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Economic dependence, gender, and the division of invisible household labor: A comparison study between China and Sweden on mental load

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Abstract

This study examines the association between economic dependence, gender, and invisible labor in households in China and Sweden. Survey data from 501 Chinese and 223 Swedish respondents were collected online to examine. The findings reveal that women in China bear a higher mental load compared to men, while no gender difference is observed in Sweden. Furthermore, in my sample, both men and women in China exhibit a lower mental load than their counterparts in Sweden. Specifically, a positive linear relationship is observed between the share of household income and mental load in China, while in Sweden, a U-shaped relationship is found. The results highlight the complexity of the association between economic dependence and mental load, which deviates from Becker's model (Becker 1965). In Sweden, men with traditional gender attitudes experience higher mental load which is a novel finding. Exploratory analysis further disaggregates mental load sources into three household responsibility subcategories: household routines, child well-being, and household finance. Robustness checks, including regressions excluding potential extreme outliers, were conducted to validate the results. Overall, the results provide valuable insights into the complex interplay between economic dependence, gender, and the division of invisible household labor and highlight the importance of considering cultural and societal contexts when examining gender differences in household work and the associations with income.

Keywords: Mental Load, Invisible Household Labor, Gender Economics, Economic Dependence

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Table of Contents

1	Introduction.....	4
2	Literature Review.....	6
2.1	Gendered household labor.....	6
2.2	Household labor and income.....	6
2.3	Mental load.....	7
2.4	Mental load measurement	9
2.5	My contribution to the literature	9
3	Experiment design and Data	10
3.1	Setup and Conditions	10
3.1.1	Experimental Design.....	10
3.1.2	Design of Forms.....	10
3.1.3	Participants and Power Calculation	13
3.2	Data	14
3.2.1	Dependent variable.....	14
3.2.2	Independent variables.....	14
4	Empirical Approach	17
4.1	Hypothesis and regressions for each country	17
4.2	Hypotheses and regressions comparing China and Sweden	20
4.3	Exploratory analysis in separate household responsibilities	22
4.4	Robustness checks.....	25
5	Results.....	25
5.1	Descriptive Statistics	25
5.2	Regressions results	30
5.2.1	Main Results.....	30
5.2.2	Sub Analysis Results.....	38
5.3	Robustness Checks.....	49
5.3.1	T-test for the Main Results.....	49
5.3.2	Regression without Potential Extreme Outliers	50
6	Discussion	51
6.1	General	51
6.2	Limitations	54
6.3	Internal validity	56
6.4	External validity	56
6.5	Avenues for future research	57
	Reference	59
	Appendix.....	66

1 Introduction

Gender disparities in the allocation of housework have attracted interest from across the social sciences (Becker 1965; Hakim 1996; Hakim 2000; Akerlof and Kranton 2000; Baker and Jacobsen 2007; Lachance-Grzela and Bouchard 2010; and many others). While research has tended to focus on physical housework gender disparities, attention has recently shifted to the cognitive dimension of housework and childcare, that is, the often invisible “management” tasks of running the family home (Ciciolla and Luthar 2019; Daminger 2019; Offer 2014).

Cognitive dimension of labor is also often referred to as mental load or cognitive labor. While there is no one single well accepted specific definition of mental load within the household, research has described it as invisible household labor (Hochschild 1989; Lareau and Weininger 2008). Distinct from housework chores, childcare, and emotional work, mental load can be categorised as thinking activities performed for the sake of accomplishing family goals (Robertson et al. 2019). The broader definition of cognitive labor can be defined as the work of (1) anticipating needs; (2) identifying options for meeting those needs; (3) deciding among the options; and (4) monitoring the results (Damingier 2019). Cognitive labor may occur at the same time or space as its physical and emotional counterparts, but it differs in form (chiefly mental rather than physical) and purpose (anticipating a need or making a decision rather than regulating affect and mood). In this paper the household cognitive labor was broken down into three categories: household routines, child well-being, and responsibility for household finances (Ciciolla and Luthar 2019).

Although research often shows that decision-making is largely collaborative, family-related thinking is gendered within heterosexual households, mothers represented themselves as their family’s primary mental labor, regardless of employment status or their partner’s level of involvement (Damingier 2019, Robertson et al. 2019, Ciciolla and Luther 2019). Additionally, women are expected and assumed to be more communal than men and, accordingly, disproportionately shoulder tasks at home (Eagly and Wood 2012). As an increased mental load can have an impact on well-being and relationship satisfaction (Ciciolla and Luther 2019) a higher mental load for women can have an impact on other aspects of life.

Researchers found evidence that as both the share and absolute level of income increase, the amount of housework undertaken by wives and husbands decreases but traditional gender roles also underpin housework allocation, which is evidenced by women increasing their housework if they earn more than their partner (Bittman et al. 2003; Schneider 2011; Procher et al. 2018).

The popular explanations of the existing gender disparities within household work allocation are from various resource-based and identity-based theories such as bargaining power, opportunity cost, time availability and gender identity (e.g., Becker 1965; Gronau 1986; Apps and Rees 1997; Browning and Chiappori 1998; Coverman 1985; Gupta 2006; Gupta 2007). No previous study has looked at relation between mental load with the share of household income. This paper will investigate whether the same gender disparities exist in heterosexual household mental load when men and women increase their share of household income.

Gendered division of labor varies cross-nationally, which some research attributes to policy differences between countries as well as cultural and social norms about gender and family care (Gornick and Meyers 2009; Lewis 2009). In this thesis I study China and Sweden. China is a developing country with relatively high female labor participation rate and developing gender equality. It is interesting to compare potential differences in the division of household work and income sharing between developed and developing countries. Developed countries generally have more gender-equal attitudes, and men are more likely to participate in household work and share income equally with their partners. On the other hand, developing countries tend to have less gender-equal attitudes, and women continue to undertake a larger share of household work and earn lower incomes than men. Sweden is one of the most gender equal countries in the world (CITE Global Gender Gap report or something like that) with Swedish women having one of the highest labor force participation rates in the world and strong institutional support for working parents (Björnberg 2002). Thus, studying the relationship between mental load and income sharing in both types of countries can provide insight into the impact of gender attitudes on household work and income. This paper will explore mental load gender disparities within the Swedish and Chinese context.

This study advances three areas of research. Firstly, it contributes to the research of mental load and investigates the relationship between household income share and mental labor. Secondly, it focuses on gender disparities within the Swedish and Chinese contexts where the previous research into gender disparities in household tasks focuses on American, Australian, or German data. Thirdly, it analyses the relationship between traditional gender attitudes and mental load. This research aims to help parents, researchers, clinicians, policymakers, and educators recognize, value, and better account for the mental load dynamics operating in the construction of family life, reproduction of gender roles, and perpetuation of gender gaps in family labor division.

2 Literature Review

Previous studies have extensively investigated gender differences in household work, primarily focusing on physical tasks (Altintas and Sullivan 2016; Bianchi et al. 2000; Bittman et al. 2003; Blair and Lichter 1991; Lachance-Grzela and Bouchard 2010; Lyonette and Crompton 2015; Schneider 2011; Schneider and Hastings 2017). Despite the decreasing trend in the amount of time women spend on household tasks and the increase in the time spent by men, women still perform a greater share of household work compared to men (Altintas and Sullivan 2016; Bianchi et al. 2000; Bittman et al. 2003; Procher et al. 2018). However, the pace of convergence towards gender equality in household work varies across countries and is contingent on the level of gender equality within each country (Altintas and Sullivan 2016).

2.1 Gendered household labor

The gendered division of labor in the household has been a topic of interest in economics for decades. Early studies in the 1960s and 1970s, such as that of Mincer and Polachek (1974), found that women were responsible for a disproportionate share of household work, even when they also participated in paid employment outside the home. This has since been confirmed in numerous studies across different countries and time periods (Gershuny and Robinson 1988; Bianchi et al. 2000; Hook 2006; Schouten 2019). The persistence of gender differences in household labor has been attributed to a variety of factors, including gendered expectations and norms, bargaining power within the household, and economic factors such as the opportunity cost of time (Bianchi et al. 2000).

Economic theory, particularly Gary Becker's model of household production (Becker 1965), provides a framework for understanding the gendered division of labor in the household. According to Becker (Becker 1965), household production is similar to a firm producing goods and services, with the household members acting as inputs to the production process. Each household member has different skills and abilities, and the household must allocate these inputs efficiently to produce the desired outcomes. The division of labor in the household is therefore based on the comparative advantage of each member, which can be influenced by factors such as education, work experience, and gender.

2.2 Household labor and income

Research on the relationship between income and household labor in heterosexual couples has primarily focused on gender differences, with several studies examining the effects of income on women's household work (Greenstein 2000; Brines 1994; Bittman et al. 2003). Some of

these studies suggest a linear decrease in the absolute number of hours women spend on housework as their earnings increase, which can be attributed to the time availability theory, which posits that the number of working hours influences the household share (Coverman 1985, Shelton 1992). However, other studies suggest that this relationship holds true only up to a certain level of earnings (Bittman et al. 2003; Schneider, 2011; Procher et al. 2018). When a woman's income exceeds her partner's, there is a significant increase in the hours spent by women on housework (Bittman et al. 2003; Schneider 2011), a curvilinear relationship also observed by Greenstein (2000) when comparing the share of household work instead of absolute hours. This phenomenon may be attributed to women's efforts to neutralize the gender deviance that their higher income represents (Bittman et al. 2003; Schneider 2011). Differences in data collection methods may also explain some of the variations in the relationships shown in these studies (Schneider 2011).

In contrast, research on the relationship between income and household work for men has yielded mixed findings. As for women, some studies report a curvilinear relationship between income share and household work for men, with the hours of household work increasing when women's share of income increases, but only up to a certain level, after which the hours decrease with higher shares of women's income (Brines 1994; Greenstein 2000). Gender norms are offered as one explanation for this pattern (Brines 1994). However, other studies have not found a statistically significant relationship between the share of income and the amount of household work for men (Bittman et al. 2003; Schneider 2011).

Differences can also be seen between different income groups (Schneider and Hastings 2017; Lyonette and Crompton 2015). Lyonette and Crompton (2015) find a more equal share of household work for women with either the highest or the lowest income who work full-time, while Schneider and Hastings (2017) argue that affluent women are more likely to outsource household work which results in a lower absolute load.

2.3 Mental load

Even though the idea of cognitive labor as part of household labor is not new (Hochschild, 1989; Mederer 1993), especially in recent years, mental load within households has gained attention in research. Several studies have been published on this topic, with the results suggesting a higher mental load for women than men within a household (Damingier 2019; Robertson et al. 2019; Ciciolla and Luther 2019).

Daminger (2019) conducted interviews with 35 couples to investigate the components of cognitive labor and the distribution between partners of heterosexual, middle-class couples in the US. The results show that cognitive labor which is linked to anticipating needs and monitoring actions are mainly done by women. In contrast, cognitive tasks which are more associated with power, like decision-making, are distributed more equally.

Ciciolla and Luther (2019) investigated the distribution of mental load and how an increased mental load for women can impact their well-being. By conducting a survey with almost 400 married women in the US, they found evidence that cognitive tasks regarding household routines, like schedule organisation or managing and assigning tasks within the family, are mainly done by women. But again, the distribution varies for different tasks, with tasks related to finances being distributed mostly equally. Tasks regarding childcare were either mainly done by women and or equally distributed. Ciciolla and Luther (2019) also find a negative correlation between mental load and well-being and relationship satisfaction. Therefore, Ciciolla and Luther (2019) suggest incorporating the aspect of mental load in future research about household labor. Also, Offer (2014) shows that women's emotional well-being suffers more from thinking about family related issues than men's. Even if women and men spend equal time thinking about family matters, it only causes emotional stress for mothers (Offer 2014).

Furthermore, similar to previous research results on inequitable distribution of the mental load for intact couples (Daminger 2019; Offer 2014; Rehel 2014), similar patterns have been found for separate families (Luthra and Haux 2022). Luthra and Haux (2022) draw on 31 semi-structured interviews of separated parents in the UK, including 7 former couples and find that for some families, gendered identities and working lives continue to justify an unequal division of the mental load, even when children spend large amounts of time solely with fathers. The gendered working lives, identities and ideology can justify an unequal division of the mental load even across two households, with separated women deemed to “naturally” have better organisational skills and fathers' contribution conceived as financial and in-kind transfers (Luthra and Haux 2022). But Luthra and Haux (2022) also find that separation can present a turning point where working lives and identities are re-evaluated, and the mental load can be negotiated anew.

2.4 Mental load measurement

Measuring mental load poses a difficulty in research. Different types of interviews (focus group interviews, semi-structured interviews) have been used in previous research to identify the mental load and its share within families (Daminger 2019; Robertson et al. 2019; Luthra and Haux 2022). The method Subjective Workload Assessment Technique (SWAT) introduced by Reid and Nygren (1988) breaks down the mental workload into three parts: time load, mental effort load, and psychological stress load. It captures this multidimensional nature of mental workload by a two-phased method that includes (a) a scale development phase based on the conjoint measurement and non-metric scaling, and (b) an event scoring phase. Ciciolla and Luthar (2019) used a survey to identify the distribution of cognitive labor. They divide mental load in three categories: household routines, child adjustment and household finances. The participants need to decide for several items whether they themselves or their partner have the main responsibility for this task or if it is equally distributed. The frequency of answering “mostly me” is used as a score to measure the responsibility for cognitive tasks within the household.

The survey structure from Ciciolla and Luthar (2019) is used as a reference for the survey presented in this paper to measure mental load. It allows the research to measure the perceived relative distribution between partners for different aspects. The quantification of the total hours spent on cognitive labor is difficult to define, which is why a measurement in absolute hours may be less useful. Although this metric is rough, it enables a simple and easily comprehensible survey design where I can identify whether one partner has more responsibility with regard to mental load. It captures most aspects of cognitive household labor. Dividing the issues in several parts of mental load is also done by other authors (e.g., Daminger 2019), as it helps to differentiate within the broad field of mental load.

2.5 My contribution to the literature

The literature review shows that there is substantial research on the relationship between household labor (mainly focused on physical labor) and income, with a mixed results of linear and curvilinear relationship for women and men. As recent papers start focusing more on the factor of mental load within the area of household work, this paper aims to fill the gap in research regarding the relationship between mental load and a person’s share of household income. My data can also shed light on whether gender attitudes still influence men’s and women’s behaviour, in which gender deviations in income shares are compensated for by

household work. It is also novel to compare results between a developed country with more gender equal attitudes and a developing country with less gender equal attitudes.

3 Experiment design and Data

3.1 Setup and Conditions

In order to avoid “researcher degrees of freedom” including p-hacking (Simmons et al 2011), and more specifically, to minimise the risk of finding a false positive, a pre-analysis plan was decided upon and submitted to osf.io, in advance of starting the data collection. In the pre-analysis plan, all statistical methods, and regressions, that later were used in the research, were clearly stated. And the pre-analysis plan can be found both in the Appendix and the link to osf.io website, <https://osf.io/7hb9c/>.

3.1.1 Experimental Design

To study whether mental load varies with share of household income, I conduct a survey on adults who share their household with a heterosexual partner and have dependent children at home. Participants are given a survey that captures several demographics and their household structure and income, and, importantly, questions on the division of labor within the household. The questions are split into three divisions of household tasks: Household routines, Child well-being, and Responsibility for household finances. Within each division, four tasks are described, and participants are asked which proportion of this task they take responsibility for at a household level by choosing from “Mostly me”, “Both Equally” and “Mostly My Partner”. All responsibilities and household tasks are mental by their construction as I am only interested in the individual share of mental labor. Points are assigned to each answer of the survey as a measure of the proportion of household tasks the participant is responsible for, this is then used as a proxy for mental load. The information drawn from this survey is used to measure whether the share of household responsibilities and therefore mental load varies for men and women by their share of household income and between countries.

3.1.2 Design of Forms

To keep the drop-out rate low and the response rate high, the survey was designed as short as possible while containing the necessary questions. I conducted a pilot study in order to identify potential issues with the survey and to get feedback from the test participants. This also provided an indication on how long the survey takes to fill out. And from the exported outcome from the survey website, on average most people spend around 6 minutes to complete the survey.

The pilot study was conducted by letting friends and family in the target participant pool answer my survey. 50 individuals were recruited for the pilot study. After the pilot study an additional attention check question was added near the end of survey by asking respondents to choose a certain number from the choices to confirm if respondents paid attention in the survey process. From the feedback from China, a relatively low level of mental load was found compared with the Swedish data, so one more question was added about physical housework to see if it has something to do with the extra help in the Chinese context. This question asks about who is mainly responsible for the physical housework. There are three options to choose, that are “mostly me”, “mostly my partner”, and “mostly help from family or paid help”.

The formal data collection survey was distributed and conducted online in order to reach as many potential participants as possible. The drawback of conducting the survey online is that I cannot answer questions if anything is unclear in the survey.

The survey begins by asking questions on several demographics, household structure and income. These are: 1) How many dependent children do you have at home? (1, 2, 3, 4 or more). 2) What is your gender on your passport? (Female or male). 3) What is your total household income? (Open answer) 4) What is your net annual income? (Open answer).

The survey proceeds by asking the questions that will form my dependent variable: the total mental load of an individual. Inspiration was drawn from the research of Ciciolla and Luthar (2019), and Daminger (2019), with multiple of the questions directly taken from the former. The advantage of utilising many of the same questions as Ciciolla and Luthar is that my results can easily be compared with the ones of Ciciolla and Luthar, both in terms of how mental household labor differ between geographies.

As stated in 3.1.1, there are 12 questions in total, divided into three distinct categories of mental load. On each respective question, the participant will answer which person in their household takes most of the responsibility for the relevant task. The alternative answers are “Mostly me”, “Mostly Partner”, or “Both Equally”. These three alternative answers are also replicated from Ciciolla and Luthar (2019). The categories and respective questions are as follows:

A. Responsibility for Household Routines

1. Organising schedules for the family.
2. Being the “captain of the ship”, ensuring that various tasks are appropriately covered.
3. Maintaining standards for routine and order in the home.
4. Deciding what meals to cook and planning shopping list.

B. Responsible for Child well-being

5. Being vigilant of the children's emotions.
6. Coordinating free time for the children (playdates, activities).
7. Instilling values and shaping character in your children.
8. Caring about children's school performance and extracurricular activities.

C. Responsible for Household Finances

9. Where to make financial investments
10. What and where to make major financial purchases (e.g., car, kitchen renovation)
11. Ensuring bills are paid on time
12. Planning vacation budget

In the introduction of the survey, before answering the questions on mental household labor division, a short explanatory sentence was included to emphasise that the questions are about mental household labor and not physical household labor, to make sure that this is clear for the participants. This should not bias the answers but instead give more accurate results as it should decrease the risk of participants misinterpreting the task.

The motivation for the categorization of household tasks is that the division of household labor between couples is not evenly spread out between types of household activities. As mentioned in the literature review, anticipating needs and monitoring actions are mainly done by women, while cognitive tasks more associated with decision-making and power are distributed more equally (Ciciolla and Luther 2019). Further justification for the categorisation of cognitive household labor is that the amount of effort put in the different categories might vary with income. For example, there is evidence that when women's earnings increase, they take on a larger role in the financial management of their household (Mano-Negrin and Katz 2003). Studies have also found that middle-income mothers in the US invested more time in parenting responsibilities than did low-income and high-income mothers (Offer 2014).

An attention and logic check question was included in order to exclude participants who did not attentively read the survey from the statistical analysis. The attention question is as follows: "What is the gender of your first child?" With alternatives: *male, female, I have no child*. If a person answered a positive number of children in previous question but choose to answer *I have no child* in this attention check question, I pre-specified that I would exclude this participant from the analysis.

It was not possible to skip questions in the survey.

3.1.3 Participants and Power Calculation

In order to achieve at least 80 % statistical power and significance at the 5 percent level to detect an effect size of 0.3, a large pool of participants is needed. Based on a power calculation, previous research, and practical considerations, more data are needed in China to represent the larger population compared with Sweden. Due to resources constraints, this research aims to collect a minimum of 200 responses with an even gender ratio from Sweden and 500 responses with an even gender ratio from China, which should be sufficient in order to detect an effect if there exists a true effect. I pre-specified that if the Swedish sample did not reach the minimum size requirement, the regression analysis would focus more on the Chinese data with the Swedish data being shown as descriptive statistics and analysed more as exploratory.

My focus is on adult men and women, 18 years or older, living in a shared, heterosexual household with dependent children at home. According to Bianchi et al. (2000), Birch (2009) and Bureau of Labor Statistics (2015), couples with children tend to have the greatest gender differences in time spent on the household, thus, I decided to focus on couples with dependent children at home. This is also in line with the previous literature, making it easier to compare results and build upon past research. 18 years old was chosen as the age-limit to simplify data collection and GDPR related considerations.

The survey was distributed and conducted on social media, email, and physical QR code to reach as many potential participants as possible. The drawback of conducting the experiment digitally is that I could not answer questions if anything was unclear in the survey. To mitigate the risk of the survey is unclear, two questions about the mental load clarification were included. However, this cannot guarantee the full attention of participants, and thus, the above-mentioned attention questions were included in the survey.

There are some rules to exclude unqualified data. A screening question about whether the respondent is married or living with a partner is included in the beginning. Respondents who are unmarried and living alone are not provided with further questions since they are not the targeted respondents. Responses with incomplete answers are not included in the analysis, as well as responses with a wrong answer in the attention check question. Inconsistent responses, for example those stating that their individual income is higher than their household income are also excluded. Those stating they have dependent children at home in the beginning but then answered they do not have any child in the question about the gender of the first child are

excluded. Respondents who stating age under 16 years old would be excluded. In the formal data collection, 342 responses are collected from Sweden and 938 were collected from China. After applying the attention check and also removing the unqualified respondents there are 225 Swedish data and 501 Chinese data for final data analysis.

Sending the survey widely online means I cannot really control who answers it so there might be self-selection bias and representative problems. The self-selection bias is that only individuals who are interested in the topic or have strong opinions respond to the survey. And the combination of respondents online may not be representative enough of the whole population. To solve this, respondents from the extensive personal network, including connections through friends, families, work, and school, will also be recruited to make sure the sample have a better representativeness for demographic pattern on the national level with respect to education and income levels and age. There is a need for caution when interpreting and generalizing the results within each country as well as between the two countries.

3.2 Data

3.2.1 Dependent variable

Mental Load: This is measured by a series of questions about the respondent's cognitive dimension of labor in three big household responsibility categories.

The dependent variable is the total score on household tasks. To analyse what proportion of household tasks participants are responsible for, participants are answering questions on 12 household responsibilities, and asked to rate how responsible they are for each one with the choices of “Mostly me”, “Mostly my spouse or partner”, and “Both Equally” as answer options. The survey and scoring scale are modified from Ciciolla and Luthar (2019). An answer of “Mostly Me” is assigned with a score of 1, an answer of “Both Equally” is assigned with a score of 0.5, while “Mostly my spouse or partner” is given a score of 0. Leading to a total score of 0-12.

3.2.2 Independent variables

Gender: it's the gender information on one's passport. It is measured as a binary variable, with 1 for women and 0 for men. Gender inequality is a key issue in this study, and it is important to investigate how the distribution of mental load varies across gender.

Share of Household Income: measured as the proportion of household income contributed by the respondent. The range of share of household income is from 0 to 1. It is the main

independent variable of interest. This will be coded by dividing the individual income with the total household income stated in the survey. This measure captures the level of financial contribution of each partner in the household, and it is relevant to understand the distribution of economic resources and bargaining power within the household.

Gender Attitude: measured by respondent's attitude towards the following three questions from World Value Survey (Haerpfer et al. 2020).

"A university education is more important for a boy than for a girl."

"When jobs are scarce, men should have more right to a job than women."

"It is much better for everyone involved if the man is the achiever outside the home and the woman takes care of the home and family."

Respondents use a slider to choose to which extent they agree with the statements. Their attitudes from strongly disagree to strongly agree are divided into 5 options, in which strongly disagree is scored as 1, and strongly agree is scored as 5. The sum of the score turns into a gender attitude index. The higher number of the index is, the more traditional the gender attitude that respondent the person holds. The range of the gender attitude index is from 3 to 15.

Country: it is the country the respondent lives in. It is measured as a dummy variable, with 1 for China and 0 for Sweden.

Control variables will be added in order to account for potential confounding factors that may affect both mental load and the share of household income. They include number of dependent children at home, age, education, and employment status.

Number of dependent children at home is included as a control variable to account for the potential impact of childcare-related factors on the relationship between mental load and the share of household income. A family with more dependent children at home may have a higher mental load because the household responsibilities related to childcare is heavier.

Age is included as a control variable to account for the potential impact of age-related factors on the relationship between mental load and the share of household income. Older individuals may have different levels of mental load and income than younger individuals due to accumulated experience, skills, and differences in job opportunities. By including age as a

control variable, I can better isolate the true relationship between the variables of interest and reduce the likelihood of obtaining inaccurate or misleading results.

Education is included as a control variable to account for the potential impact of education-related factors on the relationship between mental load and income. Individuals with higher levels of education may have different levels of mental load and income than those with lower levels of education due to their skills, knowledge, and job opportunities. By including education as a control variable, I can better isolate the true relationship between the variables of interest and reduce the likelihood of obtaining inaccurate or misleading results. Different education levels are divided into four categories with related years of education in a parenthesis: high school or below (12 years or less), some college (14 years), college degree (16 years), and graduate degree and above (18 years or more). Categorizing education into dummy variables may lead to a loss of information and a decrease in statistical power, as it reduces the variability of the variable. Therefore, education is converted into numbers that represent the years of education.

Employment status is included as a control variable to account for the potential impact of employment-related factors on the relationship between mental load and income. Individuals who are employed may have different levels of mental load and income than those who are unemployed or not in the labor force, due to their job characteristics and time constraints. By including employment status as a control variable, the research can better isolate the true relationship between the variables of interest and reduce the likelihood of obtaining inaccurate or misleading results. Employment statuses are divided into unemployed or retired, part time employed, full time employed, and self-employed, and are coded as dummy variables.

Household Income is measured as self-reported total household income. People with higher household incomes might have more access to housework help or housework outsourcing which might play a role in influencing the mental load. This variable is used as a control variable, to better isolate the true relationship between the variables of interest and reduce the likelihood of obtaining inaccurate or misleading results.

By including these control variables in the econometric model, I can improve the reliability and validity of the findings and contribute to a better understanding of the relationship between mental load and the share of household income.

4 Empirical Approach

4.1 Hypothesis and regressions for each country

The following four groups of hypotheses and regressions were designed to apply to data from China and Sweden respectively.

Hypothesis 1: Across the combined mental household responsibility categories, women have a higher mental load than men.

This hypothesis is based on the observation that women typically have a higher responsibility for household tasks than men, particularly in Asian countries with more traditional gender roles societies. Although Sweden is in the forefront of gender equality countries, Swedish women spend more hours on housework than men (Statistics Sweden 2022). the following First Model (M1) can be used to test hypothesis 1 in each country.

$$\text{Mental load}_i = \beta_0 + \beta_1 \text{Gender}_i + X\beta + \varepsilon$$

Where:

- Mental load_i is the mental load of individual i
- Gender_i is a dummy variable indicating the gender of individual i (1 for female, 0 for male)
- X is a vector of control variables including Number of dependent children at home, Age, Education, Employment Status and Household Income.
- β_0 is the intercept
- β_1 is the coefficient for Gender_i, which represents the difference in mental load between women and men
- β is a vector of coefficients for the control variables
- ε is the error term

If β_1 is statistically significant and positive, it would provide evidence that women have a higher mental load than men.

Hypothesis 2a: Across the combined mental household responsibility categories, women's mental load will be negatively correlated with their share of household income.

Hypothesis 2b: Across the combined mental household responsibility categories, men's mental load will be negatively correlated with their share of household income.

To test these two hypotheses, I separately use data from men and women to do two regressions respectively based on the second model(M2) where $ShareHHincome_i$ is individual i 's share of household income.

$$Mentalload_i = \beta_0 + \beta_1 ShareHHincome_i + X\beta + \varepsilon$$

For women, if β_1 is negative and statistically significant, it would indicate that there is a negative correlation between women's share of household income and their mental load. This would support the hypothesis 2a. For the male data, if β_1 is negative and statistically significant, it would indicate that there is a negative correlation between men's share of household income and their mental load. This would support the hypothesis 2b.

Hypothesis 3. Across the combined mental household responsibility categories, the relationship between mental load and share of household income is different for men and women.

By adding $ShareHHincome_i$ and the interaction term of $ShareHHincome_i$ and gender into the M1, I get the following second model (M3)

$$Mentalload_i = \beta_0 + \beta_1 Gender_i + \beta_2 ShareHHincome_i + \beta_3 Gender_i * ShareHHincome_i + X\beta + \varepsilon$$

A statistically positive β_3 will suggest that the effect of share of household income on mental load is stronger for women than for men. In other words, women who contribute more to the household income tend to experience a higher mental load compared to men who contribute the same amount.

However, before data was finally collected, the research cannot rule out the possibility that the relationship between the share of household income and mental load may not be strictly linear in the complex reality situation. Some findings from previous literature related to physical housework showed a quadratic relationship between household labor and the share of

household income. For example, Greenstein (2000) and Bittman et al. (2003) show that the proportion of housework and economic dependence follows a u-shaped convex distribution for women and a concave distribution for men. As women's share of household income increases, bargaining power increases and the opportunity cost of performing household responsibilities increases driving the expected decrease in household responsibilities and mental load. However, at high proportions of income women try to normalize the social gender deviance that their higher income share represents by being more active in household tasks and thus performing a more traditional gender norm (Schneider 2011).

Therefore, I have the following hypothesis between mental load and share of household income.

Hypothesis 4a: Across the combined mental household responsibility categories women will be initially decreasingly responsible as their share of household income increases then this mental load will increase at higher income level.

Hypothesis 4b: Across the combined mental household responsibility categories men will be initially increasingly responsible as their share of household income increases then this mental load will decrease at higher income level.

To test these hypotheses, I use a quadratic model to do two regressions on female and male data respectively. The quadratic model (M4) includes the ShareHHincome2 which is the share of household income squared.

$$\text{Mentalload}_i = \beta_0 + \beta_1 \text{ShareHHincome}_i + \beta_2 \text{ShareHHincome}_i^2 + X\beta + \varepsilon$$

If I find statistically significant $\beta_1 < 0$ and $\beta_2 > 0$ for women, I have evidence for hypothesis 4a. In other words, there is a convex U-shaped relationship between mental load and share of household income for women.

For men, if I find statistically significant $\beta_1 > 0$ and $\beta_2 < 0$, I have evidence for hypothesis 4b. In other words, there is a concave relationship between mental load and share of household income for men.

Hypothesis 5a: controlling for the share of household income, women with a more traditional gender attitude will have more mental load.

Hypothesis 5b: controlling for the share of household income, men with a more traditional gender attitude will have less mental labor.

To test these two hypotheses, I separately use data from men and women to do two regressions respectively based on the fifth model(M5) where Genderattitude_i is individual i's gender attitude.

$$Mentalload_i = \beta_0 + \beta_1 ShareHHincome_i + \beta_2 Genderattitude_i + X\beta + \varepsilon$$

For women, if β_2 is negative and statistically significant, it would indicate that women's traditional gender attitude is positively correlated with their mental load. This would support hypothesis 5a. For men, if β_2 is negative and statistically significant, it would indicate that men's traditional gender attitude is negatively correlated with their mental load. This would support hypothesis 5b.

4.2 Hypotheses and regressions comparing China and Sweden

Hypothesis 6 controlling for the share of household income and other factors, parents in China have a higher mental load than parents in Sweden.

This hypothesis is derived from cultural and societal differences between the two countries, such as differences in gender roles, family structure, and social norms. Studies have shown that Chinese parents tend to have more traditional gender roles, with women primarily responsible for domestic tasks and child-rearing, while men focus on providing financial support for the family (Hu and Scott 2016). In contrast, Swedish society has been characterized by greater gender equality, with a larger proportion of women in the workforce and a more equal division of household tasks (Esping-Andersen 2009). Additionally, cultural factors such as collectivism and high family expectations may contribute to a greater mental load for Chinese parents, as compared to their Swedish counterparts (Huang and Gove 2015).

To test this hypothesis, the following regression analysis (M6) will be conducted. Country_i is a dummy variable represents which country a parent live in. Living in China is coded into 1

while living in Sweden is coded into 0. X is a vector of control variables including Number of children, Age, Education, Employment Status, Household Income and Share of household income.

$$\text{Mentalload}_i = \beta_0 + \beta_1 \text{Country}_i + X\beta + \varepsilon$$

If β_1 is positive and statistically significant, then I find evidence for Hypothesis 6. The parents in China bear a higher mental load than parents in Sweden when other considered factors are the same.

Hypothesis 6a: controlling for the share of household income and other factors, women in China have a higher mental load than women in Sweden.

Hypothesis 6b: controlling for the share of household income and other factors, men in China have a lower mental load than men in Sweden.

These hypotheses are grounded in several factors, including cultural differences and variations in gender roles and expectations. Studies have shown that Chinese women often bear a disproportionate burden of household and caregiving responsibilities, while men focus primarily on financial provision for the family rather than being involved in domestic and caregiving tasks (Hu and Scott 2016). In contrast, Swedish society has been characterized by greater gender equality, with a more even distribution of household tasks and a larger proportion of women in the workforce (Esping-Andersen 2009). This may result in a lower mental load for Chinese men, as they may not perceive the same level of responsibility and expectation for managing household and family responsibilities as their Swedish counterparts. These differences in gender roles and expectations may contribute to a higher mental load for Chinese women, as compared to their Swedish counterparts. Besides, studies have shown that Chinese culture places a strong emphasis on family values and obligations, with a greater expectation for women to prioritize their family responsibilities over personal pursuits (Huang and Gove 2015). This may result in a greater level of social support and assistance from extended family members, especially from men's female extended family members, which can help to alleviate the mental load experienced by men. In contrast, Swedish culture is often characterized by a more individualistic and egalitarian approach, with greater emphasis placed on personal fulfillment and self-care (Lockhart 2003).

To test these hypotheses, the following regression analysis (M7) will be conducted. $\text{Gender}_i * \text{Country}_i$ is the interaction term between country and gender. X is a vector of control variables

including Number of children, Age, Education, Employment Status, Household Income, and Share of household income.

$$Mentalload_i = \beta_0 + \beta_1 Gender_i + \beta_2 Country_i + \beta_3 (Gender_i * Country_i) + X\beta + \varepsilon$$

If β_2 and β_3 is statistically significant and positive, it would provide evidence for women in China having a higher mental load than women in Sweden. If β_2 is statistically significant and negative, it would provide evidence for men in China having a lower mental load than men in Sweden.

4.3 Exploratory analysis in separate household responsibilities

To investigate into details of how the mental load composite. I have the following exploratory analysis by developing *Hypothesis 1* from the main analysis into following three sub category analysis in separate household responsibilities.

*Hypothesis 1a: Women have a higher mental load than men for **household routines**.*

*Hypothesis 1b: Women have a higher mental load than men for **child well-being**.*

*Hypothesis 1c: Women have a higher mental load than men for **household finances**.*

$$Mentalload_i = \beta_0 + \beta_1 Gender_i + X\beta + \varepsilon$$

Where:

- $Mentalload_i$ is the mental load of individual i in the related household responsibility category.
- $Gender_i$ is a dummy variable indicating the gender of individual i (1 for female, 0 for male)
- X is a vector of control variables including Number of dependent children at home, Age, Education, Employment Status and Household Income.
- β_0 is the intercept
- β_1 is the coefficient for $Gender_i$, which represents the difference in mental load between women and men
- β is a vector of coefficients for the control variables
- ε is the error term

To test these hypotheses, I can use the mental load in separate household responsibility categories as the dependent variable. If β_1 is statistically significant and positive, it would provide evidence that women report a higher mental load than men in related household responsibility category.

To understand the composition of the relationship between mental load and household income, the following six exploratory analysis were carried out from *Hypothesis 2a* and *Hypothesis 2b*, with mental load of a specific family responsibility category as the dependent variable.

*Hypothesis 2c: Women's mental load in **household routines** will be negatively correlated with their share of household income.*

*Hypothesis 2d: Men's mental load in **household routines** will be negatively correlated with their share of household income.*

*Hypothesis 2e: Women's mental load in **child well-being** will be negatively correlated with their share of household income.*

*Hypothesis 2f: Men's mental load in **child well-being** will be negatively correlated with their share of household income.*

*Hypothesis 2g: Women's mental load in **household finances** will be negatively correlated with their share of household income.*

*Hypothesis 2h: Men's mental load in **household finances** will be negatively correlated with their share of household income.*

These hypotheses are based on bargaining theory. The partner with a higher share of household income will have more bargaining power in decision-making about household responsibilities. This could lead to an unequal distribution of mental load, with the partner who earns less taking on a greater share of household tasks that require mental effort.

$$Mentalload_i = \beta_0 + \beta_1 ShareHHincome_i + X\beta + \varepsilon$$

To test these hypotheses, I can use the mental load in separate household responsibility categories as the dependent variable and regress on women's and men's data respectively. For the female data, if β_1 is negative and statistically significant, it would indicate that there is a

negative correlation between women's share of household income and their mental load in related household responsibilities. For the male data, if β_1 is negative and statistically significant, it would indicate that there is a negative correlation between men's share of household income and their mental load.

To gain a deeper understanding of the results pertaining to *Hypothesis 4a* and *Hypothesis 4b*, further investigation was conducted by repeating the regression model (M4) with separate household responsibility categories as the dependent variable. The same model was utilized, with the aim of testing the following additional hypotheses:

*Hypothesis 4c: Women will be initially decreasingly responsible for **household routines** as their share of household income increases then this mental load will increase at high shares of household income*

*Hypothesis 4d: Men will be initially increasingly responsible for **household routines** as their share of household income increases then this mental load share will decrease at high shares of household income*

*Hypothesis 4e: Women will be initially decreasingly responsible for **child well-being** as their share of household income increases then this mental load will increase at high shares of household income*

*Hypothesis 4f: Men will be initially increasingly responsible for **child well-being** as their share of household income increases then this mental load will decrease at high shares of household income*

*Hypothesis 4g: Women will be initially decreasingly responsible for **household finances** as their share of household income increases then this mental load share will increase at high shares of household income*

*Hypothesis 3h: Men will be initially increasingly responsible for **household finances** as their share of household income increases then this mental load will decrease at high shares of household income*

$$\text{Mentalload}_i = \beta_0 + \beta_1 \text{ShareHHincome}_i + \beta_2 \text{ShareHHincome}_i^2 + X\beta + \varepsilon$$

As with all the regressions I have included a quadratic share of household income term I focus on the sign of the co-efficient of the quadratic term. For all regressions and hypotheses, it is expected to see $\beta_1 < 0$ and $\beta_2 > 0$ for women implying a diminishing reduction in mental

load with increases in share of household income and a convex U-shaped relationship. For men it was expected to see $\beta_1 > 0$ and $\beta_2 < 0$ for all regressions leading to a concave relationship.

4.4 Robustness checks

I conduct a t-test to compare the mean mental load scores between men and women in both Sweden and China.

As an additional measure to account for errors in calculating income when completing the survey or to limit the effect of potential extreme outliers I repeat the analysis without the top and bottom 5% participants in terms of household income. It was expected no changes to the signs of the β_1 and β_2 coefficients with this reduced data set and expect to see limited or no change in the magnitude of the coefficients. Significant variation above this may suggest an overweighting on the top and bottom income tails in the results and put in doubt any relationship found between mental load and share of household income.

5 Results

5.1 Descriptive Statistics

In the study, a total of 342 responses were initially collected from Sweden and 938 responses were collected from China. After applying an attention check and removing respondents who did not meet the qualifications for the study, the final dataset for analysis consisted of 225 responses from Sweden and 501 responses from China. These qualified responses were deemed suitable for further data analysis to explore the research questions and hypotheses.

Table1: Descriptive Statics of the Respondents

Country	observations	number of men	number of women	average age	years of education	average annual household income
China	501	184	317	40.12	15.33	45.01 k USD
Sweden	225	70	155	36.84	16.24	78.81 k USD

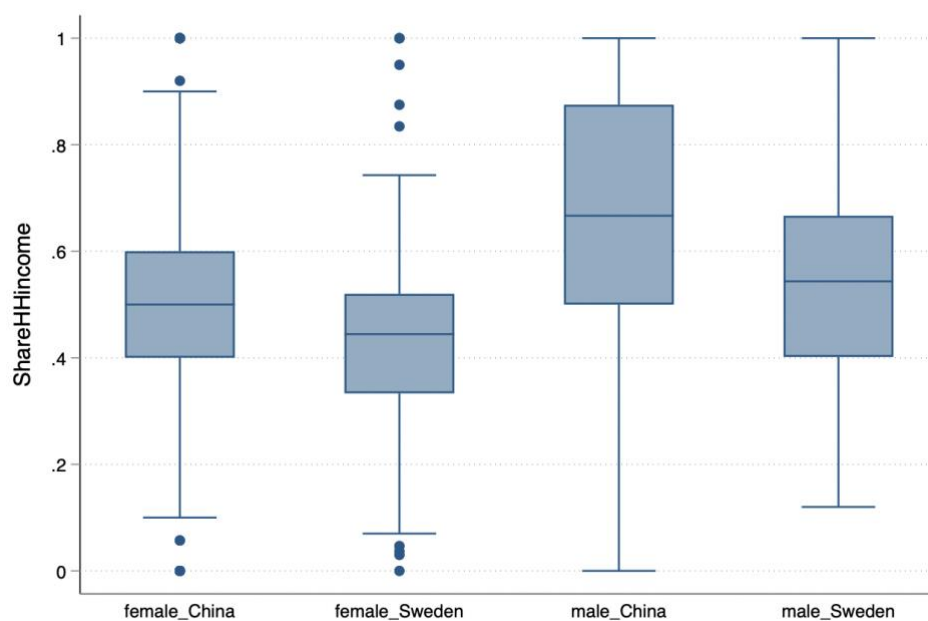
Source: Author's creation based on the survey responses

For the respondents from China (n=501), the average age is 40.12 years, with a standard deviation of 10.51. The age range of the respondents spans from 22 to 73 years old, indicating a diverse age distribution within the sample. On average, the respondents have completed 15.33 years of education, with a standard deviation of 2.07. This suggests a relatively high level of educational attainment among the participants, which may have implications for their socio-economic status and employment opportunities. In terms of family composition, the respondents have an average of 1.03 children, with a standard deviation of 0.81. This indicates that, on average, the respondents have slightly more than one child, suggesting a range of family sizes within the sample. 317 of the respondents are female which accounts for 63.27% of the respondents. The average annual household income is 311.80 thousand Chinese yuan (approximately 45.01 thousand USD) with a standard deviation of 528.77 thousand Chinese yuan. The range of household income in the dataset spans from a minimum of 10 thousand Chinese yuan to a maximum of 10,000 thousand Chinese yuan, reflecting the diverse income distribution within the sample. Among the respondents, the majority, comprising 75.45%, reported being full-time employed. Additionally, a small proportion of the respondents, accounting for 4.59%, indicated being part-time employed, suggesting a lesser commitment to work hours. Around 9.38% of the respondents identified themselves as self-employed, reflecting a notable segment of individuals who have their own businesses or work independently. Lastly, 10.58% of the respondents reported being either unemployed or retired, signifying a portion of the sample who are not currently engaged in formal employment due to various reasons such as joblessness or retirement.

For the respondents from Sweden (n=225), the average age is 36.84 years, with a standard deviation of 10.86. The age range of the respondents spans from 19 to 69 years old, indicating a diverse age distribution within the sample. On average, the respondents have completed 16.24 years of education, with a standard deviation of 1.87. This suggests a relatively high level of educational attainment among the participants, which is consistent with the overall educational

standards in Sweden. In terms of family composition, the respondents have an average of 1.19 children, with a standard deviation of 1.13. This indicates that, on average, the respondents have slightly more than one child, suggesting a range of family sizes within the sample. Furthermore, it is worth noting that a significant portion of the respondents are female, comprising 68.89% of the sample. This gender distribution is important to consider in analysing the gender dynamics and potential variations in mental load within Swedish households. The respondents in the Swedish data have an average annual household income of 809.93 thousand SEK, which is approximately equivalent to 78.81 thousand USD. The standard deviation of the household income is 842.03 thousand SEK, indicating a significant variation in income levels among the respondents. The range of household income in the dataset spans from a minimum of 0 SEK to a maximum of 11,000 thousand SEK, reflecting the wide range of income distribution within the sample. Among the respondents, the majority, accounting for 66.22%, are full-time employed. Additionally, 17.78% of the respondents reported being part-time employed, indicating a significant portion of the sample engaging in less than full-time work. Around 4.44% of the respondents identified themselves as self-employed, reflecting a small percentage of individuals who are entrepreneurs or have their own businesses. Lastly, 11.56% of the respondents reported being either unemployed or retired, indicating a portion of the sample who are not currently employed due to various reasons such as joblessness or retirement.

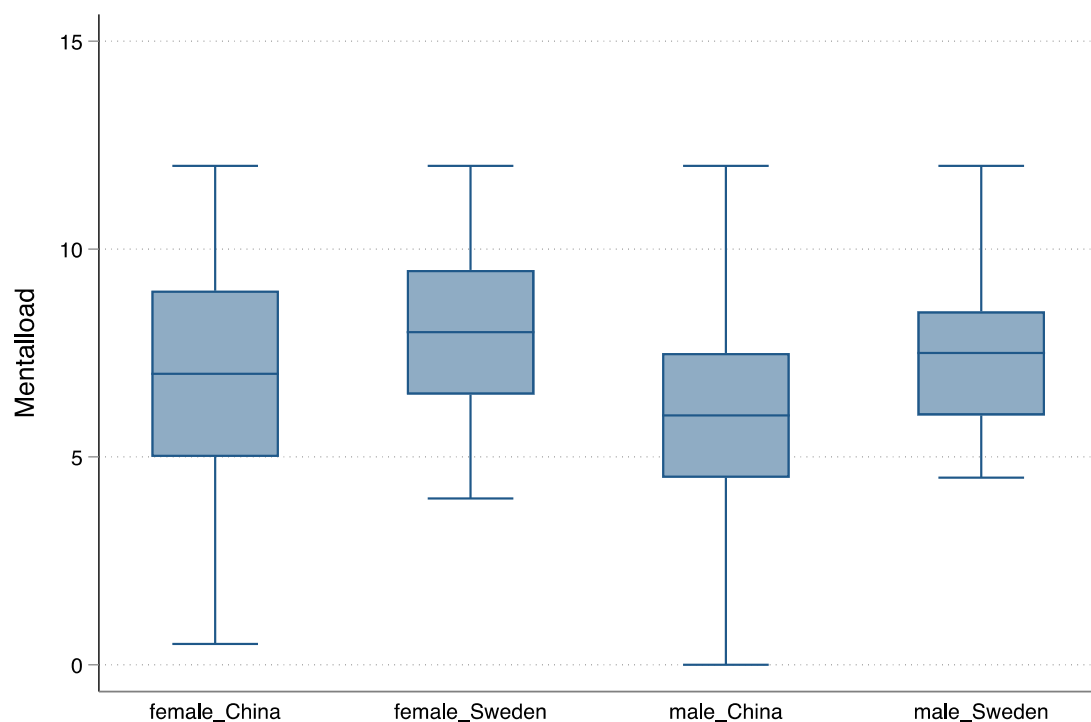
Figure 1 Share of Household Income for Different Groups



Source: Author's creation based on the survey responses

Figure 1 displays the distribution of the share of household income for respondents from China and Sweden. On average, men tend to have a higher share of household income in both countries. However, it is worth noting that the Swedish data exhibits greater variation compared to the Chinese data, indicating greater diversity in income distribution among the respondents.

Figure 2 Mental Load for Different Groups



Source: Author's creation based on the survey responses

Figure 2 illustrates the combined mental load scores for women and men in China and Sweden. The mental load score ranges from 0 to 12, with higher scores indicating a heavier mental load.

Among the female respondents from China (n=317), the average mental load score is 7.06, ranging from 0.5 to 12. On the other hand, the average mental load score for the 155 Swedish female respondents is slightly higher at 8.12.

For male respondents in China (n=184), the average mental load score is 6.05, with a range from 0 to 12. In comparison, male respondents in Sweden (n=155) have an average mental load score of 7.46, ranging from 4.5 to 12.

These findings suggest that, on average, female respondents in both countries tend to have a higher mental load compared to male respondents. In China, both male and female respondents have lower average mental load scores compared to their counterparts in Sweden. However, it is important to note the variability in the scores, as indicated by the range, which implies that there are individuals within each group experiencing different levels of mental load.

Table 2: Traditional Gender Attitude Index of Different Groups

Group	Obs	Mean	Std.Dev.	Min	Max
Female in Sweden	155	3.832258	1.793999	3	12
Male in Sweden	70	4.9	3.055762	3	15
Female in China	317	6.299685	2.974858	3	15
Male in China	184	7.603261	2.740147	3	14

The traditional gender attitude index shown in table 2 was utilized to assess the respondents' attitudes towards gender roles and gender equality across different contexts. The index has a range of 3 to 15, where higher scores indicate more traditional attitudes towards gender roles.

The findings from Table 2 indicate notable differences in gender attitudes between Sweden and China. In Sweden, women exhibit the least traditional attitudes towards gender roles and gender equality among the four comparison groups, with an average score of 3.83 and a standard deviation of 1.79. On the other hand, men in Sweden demonstrate slightly more traditional attitudes, with an average score of 4.9 and a higher standard deviation of 3.06.

In contrast, women in China exhibit significantly higher mean scores on the gender attitude index, indicating more traditional attitudes towards gender roles and gender equality, with an average score of 6.3 and a standard deviation of 2.97. Similarly, men in China hold more traditional attitudes, as evidenced by their higher average score of 7.6 and a standard deviation of 2.74. This suggests that both men and women in China hold more traditional views regarding gender roles and gender equality when compared to their counterparts in Sweden.

These results shed light on the differences in gender attitudes between Sweden and China, highlighting the more progressive attitudes of women in Sweden and the more traditional attitudes of both men and women in China. These findings can be explained by the differences in cultural and socio-economic factors between Sweden and China. Previous studies have shown that countries with higher levels of gender equality tend to have less traditional gender attitudes (Hofstede et al. 2010). Additionally, gender roles are often shaped by the economic structure and labor market conditions in a society (Budig and England 2001). Therefore, the more traditional gender attitudes in China may reflect the country's social and economic structures.

5.2 Regressions results

5.2.1 Main Results

Table 3: Regression Results of Relationship between Mental Load And Gender

	(1)	(2)
	Model 1	Model 2
VARIABLES	China	Sweden
Gender	1.270*** (0.222)	0.239 (0.195)
# of children	1.035*** (0.154)	1.036*** (0.0935)
Hhincome	7.11e-05 (0.000208)	0.000263** (0.000111)
Education	-0.0229 (0.0612)	0.0251 (0.0498)
Age	0.0484*** (0.0121)	0.0108 (0.00972)
full time employed	0.509 (0.384)	0.617 (0.442)
part-time employed	1.270**	0.459

	(0.610)	(0.510)
o.self-employed	-	-
unemployed or retired	0.244	0.0781
	(0.501)	(0.516)
Constant	2.729**	4.996***
	(1.208)	(1.070)
Observations	501	225
R-squared	0.225	0.524

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 3 presents regression results of mental load on several independent variables including the variable of interest, which is Gender. The first column shows the regression results for respondents in China, the second for respondents in Sweden. The regression results are to test hypothesis 1: Across the combined mental household responsibility categories, women have a higher mental load than men.

The coefficient for Gender is statistically significant and positive for Chinese data, it provides evidence that across the combined household responsibility categories women have a higher mental load than men in China. It is estimated that on average women in China would have 1.27 higher mental load scores than men in China. But the coefficient for Gender is not statistically significant for Swedish data. There is no evidence that women in Sweden have higher mental load than men across the combined household responsibility categories.

Table 4: Linear Regression Results of Mental Load on Share of Household Income

	(1)	(2)	(3)	(4)	(5)
	female	female	male	male	
VARIABLES	China	Sweden	China	Sweden	all respondents
ShareHHincome	2.507***	0.284	1.459*	1.027	0.867**

	(0.534)	(0.710)	(0.749)	(0.978)	(0.353)
# of children	1.348***	1.068***	0.675***	0.964***	1.156***
	(0.196)	(0.111)	(0.226)	(0.194)	(0.102)
Hhincome	0.000213	0.000204	-0.000437	0.000832**	0.000448***
	(0.000225)	(0.000127)	(0.000431)	(0.000329)	(0.000126)
Education	0.0980	0.0273	-0.0874	0.0218	0.0227
	(0.0778)	(0.0585)	(0.0910)	(0.104)	(0.0449)
Age	0.0707***	0.0168	-0.00456	-0.00715	0.0266***
	(0.0152)	(0.0118)	(0.0184)	(0.0186)	(0.00890)
full time employed	0.722	0.637	-0.118	-0.429	0.675**
	(0.468)	(0.581)	(0.756)	(0.583)	(0.310)
part-time employed	1.685**	0.580	1.624	-0.657	1.604***
	(0.689)	(0.654)	(1.234)	(0.620)	(0.413)
o.self-employed	-	-			-
unemployed or retired	0.418	-0.148			0.883**
	(0.570)	(0.675)			(0.393)
self-employed			0.0636	-1.526	
			(0.945)	(0.960)	
o.unemployed or retired			-	-	
Constant	-0.582	4.844***	5.970***	5.687***	3.010***
	(1.532)	(1.402)	(2.004)	(1.912)	(0.917)
Observations	317	155	184	70	726
R-squared	0.340	0.540	0.142	0.521	0.249

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 4 presents regression results of mental load on several independent variables including the variable of interest, which is share of household income (ShareHHincome). The first column shows the regression results for women in China, the second for women in Sweden, the third for men in China, the fourth for men in Sweden, and the fifth for all respondents. The regression results in table 3 is to test hypothesis 2a and 2b.

From the OLS model, the coefficient of ShareHHincome is positive and statistically significant only for female data from China, which indicate that women's share of household income is positively correlated with their mental load. There is no evidence that the relationship between share of household income and mental load is statistically significant for men and women in Sweden. When combining the data from Sweden and China together, the regression shows that the share of household income is positively correlated with mental load. Since there is no evidence to support the similar positive correlation between male's mental load and their share of household income, there is no need to test hypothesis 3 which assume the relationship between mental load and share of household income is different for men and women.

Table 5: Non-linear Regression Results of Relationship between Mental Load and Share of Household Income

	(1)	(2)	(3)	(4)
	female	female	male	male
VARIABLES	China	Sweden	China	Sweden
ShareHHincome	2.797 (2.038)	-3.440 (2.269)	5.764 (3.520)	-8.932* (4.759)
ShareHHincome ²	-0.255 (1.731)	3.617* (2.095)	-3.039 (2.428)	8.947** (4.189)
# of children	1.351*** (0.197)	1.071*** (0.111)	0.708*** (0.227)	1.011*** (0.189)
Hhincome	0.000218 (0.000228)	0.000136 (0.000132)	-0.000422 (0.000431)	0.000738** (0.000323)
Education	0.0973 (0.0781)	0.0239 (0.0581)	-0.0929 (0.0910)	0.0115 (0.102)
Age	0.0705*** (0.0154)	0.0171 (0.0117)	-0.00816 (0.0186)	-0.00148 (0.0183)
full time employed	0.724 (0.469)	0.709 (0.579)	-0.406 (0.789)	0.122 (0.622)
part-time employed	1.691**	0.653	1.400	-0.147

	(0.691)	(0.651)	(1.245)	(0.649)
o.self-employed	-	-		
unemployed or retired	0.447	-0.290		
	(0.604)	(0.676)		
self-employed			-0.225	-1.169
			(0.972)	(0.948)
o.unemployed or retired			-	-
Constant	-0.636	5.729***	5.062**	7.710***
	(1.577)	(1.484)	(2.128)	(2.086)
Observations	317	155	184	70
R-squared	0.340	0.549	0.150	0.555

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 5 presents a non-linear regression results of relationship between mental load and several independent variables including the variable of interest, which is share of household income (ShareHHincome). No evidence is found for hypothesis 4a and hypothesis 4b. In other words, there is no evidence for a convex U-shaped relationship between mental load and share of household income for women or a concave relationship between mental load and share of household income for men.

However, for men in Sweden, there is a convex U-shaped relationship between mental load and share of household income, suggesting that mental load for this group is first negatively correlated with the share of household income as the share of household income increases then mental load is positively correlated with the share of household income after a contain level of share of household income. But this is found in the relatively small sample size which is only 70 sample from Sweden.

Table 6: Regression Results of Relationship between Mental Load and Gender Attitude

	(1)	(2)	(3)	(4)	(5)
	female	female	male	male	
VARIABLES	China	Sweden	China	Sweden	all respondents
ShareHHincome	2.521*** (0.536)	0.390 (0.709)	1.242 (0.757)	0.711 (0.935)	0.988*** (0.360)
Genderattitude	-0.0254 (0.0475)	0.102 (0.0621)	0.110 (0.0666)	0.145*** (0.0518)	-0.0486* (0.0294)
# of children	1.366*** (0.199)	1.055*** (0.111)	0.580** (0.232)	0.960*** (0.184)	1.167*** (0.102)
Hhincome	0.000215 (0.000226)	0.000221* (0.000126)	-0.000408 (0.000430)	0.000725** (0.000315)	0.000425*** (0.000126)
Education	0.0919 (0.0788)	0.0343 (0.0583)	-0.0783 (0.0908)	0.0652 (0.100)	0.00914 (0.0455)
Age	0.0715*** (0.0153)	0.0191 (0.0118)	-0.00636 (0.0183)	-9.14e-05 (0.0179)	0.0278*** (0.00892)
full time employed	0.707 (0.470)	0.777 (0.584)	-0.0729 (0.753)	-0.238 (0.557)	0.624** (0.311)
part-time employed	1.684** (0.690)	0.625 (0.651)	1.427 (1.234)	-0.549 (0.590)	1.568*** (0.414)
o.self-employed	-	-			-
unemployed or retired	0.441 (0.572)	-0.0160 (0.676)			0.870** (0.393)
self-employed			0.0685 (0.941)	-1.251 (0.916)	
o.unemployed or retired			-	-	
Constant	-0.375 (1.582)	4.095*** (1.467)	5.290** (2.036)	4.119** (1.898)	3.440*** (0.952)

Observations	317	155	184	70	726
R-squared	0.341	0.548	0.155	0.576	0.252

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 6 presents regression results of relationship between mental load and the variable of interest that is gender attitude, and other control variables. From the design of the survey, a higher gender attitude score indicates a more traditional gender attitude. For the female data, the coefficient of gender attitude is not negative or statistically significant for respondents from Sweden or China respectively. There is no evidence for hypothesis 5a which assumes that controlling for the share of household income, women with a more traditional gender attitude will have more mental load.

But for the male data in Sweden, the coefficient of gender attitude is statistically significant and positive, which indicates that Hypothesis 5b is rejected and men's traditional gender attitude is positively correlated with their mental load.

Table 7: Regression Results of Mental Load difference on Country Level

VARIABLES	(1) Parents in China vs Sweden
country==China	-1.022*** (0.197)
country==Sweden = o,	-
# of children	1.035*** (0.102)
Hhincome	0.000195 (0.000130)
Education	-0.0271 (0.0445)

Age	0.0348*** (0.00881)
full-time employed	0.522* (0.307)
part-time employed	0.959** (0.420)
unemployed or retired	0.444 (0.391)
Constant	5.109*** (0.910)
Observations	726
R-squared	0.270

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 7 presents regression results of relationship between mental load and a parent's residence country. The coefficient of being a residence in China is negative and statistically significant, which is evidence to reject hypothesis 6. Evidence was found that the parents in China bear a lower mental load than parents in Sweden when other considered factors are the same.

Table 8: Regression Results of Mental Load with Gender Country Interaction Term

VARIABLES	(1) Model 1
Gender	0.117 (0.304)
country_dummy	-1.866*** (0.305)
genercountry_intersection_term	1.153*** (0.363)
# of children	1.046***

	(0.0993)
Education	-0.0164
	(0.0425)
Age	0.0396***
	(0.00858)
Employment==full-time employed	0.516*
	(0.297)
Employment==part-time employed	0.824**
	(0.405)
Employment==self-employed = 0,	-
Employment==unemployed or retired	0.210
	(0.378)
Constant	4.879***
	(0.906)
Observations	726
R-squared	0.309

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 8 presents regression results of mental load with gender country interaction term. The regression model for this table is that $Mentalload_i = \beta_0 + \beta_1 Gender_i + \beta_2 Country_i + \beta_3 (Gender_i * Country_i) + X\beta + \varepsilon$. From Table 8, β_2 and β_3 are statistically significant. The sum of β_2 and β_3 catches the difference between mental load of women in China and women in Sweden. The sum of β_2 and β_3 is negative which provides evidence women in China have a lower mental load than women in Sweden. β_2 catches the difference between men in China and men in Sweden and it is statistically significant and negative, which provides evidence that men in China have a lower mental load than men in Sweden.

5.2.2 Sub Analysis Results

Table 9: Regression Results for Mental Load Gender Difference in Subcategories

VARIABLES	(1) household routine China	(2) household routine Sweden	(3) child well-being China	(4) child well-being Sweden	(5) household finance China	(6) household finance Sweden
Gender	0.936*** (0.0931)	0.243*** (0.0790)	0.967*** (0.105)	0.155 (0.111)	-0.634*** (0.113)	-0.159 (0.100)
Nchild	0.0385 (0.0645)	0.0678* (0.0378)	0.857*** (0.0728)	0.957*** (0.0533)	0.139* (0.0785)	0.0117 (0.0480)
Hhincome	1.74e-05 (8.72e-05)	6.10e-05 (4.49e-05)	6.56e-06 (9.84e-05)	9.98e-05 (6.33e-05)	4.71e-05 (0.000106)	0.000102* (5.71e-05)
Education	-0.0325 (0.0256)	-0.00674 (0.0202)	0.00980 (0.0289)	0.00438 (0.0284)	-0.000232 (0.0312)	0.0274 (0.0256)
Age	0.00247 (0.00508)	-0.00458 (0.00393)	0.0440*** (0.00574)	0.0171*** (0.00554)	0.00194 (0.00619)	-0.00177 (0.00500)
full_time_employed	0.0879 (0.161)	0.135 (0.179)	0.339* (0.182)	0.292 (0.252)	0.0822 (0.196)	0.191 (0.227)
part_time_employed	0.365 (0.255)	0.0101 (0.206)	0.517* (0.288)	0.0628 (0.291)	0.388 (0.311)	0.386 (0.262)
unemployed/retired	0.185 (0.210)	-0.0763 (0.209)	0.103 (0.237)	0.0910 (0.294)	-0.0438 (0.255)	0.0633 (0.265)
Constant	2.176*** (0.506)	3.154*** (0.433)	-1.838*** (0.571)	-0.557 (0.610)	2.390*** (0.616)	2.399*** (0.550)
Observations	501	225	501	225	501	225
R-squared	0.188	0.103	0.462	0.740	0.080	0.051

Standard errors in parentheses
 *** p<0.01, ** p<0.05, * p<0.1

Table 9 presents regression results of mental load gender difference in household responsibility subcategories. The dependent variables are the mental load in different household responsibility categories. The variable of interest is Gender. In the household routine subcategory, the coefficient for Gender is statistically significant and positive for both Swedish and Chinese data. Which provides evidence that women in China and Sweden all have a higher mental load in household routines than men. And the magnitude of coefficient for Gender is higher for women in China compared with women in Sweden which means the gender difference is larger in China than that in Sweden. When it comes to child well-being and household finance there is a gender difference in China but not in Sweden. Women in China have a higher mental load in child well-being but have a lower mental load in household finance than men in China.

Table 10: Linear Regression Results of Relationship between Mental Load in Household Routines and Share of Household Income

VARIABLES	(1) female China	(2) female Sweden	(3) male China	(4) male Sweden	(5) all respondents
ShareHHincome	0.647***	-0.116	0.0201	0.159	-0.303*

	(0.216)	(0.290)	(0.345)	(0.390)	(0.160)
# of children	0.207***	0.0891*	-0.155	-0.00291	0.124***
	(0.0791)	(0.0455)	(0.104)	(0.0771)	(0.0461)
Hhincome	9.11e-05	1.60e-05	-0.000258	0.000361***	0.000199***
	(9.10e-05)	(5.16e-05)	(0.000199)	(0.000131)	(5.70e-05)
Education	0.00363	-0.0138	-0.0524	-0.0103	-0.00702
	(0.0315)	(0.0239)	(0.0420)	(0.0416)	(0.0204)
Age	0.0101	-0.00553	-0.0156*	-0.00719	-0.00458
	(0.00616)	(0.00481)	(0.00847)	(0.00742)	(0.00404)
full time employed	0.207	0.0464	-0.225	-0.0136	0.183
	(0.189)	(0.237)	(0.349)	(0.232)	(0.141)
part-time employed	0.476*	-0.0485	0.607	-0.187	0.582***
	(0.279)	(0.267)	(0.569)	(0.247)	(0.188)
o.self-employed	-	-			-
unemployed or retired	0.279	-0.239			0.444**
	(0.230)	(0.276)			(0.178)
self-employed			0.00393	-0.426	
			(0.436)	(0.383)	
o.unemployed or retired			-	-	
Constant	1.630***	3.695***	3.780***	3.182***	2.743***
	(0.619)	(0.572)	(0.924)	(0.761)	(0.416)
Observations	317	155	184	70	726
R-squared	0.096	0.075	0.079	0.166	0.053

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 10 presents regression results of mental load from household routines on several independent variables including the variable of interest, which is share of household income(ShareHHincome). The first column shows the regression results for women in China, the second for women in Sweden, the third for men in China, the fourth for men in Sweden, and the fifth for all respondents.

The coefficient for the variable of interest, share of household income (ShareHHincome), represents the relationship between mental load in household routines and the share of household income. The coefficient for ShareHHincome is positive and statistically significant for women in China and for all respondents, indicating that the share of household income is positively correlated with mental load in household routines for Chinese women. However, for women in Sweden and for men in both China and Sweden, the coefficient for ShareHHincome is not statistically significant, indicating no significant relationship between mental load in household routines and the share of household income.

Table 11 Linear Regression results of Relationship between Mental Load in Child Well-being and Share of Household Income

	(1)	(2)	(3)	(4)	(5)
	female	female	male	male	
VARIABLES	China	Sweden	China	Sweden	all respondents
ShareHHincome	0.0175 (0.262)	0.424 (0.398)	0.505 (0.355)	0.273 (0.600)	-0.244 (0.177)
# of children	1.077*** (0.0959)	0.957*** (0.0625)	0.558*** (0.107)	0.994*** (0.119)	0.866*** (0.0508)
Hhincome	6.44e-05 (0.000110)	0.000107 (7.09e-05)	-0.000191 (0.000204)	0.000262 (0.000202)	-4.52e-07 (6.29e-05)
Education	0.0188 (0.0382)	0.0155 (0.0328)	0.0151 (0.0431)	0.00143 (0.0641)	-0.0141 (0.0224)
Age	0.0497*** (0.00747)	0.0221*** (0.00661)	0.0318*** (0.00870)	0.00508 (0.0114)	0.0350*** (0.00445)
full time employed	0.476** (0.230)	0.308 (0.326)	0.174 (0.358)	-0.141 (0.357)	0.304* (0.155)
part-time employed	0.563* (0.338)	0.0751 (0.366)	0.930 (0.584)	-0.243 (0.380)	0.236 (0.207)
o.self-employed	-	-			-
unemployed or retired	0.199	0.0705			0.193

	(0.280)	(0.379)			(0.197)
self-employed			0.0315	-0.679	
			(0.448)	(0.589)	
o.unemployed or retired			-	-	
Constant	-1.587**	-0.974	-1.237	-0.0211	-0.400
	(0.751)	(0.786)	(0.949)	(1.172)	(0.459)
Observations	317	155	184	70	726
R-squared	0.515	0.749	0.326	0.711	0.469

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 11 presents regression results of mental load from child well-being on several independent variables including the variable of interest, which is share of household income(ShareHHincome). This is a multiple regression analysis with mental load from child well-being as the dependent variable and several independent variables, including variable of interest that is the share of household income. The results are presented for different subgroups (men and women in China and Sweden, and all respondents).

The coefficient for the ShareHHincome variable is positive in all subgroups. However, the coefficients are not statistically significant in any subgroup at the conventional levels ($p>0.1$), indicating that the relationship may not be robust or strong enough to be considered statistically significant. There is no evidence that share of household income is correlated with mental load in child well-being.

Table 12: Linear Regression Results of Relationship between Mental Load in Household Finance and Share of Household Income

	(1)	(2)	(3)	(4)	(5)
	female	female	male	male	
VARIABLES	China	Sweden	China	Sweden	all respondents

ShareHHincome	1.842*** (0.277)	-0.0231 (0.361)	0.934*** (0.355)	0.596 (0.531)	1.414*** (0.174)
# of children	0.0646 (0.102)	0.0211 (0.0567)	0.273** (0.107)	-0.0272 (0.105)	0.166*** (0.0501)
Hhincome	5.78e-05 (0.000117)	8.04e-05 (6.44e-05)	1.19e-05 (0.000205)	0.000209 (0.000179)	0.000249*** (6.19e-05)
Education	0.0756* (0.0404)	0.0256 (0.0298)	-0.0501 (0.0432)	0.0306 (0.0567)	0.0438** (0.0221)
Age	0.0109 (0.00791)	0.000205 (0.00600)	-0.0207** (0.00871)	-0.00504 (0.0101)	-0.00377 (0.00439)
full time employed	0.0388 (0.243)	0.283 (0.296)	-0.0668 (0.359)	-0.274 (0.316)	0.188 (0.153)
part-time employed	0.646* (0.358)	0.553* (0.333)	0.0864 (0.585)	-0.227 (0.336)	0.786*** (0.204)
o.self-employed	-	-			-
unemployed or retired	-0.0599 (0.296)	0.0201 (0.344)			0.246 (0.194)
self-employed			0.0281 (0.448)	-0.420 (0.521)	
o.unemployed or retired			-	-	
Constant	-0.626 (0.795)	2.124*** (0.713)	3.428*** (0.950)	2.526** (1.037)	0.667 (0.452)
Observations	317	155	184	70	726
R-squared	0.148	0.066	0.114	0.071	0.123

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 12 shows the results of a regression analysis with mental load from household finance as the dependent variable and ShareHHincome (share of household income) as the main independent variable of interest. The analysis is conducted separately for male and female respondents in China and Sweden, as well as for all respondents combined.

The coefficient for ShareHHincome is positive and statistically significant for all respondents and for both male and female respondents in China. This suggests that an increase in the share of household income that a respondent contributes is associated with a higher mental load from household finance. However, the coefficient is not statistically significant for female or male respondents respondents in Sweden. There is no evidence that the share of household income is correlated with mental load in household finance in Sweden.

Table 13: Non-linear Regression Results of Relationship between Mental Load in Household Routines and Share of Household Income

	(1)	(2)	(3)	(4)	(5)
VARIABLES	female China	female Sweden	male China	male Sweden	all respondents
ShareHHincome	-0.690 (0.820)	-1.309 (0.929)	-2.022 (1.623)	-1.989 (1.946)	-0.486 (0.628)
ShareHHincome ²	1.176* (0.696)	1.159 (0.858)	1.441 (1.119)	1.929 (1.713)	0.152 (0.504)
# of children	0.196** (0.0791)	0.0901** (0.0453)	-0.171 (0.105)	0.00722 (0.0775)	0.123*** (0.0462)
Hhincome	6.88e-05 (9.17e-05)	-5.65e-06 (5.39e-05)	-0.000265 (0.000199)	0.000341** (0.000132)	0.000197*** (5.75e-05)
Education	0.00698 (0.0314)	-0.0149 (0.0238)	-0.0498 (0.0419)	-0.0125 (0.0416)	-0.00664 (0.0204)
Age	0.0114* (0.00618)	-0.00543 (0.00480)	-0.0139 (0.00856)	-0.00597 (0.00748)	-0.00449 (0.00405)
full time employed	0.201 (0.189)	0.0693 (0.237)	-0.0890 (0.364)	0.105 (0.254)	0.185 (0.141)
part-time employed	0.450 (0.278)	-0.0250 (0.267)	0.713 (0.574)	-0.0771 (0.265)	0.583*** (0.188)
o.self-employed	-	-			-
unemployed or retired	0.146	-0.284			0.431**

	(0.243)	(0.277)			(0.183)
self-employed			0.141	-0.349	
			(0.448)	(0.388)	
o.unemployed or retired			-	-	
Constant	1.878***	3.978***	4.210***	3.618***	2.781***
	(0.634)	(0.608)	(0.981)	(0.853)	(0.436)
Observations	317	155	184	70	726
R-squared	0.105	0.087	0.088	0.183	0.053

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 13 presents the results of a non-linear regression analysis exploring the relationship between mental load in household routines and the share of household income. The table reports coefficients and standard errors for five different models that include various control variables. Models 1 and 2 report results for women in China and Sweden, respectively, while Models 3 and 4 present results for men in China and Sweden, respectively. Model 5 reports results for all respondents.

The coefficient for ShareHHincome² is positive and statistically significant in Model 1 only, suggesting a non-linear relationship between share of household income and mental load for women in China.

Table 14: Non-linear Regression Results of Relationship between Mental Load in Child Well-being and Share of Household Income

	(1)	(2)	(3)	(4)	(5)
	female	female	male	male	
VARIABLES	China	Sweden	China	Sweden	all respondents
ShareHHincome	-0.735	-0.430	2.102	-5.657*	-0.903
	(0.999)	(1.283)	(1.670)	(2.925)	(0.692)
ShareHHincome2	0.662	0.830	-1.127	5.327**	0.547
	(0.848)	(1.184)	(1.152)	(2.574)	(0.555)

# of children	1.071*** (0.0963)	0.958*** (0.0626)	0.570*** (0.108)	1.022*** (0.116)	0.863*** (0.0509)
Hhincome	5.18e-05 (0.000112)	9.20e-05 (7.44e-05)	-0.000185 (0.000204)	0.000206 (0.000199)	-8.21e-06 (6.33e-05)
Education	0.0207 (0.0383)	0.0148 (0.0329)	0.0131 (0.0432)	-0.00470 (0.0625)	-0.0128 (0.0225)
Age	0.0504*** (0.00753)	0.0222*** (0.00662)	0.0304*** (0.00881)	0.00845 (0.0113)	0.0353*** (0.00447)
full time employed	0.472** (0.230)	0.324 (0.327)	0.0674 (0.374)	0.187 (0.382)	0.310** (0.155)
part-time employed	0.549 (0.339)	0.0919 (0.368)	0.847 (0.591)	0.0607 (0.399)	0.240 (0.207)
o.self-employed	-	-			-
unemployed or retired	0.124 (0.296)	0.0380 (0.382)			0.148 (0.202)
self-employed			-0.0755 (0.461)	-0.467 (0.583)	
o.unemployed or retired			-	-	
Constant	-1.447* (0.773)	-0.771 (0.839)	-1.574 (1.009)	1.183 (1.282)	-0.260 (0.480)
Observations	317	155	184	70	726
R-squared	0.515	0.750	0.330	0.731	0.470

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 14 presents the results of a non-linear regression analysis examining the relationship between mental load in child well-being and share of household income, controlling for other relevant variables. The dependent variable is mental load in child well-being, while the variable of interest is share of household income, which is measured by ShareHHincome and ShareHHincome².

Table 14 is divided into five columns, with columns (1) and (2) representing female

respondents from China and Sweden, respectively, and columns (3) and (4) representing male respondents from China and Sweden, respectively. The final column shows the results for all respondents combined.

The coefficients for ShareHHincome and ShareHHincome² are statistically significant in Model 4 only, for men in Sweden, suggesting a non-linear relationship between share of household income and mental load in child well-being. Men in Sweden with low or high share household income are estimated to have more mental load in child well-being than men with middle share of household income. But this is found within a small sample size of 70.

Table 15: Non-linear Regression Results of Relationship between Mental Load in Household Finance and Share of Household Income

	(1)	(2)	(3)	(4)	(5)
	female	female	male	male	
VARIABLES	China	Sweden	China	Sweden	all respondents
ShareHHincome	4.221*** (1.049)	-1.700 (1.157)	5.684*** (1.635)	-1.285 (2.666)	3.937*** (0.675)
ShareHHincome2	-2.094** (0.891)	1.629 (1.068)	-3.354*** (1.128)	1.690 (2.347)	-2.093*** (0.541)
# of children	0.0843 (0.101)	0.0224 (0.0565)	0.308*** (0.106)	-0.0183 (0.106)	0.178*** (0.0497)
Hhincome	9.75e-05 (0.000117)	4.99e-05 (6.71e-05)	2.81e-05 (0.000200)	0.000192 (0.000181)	0.000279*** (6.18e-05)
Education	0.0696* (0.0402)	0.0240 (0.0296)	-0.0562 (0.0423)	0.0287 (0.0570)	0.0386* (0.0219)
Age	0.00873 (0.00791)	0.000342 (0.00597)	-0.0247*** (0.00863)	-0.00397 (0.0103)	-0.00500 (0.00436)
full time employed	0.0510 (0.241)	0.316 (0.295)	-0.384 (0.367)	-0.170 (0.349)	0.165 (0.152)
part-time employed	0.692* (0.356)	0.586* (0.332)	-0.160 (0.578)	-0.130 (0.363)	0.770*** (0.202)
o.self-employed	-	-			-

unemployed or retired	0.176 (0.311)	-0.0437 (0.345)			0.421** (0.197)
self-employed			-0.290 (0.451)	-0.353 (0.531)	
o.unemployed or retired			-	-	
Constant	-1.067 (0.812)	2.522*** (0.757)	2.426** (0.989)	2.908** (1.168)	0.131 (0.469)
Observations	317	155	184	70	726
R-squared	0.163	0.080	0.157	0.079	0.140

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 15 displays the results of a non-linear regression analysis that investigates the relationship between mental load in household finance and the share of household income. The analysis is conducted separately for male and female respondents in China and Sweden, as well as for all respondents combined.

The variable of interest, Share of Household Income, is positively associated with mental load in household finance for all respondents, as indicated by the significant positive coefficients in Chinese data and all data combined ($p<0.01$). However, the relationship is non-linear, as shown by the negative coefficients on the squared term, ShareHHincome², in Chinese data and pooled data for all respondents ($p<0.05$). There is an inverted U-shaped relationship shape between the share of household income and mental load in household finance for men and women in China and pooled data. This suggests that the positive effect of the Share of Household Income on mental load in household finance diminishes as the Share of Household Income increases. Although in previous Table 11 it was found that a positive correlation between share of household income and mental load in household finance for women and men in China, the R-squared is bigger for the non-linear model. So, it is more explanatory that there is an inverted U-shaped relationship shape between the share of household income and mental load in household finance for men and women in China and pooled data.

5.3 Robustness Checks

5.3.1 T-test for the Main Results

Table 16: T-test Results for Different Comparison Groups in Mental Load

Comparison Groups	t-test results	$\Pr(T > t)$
Men in Sweden vs Men in China	-4.549208	0
Men in Sweden vs Women in Sweden	-2.45665	0.0148
Women in China vs Women in Sweden	-4.334834	0
Women in China vs Men in China	-4.179387	0

Table 16 shows the t-test results for four different comparisons of groups based on the mental load. The first column indicates the two groups being compared. The second column indicates the t-test results for the comparison, while the third column provides the p-value for the test.

The results of the two-sample t-tests show that there is a statistically significant difference in the mean mental load between men and women in China, men in China and men Sweden, women in China and women in Sweden. And there is no difference between men in Sweden and women in Sweden.

This t-test results are in line with the previous regression results. Therefore, it is safe to believe that there is a significant gender difference in mental load between men and women in China but not in Sweden. And there is a country difference in mental load for the same gender.

Table 17: T-test Results for Different Comparison Groups in Gender Attitude

Group	t-test results	$\Pr(T > t)$
Men in Sweden vs Men in China	6.8019	0
Men in Sweden vs Women in Sweden	3.2795	0.0012
Women in China vs Women in Sweden	9.5121	0
Women in China vs Men in China	4.8653	0

The t-test results presented in Table 17 indicate significant differences in gender attitudes between three out of the four comparison groups. This suggests that there are notable variations in attitudes towards gender roles and gender equality among some groups of respondents.

Specifically, male respondents in both countries hold more traditional gender attitudes compared to female respondents. This finding is consistent with previous research that has found that men tend to hold more traditional gender attitudes compared to women across various countries (e.g., Charles and Bradley 2009; Guiso et al. 2008).

Moreover, the t-test results suggest that there are significant differences in gender attitudes between men in Sweden and China as well as between women in China and Sweden. These results are consistent with previous research that suggests that gender attitudes tend to be more traditional in developing countries compared to developed countries (Kabeer 1999; Sen 1990). These findings can be explained by the fact that gender attitudes are shaped by cultural and social factors, which vary across countries (Kishor and Gupta 2004; Verloo 2006). For example, in China, Confucian values and traditional gender roles have a strong influence on gender attitudes (Croll 2006). In contrast, in Sweden, gender equality is strongly promoted through various policies and social norms (Rubery 2015).

5.3.2 Regression without Potential Extreme Outliers

To account for errors in income reporting and minimize the influence of potential extreme outliers, a secondary analysis was conducted by excluding the top and bottom 5% of participants based on household income for both the Chinese and Swedish datasets. The regression analysis was repeated using this reduced dataset, and the results are provided in the appendix.

The findings from the secondary analysis revealed that there were no changes in the signs of the coefficients for the variables of interest. Additionally, there were minimal changes in the magnitude of the coefficients when compared to the original analysis using the full dataset. This suggests that the inclusion of extreme income values did not significantly impact the results.

Based on these results, it can be concluded that there is no substantial bias or overweighting of the top and bottom income tails in the majority of the findings. Therefore, the original analysis remains robust, and the conclusions drawn from it regarding the relationships between variables of interest can be considered reliable.

But it is worth mentioning that one difference in significance levels was found between the regression with all data and regression without extreme outliers. When it comes to non-linear regression results for relationship between mental load and share of household income, the coefficient of ShareHHincome (share of household income) and ShareHHincome² (the square term of share of household income) became significant for women in Sweden while the coefficient for ShareHHincome is still negative and coefficient for ShareHHincome² is still positive.

This new finding, after excluding extreme values, reveals a significant U-shaped relationship between mental load and share of household income for women in Sweden. This finding suggests that women who fall on the extremes of the income distribution, contributing either the least or the most to the household income, experience a higher mental load compared to women who contribute a middle portion. This new finding highlights the need to account for extreme values and their potential impact on the results to gain a clearer picture of the dynamics at play.

6 Discussion

6.1 General

The results of my survey show that mental load in general is gendered in China but not in Sweden – at least in my sample. In the combined household responsibility categories, women in China have a higher mental load than men, but there is no gender difference found in Sweden. To understand the composition of the mental load difference, household responsibilities were broken down into three subcategories including household routines, child well-being and household finance. The subcategory analysis also highlights the varying gender differences in mental load across different household responsibilities. The mental load gender difference in China is driven by the fact that women have higher share of invisible household labor within household routines and child well-being than men, although women have less mental load within household finance. However, there is no gender difference

found in Sweden when it comes to mental load from child well-being and household finance however there is a gender difference in household routines. China and Sweden are two countries with distinct cultural and historical backgrounds, and it is possible that the differences in gendered mental load are related to differing gender norms and expectations in these countries. From the gender attitude scores it was shown that men and women in China in my sample hold a more traditional attitude towards gender roles and gender equality compared to their counterparts in Sweden, which is in line with the result from World Value Survey data (Haerpfer et al. 2020). This suggests that traditional gender roles and expectations may still be influential in shaping the division of invisible household labor in China, even as the country undergoes rapid economic and social changes.

Comparing the difference in country, men and women in China generally both bear a lower mental load than their counterparts in Sweden when other considered factors are the same. After looking into the subcategory household responsibilities, no difference is found from child well-being, but the mental load is heavier for people in Sweden from the household routines and household finance categories. One possible explanation for this can be that those parents in China – at least in my sample – have easy access to help from relatives in childcare and cheaper housekeeping services from the market, which can reduce the mental load associated with household routines. By contrast, in Sweden, there may be fewer such resources available, which can result in a higher mental load for both men and women from household routines and household finance.

But it is worth mentioning that no matter which country the women live in, they still bear more invisible household labor in household routines. Compared with men, they have more cognitive and emotional work performed to manage and organize the household. To be more specific, they have more stress and invisible household labor in organizing schedules for the family, maintaining standards for routine and order in the home, and deciding what meals to cook and planning shopping list.

The results show that economic dependence is associated with mental load in different ways in China and Sweden, which is more complex than Becker's model (Becker 1965). In China, there was a linear relationship between share of household income and women's mental load, indicating that women who contribute more to the household income also bear a greater mental load while no evidence for such correlation for men in China. In Sweden, the

relationship is non-linear, which is a convex U-shaped relationship between mental load and men's share of household income while there is no such correlation found for women. Even in the subcategory household responsibilities the gendered division of labor is not as clear-cut as predicted by Becker's model (Becker 1965). For example, Chinese women with a higher share of household income bear more mental load in household routines. This may be explained by gender role expectations and social norms. Even if women have a higher share of household income, they are expected to bear the primary responsibility for household chores. Although gender expectations are changing over time, the persisting traditional gender expectation may affect women's behaviours to fulfil it rather than encourage women to deviate from it. Another explanation to this is about bargaining power, when people contribute more to the family, they might have more bargaining power in family decision making and act as a "captain of the ship", ensuring that various tasks are appropriately covered.

In Sweden, men are found to have a lower mental load related to child well-being when their share of household income increases, but this trend is reversed at higher shares of household income beyond a certain threshold. This suggests that men in Sweden who fall on the extremes of the share of household income distribution, contributing either the least or the most to the household income, may have a higher mental load in child well-being compared to men with a middle share of household income. One possible explanation can be that men who contribute the least to household income may face societal expectations of being more involved in caregiving and child-rearing responsibilities to compensate for their lower financial contribution. This can result in a higher mental load as they navigate these additional responsibilities related with child-wellbeing. Men who contribute the most to the household income may experience higher levels of financial stress and pressure to maintain their breadwinning role. This can lead to competing demands on their time and resources, causing an increased mental load in managing both work and family responsibilities. Men with a middle share of household income may have more balanced work-life arrangements, allowing them to allocate sufficient time and energy to child well-being without being overwhelmed by excessive work demands or financial pressures. However, it is crucial to consider that various factors and dynamics may contribute to this relationship, and further research is necessary to fully understand the complexities involved in the interplay between economic dependence, gender roles, and the mental load experienced by men in relation to

child well-being in Sweden. Nonetheless, the observed associations provide valuable insights into the potential patterns and dynamics surrounding this issue.

In the domain of household finance, there is an inverted U-shaped relationship between the share of household income and mental load in household finance for men and women in China. Financial mental load increases with income up to a certain point, and then decreases as income continues to increase. One possible explanation for this can be that higher income can alleviate financial stress by providing more financial security and reducing the need for financial planning and budgeting.

Interestingly, it was found that in Sweden, men's traditional gender attitudes were positively correlated with their mental load, which is a novel finding. This could be related to the concept of gender norms and socialization, as men may feel pressure to adhere to societal expectations of being the primary breadwinner and less involved in household and caregiving tasks, leading to increased stress and negative outcomes for their mental health.

Overall, the research provides valuable insights into the complex interplay between economic dependence, gender, and the division of invisible household labor. The findings highlight the importance of considering cultural and societal contexts when examining gender differences in household work and the associations with income. The study also provides a useful contribution to the literature on mental load, which goes beyond the traditional time use data and sheds light on the subjective experience of household labor. Future policies and programs aimed at reducing gendered household labor and achieving greater gender equality, other than to increase access to paid leave and flexible work arrangements, addressing societal norms and gendered expectations surrounding mental load is necessary.

6.2 Limitations

The used measurement focuses only on the relative distribution between spouses. The survey design does not allow any kind of quantification of mental labor. Neither the amount of hours spent by one person nor the exact share of housework of each partner can be measured. This lowers the informative value the survey can provide. Additionally, using a relative share

instead of an absolute measurement can change the relationship between income and household work (Greenstein 2000). Differences caused by the measurement cannot be analysed if the data does not provide information about absolute and relative measurements. Furthermore, measuring the share of the household income does not include any information about time availability of each partner. For instance, even if the women have a lower income, it can be the case that both spouses are working the same number of hours per week and have equal flexibility in their work schedule. As the available hours can be an influencing factor of the time spent on physical housework (Shelton 1992; Bianchi et al. 2000), this can also have an impact on the share of mental load.

Additionally, the results may be limited by the specific sample and context in which the data was collected. Due to many practical restrictions such as funding and time constraints, the respondents are mainly from my social network such as friends' families and their friends, as well as respondents from different public residence social media groups. This may limit the generalizability of the findings to the broader population. The sample may not be representative of the entire population in Sweden or China, as it may overrepresent certain groups and underrepresent others. For example, the sample may be biased towards individuals with higher levels of education and access to technology, as they may be more likely to be connected to me or social medias. Additionally, the sample may not include individuals who do not use the internet which could result in the exclusion of important subgroups.

Due to the General Data Protection Regulation and SSE data protection rules, it is not allowed to collect personal contact information and it is therefore impossible to identify that a man's response and a woman's response are from the same household. The results could be more precisely interpreted if the research showed if the respondents are from the same family or not.

Furthermore, there may be other factors that influence mental load that were not included in the study, such as working time flexibility, social support and individual personality traits. Future research could examine the role of these factors in shaping mental load in different contexts.

6.3 Internal validity

The survey is designed to be intuitive to answer. Participants only need to assess roughly how responsibilities are distributed and neither an exact share in percent, a detailed scale nor an exact number of hours is asked. The simple design makes it easier for participants to answer correctly and ensures that participants assess the given choices similarly. Especially in the context of mental load this is reasonable, as the total amount of mental load is difficult to quantify. However, the measurement is based on the subjective impression of only one person within a household. It was not guaranteed that the answer is fully true, as I do not know if the partner of the participant would assess it in the same way. Besides, since the research measure only once at a single point in time, the research cannot exclude that those participants might be influenced by their current situation. For instance, if their amount of housework was above average in the week before their participation, they might overestimate the mental load. This can lower the internal validity.

Conducting an online survey increases the degree of transparency of the research, as the survey material will be available online, and the complete procedure is recorded. One potential risk with the usage of a web-based methodology, is that it cannot completely rule out the possibility that people participate several times in the survey. However, it was assessed that the risk of people participating multiple times to be low.

6.4 External validity

It is important to consider the external validity of the research findings and recognize the potential limitations in generalizing the results to other geographies. Since Sweden is a forerunner in gender equality in the world, its unique socio-cultural, economic, and policy landscape, which promotes gender equality, may influence the dynamics of household responsibilities and mental load. Similarly, the findings from China should also be interpreted within the specific context of the country. China has its own distinct cultural, societal, and economic factors that shape gender roles and family dynamics. When it comes to other geographies, it is crucial to consider the cultural, institutional, and economic contexts specific to each country. Gender norms, social expectations, labor market conditions, and policy

frameworks vary across nations and can significantly influence the division of household labor and the experiences of men and women.

It is important to exercise caution when extrapolating the findings to the entire China or entire Sweden. While efforts were made to recruit a diverse group of participants with mixed backgrounds, there may still be inherent biases and limitations in the sample composition as it discussed in the limitations, the results may be limited by the specific sample and context. However, by including participants from different cities via online surveys, the study captures a broader range of perspectives and experiences, which can help reduce the potential bias associated with focusing on a single location. It allows for a more diverse representation of the population within the country, considering regional variations, cultural differences, and socioeconomic factors that may influence gender roles and household dynamics.

Everyday activities and household tasks may vary in different cultural and societal settings and the survey only covered the general aspects within a Swedish and Chinese context. This may threaten external validity when the results are expanded to other countries, as some theories claim that gender is produced in everyday activities and household tasks and therefore household members ‘do’ gender as they carry out gender-differentiated housework and childcare (Berk 1985; Fenstermaker 2002).

6.5 Avenues for future research

Mental load may be correlated with the working hours as well. The length of working hours and the flexibility thereof can both have effects on time allocation within a household. Future research can combine information on the number of working hours with the share of household income when collecting data and doing analysis.

Furthermore, by developing other ways of measurement for the level of mental load, a quantification of the variable would be possible. Developing alternative measures to quantify the absolute level of mental load could provide a more precise understanding the composition of mental load. And this would allow further research to draw firmer conclusions about the relationship of absolute hours of mental load and income. Additionally, one could investigate whether there are differences in the relationship of income and the relative division of mental

load in contrast to the relationship with absolute mental load since this difference can be seen in Greenstein (2000) for household labor.

Gender ideology correlates with men's and women's time spent on housework (Evertsson 2014). Evidence shows that women with a gender egalitarian ideology do not appear to be able to persuade their husbands to increase their time spent on housework (Evertsson 2014). It would be interesting to see if women's gender egalitarianism can affect their husbands to increase time on the invisible mental load within a household.

Further research can also be done about separate families and homosexual families. Existing research shows that in separate families the distribution of mental load remains gendered in some cases (Luthra and Haux 2022) although with different variations observed in some cases. Additionally, exploring the distribution of mental load in homosexual families would contribute to our understanding of how gender dynamics and the division of cognitive labor operate in non-traditional family structures. This research could shed light on the factors that shape the distribution of mental load in diverse family contexts.

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Appendix

Table 1: Regression Results of Relationship between Mental Load And Gender

VARIABLES	(1) Model 1 China	(2) Model 2 Sweden
Gender	1.264*** (0.228)	0.318 (0.207)
Nchild	1.065*** (0.160)	1.000*** (0.0974)
Hhincome	-0.00159** (0.000737)	-6.83e-05 (0.000429)
Education	0.0375 (0.0676)	0.0289 (0.0517)
Age	0.0504*** (0.0124)	0.0134 (0.0109)
full_time_employed	-0.613 (0.524)	1.102** (0.499)
o.part_time_employed	-	
self_employed	-1.138* (0.623)	
unemployed_or_retired	-1.059* (0.619)	0.464 (0.599)
part_time_employed		1.032* (0.580)
o.self_employed		-
Constant	3.284** (1.299)	4.621*** (1.151)
Observations	472	204
R-squared	0.231	0.496

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 2: Gender Difference in Three Subcategory Mental load

VARIABLES	(1) household routine China	(2) household routine Sweden	(3) child wellbeing China	(4) child wellbeing Sweden	(5) household finance China	(6) household finance Sweden
Gender	0.950*** (0.0953)	0.282*** (0.0820)	0.950*** (0.108)	0.163 (0.121)	-0.636*** (0.115)	-0.127 (0.103)
Nchild	0.0691	0.0562	0.852***	0.943***	0.144*	0.000344

	(0.0670)	(0.0386)	(0.0759)	(0.0570)	(0.0810)	(0.0487)
Hhincome	-0.000520*	3.30e-05	-0.000208	1.32e-05	-0.000865**	-0.000114
	(0.000308)	(0.000170)	(0.000349)	(0.000251)	(0.000372)	(0.000214)
Education	-0.0188	-0.00863	0.0151	0.0109	0.0412	0.0266
	(0.0282)	(0.0205)	(0.0320)	(0.0303)	(0.0341)	(0.0258)
Age	0.00183	-0.00621	0.0453***	0.0192***	0.00329	0.000451
	(0.00518)	(0.00433)	(0.00587)	(0.00640)	(0.00627)	(0.00546)
full_time_employed	-0.199	0.298	-0.186	0.465	-0.228	0.339
	(0.219)	(0.197)	(0.248)	(0.292)	(0.265)	(0.249)
o.part_time_employed	-		-		-	
self_employed	-0.303		-0.500*		-0.335	
	(0.260)		(0.295)		(0.315)	
unemployed_or_retired	-0.0985	0.0250	-0.521*	0.269	-0.440	0.170
	(0.259)	(0.237)	(0.293)	(0.350)	(0.313)	(0.299)
part_time_employed		0.163		0.209		0.660**
		(0.230)		(0.339)		(0.290)
o.self_employed		-		-		-
Constant	2.369***	3.095***	-1.354**	-0.811	2.268***	2.337***
	(0.543)	(0.456)	(0.615)	(0.674)	(0.656)	(0.575)
Observations	472	204	472	204	472	204
R-squared	0.195	0.126	0.458	0.719	0.096	0.068

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 3: Linear Regression Results of Mental Load on Share of Household Income

	(1)	(2)	(3)	(4)	(5)
VARIABLES	female China	female Sweden	male China	male Sweden	all respondents
ShareHHincome	2.250*** (0.636)	-0.315 (0.812)	1.473* (0.811)	1.210 (1.077)	1.036*** (0.398)
Nchild	1.394*** (0.206)	1.020*** (0.115)	0.680*** (0.239)	0.855*** (0.215)	1.101*** (0.107)
Hhincome	-0.000735 (0.000966)	-0.000470 (0.000551)	-0.000115 (0.00123)	0.00108 (0.000816)	0.00123*** (0.000333)
Education	0.116 (0.0862)	0.0525 (0.0601)	-0.103 (0.102)	-0.0125 (0.112)	-0.0242 (0.0489)
Age	0.0722*** (0.0157)	0.0242* (0.0130)	-0.00361 (0.0193)	-0.00914 (0.0217)	0.0266*** (0.00930)

full_time_employed	-0.801 (0.587)	0.950 (0.648)	-1.766* (1.055)	-0.363 (0.660)	-1.006*** (0.317)
o.part_time_employed	-		-		-
self_employed	-1.587** (0.711)		-1.582 (1.181)	-1.617 (1.071)	-1.618*** (0.434)
unemployed_or_retired	-1.179* (0.681)	-0.210 (0.812)	-1.631 (1.264)		-0.838** (0.407)
part_time_employed		0.923 (0.749)		-0.568 (0.662)	
o.self_employed		-			
o.unemployed_or_retired				-	
Constant	0.995 (1.598)	4.744*** (1.515)	7.723*** (2.147)	6.144*** (2.055)	5.087*** (0.909)
Observations	297	142	175	62	676
R-squared	0.339	0.520	0.136	0.435	0.247

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 4: Non-linear Regression Results of Relationship between Mental Load and Share of Household Income

VARIABLES	(1) female China	(2) female Sweden	(3) male China	(4) male Sweden
ShareHHincome	2.216 (2.169)	-6.119** (2.506)	6.246 (3.964)	-8.754* (5.055)
ShareHHincome ²	0.0292 (1.804)	5.659** (2.316)	-3.334 (2.710)	9.140** (4.537)
Nchild	1.393*** (0.207)	1.037*** (0.113)	0.729*** (0.242)	0.880*** (0.210)
Hhincome	-0.000737 (0.000972)	-0.000412 (0.000542)	-0.000328 (0.00124)	0.00132 (0.000802)
Education	0.116 (0.0868)	0.0485 (0.0590)	-0.102 (0.102)	-0.0255 (0.109)
Age	0.0723*** (0.0159)	0.0234* (0.0127)	-0.00867 (0.0197)	-0.00500 (0.0212)
full_time_employed	-0.800 (0.590)	1.136* (0.641)	-1.820* (1.054)	0.0656 (0.676)
o.part_time_employed	-		-	
self_employed	-1.586** (0.714)		-1.638 (1.180)	-1.265 (1.056)
unemployed_or_retired	-1.181* (0.696)	-0.201 (0.797)	-1.363 (1.280)	
part_time_employed		1.147		-0.0922

		(0.741)		(0.686)
o.self_employed		-		
o.unemployed_or_retired				-
Constant	0.999 (1.626)	5.933*** (1.565)	6.399*** (2.398)	8.085*** (2.218)
Observations	297	142	175	62
R-squared	0.339	0.541	0.144	0.476

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 5: Regression Results of Relationship between Mental Load and Gender Attitude

	(1)	(2)	(3)	(4)	(5)
	female	female	male	male	
VARIABLES	China	Sweden	China	Sweden	all respondents
ShareHHincome	2.260*** (0.637)	-0.212 (0.811)	1.257 (0.822)	0.717 (1.041)	1.083*** (0.401)
Genderattitude	-0.0289 (0.0486)	0.0949 (0.0646)	0.102 (0.0700)	0.145** (0.0559)	-0.0281 (0.0313)
Nchild	1.418*** (0.210)	1.012*** (0.114)	0.585** (0.247)	0.864*** (0.205)	1.113*** (0.108)
Hhincome	-0.000762 (0.000968)	-0.000385 (0.000552)	-0.000202 (0.00122)	0.000752 (0.000785)	0.00115*** (0.000347)
Education	0.110 (0.0869)	0.0608 (0.0601)	-0.0907 (0.102)	0.0374 (0.108)	-0.0289 (0.0492)
Age	0.0731*** (0.0158)	0.0261** (0.0130)	-0.00482 (0.0192)	-0.000340 (0.0209)	0.0273*** (0.00933)
full_time_employed	-0.815 (0.588)	1.078 (0.651)	-1.523 (1.064)	-0.105 (0.635)	-1.015*** (0.318)
o.part_time_employed	-		-		-
self_employed	-1.592** (0.712)		-1.382 (1.185)	-1.184 (1.031)	-1.608*** (0.434)
unemployed_or_retired	-1.153* (0.683)	-0.0863 (0.813)	-1.449 (1.265)		-0.829** (0.407)
part_time_employed		0.983 (0.747)		-0.420 (0.632)	
o.self_employed		-			
o.unemployed_or_retired				-	
Constant	1.222 (1.644)	3.967** (1.598)	6.855*** (2.220)	4.576** (2.044)	5.302*** (0.940)

Observations	297	142	175	62	676
R-squared	0.340	0.528	0.147	0.500	0.247

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 6: Regression Results of Mental Load difference on Country Level

VARIABLES	(1) parents China vs Sweden
country==China	-1.471*** (0.282)
country==Sweden = o,	-
Nchild	1.032*** (0.106)
Hhincome	-0.000746* (0.000452)
Education	-0.00242 (0.0484)
Age	0.0386*** (0.00925)
Employment==full-time employed	-0.381 (0.328)
Employment==part-time employed = o,	-
Employment==self-employed	-0.954** (0.442)
Employment==unemployed or retired	-0.714* (0.402)
Constant	6.217*** (0.884)
Observations	676
R-squared	0.269

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 7: Regression Results of Mental Load with Gender Country Interaction Term

VARIABLES	(1) Model 1
Gender	0.188 (0.323)
country_dummy	-1.783*** (0.322)
genercountry_intersection_term	1.027***

	(0.384)
Nchild	1.033***
	(0.104)
Education	-0.0284
	(0.0446)
Age	0.0397***
	(0.00895)
Employment==full-time employed	-0.427
	(0.312)
Employment==part-time employed = o,	-
Employment==self-employed	-1.042**
	(0.426)
Employment==unemployed or retired	-0.819**
	(0.393)
Constant	5.973***
	(0.889)
Observations	676
R-squared	0.304

Standard errors in parentheses
 *** p<0.01, ** p<0.05, * p<0.1

Survey-English Version

Instruction

Hi!

I am Lingzi Tang, studying a master's of Economics at the Stockholm School of Economics. I am collecting data to write my master's thesis about household mental load. It would be highly appreciated if you have 5 minutes to answer the survey.

Thank you very much!

Data protection: The survey is fully anonymous, and it will not be storing any contact or identifying information at all. If you have any questions, send me an e-mail to 42131@student.hhs.se.

GDPR

By continuing to the following pages, you consent to us using your responses in our research. In accordance with the General Data Protection Regulation (GDPR), your personal data will be handled confidentially. The thesis will not contain any information that can identify you as a participant in the survey. The data will be permanently deleted in June 2023. You are

welcome to visit <https://www.hhs.se/en/about-us/data-protection/> to learn more about your rights related to personal data.

-Continue

Do you have a partne Are you married or do you have a partner living together with you?

-Yes

-No

How many dependent children do you have at home?

-0

-1

-2

-3

-4

What is your gender on your passport?

-Female

-Male

What is the gender of your first child?

-Female

-Male

-We do not have any child

Now we try to measure your mental load in your household. This is the thinking activities performed to accomplish family goals rather than the physical housework performed. Are you clear that we are trying to measure mental work rather than physical work?

-Yes

-No

-Can I have more clarification?

Display following Question if respondents choose “Can I have more clarification?”

Mental load measures mental work disregarding physical work. This could for example be planing what groceries to buy and what to cook for the family, planing a birthday party for your child, or thinking about how much of the household budget should be spent for travelling. The mental work could come along with your physical work or appear independently. Now do you feel ready to measure your household mental load?

-Yes (continue the survey)

-No (End the survey)

(The following three question and their related contents would be displayed for respondents in a random order)



Thinking about Household Routines Responsibility

	Mostly Me	Both Equally	Mostly Partner
Organizing schedules for the family	☐	☐	☐
Being the “captain of the ship”, ensuring that various tasks are appropriately covered	☐	☐	☐
Maintaining standards for routine and order in the home	☐	☐	☐
Deciding what meals to cook and planning shopping list	☐	☐	☐



Thinking about Child Well-being

	Mostly Me	Both Equally	Mostly Partner
Being vigilant of the children’s emotions	☐	☐	☐
Coordinating free time for the children (playdates, activities)	☐	☐	☐
Instilling values and shaping character in your children	☐	☐	☐
Caring about children's school performance and extracurricular activities	☐	☐	☐



Thinking about Household Finances

	Mostly Me	Both Equally	Mostly Partner
Where to make financial investments	☐	☐	☐
What and where to make major financial purchases (e.g., car, kitchen renovation)	☐	☐	☐
Ensuring bills are paid on time	☐	☐	☐
Planning vacation budget	☐	☐	☐

What is your total household annual income after tax? (approximately, in thousands of sek, eg. 20 corresponds to 20k sek).

What is your individual annual income after tax? (approximately, in thousands of sek, eg. 10 corresponds to 10k sek)

What is your employment status?

- unemployed or retired
- full-time employed
- part-time employed
- self-employed

What is your education background (or years of education)?

high school or below (12 years or less)

-a few years of college or similar (14 years)

-college degree (16 years)

-post-graduate degree (18 years or higher)

What is your age? (please type in number)

Who is mostly doing the physical housework in your household?

-Mostly me

-Both equally

-Mostly partner

(The contents in gender attitude question is displayed in a random order)



To which extent do you agree with the following statement?

Strongly disagree Somewhat disagree Neither agree nor disagree Somewhat agree Strongly agree

1 2 3 4 5

"A university education is more important for a boy than for a girl."	
"When jobs are scarce, men should have more right to a job than women."	
"It is much better for everyone involved if the man is the achiever outside the home and the woman takes care of the home and family."	

(The options in attention check question is displayed in a random order)



Attention check This is an attention check question, if you see this question, please select 6

-12

-6

-8

Do you want to comment on the survey? Or is there anything you would like to add?

Survey – Chinese Version

您好！

我是唐菱子，在斯德哥尔摩经济学院攻读经济学硕士。我正在收集数据来撰写关于家庭精神负担的硕士论文。本问卷预计花费您宝贵的5分钟，十分感谢您对我的帮助。

数据保护:

问卷是完全匿名的，不会收集您的任何个人信息。如果您有任何问题或疑虑，请发送电子邮件至 42131@student.hhs.se。非常感谢！

通用数据保护条例(GDPR)

继续阅读以下页面，即表示您同意我们在我们的研究中使用您的回答。

根据通用数据保护条例 (GDPR)，您的个人数据将被保密处理。

论文将不包含任何可以将您识别为调查参与者的信息。数据将于 2023 年 6 月永久删除。欢迎您访问 <https://www.hhs.se/en/about-us/data-protection/> 了解更多关于您与个人数据相关的权利。

-继续问卷

您是否已婚同居或有同居伴侣？

-是 (继续问卷)

-否 (结束问卷)

您家里有几个需要抚养的孩子？

-0

-1

-2

-3

-更多

您身份证上的性别是什么？

-女

-男

您第一个孩子的性别是什么？

-男

-女

-没有小孩

现在我们要测量您在家中的精神负担。

精神负担是指，为实现家庭目标而进行的脑力劳动所带来的负担。精神负担可能伴随体力劳动一起产生，

也可能单独出现。您现在清楚我们要衡量脑力劳动而不是体力劳动吗？

-清楚了

-不太清楚, 有进一步解释吗？

精神负担衡量脑力劳动而不是体力劳动。

例如，计划如何为家人买菜做饭，策划如何给孩子过生日，或者考虑家庭旅行预算。

这样的脑力劳动可能伴随体力劳动出现，也可能独立存在。

现在你是不是觉得对精神负担有了更深入的了解？

-是的 (继续问卷)

-没有 (结束问卷)



衡量家庭例行公事的精神负担: 是谁在操心家庭日常事务？

	主要是我	两人平分	主要是我伴侣
为家里安排日程	☐	☐	☐
确保各项家庭任务得到适当完成	☐	☐	☐
维持家庭日常和秩序的标准	☐	☐	☐
决定要做什么饭菜和计划购物清单	☐	☐	☐



衡量养育孩子的精神负担: 是谁在操心养育小孩?

	主要是我	两人平分	主要是我伴侣
对孩子的情绪较为敏感	☐	☐	☐
安排孩子们的空闲时间（游戏时间、活动）	☐	☐	☐
塑造价值观和影响孩子性格	☐	☐	☐
关心孩子的学业和课外活动	☐	☐	☐



衡量家庭财务的精神负担: 是谁在操心家庭财务?

	主要是我	两人平分	主要是我的伴侣
考虑金融投资的方向	☐	☐	☐
考虑重大家庭支出的对象与方向（例如，买汽车、厨房装修）	☐	☐	☐
确保按时支付账单	☐	☐	☐
规划和安排家庭出游的费用	☐	☐	☐

您的税后家庭年总收入大约是多少？

（以万人民币为单位，例如，20万人民币，请输入20）。

您的税后个人年总收入大约是多少？

（以万人民币为单位，例如，10万人民币，请输入10）。

你的就业状况是？

- 失业或退休
- 全职工作
- 兼职

-自我雇佣

您的教育背景（或受教育年限）是？

- 高中或以下（12 年或以下）
- 大专（14 年）
- 本科学历（16年）
- 研究生及以上（18 年或更多）

您的年龄是? (请输入数字)

在您家, 主要是谁在做家务？

- 主要是我自己
- 平分家务
- 主要是我的伴侣
- 其他(老人或保姆)



Gender attitude 您在多大程度上赞同下面的话？

强烈反对 有些反对 不反对不赞同 有些赞同 非常赞同

1 2 3 4 5

“大学教育对男孩来说比对女孩更重要。”	
“当工作稀缺时，男性应该比女性拥有更多的工作权利。”	
“男主外女主内，那么对所有人来说都会更好。”	



attention check 本题目为注意力测试, 请选择下面的数字6

- 8
- 6
- 12

你想对调查发表评论吗？或者您有什么要补充的吗？
