Childcare Preferences, Bargaining Power, and the Unpaid Labor Division

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Abstract

Despite significant progress in women's education and workforce participation across OECD countries, women continue to perform a disproportionate share of unpaid labor. This paper addresses this imbalance by presenting a methodological contribution: a novel online choice experiment that combines stated-preference and revealed-preference data, allowing for the separate identification of preferences and bargaining power in a collective intra-household bargaining model. Preferences are identified from trade-offs between income, leisure, and childcare in hypothetical scenarios, while bargaining power is identified from the alignment of each spouse's preferences with actual household decisions. Using a unique dataset of 265 dual-earner households with young children in South Korea, I estimate how gendered preferences, bargaining power, and childcare availability shape the division of unpaid labor. While both spouses show similar willingness-to-pay for the husband's first hour of parental care, preferences decline as his involvement increases. The husband's average bargaining power is 0.690 (on a 0 to 1 scale), but as the wife's relative wage rises, her influence grows. Counterfactual experiments show that as bargaining power equalizes, the gap in parental care time narrows. My framework supports various counterfactual analyses, such as adjusting household choice sets, to assess changes in the unpaid labor gap and inform policy.

Keywords: Unpaid Labor, Childcare Preferences, Bargaining Power, Choice Experiment, Stated-Preference Data, Collective Models, Gender Inequality

JEL Codes: J13, J16, D13, J22, C35, C91

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1 Introduction

Despite significant progress in women's education and workforce participation across OECD countries, a persistent gender gap remains in unpaid labor, with women continuing to do far more household and caregiving work than men. As shown in Figure 1, women's tertiary education[1] attainment has surpassed men's, and their labor force participation reached over 70% by 2022. However, women continue to perform significantly more unpaid labor. On average, women in OECD countries perform 1.9 times more unpaid work than men, with figures reaching 1.6 times in the United States and as high as 4.4 times in South Korea. This disparity underscores that while strides have been made in education and workforce participation, the gap in unpaid labor remains largely unchanged.

This unequal division of unpaid labor is a key contributor to the "Child Penalty," which refers to the significant career and wage sacrifices women face as a result of childcare responsibilities (Blau & Kahn 2017, Adda et al. 2017, Lundborg et al. 2017, Kleven et al. 2019). Andresen & Nix (2022) identifies several factors that drive this penalty, including the disproportionate burden of unpaid labor on women, gendered preferences for childcare, entrenched gender norms, and employer discrimination. Despite women's advances in education and workforce participation, the unequal division of unpaid labor continues to hinder their career progression and contributes to persistent gender gaps in earnings.

In this paper, I aim to investigate why women continue to shoulder a disproportionate share of unpaid labor despite advancements in education and workforce participation. Is this driven by women's own preferences, or because men prefer women to take on more of the unpaid work, with men holding greater bargaining power? This analysis focuses on identifying gendered preferences and spousal bargaining power, which together influence how unpaid labor is divided within households.

A key methodological contribution of this study is the design and collection of a novel dataset that combines stated-preference and revealed-preference data, enabling the separate identification of preferences and bargaining power. To achieve this, I develop a collective intra-household bargaining model in which the husband and wife negotiate on the allocation of time between paid work and unpaid labor, such as childcare and housework. The model includes two key elements: (i) individual preferences for time-allocation and childcare arrangements, and (ii) the bargaining power of the household members. Household decisions are modeled collectively, aiming to maximize a weighted sum of the wife's and husband's utilities.

The novel dataset, collected through an online choice experiment with 265 dual-earner house-

[1]Tertiary education refers to education at the post-secondary level, including undergraduate, graduate, and advanced research programs offered by universities, colleges, and other higher education institutions.

holds (530 individuals) with pre-school-aged children in South Korea, is essential for the separate identification of preferences and bargaining power in the model. Each participant faced hypothetical scenarios in which the number of hours allocated to paid work, unpaid labor, and various childcare arrangements varied across alternatives. Preferences are identified by analyzing choices across alternatives with varying prices, leisure, and childcare time. This variation reveals how participants trade off household income, leisure, and childcare, allowing for the identification of preference parameters.

Bargaining power is identified using both preference estimates and revealed-preference data, which reflect household's actual choices. These bargaining power weights capture each spouse's influence on household decisions and the division of unpaid labor. For example, if the actual choices align more closely with the husband's preferences, the bargaining power estimate will be closer to 1, indicating a stronger influence of the husband in decision-making. The identification relies on differences in preferences between spouses and variations in household choices and choice set composition. This approach, which integrates stated- and revealed-preference data as in Dosman & Adamowicz (2006) and Michaud et al. (2020), allows for the identification of both preferences and bargaining power by analyzing both hypothetical and actual household choices. This method avoids the need for restrictive assumptions and provides a clearer understanding of each spouse's influence on household decision-making.

I first estimate the preference parameters using a discrete choice model based on a random utility framework. Specifically, I model each spouse's utility function to account for net household income, leisure time, and the time allocated to parental, formal, and informal childcare. The coefficients for these variables represent each spouse's willingness-to-pay for a trade-off in parental care, formal care, or informal care, in exchange for a reduction in the wife's parental care. I assume the error term follows a Type I Extreme Value distribution, enabling choice probabilities to be estimated using Maximum Likelihood Estimation (MLE). In the heterogeneity analysis, I further examine how preferences for childcare and leisure vary by factors such as access to informal care, the age of the youngest child, number of children, and relative wage differences between spouses. After estimating the preference parameters, I combine these with actual household choice data to estimate bargaining power.

The preference estimation results reveal that both wives and husbands value their own leisure time, but husbands place significantly higher value on it compared to wives. While both spouses show similar willingness-to-pay for the first hour of the husband's parental care, preferences diminish as the husband's involvement increases. Additionally, in households where the wife's wage is equal to or higher than the husband's, both spouses place a lower value on the husband's parental care, suggesting that traditional gender roles may still influence how childcare responsibilities are valued, even when the wife's time has a higher economic cost.

The estimation of bargaining power in this study shows that, on average, husbands have a greater influence in household decision-making, with a bargaining power of 0.690 (on a scale from 0 to 1), suggesting that household choices tend to align more closely with the husband's preferences. However, the dynamic shifts as the wife's relative wage increases, reducing the husband's bargaining power and giving the wife more influence. Traditional gender role attitudes also play a role, with more egalitarian views of husbands associated with a more balanced distribution of decision-making authority. Furthermore, in households where the wife is satisfied with the division of labor, the husband's bargaining power decreases, indicating a more equitable decision-making process.

In the counterfactual analysis, two experiments were conducted. The first experiment explores the impact of changing bargaining power, such as fixing it at $\lambda = 0$ (wife decides all) and $\lambda = 1$ (husband decides all), and simulating household time allocations. When the wife makes all decisions, the husband's parental care increases substantially, and the wife gains more leisure time. Conversely, when the husband makes all decisions, the wife's leisure decreases, and her parental care increases. As bargaining power becomes equal ($\lambda = 0.5$), the gap in parental care time between spouses narrows, closing the initial gap by 75% for households not using informal care and by 90% for those using informal care. My framework allows for a range of counterfactual analyses, such as adding or removing options from the household choice set, to evaluate how these changes impact the unpaid labor gap. For example, I have analyzed the effect of removing options like long work hours from the choice set to assess how the unpaid labor gap adjusts. The flexibility of this framework offers broad applicability and the potential to inform policy decisions.

Related Literature

This paper relates to several strands of literature. The division of unpaid domestic work has traditionally been explained through three main perspectives: economic exchange, time availability, and gender values and interactions (Dominguez-Folgueras 2022). However, studies show that women still perform more unpaid work even in households where they earn more, challenging the economic exchange explanation. Other research attributes this gap to factors like "doing-gender" and gendered inefficiency (Sevilla-Sanz et al. 2010, Hancock et al. 2023). My study contributes by identifying and estimating gendered preferences while controlling for and varying economic exchange and time availability factors.

Methodologically, this paper builds on the literature studying household decision-making using experimental methods, as reviewed by Munro (2018). Particularly, this study adopts experimental methods to uncover household bargaining power by combining stated-preference and revealed-preference data, an approach used in studies on household decisions about vacations and retirement

(Dosman & Adamowicz 2006, Michaud et al. 2020). This method has also been applied to joint household decisions on consumption, school choice, intertemporal choices, and multi-attributable goods (Cherchye et al. 2021, Almås et al. 2018, Mariel et al. 2018, Carlsson et al. 2012, Rungie et al. 2014). I contribute to this literature by applying this methodology to the study of unpaid labor division within households.

Among studies that use experimental methods, those focusing on the division of unpaid work, such as Auspurg et al. (2017), employ vignette-based experiments to explore gendered preferences in the division of housework, asking participants to imagine and evaluate hypothetical domestic scenarios with their partners. Building on this, my study presents a broader range of scenarios that vary paid labor, unpaid labor, leisure, and both formal and informal childcare. Using a choice experiment, I estimate willingness-to-pay for each activity. Additionally, I collect couple-level data to capture the interdependence of preferences between partners. To my knowledge, this is the first study to design a discrete choice experiment considering individually tailored wages, work hours, leisure, and childcare, in order to identify each spouse's preferences toward these activities.

Moreover, this paper expands on the literature on household childcare decisions. Previous studies, such as Suárez (2013), examine the determinants of childcare choices, while others have employed discrete choice models to explore household decisions (Powell 2002, Kornstad & Thoresen 2007, Thoresen & Vattø 2019). Additionally, studies discuss childcare choices during the COVID-19 pandemic (Golin 2021, Del Boca et al. 2020, Seiz 2021, Heggeness 2020, Petts et al. 2021, Zamarro & Prados 2021). This study contributes to the literature on household childcare decisions by uniquely examining how preferences and bargaining power shape parental childcare choices when informal care options are unavailable. Using a discrete choice experiment that integrates paid labor, unpaid labor, and leisure, this paper also calculates the willingness-to-pay for increasing the husband's, formal, and informal childcare time, based on preference estimates that control for both spouses' wages and time availability.

Finally, this study builds on collective intra-household bargaining models (Chiappori 1992, Chiuri et al. 1999, Blundell et al. 2007) and follows previous research to build a collective model on time allocation and childcare decisions (Cherchye et al. 2012, Turon 2019).

The remainder of the paper is structured as follows. Section 2 introduces the collective bargaining model of time allocation and childcare. Section 3 examines the time-use patterns and childcare arrangements in South Korea, which inform the experimental design, followed by details on the survey instrument. Section 4 describes the study sample and survey data. Section 5 outlines the estimation of preferences and bargaining power. Section 6 presents the results, including preference estimates, willingness-to-pay, and bargaining power. Section 7 discusses the counterfactual experiments, and Section 8 concludes.

2 Model

The model introduced in this section is similar to the collective models related to time allocation and childcare choices as explored in the studies conducted by Cherchye et al. (2012) and Turon (2019). In Section 2.1, I discuss identification.

Model Setup The model assumes that each household consists of two adult members, denoted by $g = w(ife), h(usband)$, who have children requiring care. Household member g allocates her/his time to labor market activities lm_g, leisure l_g, and unpaid work, such as parental childcare or housework PC_g. The time constraint for each individual is subject to a time endowment of T hours and can be expressed as:

$$lm_g + l_g + PC_g = T. \tag{1}$$

Childcare must be provided during working hours and can be delivered through parental childcare PC, formal care FC, such as childcare centers or kindergartens, or informal care IC, such as care provided by grandparents or relatives. This leads to the following childcare time constraint:

$$\sum_g PC_g + FC + IC = T. \tag{2}$$

The net household income y_{net} is given by:

$$y_{net} = \sum_g \left(w_g \cdot lm_g\right) - c_{ch}, \tag{3}$$

where w_g represents the wage rate of adult member g and c_{ch} is the childcare expenditure on formal and informal childcare. The childcare expenditure is given by:

$$c_{ch} = p_{FC} \cdot FC + p_{IC} \cdot IC, \tag{4}$$

where p_{FC} and p_{IC} denote the hourly cost of formal and informal childcare, respectively.

Preferences Household members have distinct preferences over net income, leisure, and childcare arrangements for both themselves and their spouses. These preferences are represented by a utility function, which can be expressed as:

$$u_g = u(y_{net}, l_g, PC_w, PC_h, FC, IC),\ g = w(ife), h(usband). \tag{5}$$

I assume that individuals make discrete choices when deciding how to allocate their time. Specifically, they select a specific time-allocation combination X that satisfies the four constraints

(1), (2), (3), and (4), where X is expressed as:

$$X = (lm_w, lm_h, l_w, l_h, PC_w, PC_h, FC, IC). \tag{6}$$

Household Decision-making In this model, household decisions regarding time allocation are made collectively, with the household maximizing the weighted sum of the wife's and husband's utilities. Each utility function takes the arguments of consumption and time allocation, and the household solves the following maximization problem given prices $(\mathbf{w}, \mathbf{p}) = (w_w, w_h, p_{FC}, p_{IC})$:

$$\max_X \ \lambda \cdot u_h + (1 - \lambda) \cdot u_w, \tag{7}$$

by making discrete choices and selecting X that satisfies (1), (2), (3), and (4). Here, $\lambda \in [0, 1]$ represents husbands' bargaining power, while $(1 - \lambda)$ represents wives' bargaining power.

2.1 Identification

Building on the methodology established in earlier research on household decisions about vacation destinations and retirement (Dosman & Adamowicz 2006, Michaud et al. 2020), I combine stated preference data from individual household members with revealed preference data from actual household choices. This approach facilitates the identification of intra-household preferences and bargaining power. This technique has also been employed in studies investigating joint household decisions concerning diverse issues, such as consumption, school choice, intertemporal decisions, and multi-attribute goods (Cherchye et al. 2021, Almås et al. 2018, Mariel et al. 2018, Carlsson et al. 2012, Rungie et al. 2014).

To identify and estimate household preferences, I collect stated-preference data using a discrete choice experiment where respondents make choices as if they have complete control over the decision-making process (i.e., their own dictatorship). Specifically, data collected from the choice experiment corresponding to the husband results from a maximization problem under the condition of $\lambda = 1$. Conversely, for the wife, the data corresponds to a scenario where $\lambda = 0$.

Using the preference estimates, the bargaining power parameter (λ) can be identified and estimated by observing the actual allocation of time and resources under prices $(\mathbf{w}, \mathbf{p})$, denoted as $X^* = (lm_w^*, lm_h^*, l_w^*, l_h^*, PC_w^*, PC_h^*, FC^*, IC^*)$. Specifically, λ can be estimated by finding the value that minimizes the discrepancy between the observed allocation and the allocation predicted by the estimated preferences of each household member.

3 Experimental Design

In this study, I aim to examine why women continue to bear a disproportionate share of unpaid work in a context like South Korea (hereafter Korea), where formal childcare is widely available and women are highly educated. The section is divided into two sub-sections. Section 3.1 investigates the different types of childcare utilized in Korea, including associated hours and costs. I also look at individual time-use patterns in Korean dual-earner households. Due to the limitations of observed data, which fail to account for varying choice sets and unobserved factors, a discrete choice experiment is necessary to more accurately capture household preferences and bargaining power in dual-earner households. Section 3.2 examines the details the survey used in this study, with the observed patterns from the previous section guiding its design.

3.1 Childcare Arrangements and Time-Use in South Korea

Korea has a notably high enrollment rate in early childhood education and care, with an average of 95% of children aged 2 to 5 enrolled. This far exceeds the OECD average of 75% and is significantly higher than the United States, where the enrollment rate is only 55%[2]. Uniform access to formal childcare in Korea provides households with similar external resources, making it an ideal setting to observe how families allocate parental childcare time without disparities in external support.

Despite the widespread availability of formal childcare, a significant gendered division of unpaid care and housework persists in Korea. Women perform 4.4 times more unpaid work than men, a disparity highlighted in the third chart of Figure 1. This is particularly striking given that 51% of women aged 25-64 in Korea have attained tertiary education, surpassing the OECD average of 44.3%[3]. This combination underscores the persistent inequality in unpaid labor, despite high levels of female education. According to Kim et al. (2023), the father's childcare time does not differ between dual-earner and non-dual-earner households, indicating that even in dual-earner households, the mother increases her own childcare time or relies more on formal care to manage childcare responsibilities.

Focusing specifically on dual-earner wage workers, I eliminate the influence of households where women are not employed, allowing for a clearer analysis of gendered preferences. In the remainder of this section, I discuss the childcare arrangements of dual-earner households in Korea, using statistics from the 2021 National Childcare Survey[4] and Kim et al. (2023). Then, I present

[2]Source: Education at a Glance 2023: OECD Indicators

[3]Source: OECD Education Database

[4]The National Childcare Survey is conducted every three years to understand the child-rearing conditions in households with young children. The survey includes a total sample of 2,500 households.

the time use analysis of dual-earner households in Korea, utilizing data from the 2019 Korean Time Use Survey[5].

Childcare Arrangements Figure 2 shows the childcare arrangements of dual-earner households throughout the day. Formal care represents care provided by institutions like childcare centers and kindergartens[6]. Informal care represents familial care, typically provided by grandparents or relatives. All other childcare types are classified as "Others"[7]. Over 85% of childcare, at any given time, is provided by either formal, parental, or informal care. By 10 AM, formal care encompasses 90% of the children. From 4 PM onward, there is an evident increase in the proportion of informal care provided by parents and grandparents/relatives. Informal care peaks between 4 PM and 6 PM, and by 6 PM, the majority of the children, exceeding 80%, are under parental care.

Individual Time-Use of Dual-earner Households Figure 3 illustrates the mean time distribution across various activities, such as work, leisure, childcare, housework, self-care, and others, stratified by gender. The cumulative hours spent on work, leisure, childcare, and housework equate to 13 hours, with no significant gender disparities noted.

While there are no gender disparities in the sum of hours spent on these various activities, the data present a statistically significant gender disparity in the allocation of time for various activities, with differences significant at the 1% level. On average, men tend to spend more time working, with 9.5 hours compared to women's 7.4 hours. In terms of leisure time, men also spend slightly more time, averaging 2.1 hours, while women average 1.4 hours. Conversely, women spend significantly more time on childcare and housework than men. The average time women spend on childcare is 2.2 hours, more than double the men's average of 0.9 hours. Additionally, women spend on average 1.7 hours on housework, which is over triple the time men spend, with an average of 0.5 hours. These differences highlight the persisting gender disparities in time allocation for work, leisure, and household responsibilities.

Overcoming the Challenges of Estimating Household Preferences and Bargaining Power with Observed Data It is challenging to estimate household preferences and bargaining power using observed data (such as Figure 2 and Figure 3) for several reasons. First, different households face varying choice sets, such as differences in work hour options, or access to informal childcare.

[5]The Korean Time Use Survey is an extensive study that analyzes the activities of individuals within 24-hour periods in 10-minute intervals. The survey covers 12,435 households and is carried out every five years, with the most recent dataset available from 2019. Among these households, 236 have been identified as dual-earner families with pre-school-aged children.

[6]In Korea, the early childhood education system consists of childcare centers, serving children from infancy up to age 5, and kindergartens, which cater to children aged 3 to 5. More details on the ECEC system in Korea can be found in Appendix Appendix A.

[7]"Others" includes part-time childcare, other public care institutions, childcare support services, half-day academies, part-time private education centers, and private babysitters.

These varying options make it difficult to estimate preferences directly from observed data, as not all households face the same choice sets. For instance, some families may have access to informal childcare but choose not to use it, while others lack the option altogether. However, in observed data, these households would appear the same despite facing different circumstances. In discrete choice experiments (DCEs), participants are presented with explicit choice sets and asked to make decisions based on them, allowing for a more accurate estimation of preferences by ensuring the choice set is clearly defined.

Second, in dual-earner households, husbands often work longer hours and earn higher incomes, leading to time constraints that shift more unpaid labor onto wives. A DCE allows us to control for wage differences and time availability, varying these factors across scenarios to analyze how they influence preferences for dividing unpaid work.

Third, unobserved factors likely influence time allocation decisions. These factors are not always captured in observable data, which can lead to biased estimates if unaccounted for. A DCE addresses this challenge by creating hypothetical scenarios where all else held constant, forcing participants to make decisions based on the presented variables. The DCE enables us to identify marginal rates of substitution between time-use categories (e.g., work hours vs. childcare), while accounting for unobserved influences.

Finally, by combining stated-preference data from DCE with revealed-preference data, I can separately identify bargaining power and individual preferences within the household. Without the collective bargaining model presented in Section 2 and this methodology, it would be impossible to distinguish between bargaining power and individual preferences using only observed data. This approach provides a more comprehensive framework for analyzing time allocation and decision-making in dual-earner households, overcoming the limitations of observational data alone. The next section details this survey instrument further.

3.2 Survey Instrument

In this section, I outline the survey instrument aimed at identifying preference and bargaining parameters. The survey consists of four components. First, inputs for hypothetical scenarios are collected, including information on employment and childcare arrangements. Using these inputs, respondents' hourly wage rates and childcare costs are tailored to each individual. Second, a discrete choice experiment is conducted, consisting of 16 hypothetical scenarios in which stated-preference data are collected. Respondents are asked to choose their most preferred alternative. Alternatives are designed to exogenously vary in the time-allocation combination and prices, allowing for the identification and estimation of preference parameters. The third component involves the actual choice of households and choice sets. Lastly, family values and demographics are recorded to

control for potential confounding variables.

To ensure the survey instrument reflected realistic choices, several steps were taken. In-depth qualitative interviews from March to July 2022 explored the experiences of working mothers in South Korea regarding childcare and housework. The findings showed that informal childcare availability significantly influenced decision-making. Based on this, households are shown different choice sets depending on their access to informal care, and this will be accounted for in the preference estimation of time allocation between paid and unpaid work. A pilot survey was then conducted from from May to June 2024, with 18 participants who provided open-ended feedback, leading to adjustments based on their comments and suggestions.

3.2.1 Inputs

Before starting the choice experiment, participants were asked to provide details about their expected wage levels, types of formal childcare, and their willingness-to-pay for informal care. This information was used to generate two wage levels (high and low) for both the participant and their spouse, as well as high and low cost levels for formal and informal childcare.

In the first phase of the survey, participants are asked to imagine receiving job offers next month and specify their expected minimum, maximum, and most likely wage offers. The same information is collected for their spouses. Using this data, two wage levels, w_g^{lo} and w_g^{hi}, are constructed for both the wife and husband ($g = wife, hus$). Participants also indicate whether their children attend childcare centers or kindergartens. Based on the average costs of public and private institutions, two levels of formal childcare costs are calculated: p_{FC}^{hi} and p_{IC}^{lo}. Finally, participants provide their willingness-to-pay for informal care, which is used to determine two levels of informal childcare costs, p_{IC}^{hi} and p_{IC}^{lo}. Further details on the weighting and calculations of these values can be found in Appendix C.1.

3.2.2 Discrete Choice Experiment

In this discrete choice experiment, participants are presented with 16 unique choice sets, each comprising three alternatives for allocating 13 hours between leisure, work, unpaid labor, and childcare. These choice sets vary in the wages for the participant and their spouse and in the costs of formal and informal childcare.

Figure 4 illustrates a sample choice set. First, the hourly wages and childcare costs per hour are presented. Then, three alternatives are provided. For each alternative, the net household monthly wage and monthly childcare cost are calculated. Participants are asked to choose their most preferred alternative.

Prices/Costs Table 1 details the price variations across the choice sets, offering two levels

each for hourly wages and for both formal and informal childcare costs. With two levels for four different wages/costs, there are 16 possible combinations. Each choice set is assigned with prices from one of these 16 combinations, chosen randomly. Participants are asked to choose their preferred alternative given these prices. For each choice set, the price combination remains fixed. In the example choice set in Figure 4, the combination is set to a low wage for the participant, a high wage for the spouse, a low cost for formal childcare, and a high cost for informal childcare.

Alternatives Table 2 outlines how hours are distributed among activities in the experiment's alternatives, inspired by 2019 Korea Time Use Survey data and 2021 National Childcare Survey[8]. For each spouse, there are four levels of work and leisure hours, and three levels of formal childcare hours. Parental and informal childcare hours are derived based on the remaining time after work, leisure, and formal childcare allocations. Each alternative presents a different mix of these time allocations.

Choice Sets Structure Each choice set in this study comprises three alternatives, differentiated by a unique combination of wages and childcare costs. Participants encounter 16 choice sets, divided into four segments based on childcare arrangements. The first segment involves allocating 13 hours between parental and formal childcare, the second segment is dedicated to parental care only, the third excludes formal childcare, requiring distribution between parental and informal care, and the fourth segment integrates all four childcare options for the allocation of the 13 hours. An example choice set for each segment is provided in Figure 5.

Participants' access to informal childcare is assessed before they view the choice sets. Those with access examine four randomly selected sets from each of the four segments, totaling 16 sets. In contrast, those without access to informal childcare review eight sets chosen randomly from just the first and second segments. Detailed description of choice set construction is available in Appendix C.

3.2.3 Actual Household Choices

After completing the choice experiment, participants are asked to detail their household's "actual" time allocation. They report daily hours spent by both spouses on work, leisure, and unpaid work, along with the allocation across different childcare types. Crucially, participants also describe their household's choice set parameters, including minimum and maximum work hours, availability and maximum amount of informal childcare, as well as their wages and the costs associated with different childcare options.

[8]For more details, see Appendix B.

3.2.4 Family Values and Demographics

Lastly, participants are asked about their family values, including questions on decision-making within the household and perspectives on family roles in various activities. Examples of family values questions include inquiries about who primarily influences decisions on certain issues and individual views on the distribution of roles within the family.

Participants are asked about their demographics and employment details, including date of birth, gender, household composition (number of members and their relationships), children's ages, housing type, highest education level, occupation, job title, employment status (full-time/part-time), and working days.

4 Data

This section details the data collection. I first present the demographics and household characteristics of these couples. Then, I describe the stated-preference data collected from the choice experiment and the revealed-preference data, which reflects households' actual choices.

4.1 Sample

Participants were selected from a panel maintained by Hankook Research in Korea, targeting dual-earner wage worker households with preschool children[9]. The first data collection occurred from September 11 to October 14, 2023, and involved 248 couples (496 individuals). The second data collection ocurred from May 27 to June 10, 2024, and involved 70 couples (140 individuals), totaling 318 couples (636 individuals). Collecting data at the couple level enables to capture the interdependence of spouses' preferences and bargaining power in household decision-making, providing a more comprehensive understanding of the factors that influence time-allocation decisions in dual-earner households. During the data collection, two quotas guided participant selection: one based on monthly household income, requiring 50% of the sample to have an income of KRW 5,000,000 (approximately 6,250 in USD PPP), and the other based on geographical location, with 50% residing in the capital region.

Among 685 participants, 155 were excluded based on specific criteria to ensure the quality of the responses, leaving 265 couples (77%, 530 individuals) remaining. Additional information on the exclusion criteria is available in Appendix D. In the excluded sample, participants are younger

[9]In Korea, 51.5% of households with the youngest child aged 0 to 6 are dual-earner households. Source: Second Half of 2023 Regional Employment Survey: Status of Dual-Earner Households and Single-Person Household Employment, Statistics Korea

on average, work fewer hours, and have higher household monthly incomes[10].

Table 3 presents summary statistics for the 265 couples, broken down by gender. Compared to OECD data on Adults' Educational Attainment, our sample shows a higher proportion of college-educated individuals. In Korea, 63% of men and 77% of women aged 25-34 have tertiary education, while for those aged 35-44, the figures are 69% for men and 71% for women. In our sample, most of the participants fall within the 25-44 age range, with 93% of women and 92% of men holding a 2-year college degree or higher. This is higher than the 75% for both genders in the 2019 Korean Time-Use Survey (KTUS) sample of 236 dual-earner couples[11].

Table 4 shows the household-level characteristics. Compared with the dual-earner household sample in Kim et al. (2023), our participants show greater engagement with informal childcare options. Specifically, 37% of our sample actively uses informal care, and 66% have access to it through grandparents or relatives, compared to 23% usage reported in the cited study. Higher household income in my sample may explain the greater reliance on informal childcare, as the cited study show that higher income is associated with an increased likelihood of grandparents providing childcare. In my sample of 265 households, the average pre-tax income is KRW 6,788,000 (approx. 8,500 in USD PPP), significantly higher than the 2024 national median for three-person households (KRW 4,714,657 or approx. 5,890 in USD PPP) and four-person households (KRW 5,729,913 or approx. 7,160 in USD PPP).

4.2 Stated-Preference Data

In the discrete choice experiment, each participant was presented with sets of three alternatives and asked to select one. 85% of participants were presented with all 16 choice sets (48 alternatives in total), while 15% of the participants were presented with fewer than the full set of 16 choice sets[12]. Table 5 presents summary statistics of the presented choice sets, covering 8,068 choices from the same number of choice sets. Since each set has three alternatives, there are 24,204 observations in total. Note that formal and informal care arrangements do not appear in all alternatives, resulting in fewer observations for these categories. The mean household monthly consumption presented is KRW 5,531,000 (approx. 6,900 in USD PPP.)

Choices Figure 6 shows the distribution of preferences for different alternatives among 265 couples (265 wives and 265 husbands) across 80 choice sets. The choice sets are divided into four

[10]These three variables are statistically significantly different. For more details, see Table 16, which compares the characteristics of sample and excluded participants.

[11]See Appendix B for more information on the 2019 KTUS.

[12]Initially, at the beginning of data collection, choice sets were presented through a random selection with replacement, leading to participants encountering the same choice sets multiple times. Consequently, 15% of the participants were presented with fewer than the full set of 16 choice experiments. The analysis reveals no significant differences in the average number of choice sets shown to participants across gender and the availability of informal childcare.

segments, each containing 20 sets, with each segment varying the distribution of 13 hours across different childcare types. Participants were shown up to 16 choice sets out of the total 80. A total of 8,068 choices were made by 265 couples.

The percentages within each cell represent the proportion of wives and husbands who selected that specific alternative as their most preferred option. The heat map color coding indicates the intensity of preference, with green representing higher preference percentages and red indicating lower preference percentages.

In four choice sets, one alternative was never chosen. In Segment 3, options 19 and 20 were never selected by husbands. They avoided alternatives where they provided significantly more parental care and informal care while working fewer hours than their wives. In Segment 4, options 12 and 14 were never chosen by wives, where the wife provides 0 hours of parental care, the husband takes on more parental care, and the wife works more while the husband works less. In Appendix E, I describe more on the least favorite alternatives among wives and husbands, respectively. These alternatives were chosen by less than 15% of participants, regardless of the other options presented.

4.3 Revealed-Preference Data

The collected data not only include choices from the experiment but also captures the actual choices made by each household, specifically detailing their work hours, leisure hours, unpaid labor hours (such as childcare or housework), and both formal and informal childcare hours. These real-life choices are reported within the context of specific price conditions that include both wages and childcare costs.

Both wives and husbands reported on formal and informal childcare hours, as well as their unpaid work hours, including their spouse's hours. Notably, there was a discrepancy in the reported hours between genders, which I discuss in Appendix F. Given these differences, the study averages the reported hours between spouses to ensure consistency. Figure 7 illustrates the households' average actual choices, dividing them into 91 households without informal childcare and 174 with informal childcare, with activity hours balanced between wife and husband.

In households without informal childcare, the division of unpaid labor significantly favors men, with wives undertaking twice as much unpaid work (4.8 hours for wives vs. 2.4 hours for husbands) and working 2.7 hours less in paid employment. These households allocate an average of 7.6 hours to formal childcare. Conversely, in households with informal childcare, the disparity in unpaid labor is reduced (3.9 hours for wives vs. 2.5 for husbands), though wives still engage in 1.5 hours less paid work than their husbands. These households allocate 6.9 hours to formal and 1.4 hours to informal childcare. Gender differences in these categories, aside from leisure hours in households

without informal childcare, are statistically significant. Moreover, differences attributed to the availability of informal childcare are significant across all categories, except for wives' leisure time and husbands' parental care.

4.3.1 Choice Set

I collected data on the range of options considered by households for their actual choices — encompassing work hours, leisure time, unpaid labor (parental care), and both formal and informal childcare hours — specifically to create household-specific choice sets. Work hours are defined within ranges specific to individuals, based on the typical minimum and maximum daily hours for those with similar education and experience levels. These household-specific choice sets allow for a more tailored analysis of each household's decision-making process.

I construct household-specific choice sets using the categorization detailed in Appendix G, with an average of 165 alternatives per set across the 265 households. Each household has one chosen alternative, representing their actual household choice.

4.4 Family Values

Table 6 presents the distribution of responses from 265 wives and husbands across several statements related to gender roles, household responsibilities, and childcare. I generated "Gender Score" based on the responses, with the two questions marked * reverse coded. The score was calculated by summing responses, "Strongly Agree" with the highest value of 4. The mean score is 21.5 for the wives, and 20.2 for husbands, with the difference being statistically significant at the 1% level.

Figure 8 shows the distribution of satisfaction levels regarding the division of household chores and caregiving responsibilities between wives and husbands. The figure suggests that husbands tend to express higher satisfaction with the division compared to wives.

5 Estimation

In this section, I detail the empirical specification of the utility function and proceed with preference estimation under a random utility framework, based on the data presented earlier. Subsequently, I estimate bargaining power by integrating the preference estimates with the choice set information and actual choices of each household.

5.1 Preference

In the analysis, I employ a random utility framework to model the decision-making process of participants. This framework posits that utility u a participant derives from a particular choice is composed of two parts: a deterministic component v that can be explicitly modeled based on observed factors and a stochastic error term ε that captures unobserved influences:

$$u = v + \varepsilon. \tag{8}$$

The deterministic component of utility v is distinct for each wife and husband. The utility function is defined as:

$$v^g = y_{net} + \alpha_l^g \cdot l_g + \beta_h^g \cdot PC_h + \beta_{h_{sq}}^g \cdot PC_h^2 + \gamma_{FC}^g \cdot FC + \gamma_{IC}^g \cdot IC, \quad g = wife, hus, \tag{9}$$

where y_{net} is the household net income[13], l_g is the leisure hours for the household member g, PC_h denote the parental childcare hours provided by the husband. FC is formal childcare hours and IC is informal childcare hours.

By construction, $PC_w + PC_h + FC + IC = 13$, so I exclude PC_w from the specification. This means that the coefficients β and γ represent the willingness-to-pay (WTP) for a one-hour increase in PC_h, FC, or IC, in exchange for a corresponding decrease in PC_w. For PC_h (βs), the inclusion of the quadratic term PC_h^2 means that the WTP is not constant but depends on the current level of PC_h. As the husband's parental childcare hours increase, the marginal WTP for additional hours of PC_h changes, reflecting diminishing or increasing returns to additional childcare depending on the estimated value of the quadratic coefficient. Since the coefficient for y_{net} is fixed at 1, the other coefficients are directly interpreted as WTP, indicating how much wife or husband are willing to trade off a reduction in the wife's parental care for an increase in other forms of care.

Identification: Preferences I use stated-preference data to identify and estimate the parameters governing household decisions on time allocation and childcare. By observing participants' choices across hypothetical scenarios with varying levels of household income, leisure, and childcare options, I can capture how they trade off between income and time spent on activities such as paid work, leisure, and parental childcare. These trade-offs generate the necessary variation to identify the preference parameters.

The analysis is framed within a multinomial logit (MNL) model. The analysis is framed within

[13]The rationale for specifying y_{net} to enter linearly into the utility function reflects constant returns to scale, as differences in household net income are relatively small and depend on paid work hours. The average difference in y_{net} between the highest and second highest alternative, and between the second and third highest, is about 82.7 in 10,000 KRW (1,033 in USD PPP). Using $\ln(y_{net})$ would impose diminishing returns, which may not be suitable given these small variations.

a multinomial logit (MNL) model. I assume that the random component of utility, ε follows a Type I Extreme Value distribution, which implies that the random components are independent and identically distributed (i.i.d.) across individuals, alternatives, and choice sets. This assumption allows the choice probabilities to take the familiar closed form used in MNL models, facilitating identification and estimation.

Each choice set consists of three alternatives, and I observe which alternative is selected, implying that the utility of the chosen alternative exceeds that of the others. The relative utilities between alternatives determine the choice, and by observing trade-offs between net income, leisure, and childcare options, I can identify the preference parameters $\alpha_l, \beta_h, \beta_{h_{sq}}, \gamma_{FC}$[14], and γ_{IC} from the variation across alternatives and choice sets.

In this MNL framework, identification relies on exogenous variation in prices and time allocations across choice sets, which allows me to observe how participants trade off household net income against time spent on different activities. The exogenous variation in l_g, PC_w, PC_h, FC, and IC ensures that the utility parameters are uniquely identified based on observed choices. To further ensure identification, I fix the coefficient of y_{net} at 1, which allows the otehr parameters to be interpreted directly as willingness-to-pay for changes in leisure or childcare time. The normalization anchors the model and enables clear estimation of trade-offs between time and income.

Maximum Likelihood Estimation Given the assumption that the random utility component ε follows a Type I Extreme Value distribution, the model yields closed-form choice probabilities typical of the MNL framework. This assumption extends to the random component being independent and identically distributed (i.i.d.) across individuals denoted by i, alternatives labeled j, and across choice sets indicated by k. For any individual i from group $g = wife, hus$, the likelihood of choosing option j within a set of alternatives k is determined by:

$$p_{i,j,k}(\theta^g) = \frac{\exp\left(v_{i,j,k}(\theta^g)\right)}{\sum_{j'} \exp\left(v_{i,j',k}(\theta^g)\right)}, \tag{10}$$

where $\theta^g = (\alpha^g, \beta^g, \gamma^g)$, and $v_{i,j,k}(\theta^g)$ represents the utility that member g derives from selecting alternative j in choice set k.

The model parameters are estimated using Maximum Likelihood Estimation (MLE). The log-likelihood function, which represents the probability of observing the actual choices made by in-

[14] In the choice experiment, formal childcare hours (FC) can be 0, 7, or 10 hours. However, most choice sets either have all alternatives with 0 hours or all with 7 or 10 hours, with few sets offering a comparison between 0 and 7 or 0 and 10 hours. As a result, I cannot identify preferences between 0 vs. 7 hours or 0 vs. 10 hours. Therefore, γ_{FC} reflects the willingness-to-pay (WTP) for a one-hour increase in formal childcare, but only within the range of 7 to 10 hours. This means the WTP does not capture preferences for increases from 0 to 7 or 0 to 10 hours, but specifically for the marginal increase between 7 and 10 hours of formal childcare.

dividuals, is defined separately for each household member $g = wife, hus$ as follows:

$$ll(\theta^g) = \sum_i \sum_k \sum_j y^g_{i,j,k} \cdot \ln\left(p_{i,j,k}(\theta^g)\right), \tag{11}$$

where $y^g_{i,j,k}$ indicates whether individual i of member g selected alternative j in choice set k, a value of 1 if selected and 0 otherwise. This formulation aggregates the log of the choice probabilities across all individuals, choice sets, and alternatives, reflecting the likelihood of the observed selection patterns given the parameterized utility specification.

5.1.1 Heterogeneity Analysis

I examine whether the coefficients in eq. (9) vary across observed household characteristics. Specifically, I investigate how preferences for parental and formal/informal childcare differ based on the availability of informal childcare, the age of the youngest child, the number of children, and the relative wage of the wife compared to the husband. This analysis allows us to explore potential heterogeneity in preferences and how these factors influence the division of childcare responsibilities within households. The household characteristics used in the heterogeneity analysis are summarized in Table 7.

For the preference for own leisure, where $g = wife, hus$:

$$\alpha^g_l = \alpha^g_0 + \alpha^g_1 \cdot I[\text{IC Available}]. \tag{12}$$

Here, the parameter α_0 captures the baseline preference, and α_1 reflects the shift in preference when informal childcare is available. For the husband's parental care coefficient:

$$\beta^g_h = \beta^g_0 + \beta^g_1 \cdot I\left[\frac{wage_w}{wage_h} \geq 1\right], \quad \beta^g_{h_{sq}} = \beta^g_2 + \beta^g_3 \cdot I\left[\frac{wage_w}{wage_h} \geq 1\right]. \tag{13}$$

This specification includes interaction terms to account for the relative wage of wife compared to the husband. For formal and informal childcare coefficients, $ch = FC, IC$:

$$\gamma_{IC} = \gamma^g_0 + \gamma^g_1 \cdot I\left[\text{Age of child "4 to 6"}\right]. \tag{14}$$

This equation models the preferences for formal and informal childcare, accounting for the age of the child.

5.2 Bargaining Power

The parameter λ serves as a measure of the bargaining power between spouses. The utility of a household, u_H, encompasses both deterministic and stochastic components, with the deterministic part reflecting a weighted aggregation of the utilities derived by the husband and wife from a given choice. Specifically, the utility function is specified as:

$$u_H = \lambda \cdot v(\hat{\theta}^h) + (1 - \lambda) \cdot v(\hat{\theta}^w) + \varepsilon_H, \tag{15}$$

where $v(\hat{\theta}^h)$ and $v(\hat{\theta}^w)$ represent the predicted utilities for the husband and wife, respectively, based on their estimated preference parameters θ^g[15], and ε_H denotes the random component of household utility.

Identification: Bargaining Power The bargaining power parameter λ is identified using both preference estimates and revealed-preference data, which reflect households' actual choices. Identification relies on differences in preferences between wife and husband, as well as variations in household choices and choice set composition. As noted in section 2.1, I follow the methodology from previous studies that combine stated- and revealed-preference data to identify bargaining power parameters (Dosman & Adamowicz 2006, Michaud et al. 2020).

As described in Section 4.3.1, each household faces a set of household-specific alternatives, with one alternative representing the actual choice made by the household. I assume that the error term ε_H follows a Type I Extreme Value distribution, which allows for a closed-form expression of the choice probabilities in a MNL framework. Given the estimated preferences $\hat{\theta}^w$, and $\hat{\theta}^h$, I can predict the utilities $v(\hat{\theta}^h)$ and $v(\hat{\theta}^w)$ for each alternative. The household's actual choice reveals which spouse's preferences are more aligned with the final decision, allowing me to estimate λ, the bargaining power parameter.

Maximum Likelihood Estimation To estimate the parameter λ, which quantifies the husband's share of bargaining power within the household, I examine the household's actual choices. The probability that a household H chooses a specific alternative j, given wage and price constraints, is modeled as:

$$p_{H,j}(\hat{\theta}, \lambda) = \frac{\exp\left(\lambda \cdot v_{H,j}(\hat{\theta}^h) + (1 - \lambda) \cdot v_{H,j}(\hat{\theta}^w)\right)}{\sum_{j'} \exp\left(\lambda \cdot v_{H,j'}(\hat{\theta}^h) + (1 - \lambda) \cdot v_{H,j'}(\hat{\theta}^w)\right)}, \tag{16}$$

where the expression within the exponentials captures the weighted sum of the husband and the wife's utilities for each choice alternative, parameterized by their respective estimated preferences.

[15] I use the specification where observed household characteristics are included.

In the denominator of the above equation, for each household h, I account for the different alternatives present in their respective choice set.

The estimation of λ involves maximizing the log-likelihood function:

$$ll(\hat{\theta}, \lambda) = \sum_{H} \sum_{j} y_{H,j} \cdot \ln\left(p_{H,j}(\hat{\theta}, \lambda)\right), \tag{17}$$

where $y_{H,j} = 1$ if the alternative j is the actual choice made by household H, and 0 otherwise. This function aggregates the logarithm of the probabilities of observed choices across all households, providing a statistical basis for estimating the bargaining power parameter that best aligns with the empirical data.

I model λ as a linear function of various factors influencing household decision-making. In eq. (18), λ is modeled as a function of the relative wage ($\frac{wage_w}{wage_h}$), with δ_1 capturing the impact of wage ratios on bargaining power. Equation (19) introduces a binary indicator $I[wage_w \geq wage_h]$, which captures whether the wife's wage is greater than equal to the husband's, allowing δ_2 to quantify the effect of this wage dominance. In eq. (20), the model incorporates gender role attitudes, represented by a binary variable comparing the Gender Role scores (table 6), of the husband and wife, with δ_3 reflecting the effect when the husband's score is greater than equal to the wife's. Lastly, eq. (21) introduces a satisfaction variable, where δ_4 accounts for the wife's satisfaction with the division of labor (Figure 8), affecting λ.

$$\lambda = \delta_0 + \delta_1 \cdot \frac{wage_w}{wage_h}, \tag{18}$$

$$\lambda = \delta_0 + \delta_2 \cdot I[wage_w \geq wage_h], \tag{19}$$

$$\lambda = \delta_0 + \delta_2 \cdot I[wage_w \geq wage_h] + \delta_3 \cdot I[GenderScore_h \geq GenderScore_w], \tag{20}$$

$$\lambda = \delta_0 + \delta_2 \cdot I[wage_w \geq wage_h] + \delta_4 \cdot I[\text{“Wife Satisfied with the Division”}]. \tag{21}$$

6 Results

In this section, I first present the estimation results for preferences. Then, I examine estimates for bargaining power.

6.1 Preferences

Table 8 presents preference estimation results for both wives and husbands, with a comparison of differences between the two. The table includes estimates for own leisure time (α_l), husband's parental care ($\beta_h, \beta_{h_{sq}}$), formal care (γ_{FC}), and informal care (γ_{IC}). The coefficients are directly

interpreted as willingness-to-pay (WTP), with units in 10,000 KRW. In Section 6.2, I convert these values to USD PPP.

For own leisure, both wives and husbands exhibit positive preferences, but husbands place a significantly higher value on leisure, with a coefficient of 22.208 compared to 13.023 for wives. The difference between the two is statistically significant at the 1% level, with husbands valuing their leisure time 9.185 points higher than wives.

Both wives and husbands have similar WTP β_h when $PC_h = 0$ for the first hour of the husband's parental care, in exchange for one-hour decrease in the wife's parental care, with no statistically significant difference. The negative estimate for the squared term $\beta_{h_{sq}}$ indicates that as the husband's involvement in parental care increases, the preference for additional hours decreases.

The coefficient for formal care (γ_{FC}), and informal care (γ_{IC}) reflects the utility from a one-hour increase in these activities, but in exchange for a corresponding decrease in the wife's parental care. For formal care (γ_{FC}), both wives and husbands have strong negative preferences, with coefficients of -34.138 for wives and -33.301 for husbands, respectively. Note that γ_{FC} reflects the utility for a one-hour increase in formal childcare, but only within the range of 7 to 10 hours. For informal care (γ_{IC}), wives show a more negative preference (-20.939) compared to husbands (-17.576), with the difference -3.363 being statistically significant at the 10% level. The standard errors are clustered at the individual level.

Preference Heterogeneity Analysis Table 9 presents the preference estimation results from the heterogeneity analysis, examining how household characteristics influence preferences. The table shows estimates for both wives and husbands, along with comparisons between the two. Various household characteristics are considered, such as the availability of informal care, age of the child, and whether the wife's wage is the same or higher than the husband's.

One notable finding is the significant negative values for the "Wife's wage is same or higher" variable in the husband's parental care estimation. The willingness-to-pay (WTP) for an additional hour of the husband's parental care (from 0 to 1) is 15.774 lower for wives and 13.893 lower for husbands when the wife's wage is higher compared to when it is lower. This suggests that in households where wives earn more, both wives and husbands place less value on the husband's parental care relative to the wife's parental care. Despite the higher opportunity cost of the wife's time, the willingness-to-pay for the husband to take on additional parental care decreases.

6.2 Willingness-To-Pay

Table 10 presents the estimated willingness-to-pay (WTP) for a one-hour daily increase in leisure, husband's parental care (PC_h), formal (FC) and informal childcare (IC), with PC_h, FC, and IC increases traded off for a reduction in the wife's parental care. The WTP values are calculated for a

one-hour increase per weekday, extended over the entire month. The WTP values are based on the preference estimation results, originally measured in KRW and converted to approximate values in USD PPP. The average monthly household income used in the choice experiment is $7,000 for wives and $6,821 for husbands[16]. The mean values for each activity are provided alongside the WTP and the percentage of household income.

Figure 9 illustrates the WTP for the PC_h hours, both cumulative and marginal WTP for wives and husbands. The top chart shows the cumulative WTP from 0 to 12 hours of PC_h, peaking around 5 to 6 hours for both spouses before declining with additional hours. The bottom chart shows the marginal WTP for each additional hour of PC_h, indicating a declining preference for more hours of husband's PC after the first few hours. The first hour has the highest marginal WTP ($189 for wives and husbands), and the marginal WTP decreases steadily, becoming negative after the 6th hour, reflecting a diminishing preference for more PC_h hours from the husband as his involvement increases. These WTP estimates reflect the trade-off of increasing PC_h by one hour in exchange for a one-hour reduction in the wife's PC.

On average, wives are willing to pay $163 (2.3% of income) for an additional hour of leisure, while husbands are willing to pay $277 (4.0% of income) for the same. For formal care, a one-hour increase from 7 to 10 hours in exchange for a reduction in the wife's parental care results in negative WTP values: -$427 (6.1% of income) for wives and -$416 (5.9% of income) for husbands. Similarly, for informal care, wives' WTP is -$262 (3.7% of income), and husbands' WTP is -$220 (3.1% of income) for one additional hour in exchange for reduced wife's parental care.

WTP: Preference Heterogeneity Table 11 presents the estimated WTP for a one-hour increase in various activities, accounting for differences across households with varying characteristics. These WTP values are based on Table 9 and have been converted to USD PPP. In households with access to informal childcare, women are willing to pay $142 more for an extra hour of their own leisure time. This means that in households where informal childcare is available, women value their leisure time significantly more. Recall that only wives and husbands with access to informal childcare were presented with alternatives that included informal care options. The intuition behind this result is that access to informal childcare may change how women value their leisure time relative to other activities. This could suggest that the flexibility provided by informal care increases the perceived value of leisure, as women may feel less constrained by strict schedules or external caregiving arrangements.

Notably, in households where the wife's wage is the same or higher than the husband's, the WTP for an additional hour of husband's parental care from 0 to 1, in exchange for a reduction

[16]The differences in average monthly household income between wives and husbands are due to each spouse being asked to estimate both their own and their spouse's expected wage range. Naturally, their perceptions of each other's earnings can differ, leading to variations in the reported income.

in the wife's parental care, is $197 lower for wives and $174 lower for husbands. This finding suggests that in households where the wife earns the same or more than the husband, traditional gender roles and expectations may still influence the division of parental care. Even though the opportunity cost of the wife's time is higher, both spouses may place less value on the husband taking on additional parental responsibilities, potentially due to ingrained norms about gender roles in caregiving. The lower willingness-to-pay for the husband's parental care might reflect a preference for the wife's continued involvement in childcare, despite the economic logic of reallocating tasks to the lower-earning spouse.

6.3 Bargaining Power

Table 12 displays estimation results for husband's bargaining power, represented as λ. Column (1) shows results with λ treated as constant. Constrained to be between 0 and 1, the value 0.690 indicates that the husband's bargaining power is greater than the wife's, whose share is 0.310 $(1 - \lambda)$. This suggests that the actual household choice aligns more closely with the husband's preferences.

Column (2) to (5) present the estimation results from Equation (18) to Equation (21), where λ is modeled as a linear function of relative wage, gender role scores, and satisfaction with the division of labor between spouses. The results align with intuition. The wife's relative wage ($\frac{wage_w}{wage_h}$) is negatively correlated with the husband's bargaining power. In column (3), for households where the wife's relative wage is equal to or greater than 1, the husband's bargaining power is 0.370 $(0.735 - 0.365)$, indicating that the wife's bargaining power is now higher, and the household choice reflects her preferences. Additionally, in households where the husband's gender role score is the same or higher than the wife's, his bargaining power is 0.066 lower compared to households without this characteristic. Similarly, in households where the wife is satisfied with the division of labor, the husband's bargaining power is 0.109 lower than in households where the wife is not satisfied.

7 Counterfactual Analysis

Using the estimated structural parameters, including the preference and bargaining power estimates, I conduct two counterfactual experiments. The first experiment involves changing the bargaining power λ, fixing bargaining power to $\lambda = 0$ and $\lambda = 1$, simulating household allocations where one member makes all decisions. I also show how wife's parental care division changes as λ increases from 0 to 1. The second experiment removes alternatives from the household choice set where work hours are greater than ten hours, to observe how this impacts household allocation

decisions. I use the preference estimates in Table 9 and the (2) specification in Table 12.

7.1 Changing Bargaining Power

Figure 10 shows the difference in time allocation between actual household choices and the counterfactual scenario where the wife makes all decisions ("Wife Decides All"). In both households using and not using informal care, there is a substantial increase in the husband's parental care time- 79 minutes for households not using informal care and 75 minutes for those using informal care. The wife gains more leisure time, while the husband's leisure time decreases.

Figure 11 shows the counterfactual scenario where the husband makes all decisions ("Husband Decides All"). In this case, the wife's leisure decreases by 35 to 36 minutes, with a slight increase in her parental care time. In households that use informal care, the husband's parental care time decreases, further widening the gap between the spouses' contributions.

Figure 12 illustrates how the wife's share of parental care (PC) changes as the husband's bargaining power increases. The x-axis represents the husband's bargaining power (λ), ranging from 0 to 1, and the y-axis represents the wife's share of parental care, ($\frac{PC_w}{PC_w+PC_h}$). Households using informal care consistently show a lower share of PC_w. However, as the husband's bargaining power approaches 1, the gap between the two group narrows. When $\lambda = 0.5$, the wife's parental care share is 0.508 for households using informal care and 0.534 for those not using informal care. Figure 13 shows the difference in time allocation between actual household choices and the scenario where $\lambda = 0.5$. Equal bargaining power closes the initial gap in parental care hours by 75% for households not using informal care and by 90% for those using informal care.

7.2 Changing Choice Set Composition

Figure 14 shows the counterfactual allocation where both spouses' work hours are restricted to a maximum of 10 hours each, whereas previously they had the option of working up to 13 hours[17]. In this scenario, the gap in PC hours between spouses narrows significantly, by 84% for households not using informal care and by 72% for those using informal care.

8 Conclusion

The findings of this study provide important insights into the dynamics of unpaid labor division in dual-earner households, with a particular focus on the role of preferences and bargaining power. Despite advancements in women's education and workforce participation, the unequal division of

[17]Details on the choice set construction and composition can be found in Appendix G

unpaid labor remains a persistent challenge. This research reveals that differences in bargaining power and spousal preferences contribute to the persistent disparities in unpaid labor division.

The results reveal that husbands generally have greater bargaining power, which aligns household decisions more closely with their preferences. However, the analysis shows a positive correlation between the wife's relative wage and her bargaining power, which is associated with a more equitable division of labor. This suggests that addressing gender wage gaps could potentially influence the balance of household responsibilities by altering bargaining dynamics. Additionally, the findings indicate lower willingness-to-pay for the husband's parental care even in households where the wife earns more, reflecting the complex interplay of preferences and labor division.

The counterfactual experiments further emphasize the influence of bargaining power and choice set constraints on household allocations. When bargaining power is evenly distributed ($\lambda = 0.5$), the gap in parental care between spouses narrows substantially, particularly in households using informal care. Similarly, restricting work hours to a maximum of 10 hours significantly reduces the unpaid labor gap, suggesting that workplace policies promoting work-life balance could have positive ripple effects on household equity.

This study makes a methodological contribution by combining stated-preference and revealed-preference data to separately identify preferences and bargaining power within a collective bargaining framework. The novel choice experiment provides a flexible and robust approach to analyzing household decision-making, offering valuable implications for policymakers. Future research could build on this framework to explore the intersection of cultural norms, policy interventions, and household decision-making in different contexts, further advancing our understanding of gender dynamics in unpaid labor.

Figures and Tables

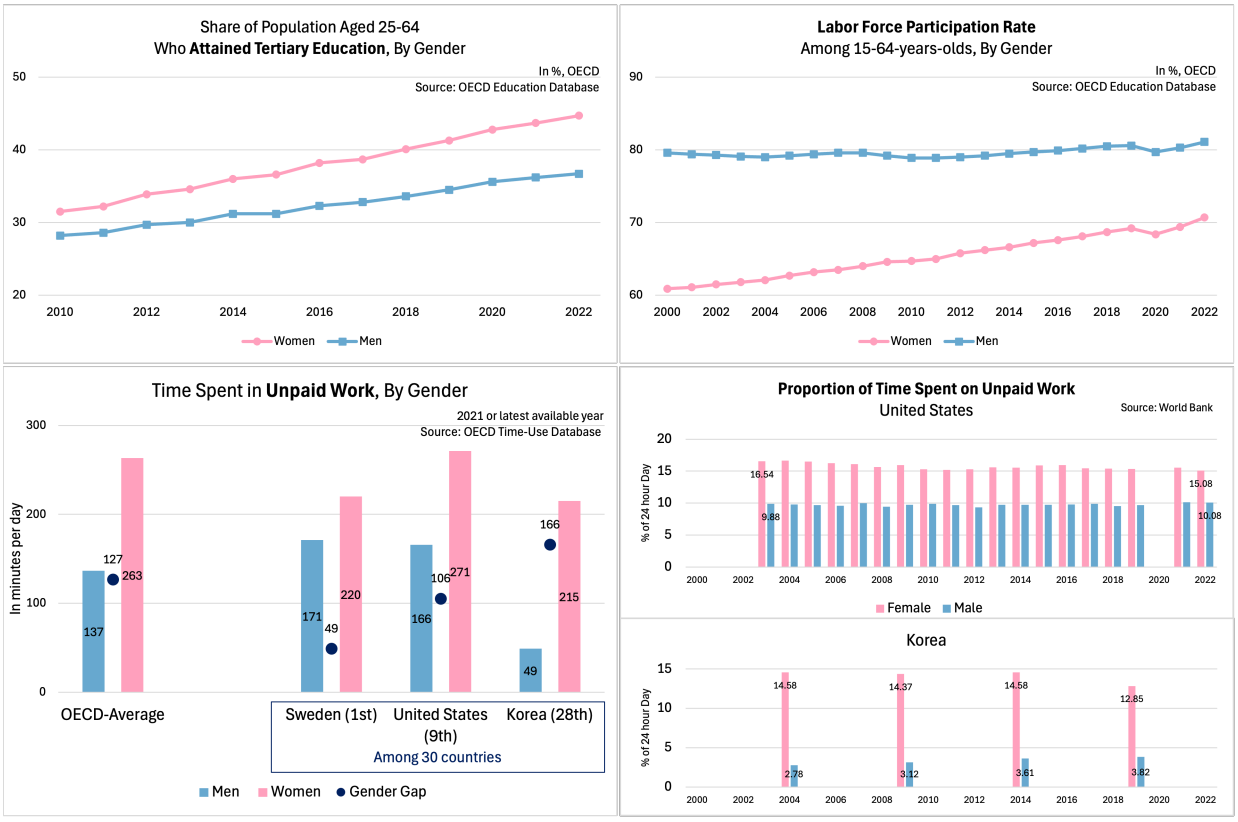


Figure 1: Progress in Education and Workforce Participation, but Persistent Gender Gap in Unpaid Work Across OECD Countries

Note: The figures illustrate gender disparities in education, labor force participation, and unpaid work across OECD countries. The top-left chart shows that the share of women aged 25-64 who attained tertiary education has been steadily increased from 2010 to 2022, surpassing the share of men throughout this period. The top-right chart illustrates labor force participation rates for men and women aged 15-64. Women's labor force participation has been steadily rising, surpassing 70% by 2022. The bottom-left chart shows a stark contrast in time spent on unpaid work by gender. Across OECD countries, women spend significantly more time on unpaid housework and caregiving than men. Lastly, the bottom-right chart examines the proportion of time spent on unpaid labor in the United States and South Korea from 2000 to 2022. Even as labor force participation for women has improved, the gap in unpaid work has remained relatively unchanged over time, with women continuing to bear a larger share of household and caregiving responsibilities. This illustrates that while progress has been made in education and labor force participation, the disparity in unpaid labor persists.

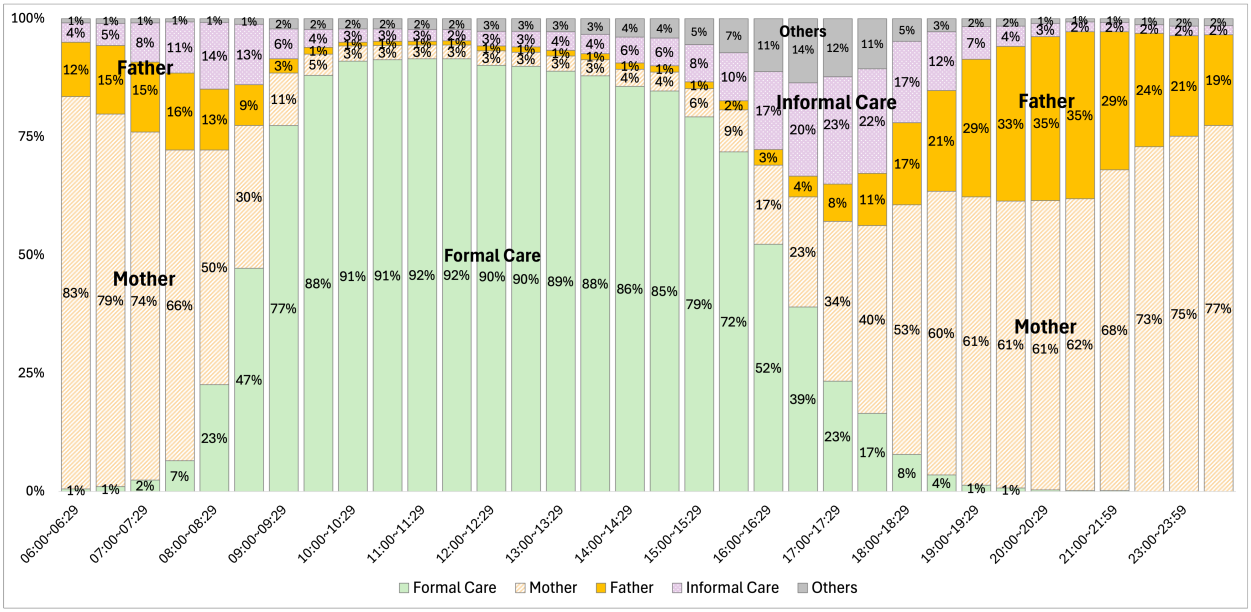


Figure 2: Childcare Arrangements of Dual-earner Households

Note: Figure 2 shows the distribution of childcare arrangements for dual-earner households with children aged 2 to 7. The vast majority of care is provided through three main types: parental care, formal care, and informal care. Early in the day, most care is provided by mothers. From 9:00 AM to 4:00 PM, formal care dominates, peaking at 92% around midday. After 4:00 PM, formal care declines, and informal care, typically provided by grandparents, increases briefly. By 6:00 PM, maternal care becomes the primary form, accounting for over 60% of childcare and continuing until the end of the day. Fathers provide a smaller share of care throughout the day.

Source: Kim et al. (2023), $N = 2,697$ dual-earner households with child aged 2 to 7.

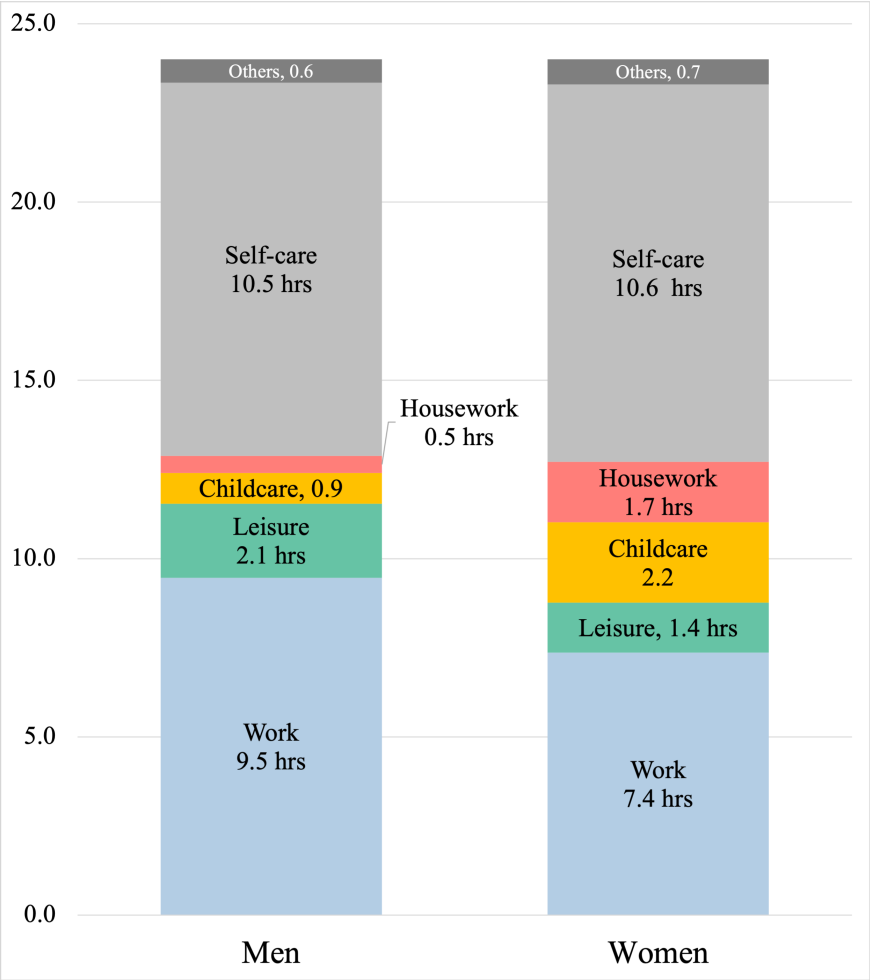


Figure 3: Gender-Based Comparison of Average Time Allocation for Various Activities

Note: Figure 3 quantifies the average time apportioned to work, leisure, childcare, housework, self-care, and other activities, with a distinction by gender. Self-care encapsulates time devoted to sleep, meals, personal health, and hygiene, while housework constitutes time spent on domestic tasks such as cooking, cleaning, and laundry. Notably, the allocation of time for self-care, other activities, and the sum of interest hours (encompassing housework, childcare, leisure, and work, totaling 13 hours) reveal no substantial gender disparity. However, a pronounced and statistically significant gender divergence at the 1% level is observed in the time allocation for work, leisure, childcare, and housework. This 13-hour time-frame is subsequently employed to construct alternatives in the choice experiment.

Source: 2019 Korean Time Use Survey, $N = 236$ dual-earner households

The provided image is a hypothetical alternative regarding how you and your spouse utilize your time and care for your children.

Please choose the option you prefer most, considering factors like time and cost.

[Hourly Wages]

Myself: 13,500 KRW (Low) Spouse: 21,500 KRW (High)

[Cost Per Hour]

Formal: 836 KRW (Low) Informal: 15,000 KRW (High)

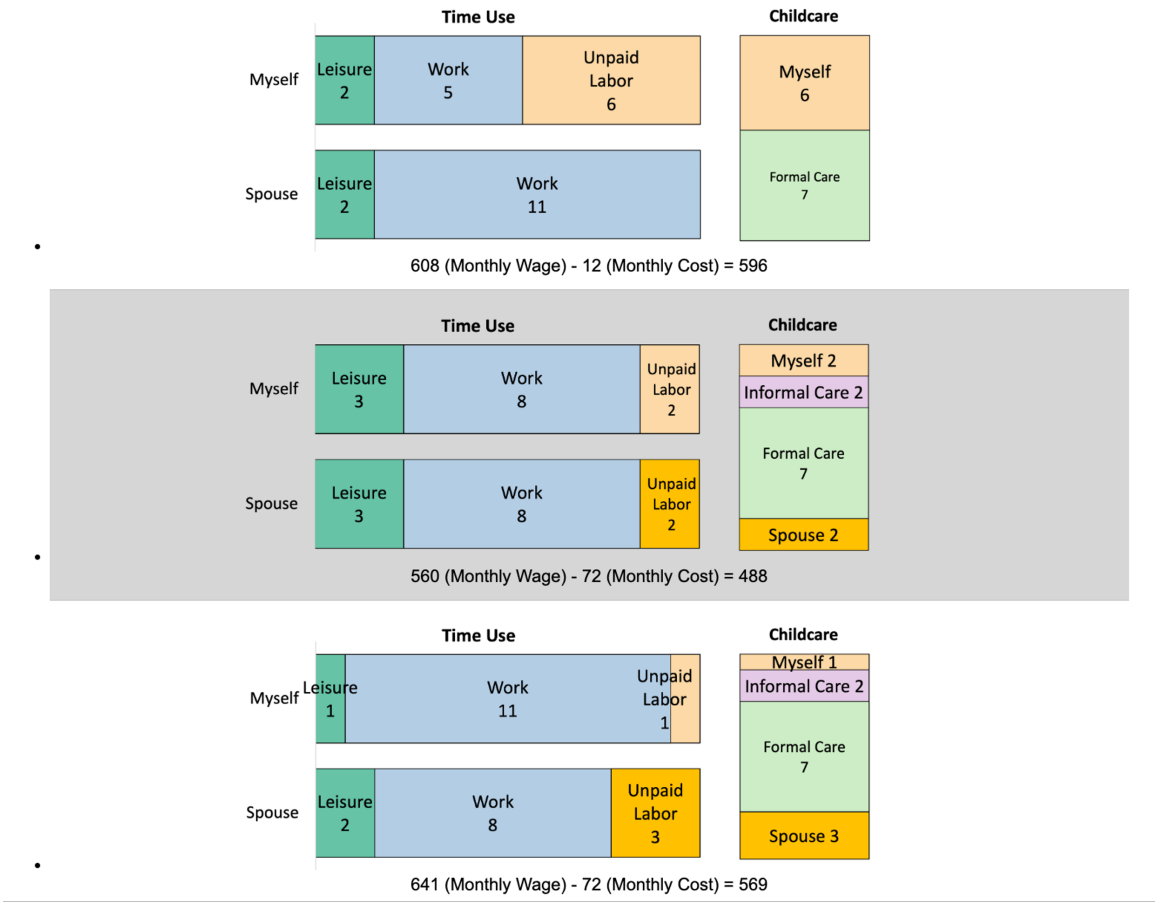


Figure 4: Example Hypothetical Scenario

Note: Figure 4 shows a representative hypothetical scenario (choice set) employed in this study. Respondents are asked to choose their most preferred alternatives that differ in the allocation of 13 hours between leisure, work, and unpaid labor for both the participant and their spouse, and for childcare. Moreover, each choice set has varied wage and cost levels (low and high) for the participant, spouse, and both types of childcare.

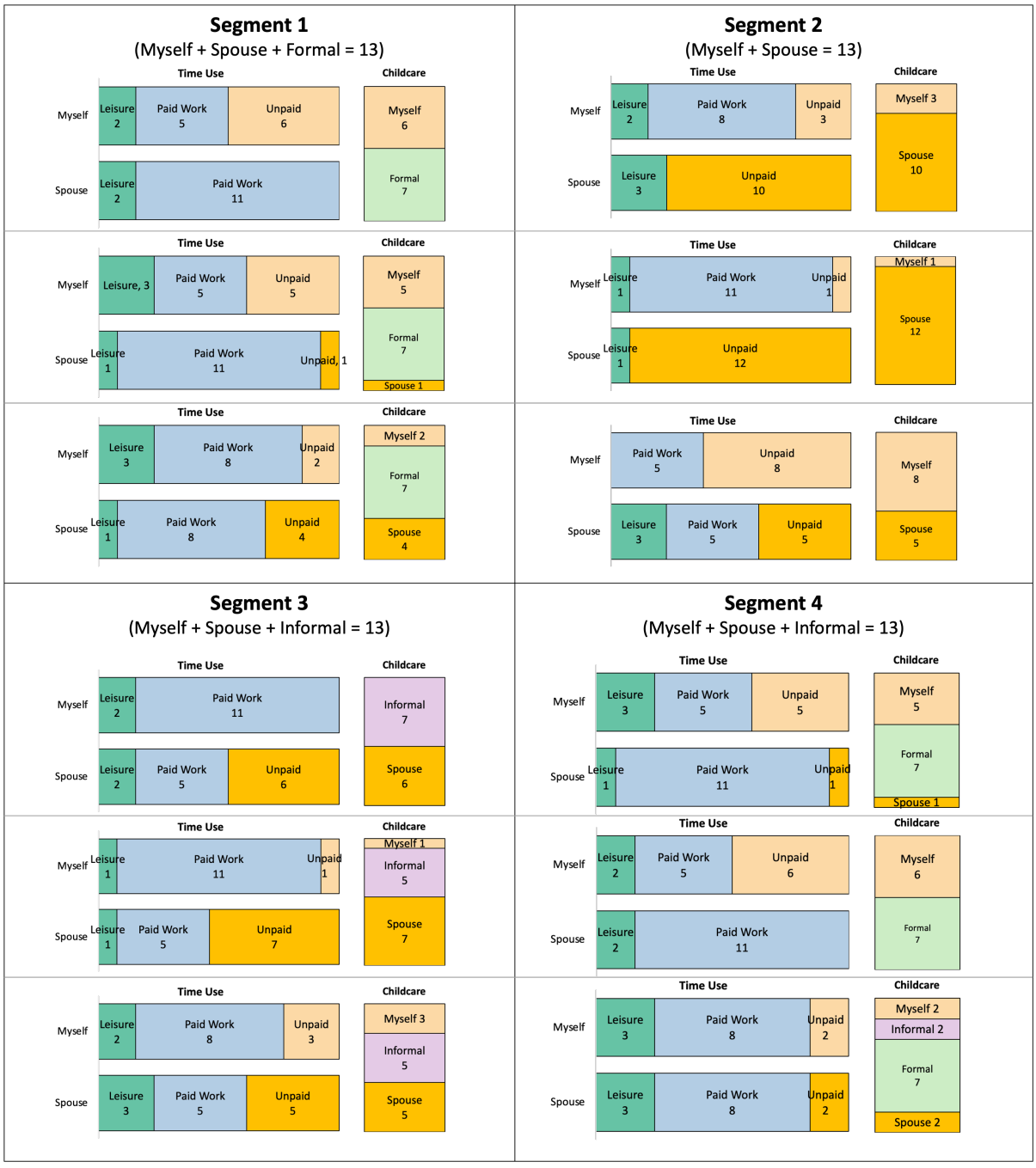


Figure 5: Example Choice Sets from Segment 1 to 4

Note: Figure 5 shows an example choice set for each segment. The first segment involves allocating 13 hours between parental and formal childcare, the second segment is dedicated to parental care only, the third excludes formal childcare, requiring distribution between parental and informal care, and the fourth segment integrates all four childcare options for the allocation of the 13 hours.

		Number of Obs.		Alternative 1		Alternative 2		Alternative 3	
	Choice Set	Wives	Husbands	Wives	Husbands	Wives	Husbands	Wives	Husbands
Segment 1	1	82	63	35%	13%	16%	29%	49%	59%
Unpaid (Wife)	2	71	82	39%	11%	30%	78%	31%	11%
Unpaid (Husband)	3	87	65	51%	18%	40%	48%	9%	34%
Formal Care	4	85	59	40%	10%	46%	61%	14%	29%
	5	74	72	18%	6%	58%	79%	24%	15%
	6	70	71	29%	14%	53%	44%	19%	42%
	7	70	73	27%	8%	60%	64%	13%	27%
	8	73	65	47%	11%	40%	32%	14%	57%
	9	84	67	51%	16%	37%	21%	12%	63%
	10	69	75	71%	15%	16%	33%	13%	52%
	11	65	83	32%	45%	42%	25%	26%	30%
	12	67	76	36%	36%	51%	32%	13%	33%
	13	69	65	20%	17%	70%	45%	10%	38%
	14	63	90	48%	43%	43%	26%	10%	31%
	15	81	62	56%	45%	35%	18%	10%	37%
	16	59	85	61%	41%	17%	31%	22%	28%
	17	61	80	44%	25%	30%	21%	26%	54%
	18	78	57	67%	42%	24%	9%	9%	49%
	19	60	72	78%	38%	7%	29%	15%	33%
	20	63	73	51%	23%	35%	40%	14%	37%
Segment 2	1	72	79	11%	38%	8%	37%	81%	25%
Unpaid (Wife)	2	81	109	10%	12%	10%	21%	80%	67%
Unpaid (Husband)	3	77	77	12%	40%	14%	48%	74%	12%
	4	84	69	19%	42%	12%	43%	69%	14%
	5	82	71	7%	31%	63%	45%	29%	24%
	6	73	68	8%	53%	67%	41%	25%	6%
	7	70	70	7%	36%	53%	46%	40%	19%
	8	78	63	10%	35%	55%	56%	35%	10%
	9	73	61	16%	20%	47%	70%	37%	10%
	10	80	64	24%	69%	46%	19%	30%	13%
	11	77	59	6%	20%	78%	32%	16%	47%
	12	75	72	12%	51%	56%	42%	32%	7%
	13	58	79	7%	48%	66%	47%	28%	5%
	14	56	75	2%	23%	71%	73%	27%	4%
	15	65	75	8%	55%	51%	37%	42%	8%
	16	62	80	16%	71%	42%	16%	42%	13%
	17	65	90	22%	12%	46%	82%	32%	6%
	18	66	71	62%	63%	24%	31%	14%	6%
	19	61	75	66%	71%	20%	20%	15%	9%
	20	74	63	41%	81%	28%	11%	31%	8%
Segment 3	1	34	29	3%	21%	44%	45%	53%	34%
Unpaid (Wife)	2	32	31	6%	23%	44%	61%	50%	16%
Unpaid (Husband)	3	27	32	15%	53%	11%	38%	74%	9%
Informal Care	4	36	31	6%	26%	83%	68%	11%	6%
	5	36	25	11%	56%	17%	20%	72%	24%
	6	36	26	44%	69%	22%	19%	33%	12%
	7	33	28	58%	50%	33%	32%	9%	18%
	8	31	24	19%	46%	45%	42%	35%	13%
	9	27	26	15%	12%	56%	65%	30%	23%
	10	27	27	11%	30%	33%	44%	56%	26%
	11	27	29	15%	41%	19%	28%	67%	31%
	12	26	25	4%	16%	38%	56%	58%	28%
	13	24	29	17%	66%	21%	17%	63%	17%
	14	29	32	45%	69%	41%	22%	14%	9%
	15	28	35	14%	40%	57%	46%	29%	14%
	16	22	38	18%	39%	14%	18%	68%	42%
	17	23	33	43%	39%	26%	18%	30%	42%
	18	31	32	13%	13%	45%	69%	42%	19%
	19	31	31	35%	61%	39%	39%	26%	0%
	20	25	31	48%	94%	32%	6%	20%	0%
Segment4	1	28	27	32%	7%	21%	63%	46%	30%
Unpaid (Wife)	2	35	24	43%	4%	29%	54%	29%	42%
Unpaid (Husband)	3	31	33	35%	9%	52%	55%	13%	36%
Formal Care	4	28	34	32%	21%	50%	62%	18%	18%
Informal Care	5	38	31	34%	10%	55%	35%	11%	55%
	6	32	35	22%	17%	69%	23%	9%	60%
	7	32	34	25%	26%	34%	32%	41%	41%
	8	29	27	52%	22%	7%	30%	41%	48%
	9	34	23	62%	13%	21%	57%	18%	30%
	10	34	26	65%	19%	29%	73%	6%	8%
	11	36	25	44%	24%	44%	28%	11%	48%
	12	24	21	33%	48%	67%	24%	0%	29%
	13	22	32	23%	41%	55%	19%	23%	41%
	14	21	32	67%	38%	0%	22%	33%	41%
	15	25	27	64%	48%	12%	15%	24%	37%
	16	22	37	14%	27%	55%	43%	32%	30%
	17	28	39	50%	23%	25%	36%	25%	41%
	18	30	26	53%	50%	27%	31%	20%	19%
	19	24	27	54%	22%	21%	59%	25%	19%
	20	30	24	10%	29%	23%	38%	67%	33%

Figure 6: Distribution of Choices Across 80 Choice Sets

Note: Figure 6 shows the distribution of preferences for different alternatives among 265 couples across 80 choice sets. The columns labeled "Number of observation wives" and "Number of observations husbands" indicate how many wives and husbands viewed each particular choice set. A total of 8,068 choices were made by 265 couples. The percentages within each cell represent the proportion of wives and husbands who selected that specific alternative as their most preferred option. The heat map color coding indicates the intensity of preference, with green representing higher preference percentages and red indicating lower preference percentages.

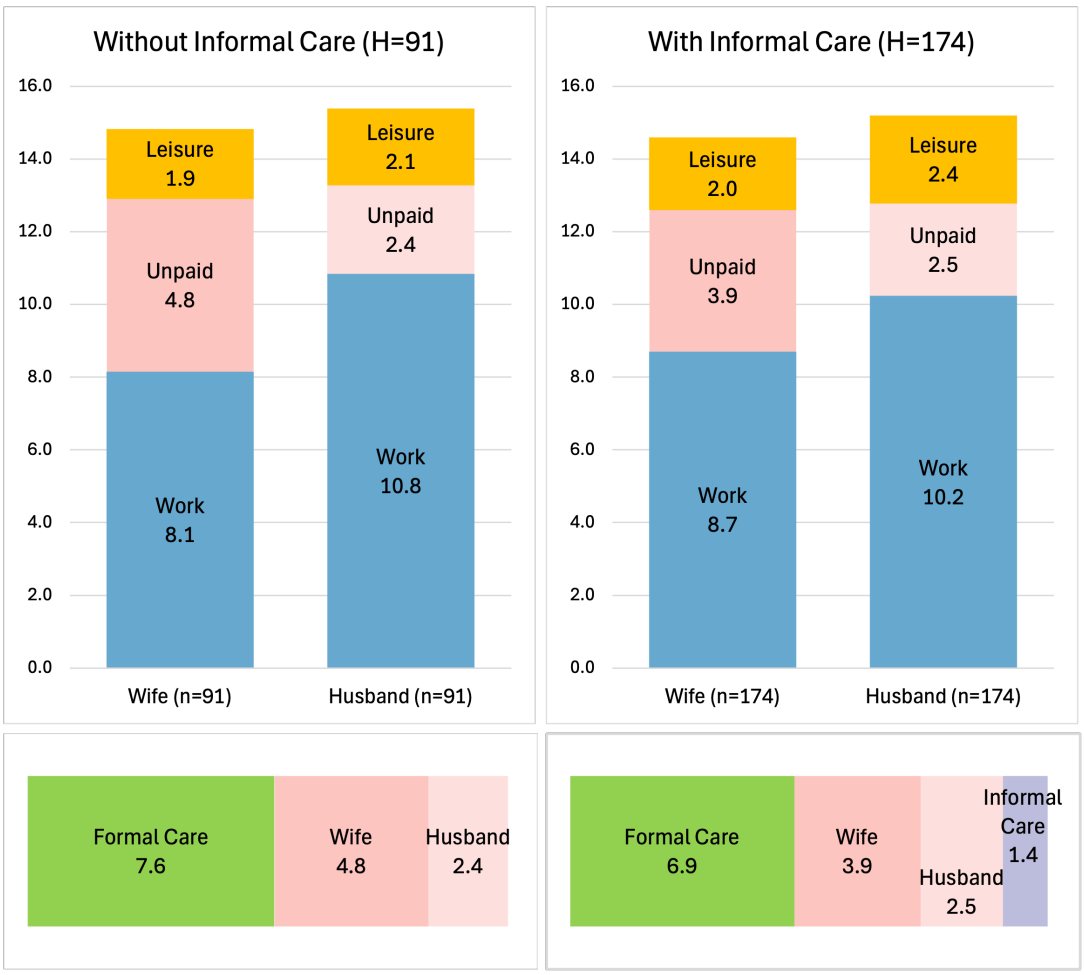


Figure 7: Actual Choice of Households, Averaged between Wives and Husbands

Note: Figure 7 illustrates the households' average actual choices, dividing them into 91 households without informal childcare and 174 with informal childcare, with activity hours averaged between wife and husband. In households without informal childcare, the division of unpaid labor significantly favors men, with wives undertaking twice as much unpaid work (4.8 hours for wives vs. 2.4 hours for husbands) and working 1.7 hours less in paid employment. These households allocate an average of 7.6 hours to formal childcare. Conversely, in households with informal childcare, the disparity in unpaid labor is reduced (3.9 hours for wives vs. 2.5 for husbands), though wives still engage in 1.5 hours less paid work than their husbands. These households allocate 6.9 hours to formal and 1.4 hours to informal childcare. Gender differences in these categories, aside from leisure hours in households without informal childcare, are statistically significant. Moreover, differences attributed to the availability of informal childcare are significant across all categories, except for wives' leisure time and husbands' parental care.

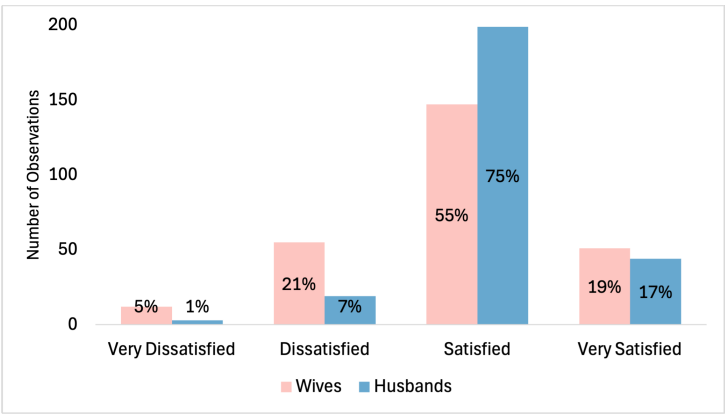


Figure 8: Satisfaction with Housework and Childcare Responsibilities: Wives vs. Husbands

Note: Figure 8 shows the distribution of satisfaction levels regarding the division of household chores and caregiving responsibilities between wives and husbands. The data is categorized into four levels of satisfaction: Very Dissatisfied, Dissatisfied, Satisfied, and Very Satisfied.

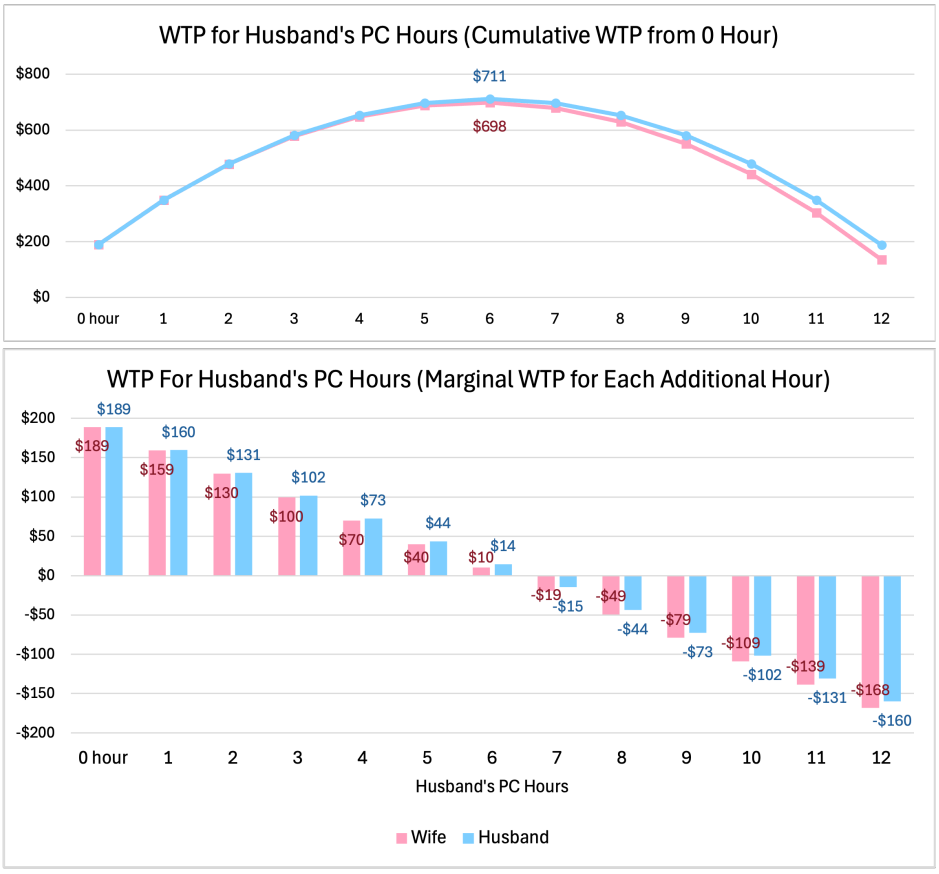


Figure 9: WTP for Husband's PC Hours

Note: Figure 9 illustrates the willingness-to-pay (WTP) for husband's parental care (PC) hours, both cumulative and marginal WTP for wives and husbands. The top chart shows the cumulative WTP from 0 to 12 hours of husband's PC. The bottom chart shows the marginal WTP for each additional hour of husband's PC.

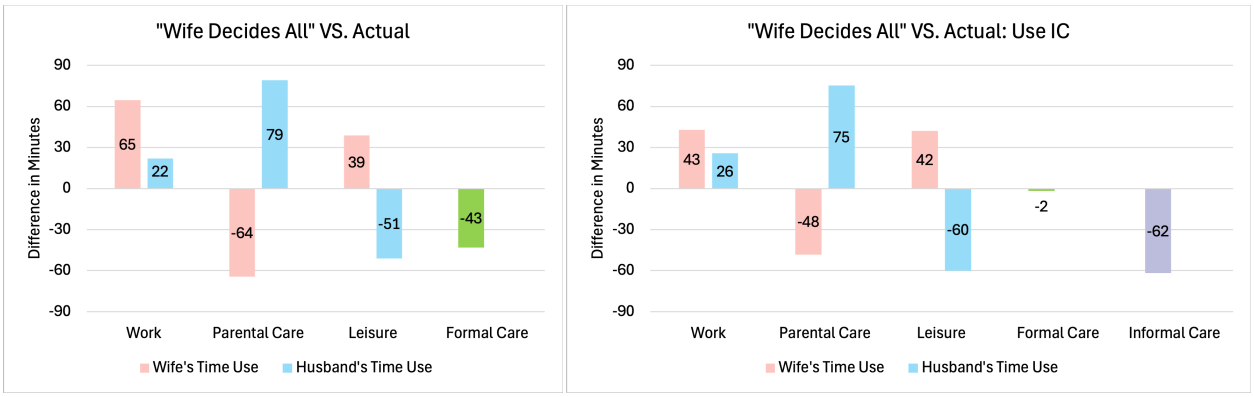


Figure 10: Wife Decides All: Counterfactual Results under $\lambda = 0$

Note: Figure 10 presents the counterfactual allocation where the wife makes all decisions ("Wife Decides All") alongside the actual household allocation. Households are divided into two groups: households without informal care and households with informal care.

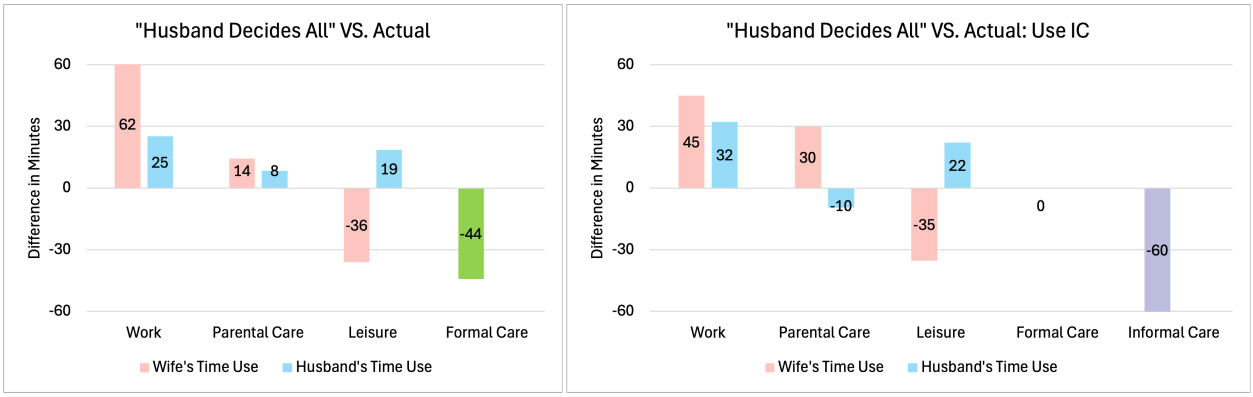


Figure 11: Husbands Decides All: Counterfactual Results under $\lambda = 1$

Note: Figure 11 presents the counterfactual allocation where the husband makes all decisions ("Husband Decides All"). Households are divided into two groups: households without informal care and households with informal care.

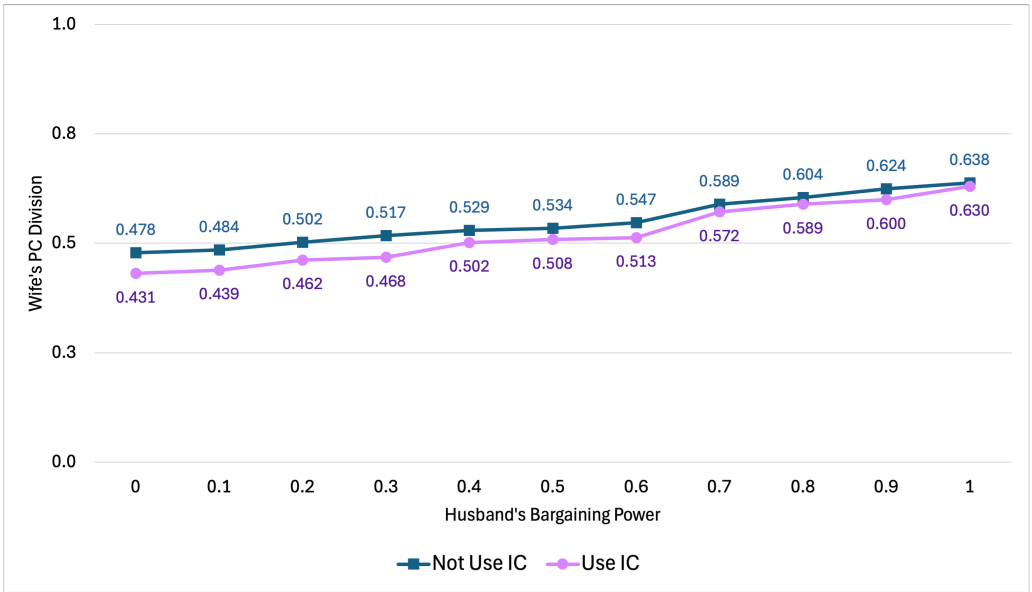


Figure 12: Wife's PC Division by Bargaining Power

Note: Figure 12 illustrates how the wife's share of parental care (PC) changes as the husband's bargaining power increases. The x-axis represents the husband's bargaining power, ranging from 0 to 1, and the y-axis represents the wife's share of parental care, $\frac{PC_w}{PC_w+PC_h}$. Households using informal care consistently show a lower share of wife's PC. As the husband's bargaining power approaches 1, the gap between the two group narrows.

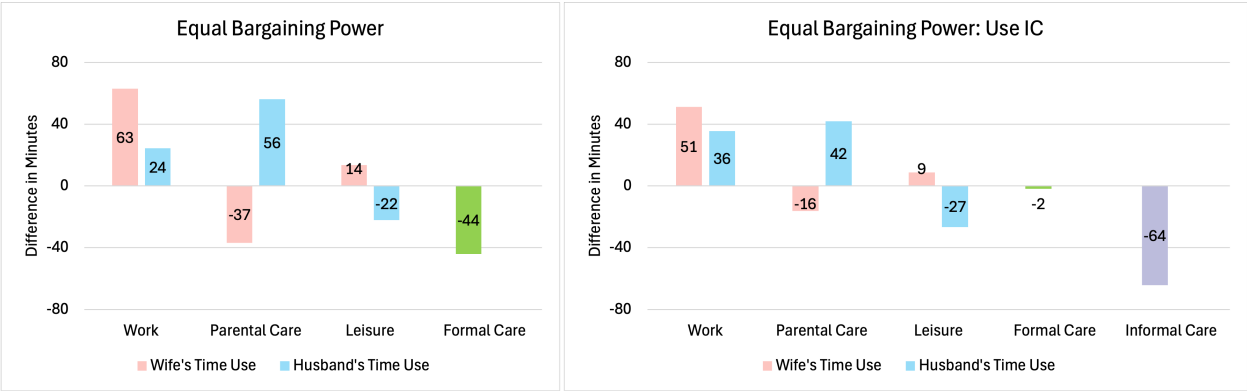


Figure 13: Equal Bargaining Power

Note: Figure 13 shows the difference in time allocation between actual household choices and the scenario where $\lambda = 0.5$.

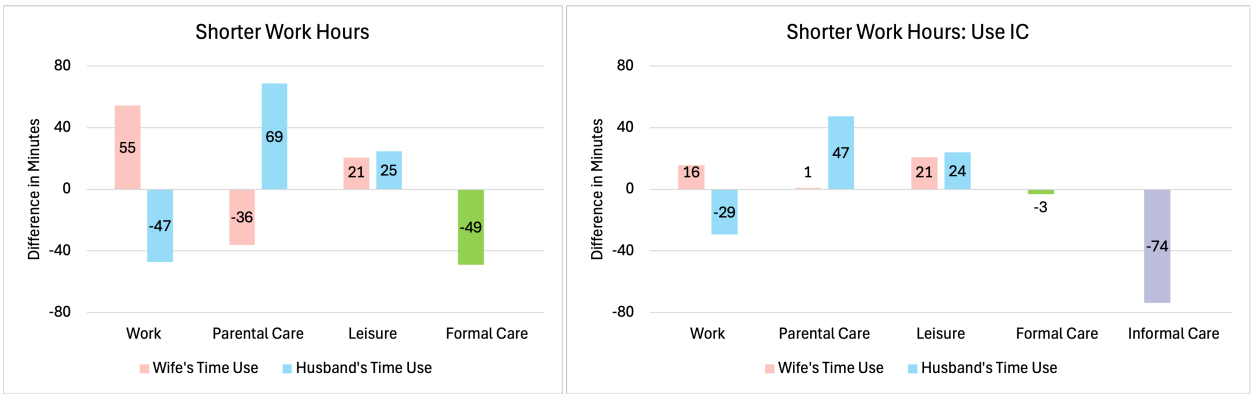


Figure 14: Shorter Work Hours, Max. 10 hours

Note: Figure 14 shows the counterfactual allocation where both spouses' work hours are restricted to a maximum of 10 hours a day.

Table 1: Distribution of Prices Across Choice Sets

		Levels	
Hourly Wage	*Wife*	Level 1	w^{hi}_{wife}
		Level 2	w^{lo}_{wife}
	Husband	Level 1	w^{hi}_{hus}
		Level 2	w^{lo}_{hus}
Childcare Cost	*Formal*	Level 1	p^{hi}_{FC}
		Level 2	p^{lo}_{FC}
	Informal	Level 1	p^{hi}_{IC}
		Level 2	p^{lo}_{IC}

Note: There are two levels for hourly wages of the wife and the husband and two levels for childcare costs for formal and informal childcare.

Table 2: Distribution of Hours in Different Activities Across Alternatives

	Levels	Hours
Work	Level 1	0 hour
	Level 2	5 hours
	Level 3	8 hours
	Level 4	11 hours
Leisure	Level 1	0 hour
	Level 2	1 hour
	Level 3	2 hours
	Level 4	3 hours
Formal Care	Level 1	0 hour
	Level 2	7 hours
	Level 3	10 hours

Note: For $g = wife, hus$, I consider four work hour levels (lm_g), four leisure hour levels (l_g), and three formal childcare hour levels (FC). Parental care hours (PC) and informal care hours (IC) levels are defined to satisfy the constraint $PC_w + PC_h + FC + IC = 13$. The distribution of hours spent in formal and informal childcare among households with working mothers is presented in Figure 19 and Figure 20 respectively. The observed patterns in childcare provision form the basis for the alternative childcare scenarios presented in the choice experiment. Specifically, variations in formal, informal, and parental childcare hours, as revealed in the data, motivate the differences represented in the experimental alternatives.

Table 3: Participant Demographics Summary

			Women				Men			
			Freq.	Percent	Mean	Std.Dev.	Freq.	Percent	Mean	Std.Dev.
N			265				265			
Age	*Age Groups*	25 to 29	6	2%			1	0%		
		30 to 34	62	23%			33	12%		
		35 to 39	123	46%			97	37%		
		40 to 44	70	26%			113	43%		
		45 to 49	4	2%			21	8%		
	*Age**				37.2	(3.771)			39.4	(3.969)
Education		High School	18	7%			20	8%		
		Associate's Degree/2-Year College	42	16%			33	12%		
		Bachelor's Degree/4-Year College	168	63%			176	66%		
		Master's Degree	32	12%			26	10%		
		Doctoral	5	2%			10	4%		
Employment	*Type*	Regular	229	86%			256	97%		
		Temporary	25	9%			3	1%		
		Daily	11	4%			6	2%		
	Full/Part-time	Full-time	202	76%			261	98%		
		Part-time	63	24%			4	2%		
	*Work Hours (Daily)***				8.5	(2.247)			10.4	(1.858)
	*Monthly Wage ****	100 to 200 ($1,250 to $2,500)	41	15%			3	1%		
		200 to 300 ($2,500 to $3,750)	76	29%			29	11%		
		300 to 400 ($3,750 to $5,000)	72	27%			80	30%		
		400 to 500 ($5,000 to $6,250)	29	11%			69	26%		
		500 to 600 ($6,250 to $7,500)	16	6%			43	16%		
		600 to 700 ($7,500 to $8,750)	10	4%			23	9%		
		700 to 800 ($8,750 to $10,000)	4	2%			9	3%		
		800 to 900 ($10,000 to $11,245)	0	0%			6	2%		
		900 to 1000 ($11,245 to $12,500)	17	6%			0	0%		
		More than 1000 ($12,500)	0	0%			3	1%		
					291.9 $ 3,650	(145.5)			437.8 $ 5,470	(182.0)
	*Work Days*****	Less than 5 days	31	12%			10	4%		
		5 days	224	85%			218	82%		
		More than 5 days	10	4%			37	14%		
					4.8	(0.698)			5.1	(0.551)
	Work Sector	Sales/Service/Marketing/Technology	48	18%			59	22%		
		Education	46	17%			17	6%		
		Administrative/Management/Supervisory	134	51%			136	51%		
		Agriculture/Forestry/Mining/Livestock farming	0	0%			3	1%		
		Professional	33	12%			47	18%		
		Others	4	2%			3	1%		

Note: Table 3 presents summary statistics for the demographics of 265 couples, distinguishing between men and women. * Gender differences in age, work hours, monthly wage, and work days are significant at the 1% level. Monthly wages are reported in 10,000 KRW units, approximate in USD PPP in the parentheses.

Table 4: Household Characteristics Summary

		Freq.	Percent	Mean	Std.Dev
N		265			
Location	*Capital Area*	129	49%		
	Non-Capital Areas	136	51%		
Number of Children	*One*	121	46%		
	Two	124	47%		
	Three	19	7%		
	Four	1	0%		
Age of First Child	*0 to 6 (Pre-school)*	190	72%		
	7 to 10	59	22%		
	More than 10	16	6%		
Age of Second Child	*0 to 6 (Pre-school)*	132	92%		
	7 to 10	8	6%		
	More than 10	4	3%		
Age of Third Child	*0 to 6 (Pre-school)*	20	100%		
Housing	*Own Home*	180	68%		
	Jeon-se (without rent)	59	22%		
	Monthly Rent with Deposit	22	8%		
	Free	4	2%		
Household Monthly Pre-tax Income			$ 5,221	678.8	(238.983)
	200 to 300 ($1,538 to $2,308)	3	1%		
	300 to 400 ($2,308 to $3,077)	9	3%		
	400 to 500 ($3,077 to $3,846)	31	12%		
	500 to 600 ($3,846 to $4,615)	56	21%		
	600 to 700 ($4,615 to $5,385)	51	19%		
	700 to 800 ($5,385 to $6,154)	43	16%		
	800 to 900 ($6,154 to $6,923)	35	13%		
	900 to 1000 ($6,923 to $7,692)	15	6%		
	More than 1000 ($7,692)	23	9%		
Informal Childcare Availability	Yes	174	66%		
	No	91	34%		

Note: Table 4 presents summary statistics for the characteristics of 265 households. Household Monthly Pre-tax Income is the average of both spouses' incomes, while other values are based on the wife's responses.

Table 5: Summary Statistics of the Presented Alternatives

Variable	Obs	Mean	Std. Dev.	Min	Max
Net Income	24,204	553.1	254.528	3	2796
Leisure Hours	24,204	1.7	0.895	0	3
Work Hours	24,204	7.3	3.406	0	11
Parental Care Hours	24,204	3.9	3.386	0	12
Formal Care Hours	12,099	7.7	1.603	0	10
Informal Care Hours	7,017	4.4	3.375	0	11

Note: Table 5 presents summary statistics of the presented alternatives. The variables leisure, work, parental childcare, formal childcare, and informal childcare are measured in hours. The net income value, is expressed in units of 10,000 KRW. There are 24,204 observations, derived from 8,068 choice sets each with three alternatives.

Table 6: Gender Roles and Household Responsibilities: Wives vs. Husbands

	Strongly Disagree (1)		Somewhat Disagree (2)		Somewhat Agree (3)		Strongly Agree (4)	
	Wife	Husband	Wife	Husband	Wife	Husband	Wife	Husband
It is most ideal for men to work and for women to take care of the home.*	37%	24%	33%	37%	26%	32%	4%	7%
For a relationship to be equal, women also need to work.	3%	8%	19%	27%	48%	49%	31%	17%
If a mother with preschool-aged children works, it will have a negative impact on the children.*	26%	25%	39%	38%	28%	32%	6%	5%
Dual-earner couples should share housework equally.	0%	2%	5%	7%	42%	51%	53%	37%
Even for married couples, income should be managed separately.	19%	15%	41%	43%	30%	32%	10%	10%
A shared home should be jointly owned by both spouses.	2%	7%	22%	25%	46%	52%	30%	16%
Fathers have the same responsibility as mothers in caring for their children.	1%	1%	1%	4%	23%	39%	75%	55%

Note: Table 6 presents the distribution of responses from 265 wives and husbands across several statements related to gender roles, household responsibilities, and childcare. I generated "Gender Score" based on the responses, with the two questions marked * reverse coded. The score was calculated by summing responses, "Strongly Agree" with the highest value of 4. The mean score is 21.5 for the wives, and 20.2 for husbands, with the difference being statistically significant at the 1% level.

Table 7: Characteristics Used for the Heterogeneity Analysis

		Freq.	Percent
Number of Households		265	
Informal Childcare	*Available*	159	60%
	Unavailable	109	41%
Number of children	*One*	121	46%
	More than one	144	54%
Age of child*	*1 to 3*	122	46%
	4 to 6	143	54%
Residence	*Capital Area*	128	48%
	Non-capital Area	137	52%
	Number of choices	8,068	
Relative Wage**	≥ 1	1,957	24%
	< 1	6,111	76%

Note: * In the choice experiment, participants are asked to make decisions based on their youngest child, who is between 1 and 6 years old. ** The relative wage (wife's wage divided by husband's wage) varies between choice sets but remains consistent across the three alternatives within each set.

Table 8: Preference Estimation Results

	(1)		(2)		Compare	
	Wife		Husband		(1) - (2)	
Observations	12,078		12,126		24,204	
N	265		265		530	
Own Leisure (α_l)	13.023	***	22.208	***	-9.185	***
	(1.973)		(1.496)		(2.476)	
Husband's Parental Care (β_{hus})	15.137	***	15.106	***	0.031	
	(1.507)		(1.654)		(2.237)	
Husband's Parental Care sq. ($\beta_{hus_{sq}}$)	-1.192	***	-1.162	***	-0.030	
	(0.165)		(0.121)		(0.205)	
Formal Care (γ_{FC})	-34.138	***	-33.301	***	-0.837	
	(1.334)		(1.362)		(1.907)	
Informal Care (γ_{IC})	-20.939	***	-17.576	***	-3.363	*
	(1.391)		(1.256)		(1.874)	

Note: Standard errors in parentheses. The standard errors are clustered at the individual level. * Significant at the 10% level, ** Significant at the 5% level, *** Significant at the 1% level.

Table 9: Preference Estimation Results, Heterogeneity Analysis

		(1)		(2)		Compare	
		Wife		Husband		(1) - (2)	
Observations		12,078		12,126		24,204	
N		265		265		530	
Own Leisure	*Base*	7.992	**	15.785	***	-7.793	**
		(3.415)		(2.961)		(4.521)	
	IC Available Households	11.377	**	9.710	**	1.668	
		(5.142)		(3.775)		(6.379)	
Husband's Parental Care (PC)	*Base*	16.986	***	16.434	***	0.552	
		(1.469)		(2.040)		(2.514)	
	Wife's wage is same or higher	-15.774	***	-13.893	***	-1.881	
		(2.808)		(2.728)		(3.915)	
Husband's Parental Care (PC) sq.	*Base*	-0.998	***	-0.908	***	-0.090	
		(0.111)		(0.238)		(0.263)	
	Wife's wage is same or higher	0.244		0.263		-0.019	
		(0.630)		(0.309)		(0.702)	
Formal Care (FC)	*Base*	-34.507	***	-33.422	***	-1.085	
		(1.639)		(1.382)		(2.144)	
Informal Care (IC)	*Base*	-22.394	***	-19.432	***	-2.962	
		(1.715)		(1.344)		(2.178)	
	Child Older Group (4-6)	2.460		4.427	*	-1.967	
		(2.865)		(2.542)		(3.830)	

Note: Standard errors in parentheses. * Significant at the 10% level, ** Significant at the 5% level, *** Significant at the 1% level.

Table 10: Willingness-To-Pay

		Wife		Husband	
Observations		12,078		12,126	
N		265		265	
Average Monthly Household Income		$7,000		$6,821	
	Mean	WTP	% of Income	WTP	% of Income
Leisure	1.7 hrs	$163	2.3%	$277	4.0%
Husband's PC (at 0)	3.9 hrs	$189.1	2.7%	$188.7	2.7%
Formal Care	7.7 hrs	-$427	-6.1%	-$416	-5.9%
Informal Care	4.4 hrs	-$262	-3.7%	-$220	-3.1%

Note: The WTP values are based on the preference estimation results in Table 8, originally measured in KRW and converted to approximate values in USD PPP.

Table 11: Willingness-To-Pay - Heterogeneity Analysis

		Wife		Husband	
Observations		12,078		12,126	
N		265		265	
		WTP	% of Income	WTP	% of Income
Leisure	*Base*	$100	1%	$197	3%
	IC Available Households	$142	2%	$121	2%
Husband's Parental Care (PC)	*Base*	$212	3%	$205	3%
	Wife's wage is same or higher	-$197	-2.8%	-$174	-2.5%
Husband's Parental Care (PC) sq.	*Base*	-$12	-0.2%	-$11.3	-0.2%
	Wife's wage is same or higher	$3	0.0%	$3	0.0%
Formal Care (FC)	*Base*	-$431	-6.2%	-$418	-6.0%
IC	*Base*	-$280	-4%	-$243	-3%
	Child Older Group (4-6)	$31	0%	$55	1%

Note: The WTP values are based on the preference estimation results in Table 9, originally measured in KRW and converted to approximate values in USD PPP.

Table 12: Bargaining Power (λ) - Estimation Results

	(1)		(2)		(3)		(4)		(5)	
Base	0.690	***	0.868	***	0.735	***	0.779	***	0.832	***
	(0.006)		(0.013)		(0.007)		(0.013)		(0.022)	
Relative Wage (Continuous, δ_1)			-0.231	***						
			(0.011)							
Relative Wage $\geq$ 1 (Dummy, δ_2)					-0.365	***	-0.389	***	-0.354	***
					(0.013)		(0.015)		(0.015)	
Gender Role Score: Husband $\geq$ Wife (δ_3)							-0.066	***		
							(0.015)			
Wife Satisfied with the Division (δ_4)									-0.109	***
									(0.024)	
Observations	32,323									
N	263									

Note: 2 households dropped because formal childcare 0 hours. There are 36,963 observations across 263 households, each with a different number of household-specific choice sets. Recall from Table 18 that on average, each household has 165 alternatives in their choice sets. For each household, one alternative in their choice set represents their actual household choice. Standard errors in parentheses.

* Significant at the 10% level, ** Significant at the 5% level, *** Significant at the 1% level.

Appendix

A ECEC System in Korea

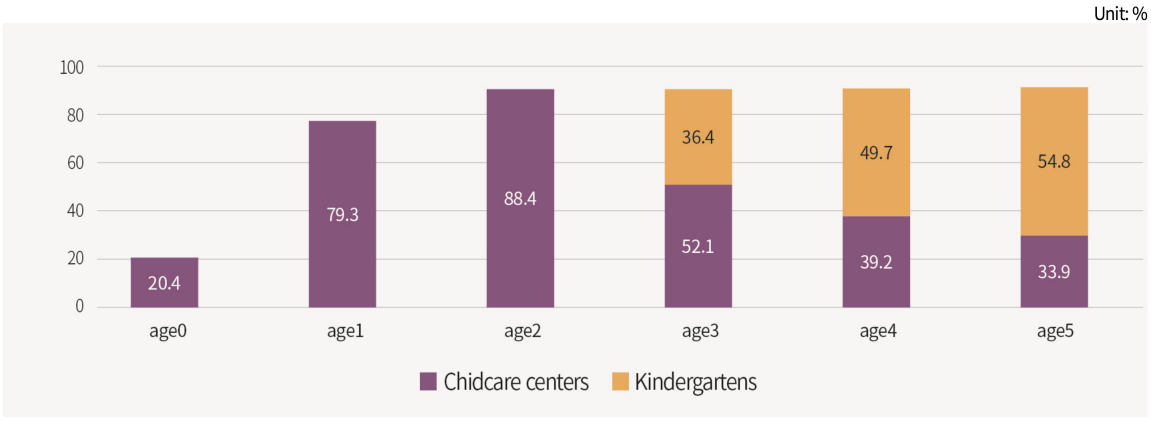
The Early Childhood Education and Care (ECEC) system in Korea is divided into two ministries. The Ministry of Health and Welfare manages childcare centers for children up to five years old, whereas the Ministry of Education oversees kindergartens for children aged three to five[18]. For a more comprehensive comparison of kindergartens and childcare centers, refer to Table 13.

According to Kim (2021), the enrollment rate for children under six years of age in either kindergartens or childcare centers stood at 72.3% in 2020. The rates of enrollment across different age brackets are detailed in Figure 15.

Table 13: ECEC systems in Korea

	Earlyhood Childhood Education	Early Childhood Care
Department	Ministry of Education	Ministry of Health and Welfare
Children's age	Age 3-5	Age 0-5
Daily School Hours	Basic curriculum (4-5 hours) + Afterschool	12 hours (7:30-19:30) + Extended hours

Source: Kim (2021)



Source: 1) Korean Educational Development Institute (2020). Education Statistics.
2) Ministry of Health and Welfare (2020). Childcare Statistics.
3) Ministry of the Interior and Safety (2020). Population Statistics Based on Resident Registration.

Figure 15: Percentage of children's participation in ECEC services (2020)

Source: Kim (2021)

[18] In Korea, children usually start elementary school at age six.

B Findings from Korean National Surveys

B.1 Korean Time Use Survey (KTUS)

The Korean Time Use Survey (KTUS) is a comprehensive survey conducted every five years by the Korean government to analyze how individuals allocate their time across various activities within households. The survey includes a nationally representative sample of over 26,000 individuals within approximately 12,000 households. The latest available data comes from the 2019 iteration, which is the most recent survey conducted as part of this ongoing series.

Table 14 and Table 15 show the summary statistics of the 236 dual-earner households in the 2019 KTUS. Figure 16, Figure 17, and Figure 18 illustrate the distributions of work hours, unpaid work hours, and leisure hours respectively, based on data from 236 dual-earner households in the 2019 KTUS.

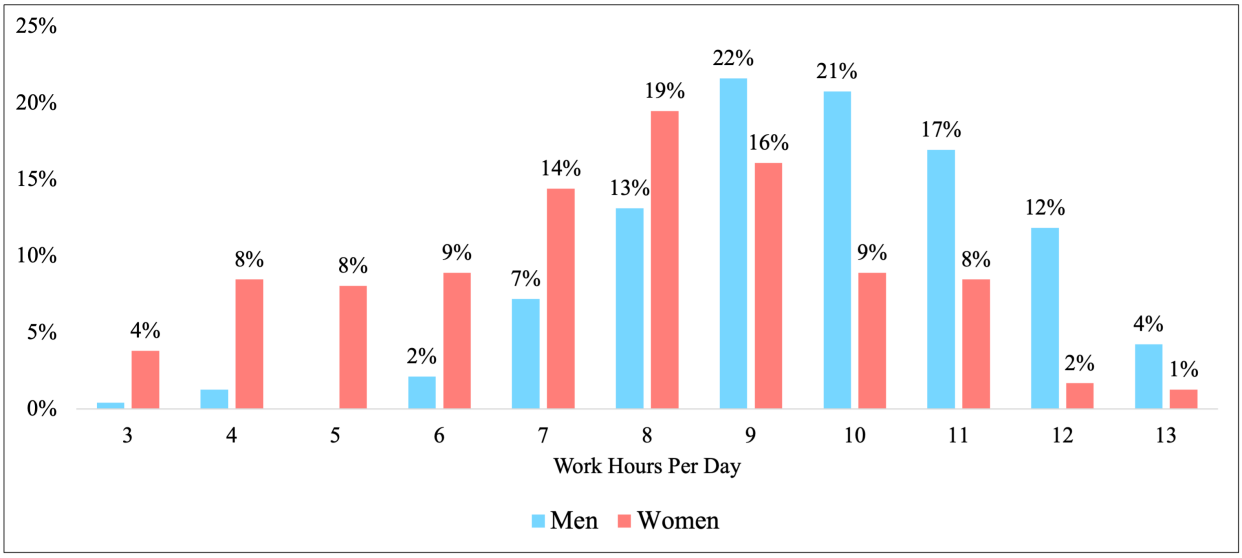


Figure 16: Distribution of Work Hours in 2019 KTUS

Note: The above figure displays the distribution of work hours for men and women in 236 dual-earner households, standardized with the assumption that 13 hours are allocated to paid work, unpaid work, and leisure. The mean value is 9.6 hours for men and 7.6 hours for women.

Table 14: Participant Demographics Summary - 2019 Korean Time-Use Survey

			Men				Women			
			Freq.	Percent	Mean	Std.Dev.	Freq.	Percent	Mean	Std.Dev.
N			236				236			
Age	*Age Groups*	20 to 29	11	5%			22	9%		
		30 to 39	152	64%			181	77%		
		40 to 49	71	30%			32	14%		
		50 to 59	2	1%			1	0%		
	*Age**				37.7	(4.658)			35.9	(4.337)
Education		High-school	58	25%			58	25%		
		College (<4)	52	22%			64	27%		
		College	107	45%			97	41%		
		Master/Ph.D.	19	8%			17	7%		
Employment	*Type*	Regular/Permanent	226	96%			175	74%		
		Temporary	6	3%			44	19%		
		Daily	4	2%			17	7%		
	Full/Part-time	Full-time	232	98%			162	69%		
		Part-time	4	2%			74	31%		
	*Work Hours**				47.8	(9.273)			36.9	(11.833)
	Monthly Wage	Less than 100	0	0%			46	19%		
		100 to 200	10	4%			60	25%		
		200 to 300	76	32%			77	33%		
		300 to 400	86	36%			33	14%		
		400 to 500	37	16%			13	6%		
		500 to 600	19	8%			5	2%		
		600 to 700	2	1%			1	0%		
		700 to 800	3	1%			1	0%		
		More than 800	3	1%			0	0%		

Note: Table 14 provides demographics summary statistics for 236 dual-earner, wage-worker couples with pre-school children from the 2019 Korean Time-Use Survey, highlighting differences between genders. Significant disparities in age and work hours at the 1% level are observed, with monthly wages reported in units of 10,000 KRW.

Table 15: Household Characteristics Overview - 2019 Korean Time-Use Survey

		Household	
		Freq.	Percent
Location	Seoul Metropolitan Area	78	33%
	Others	158	67%
Number of Preschool Kids	One	161	68%
	Two	71	30%
	Three	4	2%
	N	236	

Note: Table 15 provides household characteristics for 236 dual-earner, wage-worker couples with pre-school children from the 2019 Korean Time-Use Survey.

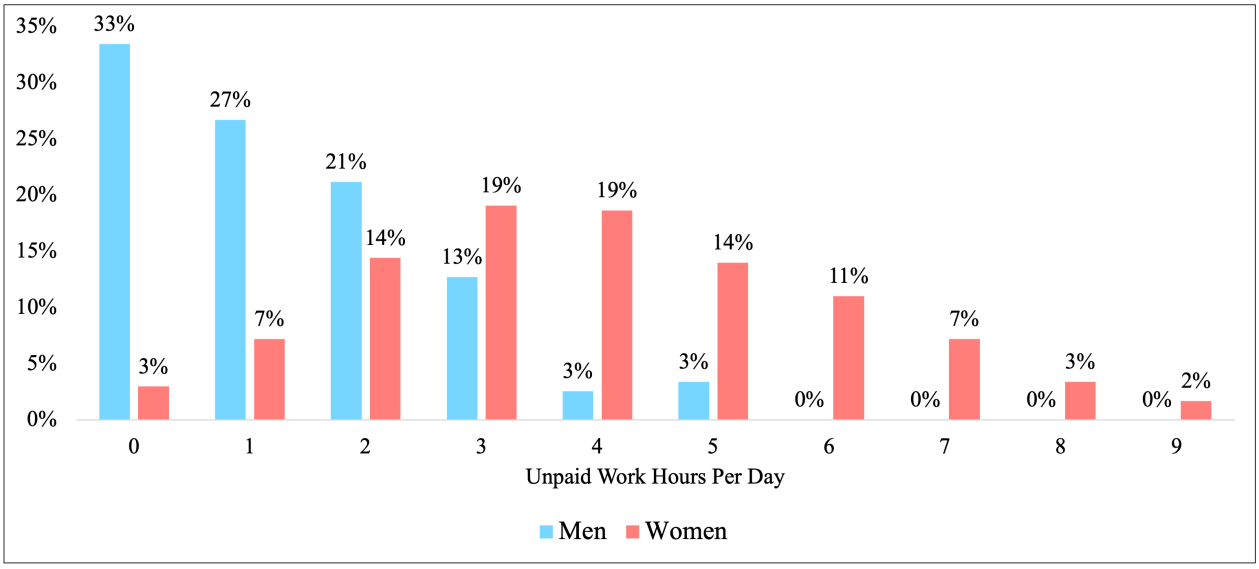


Figure 17: Distribution of Unpaid Work Hours in 2019 KTUS

Note: The above figure illustrates the distribution of unpaid work hours, comprising housework and childcare, for men and women in 236 dual-earner households. It is standardized based on the assumption that 13 hours are allocated to paid work, unpaid work, and leisure. The mean value is 1.3 hours for men and 4 hours for women.

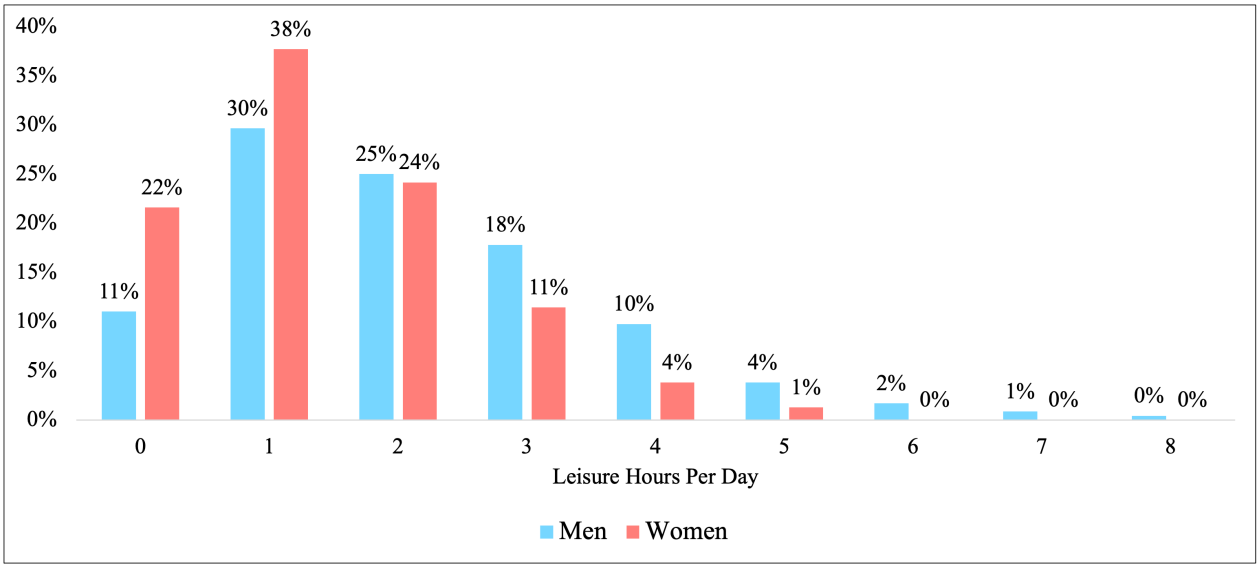


Figure 18: Distribution of Leisure Hours in 2019 KTUS

Note: The above figure illustrates the distribution of leisure hours, for men and women in 236 dual-earner households. It is standardized based on the assumption that 13 hours are allocated to paid work, unpaid work, and leisure. The mean value is 2.1 hours for men and 1.4 hours for women.

B.2 National Childcare Survey

The National Childcare Survey in Korea is conducted every three years to understand the child-rearing conditions in households with young children. The survey includes a total sample of 2,500 households. Figure 19 and Figure 20 show the distribution of hours in formal and informal childcare in households with working mothers.

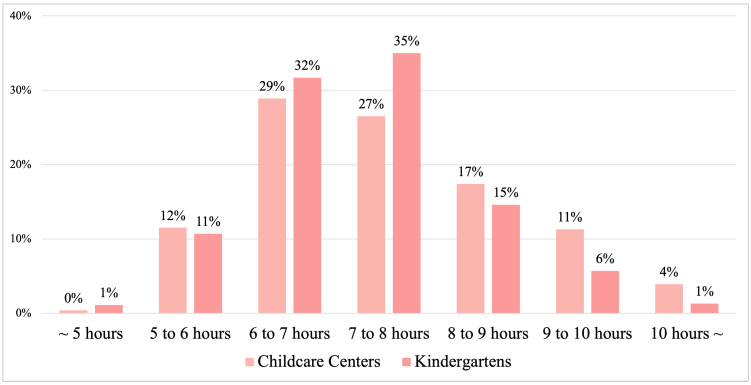


Figure 19: Number of Hours in Formal Childcare in Households with Working Mothers

Note: The above figure shows the number of hours children spend in formal childcare, such as childcare centers and kindergartens. On average, children spend 7 hours and 45 minutes in childcare centers and 7 hours and 27 minutes in kindergartens.

Source: 2021 National Childcare Survey, $N = 673$ households using childcare centers, $N = 492$ households using kindergartens.

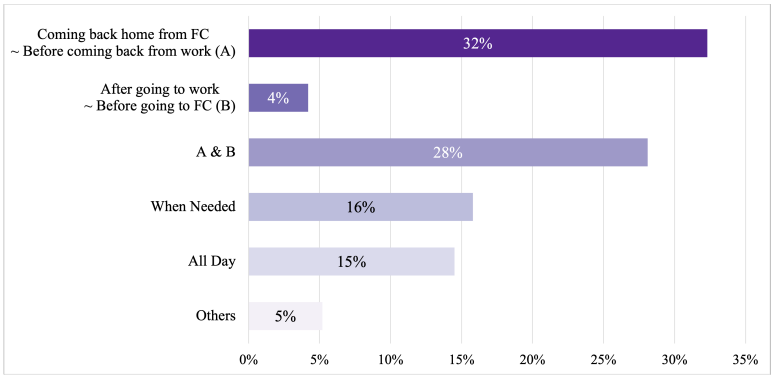


Figure 20: Frequency of Using Informal Childcare

Note: This figure represents the proportions of households utilizing grandparent-provided childcare at various times throughout the day.

Source: 2021 National Childcare Survey, $N = 266$ households with working mothers

C Experimental Design

C.1 Inputs

In the survey's initial phase, respondents are invited to envision a scenario where, in the succeeding month, they receive numerous job offers aligned with their qualifications. They are then prompted to specify their expected minimum (w_g^{min}), maximum (w_g^{max}), and most probable (w_g^{real}) wage offers. The same information is requested concerning their spouses. Utilizing the data, I construct two wage levels, denoted as w_g^{lo} and w_g^{hi}, for $g = wife, hus$.

$$w_g^{lo} = 0.3 \times w_g^{min} + 0.7 \times w_g^{real}, \tag{22}$$

$$w_g^{hi} = 0.7 \times w_g^{real} + 0.3 \times w_g^{max}. \tag{23}$$

The chosen weights are purposefully set to create a clear variation between the two wage levels. By emphasizing the most probable wage (w_g^{real}) in both calculations, I anchor the levels to participants' realistic expectations. However, blending in the minimum and maximum expected wages introduces the desired variation. This design simulates a range of wage offers, offering insights into participants' decision-making in the face of wage differences.

Participants are subsequently prompted to state whether their children are currently enrolled in childcare centers or kindergartens. Utilizing the average costs for public and private institutions, derived from childcare centers and kindergartens, two distinct levels of formal childcare costs are computed[19].

$$p_{FC}^{hi} = 0.7 \times p_{FC}^{pri} + 0.3 \times p_{FC}^{pub}, \tag{24}$$

$$p_{IC}^{lo} = 0.3 \times p_{FC}^{pri} + 0.7 \times p_{FC}^{pub} \tag{25}$$

By weighting the private costs more in the p_{FC}^{hi} level and the public costs in the p_{IC}^{lo} level, I create a clear distinction between the two levels, representing varied economic situations. This mix of both private and public costs ensures the values are realistic and aligned with actual costs parents may face.

Lastly, they are asked to provide information on how much they are willing to pay for informal childcare (WTP_{IC}). Two levels of informal childcare costs, p_{IC}^{hi} and p_{IC}^{lo} are then computed based

[19]The average childcare costs are drawn from the 2021 National Childcare Survey. According to this source, the mean monthly childcare cost for public childcare centers stands at 31,600 KRW (39 in USD PPP), while that for private childcare centers is substantially higher at 80,700 KRW (101 in USD PPP). In terms of kindergarten, the average monthly cost for public institutions is 42,300 KRW (53 in USD PPP), increasing considerably to 250,100 KRW (312 in USD PPP) for private establishments.

on their responses:

$$p_{IC}^{hi} = 1.3 \times WTP_{IC}, \tag{26}$$

$$p_{IC}^{lo} = 0.7 \times WTP_{IC}. \tag{27}$$

Specifically, p_{IC}^{hi} is set at 130% of WTP while p_{IC}^{lo} is at 70% of WTP. This variation allows us to observe decision-making patterns at different price points.

C.2 Choice Experiment

In my experimental design, participants are presented with a series of choice sets, structured across four distinct segments. Specifically, each segment is comprised of 20 choice sets, summing to a total of 80 across all segments. Within each choice set, participants have three distinct alternatives to select from, and every alternative is characterized by the variables ($lm_{wife}, lm_h, l_w, l_h, PC_w$, $PC_h, FC, IC, w_w, w_h, p_{FC}, p_{IC}$) as delineated in Table 2. Constraints on hours were set such that $PC_g = 13 - lm_g - l_g$ and $13 - \sum_{g=1} PC_g - FC$, where $g = wife, hus$. Initially, I considered all feasible combinations of these variables, yielding a total of 196 potential alternatives, all of which are non-negative integers.

However, to ensure relevance and feasibility, several rules were implemented to simplify this extensive list. For instance, a scenario where $l_{wife} = 0$ or $l_{hus} = 0$ was admissible only when $FC = 0$, leading to the exclusion of 19 observations. Similar constraints led to the removal of alternatives under various conditions, such as the requirement for $IC = 0$ when $l_{wife} = 0$ or $l_{hus} = 0$, which resulted in the omission of 50 observations.After applying a comprehensive set of such conditions, which included assumptions about the availability of formal and informal childcare as well as the distribution of parental care hours, the list was narrowed down to 42 viable alternatives. These alternatives could further be categorized based on the sum of hours allocated across different care options. For example, the alternatives where the sum of hours for PC_{wife}, PC_{hus}, and FC was 13 resulted in 9 distinct options. In total, these categorizations yield four primary sets, with the total alternatives for each category being 9, 8, 13, and 13, respectively.

To ensure a diverse yet manageable set of choice sets, similar alternatives were grouped, and a single representative was randomly selected from each group. This process ensures that each segment contained 5 to 6 unique alternatives. Through combinatorial techniques, this allows me to generate 20 unique choice sets for each segment. Lastly, wage and price variables, denoted as w, p, were varied across two levels: High (H) and Low (L). The 16 potential combinations of $w_{wife}, w_{hus}, p_{FC}, p_{IC}$ were then randomly assigned to the curated choice sets to complete my experimental design.

D Data Collection

Pilot Study A preliminary pilot study was conducted to evaluate the closeness of the choice experiment to real-life decisions, to determine if the questionnaire was excessively long, to assess the complexity of the experiment, and to collect feedback for potential improvements. The pilot study was carried out from May 19th to June 6th, 2023. For this preliminary study, 20 participants were recruited from an existing study cohort[20].

Data Clearing Among 685 participants, 155 were excluded based on specific criteria to ensure the quality of the responses, leaving 265 couples (77%, 530 individuals) remaining.

- 685 participants in total, 318 couples (636 individuals) and 49 individuals. "Complete" for 270 couples.
  - First cohort, collected from September 11 to October 14, 2023
    - 527 participants, 248 couples (496 individuals) and 31 individuals
    - "Complete" for 200 couples (400 individuals)
  - Second cohort, collected from May 27 to June 10, 2024
    - 158 participants, 70 couples (140 individuals) and 18 individuals
    - "Complete" for 70 couples (140 individuals)

- Criteria for exclusion, note that if one member of a couple meets the criteria for exclusion, both individuals in that couple should also be excluded.
  1. Duplicated responses, one person completing both surveys
  2. Answered "Did not answer sincerely"
  3. Took < 10 minutes to complete the survey
  4. Spouse did not participate
- 265 couples, 86% of 318 couples survived this criteria (77% among 685 participants).

Comparison of Participants in Sample and Excluded Table 16 compares the characteristics of sample and excluded participants. In the excluded sample, participants are younger on average, work fewer hours, and have higher household monthly incomes.

[20] *The Qualitative Study of the Division of Childcare During the COVID-19 Pandemic in South Korea*, with Jieun Yi

Table 16: Comparison of Participants in Sample and Excluded

			Sample (N=530)				Excluded (N=155)			
			Freq.	Percent	Mean	Std.Dev.	Freq.	Percent	Mean	Std.Dev.
N			265	50%			78	50.3%		
Gender			265	50%			77	49.7%		
Age*					38.3	4.022			37.3	4.610
Education		High School	38	7%			11	7%		
		Associate's Degree/2-Year College	75	14%			26	17%		
		Bachelor's Degree/4-Year College	344	65%			97	63%		
		Master's Degree	58	11%			20	13%		
		Doctoral	15	3%			1	1%		
Employment	*Type*	Regular	485	92%			138	89%		
		Temporary	28	5%			15	10%		
		Daily	17	3%			2	1%		
	Full/Part-time	Full-time	463	87%			128	83%		
		Part-time	67	13%			27	17%		
	*Work Hours (Daily)***				9.475	2.275			8.868	2.491
	Monthly Wage				364.8	180.101			363.5	16.585
	Work Days				4.958	0.641			5.026	0.693
	Work Sector	Sales/Service/Marketing/Technology	107	20%			30	19%		
		Education	63	12%			22	14%		
		Administrative/Management/Supervisory	270	51%			83	54%		
		Agriculture/Forestry/Mining/Livestock	3	1%			1	1%		
		Professional	80	15%			15	10%		
		Others	7	1%			4	3%		
Household Monthly Pre-tax Income***					678.8	238.757			736.3	829.13
Informal Childcare Availability	Yes		312	59%			94	61%		
	No		218	41%			61	39%		
Location	*Capital Area*		257	48%			93	60%		
	Non-Capital Areas		273	52%			62	40%		
Number of Children					1.628	0.636			1.619	0.637
Housing	*Own Home*		359	68%			108	70%		
	Jeon-se (without rent)		120	23%			37	24%		
	Monthly Rent with Deposit		43	8%			9	6%		
	Unpaid		8	2%			1	1%		

Note: Table 16 compares the characteristics of sample and excluded participants. * Age differs significantly at the 1% level. ** Work hours differ significantly at the 1% level. *** Household Monthly Income differ significantly at the 10% level. Monthly wages are reported in units of 10,000 KRW.

E Choice Experiment Data

Table 17 shows the duration required to complete the survey.

Table 17: Survey Overview

		Freq.	Percent
N		530	
Survey Duration	Less than 15 minutes	61	11%
	15 to 29 minutes	226	43%
	30 to 44 minutes	55	10%
	45 to 59 minutes	19	4%
	60 to 74 minutes	11	2%
	75 to 89 minutes	8	2%
	More than 89 minutes	150	28%
Number of Presented Choice Sets	Less than 10	29	5.5%
	10 to 15	49	9.2%
	16	452	85.3%

Note: Table 17 details the duration required to complete the survey and the number of presented choice sets. It's important to note that for responses with unusually long completion times, it's unclear whether participants began, paused, and then resumed the survey at a later time. During the initial phase of data collection, choice sets were presented through a random selection with replacement, leading to participants encountering the same choice sets multiple times. Consequently, 14% of the participants were presented with fewer than the full set of 16 choice experiments. However, 85% of participants were presented with all 16 choice experiments. Analysis reveals no significant differences in the average number of choice sets shown to participants across gender and the availability of informal childcare.

Figure 21 and Figure 22 show the least favorite alternatives among wives and husbands, respectively. These alternatives were chosen by less than 15% of participants, regardless of the other options presented. For wives, the least chosen alternatives typically involved minimal unpaid work hours for themselves and a majority of their husband's unpaid work. Conversely, husbands least favored alternatives where their share of unpaid work was very high.

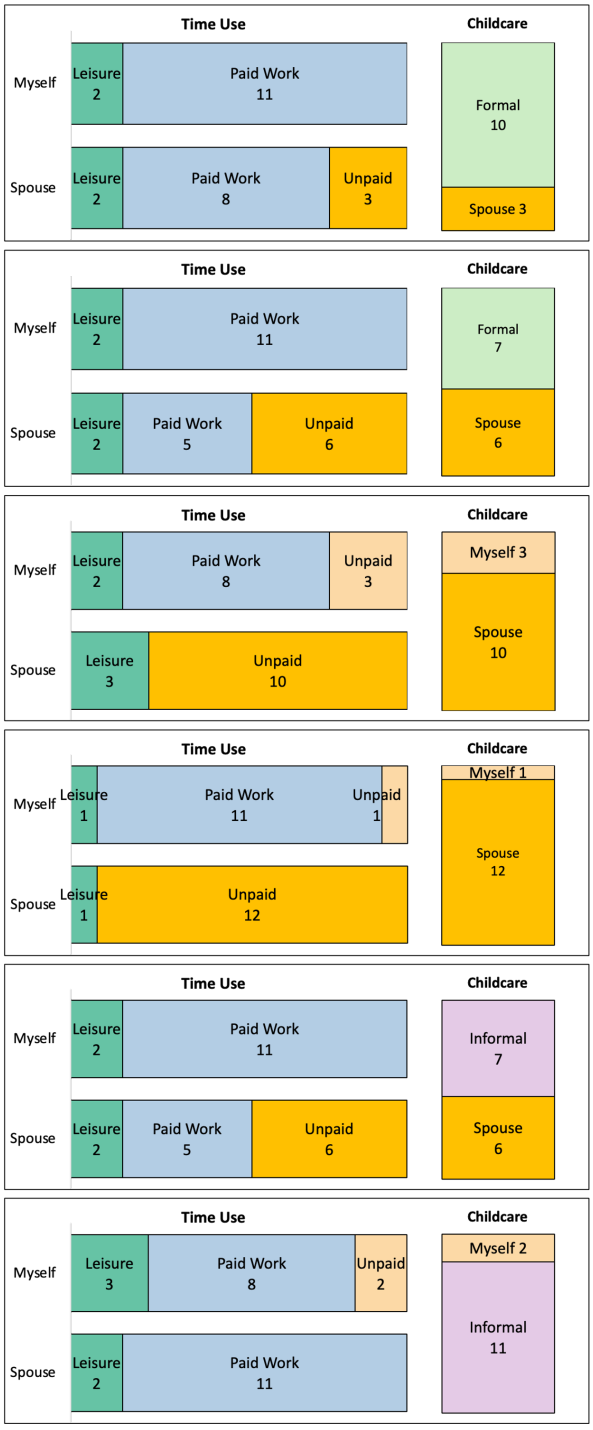


Figure 21: Least Favorite Alternatives Among Wives

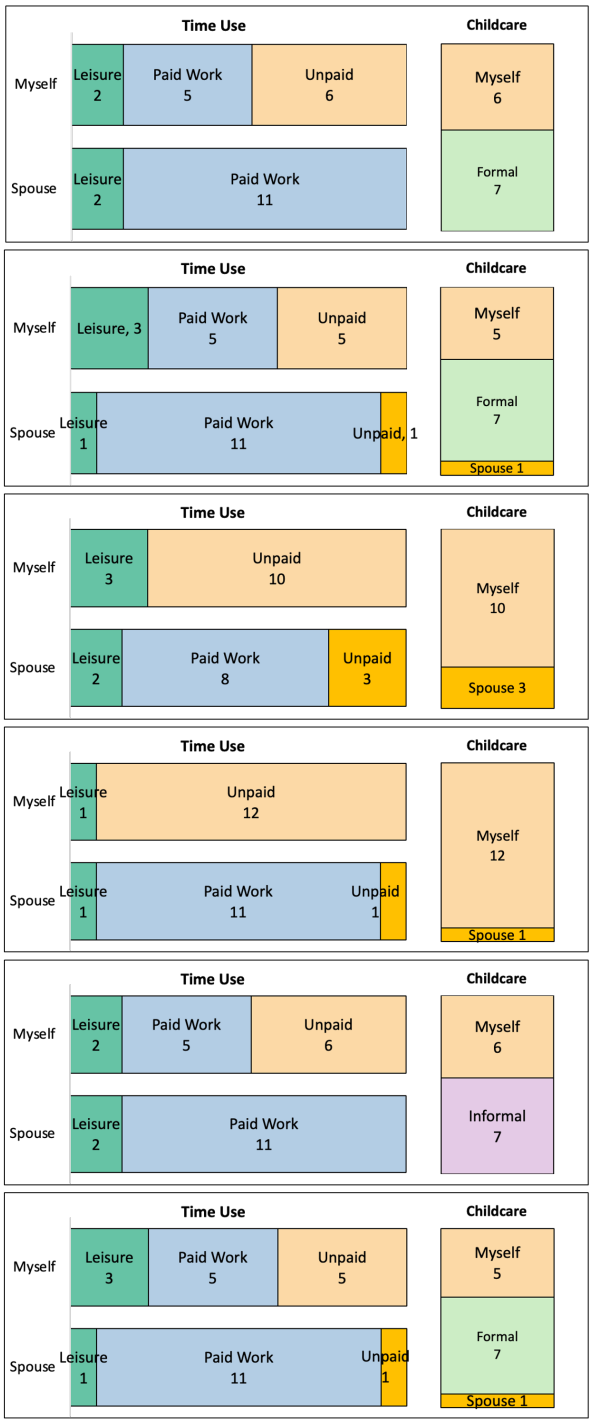


Figure 22: Least Favorite Alternatives Among Husbands

F Discrepancies in Reported Unpaid Work Hours

Figure 23 illustrates the discrepancies in reported unpaid work between wives and husbands. Each participant was asked to record both their own and their spouse's hours spent on childcare or housework. The data show that husbands consistently reported higher hours of unpaid labor compared to the reports from their wives. The figure is divided into four graphs, each showing responses for different subsets of participants: 91 households without informal care and 174 households with informal care. For instance, in the wife's response section from 91 households without informal care, wives reported spending 6.2 hours on unpaid work and indicated that their husbands spend 1.3 hours. However, in the corresponding husband's response section, husbands reported spending 3.6 hours on unpaid work, while indicating their wives spend 3.3 hours. This pattern is consistent in the 174 households with informal care, where wives reported spending 5.3 hours on unpaid work and indicated their husbands spend 1.3 hours, while husbands reported spending 3.8 hours on unpaid work, and indicated their wives spend 2.5 hours.

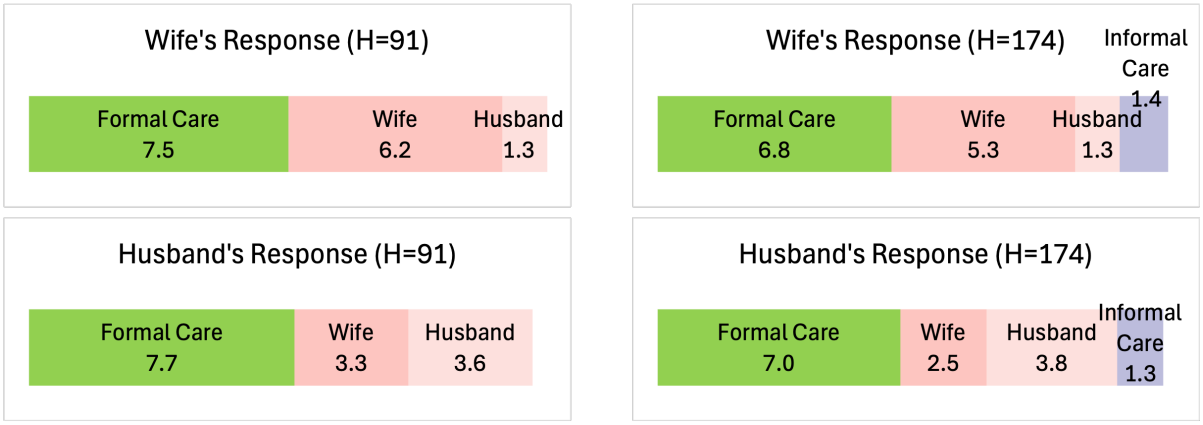


Figure 23: Discrepancies in Reported Unpaid Work Hours Between Wives and Husbands

Note: Figure 23 shows differences in reported unpaid work time between wives and husbands. Note that each participant was asked to record both their own and their spouse's hours spent on childcare or housework. Husbands consistently reported more hours of unpaid labor compared to their wives' reports.

G Choice Set Construction

Table 18 outlines the statistics of hours from actual household choices and the corresponding discrete levels used to create alternatives in each household's choice set. These levels cover leisure, work, parental care, formal care, and informal care. The alternatives in each choice set are constructed based on the values observed in households' actual choices. The actual leisure time ranges from 0 to 9 hours, with 90% of observations below 4 hours, and is categorized into four levels: 1, 2, 3, and 4 hours. Work hours range from 1 to 15 hours, divided into five categories. Parental childcare varies from 0 to 10 hours and is structured into five levels. Formal care is available for 0 to 11 hours, categorized into three levels. Informal care, dependent on availability, range from 0 to 8 hours and is divided into five levels.

I construct household-specific choice sets using this categorization, with an average of 165 alternatives per set across the 265 households. Each household has one chosen alternative, representing their actual household choice.

Table 18: Summary of Household Choices and Corresponding Choice Set Levels

	Actual Choice (265 households)				Choice Set	
	Mean	Std. Dev.	Min	Max	Level	Value
Leisure	2.2	1.416	0	9	Level 1	1 hour
(90th Percentile: 4 hours)					Level 2	2 hours
					Level 3	3 hours
					Level 4	4 hours
Work Hours	9.5	2.284	1	15	Level 1	0 hour
(90th Percentile: 12 hours)					Level 2	3 hours
					Level 3	7 hours
					Level 4	10 hours
					Level 5	13 hours
Parental Care Hours	3.6	1.731	0	10	Level 1	0 hour
(90th Percentile: 6 hours)					Level 2	1.5 hours
					Level 3	3.5 hours
					Level 4	5.5 hours
					Level 5	8 hours
Formal Care Hours	7.4	1.617	0	11	Level 1	0 hour
(90th Percentile: 9 hours)					Level 2	7 hours
					Level 3	10 hours
Informal Care Hours	1.3	1.673	0	8	Level 1	0 hour
(90th Percentile: 3 hours)					Level 2	1 hour
					Level 3	2 hours
					Level 4	3 hours
					Level 5	4 hours
	Mean	Std. Dev.	Minimum	Maximum		
Number of Choice Sets	165	124.045	12	681		

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