Beyond Division: An Analysis of Housework Trajectories and Fertility in the United Kingdom

Introduction to the topic

Recent decades have seen growing recognition of the role of gender equality in explaining fertility (McDonald, 2013; Goldscheider et al., 2015). As the gender revolution advances, the previously positive link between traditional gender roles and fertility may weaken (Zhou & Kan, 2019). With growing gender role convergence and the spread of egalitarian values, particularly among women, an equitable division of housework is increasingly valued and may even enhance fertility (Esping-Andersen & Billari, 2012). However, despite men's increasing participation in domestic work, women still perform most household tasks, reflecting persistent gender inequalities, especially in societies with traditional gender norms (Sullivan et al., 2018). In this sense, this persistence of unequal divisions, often described as the "stalled gender revolution", can undermine work–family balance for women and negatively impact fertility (Goldscheider et al., 2015).

Theoretical Focus

Empirical research consistently connects household labor division to fertility, especially among couples with children (Leocádio et al., 2025). However, empirical evidence on this relationship remains inconclusive and lacks coherence across studies.

Limitations of Existing Micro-Level Research

Indeed, existing studies yield divergent findings, showing positive, negative, or U-shaped links between housework division and fertility (Torr & Short, 2004; Miettinen et al., 2015; Leocádio et al., 2025). These inconsistencies stem from four main issues. Firstly, as Leocádio et al. (2025) explain, there is measurement heterogeneity: "gender equity" and "housework" are operationalized inconsistently across studies, sometimes with continuous and some other times with categorical variables, and often ignoring cases where men perform the majority of housework or collapsing them into "egalitarian" categories. Secondly, findings are often context- or parity-specific (Leocádio et al., 2025). Thirdly, most analyses remain individual-centered, typically focusing on women, even though fertility decisions are joint processes shaped by both partners' preferences and power relation (Bauer & Kneip, 2013). Finally, most of the studies that explored this link rely on cross-sectional data, despite its dynamic nature and link to life-course events (Leocádio et al., 2025). Household labor and childcare evolve alongside relationship and employment changes, requiring longitudinal approaches to capture this process (Brodmann et al., 2007; Grunow et al., 2012). Therefore, observing housework time across individuals' lives and cohorts is crucial for better understanding this phenomenon.

Couples' unpaid work division trajectories and fertility

Understanding the link between unpaid work and fertility from a couple-perspective requires considering not only the current division of tasks but also considering the all domestic work trajectory. The division of housework and childcare is not static, but evolves through prior decisions, shifting economic inequalities, and the transition to parenthood (Brodmann et al., 2007; Grunow et al., 2012). A life-course perspective is therefore essential, as social and household dynamics are intrinsically longitudinal and must be observed over time (Elder et al., 2003).

To move beyond a static view, the life course must be conceptualized as multidimensional (Bernardi et al., 2019). Single domains like employment and family are embedded within historical and social contexts, constantly interacting so that changes in one area constrain or enable opportunities in another (Buhr & Huinink, 2014; Bernardi et al., 2019; Fauser & Scheuring, 2022). Following the "linked lives" perspective, partners' lives are interdependent: their preferences and resource allocations are shaped jointly (Elder et al., 2003). The division of unpaid work is thus a dynamic phenomenon, shifting with partners' material and ideological resources or remaining stable in their absence (Grunow et al., 2012; Nitsche & Grunow, 2016). Domestic

responsibilities are continuously negotiated, and this process influences critical outcomes like the decision to have children (Zhou & Kan, 2019). Consequently, family expansion is a dynamic process intertwined with other life domains (Buhr & Huinink, 2014). From this viewpoint, we can conceptualize unpaid labour division as a social pathway or trajectory where the starting point, timing, and duration cumulatively shape fertility (Elder et al., 2003). At the same time, these outcomes reflect partners' active weighing of the costs and benefits of parenthood rather than predetermined paths (Elder et al., 2003; Buhr & Huinink, 2014).

Despite these arguments, unpaid work is rarely studied through a consistent life-course paradigm. Research tracking housework often focuses on individuals, finding that while gender gaps have narrowed across cohorts, profiles remains starkly gendered (Leopold et al., 2018; Skopek & Leopold, 2019; Johnson et al., 2024; Moro, 2025). Currently, few couple-level studies focus holistically on unpaid work division trajectories. Many recent analyses are limited to the short-term impact of COVID-19 (Rodríguez Sánchez et al., 2021; Zamberlan et al., 2021; Petts & Carlson, 2024). Others examine how earnings or ideology affect domestic trajectories but focus on "average" trajectories, failing to identify different forms of couple types (Grunow et al., 2012; Nitsche & Grunow, 2016). A notable exception is Fan (2024), who used Sequence Analysis (SA) to identify distinct labour division trajectories after childbirth and predict which couples' characteristics predict cluster membership. However, no study to date has tracked these trajectories from the start of cohabitation to link long-term domestic patterns directly to fertility outcomes.

The UK Context

The UK offers a compelling case for examining these dynamics. Fertility peaked at 1.9 in 2012 but has since declined to around 1.6[1]. Despite progress in women's labor market participation, significant inequalities in housework and childcare persist, even among the dual-earner couples that now constitute the majority (Zhou & Kan, 2019; Zamberlan et al., 2021; García Román & Ophir, 2024). Traditional gender attitudes also remain entrenched, particularly among less-educated groups, where women still face strong cultural expectations to prioritize caregiving (Brough & Sheppard, 2022). This reality, combined with the enduring "motherhood penalty" and domestic inequality, have led scholars to characterize the UK not as fully egalitarian, but as a "modified breadwinner society" (Harkness et al., 2019; Kleven et al., 2019; Zamberlan et al., 2021).

Data & Methods

Data

This study uses data from two major UK longitudinal household surveys: the British Household Panel Survey (BHPS; waves 2–18) and Understanding Society (UKHLS; waves 1–4)[2]. Both provide rich information on housework division, education, income, employment, and family histories, with monthly data on employment and family events[3,4]. These features make them particularly suited for analysing unpaid work and fertility dynamics from a couple-level, life-course perspective.

We analyse two parity-stratified samples of heterosexual couples who cohabited during the observation period. In all samples, women were aged 18–45 during the study period. Monthly data on cohabitation start and end dates enable precise tracking and the construction of annual cohabitation spells[5]. To ensure data reliability, we include only couples observed for at least 21 months and exclude the final 9 months of each observation window. This approach guarantees a minimum of 12 months of confirmed childlessness, reducing (1) endogeneity bias by minimizing behavioral changes preceding childbirth, and (2) censoring bias among childless couples due to short observation periods. We exclude BHPS wave 1 (which lacks housework data).

Analytical Strategy

[1] https://data.worldbank.org/indicator/SP.DYN.TFRT.IN?locations=GB-DE
[2] University of Essex, Institute for Social and Economic Research. (2024). Understanding Society: Waves 1-14, 2009-2023 and Harmonised BHPS: Waves 1-18, 1991-2009: Special Licence Access. [data collection]. 18th Edition. UK Data Service. SN: 6931, DOI: http://doi.org/10.5255/UKDA-SN-6931-17
[3] https://www.understandingsociety.ac.uk/topic-page/employment/
[4] https://www.understandingsociety.ac.uk/topic-page/family-and-households/
[5] University of Essex, Institute for Social and Economic Research. (2025). Understanding Society: Marital and Cohabitation Histories, 1991-2023. [data collection]. 6th Edition. UK Data Service. SN: 8473, DOI: http://doi.org/10.5255/UKDA-SN-8473-6

Our analysis proceeds in two stages, corresponding to the two parity-specific samples (0, 1). Regarding the first parity, we construct monthly spells of unpaid work division and apply Sequence Analysis (SA) to build trajectories. SA is a powerful non-parametric method for modelling categorical transitions over time (Barban & Billari, 2012). The standard SA process involves three steps: (1) constructing individual sequences based on monthly status; (2) measuring distance by calculating pairwise dissimilarities between sequences using techniques such as Optimal Matching (OM) or Hamming distance, a process that generates a distance matrix based on the relative similarity (or divergence) between sequence pairs; and (3) clustering sequences using an algorithm such as Ward's or PAM to identify distinct patterns.

To mitigate endogeneity, we truncate sequences nine months prior to childbirth (or the end of observation for childless couples) to avoid capturing anticipatory behavioral changes (Rossignon et al., 2018). This produces sequences of varying lengths. However, standard SA often requires uniform sequence lengths to prevent clustering based on exposure time rather than behavior (Mencarini et al., 2022). To address this issue, we propose a four-step hybrid strategy. First, we apply the Integrated Forward Dissimilarity approach proposed by Mencarini et al. (2022), selecting sequences with at least 12 months of observation and aligning them from the first month. For each pair, the algorithm identifies the common period (L_{common}) and computes the Generalized Hamming Distance based on state substitutions within that window. The distance is then normalized by dividing total substitution cost by L_{common}, making it independent of overall duration. Second, we introduce an "Integrated Right-Aligned Dissimilarity" approach, since the previous approach, to work by itself, requires a high minimum duration (e.g., 11 years in Mencarini et al., 2022). Sequences are anchored to their last observed month and compared backward, focusing again on their minimum common length from the end. We compute the Generalized Hamming Distance and normalize by the length of this shared terminal period. This captures similarity in "destination states", treating couples in identical situations at truncation as similar regardless of total duration or initial conditions. Third, we construct a Combined Distance Matrix by summing the previous two distance matrix. Finally, we translate the combined matrix into clusters using Ward's hierarchical algorithm, which minimizes within-cluster variance to enhance group homogeneity (Bolano & Studer, 2020).

The resulting unpaid work division clusters are then used as predictors of the transition to first childbirth through discrete-time Event History Analysis (EHA), following the Sequence History Analysis (SHA) approach of Rossignon et al. (2018). Each couple is assigned to a static cluster, which predicts birth likelihood while controlling for the previously specified covariates. This approach allow us to identifies which domestic work "careers" are most strongly associated with fertility

We apply the same method to parity-1 couples, following them from the first month after their first birth until nine months before a second birth or the end of observation (in case they do not have a new child).

Preliminary findings

Preliminary results indicate that while a majority of couples follow traditional trajectories, there is a high level of heterogeneity in how domestic labor is divided. At Parity 0, approximately 40% of couples maintain a stable traditional division from the outset, while an additional 10% shift toward traditionalism from egalitarian or atypical arrangements. These results confirm the persistence of domestic inequality in the UK, even within a societal context where dual-earner childless couples are the norm. Nevertheless, the data reveals significant diversity in experiences: roughly 20% of couples remain stably egalitarian and 10% shifts from traditional to egalitarian arrangements. This may suggest that the "gender revolution" is progressing, albeit at a slow pace. Furthermore, about 10% follow stable atypical trajectories, where men contribute more to unpaid work, a share that increases when including those who shift toward atypicality later in the life course. Viewed through this lens, unpaid work emerges as a dynamic, negotiated process rather than a static state, highlighting the importance of a life-course approach. The transition to Parity 1 represents a major turning point for gender inequality, as the birth of a first child often triggers a shift toward more conventional roles. Indeed, following childbirth, nearly 45% of couples follow a stable traditional path, and over 20% undergo a process of "traditionalization". In contrast, far fewer couples than at Parity 0 remain egalitarian or move toward equality, which suggests that childbirth remains a primary driver of the "stalled gender revolution" and persistent domestic inequalities in the UK. Moreover, atypical arrangements also decline during this period.

Regarding fertility outcomes, couples in stable trajectories generally display the highest first-birth fertility, with the notable exception of those in the most radically traditional tracks. Conversely, couples who renegotiate housework, particularly those shifting toward greater inequality, exhibit lower first-birth fertility. The strain associated with such renegotiation, potentially triggered by labor market shifts or interpersonal conflict, may reduce the relationship stability necessary for childbearing. Findings for Parity 1 are largely consistent; couples in stable egalitarian or moderately traditional trajectories show the highest fertility, while radical traditionalists and those in stable atypical arrangements show lower rates. Once again, couples renegotiating housework display the lowest fertility, except for those moving from egalitarian to moderately traditional setups. Indeed, this specific group maintains a level of second-birth fertility similar to that of stable egalitarian and traditional couples, suggesting that "traditionalization" may be viewed as a normalized or standard adjustment during the transition to parenthood, rather than a disruptive renegotiation.

Bibliography

Barban, N., & Billari, F. C. (2012). Classifying Life Course Trajectories: A Comparison of Latent Class and Sequence Analysis. *Journal of the Royal Statistical Society Series C: Applied Statistics*, *61*(5), 765–784. https://doi.org/10.1111/j.1467-9876.2012.01047.x

Bauer, G., & Kneip, T. (2013). Fertility From a Couple Perspective: A Test of Competing Decision Rules on Proceptive Behaviour. *European Sociological Review*, *29*(3), 535–548. https://doi.org/10.1093/esr/jcr095

Bernardi, L., Huinink, J., & Settersten, J. R. A. (2019). The life course cube: A tool for studying lives. *Advances in Life Course Research*, *41*, 100258. https://doi.org/10.1016/j.alcr.2018.11.004

Bolano, D., & Studer, M. (2020). The link between previous life trajectories and a later life outcome: A feature selection approach. *LIVES Work. Pap.*, *82*, 2296–1658. https://doi. org/10.12682/lives

Brodmann, S., Esping-Andersen, G., & Guell, M. (2007). When Fertility is Bargained: Second Births in Denmark and Spain. *European Sociological Review*, *23*(5), 599–613. https://doi.org/10.1093/esr/jcm025

Brough, M., & Sheppard, P. (2022). Fertility Decision-Making in the UK: Insights from a Qualitative Study among British Men and Women. *Social Sciences*, *11*(9), 409. https://doi.org/10.3390/socsci11090409

Buhr, P., & Huinink, J. (2014). Fertility analysis from a life course perspective. *Advances in Life Course Research*, *21*, 1–9. https://doi.org/10.1016/j.alcr.2014.04.001

Elder, J. G. H., Johnson, M. K., & Crosnoe, R. (2003). The emergence and development of life course theory. In *Handbook of the life course* (pp. 3–19). Boston, MA: Springer US.

Esping-Andersen, G., & Billari, F. C. (n.d.). Re-Theorizing Family Demographics. *Paper Presented at the European Population Conference, Stockholm, 13–16 June 2012*.

Fan, W. (2024). Becoming a parent: Trajectories of family division of labor in Germany and the United States. *Advances in Life Course Research*, *60*, 100611. https://doi.org/10.1016/j.alcr.2024.100611

Fauser, S., & Scheuring, S. (2022). Couples' early career trajectories and later life housing consequences in Germany: Investigating cumulative disadvantages. *Advances in Life Course Research*, *51*, 100445. https://doi.org/10.1016/j.alcr.2021.100445

García Román, J., & Ophir, A. (2024). Housework time and task segregation: Revisiting gender inequality among parents in 15 European countries. *Demographic Research*, *50*, 503–514. https://doi.org/10.4054/DemRes.2024.50.19

Goldscheider, F., Bernhardt, E., & Lappegård, T. (2015). The Gender Revolution: A Framework for Understanding Changing Family and Demographic Behavior. *Population and Development Review*, *41*(2), 207–239. https://doi.org/10.1111/j.1728-4457.2015.00045.x

Grunow, D., Schulz, F., & Blossfeld, H.-P. (2012). What determines change in the division of housework over the course of marriage? *International Sociology*, *27*(3), 289–307. https://doi.org/10.1177/0268580911423056

Harkness, S., Borkowska, M., & Pelikh, A. (2019). Employment pathways and occupational change after childbirth. *Government Equalities Office: London, UK*.

Johnson, M. D., Maroto, M., Galambos, N. L., & Krahn, H. J. (2024). Who's doing more and when? Gender, parenting, and housework trajectories. *Journal of Family Psychology*, *38*(5), 685–696. https://doi.org/10.1037/fam0001219

Kleven, H., Landais, C., Posch, J., Steinhauer, A., & Zweimüller, J. (2019). Child Penalties across Countries: Evidence and Explanations. *AEA Papers and Proceedings*, *109*, 122–126. https://doi.org/10.1257/pandp.20191078

Leocádio, V., Verona, A. P., & Wajnman, S. (2025). A review of research of the relationship between gender equity and fertility in low-fertility settings. *Journal of Population Research*, *42*(1), 1. https://doi.org/10.1007/s12546-024-09353-y

Leopold, T., Skopek, J., & Schulz, T. C. D. (2018). Gender Convergence in Housework Time: A Life Course and Cohort Perspective. *Sociological Science*, *5*, 281–303. https://doi.org/10.15195/v5.a13

McDonald, P. (2013). Societal foundations for explaining fertility: Gender equity. *Demographic Research*, *28*, 981–994. https://doi.org/10.4054/DemRes.2013.28.34

Mencarini, L., Piccarreta, R., & Le Moglie, M. (2022). Life-Course Perspective on Personality Traits and Fertility with Sequence Analysis. *Journal of the Royal Statistical Society Series A: Statistics in Society*, *185*(3), 1344–1369. https://doi.org/10.1111/rssa.12832

Miettinen, A., Lainiala, L., & Rotkirch, A. (2015). Women's housework decreases fertility: Evidence from a longitudinal study among Finnish couples. *Acta Sociologica*, *58*(2), 139–154. https://doi.org/10.1177/0001699315572028

Moro, B. R. (2025). The unchanging divide: Housework and labor responsibilities in late family stages. *SERIEs*. https://doi.org/10.1007/s13209-025-00314-z

Nitsche, N., & Grunow, D. (2016). Housework over the course of relationships: Gender ideology, resources, and the division of housework from a growth curve perspective. *Advances in Life Course Research*, *29*, 80–94. https://doi.org/10.1016/j.alcr.2016.02.001

Petts, R., & Carlson, D. (2024). Trajectories of US parents' divisions of domestic labor throughout the COVID-19 pandemic. *Demographic Research*, *51*, 377–424. https://doi.org/10.4054/DemRes.2024.51.12

Rodríguez Sánchez, A., Fasang, A., & Harkness, S. (2021). Gender division of housework during the COVID-19 pandemic: Temporary shocks or durable change? *Demographic Research*, *45*, 1297–1316. https://doi.org/10.4054/DemRes.2021.45.43

Rossignon, F., Studer, M., Gauthier, J. A., & Goff, J. M. L. (2018). Sequence history analysis (SHA): Estimating the effect of past trajectories on an upcoming event. In *Sequence analysis and related approaches: Innovative methods and applications* (pp. 83–100).

Skopek, J., & Leopold, T. (2019). Explaining gender convergence in housework time: Evidence from a cohort-sequence design. *Social Forces*, *98*(2), 578–621.

Sullivan, O., Gershuny, J., & Robinson, J. P. (2018). Stalled or Uneven Gender Revolution? A Long-Term Processual Framework for Understanding Why Change Is Slow. *Journal of Family Theory & Review*, *10*(1), 263–279. https://doi.org/10.1111/jftr.12248

Torr, B. M., & Short, S. E. (2004). Second Births and the Second Shift: A Research Note on Gender Equity and Fertility. *Population and Development Review*, *30*(1), 109–130. https://doi.org/10.1111/j.1728-4457.2004.00005.x

Zamberlan, A., Gioachin, F., & Gritti, D. (2021). Work less, help out more? The persistence of gender inequality in housework and childcare during UK COVID-19. *Research in Social Stratification and Mobility*, *73*, 100583. https://doi.org/10.1016/j.rssm.2021.100583

Zhou, M., & Kan, M.-Y. (2019). A new family equilibrium? Changing dynamics between the gender division of labor and fertility in Great Britain, 1991–2017. *Demographic Research*, *40*, 1455–1500. https://doi.org/10.4054/DemRes.2019.40.50