

Partnership pathways associated with lifetime childlessness in Belgium and Finland

Alice Yolann Rees, Christine Schnor and Marika Jalovaara

Abstract

In recent decades, many European countries have witnessed both a rise in ultimate childlessness and increasing diversity in partnership trajectories. This paper investigates patterns of partnership trajectories associated with childlessness in Belgium and Finland from a life-course perspective. Using sequence and cluster analysis on register data, we examine the partnership histories of Belgian (N=19,590) and Finnish (N=13,368) men and women born in 1975, following them from age 18 to 45. We identified five typical partnership clusters among the Belgian childless and four among the Finnish. Three clusters—Never Partnered, Partnership Instability, and Marriage—are common to both countries. Most childless individuals in both countries remain unpartnered or face partnership instability. A turbulence index was then computed to assess the difference of turbulence of the sequences between the two countries. This paper contributes to the literature on childlessness by examining the heterogeneity of partnership biographies and cross-country differences using high-quality administrative data.

Keywords: Childlessness, partnership, Belgium, Finland, life course, sequence analysis

Introduction

Although the family continues to serve as a fundamental unit of social organization, family dynamics have changed in advanced industrialized societies during the last decades. These changes include, for example, declining marriage rates, the diversification of partnerships such as the rise of non-marital cohabitation, and the increase in separation and divorce. Forming a first partnership (either cohabitation or marriage) and parenthood has been generally delayed (Schoon, 2015), and the phenomenon of never becoming a parent during one's reproductive years, referred to as *ultimate childlessness* or *lifetime childlessness* (Jalovaara & Fasang, 2017) has seen a rise in numerous European countries (Miettinen et al., 2015; Sobotka, 2017). Various factors contribute to childlessness, including income instability (Fieder et al., 2011; Fieder & Huber, 2020), frequent periods of unemployment (Currie & Schwandt, 2014), partnership histories instability and lifelong singlehood (Jalovaara & Fasang, 2017; Koropecjy-Cox & Call, 2007; Rowland, 2007), the postponement of pregnancies and fecundity issues (Rybińska & Morgan, 2019; Jongbloet et al., 2007), voluntary childlessness (Shapiro, 2014), and health issues (Quashie et al., 2021). Consequently, a part of the

Rees (Catholic University of Louvain), Schnor (Catholic University of Louvain) and Jalovaara (University of Turku). Corresponding author's e-mail: alice.rees@uclouvain.be. © Author(s) 2025. This work is licensed under a Creative Commons Attribution 4.0 International License (CC BY 4.0). ISSN 2736-9749

population reaches advanced ages without entering parenthood. Despite growing interest in this topic, most studies have relied on cross-sectional data and focused primarily on women, limiting our understanding of the dynamic processes and gendered differences of childlessness. Only recently, empirical studies started to address these shortcomings by using longitudinal data and by including both men and women and showing the heterogeneity among the childless population (see for example Jalovaara & Fasang, 2017; Raab & Struffolino, 2020). However, cross-national comparative research remains scarce, hindering our ability to understand how cultural, economic and policy contexts shape childbearing dynamics and patterns of childlessness. Comparing two countries with different social and cultural contexts helps determine if observed patterns are specific to a certain setting. It also allows an understanding of how contextual factors are linked to childlessness and can further inform policy interventions.

While childlessness can be a deliberate choice, research suggests it often results from a series of decisions or constraints that lead to continued postponement of childbearing (Tocchioni et al., 2021). In addition to fertility intentions and socioeconomic characteristics, partnership histories play a key role in understanding contemporary childlessness (Kreyenfeld & Konietzka, 2017; Jalovaara & Fasang, 2017). Most childbearing takes place within partnerships (Hoem et al., 2013) and never having been married and being divorced are important predictors of childlessness (Hart, 2019). Recent studies using sequence analysis have revealed distinct patterns of partnership trajectory patterns among childless individuals. For example, using Finnish register data (cohorts 1969–1970), Jalovaara and Fasang (2017) observed that partnership trajectories of the childless involve either not forming coresidential partnerships at all, having short spells of cohabitation, or in some cases, being married. The largest group (45%) among the childless are individuals who had never cohabited or married. Based on a similar study design, Raab and Struffolino (2020) used German Family Panel data for cohorts 1971–1973 and identified five distinct patterns of partnership trajectories. The Single cluster (never having experienced cohabitation, Living Apart Together (LAT) episodes or marriage) was the most prevalent group among the childless (N = 39%).

While Finland and Belgium are both situated in Europe, they present contrasting cultural and societal contexts that may influence partnership trajectories and childlessness trends. While the share of the childless population in Finland is very high (Sobotka, 2017), Belgium exhibits moderate but steadily rising levels of childlessness (see Table 1).

Table 1. Childlessness levels by cohort and gender in Finland and Belgium, 1950–1975, percentages.

Cohorts	Finland		Belgium	
	Childless men aged 45	Childless women aged 45	Childless men aged 45	Childless women aged 45
1950	23	17	17	14
1955	26	18	19	15
1960	28	18	21	15
1965	29	19	23	16
1970	30	21	23	17
1975	30	22	26	17

Source: Belgium: Statistics Belgium (DEMOBEL database); Finland: Statistics Finland, calculations by the authors.

These differing childlessness trends may be intertwined with their contrasting welfare state regimes. Finland and Belgium represent distinct welfare regimes with different approaches to family support. Finland’s comprehensive system is characterized by generous parental leave benefits, offering a replacement rate of 90 per cent of daily earnings (decreasing to 70% after 16 days) (OECD, 2024). Belgium, in contrast,

operates a more conservative system with significantly lower flat-rate parental leave benefit (Rizzi & Rees, 2021). While Finland's policies aim to support parents financially during leave, other institutional factors may play a role in shaping childlessness trends. For instance, mothers in Finland tend to stay home longer than in Belgium, potentially influencing career trajectories and family planning decisions (OECD, 2024). Further research is needed to fully understand the complex interplay of institutional factors and individual choices contributing to childlessness in these two countries.

This study takes an explicitly explanatory approach, leveraging a cross-national comparison to generate insights that can inform future development of more comprehensive theories. This study addresses two objectives. First, we investigate how partnership trajectories differ between parents and childless men and women. Our aim is to identify potential distinct pathways associated with childlessness. Second, we examine the extent to which patterns of partnership trajectories associated with childlessness are similar in Finland and Belgium. Research on childlessness in Belgium remains limited, often relying on outdated survey data (see Miettinen et al., 2015; Prioux, 1993). Direct comparative analyses of partnership trajectories and childlessness remain remarkably scarce, particularly beyond the Nordic context. This study addresses this gap by examining contemporary trends in Belgium and Finland, leveraging the more extensive research available for the Nordic countries to enable a novel cross-national comparison. By using similar data and study design, we are able to directly compare population, which is a main asset of this study. In applying a research design similar to Jalovaara and Fasang (2017) but focusing on a younger cohort and longer observation period, we aim to update and expand upon their findings for Finland. Our focus is on men and women born in 1975, with childlessness measured at age 45. This is before women and men reach the end of their reproductive life, but it is not a major impediment because few individuals have their first child above the age of 45 (Statistics Belgium, 2024; Statistics Finland, n.d.). This cohort also represents the oldest for which complete cohabitation and childbearing histories from age 18 are available. Using sequence analysis, we first compare partnership trajectories of the parents with the ones of childless men and women in order to assess similarities and differences. In a second step, using sequence and cluster analysis, we identify patterns of partnership trajectories among childless individuals from age 18 to 45.

This study makes significant contributions to the understanding of childlessness through a cross-national comparison of Belgium and Finland. By examining these two countries – characterized by contrasting cultural and welfare state contexts – we can explore how these factors may influence partnership trajectories and the likelihood of remaining childless. This comparative analysis is made possible by the availability of remarkably similar longitudinal register data in both countries.

The life course theory

Societal norms and expectations play a role in shaping the timing and sequencing of life course transitions. Societies often hold implicit or explicit expectations regarding 'appropriate' age for marriage, parenthood and other life transitions (Hagestad & Call, 2007). These norms can create pressure to conform to certain timelines. In addition, the social dimension of 'opportunity deadlines' is also salient when considering the transition to parenthood. Societal pressure potentially creates a strong impetus to become a parent, making remaining childless a more accurate description than choosing childlessness (DeOllos & Kapinus, 2002). Rather than a deliberate decision not to have children, childlessness often emerges from a series of life choices that prioritize other goals such as education, career or personal fulfillment (DeOllos & Kapinus, 2002).

This study examines the relationship between partnership trajectories and childlessness through the lens of life course theory, which provides a framework for understanding of how individual lives unfold within historical and social contexts, emphasizing the interconnectedness of events and transitions (Beck & Beck-Gernsheim, 2002; Giddens, 1992). Central to life course theory are the concepts of timing and sequencing (Elder, 1994; Elzinga & Liefbroer, 2007). The age at which individuals experience key tran-

sitions, such as leaving the parental home, entering cohabitation or marriage, and transitioning to parenthood, can significantly shape their subsequent life trajectories. The order and timing of these transitions can create a ripple effect, influencing opportunities and constraints in other areas.

The social dimension of opportunity deadlines becomes interesting when comparing contexts with differing norms and values. Finnish young adults tend to leave the parental home earlier than their Belgian counterparts (Eurostat, 2023). This cultural difference may shape the timing of independence accordingly. Earlier departure from the parental home in Finland might be linked to a cultural emphasis on independence at a younger age. This could, in turn, lead to earlier cohabitation or marriage as young adults establish their own household and potentially form partnership earlier.

While individual agency plays a role in shaping life course transitions, it is important to recognize that the relationship between societal norms, opportunity deadlines and life course transitions is complex and multifaceted. Other factors, such as economic conditions, housing markets, individual agency and policy context, also contribute to the timing and sequencing of these life events.

Data and methods

Data

We use high-quality data from Belgium and Finland including records from administrative registers covering the entire population. Our datasets contain partnership and childbearing histories for the 1975 birth cohort from age 18 to 45. As the R package TraMineR allows a maximum of 46,431 unique sequences, for Belgium, we use a random sample (8%) from the Demobel database constructed and delivered by Statistics Belgium (Direction Générale Statistiques, Statbel; demos@economie.fgov.be). Demobel was developed based on the Belgian national Register and combines socioeconomic information (spanning the years 1991–2020). For Finland, we use a random sample of register data (9%) compiled at Statistics Finland (permission TK52-493-19) by linking different register sources. When residential cohabitation was not available in the data, we assumed the existence of a nonmarital cohabitation if two unrelated, different-sex individuals live in the same household and have an age difference of no more than 16 years or less. This definition of nonmarital partnerships follows standard assumptions (Lodewijckx & Deboosere, 2011). For further details on how cohabitation is inferred, see Damiens et al. (2023) for Belgium and Jalovaara and Fasang (2015) for Finland.

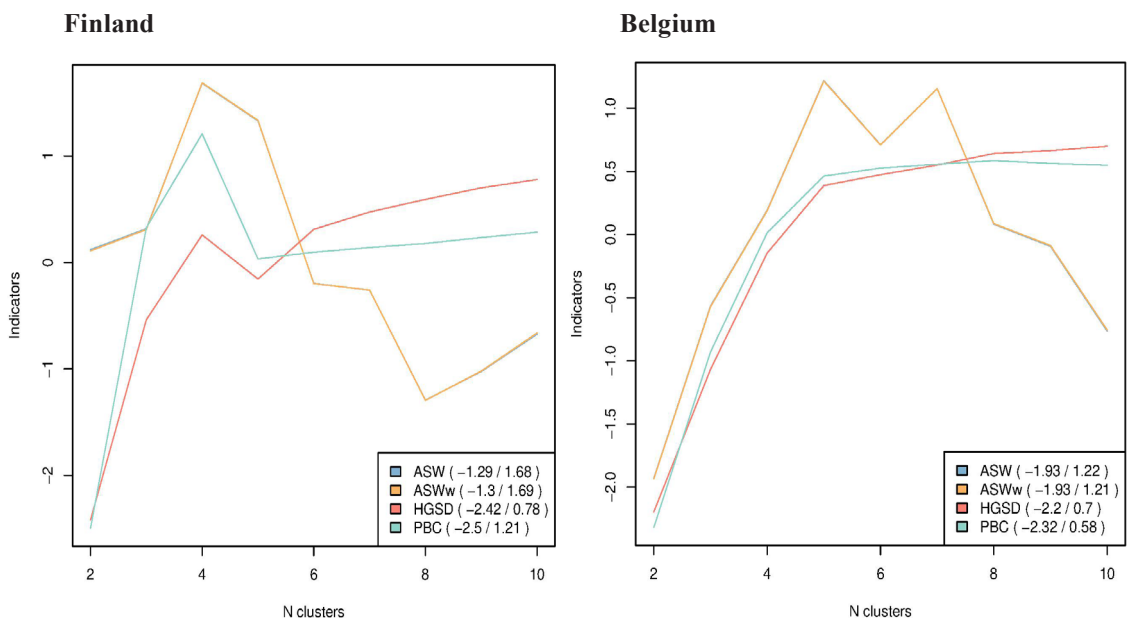
Individuals who did not live in Belgium or Finland when they turned 18 years of age in Belgium (114,386) and Finland (33,641) and people who died or emigrated between ages 18 and 45 in Belgium (844,296) and in Finland (178,644) were excluded from the analysis.

Methods

In the first step, we apply sequence analysis (Abbott, 1995) to compare the partnership trajectories of the Finnish and Belgian childless parents. Sequence analysis is suited to study a complex set of life-course trajectories, as it provides the typical partnership trajectory patterns that can be interpreted and analyzed in a meaningful way (Aassve et al., 2007). Then, we use cluster analysis to identify collective patterns of partnership trajectories among the childless. The sequence of partnership trajectories distinguishes between four states: never partnered (NP), cohabiting (C), married (M) and previously partnered (PP). The PP state includes being separated, divorced and widowed. We use Optimal Matching method (OM) with constant substitution costs of 2 and indel costs of 1 to determine the pairwise dissimilarity between partnership trajectories (Aisenbrey & Fasang, 2010; Lesnard, 2014), which is a robust choice for identifying sequence similarities of the order and the timing of partnership states (Studer & Ritschard, 2016). The OM provides a pairwise distance matrix that includes a distance value for each possible pair of partnership

trajectories. Following standard practice, the number of retained clusters was chosen by checking whether increasing the number of clusters provided additional information or whether it resulted in a decline in heterogeneity among clusters and a small cluster size.

Several cut-off criteria (Figure 1) support a grouping of *five* different clusters for Belgium and *four* clusters for Finland (as in the study of Jalovaara & Fasang, 2017). The weighted Average Silhouette Width (ASWw) for five clusters is equal to 0.54 for Belgium (0.53 for Finland) and indicates a clear structure in the trajectories (Studer, 2013). To check for gender-specific clustering, we ran separate cluster analyses for men and women for both countries. For Belgium, it resulted in four clusters for women and five for men. We decided to keep the five clusters solution for both genders in the pooled analysis, as our intention is to assess partnership trajectories' heterogeneity. Also, this solution is more meaningful as it differentiates late-partnership from the early-partnership trajectories, which is of importance when studying childlessness.



Cluster cut-off criteria (weighted average silhouette (width), Point Biserial Correlation ratio, Hubert's Gamma. Source: Statistics Belgium, Statistics Finland

Figure 1. Cluster cut-off criteria for different numbers of clusters, Finland and Belgium

The same analysis was conducted for Finland, resulting in four clusters for both sexes. To illustrate the typical partnership trajectories of childless individuals and parents, we used relative frequency (RF) sequence plots, which show the proportion of individuals in each cluster at each age (Raab & Struffolino, 2022). Then, we produce RF sequence plots for each partnership cluster of the childless. Age is represented on the x-axis of the timeline. We employed the first factor obtained from Multidimensional Scaling (MDS) to determine the orderings using the distance matrix generated through OM. The first factor is the most important factor that explains the variation in the distance matrix and represents the primary dimension along which sequences differ from each other. Next, we divided the set of sequences into k groups with equal frequencies. We assessed representativeness using the medoid sequence (available in Appendix 1), which refers to the individual sequence that is the least distant from all other individual sequences in the cluster (Aassve et al., 2007). In the last step, we computed a turbulence index (available in Appendix 2) to

quantify the level of instability and change within each individual’s partnership history, further exploring the complexities of these trajectories. The turbulence index of sequences characterizes an increasing number of transitions and/or an increasing number of distinct states, and/or increasing variation in the timing/durations of events (Elzinga & Liefbroer, 2007, p. 232).

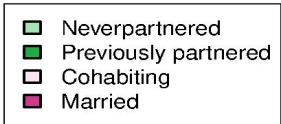
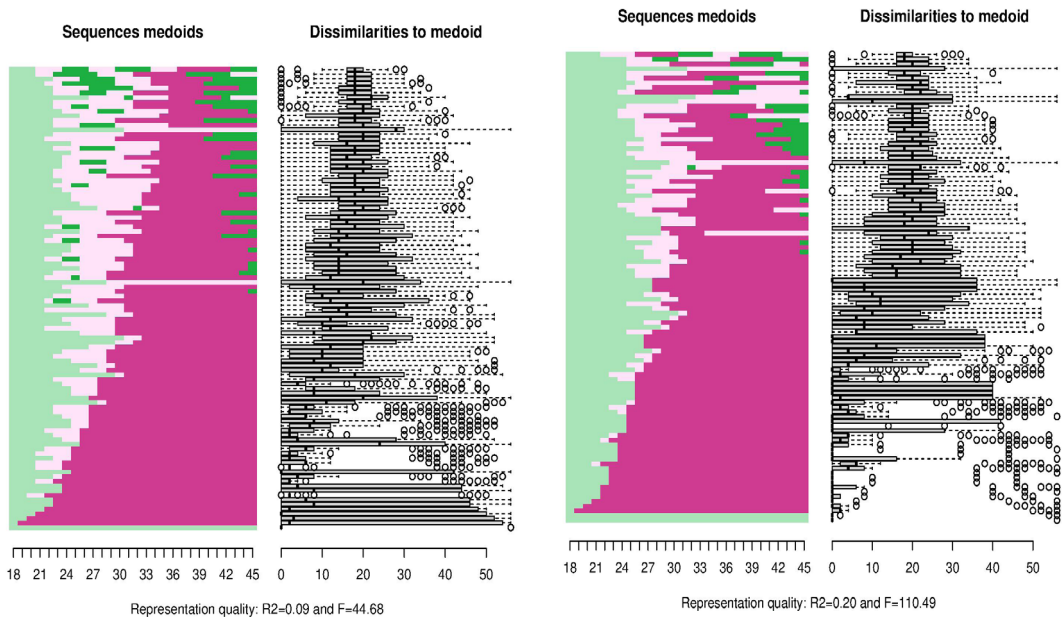
Results

Figure 2 displays RF sequence plots for the total population of childless individuals and parents at age 45. On the right panel, we displayed the medoid, a representative sequence within a cluster of sequences that minimizes the average dissimilarity between itself and all other sequences in the same cluster. In other words, a high average distance to the medoid indicates high sequence heterogeneity within the cluster. Figure 2 highlights that the primary distinction between parents and childless individuals is the occurrence of marriage, with 60 per cent of parents in Belgium being married around age 40 compared to only 17 per cent of the childless (64% and 18% for Finland). Among childless, the modal relationship state is ‘never partnered’ across the entire period, and childless men and women experience more partnership instability over time.

A) Total, Parents

Finland

Belgium



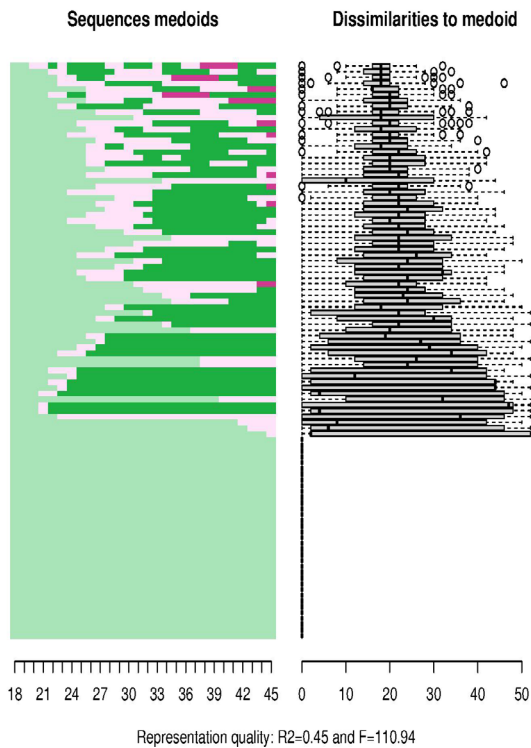
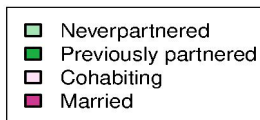
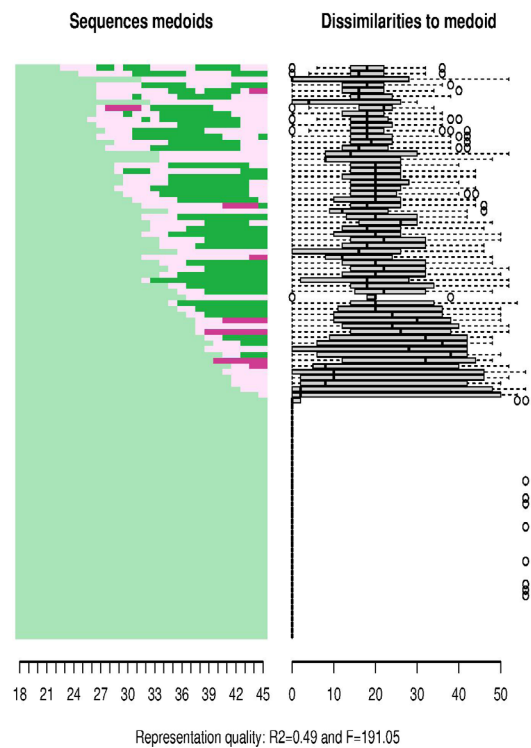
B) Total, childless**Finland****Belgium**

Figure 2. Partnership trajectories at age 18–45 of the parents (A) and childless (B); relative frequency sequence plots, representative sequences; childlessness observed at age 45.

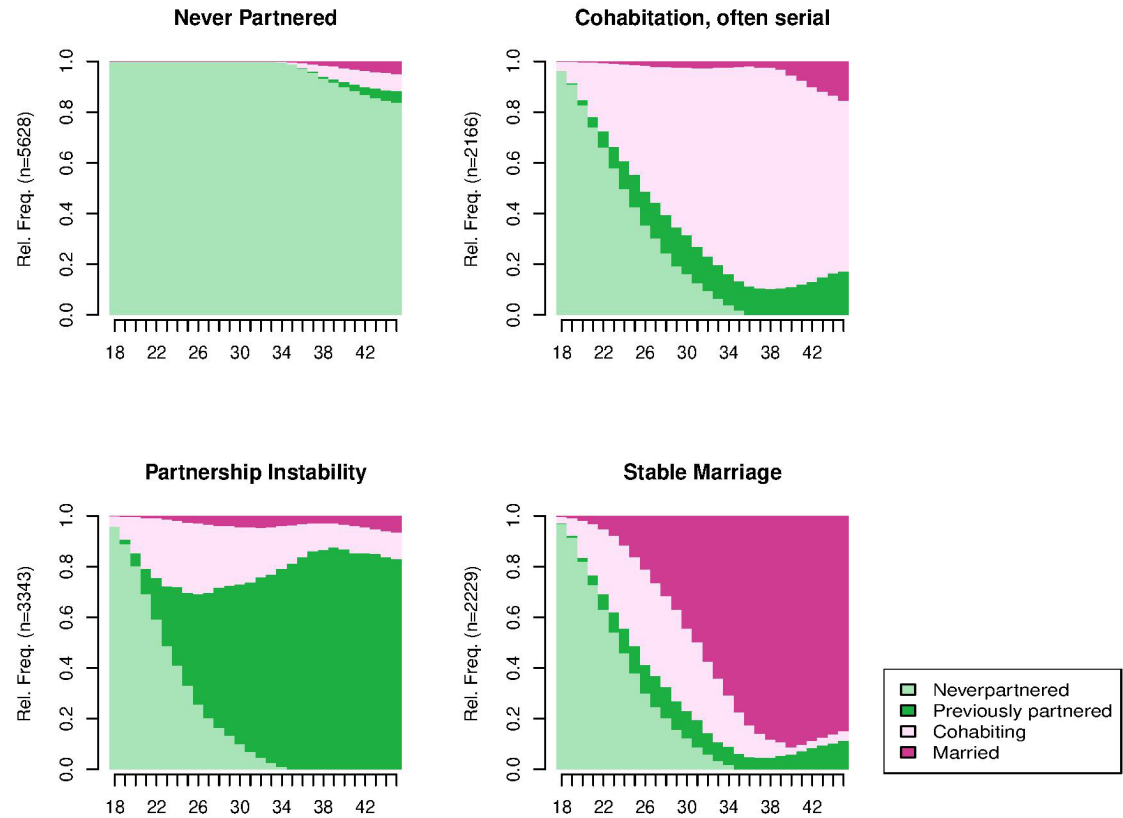
These findings are quite similar as in Jalovaara and Fasang (2017). However, we found longer periods of being Previously Partnered (PP) among the Finnish childless in the current study. This instability might contribute to higher childlessness levels in Finland as individuals may postpone childbearing. Our results for the two countries are similar, but the Finnish parents spend more time being NP before entering a partnership, whereas Belgian parents know longer periods of being NP. In Finland, more parents cohabit before marriage, and some experience more ‘turbulent sequences’ including separation. We also observe longer periods of being PP in Finland among the childless, starting at a younger age than in Belgium. In both countries, some childless individuals enter cohabitation, few enter marriage, and many experience partnership dissolutions. Separation occurs earlier in the life course of Finnish childless individuals than the Belgian.

Figure 3 displays the Relative Frequency (RF) plots (the proportion of occurrences of different states over time within a set of sequences) for each of the Belgian and Finnish clusters, among the childless. Table 2 provides information on notable cluster differences: size of clusters, mean complexity (following Elzinga,

2010), average sequence distance, and average time spent in each state for each cluster. For Finland, we found the same number of clusters as in Jalovaara and Fasang (2017). However, the current findings present different distributions within clusters, and different timing and occurrence of partnership states. We also found less childless individuals in the cluster marriage, where people spend less time being NP.

In the current analysis, we obtained four clusters for Finland: 1) Never Partnered, 2) Partnership Instability, 3) Cohabitation, often serial, and 4) Stable Marriage. The first cluster, Never Partnered (42%), is characterized by never having lived in a coresidential partnership, or for some, just entering a cohabitation near age 40. This cluster is more prevalent for men (48%) than women (32%), and is the most represented cluster in the Finnish sample. The Never Partnered cluster has the smallest average sequence distance and mean complexity (Table 2), reflecting a strong homogeneity of sequences within the cluster. The second cluster, Cohabitation, often serial (25%), is characterized by cohabitation throughout most of the period, but includes periods of being PP. Fewer childless individuals ended up married, as in the study of Jalovaara and Fasang (2017). The third cluster, Partnership Instability (16%), is characterized by mostly living alone after a (or several) brief cohabitation spell(s). The last cluster, Stable Marriage (17%), represents stable marriage over time, mostly entered after age 35, and prior to short periods of cohabitation for some. Very few individuals in this cluster have known PP periods.

A) Finland



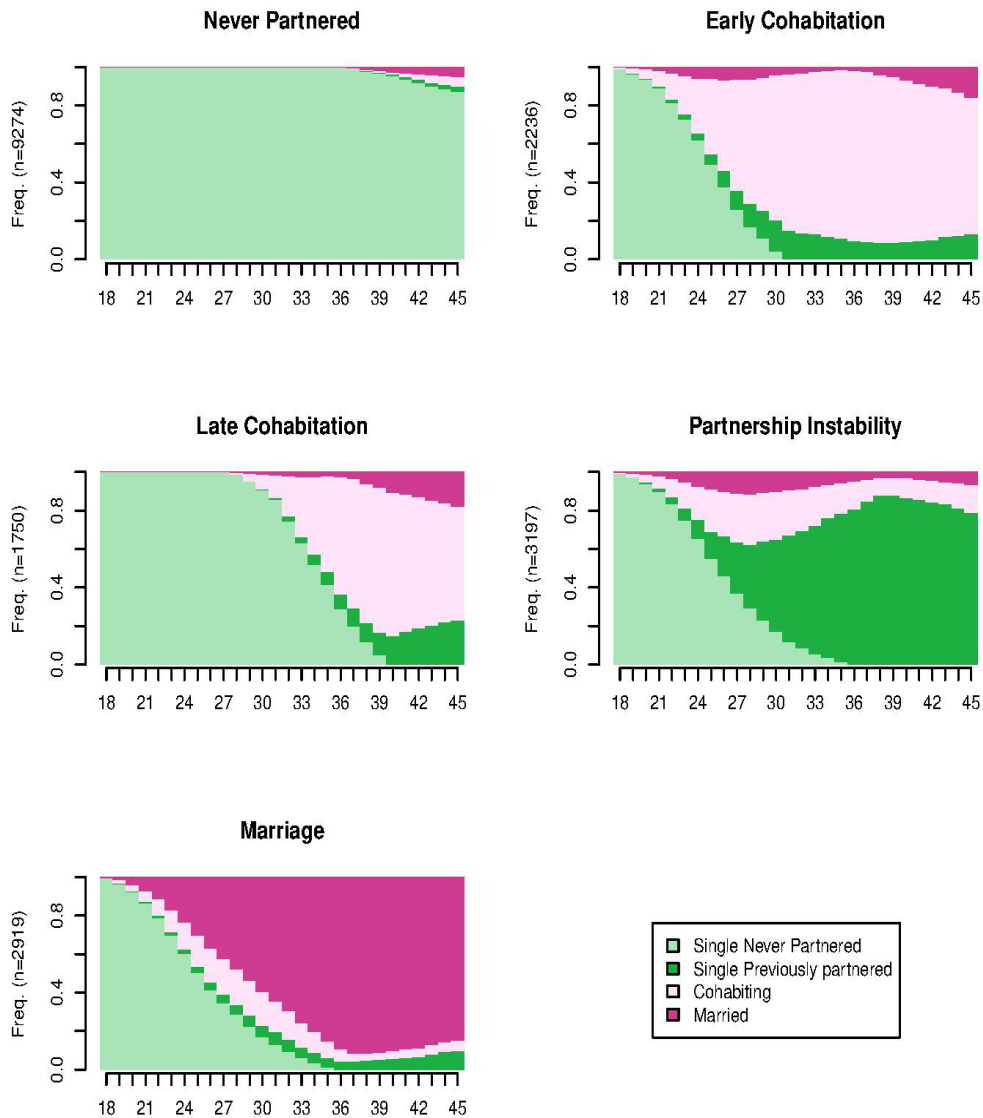
B) Belgium

Figure 3. Partnership trajectory clusters of the childless in Finland and Belgium; relative frequency sequence plots, representative sequences

For the *Belgian* childless, the five clusters are: 1) Never Partnered, 2) Early Cohabitation, 3) Late Cohabitation, 4) Partnership Instability, and 5) Marriage. The largest cluster is the Never Partnered, covering 47% of the sample as for the Finnish sample. This cluster is more prevalent for men (48%) than women (32%). As for Finland, this cluster presents the smallest mean complexity and average sequence distance (Table 2), reflecting a high degree of homogeneity of sequences within this group. The second cluster, Early Cohabitation (13%), is characterized by entering cohabitation at about age 27 with few individuals

ending up single or married. The third cluster, Late Cohabitation, is the smallest cluster (9%), characterized by entering cohabitation by age 33. Few are married and some individuals were PP at a later age. The fourth cluster, Partnership Instability (16%), is marked by discontinuous periods of cohabitation (sometimes marriage), followed by unpartnered periods. As shown in Table 2, men and women spend on average more time being PP than other partnership states in this cluster. Finally, the last cluster, Marriage (15%), is characterized by marriage mostly entered by age 35. More childless experienced partnership dissolutions after marriage than in Finland, resulting in a different cluster name. Regarding gender distribution, it seems that women are more present in the first (38%), the fourth and last cluster (19% each). The Stable Marriage (Finland) and Marriage (Belgium) clusters have the highest average sequence distance and mean complexity, reflecting the fact that sequences within the clusters are more heterogeneous.

Table 2. The partnership trajectory clusters: distributions, mean complexities, average sequence distances, and mean time (in years) spent in each state for men and women, Finland and Belgium.

A) Finland

	Partnership trajectory clusters				
	1) Never Partnered	2) Partnership Instability	3) Cohabitation, often serial	4) Stable Marriage	All
N	5,629	3,344	2,166	2,229	13,368
% of all childless persons	42	16	25	17	100
% of childless men	48	13	24	14	100
% of childless women	32	20	27	20	100
Mean complexity	1.4	6.3	6.2	6.5	4.3
Average sequence distance	1.9	8.6	8.5	9.3	15.2
Mean time in each state, in years, men					
Never Partnered	27	7	8	7	17
Briefly cohabitated	0	16	4	5	4
Previously partnered	0	3	16	2	5
Married	0	1	1	13	2
Mean time in each state, in years, women					
Never Partnered	27	5	6	6	13
Briefly cohabitated	0	5	17	5	6
Previously partnered	0	16	3	2	5
Married	0	2	1	15	4

Source: Statistics Finland

B) Belgium

	Partnership trajectory clusters					
	1) Never Partnered	2) Early Co-habitation	3) Late Co-habitation	4) Partnership Instability	5) Marriage	All
N	9,207	2,485	1,716	3,238	2,944	19,590
% of all childless persons	47	13	9	16	15	100
% of childless men	53	10	10	15	12	100
% of childless women	38	16	8	19	19	100
Mean complexity	1.2	6.5	5.3	6.5	5.8	3.8
Average sequence distance	6.8	20	10	20	21	13
Mean time in each state, in years, men						
Never Partnered	27	8	18	9	9	20
Briefly cohabitated	0	16	7	4	2	3
Previously partnered	0	2	2	13	1	3
Married	0	1	1	1	15	2
Mean time in each state, in years, women						
Never Partnered	27	7	18	7	7	16
Briefly cohabitated	0	17	7	4	3	5
Previously partnered	0	2	2	14	1	3
Married	0	2	1	2	17	4

Source: Statistics Belgium

In sum, the great majority of partnership histories of the childless (42% of the Finnish and 47% of the Belgian childless) are characterized by the (almost) complete absence of coresidential partnerships, or fragmentary cohabitation histories. These results reflect past studies, where the largest group of childless men and women has (almost) never experienced partnership formation during the observation period (Jalovaara & Fasang, 2017; Raab & Struffolino, 2020). The typical partnership trajectories of the Belgian childless differ from Finland as the timing of cohabitation is more heterogeneous among the Belgian population, resulting in two different clusters (late cohabitation and early cohabitation). The late cohabitation cluster might reflect a stronger emphasis on achieving education and economic security before entering cohabiting relationships that could lead to forming a partnership at later ages, potentially reducing the window for childbearing. On the contrary, early cohabitation might be associated with higher partnership instability, leading to potential partnership dissolution and potentially delaying childbearing. Belgian childless men

and women's trajectories include more unpartnered periods over time than the Finnish childless individuals (even among parents). Regarding gender, we observed that in both countries, men spend more time being never partnered than women whereas women spend more time being married.

In the last step of this study, we computed the turbulence index to assess how turbulent partnership trajectories were for both countries (Appendix 2). Finnish childless men and women seem to experience more turbulence in their partnership sequences than in Belgium, reflecting a higher proportion of individuals changing partnership status during the observation period and a higher partnership instability. This difference could be attributed to a greater societal acceptance of cohabitation outside marriage in Finland, leading to a wider range of partnership transitions that contribute to higher measured turbulence. However, other factors, such as differing levels of individual economic independence or variations in cultural norms surrounding partnership commitment, could also contribute to this pattern.

Conclusion

Childlessness has increased in Europe, prompting growing interest in understanding the partnership trajectories associated with this demographic shift. Previous research has primarily focused on Nordic countries (Berninger, 2013; Chudnovskaya, 2019; Jalovaara & Fasang, 2017) and has highlighted the role of never partnering and partnership instability in childlessness. Additionally, research in Southern European countries like Italy (Mynarska et al., 2015) has emphasized the role of strong family ties and later transitions to adulthood in contributing to childlessness rates. However, there is a lack of systematic cross-national comparisons. This study addresses this gap by examining partnership trajectories associated with childlessness for the same birth cohort in Belgium and Finland, offering a comparative perspective on two countries with contrasting welfare regimes and childlessness trends.

Using rich and similar administrative data from Belgium and Finland, we focused on individuals born in 1975, tracking their partnership histories from age 18 to 45 while measuring childlessness at age 45. This approach allowed us to capture detailed information on the timing, duration, and sequencing of coresidential partnerships. Employing sequence and cluster analysis techniques, we identified distinct partnership trajectory patterns among childless individuals.

Our findings reveal both similarities and differences with existing literature. Consistent with studies from Finland (Jalovaara & Fasang, 2017; Rahnü & Jalovaara, 2023), we find that being never partnered and experiencing partnership instability are significant factors associated with childlessness in both countries. However, our analysis reveals nuanced variations in the timing and duration of partnership states within clusters of childless individuals, suggesting that partnership trajectories associated with childlessness are not homogeneous.

Furthermore, our comparative approach highlights the potential influence of contextual factors on these trajectories. Belgium, with its moderate childlessness levels, exhibits a more diverse range of partnership trajectories compared to Finland, where never partnering is more prevalent. This difference could be linked to distinct cultural norms surrounding family formation, as well as policy variations. The comprehensive family support system in Nordic countries like Finland might provide greater flexibility for individuals to choose non-traditional family structures or delay parenthood, potentially contributing to higher childlessness rates. Additionally, we found that Finnish childless men and women experience higher levels of partnership turbulence compared to their Belgian counterparts. This difference could be attributed to several factors, such as a greater societal acceptance of cohabitation outside marriage in Finland, leading to a wider range of partnership transitions.

This study underscores the importance of examining childlessness not as a static endpoint but as an outcome interwoven with dynamic partnership experiences. While never partnering and partnership instability are influential factors, the specific timing and sequencing of these experiences within individual life courses contribute to the heterogeneity observed among childless men and women. Moreover, our findings

highlight how societal contexts can influence the prevalence of certain partnership trajectories and their association with childlessness.

Future studies should address the limitations of this study by incorporating Living Apart Together partnerships and expanding the analysis to a wider range of countries, encompassing diverse welfare regimes and cultural contexts. This broader perspective will provide a more comprehensive understanding of the multifaceted factors driving partnership trajectories and their impact on childlessness across Europe.

Funding and acknowledgments

The authors wish to thank Statistics Finland (permission TK52-493-19) and Statistics Belgium for granting permission to use the data. We acknowledge support from the Research Council of Finland under Grand 320162 for the INVEST research flagship, and FLUX project founded by the Strategic Research Council (decision number 345130). We thank Statbel (Directorate-General Statistics – Statistics Belgium) for access to the Demobel (adaptation of the National Register). Computational resources were provided by the supercomputing facilities of the Université Catholique de Louvain (CISM/UCL) and the Consortium des Équipements de Calcul Intensif en Fédération Wallonie Bruxelles (CÉCI), funded by the Fond de la Recherche Scientifique de Belgique (F.R.S.-FNRS) under convention 2.5020.11 and by the Walloon Region.

References

- Aassve, A., Billari, F. C., & Piccarreta, R. (2007). Strings of adulthood: A sequence analysis of young British women's work-family trajectories: *Parcours de la vie adulte : Une analyse par séquence des trajectoires travail-famille des jeunes femmes britanniques. European Journal of Population/Revue Européenne de Démographie*, 23(3–4), 369–388. <https://doi.org/10.1007/s10680-007-9134-6>
- Abbott, A. (1995). Sequence analysis: New methods for old ideas. *Annual Review of Sociology*, 21, 93–113. <https://doi.org/10.1146/annurev.so.21.080195.000521>
- Aisenbrey, S., & Fasang, A. E. (2010). New life for old ideas: The "second wave" of sequence analysis bringing the "course" back into the life course. *Sociological Methods & Research*, 38(3), 420–462. <http://dx.doi.org/10.1177/0049124109357532>
- Beck, U., & Beck-Gernsheim, E. (2002). Losing the traditional: individualization and 'precarious freedoms'. In *Losing the traditional: Individualization and 'precarious freedoms'* (pp. 1–21). SAGE Publications Ltd, <https://doi.org/10.4135/9781446218693>
- Berninger, I. (2013). Women's income and childbearing in context: First births in Denmark and Finland. *Acta Sociologica*, 56(2), 97–115. <https://doi.org/10.1177/0001699312444933>
- Chudnovskaya, M. (2019). Trends in childlessness among highly educated men in Sweden. *European Journal of Population*, 35(5), 939–958. <https://doi.org/10.1007/s10680-018-9511-3>
- Currie, J., & Schwandt, H. (2014). Short- and long-term effects of unemployment on fertility. *Proceedings of the National Academy of Sciences*, 111(41), 14734–14739. <https://doi.org/10.1073/pnas.1408975111>
- Damiens, J., Fadel, L., Marteau, B., Rees, A., Schnor, C., Van Cleemput, O., & Zilincikova, Z. (2023). Identifying partnership biographies from residential information in Belgian administrative data. *Quetelet Journal*, 11(1), 41–67. <https://doi.org/10.14428/rqj2023.11.01.02>
- DeOllos, I. Y., & Kapinus, C. A. (2002). Aging childless individuals and couples: Suggestions for new directions in research. *Sociological Inquiry*, 72(1). <https://doi.org/10.1111/1475-682X.00006>
- Elder, G. H. (1994). Time, human agency, and social change: Perspectives on the life course. *Social Psychology Quarterly*, 57(1), 4–15. <https://doi.org/10.2307/2786971>

- Elzinga, C. H. (2010). Complexity of categorical time series. *Sociological Methods and Research*, 38(3), 463–481. <https://doi.org/10.1177/0049124109357535>
- Elzinga, C. H., & Liefbroer, A. C. (2007). De-standardization of family-life trajectories of young adults: A cross-national comparison using sequence analysis. *European Journal of Population*, 23, 225–250. <https://doi.org/10.1007/s10680-007-9133-7>
- Eurostat. (2023). Archive: age of young people leaving their parental household. [Online]. Available at <https://ec.europa.eu/eurostat/statisticsexplained>
- Fieder, M., & Huber, S. (2020). Effects of wife's and husband's income on wife's reproduction: An evolutionary perspective on human mating. *Biodemography and Social Biology*, 65(1), 31–40. <https://doi.org/10.1080/19485565.2019.1689351>
- Fieder, M., Huber, S., & Bookstein, F. L. (2011). Socioeconomic status, marital status and childlessness in men and women: An analysis of census data from six countries. *Journal of Biosocial Science*, 43(5), 619–635. <https://doi.org/10.1017/S002193201100023X>
- Giddens, A. (1992). *Modernity and Self-Identity: Self and Society in the Late Modern Age*. Stanford University Press.
- Hagestad, G. O., & Call, V. R. A. (2007). Pathways to childlessness: A life course perspective. *Journal of Family Issues*, 28(10), 1338–1361. <https://doi.org/10.1177/0192513X07303836>
- Hart, R. K. (2019). Union histories of dissolution: What can they say about childlessness? *European Journal of Population = Revue Européenne de Démographie*, 35(1), 101.
- Hoem, J. M., Jalovaara, M., & Muresan, C. (2013). Recent fertility patterns of Finnish women by union status: A descriptive account. *Demographic Research*, 28(14), 409–420. <https://doi.org/10.4054/DemRes.2013.28.14>
- Jalovaara, M., & Fasang, A. E. (2015). Are there gender differences in family trajectories by education in Finland? *Demographic Research*, 33(44), 1241–1256. <https://doi.org/10.4054/DemRes.2015.33.44>
- Jalovaara, M., & Fasang, A. E. (2017). From never partnered to serial cohabitators: Union trajectories to childlessness. *Demographic Research*, 36, 1703–1720. <https://doi.org/10.4054/DemRes.2017.36.55>
- Jongbloet, P. H., Groenewoud, H. M. M., Huber, S., Fieder, M., & Roeleveld, N. (2007). Month of birth related to fecundity and childlessness among contemporary women. *Human Biology*, 79(5), 479–490. <https://doi.org/10.1353/hub.2008.0006>
- Koropecjy-Cox, T., & Call, V. R. (2007). Characteristics of older childless persons and parents: Cross-national comparisons. *Journal of Family Issues*, 28(10), 1362–1414.
- Kreyenfeld, M., & Konietzka, D. (Eds.). (2017). *Childlessness in Europe: Contexts, causes, and consequences*. Springer International Publishing. <https://doi.org/10.1007/978-3-319-44667-7>
- Lesnard, L. (2014). Using optimal matching analysis in sociology: Cost setting and sociology of time. In P. Blanchard, F. Bühlmann, & J.-A. Gauthier (Eds.), *Advances in sequence analysis: Theory, method, applications* (pp. 39–50). Springer International Publishing. https://doi.org/10.1007/978-3-319-04969-4_3
- Lodewijckx, E., & Deboosere, P. (2011). *Ménages et familles: Evolutions rapides et grande stabilité à la fois*. GGP Belgium Paper Series, 6.
- Miettinen, A., Rotkirch, A., Szalma, I., Donno, A., & Tanturri, M.-L. (2015). *Increasing childlessness in Europe: Time trends and country differences*. Working paper 5. The Population Research Institute.
- Mynarska, M., Matysiak, A., Rybińska, A., Tocchioni, V., & Vignoli, D. (2015). Diverse paths into childlessness over the life course. *Advances in Life Course Research*, 25, 35–48. <https://doi.org/10.1016/j.alcr.2015.05.003>
- OECD. (2024). PF2.1: Parental leave systems. OECD Family Database. Retrieved February 26, 2025, from https://www.oecd.org/content/dam/oecd/en/data/datasets/family-database/pf2_1_parental_leave_systems.pdf
- Official Statistics of Finland (OSF): Births [e-publication]. ISSN=1798-2413. Statistics Finland [referred: 26.2.2025]. Access method: http://stat.fi/til/synt/index_en.html

- Prioux, F. (1993). L'infécondité en Europe. *European Population*, 2, 231–251.
- Quashie, N. T., Arpino, B., Antczak, R., & Mair, C. A. (2021). Childlessness and health among older adults: Variation across five outcomes and 20 countries. *The Journals of Gerontology: Series B*, 76(2), 348–359. <https://doi.org/10.1093/geronb/gbz153>
- Raab, M., & Struffolino, E. (2020). The heterogeneity of partnership trajectories to childlessness in Germany. *European Journal of Population*, 36(1), 53–70. <https://doi.org/10.1007/s10680-019-09519-y>
- Raab, M., & Struffolino, E. (2022). *Sequence analysis*. SAGE.
- Rahnu, L., & Jalovaara, M. (2023). Partnership dynamics and entry into parenthood: Comparison of Finnish birth cohorts 1969–2000. *Advances in Life Course Research*, 56, 100548. <https://doi.org/10.1016/j.alcr.2023.100548>
- Rizzi, E., & Rees, A. (2021). Belgian family policy from a comparative perspective: Does it support fertility and gender equity? *Quetelet Journal*, 9(1), 1. <https://doi.org/10.14428/rqj2021.09.01.04>
- Rowland, D. T. (2007). Historical trends in childlessness. *Journal of Family Issues*, 28(10), 1311–1337. <https://doi.org/10.1177/0192513X07303823>
- Rybińska, A., & Morgan, S. P. (2019). Childless expectations and childlessness over the life course. *Social Forces*, 97(4), 1571–1602. <https://doi.org/10.1093/sf/soy098>
- Schoon, I. (2015). Diverse pathways: Rethinking the transition to adulthood. Families in an era of increasing inequality: Diverging destinies, 115–136. https://doi.org/10.1007/978-3-319-08308-7_9
- Shapiro, G. (2014). Voluntary childlessness: A critical review of the literature. *Studies in the Maternal*, 6(1). <https://doi.org/10.16995/sim.9>
- Sobotka, T. (2017). Childlessness in Europe: Reconstructing long-term trends among women born in 1900–1972. In *Childlessness in Europe: Contexts, causes, and consequences* (pp. 17–53). Springer, Cham.
- Statbel. (2024). Natalité et fécondité. Retrieved February 26, 2025, from <https://statbel.fgov.be/fr/themes/population/natalite-et-fecondite>
- Studer, M. (2013). *WeightedCluster library manual: A practical guide to creating typologies of trajectories in the social sciences with R*. <https://doi.org/10.12682/lives.2296-1658.2013.24>
- Studer, M., & Ritschard, G. (2016). What matters in differences between life trajectories: A comparative review of sequence dissimilarity measures. *Journal of the Royal Statistical Society: Series A (Statistics in Society)*, 79(2), 481–511. <https://doi.org/10.1111/rssa.12125>
- Tocchioni, V., Berrington, A., Vignoli, D., & Vitali, A. (2021). The changing association between homeownership and the transition to parenthood. *Demography*, 58(5), 1843–1865. <https://doi.org/10.1215/00703370-9420322>

Author biographies

Alice Yolann Rees is a PhD student and teaching assistant in demography in UCLouvain. Her thesis explores life pathways associated with childlessness in Finland and in Belgium, using register data.

Christine Schnor is a Professor at the Centre for Demographic Research DEMO in UCLouvain. Her main research interest are social inequalities and family dynamics in Europe.

Marika Jalovaara is a Professor of Sociology, specialized in Demography at the University of Turku. Her main research interests include links among family dynamics (cohabitation, marriage, childbearing), social inequalities, and the welfare state.