai, or Guangdong Province).

As discussed above, I compared the BIC scores to determine which model is a better-fitting model. In the models for the leisure gap between spouses, panel 3 has the smallest BIC score; and in the models for the sleep gap between spouses, panel 1 has the smallest BIC score. As a general rule, a smaller BIC indicates a better-fitting model. Hence, panel 3 of the leisure gap models, and panel 1 of the sleep gap models are the two better-fitting models. To crystalize the effect of the focal predictors on the dependent variables, I removed the nonsignificant controls in panel 4. The following discussion will mainly focus on panel 4 of each model.

Discussion

Numerous studies about time-use have been conducted in the past decades, however, very few of them used data from non-Western and developing countries, such as China. Among the studies focusing on Chinese society, very few focus on non-work time-use, such as leisure and sleep time. My study investigates the leisure and sleep gaps between spouses in China and attempts to provide theoretical explanations for the gaps in leisure and sleep time among married couples in China.

Previous research about housework assume that household labor was a undesirable burden that spouses actively seek to avoid (Brines 1994; Greenstein 2000; Kroska 1997). Based on that assumption, a number of theoretical frameworks have been developed to explain how couples allocate housework. Similarly, if couples attempt to avoid doing housework, it is reasonable to assume that they seek more leisure and/or sleep time. Therefore, I adopt the theoretical models developed to

explain household labor to explain the leisure and sleep gaps between spouses in this study.

What factors affect the gap in leisure and sleep time between spouses in China? The major factors affecting spousal leisure and sleep gaps are different. Indeed, several patterns were discovered in my analyses and are worth noting. For the gap in leisure time between spouses, surprisingly, the effect of both spouses' gender traditionalism in predicting the leisure gap between spouses is highly significant. I find that traditional gender ideology among wives decreases their leisure time relative to that of their husbands. In other words, wives with more traditional gender ideology spend less time on leisure activities relative to their husbands. As shown in Table 4.2, I controlled for wife's housework time, and both spouses' sleep time in the models for spousal leisure gap. Since the dependent variable is the leisure gap between spouses (wife's leisure time – husband's leisure time), if spousal leisure gap decreases, there are three possible scenarios. First, a wife's leisure time may decrease, while her husband's leisure time remains constant or decreases with a smaller magnitude. For example, wives with more traditional gender ideology may spend more time on other household-related activities that are not measured in the CFPS data, such as childcare and elderly care. Therefore, their leisure time decreases. Their husbands may also spend time on these activities but spend less time than the wives. Second, a husband's leisure time may increase, while his wife's leisure time remains constant or increases with a smaller magnitude. Or, third, a wife's leisure time may decrease and her

husband's leisure time may increase simultaneously. For instance, when wives with a more traditional gender ideology spend more time on childcare and elderly care, their leisure time decreases. This, perhaps, will not only take up wives' leisure time, but also free their husbands from taking care of children and elderly family members, and, therefore, give their husbands more leisure time. As a result, a wife's gender traditionalism reduces her leisure time relative to that of her husband's.

On the other hand, contrary to expectations, traditional gender ideology among husbands increases their wives' relative leisure time. Similarly, three possible scenarios emerge. First, a husband's leisure time may decrease, while his wife's leisure time remains constant or decreases with a smaller magnitude. Wife's housework time, and both spouses' sleep and paid work time are being controlled in my model (husband's housework time is not controlled, as its addition does not affect the model coefficients). Perhaps such a result is due to the fact that husbands with more traditional gender ideology spend more time on non-household-related activities that are not measured in the CFPS data, such as social networking and hanging out with friends outside of their home. Therefore, their leisure time decreases. Second, a wife's leisure time may increase, and her husband's leisure time remains constant or increases with a smaller magnitude. Third, a wife's leisure time may increase and her husband's leisure time may decrease simultaneously. For example, husbands with more traditional gender ideology may also hold the separate sphere belief more strictly. Hence, they may prefer their wives to stay at home, which may give wives more leisure time. Therefore,

husband's gender traditionalism increases the leisure gap between spouses. It should also be noted that the leisure activities measured in the CFPS data are not exhaustive. The majority of leisure items in the CFPS are indoor family leisure activities, such as watching TV, playing games, exercising, and surfing online. Some popular time-consuming activities among the Chinese population, such as playing mahjong or other social gathering activities, may not be included in the original data.

For the gap in sleep time between wives and husbands, there is a curvilinear relationship between wife's share of couple's total income and her sleep time relative to that of her husband's. As shown in Figure 4.2, an inverted U curve is adopted to display the curvilinear relationship. When wife's share of couple's total income increases, her sleep time relative to that of her husband's increases, but only up to the point where both spouses contribute approximately the same to their total income. Once wife's share of couple's total income exceeds her husband's, her sleep time relative to her husband's decreases. Note that wife's housework time, and both spouses' paid work time, are controlled in the model. As discussed earlier, previous studies on housework suggest that higher earning wives may choose to compensate for their violation of traditional gender norms by spending more time on housework when their earning power threatens the breadwinner status of their husbands (Brines 1994; West and Zimmerman 1987). These findings suggest that such a theoretical paradigm can also be used to explain the sleep gap between spouses. The effect of wives' income on the sleep gap is limited because of the traditional gender norms. Wives' share of income

increases their sleep time relative to their husbands', but only under the circumstance that their income does not challenge the breadwinner status of their husbands. When their share of couple's total income exceeds 50% (as shown in Figure 4.2), they may reduce their sleep time relative to their husband's to display a more "womanly" image in their family's life. Thus, the gender display model provides a useful explanation for the sleep gap between spouses in China.

What is particularly interesting and valuable in this study is that the findings suggest the different ways couples allocate their leisure and sleep time. Couples may choose to adjust their sleep time to display gender, regardless of the rigidity of sleep time, a basic biological need. Leisure time, as compared to sleep time, is less of a necessity in daily life, and responds to the effects of gender traditionalism for both spouses.

In unreported analyses (see Appendixes A3, A4, A5, and A6), I examined the effects of the time 1 predictors on spouses' individual leisure and sleep time at time 2 using the same models. Husbands' leisure time and wives' sleep time are not responsive to the predictors. However, husbands' sleep time and wives' leisure time are susceptible to the influence of certain predictors. More specifically, both spouses' gender traditionalism affects wives' leisure time the same way it affects the leisure gap between wives and husbands, although with a smaller magnitude. A curvilinear relationship is also found between husband's share of couple's total income and his sleep time. The negative coefficient of the linear form and the positive coefficient of the squared form of husband's share of couple' total income suggests that there is a quadratic

relationship between husband's share of couple's total income and his individual sleep time. Therefore, I speculate that the changes in spousal leisure and sleep gaps (see Tables 4.2 and 4.3) are caused by only one spouse's leisure or sleep time, as the evidence seems to point to that scenario. It is possible that each spouse specializes in certain tasks leading them to form a more gender-specific time-use pattern (Beck and Arnold 2009; Maume, Sebastian and Bardo 2009, 2010). However, this needs to be further examined in the future.

This study has several limitations. Previous studies suggest that the quality may be as important as the quantity of leisure and sleep for spouses' physical and psychological wellbeing (Basner et al. 2007; Beck and Arnold 2009; Bittman and Wajcman 2000; Burgard and Ailshire 2013; Maume et. al 2009, 2010). Married men and women often enjoy a different quality of leisure and sleep. This study does not explore leisure and sleep disruptions among married couples in China. Additionally, my exploration of the gap in leisure time between spouses is limited, as the CFPS data only measure a small number of indoor leisure activities. Outdoor leisure activities, and some other popular leisure activities among Chinese adults, were not surveyed. Also, time spent on unpaid work, such as childcare and elderly care, are not measured in the data. The absence of such measures could lead to a misinterpretation of the findings and a misunderstanding of how couples utilize their non-work time.

Tables and Figures for Chapter 4

Table 4.1 Descriptive Statistics of Leisure and Sleep Gaps (*N*=949)

	Wife		Husband	
	Mean	SD	Mean	SD
Dependent variables				
Leisure gap at time 2 (w-h)	-20.46	142.44	-20.46	142.44
Sleep gap at time 2 (w-h)	.48	99.10	.48	99.10
Explanatory variables (time 1)				
Leisure gap (w-h)	-17.27	142.08	-17.27	142.08
Leisure time	189.31	127.94	206.58	129.77
Sleep gap (w-h)	3.91	92.15	3.91	92.15
Sleep time	486.40	80.71	482.49	74.23
Individual income	12.73	16.72	20.79	26.89
Share of income	39.71	24.56	60.29	24.56
Couple's total income	33.52	37.54	33.52	37.54
Housework time	162.73	114.38	81.22	89.02
Paid work time	310.01	253.03	369.94	240.27
Gender traditionalism (1-5)	3.70	1.36	3.70	1.32
Age	47.22	12.16	49.20	12.51
Education	3.10	1.36	3.42	1.26
Education gap (w-h)	-.33	1.02	-.33	1.02
Inter-*Hukou* Marriage				
Urban wife with rural husband	.03	.18	.03	.18
Rural wife with urban husband	.08	.27	.08	.27
Childless	.05	.21	.04	.20
Non-agricultural family	.60	.49	.60	.49
Region (Omitted: Beijing)				
Shanghai	.31	.46	.31	.46
Guangdong	.35	.48	.35	.48

Table 4.2 OLS Regression of Leisure Gap at Time 2 *(N*=949*)*

Independent variables at time 1	Leisure gap (w-h) at time 2			
	1	2	3	4
Leisure gap (w-h)	.310***	.312***	.310***	.323***
	(.034)	(.034)	(.034)	(.031)
Wife's share of total income	-1.040*	-.476*		
	(0.523)	(.232)		
Wife's share of total income squared	0.008			
	(0.006)			
Wife's income		.283	-.073	-.145
		(.366)	(.323)	(.314)
Husband's income		-.440*	-.223	-.183
		(.221)	(.194)	(.191)
Couple's total income	-.174			
	(.134)			
Wife's paid work time	-0.015	-.022	-.027	
	(0.026)	(.025)	(.025)	
Husband's paid work time	0.010	.010	.019	
	(0.027)	(.027)	(.027)	
Wife's gender traditionalism	-12.740***	-12.760***	-12.370***	-12.110**
	(3.856)	(3.853)	(3.854)	(3.819)
Husband's gender traditionalism	11.260**	11.220**	11.170**	10.910**
	(3.853)	(3.851)	(3.858)	(3.832)
Education gap (w-h)	-2.834	-3.405	-3.761	
	(4.432)	(4.431)	(4.435)	
Inter-*Hukou* Marriage				
Urban wife with rural husband	-11.410	-12.700	-11.950	
	(24.490)	(24.460)	(24.500)	
Rural wife with urban husband	-12.890	-11.150	-9.918	
	(16.400)	(16.400)	(16.410)	
Controls variables				
Wife's age	-.133	-.055	-.111	-.068
	(1.452)	(1.450)	(1.453)	(1.448)
Husband's age	.300	.134	.147	.189

	(1.426)	(1.424)	(1.426)	(1.406)
Childless	15.150	.244	-.930	-1.136
	(43.780)	(22.460)	(22.490)	(22.290)
Wife's housework time	-0.002	0.006	0.011	0.032
	(0.045)	(0.045)	(0.045)	(0.040)
Husband's housework time	0.009	0.011	-0.002	-0.014
	(0.055)	(0.055)	(0.055)	(0.052)
Wife's sleep time	0.124**	0.124**	0.123**	0.134**
	(0.058)	(0.058)	(0.059)	(0.058)
Husband's sleep time	-0.093	-0.093	-0.096	-0.102*
	(0.063)	(0.063)	(0.063)	(0.062)
Non-agricultural family	-2.775	-4.107	-5.290	-3.730
	(12.340)	(12.330)	(12.340)	(11.020)
Region				
Shanghai	-11.360	-14.510	-13.880	-12.790
	(11.500)	(11.390)	(11.400)	(11.340)
Guangdong	-16.860	-18.450	-18.210	-17.540
	(11.360)	(11.300)	(11.320)	(11.150)
R^2	.135	.135	.131	.129
Adjusted R^2	.115	.115	.112	.115
BIC	12123.840	12117.430	12114.860	12083.340

Note: a. Standard errors in parentheses. b. † p<.1, * p<.05, ** p<.01, *** p<.001 (two-tailed tests)

Table 4.3 OLS Regression of Sleep Gap at Time 2 (*N*=949)

Independent variables at time 1	Sleep gap (w-h) at time 2			
	1	2	3	4
Sleep gap (w-h)	.257***	.258***	.258***	.257***
	(.034)	(.034)	(.035)	(.034)
Wife's share of total income	.950*	1.032*		.977**
	(.371)	(.404)		(.370)
Wife's share of total income squared	-.010*	-.010*		-.010*
	(.004)	(.004)		(.004)
Wife's income		-.016	.202	
		(.267)	(.230)	
Husband's income		.196	.111	
		(.158)	(.138)	
Couple's total income	.130			
	(.096)			
Wife's paid work time	-.010	-.009	-.003	-.008
	(.018)	(.018)	(.018)	(.018)
Husband's paid work time	.032	.034†	.032	.036†
	(.020)	(.020)	(.020)	(.020)
Wife's gender traditionalism	-2.029	-1.971	-1.633	
	(2.741)	(2.749)	(2.747)	
Husband's gender traditionalism	.781	.712	.430	
	(2.739)	(2.746)	(2.750)	
Education gap	4.924	5.402†	5.614*	5.642†
	(3.150)	(3.156)	(3.162)	(3.124)
Inter-*Hukou* Marriage				
Urban wife with rural husband	-11.480	-11.740	-9.797	
	(17.410)	(17.440)	(17.460)	
Rural wife with urban husband	-9.249	-9.120	-10.140	
	(11.660)	(11.680)	(11.700)	
Control variables				
Wife's age	-2.104*	-2.049*	-2.067*	-2.098*
	(1.031)	(1.033)	(1.035)	(1.029)

Husband's age	1.385	1.385	1.526	1.414
	(1.015)	(1.017)	(1.018)	(1.015)
Childless	44.830	-5.066	-2.383	-5.069
	(31.110)	(16.000)	(16.000)	(15.780)
Wife's housework time	-.017	-.012	-.020	-.013
	(.032)	(.032)	(.032)	(.032)
Husband's housework time	.062	.065†	.069†	.062
	(.039)	(.039)	(.039)	(.039)
Wife's leisure time	-.010	-.010	-.012	-.008
	(.030)	(.030)	(.030)	(.030)
Husband's leisure time	.008	.012	.013	.015
	(.030)	(.030)	(.030)	(.030)
Non-agricultural family	-9.956	-9.509	-8.637	-4.977
	(8.624)	(8.644)	(8.656)	(7.938)
Region				
Shanghai	2.286	2.434	5.102	2.757
	(8.191)	(8.206)	(8.150)	(8.012)
Guangdong	-1.446	-.884	.934	-.311
	(8.097)	(8.105)	(8.092)	(8.013)
R^2	.098	.095	.088	.091
Adjusted R^2	.076	.073	.068	.075
BIC	11475.610	11478.960	11472.130	11441.670

Note: a. Standard errors in parentheses. b. † p<.1, * p<.05, ** p<.01, *** p<.001 (two-tailed tests)

Figure 4.1 Spousal Sleep Gap by Wife's Share of Total Income

Panel 1

Highest point of the curve =48.957

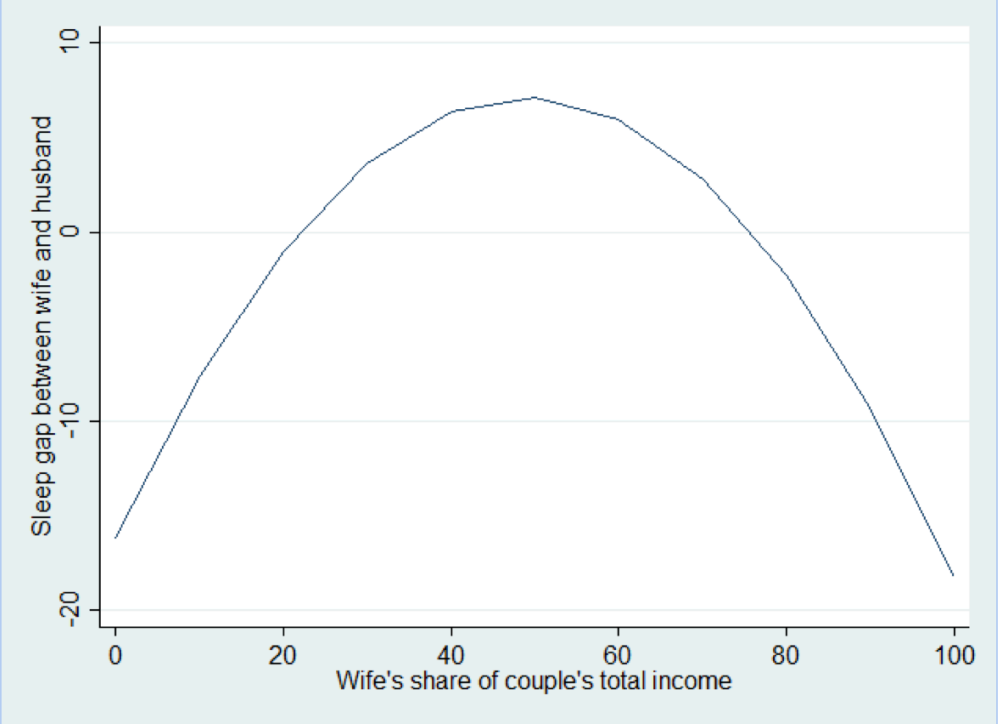
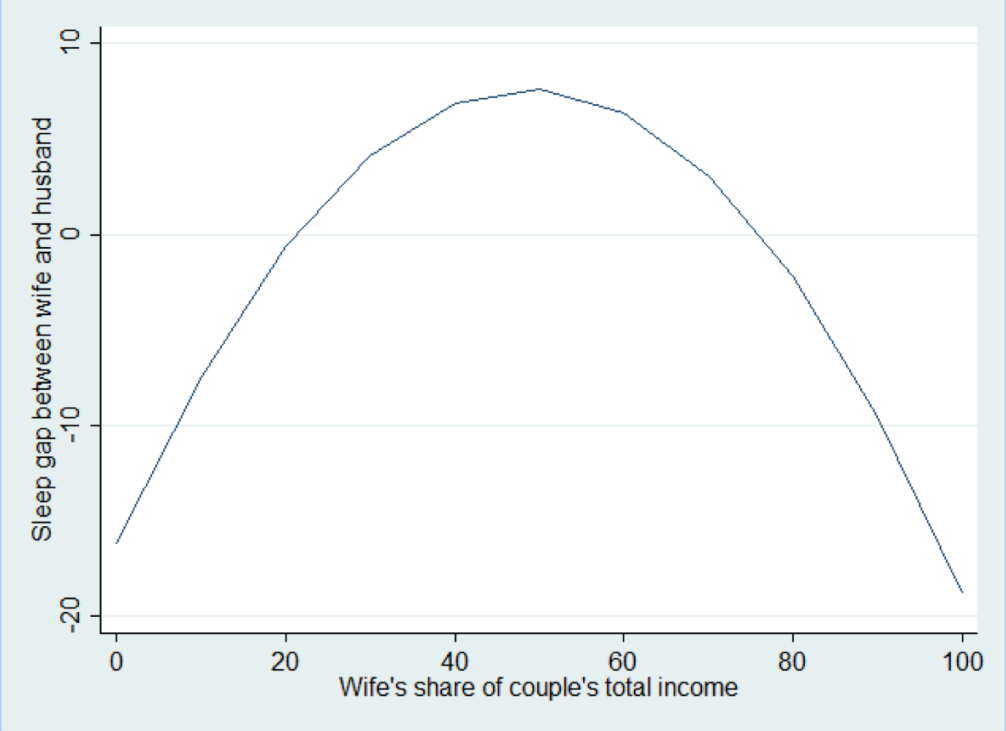


Figure 4.2 Spousal Sleep Gap by Wife's Share of Total Income

Panel 4

Highest point of the curve =48.692



Chapter 5: Mental Health of Married Couples

Literature Review

As women's labor force participation has been increasing in the past decades worldwide, a number of studies have examined how women's labor force participation affects individuals' family lives and psychological well-being (Barnett and Shen 1997; Golding 1990; Larson, Richards and Perry-Jenkins 1994). Previous studies find that women are more likely to suffer psychological distress than men; however, explanations for such patterns vary. Many scholars suggest that housework and women's labor force participation affects women's depression, especially that of married women's (Bird 1999; Coltrane 2000; Glass and Fujimoto 1994; Kalmijn and Monden 2012). Three major theoretical frameworks have been advanced to explain the mental health disparity within married couples: the equity model, role accumulation theory, and workload and role quality perspective.

The Equity Model

According to the equity model, an equal division of household labor is beneficial to both spouses' psychological wellbeing (Bird 1999). When spouses perform an equal share of housework, they have the fewest depressive symptoms. The disproportionately large or small share of housework negatively affects spouses' mental health. Paid work does not have a direct relationship with psychological distress. However, it serves as a moderator in the association between household labor and psychological distress. More specifically, for spouses who are employed,

an inequitable share of housework can lead to role overload. Hence, these spouses are more likely to have lower level of psychological health (Bird 1999; Pearson 2008).

Some scholars extend this model to include paid work, noting that when spouses spend an equal amount of time on paid and unpaid work, they are less likely to be depressed (Glass and Fujimoto 1994; Kalmijn and Monden 2012). According to the equity model, the unequal distribution of total labor imposes multiple negative effects on spouses' psychological wellbeing. If individuals spend more time on paid and unpaid work than do their spouses, they are likely to have negative feelings, such as unfairness and unhappiness. If individuals spend less time on paid and unpaid work than do their spouses, they are also likely to have negative feelings, such as unease and guilty. These negative feelings can lead to various depressive symptoms (Bird 1999; Kalmijn and Monden 2012). The inequity may also lead spouses to doubt the quality of their marriage, which, in turn, may increase marital conflicts. Such negative feelings about their marriage can be translated into depression as well (Kalmijn and Monden 2012). Hence, I hypothesize that:

> Hypothesis 5.1: An unequal division of total labor increases both spouses' depression.

The Role Accumulation Theory

The role accumulation theory assumes that performing multiple roles will benefit spouses' mental health (Marks 1977; Sieber 1974; Thoits 1983, 1986). According to this theory, adding the worker and mother role

in marriage is beneficial to women. Men are benefited from adding spouse and father roles within families (Barnett and Hyde 2001). Thoits (1983, 1986) notes that having multiples roles brings both spouses multiple beneficial effects. For example, frustration or distress caused by one role could be buffered by satisfaction or sense of accomplishment from another role. For women, having worker roles allows them to have more income, which could reduce financial stress. By adding the worker roles, women gain access to a broader social network and social support. When husbands and wives both hold multiple roles, they share similar experiences in their lives, which leads to increasing mutual understanding (Barnett and Hyde 2001). Therefore, I hypothesize that:

Hypothesis 5.2: Roles decrease depression.

The Workload Perspective

According to the workload perspective, having multiple roles can also have negative effects on individuals' mental health depending on the workload (Barnett and Baruch 1985; Barnett and Hyde 2001; Marshall and Barnett 1993). As each spouse only has limited time and energy, having multiple roles may lead to role overload. That is, if spouses take on more roles than they could handle, these roles can be detrimental to their psychological health. For example, if an individual works long hours in paid labor, working long hours at home after paid work can become unbearable and lead to psychological distress.

In addition, the negative effects of having multiple roles might be conditioned by gender. Since work and family roles have different meanings for men and women, with men more likely to consider

themselves breadwinners and women more likely to consider themselves homemakers, men and women may react differently to the pressure from the spousal role. Simon (1995, 1998) notes that men are more sensitive to problems in paid work roles, while women are more sensitive to problems in unpaid work roles. Previous research finds that wives have a lower level of depression when they do less housework and that the increase in husbands' household labor does not lead to increase in depression for men (Khawaja and Habib 2007; Ross, Mirowsky and Huber 1983). Hence, I hypothesize that:

> Hypothesis 5.3: Wives' share of total housework will increase their depression.

Results

[Insert Table 5.1]

Descriptive Statistics

I examine the mental health of married couples in China using the CFPS data, aiming to explore the relationship between spousal time-use patterns and their depression in Research Topic Three. Table 5.1 displays the descriptive statistics of the model. Multivariate OLS regression results are shown in Tables 5.2 and 5.3 for wives and husbands, respectively.

The dependent variable is depression at time 2 for both spouses. Similar to many other indexes of depression, the distribution of the depression at both time 1 and 2 for both spouses are positively skewed and thick-tailed, possibly leading to heteroscedasticity in regression analysis (Mirowsky 1996). The skewness can also inflate the standard

errors of coefficients, therefore, I normalized the distribution by using a natural log transformation. As shown in Table 5.1, after log transformation, the depression at time 2 is .3 and .22 for wives and husbands, respectively.

The independent variables are time 1 predictors. Similar to time 2, the distribution of depression at time 1 are positively skewed. Therefore, I also used a natural log transformation to normalize the distribution of depression at time 1. As shown in Table 5.1, wives' share of couple's total labor (housework time and paid work time combined) is 49.34%; and husbands' share is 50.66%. On average, wives spend 2.47 hours on housework per day, accounting for 69.78% of couple's total housework time per day; husband spend 1.14 hours on housework every day, accounting for 30.22% of couple's total housework time per day. The mean leisure time is 2.92 and 3.04 hours per day for wives and husbands, respectively. Both spouses have similar sleep time. On average, the sleep time is 8.11 and 8.02 hours per day for wives and husbands, respectively.

The individual income is 12,990 and 22,230 Chinese *Yuan* for wives and husbands, respectively. On average, couples' total income is 36,220 Chinese *Yuan*, and wives' and husbands' individual income accounts for 37.51.44% and 62.49% of the couple's total income, respectively. The individual paid work time is 6.27 and 7.51 hours per day for wives and husbands, respectively. Wives' share couple's total paid work time is 42.66% and husband's share is 57.34%. 42% of wives and 40% of husbands have traditional gender ideology.

Several demographic variables are also included in the model. The self-evaluated poor physical health is 2.54 and 2.32 for wives and husbands, respectively. Ranging from 1 (very good) to 5 (very bad) in physical health, these averages suggest that both spouses consider themselves fairly healthy. Wives' average age is about 44 years, and husbands are about two years older. Both spouses' educational attainments are about 3, indicating that the average educational attainment for both spouses is junior high school. Among all the couples in the sample, 4% of them are in an inter-*Hukou* marriage between an urban wife and a rural husband. About 8% of the couples are in an inter-*Hukou* marriage between a rural wife and an urban husband. Out of 700 couples in the sample, .3.63% of them do not have children, 64.94% of them are from non-agricultural families, 38.12% are from Beijing, 30.58% are from Shanghai, and 31.39% are from Guangdong Province.

In the regression models of husband's depression, I add two interaction terms between age and traditional gender ideology and childless, respectively. The interaction effects of these two terms are not reported in the models of wife's depression, as the effects are not statistically significant.

Analytic Strategy

To examine the effect of different predictors on spouses' depression, I included 4 different model specifications for both wives and husbands. As shown in Tables 5.2 and 5.3, panel 1 focuses on the effect of the share of various time-use activities and the income on both spouses' depression. To examine the effect of the absolute time-use and

income on spouses' depression, I removed the proportional measure of time-use, and added the absolute measures of time-use activities and each spouse's individual income in panel 2. As previously discussed, *Hukou* status plays a significant role in determining access to various social resources in China, therefore, they can affect individual's mental health in various ways (Wu and Treiman, 2004, 2007). For example, spouse with rural *Hukou* may have more pressure in an inter-*Hukou* marriage, as their access to social resources are more limited. Also, individuals with rural *Hukou* status in general may experience more discrimination in accessing social resources, leading them to depress. Hence, to thoroughly understand the effect of *Hukou* status on the depression of married couples in China, I controlled for inter-*Hukou* marriage in panel 1 and 2. I replaced the inter-*Hukou* marriage variables with each focal respondent's *Hukou* status in panel 3 .

To determine which model is a better-fitting model, I compared the BIC scores of the three aforementioned models. As a general rule, a smaller BIC indicates a better-fitting model. As shown in Table 5.2, panel 3 has the smallest BIC. However, since the coefficients of the majority of the focal predictors are nonsignificant in panel 3, and the coefficients of both the linear and the squared forms of wife's share of couple's total income are statistically significant in panel 1, to combine the explanatory power of panel 1 and 3 and examine the effect of the share of income on wives' depression, I modified panel 3 by removing the variables that are consistently nonsignificant and adding the linear and the squared forms of wife's share of housework. The regression results are shown in panel 4.

As shown in Table 5.3, panel 3 has the smallest BIC in husbands' models. Similarly, to combine the explanatory power of panel 1 and 3, I modified panel 3 by removing the nonsignificant focal variables, and adding husband's share of couple's total income. I show the trimmed model in panel 4.

[Insert Table 5.2 and 5.3]

Multivariate Results

I present the multivariate OLS regression results for wives' and husbands' depression in Tables 5.2 and 5.3, respectively. According to the equity model hypothesis (Hypothesis 5.1), an unequal division of total labor increases both spouses' depression. As shown in Table 5.2, the coefficient of wife's share of total labor is nonsignificant across panels, suggesting that wife's share of couple's total labor does not affect their depression. However, as shown in Table 5.3, the coefficients for the linear and the squared forms of husband's share of the total labor are significant or marginally significant, suggesting that there is a curvilinear relationship between husbands' share of total labor and their depression. As illustrated in Figures 5.3 and 5.5, husbands, whose share of couple's total labor is about 63%, have the lowest level of depression, as compared to husbands whose share of couple's total labor is higher or lower than 63%. Therefore, Hypothesis 5.1 is partially supported.

The role accumulation theory hypothesis (Hypothesis 5.2) proposes that roles decrease depression for both spouses. The basic assumption is that performing multiple roles will benefit the mental health for both wives and husbands. As shown in Table 5.2, the

coefficient of employed is negative and significant or marginally significant in the first three panels, suggesting that having worker roles reduces wives' depression. However, having worker roles does not affect husbands' depression (see Table 5.3). The coefficient of childless is nonsignificant for wives across all panels as shown in Tables 5.2, suggesting that parental roles do not affect wives' depression.

However, as shown in Table 5.3, the interaction effects between age and childlessness for husbands' depression are significant or marginally significant. For childless husbands, one year increase in age leads to .001 unit increase in depression. For husbands who have children, when their age increases by one year, their depression decreases by .006 units. As discussed above, the latent effects of Confucianism can still be seen in the Chinese society. According to Confucianism, there are three forms of unfilial conduct, of which the worst is to have no descendants. Since men are the ones expected to carry on the family line, the effect of such family ideology could be detrimental to the mental health of childless men, especially when they get older. Therefore, Hypothesis 5.2 is partially supported.

Hypothesis 5.3 proposes that wives' share of total housework will increase their depression. As shown in Table 5.2, the coefficients of both the linear and the squared form of wife's share of housework are significant in panel 1 and 4, suggesting that, instead of a negative linear relationship, a curvilinear relationship is found between wives' share of housework and their depression in the data. As illustrated in Figures 5.1 and 5.2, wives' share of housework reduces their depression, but only up

to the point where wives do about 60% of the total housework. For wives who perform at least 60% of the total housework, increase in the share of housework increases depression. By contrast, as shown in Table 5.3, the share of housework does not affect husbands' depression.

In addition to the key predictors, the coefficients of other variables in the models for both spouses are noteworthy. As shown in Tables 5.2 and 5.3, poor health increases both spouses' depression. The coefficients of age in both models are negative and significant, suggesting that age increases depression for both spouses. Since the square form of age is consistently nonsignificant across panels in both analyses, it is not reported in Tables 5.2 and 5.3. *Hukou* status has effect on wives' depression but not on husbands'. Table 5.2 shows that being in inter-*Hukou* marriages decreases depression for wives of urban *Hukou* status. Also, compared to wives with rural *Hukou* status, wives with urban *Hukou* status have lower level of depression. I do not find the effect of *Hukou* status on husbands' depression in the data.

As displayed in Table 5.3, husbands' leisure time reduces their depression. Each additional hour a husband spends on leisure reduces their depression by about .017 units. Unlike the wives, whose depression is not responsive to their individual or couple's total income, husbands' share of couple's total income increases their depression, and the couple's total income decreases it (only in panel 1).

Table 5.3 also shows that the coefficients of both the linear and the squared forms of the husband's paid work time are significant or marginally significant, suggesting that there is a curvilinear relationship

between husbands' paid work time and depression. Note that the coefficients of the linear and the squared forms of husbands' paid work time do not vary much under alternative specifications, showing that the effect of husbands' paid work time on their depression is quite robust. As illustrated in Figures 5.4 and 5.6, husbands' paid work time reduces their depression up to the point where their mean paid work time is about eight hours per day. Once their paid work time exceeds eight hours per day, their depression increases.

I also find regional differences in models for both spouses' depression. As shown in Table 5.2, the coefficient of residing in Guangdong Province is positive and highly significant across panels, suggesting that wives who reside in Guangdong Province have higher level of depression than do wives residing in Beijing. As shown in Table 5.3, the coefficients of residing in Shanghai and Guangdong Province are both positive and highly significant, thereby suggesting husbands residing in Shanghai and Guangdong Province have higher level of depression than husbands residing in Beijing.

In the models for husband's depression, I also include an interaction term between age and traditional gender ideology. The effects of this interaction term are significant or marginally significant. For husbands with traditional gender ideology, when their age increases by one year, their depression decreases by .003 units. For husbands with more liberal gender ideology, one year increase in age results in .006 units decrease in depression. I speculate that the prevalent Confucianism plays a role in the difference between traditional and less traditional

husbands. Less traditional husbands maybe less likely to be concerned about the continuation of the family line when they get older. However, traditional husbands maybe more concerned about their children's marriage and childbearing, which may put more pressure on them.

As discussed above, panel 4 in both analyses is the trimmed model that includes only the key predictors and control variables that are significant. The following discussion is mainly based on the results in panel 4.

Discussion

Past research focusing on the mental health of married couples advances several theoretical models. These theoretical models emphasize the effect of total and household labor divisions, and the multiple roles of working couples on both spouses' depression (Barnett and Hyde 2001; Bird 1999; Kalmijn and Monden 2012; Thoits 1983; Thoits 1986). I examine these theoretical models using the CFPS data, aiming to explore the effect the aforementioned key predictors on both spouses' depression in China, a country that has distinctive tradition, cultural heritage, and level of economic development.

The results of my study suggest that wives' and husbands' depression react to the effects of the various predictors differently. The share of couple's total labor (paid and unpaid work combined for both spouses) is not found to affect wives' depression; however, husbands' depression is responsive to the changes in the share of couple's total labor. Specifically, husbands report the least depression when their share of total labor is about 63% (see Figures 5.3 and 5.5). Lower or higher than

63% increases depression among husbands. By contrast, wives' depression is responsive to the effect of the share of couple's total housework. As illustrated in Figures 5.1 and 5.2, wives report the lowest level of depression when their share of couple's total housework is about 63%. The share of couple's total housework reduces wives' depression but only up the point of 63%. Once the share of couple's total housework exceeds 63%, it increases wives' depression. The individual housework time, as shown in Tables 5.2 and 5.3, does not affect the depression for both spouses' in any ways. In the unreported analyses, I also examine the effect of the absolute total labor on spouses' depression and find its coefficients are all nonsignificant across panels.

What leads to the different patterns in depression for wives and husbands? As suggested by Glass and Fujimoto (1994), the perception of fairness affects the mental health of both spouses in a relationship. I speculate that this may also be the case among married couples in China. The perception of equity is related to actual distribution of labor between spouses (Glass and Fujimoto 1994). Since wives are the ones who do the majority of housework, their perception of equity, perhaps, is more likely to be related to the share of of housework. Unlike the wives, husbands' depression is found to respond to the distribution of total labor, of which the majority is paid work. Interestingly, in the unreported analyses, I do not find the effect of the share of total paid work on husbands' depression significant, nor on that of the wives. This, perhaps, suggests that husbands perceive the paid work as their specialized domain, therefore, are concerned about the distribution of

the paid work. However, they may also realize that they, as a part of their families, have housework responsibilities. Hence, husbands' depression is under the influence of the share of the combined paid work and housework.

Roles affect the depression of wives and husbands in different ways. I find that being employed reduces wives' depression, but has no effect on husbands' depression. This may be due to the effect of gender-specific roles. That is, the major roles are homemakers and breadwinners for wives and husbands, respectively. As a result, adding the worker role may benefit wives' mental heath by extending their social network, earning income, and increasing their confidence. However, since husbands are subscribed to be the workers supporting their families, adding the worker role does not affect their mental health. Indeed, as Barnett and Hyde (2001) suggest, adding the worker role may only benefit women's psychological wellbeing. For men, adding the family roles may increase their mental health. However, due to the focus of this study if the depression of married couples, the effect of the transition from single to married is not examined.

In addition, some other findings are worth discussing. These findings, again, support that the mechanisms of the generation of depression maybe conditioned by gender and the roles attached to it. For example, the share of income and the couple's total income affect husbands' depression but not wives'. This may result from the breadwinner roles attached to husbands in their families. The

responsibility of financially supporting their families leads husbands' depression to be more responsive to the effect of the income.

What is also noteworthy is the robust regional differences in both spouses' depression. Wives' residing in Guangdong Province have higher level of depression compared to wives from Beijing. Husbands from Shanghai and Guangdong Province are more depressed than husbands from Beijing. Several factors may lead to such a result. Gender ideology may play a role in determining wives' depression. Wives from Guangdong Province, which is one of the most patriarchal regions in China, may suffer more pressure from the patriarchal structure, therefore, are more depressed (Attané 2013). As for the husbands, their depression maybe related to their work, such as occupational status. Indeed, as Simon (1995, 1998) suggests, men are more likely to be affected by the problems related to their paid work, while women are more likely to be affected by the problems related to their unpaid work. Among the three regions, Beijing has the most higher education and research institutions, and is the cultural center of China. Shanghai is the economic center of China. Guangdong Province is also the leader of China's economy. If a large number of respondents work in the industrial sector, such as husbands from Guangdong Province, or a highly competitive economy, such as husbands from Shanghai, they may have higher level of depression compared to the husbands in Beijing, who are more likely to work in education or cultural institutions.

There are several limitations of this study. The occupational status is not thoroughly measured in the CFPS data used for this study. As

discussed above, working in different sectors may have effect on the distribution of labor and depression itself. However, since such information is absent in the research, we may misunderstand the effect of paid work on depression. The CFPS data do not contain information on spouses' perception of equity. Missing such information may lead to misinterpretation of the relationship between distribution of labor and spouses' depression. Additionally, the number of children, age of the children, and childcare information are not provided in the CFPS data. I do not know how time spent on childcare affect the time allocation between spouses, as well as the perception of fairness or depression itself.

Tables and Figures for Chapter 5

Table 5.1 Descriptive Statistics of Mental Health (*N*=700)

	Wife		Husband	
	Mean	SD	Mean	SD
Dependent variable				
Log (depression at time 2)	.30	.32	.22	.28
Explanatory variables (time 1)				
Log (depression at time 1)	.28	.31	.21	.26
Share of total labor	49.34	15.74	50.66	15.74
Housework time	2.47	1.73	1.14	1.23
Share of housework	69.78	26.05	30.22	26.05
Leisure time	2.92	1.94	3.04	1.78
Sleep time	8.11	1.27	8.02	1.24
Individual income	12.99	18.07	22.23	29.60
Share of income	37.51	24.22	62.49	24.22
Couple's total income	36.22	41.07	36.22	41.07
Paid work time	6.27	3.85	7.51	3.08
Share of paid work time	42.66	26.26	57.34	26.26
Traditional gender ideology	.42	.49	.40	.49
Poor physical health (1-5)	2.54	1.04	2.32	.90
Age	44.34	10.72	46.16	10.84
Education	3.13	1.35	3.45	1.25
Inter-*Hukou* Marriage				
Urban wife with rural husband	.04	.19	.04	.19
Rural wife with urban husband	.08	.28	.08	.28
Childless	.05	.22	.05	.22
Non-agricultural family	.53	.50	.53	.50
Region (Omitted: Beijing)				
Shanghai	.28	.45	.28	.45
Guangdong	.39	.49	.39	.49

Table 5.2 OLS Regression of Wife's Depression at Time 2 *(N=700)*

Independent variables at time 1	Wife's depression (1-5) at time 2			
	1	2	3	4
Wife's depression (1-5)	.319***	.316***	.317***	.324***
	(.039)	(.039)	(.039)	(.039)
Wife's share of total labor	.001	.001	.001	
	(.001)	(.001)	(.001)	
Wife's share of housework	-.004*			-.004*
	(.002)			(.002)
Wife's share of housework squared	.0003*			.0003*
	(.0001)			(.0001)
Employed	-.087†	-.098†	-.106*	-.006
	(.049)	(.052)	(.052)	(.030)
Childless	.030	.030	.023	.025
	(.053)	(.054)	(.053)	(.052)
Wife's income		.0002	.001	
		(.001)	(.001)	
Wife's share of total income	.001			
	(.0005)			
Couple's total income	-.0001			
	(.0003)			
Wife's paid work time	.008	.009	.008	
	(.005)	(.006)	(.006)	
Wife's traditional gender ideology	.015	.011	.008	.011
	(.024)	(.024)	(.024)	(.023)
Wife's poor physical health	.031**	.030**	.036**	.035**
	(.012)	(.012)	(.012)	(.012)
Wife's housework time		-.001	-.002	
		(.008)	(.008)	
Wife's leisure time		-.003	-.002	
		(.007)	(.007)	
Wife's sleep time		.011	.009	
		(.009)	(.009)	
Inter-*Hukou*/Marriage				

Urban wife with rural husband	-.100*	-.100*		
	(.057)	(.058)		
Rural wife with urban husband	-.053	-.048		
	(.040)	(.040)		
Wife's urban *Hukou*			-.101***	-.103***
			(.032)	(.031)
Wife's age	-.003**	-.003**	-.002*	-.002*
	(.001)	(.001)	(.001)	(.001)
Wife's education	-.014	-.015	-.003	-.001
	(.012)	(.012)	(.012)	(.012)
Non-agricultural family	.009	.020	.053	.053†
	(.030)	(.030)	(.032)	(.031)
Region				
Shanghai	.029	.022	.028	.031
	(.030)	(.030)	(.030)	(.030)
Guangdong	.105***	.105***	.107***	.116***
	(.029)	(.029)	(.029)	(.029)
R^2	.227	.222	.228	.225
Adjusted R^2	.206	.210	.210	.211
BIC	344.410	349.008	336.405	312.735

Note: a. Standard errors in parentheses. b. † p<.1, * p<.05, ** p<.01, *** p<.001 (two-tailed tests)

Figure 5.1 Depression by the Share of Housework for Wives

Panel 1

Lowest point of the curve =62.348

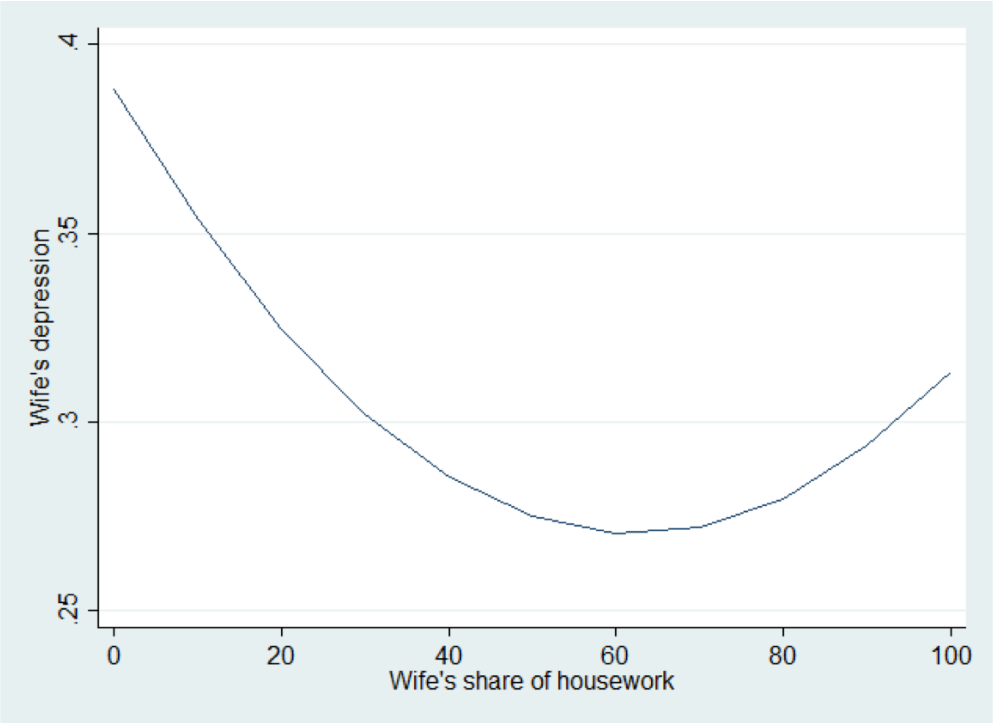


Figure 5.2 Depression by the Share of Housework for Wives

Panel 4

Lowest point of the curve =64.077

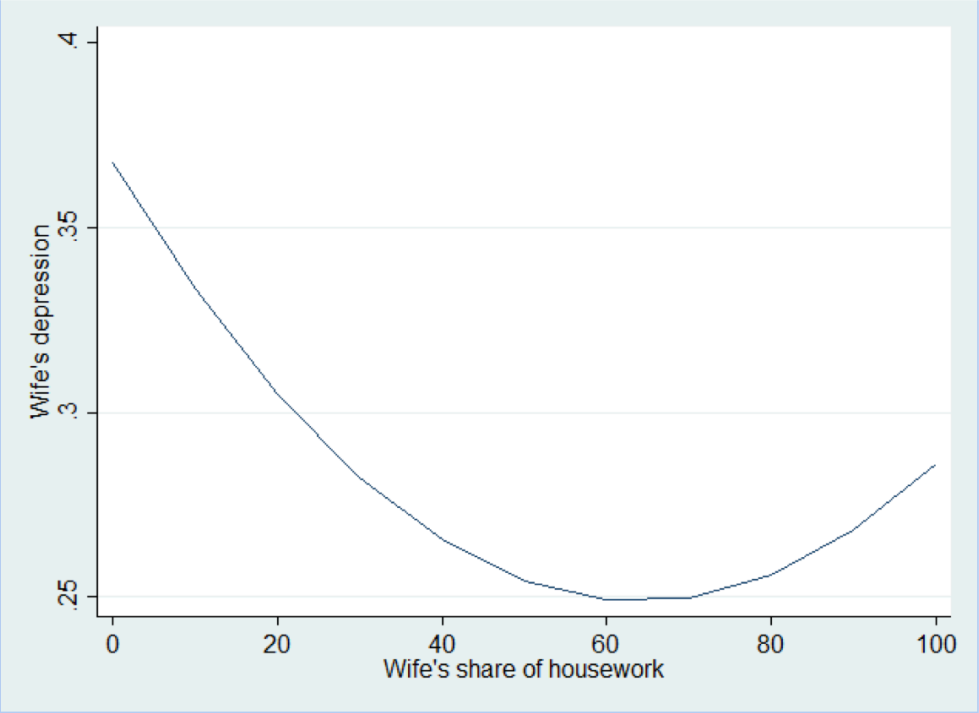


Table 5.3 OLS Regression of Husband's Depression at Time 2 *(N=700)*

Independent variables at time 1	Husband's depression (1-4) at time 2			
	1	2	3	4
Husband's depression (1-4)	.346***	.333***	.332***	.355***
	(.040)	(.039)	(.039)	(.038)
Husband's share to total labor	-.006†	-.006	-.006	-.007*
	(.003)	(.004)	(.004)	(.003)
Husband's share to total labor squared	.0001†	.0001	.0001	.0001†
	(.00003)	(.00003)	(.00003)	(.00003)
Husband's share of housework	-.0002			
	(.0004)			
Employed	.050	.039	.041	
	(.090)	(.092)	(.092)	
Childless	-.230†	-.288*	-.270*	-.228†
	(.136)	(.135)	(.135)	(.134)
Husband's income		-.001	-.0005	
		(.0004)	(.0004)	
Husband's share of couple's total income	.001*			.001*
	(.0004)			(.0004)
Couple's total income	-.001*			-.001†
	(.0003)			(.0003)
Husband's paid work time	-.033†	-.035†	-.035†	-.026*
	(.020)	(.020)	(.020)	(.013)
Husband's paid work time squared	.002†	.002†	.002†	.002†
	(.001)	(.001)	(.001)	(.001)
Husband's gender traditionalism	-.145	-.138	-.136	-.127
	(.089)	(.089)	(.088)	(.087)
Husband's poor physical health	.019	.017	.018	
	(.012)	(.012)	(.012)	
Husband's housework time		-.007	-.007	
		(.010)	(.010)	
Husband's leisure time		-.017***	-.017***	-.017***
		(.006)	(.006)	(.006)
Husband's sleep time		.010	.006	

		(.008)	(.008)	
Inter-*Hukou* Marriage				
Urban wife with	.007	.005		
rural husband	(.050)	(.050)		
Rural wife with	-.032	-.026		
urban husband	(.035)	(.035)		
Husband's urban *Hukou*			-.033	
			(.027)	
Husband's age	-.006***	-.007***	-.006***	-.006***
	(.001)	(.001)	(.001)	(.001)
Husband's education	.003	.003	.007	.002
	(.010)	(.010)	(.011)	(.010)
Non-agricultural family	.032	.033	.046*	.047*
	(.026)	(.026)	(.028)	(.025)
Region				
Shanghai	.066*	.056*	.058*	.057*
	(.026)	(.026)	(.026)	(.026)
Guangdong	.112***	.107***	.107***	.114***
	(.024)	(.024)	(.024)	(.024)
Interaction effects				
Age X traditional	.004*	.004†	.004†	.003†
gender ideology	(.002)	(.002)	(.002)	(.002)
Age X childless	.007†	.008*	.008*	.007†
	(.004)	(.004)	(.004)	(.004)
R^2	.233	.234	.235	.237
Adjusted R^2	.209	.209	.211	.218
BIC	161.529	167.801	160.321	131.448

Note: a. Standard errors in parentheses. b. † p<.1, * p<.05, ** p<.01, *** p<.001 (two-tailed tests)

Figure 5.3 Depression by the Share of Total Labor for Husbands

Panel 1

Lowest point of the curve =62.840

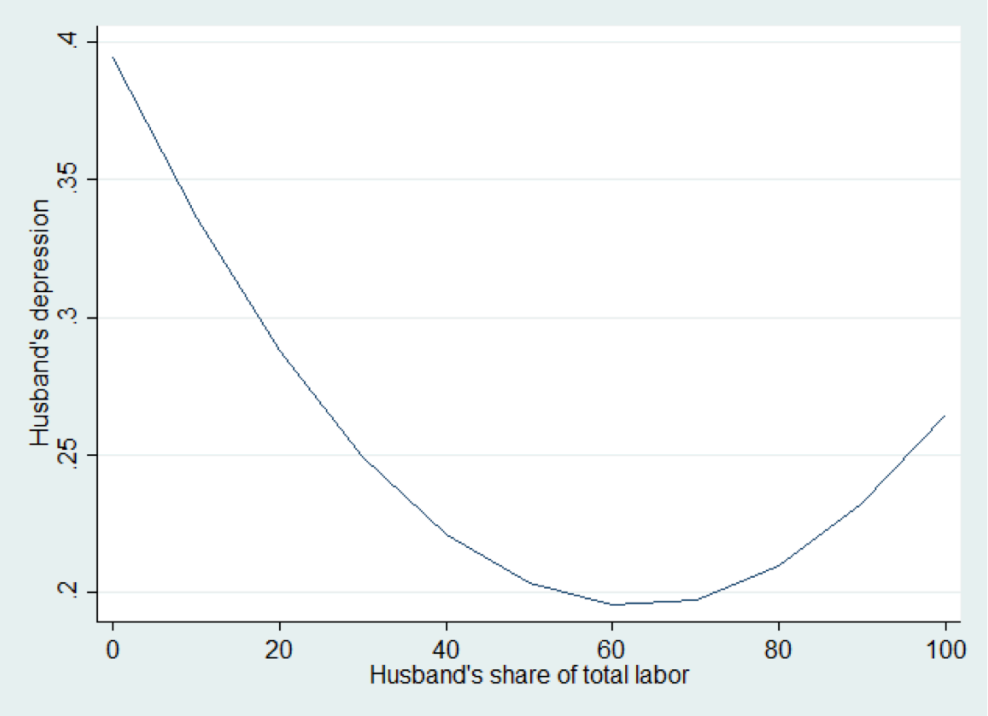


Figure 5.4 Depression by the Paid Work Time for Husbands

Panel 1

Lowest point of the curve =7.922

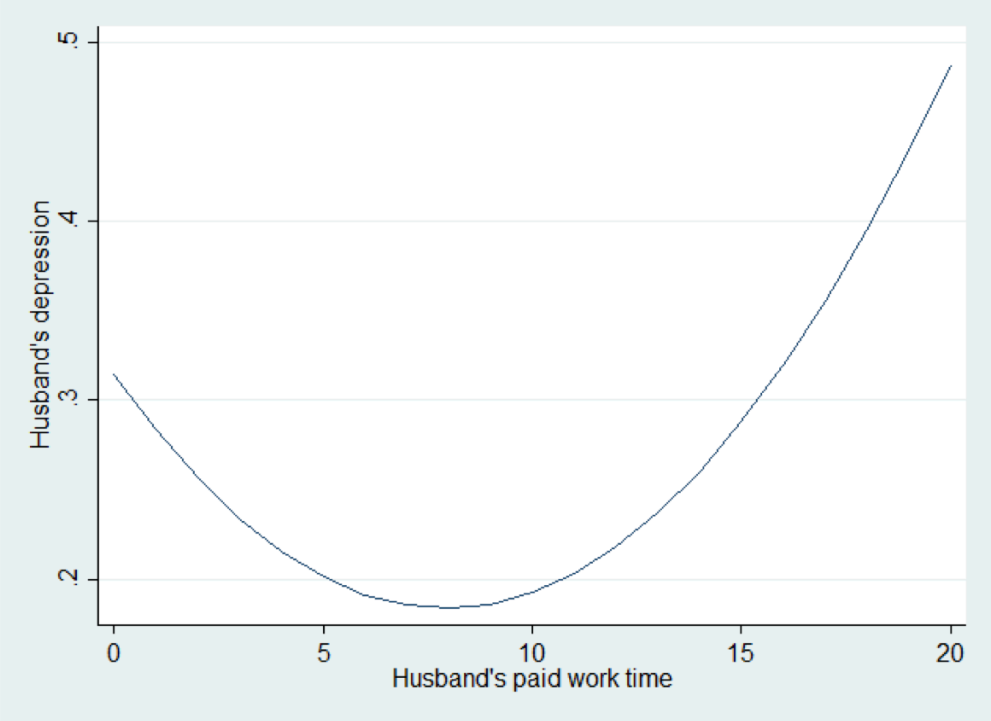


Figure 5.5 Depression by the Share of Total Labor for Husbands

Panel 4

Lowest point of the curve =64.295

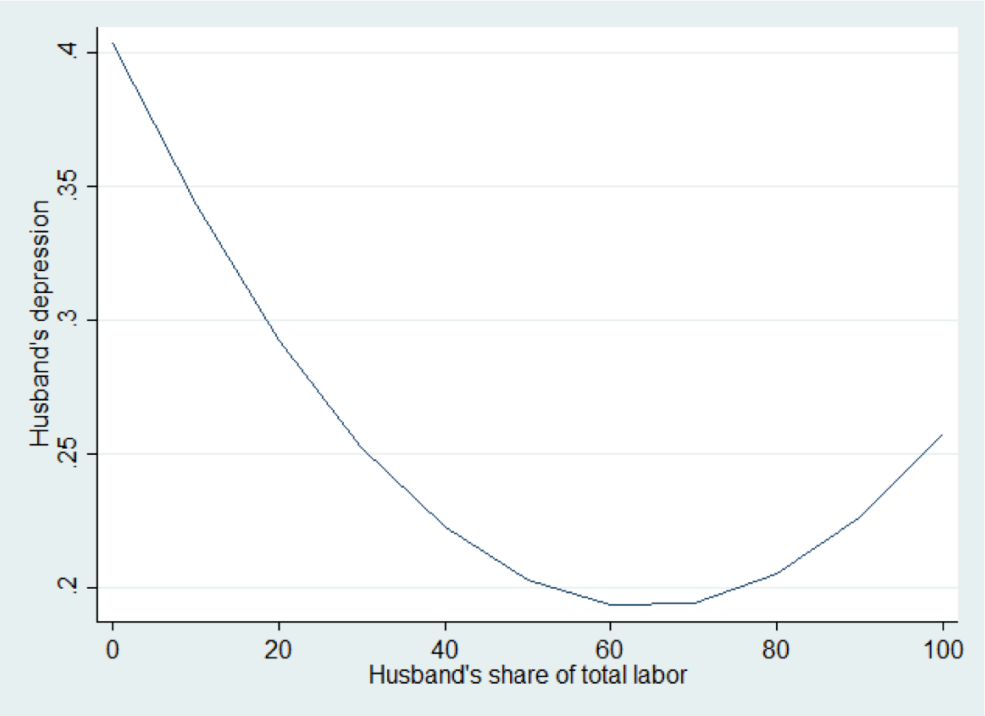
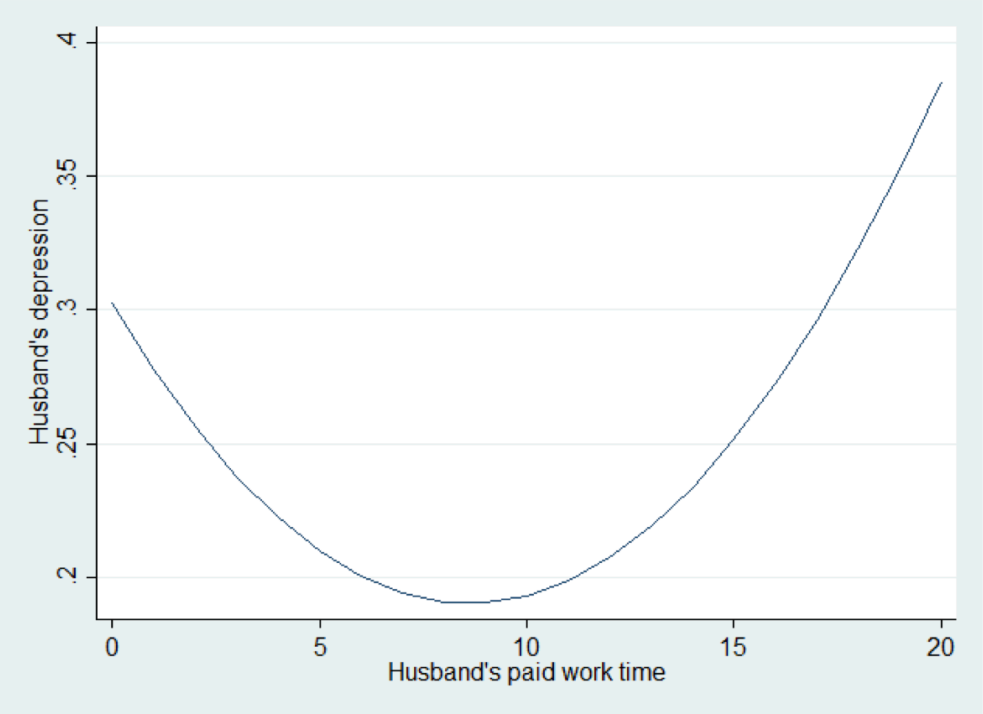


Figure 5.6 Depression by the Paid Work Time for Husbands

Panel 4

Lowest point of the curve =8.622



Chapter 6: Conclusion

The Findings

As discussed throughout this dissertation, I address three major research topics. First, I assess the applicability of the previously established theoretical frameworks about the household labor in explaining the time spent on housework among married couples in China. Second, I examine the leisure and the sleep gaps between spouses in China. I am particularly interested in using the housework theories to explain the differences between spouses' leisure and sleep time. Third, I explore the effect of the distribution of total and household labor, and the multiple roles attached to each spouse on the mental health of spouses in China. Table 6.1 shows the summary of hypothesis testing results. The following discussion addresses these research topics in details, respectively.

[Insert Table 6.1]

Housework time for both spouses in China

Past research on household labor leaves two unresolved questions: 1) The majority of them used data from Western developed countries which tend to have similar social and cultural backgrounds, and level of economic development. Less attention was paid to the household labor in other societies with distinctive cultural tradition and level of economic development, such as China. Therefore, whether these theories can explain the time spent on housework between spouses in societies other the West remains a question.

2) The past research advanced several competing theoretical frameworks of household labor. Some researchers emphasize people's ability to maximize the benefits of the use of their time and maintain that the available time is the major predictor of the housework time for both spouses (Coltrane and Ishii-Kuntz 1992; Silver and Goldscheider 1994). Others underline the effect of gender ideology on the time spent on housework (Cunningham 2005; Greenstein 1996b). More researchers focus on the effect of the relative resource of each spouse on their time spent on housework. Some of them suggest that there is a linear relationship between the relative resource of one spouse and that spouse's housework time (Davis and Greenstein 2004). Some of them find that the relative resource has limited bargaining power in negotiation of housework time (Bittman et al. 2003; Brines 1994; South and Spitze 1994). While others argue that such a curvilinear effect of the relative resource is due to the neglect of the absolute income (Gupta 2006, 2007; Killewald and Gough 2010). Regardless of the merits of each theory, no consensus has been made.

The first research topic of this dissertation sets out to answer the above-mentioned questions by situating the time spent on housework for both spouses in a different social setting that has not only a large number of population but also has been rapidly transitioning economically and culturally in the past decades – China.

Using the CFPS data, I examine the time spent on housework for both spouses in China. The results of my study suggest that wives and husbands behave differently in doing housework. Income plays a

decisive role in determining the time spent on housework for both spouses. For husbands, individual income reduces their housework time. However, individual income does not free wives from doing housework. Instead, the share of couple's total income determines wives' time spent on housework, if not completely. Indeed, a curvilinear effect of wives' share of couple's total income is found in the data, even when their individual income is controlled. In other words, gender display exists, but only among the wives.

Why do the wives display gender but not the husbands? The findings of my research suggest that the overall gender equality of a society maybe the key to understand such a divergent pattern between wives and husbands. Previous research finds that decision-making process within the family is conditioned by the social context (Hook 2006, 2010). In a gender egalitarian context, women generally have more bargaining power in negotiation of housework. Regardless of its 50 years progressive social experiment, as a society that has a long patriarchal and patrilineal tradition, China maybe still under the influence of the strong traditional gender ideology (Attané 2013; Leung 2003; Pimentel 2006). The incomplete gender liberation emphasized women's greater labor force participation in public spheres, but failed to reduce women's domestic responsibility (Evans 2002). The ideal image for wives in China is still the caring, servicing, and supportive wives. Hence, the bargaining power of wife's relative resources is limited by the traditional gender norm. This, perhaps, explains why higher-earning Chinese wives tend to display gender by increasing their time spent on housework. Husbands'

bargaining power, on the other hand, is not conditioned the traditional gender ideology. After all, under the traditional gender ideology, husbands are the breadwinners that are not expected to perform much domestic labor.

The leisure and the sleep gaps between spouses in China

Prior research on the leisure and the sleep time focuses predominantly on cases in Western societies, leaving the time-use in other societies largely unexplored. Moreover, the previous research about the spousal leisure and sleep time provides few theoretical explanations. The objective of the second research topic of this dissertation is to bridge these gaps by examining the differences in the leisure and the sleep time between spouses in China using the prevalent housework theories. I postulate that if housework was viewed as unwanted burden that both spouses actively seek to avoid, they should actively seek to enjoy more leisure and sleep time. Hence, the theories that are used to explain housework time can be used to explain the leisure and the sleep gaps between spouses.

My findings suggest that the spousal leisure and sleep gaps not only can be explained by the housework theories, they also show different patterns. The gender ideology is a strong predictor of the spousal leisure gap. The spousal sleep gap is responsive to the relative income of the spouses. For the leisure gap between spouses, increase in gender traditionalism reduces the leisure time relative to that of the spouse for both wives and husbands. For the spousal sleep gap, a

curvilinear relationship is found between wives' relative income and the sleep gap.

What is particularly interesting about the findings is that couples may use different ways to allocate time when it comes to leisure and sleep. I find the relative resource to have limited bargaining power on the spousal sleep gap. Among the few couples whose wives outearn their husbands, they display gender through reducing (for the wives) or increasing (for the husbands) sleep time, regardless of the rigidity of the sleep time. However, for the leisure gap, the gender ideology plays a decisive role in determining the spousal allocation of leisure time.

Why does it show such a pattern? Because the nature of the dependent variable is to compare the leisure and the sleep time between spouses, this study does not directly address the individual leisure and sleep time for both spouses. Nonetheless, the findings in the unreported analyses (see Appendixes A3, A4, A5, and A6) may help better understand the pattern. Gender traditionalism reduces wives' individual leisure time but not that of their husbands'. A curvilinear effect is found between husbands' relative income and their sleep time. However, wives' relative income does not affect their sleep time. Hence, it is possible that the changes in the gaps in leisure and sleep between spouses are caused by only one spouse's leisure or sleep time, as the current evidence seems to point to that scenario.

The depression of married couples in China

For the third research topic, I explore the psychological well-being of the married couples in China. I pay particular attention to the effect of

the divisions of total and housework labor, as well as the multiple roles attached to each spouse on their depression. Using different data sets and methods, some scholars find that the equal division of total labor (paid and unpaid work combined) benefits both spouses' mental health (Glass and Fujimoto 1994). Some suggests that the distribution of household labor is related to wives' mental health (Ross, Mirowsky and Huber 1983). Others maintains that have multiple roles reduces depression for both spouses (Thoits 1983, 1986, 1992). In this study, I attempt to contribute to the literature by examining the explanatory power of the aforementioned theoretical perspective for the depression of married couples in China.

None of the theories is fully supported in the data. However, several patterns emerge. Wives' depression is responsive to the effect of the share of household labor, whereas husbands' depression is responsive to the effect of the share of total labor. Moreover, I find curvilinear relationships between wives' share of housework and their depression, and husbands' share of total labor and their depression. The share of household and total labor decreases depression for wives and husbands, respectively. But once their share exceeds about 60%, the increase in their share increases their depression.

Why do wives' and husbands' depression show such a divergent pattern? I speculate that it is due to the specialization of the task for wives and husbands. Performing certain amount of housework benefits wives' mental health, as they may have rewarding feelings when they take good care of their families. But once they take on too much

housework, more than 60% of total housework in this case, they may be stressed out and feel unfair, thereby increasing their depression (Glass and Fujimoto 1994). Husbands' depression, on the other hand, is related to their share of total labor, not the share of household or paid labor. This is probably because, for the husbands' depression, both household and paid labor are fairly important predictors; however, neither of them is significant enough to affect husbands' depression itself individually.

Roles may have different meanings for wives and husbands. Previous research suggests that having worker roles benefits wives' mental health, whereas having family roles benefits husbands' mental health. My findings suggest that, in China, wives' mental health benefits from being employed. However, no evidence shows that husbands' mental health benefit from having children.

In addition, both individual and couple's total income affect husbands' mental health, but wives'. This, again, suggests that wives and husbands' may have different foci in their family lives. Comparing to their wives, husbands maybe more concerned about their ability to financially support their families. Regardless of the high female labor force participation rates, wives in China may still consider their earnings as supplement to their family income.

Implications of Findings

Throughout the discussion, a clear gendered pattern emerges. Wives and husbands behave differently. Their time-use patterns and depression respond to different predictors. Wives' relative resource has limited bargaining power in freeing them from domestic labor. Unlike

the husbands, whose individual income reduces housework, wives, especially those who outearn their husbands, do more housework. The traditional gender ideology also favors husband over wives in determining the leisure gap between spouses. Husbands, as compared to wives, are more likely to display gender by increasing sleep time when they earn less than their wives. Although the gender traditionalism does not affect spouses' mental health directly, the closely related notion of "separate spheres" may plays a role in determining spouses' mental health, as the results show that wives' depression is more likely to be affected by the distribution of housework, and the worker roles. Husbands' depression, on the other hand, is predicted by their earning power and the distribution of total labor.

Table 6.1 Summary of Hypothesis Testing Results

Hypothesis	Results
Housework time	
Hypothesis 3.1: Spouses' time spent on paid work will reduce their time spent on housework.	Rejected
Hypothesis 3.2: Spouses' share of the couple's total income will reduce their housework time.	Rejected
Hypothesis 3.3: High relative educational attainment, operationalized as the difference between the respondent's and his or her spouse's educational attainment, will reduce the respondent's housework time.	Rejected
Hypothesis 3.4: For spouses with different *Hukou* status, the one with urban *Hukou* status will do less housework.	Rejected
Hypothesis 3.5: Conservatism among wives will increase their housework time.	Rejected
Hypothesis 3.6: Conservatism among husbands will decrease their housework time.	Rejected
Hypothesis 3.7: As wives' earnings begin to exceed their husbands', their housework time increases.	Supported
Hypothesis 3.8: Wives' absolute income will reduce their housework time.	Rejected*
Leisure and sleep gaps	
Hypothesis 4.1: A wife's paid and unpaid work time will reduce her leisure time relative to her husband's.	Rejected
Hypothesis 4.2: A wife's paid and unpaid work time will reduce her sleep time relative to her husband's.	Rejected
Hypothesis 4.3: A wife's share of income will increase her leisure time relative to her husband's.	Rejected
Hypothesis 4.4: A wife's share of income will increase her sleep time relative to her husband's.	Rejected
Hypothesis 4.5: The education gap between wife and husband will increase wife's leisure time relative to her husband's.	Rejected
Hypothesis 4.6: The education gap between wife and husband will increase wife's sleep time relative to her husband's.	Rejected
Hypothesis 4.7: For spouses with different *Hukou* status, wife's urban *Hukou* status will increase her leisure time relative to her husband's; wife's rural *Hukou* status will decrease her leisure time relative to her husband's.	Rejected

Hypothesis 4.8: For spouses with different *Hukou* status, wife's urban *Hukou* status will increase her sleep time relative to her husband's; wife's rural *Hukou* status will decrease her sleep time relative to her husband's.	Rejected
Hypothesis 4.9: A wife's conservatism will decrease her leisure time relative to her husband's.	Supported
Hypothesis 4.10: A wife's conservatism will decrease her sleep time relative to her husband's.	Rejected
Hypothesis 4.11: A husband's conservatism will increase his leisure time relative to his wife's.	Rejected**
Hypothesis 4.12: A husband's conservatism will increase his sleep time relative to his wife's.	Rejected
Hypothesis 4.13: As a wife's earnings begin to exceed her husband's, her leisure time relative to her husband's increases.	Rejected
Hypothesis 4.14: As a wife's earnings begin to exceed her husband's, her sleep time relative to her husband's increases.	Supported
Hypothesis 4.15: A wife's absolute income will increase her leisure time relative to her husband's.	Rejected
Hypothesis 4.16: A wife's absolute income will increase her sleep time relative to her husband's.	Rejected
Mental health	
Hypothesis 5.1: An unequal division of total labor increases both spouses' depression.	Partially supported
Hypothesis 5.2: Roles decrease depression.	Partially supported
Hypothesis 5.3: Wives' share of total housework will increase their depression.	Rejected***

Note: * Husband's absolute income reduces his housework time. ** Increase in husband's gender traditionalism leads to increase in the spousal leisure gap. *** A curvilinear relationship between wife's share of housework and depression is found.

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The data are from China Family Panel Studies (CFPS), funded by 985 Program of Peking University and carried out by the Institute of Social Science Survey of Peking University.

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Appendix A: OLS Regression Tables

Table A1 OLS Regression of Urban Wife's Housework Time at Time 2 (*N*=608)

Independent variables at time 1	Wife's housework time at time 2				
	1	2	3	4	5
Wife's housework time	.229***	.228***	.230***	.235***	.228***
	(.029)	(.029)	(.029)	(.029)	(.028)
Wife's share of couple's total income	-.761*	-.768*	-.969*		-.736*
	(.349)	(.349)	(.395)		(.339)
Wife's share of couple's total income squared	.008*	.008*	.009*		.007*
	(.003)	(.003)	(.004)		(.003)
Couple's total income	.046				
	(.070)				
Wife's income			.274	.077	
			(.214)	(.183)	
Husband's income			-.039	.032	
			(.102)	(.086)	
Wife's paid work time	-1.049	-.995	-1.085	-1.487†	-1.029
	(.918)	(.914)	(.918)	(.902)	(.894)
Wife's gender traditionalism	-1.899	-1.961	-1.671	-2.037	
	(2.195)	(2.192)	(2.204)	(2.205)	
Education gap	1.878				
	(3.626)				
Inter-*Hukou* Marriage					
Urban Wife with Rural Husband	-13.470	-13.950	-13.080	-14.900	
	(14.900)	(14.880)	(14.900)	(14.940)	
Rural Wife with Urban Husband	-4.236	-4.875	-3.627	-4.557	
	(10.600)	(10.550)	(10.610)	(10.650)	
Control variables					
Wife's age	1.227**	1.231**	1.236**	1.057**	1.283**
	(.305)	(.305)	(.305)	(.295)	(.280)
Wife's education	-1.513	-.906	-1.798	-2.443	
	(2.754)	(2.594)	(2.765)	(2.759)	
Childless	-35.950**	-35.750*	-36.830**	-38.160**	-37.320**
	(13.910)	(13.900)	(13.920)	(13.960)	(13.66)
Region					
Shanghai	7.036	7.729	6.667	4.626	
	(7.035)	(6.953)	(7.041)	(7.014)	
Guangdong	1.899	2.750	1.165	1.812	
	(8.293)	(8.188)	(8.316)	(8.321)	
R	.271	.271	.273	.265	.267

Note: a. Standard errors in parentheses. b. † p<.1, * p<.05, ** p<.01, *** p<.001 (two-tailed tests).

Table A2 OLS Regression of Rural Wife's Housework Time at Time 2 (*N*=396)

Independent variables at time 1	Wife's housework time at time 2				
	1	2	3	4	5
Wife's housework time	.188***	.190***	.190***	.193***	.201***
	(.038)	(.038)	(.038)	(.038)	(.038)
Wife's share of couple's total income	-.046	-.040	-.171		-.401
	(.431)	(.431)	(.479)		(.418)
Wife's share of couple's total income squared	-.001	-.006	-.0002		.004
	(.005)	(.005)	(.005)		(.005)
Couple's total income	-.250				
	(.287)				
Wife's income			.201	-.236	
			(.807)	(.623)	
Husband's income			-.430	-.230	
			(.416)	(.346)	
Wife's paid work time	.943	.968	1.000	.966	1.411
	(1.177)	(1.176)	(1.182)	(1.169)	(1.162)
Wife's gender traditionalism	-1.053	-1.159	-1.216	-.910	
	(3.552)	(3.549)	(3.565)	(3.543)	
Education gap	.199				
	(2.981)				
Inter-*Hukou* Marriage					
Urban Wife with Rural Husband	-29.950	-31.680	-29.670	-29.840	
	(23.310)	(23.220)	(23.340)	(23.270)	
Rural Wife with Urban Husband	2.452	1.077	2.416	2.607	
	-29.950	-31.680	-29.670	-29.840	
Control variables					
Wife's age	1.745***	1.816***	1.775***	1.727***	1.628***
	(.372)	(.363)	(.375)	(.371)	(.342)
Wife's education	4.093	3.303	3.928	4.138	
	(4.513)	(4.420)	(4.526)	(4.511)	
Childless	28.720	28.930	28.580	27.180	33.640
	(22.750)	(22.750)	(22.770)	(22.660)	(22.600)
Region					
Shanghai	-22.290†	-24.250†	-22.760†	-21.890†	
	(12.830)	(12.630)	(12.870)	(12.670)	
Guangdong	-19.450*	-21.340*	-19.520*	-19.510*	
	(9.787)	(9.541)	(9.796)	(9.594)	
R	.164	.162	.165	.163	.136

Note: a. Standard errors in parentheses. b. † p<.1, * p<.05, ** p<.01, *** p<.001 (two-tailed tests).

Table A3 OLS Regression of Wife's Leisure Time at Time 2 *(N=949)*

Independent variables at time 1	Wife's leisure time at time 2			
	1	2	3	4
Wife's leisure time	.310***	.313***	.309***	.325***
	(.034)	(.033)	(.034)	(.031)
Wife's share of couple's total income	-.675	-.874*		-.683
	(.422)	(.457)		(.421)
Wife's share of couple's total income squared	.007	.008*		.007
	(.004)	(.005)		(.004)
Wife's income		.236	.002	
		(.313)	(.271)	
Husband's income		-.249	-.142	
		(.181)	(.157)	
Couple's total income	-.092			
	(.115)			
Wife's paid work time	-.001	-.003	-.010	-.002
	(.020)	(.020)	(.019)	(.020)
Husband's paid work time	-.014	-.014	-.010	-.015
	(.022)	(.022)	(.022)	(.022)
Wife's gender traditionalism	-9.873***	-9.741***	-9.911***	-9.827***
	(3.154)	(3.155)	(3.148)	(3.152)
Husband's gender traditionalism	8.067**	7.861**	8.051**	8.107***
	(3.129)	(3.134)	(3.134)	(3.128)
Controls variables				
Wife's age	.351	.356	.258	.363
	(.381)	(.381)	(.378)	(.381)
Wife's education	10.600***	10.250***	10.120***	9.800***
	(3.790)	(3.802)	(3.804)	(3.656)
Childless	5.770	.181	-1.082	
	(22.570)	(22.449)	(22.640)	
Wife's share of housework	.108	.104	.120	.102
	(.149)	(.149)	(.149)	(.149)
Wife's urban *Hukou*	39.160***	38.030***	37.790***	38.210***
	(10.430)	(10.470)	(10.480)	(10.360)
Non-agricultural family	3.547	3.795	3.036	2.061
	(10.700)	(10.700)	(10.700)	(10.530)
Region				
Shanghai	-23.700**	-24.030**	-26.010***	-24.960***
	(9.604)	(9.607)	(9.519)	(9.475)
Guangdong	-16.500*	-16.730*	-18.160*	-17.720*
	(9.555)	(9.556)	(9.514)	(9.431)
R^2	.298	.299	.297	.298

Note: a. Standard errors in parentheses. b. † p<.1, * p<.05, ** p<.01, *** p<.001 (two-tailed tests)

Table A4 OLS Regression of Husband's Leisure Time at Time 2 *(N=949)*

Independent variables at time 1	Husband's leisure time at time 2			
	1	2	3	4
Husband's leisure time	.383***	.383***	.383***	.385***
	(.035)	(.035)	(.035)	(.035)
Husband's share of couple's total income	.040	.036		.124
	(.534)	(.534)		(.530)
Husband's share of couple's total income squared	-.003	-.003		-.003
	(.005)	(.005)		(.005)
Wife's income		.017	.314	
		(.314)	(.270)	
Husband's income		.229	.069	
		(.185)	(.162)	
Couple's total income	.159			
	(.116)			
Wife's paid work time	.022	.028	.029	.025
	(.020)	(.020)	(.020)	(.020)
Husband's paid work time	-.027	-.027	-.033	-.025
	(.023)	(.023)	(.022)	(.023)
Wife's gender traditionalism	.379	.296	.132	.180
	(3.181)	(3.187)	(3.180)	(3.179)
Husband's gender traditionalism	-2.657	-2.561	-2.630	-2.626
	(3.190)	(3.197)	(3.197)	(3.191)
Controls variables				
Husband's age	.174	.169	.234	.144
	(.372)	(.372)	(.368)	(.371)
Husband's education	7.939*	7.972*	7.785*	9.230*
	(3.811)	(3.814)	(3.812)	(3.695)
Childless	-16.310	-15.600	-14.080	-15.180
	(18.580)	(18.640)	(18.620)	(18.570)
Husband's share of housework	-.132	-.134	-.111	-.145
	(.152)	(.152)	(.152)	(.152)
Husband's urban *Hukou*	22.820*	23.290*	22.690*	24.330*
	(10.310)	(10.360)	(10.360)	(10.260)
Non-agricultural family	17.690	17.660	18.900†	20.550†
	(10.850)	(10.860)	(10.840)	(10.660)
Region				
Shanghai	-18.230†	-18.170†	-17.800†	-16.390†
	(9.640)	(9.645)	(9.556)	(9.551)
Guangdong	-8.670	-8.677	-8.581	-7.060
	(9.389)	(9.393)	(9.356)	(9.320)
R^2	.298	.299	.297	.298

Note: a. Standard errors in parentheses. b. † p<.1, * p<.05, ** p<.01, *** p<.001 (two-tailed tests)

Table A5 OLS Regression of Wife's Sleep Time at Time 2 *(N=949)*

Independent variables at time 1	Wife's sleep time at time 2			
	1	2	3	4
Wife's sleep time	.204***	.204***	.205***	.204***
	(.034)	(.034)	(.034)	(.034)
Wife's share of couple's total income	.322	.303		.322
	(.313)	(.340)		(.313)
Husband's share of couple's total income squared	-.003	-.002		-.003
	(.003)	(.003)		(.003)
Wife's income		.034	.126	
		(.232)	(.201)	
Husband's income		-.014	-.058	
		(.134)	(.117)	
Couple's total income	.002			
	(.085)			
Wife's paid work time	-.003	-.003	-.0001	-.003
	(.014)	(.014)	(.014)	(.014)
Husband's paid work time	.012	.012	.011	.012
	(.015)	(.015)	(.015)	(.015)
Wife's gender traditionalism	-.864	-.851	-.816	-.865
	(2.341)	(2.343)	(2.335)	(2.339)
Husband's gender traditionalism	1.541	1.520	1.460	1.540
	(2.321)	(2.326)	(2.323)	(2.319)
Controls variables				
Wife's age	-1.026***	-1.025***	-.991***	-1.026***
	(.284)	(.284)	(.281)	(.283)
Wife's education	5.257†	5.224†	5.266†	5.273†
	(2.807)	(2.818)	(2.816)	(2.707)
Childless	-10.160	-10.310	-9.642	-10.140
	(13.540)	(13.590)	(13.560)	(13.520)
Wife's share of housework	-.114	-.115	-.121	-.114
	(.110)	(.110)	(.110)	(.110)
Wife's urban *Hukou*	12.210	12.100	12.170	12.230
	(7.734)	(7.774)	(7.767)	(7.679)
Non-agricultural family	-25.010***	-24.990***	-24.670***	-24.990***
	(8.008)	(8.014)	(7.999)	(7.890)
Region				
Shanghai	-2.791	-2.824	-2.234	-2.767
	(7.124)	(7.131)	(7.053)	(7.025)
Guangdong	-8.612	-8.636	-8.209	-8.588
	(7.080)	(7.086)	(7.042)	(6.986)
R^2	.084	.085	.080	.083

Note: a. Standard errors in parentheses. b. † p<.1, * p<.05, ** p<.01, *** p<.001 (two-tailed tests)

Table A6 OLS Regression of Husband's Sleep Time at Time 2 *(N=949)*

Independent variables at time 1	Husband's sleep time at time 2			
	1	2	3	4
Husband's sleep time	.243***	.242***	.242***	.244***
	(.034)	(.034)	(.034)	(.034)
Husband's share of couple's total income	-.735**	-.731**		-.779**
	(.361)	(.361)		(.359)
Husband's share of couple's total income squared	.007**	.007**		.007**
	(.003)	(.003)		(.003)
Wife's income		.078	-.063	
		(.213)	(.183)	
Husband's income		-.164	-.115	
		(.125)	(.110)	
Couple's total income	-.084			
	(.079)			
Wife's paid work time	.010	.009	.004	.008
	(.013)	(.013)	(.013)	(.013)
Husband's paid work time	-.016	-.015	-.015	-.016
	(.014)	(.014)	(.014)	(.014)
Wife's gender traditionalism	.244	.337	.110	.355
	(2.157)	(2.160)	(2.158)	(2.154)
Husband's gender traditionalism	.845	.734	.944	.831
	(2.159)	(2.163)	(2.165)	(2.159)
Controls variables				
Husband's age	-.542**	-.536**	-.622**	-.524**
	(.251)	(.251)	(.249)	(.250)
Husband's education	-1.174	-1.212	-1.319	-1.858
	(2.579)	(2.580)	(2.582)	(2.498)
Childless	-.409	-1.218	-3.089	-1.021
	(12.580)	(12.620)	(12.620)	(12.570)
Husband's share of housework	-.117	-.115	-.123	-.109
	(.102)	(.102)	(.102)	(.102)
Husband's urban *Hukou*	22.580***	22.040***	22.610***	21.780***
	(6.983)	(7.015)	(7.024)	(6.943)
Non-agricultural family	-14.480*	-14.440*	-15.290**	-15.980**
	(7.384)	(7.385)	(7.381)	(7.249)
Region				
Shanghai	-7.314	-7.384	-9.356	-8.261
	(6.508)	(6.510)	(6.454)	(6.448)
Guangdong	-10.060	-10.060	-11.310*	-10.880*
	(6.338)	(6.340)	(6.320)	(6.292)
R^2	.084	.085	.080	.083

Note: a. Standard errors in parentheses. b. † p<.1, * p<.05, ** p<.01, *** p<.001 (two-tailed tests)