Generational Placement Trajectories and Their Associations With Later-Life Well-Being and Wealth Accumulation

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Bettina Maria Hünteler, M.Sc.

aus

Ahaus

Referent: Prof. Dr. Karsten Hank, Universität zu Köln
Korreferent: Prof. Dr. Thomas Leopold, Universität zu Köln
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Contents

Chapter 1 Introduction

“Aunty,” Jem spoke up, “Atticus says you can choose your friends but you sho’ can’t choose your family, an’ they’re still kin to you no matter whether you acknowledge ’em or not, and it makes you look right silly when you don’t.”

—

(H. Lee, 1982, Chapter 23)

1.1 Background and Aim of the Dissertation

Universally decreasing fertility rates combined with increasing partnership instability have been observed in most ‘Western’ contexts since the 1960s. This trend is best-known under the term Second Demographic Transition (SDT) (Lesthaeghe, 2010; Van De Kaa, 1987; Zaidi & Morgan, 2017). It has induced discussions about a potential decline in the importance of the nuclear family. In contrast, these changes might have also resulted in a strengthening of family relations in two ways: first, because divorce and remarriage increase family complexity, *non-biological kin*, such as partners, step-parents, or step-siblings, might have become structurally more available for many individuals, so that ‘the family’ might have actually become more relevant (Kalmijn, 2013; Thomson, 2014). Second, because trends described by the SDT have additionally been accompanied with decreasing mortality rates, *biological family* structures changed in their compositional form ‘from pyramids to beanpoles’ (Bengtson, 2001). This means that, in more recent years, family systems increasingly consist of mostly vertical family members, that is, individuals of different generations, such as parents, children, and grandchildren, rather than horizontal family ties. Therefore, it has also been argued that over historical time, *intergenerational family* might have become—and might be continue to be—the most important and stable family network for individuals (Bengtson, 2001; Hagestad, 1988). Nowadays, family members of different generations seem to share more living time together than ever before (Kalmijn, 2014; Lauterbach & Klein, 2004; Leopold & Skopek, 2015a).

While acknowledging the importance of non-biological kin relations for individual lives, this dissertation focusses on biological intergenerational family relations. This is because, on the macro level, the described demographic family processes determine the age structure of a society; on the micro level, the biological family structure might be one of the most important principles to structure individual life (Alburez-Gutierrez et al., 2022). In contrast to other social relationships, intergenerational biological ties are unique because they are subject to the "universals of demography" (Caswell, 2019, p. 680) in that—without exceptions—"all humans are embedded in kinship structures in the same way that all humans are born and die" (Alburez-Gutierrez et al., 2022, p. 2). In other words, all individuals have parents and the only possible way to *get a new* intergenerational biological family member is through their *birth* which is dependent on one own's fertility behavior as well as that of the following generations. Analogously, the only possible way to *no longer have* an intergenerational biological family member is through their *death*. This is not the case for any other kind of social relationship.

Therefore, it is not surprising that the intergenerational family structure is considered the primary support network of an individual (Bengtson & Roberts, 1991) and that it determines one of the individual's key social roles, namely if one is a child, parent, or grandparent, for instance (Bengtson & Allen, 1993). This vertical position, the *generational placement*, is defined through the absence or presence of members of the preceding and following generations (Bengtson & Allen, 1993). Through birth and deaths of these generations, individuals can transition through different generational placements as they age. Following the principles of the life course theory (Elder, 1994), these transitions can occur at various ages (*timing*) and thus in distinct *orderings*, so a variety of different *generational placement trajectories* might occur (Figure 1-1).

The first goal of the current dissertation is to identify *typical patterns of generational placement trajectories* and investigate *changes in the prevalence* of these patterns across cohorts, that is over historical time (Study 1). It is assumed that some generational placement trajectories occur more frequently than others because the socio-historical context—characterized through its specific institutions and societal norms—favors specific life courses (Elder, 1994; Mayer, 2005). Through changing policies and norms, previously dominant patterns might become less prevalent and vice versa. So far, previous research has only investigated specific family transitions separately or accounted for only two generations at the same time. It has not been addressed how the structure of the intergenerational family system or the individual's position within it varies across and between individual life courses. Applying methods of sequence and cluster analysis to this topic, this dissertation presents a novel analytical approach towards investigating intergenerational family systems. It provides a more encompassing *description* of the family structure or the generational placement as a *process*, that is, a sequence of multiple events. Thereby, it examines the variation in family trajectories over age

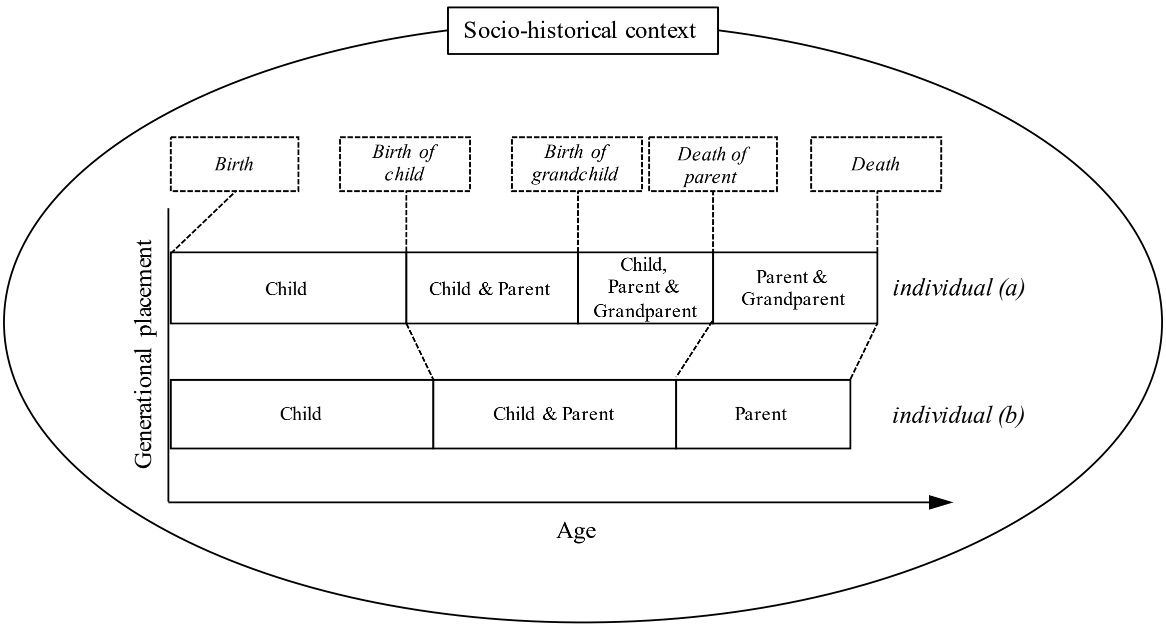

Figure 1-1 *Example Generational Placement Trajectories and Their Embeddedness in the Socio-Historical Context*

Note. Adapted from Chapter 2

and between individuals while displaying the consequences of the macro fertility and mortality trends for individual generational placements across the life course.

The second aim of the dissertation is to investigate potential outcomes of the typical generational placement patterns for individuals. More specifically, I investigate how typical family life courses are associated with *later-life well-being and health* (Study 2) as well as *life-course wealth accumulation* (Study 3). It is assumed that the mere structure of an intergenerational kin system might matter for individual lives (Albertini & Kohli, 2009; Alburez-Gutierrez et al., 2022; Ellwardt et al., 2021; Giesselmann et al., 2018; Lersch et al., 2017). This is because the generational placements do not only describe the biogenetic status (being a child, parent, or grandparent) but, through the associated social role, also define the normative expectations regarding how this individual should or should not behave, who this individual is responsible for by definition and from whom this individual can expect support by definition. Thus, individual lives are strongly shaped by their generational placements. Previous research has demonstrated that single family transitions (*becoming* a grandparent) and positions (*being* a grandparent) seem to be associated with various life course outcomes, such as well-being and wealth. Thus, Study 2 and 3 extend previous literature by examining how *multiple* family transitions and positions, as well as their *timing* and *ordering*, are *mutually* associated with individual outcomes. Through that, they offer a broader background to this existing research and place the separate associations in larger trajectories. The aim is to provide a "thick description" of the family system and its associations with individual life as a process (Abbott, 2005; Aisenbrey & Fasang, 2017).

This dissertation is placed right at the intersection of family sociology and family demography and, more broadly, research on social inequality. In particular when addressing the question of potential outcomes of the typical family trajectories, it speaks to four main approaches, namely the principles of the life course theory, role theory, as well as the concepts of relational reserves and cumulative inequality. These approaches are presented in the following paragraphs. Subsequently, I briefly summarize the studies that have been conducted. Finally, I discuss the main conclusions of these studies.

1.2 Theoretical Background

1.2.1 Life Course Framework

The life course framework is a potpourri of different approaches that are the basis for a variety of current sociological work. Its fundamental idea is that life events, here births and deaths of following and preceding generations, are embedded in a larger trajectory that is, in turn, embedded in a larger social and societal context (Bernardi et al., 2019; Elder, 1994; Mayer, 2005). Generational placement trajectories are the main concept of the current dissertation, and the investigation of their prevalence as well as potential associations with different outcomes are closely intertwined with the main principles of life course theory.

Following Glen H. Elder Jr. (1994), the life course framework is based on four principles: first, the *historical times*, or the socio-temporal context, may shape the life courses of the individuals. Depending on when individuals are born, they have to cope with specific constraints and opportunities at specific life stages, such as large recessions, globalization, or digitalization, that may create certain distinct life courses (see also Mayer, 2005). Bengtson and Allen (1993) extended this general idea of two time-clocks, the individual development (ontogenetic time or individual life course) and its embeddedness in historical time (and place), with a third time clock: generational time. Generational time refers to the vertical position of an individual within their family, the generational placement. Deriving the guiding idea from this essay, this dissertation, conceptually and empirically, combines these three clocks of family development and provides a measure that can assess the structure of the intergenerational family dynamically across individual life courses (Study 1). Thereby, it displays the intergenerational family as a function of ageing and historical time (Bengtson & Allen, 1993; Uhlenberg, 1996). By accounting for potential cohort differences in typical patterns of generational placement trajectories, I additionally aim to shed light on how the macro trends described by the SDT—which have been argued to be the product of increasing female labor force participation (increased options) and a larger normative shift (Goldscheider et al., 2015; Zaidi & Morgan, 2017)—have left their mark in the variations of individual life courses within and between individuals (Study 1).

The second principle of the life course approach concerns age related norms or "social *timing*" (Elder, 1994). They refer to the age at which certain events, such as marriage or first childbirth, are normatively expected to happen. Thus, within a given society at a given historical time, many individuals experience a specific life event around a similar age. The life course perspective highlights that the timing can be an important factor, or moderator, for the consequences such life events may have. For instance, an unexpectedly early loss of the parents has been shown to be associated with worse mental health outcomes compared to when it was experienced on-time, meaning in line with the age at which it would be expected (Leopold & Lechner, 2015). Because the generational placement trajectories are sensitive to differences in timing, the studies in this dissertation can provide insights into which combinations of timings of several family events are most typical for which cohorts (Study 1) and how specific timings might matter for specific outcomes (Study 2 and 3).

Third, the life course approach acknowledges that the lives of different individuals are interconnected (Elder, 1994). The principal of *linked lives* refers to the idea that through socialization or social exchange, the life of every individual is embedded in a larger social network, such as the family. This principal is closely connected to the idea that families represent a system in which individual lives are embedded (Fingerman & Bermann, 2000; see also concept of "family embeddedness" in Patterson, Margolis, et al., 2020). This dissertation inherently builds on this principle because generational placements directly reflect this system as they are the product of not only one own's fertility, but that of members of previous and following generations, as well as the mortality of these family members (Study 1). Moreover, linked lives can also be interpreted as the interconnectedness of one life domain, such as the family, with another life domain, such as well-being or wealth (Bernardi et al., 2019). Thus, the investigation of the family-health- and family-wealth-associations also relates to this component of the life course framework (Study 2 and 3).

Fourth, life course analysis assumes *human agency* (Elder, 1994). This means that humans are considered to be actors who can plan and choose their behavior given the constraints and options the environment provides them with. This principle was also described as the interaction between the "shadows of the future"—meaning that individuals plan their behavior knowing that this behavior will have certain consequences in the future—with the "shadows of the past"—signifying that the options individuals can choose from are the result of their prior decisions and behavior (Bernardi et al., 2019). Relating this component back to the idea of linked life domains, this dissertation addresses human agency indirectly through the assumption that certain family trajectories determine the constraints and options an individual has to consider when making choices for other life domains, such as wealth investments (Study 3).

The life course framework is the main approach for this dissertation. I additionally rely on the following, in parts closely interconnected, three approaches which further theoretically clarify how the life-course structure of intergenerational family might influence outcomes in other life domains.

1.2.2 Role Theory

As discussed above, the generational placements not only describe the biosocial position of an individual within their family system. They also refer to the *social role* this individual holds (Bengtson & Allen, 1993). This social role is assumed to be associated with certain *demands* (or normative expectations) and *rewards* (Nomaguchi & Milkie, 2020). The demands associated with a specific role, such as caring duties of children for aging parents (Silverstein, Gans, et al., 2006) or grandparents for grandchildren (Hank & Buber, 2009), might cause role strain, meaning that individuals might find it difficult to meet the expectations within this role, which can cause chronic stress and decrease individual well-being (Nomaguchi & Milkie, 2020). At the same time, the rewards associated with this role, such as joy, might counterbalance the potentially experienced strain and improve individual outcomes. It has also been argued that knowing one's own social role can provide identity, behavioral guidance (normative behavior), and meaning, which may also directly enhance well-being and health (Thoits, 2011).

Within the intergenerational family system, it is far from uncommon that individuals hold multiple roles simultaneously (Margolis & Wright, 2017). These multiple roles might either compete in their demands for individual resources, such as time, or enhance their potential positive benefits (role enhancement) (Reid & Hardy, 1999). In addition, other out-of-family roles, such as work-related ones, might simultaneously occur. Supporting the notion that the consequences of multiple roles might interact, previous research investigating the association of holding a "sandwich position" between higher and lower generations with individual well-being, for instance, was mixed, and the relationship might depend on individual resources, such as the socio-economic status (Brenna, 2021; Do et al., 2014; Hodgdon & Wong, 2019; Manor, 2020; Riley & Bowen, 2005).

Integrating these considerations with the principles of the life course theory, I assume that the *duration* that individuals spend in different family roles as well as the *timing* or age at which individuals transition into these roles might matter. Moreover, role strain and role enhancement might have *long-lasting consequences* for individual well-being and health (Chen et al., 2017, for instance). Therefore, the "net" association—meaning the joint outcome of potential demands and rewards as well as opportunities and constraints taken together—of experiencing single or multiple social roles with later-life well-being, health, and wealth is examined (Study 2 and 3). Rather than investigating a point-in-time social role and its (immediate) association with individual outcomes, these relationships are examined acknowledging that social roles are dynamic and embedded in the individual life course.

1.2.3 Relational Reserves

Another concept this dissertation builds upon are social or *relational reserves* (Cullati et al., 2018). Reserves generally are understood as a sub-form of resources that differ from them in three main aspects (Cullati et al., 2018): first, while resources might be used immediately (think of income), reserves can be a benefit in the future, over a longer period, or more indirectly (think of wealth). Second, reserves are built up through excess resources, whether it be wealth through disposable income or a stable social network through many years of investments and care work. Third, reserves are considered to protect against adverse, that is unexpected or exceptional, life events, like crises, health shocks, or marital disruptions, while resources are mainly used to ensure the functioning of daily living. Thus, the lack of sufficient reserves makes individuals vulnerable to suffering from such disruptions more strongly, and they might recover not at all or recover more slowly compared to individuals who do have access to (larger) reserves (Cullati et al., 2018).

While reserves can pertain to different domains of human life, such as cognitive functioning, relational reserves are of special interest for this dissertation. Relational reserves refer to a network of family, kin, or friends that is structurally available to an individual. A special case of the relational reserve is the so-called *kinship reservoir* that refers to a so-called demographic reserve consisting of family members of different generations (Cullati et al., 2018; Sauter et al., 2021). This reservoir can be turned into resources in times of need, for example, in the form of emotional or financial support. Speaking to the linked lives concept of the life course paradigm, the concept of relational reserves emphasizes that connections to family members might have a long-lasting and cumulative influence on individual outcomes (Cullati et al., 2018).

Another important feature of intergenerational kin understood as a kinship reservoir is that they might be “activated, *re*activated, or *de*activated [emphasis added]” (Sauter et al., 2021, p. 3) if need (or wish) be. This stresses the notion that the mere structure of kinship networks might matter for individual well-being or wealth in and of itself and independent of the function of these relationships (Alburez-Gutierrez et al., 2022). Additionally, deviations from the normative relational reserves, here generational placement patterns, might also be directly associated with worse outcomes for well-being or health, because these deviations might reflect a potential adverse life event, such an early death of the parents, that reserves are considered to protect against (Cullati et al., 2018).

Previous research has demonstrated that having access to a specific kinship reservoir can have more or less advantageous outcomes (Cullati et al., 2018; McIlvane et al., 2007; Sauter et al., 2021). This dissertation expands previous findings by accounting for the *life-course* kinship reservoir. Generally, I assume that a larger kinship reservoir should protect individuals against adverse life events and result in higher levels of well-being and health. Relating this back to the principle of timing, I, more specifically, assume that dependent on the life stages at which a specific kinship reservoir is available, the respective outcome might differ (Study 2).

1.2.4 Cumulative Inequality

Another relevant theoretical approach for this dissertation is that of cumulative inequality (or cumulative advantage/disadvantage). Among others, Gilligan and colleagues (2018) have integrated it with the principal of linked lives. Cumulative inequality refers to what is commonly known as the “Matthew effect” (Merton, 1968): small initial differences between individuals increase across time resulting in large intra-individual inequality later on. This is because life courses are subject to *path dependency*, meaning that once individuals set off on a more or less advantageous path, these individuals face distinct options to obtain positive life outcomes (Bernardi et al., 2019; Gilligan et al., 2018). Previous research has demonstrated that the family of origin, such as the parents' or grandparents' socio-economic status, plays a crucial role in the initial advantages of individuals and that not only parents' but also grandparents' resources can enhance or reduce an individual's opportunities for a more or less advantageous trajectory (Gilligan et al., 2018; Song & Mare, 2019). Similarly, adverse life events experienced in childhood, like family death, might have a long and potentially cumulative influence on later-life outcomes (Patterson, Verdery, et al., 2020). Thus, the intergenerational transmission of advantage/disadvantage coupled with the process of increasing inequality across the life course has been discussed as a mechanism to explain the increase in social inequality over historical time (Gilligan et al., 2018; Song, 2016).

Speaking to the second aim of this dissertation, namely to investigate the association of typical generational placement trajectories with individual well-being and wealth (Study 2 and 3), potential inequalities in the outcomes based on the dynamic intergenerational family structure might increase over time (Killewald et al., 2017; Willson et al., 2007). Health and wealth are cumulative (or stock) measures in and of themselves, meaning that they are dependent on their prior levels and can be amplified or diminished over time (Killewald et al., 2017). Wealth, specifically, is subject to the compound interest which results in exponential returns to existing capital, so it can accelerate the wealth accumulation process of those who already own more wealth (Gilligan et al., 2018). Therefore, it is expected that the differences in the outcomes under study may be increasing across the individual life courses.

1.3 Summary of the Three Studies

In the following sub-sections, I present each of the single studies that have been conducted as parts of this cumulative dissertation project. An overview can be found in Table 1-1. After that, I conclude with jointly discussing the results of all studies and laying out a potential agenda for future research.

Table 1-1 *Overview of Dissertation Papers*

	Study 1	**Study 2**	**Study 3**
Title	A New Perspective on the Generational Structures of Families: Generational Placements over the Life Course	Life-course Generational Placements and Well-Being in Later Life	It all Runs in the Family? A Life Course Perspective on Intergenerational Family Positions and Wealth Accumulation
Research question / Study design	(1) What kinds of patterns of generational placement trajectories exist across individual life courses? (2) Does their prevalence differ over time, that is between cohorts?	How do the occurrence, timing, and ordering of transitions into and out of multiple kin relations and family roles across the life course relate to individuals' later-life well-being and health?	Which long-term wealth trajectories are associated with typical intergenerational family life courses?
Analytical approach	(1) Sequence and cluster analysis; (2) Multinomial logistic regressions	(1) Sequence and cluster analysis; (2) Linear regressions	(1) Sequence and cluster analysis; (2) Linear regressions
Dependent variable(s)	Generational placement patterns	Life satisfaction; Depressiveness; Functional limitations; Physical health problems	Gross and net wealth ranks interacted with age
Independent variable	Cohort (gender, region)	Generational placement patterns	Generational placement patterns
Data & sample	German Ageing Survey DEAS (Waves 2008 and 2014)	German Ageing Survey DEAS (Waves 2008 and 2014)	Norwegian administrative register data (1993–2017)
Authorship	Single authorship	With Karsten Hank	With Theresa Nutz and Jonathan Wörn
Publication status	Published in *Advances in Life Course Research* (2022, 10.1016/j.alcr.2021.100450)	Revised and resubmitted in *Ageing & Society*	In preparation for journal submission

1.3.1 Study 1: A new Perspective on the Generational Structures of Families: Generational Placements Over the Life Course

The goal of this study is to introduce the concept of generational placement trajectories theoretically and empirically (Chapter 2). Building on the family life course (Bengtson & Allen, 1993), the aims are to depict the structure of intergenerational families across individual life courses, identify their typical patterns, and investigate their prevalence across cohorts. I use first-time respondents of the waves 2008 and 2014 of the German Ageing Survey DEAS (Klaus et al., 2017). The sample is restricted to individuals from three birth cohorts, 1939–43 (early war cohort), 1944–48 (war cohort), and 1949–53 (post-war cohort), and to individuals who grew up with both of their biological parents, who were born in Germany, and had survived until age 60 ($N = 2{,}607$). The generational placement trajectories ranging from birth to age 60 were constructed using the birth dates of the oldest biological children and grandchildren as well as the death date of the second parent that passed away.

Using sequence and cluster analysis, I identify six different typical generational placement patterns which are similar within but different between the groups. They differ with regard to the occurrence of an event (two childless clusters vs four clusters with children, for instance) and the timing the events were experienced (late vs early transitions). The most dominant pattern is the later three-generation family (34%), in which individuals became parents and grandparents relatively late (ages 28 and 58) and lost the second parent (age 56) around the time they transitioned into grandparenthood, meaning they lived in a three-generation family for virtually the whole time. Least prevalent is the childless cluster in which individuals experienced the death of the second parent relatively early at age 45, on average (6%).

Multinomial logistic regressions reveal that, across historical time, it has become more likely to experience "more stable" clusters, that is, clusters in which transitions occur relatively later, meaning that the family structure remains the same for a relatively long time. This is in alignment with the postponement of fertility and mortality described by the SDT. More specifically, the likelihood of experiencing the later three-generation family increased by 36% and the chances to be part of trajectories characterized by early fertility and/or early mortality (the two- and earlier three- generation family) decreased significantly by 25% and 50%, respectively. Most striking, the probability to remain childless (with a later death of the parents) increased by 75%, from 6% to 10%.

I conclude that, although the order of transitions remained largely stable (because the three-generation families remain the most dominant pattern), individuals were more likely to experience more stable family structures that resulted in an increase in shared living time with members of previous and following generations; in particular, the time shared between the respondents and their parents increased and fewer grandchildren were born when their grandparents were already dead (two-generation family). It seems as if the improvement in mortality has outrun the postponement of fertility. Generally, I demonstrate that the generational placement trajectories are an adequate tool to depict the variation in intergenerational family life courses and the changes described by the SDT for individual lives.

1.3.2 Study 2: Life-Course Generational Placements and Well-Being in Later Life

In the second study (Chapter 3), Karsten Hank and I investigate potential later-life inequalities in physical and mental health as well as individual well-being by typical patterns of generational placement trajectories. Integrating the life course paradigm, role theory, and the concept of kinship reservoirs, we expand existing research that focused on the more direct association between *single* intergenerational family transitions on well-being and health. Through applying generational placement trajectories that assess the occurrence, timing, and ordering of *multiple* family transitions, we aim to account for the embeddedness of the family-health-nexus in the broader family life course. We use the same dataset as in the first study, the German Ageing Survey DEAS, and a similar sample, namely individuals born between 1933 and 1954 who grew up with both of their biological parents (N = 3,617). We observe their intergenerational family trajectories between birth and age 60 and assess four different indicators of mental and physical health and well-being, namely life satisfaction, depressiveness, functional limitations, and physical health problems, at the time of the interview, that is when the individuals were between 60 and 74 years old. In a first step, we replicate the procedure of the first study through sequence and cluster analysis. We identify virtually the same six typical generational placement patterns. In a next step, we use four linear regression analyses with the typical family patterns as the main independent variable and the four health outcomes as the dependent variables to estimate their associations. Lastly, we include a set of socio-economic variables to control for potential selection processes into both the dependent as well as independent variables.

Most of the statistically significant associations in the bivariate models are not significant in the models controlling for socio-economic differences. Thus, we conclude that these associations are not independently driven by the life-course family transitions under study but that socio-economic characteristics are likely associated with the family transitions *and* the considered outcomes. Based on the remaining associations, we conclude that, first, a larger kinship reservoir seems to have a positive effect on individual well-being and health (see also role enhancement); clusters representing a *smaller* life-course kinship reservoir are associated with more functional limitations (childless with an early parental death) or more physical health problems (two-generation family), while clusters with *more* family relationships available exhibit lower levels of depressiveness (three-generations early) or functional limitations (three-generations late). Second, in line with the timing-principle of the life course framework, we conclude that *on-time* family transitions, meaning those that occur in alignment with the most prevalent patterns, here characterized by relatively later transitions, are associated with more advantageous health and well-being outcomes. Overall, although we do not identify a clear pattern, our study demonstrates that multiple family transitions, their timing as well as ordering, seem to jointly matter for individual health and well-being. This underlines the importance of investigating the family as a larger process.

1.3.3 Study 3: It all Runs in the Family? A Life Course Perspective on Intergenerational Family Positions and Wealth Accumulation

The third study examines the association between generational placement patterns and wealth accumulation over individual life courses (Chapter 4). We add to existing research addressing the intergenerational transmission of wealth as well as how opportunities and constraints defined by the life-course generational placement might affect the accumulation of self-generated wealth. Theoretically, this research integrates ideas from life course theory and cumulative advantage including the intergenerational transmission of inequality. Our analyses are based on Norwegian administrative register data, covering family and wealth information of virtually all Norwegian residents who were born in 1953 and who did not have a migration background (N = 47,945). We observe their partner-equivalized gross and net wealth ranks between 1993 and 2015. Using sequence and cluster analysis we identify five typical patterns of generational placement trajectories. These patterns are largely comparable to those found in Germany, except that only one childless cluster was identified instead of two. The clusters are subsequently used as the grouping variable of wealth over age in regression models, both with and without socio-demographic control variables.

We present two main findings: first, wealth accumulation was clearly stratified by the *occurrence* of (grand)parenthood; individuals in all the clusters with children exhibited very similar levels of wealth at age 40, while individuals in the childless cluster had the lowest relative wealth holdings, on average. However, while over time the wealth ranks of all clusters differentiated, childless individuals most strongly increased their wealth rank as they aged, reaching one of the highest relative levels at age 64. Second, the *timing* of transitions seems to matter as well; individuals in clusters with later transitions into (grand)parenthood increased their relative wealth holdings across the full observation period, while wealth ranks in the clusters with earlier transitions remained rather stable or slightly decreased. Additionally, clusters in which individuals experienced the death of the second parent relatively later showed increasing wealth ranks, while clusters characterized by an earlier death did not.

Taking the findings on the single family-events together, we conclude that, in contrast to what we find in the second study, a *larger family network* (or kinship reservoir) does not seem to be beneficial for individual wealth holdings because the patterns consisting of the fewest simultaneously living generations most strongly increased their or had a consistently high wealth position. Wealth appears to be bound to the family as a whole so that with more family generations alive at the same time, each individual holds less wealth individually. However, similar to the findings of the second study of this dissertation, the *most common* (maybe most normative) pattern, the later-three-generation family, held the highest, thus, the most advantageous wealth position over the full observation period, pointing to potential disadvantages associated with deviations from the normative life course.

1.4 Conclusion

1.4.1 Summary of the Findings and Contribution

This dissertation had two aims: first, to identify typical patterns of the life-course structure of intergenerational families—so-called generational placement trajectories—and investigate their changing prevalence across historical time. Second, to examine their association with later-life well-being and health as well as life-course wealth accumulation. Addressing these goals provides a more encompassing description of what previous research has, in parts, already undertaken from a more specific but somewhat isolated perspective. Rather than investigating population means of the occurrence and timing of the family events under study, I describe and examine the *variation* of these events across and between individual life courses;

rather than investigating the mechanisms that connect a specific family transition, such as childbirth, with a specific outcome, such as life satisfaction, the studies in this dissertation describe how *simultaneously* the occurrence, timing, and ordering of multiple intergenerational family transitions and positions are associated with different life-course outcomes. Thereby this dissertation recognizes the intergenerational family as one of the most important contexts in which individual lives are embedded and acknowledges the dynamic process of this structure as well as the interconnectedness of individuals with members of multiple generations within their family. The generational placements reflect both the *structure* of the intergenerational family as well as the vertical *position* of an individual within their family system across the individual life course.

Regarding the first aim of this dissertation, I show that the structure of the intergenerational family system, measured as generational placement trajectories, strongly varies within and between individual life courses. However, one pattern clearly stands out: the three-generation family, characterized by relatively later transitions of the birth of children and grandchildren and the death of the second parent, is most prevalent in Germany as well as Norway. Considering Germany, across time, the developments visible on the macro level described as the SDT, left their mark on the micro level: family transitions occurred increasingly late, so that clusters with a more stable vertical position within the family became more likely. Members of different generations had progressively more overlap in their living time, and the likelihood of having a small intergenerational family system became less likely.

Regarding the second aim, we demonstrate that the identified generational placement patterns are associated with different individual outcomes. Although a clear pattern is not identifiable for all outcomes under study, particularly health and well-being, we can derive three main conclusions: *first*, our studies lend evidence to the idea that the size of the intergenerational family network structurally available to an individual might matter for well-being-related outcomes: a larger *kinship reservoir* seems to have protective effects for well-being and health. In contrast, individual wealth holdings appear to be smaller in larger intergenerational families—potentially because, in contrast to well-being and health, wealth is finite and bound to the family as a whole and has to be split among the members simultaneously alive. *Second*, our results empirically underline the importance of *timing* of events within the life course; generational placement trajectories *deviating from the standard life course*, that is those being characterized by off-time transitions, show lower levels of individual well-being, health, and wealth (see also Kapelle & Vidal, 2022). *Third*, our research highlights that an investigation of the *interplay* between different family transitions and positions is relevant. While previous research provided, in parts, inconclusive evidence for the associations between the occurrence and timing of parenthood, grandparenthood, and the loss of parents for well-being, health, and wealth, our studies show that this could be because their influence on these outcomes might be interconnected. For instance, we find that patterns with a relatively early age at first childbirth had a significantly below-average level of depressiveness only when parental death also occurred earlier. Likewise for wealth, we show that the accumulation pattern differs by the combination of the timing of (grand)parenthood and parental death because with a similar age at (grand)parenthood, only the pattern with a later parental death was associated with an increasing average wealth accumulation.

Thus, this dissertation contributes to research on intergenerational relationships by, *firstly*, demonstrating that the intergenerational family *structure* might be relevant for individual life outcomes in and of themselves. We recognize the intergenerational family system as “one of the most fundamental principles of social structure” (Alburez-Gutierrez et al., 2022, p. 2) and use *role theory* as well as the concept of the *kinship reservoir* (Cullati et al., 2018; Sauter et al., 2021) to theoretically motivate our investigations. Previous research has mostly focused on the consequences of intergenerational solidarity and exchange, that is, the function of such relationships and how it might influence different individual outcomes (Damri & Litwin, 2019; H. J. Lee et al., 2014; Merz et al., 2009; Quirke et al., 2019; Silverstein, Cong, et al., 2006; Tsai et al., 2013). However, in line with previous research (Ellwardt et al., 2021; Leopold & Lechner, 2015; Lersch et al., 2017, for instance), we demonstrate that experiencing specific family transitions or positions might have relevant implications for individual well-being, health, and wealth.

Secondly, it considers the intergenerational family structure as a *process* that evolves over an individual's life course. Previous research on similar topics has already acknowledged the importance of family *trajectories* operationalized by marriage/partnership and number of children for various individual outcomes, for instance (Fasang & Aisenbrey, 2022; Jalovaara & Fasang, 2020; Jung, 2023). As of yet, intergenerational kinship has not been examined in that way. Accounting for a trajectory, rather than a point-in-time state or a single transition, implies that simultaneously the occurrence, timing, and ordering (or sequencing) of determining transitions into distinct states are accounted for (Brzinsky-Fay et al., 2006; Studer & Ritschard, 2016). Thus, the transitions are considered as embedded within a larger trajectory, and the analysis of the intergenerational family structure as a process directly addresses multiple principles of the *life course theory* empirically. More specifically, this dissertation introduces a concept that, firstly, empirically measures the timing of the events under consideration, secondly, allows for the investigation of their embeddedness in the socio-historical context, and thirdly, is explicitly built on the assumption of interconnectedness of different individuals across their life courses (linked lives).

1.4.2 Limitations

This dissertation is not free from limitations. First, although we assume that the generational placements influence health, well-being, and wealth, and we base our expectations on theories and previous results highlighting their causal connection, the identified associations cannot be interpreted as such. This is because we, among other things, do not account for the potential of *reversed causality*. For instance, individuals might postpone their transition into parenthood until they reach a sufficient level of wealth (Nau et al., 2015), so wealth might not be the result of prior family transitions and positions but vice versa. The same is likely to also apply to the included socio-economic control variables that might not be fully exogeneous to the processes under study (issue of *endogeneity*) (Aisenbrey & Fasang, 2017; Killewald et al., 2017; Niedzwiedz et al., 2012). Moreover, next to the differences we already control for, there might be other characteristics that influence both well-being and family or wealth and family (*omitted variable bias*). Thus, the identified associations might be, to some extent, subject to *selection* into both family and health or family and wealth groups rather than based on causalities.

Second, although the studies expand existing research by including multiple *family relationships* in their analysis, namely parents, children, and grandchildren, these are also just a few of many potentially important ties. Investing horizontal kinship, like siblings, might be one avenue for future research (Hank & Steinbach, 2018). Additionally, as described above, the SDT has also resulted in increased family complexity so that future research might want to expand the included relations to non-biological ties, including partners or step-family (Kalmijn, 2013). Existing research on these topics stressed that step-relations are increasingly relevant for individual well-being, importantly not only as a threat to it but rather an adequate replacement or supplement to the support received through biological ties (Kalmijn, 2013; Steinbach & Hank, 2018).

Third, because the generational placement trajectories are only observed until age 60 for Germany and 64 for Norway, *right censoring* is an issue. This means that the transitions into grandparenthood as well as the loss of the second parent might be underestimated in their occurrence and the timing they occur because many individuals might experience these events only after we observe them (see also Leopold & Skopek, 2015b, for a more detailed elaboration on this issue). Moreover, the samples only consisted of individuals that had survived until the end of the observation period. Therefore, the samples might suffer from *survivor bias*, meaning that individuals surviving until the end of the observation period might differ in their family, health, or wealth characteristics from those passing away earlier. This might be particularly problematic for the analyses conducted for Germany because they rely on survey data. Individuals from the earlier-born cohorts were interviewed at a higher age compared to those born later, so that these specific cohorts might be affected more strongly.

Fourth, considering the analyses conducted for Germany, because of restrictions in the questionnaire, the sample only included individuals *who grew up with both of their biological parents*. Therefore, generalizability for the analyses of Germany is limited to this specific sub-population.

Lastly, I want to highlight the interrelatedness of the family life courses and the considered outcomes with socio-economic characteristics of the individuals. As the concepts of cumulative inequality and linked lives (or the intergenerational transmission of inequality) stress, based on an individual's background, specifically their family of origin, individuals have distinct chances to access more or less advantageous family, well-being, health, and wealth trajectories. For instance, an individual from a wealthier background is likely to have access to higher education, therefore jobs with higher financial earnings, therefore greater opportunities to accumulate wealth; additionally, this individual is also likely to become a parent later because age at first childbirth is usually higher for higher educated individuals. The same appears likely for an individual growing up with highly educated parents that might place special emphasis on a healthy lifestyle. Thus, the identified associations have to be understood as embedded in yet a larger process of multigenerational transmission and increasing social inequalities. The presented studies describe one part of this larger process.

1.4.3 Implications and Future Research

The results and conclusions of the three studies have multiple implications for future examinations of related topics as well as policy and practice. First, this dissertation has identified groups that might be vulnerable to experiencing lower well-being and health as well as wealth. On the one hand, in accordance with what life course theory suggests through the principal of social timing (Elder, 1994; Mayer, 2005; Settersten, 2003), family patterns deviating from the normative pattern, here relatively late fertility and mortality of the parents, might have reduced chances to acquire positive outcomes. A once acquired disadvantage might even accumulate over time. On the other hand, typical family patterns can have positive outcomes in one life domain but a negative outcome in another; whereas for well-being and health, a larger kinship reservoir seemed to be associated with higher levels of well-being and health, this was not true for wealth outcomes. Because not only demographic behavior, that is fertility and mortality (Fasang & Raab, 2014; Kalmijn, 2022; Morosow & Trappe, 2018; Wickrama et al., 1999), but also well-being and health (Augustijn, 2021; Coneus & Spiess, 2012) as well as wealth (Hällsten & Thaning, 2022; Pfeffer & Killewald, 2018) are transmitted across generations, such social inequalities might also be increasing over generations (Mare, 2011). Therefore, policy makers may want to provide institutional conditions under which vulnerable groups find special support. This can increase their chances for keeping up with individuals following more standard life courses and reduce the intergenerational transmission of social inequality. This support needs to be tailored to different groups, depending on the outcome.

Second, future research might want to further investigate not only the underlying mechanisms of how single family-transitions and positions affect individual outcomes in the short and long term, but examine their interactions with one another. The current studies highlight that an isolated investigation of single events might only tell part of the overall story because these take place embedded in a larger life course trajectory. However, *how* these transitions and positions interact is not yet clear. Empirical investigations of specific interactions might further clarify the mechanisms underlying our results.

Concluding, the findings, in particular of the two studies investigating the association of the life-course structure of intergenerational family, highlight the necessity to account for the embeddedness of associations of single family-transitions with individual outcomes in the larger family life course. The effects of one family transition might interact with that of another, while the timing when these transitions occur appears to play an additional role. Investigating the outcomes of intergenerational family transitions separately from one another is important in order to better understand the causal mechanisms that underlie their association. Nonetheless, considering the principles of the life course framework, these associations are likely moderated by events happening prior or simultaneously to the event under study.

1.5 Status of the Studies and Contribution of Co-Authors

The first study, *A New Perspective on the Generational Structures of Families: Generational Placements over the Life Course*, is published in *Advances in Life Course Research* (doi: 10.1016/j.alcr.2021.100450). As the single author, I was responsible for all parts of this study in full, although I received kind support along the way from my supervisors and various colleagues.

The second study, *Life-Course Generational Placements and Well-Being in Later Life*, is currently being revised for resubmission at *Ageing & Society*. As the lead author, I developed the research question, prepared the data for the analyses, conducted the empirical analyses, and wrote the respective sections in the manuscript. Moreover, I edited the sections of the manuscript that I did not write myself. The co-author Karsten Hank, University of Cologne, wrote the introduction, background, and large parts of the conclusion sections and supported me in conceptualizing the study. Moreover, he edited the sections of the manuscript that he did not write himself.

The third study, *It all Runs in the Family? A Life Course Perspective on Intergenerational Family Positions and Wealth Accumulation*, is currently being prepared for journal submission. As the lead author, I co-developed the research question and concept, prepared the data for the analyses, conducted the empirical analyses, and wrote all parts of the manuscript except for the background sections on wealth and the Norwegian context. Moreover, I edited the sections of the manuscript that I did not write myself. The co-author Theresa Nutz, GESIS – Leibniz Institute for Social Sciences, co-developed the research question and concept and wrote the background sections on wealth and the Norwegian context. Moreover, she supported us in the data preparation of the wealth data and edited different versions of the manuscript. The co-author Jonathan Wörn, Norwegian Institute of Public Health, supported us in the conceptualization of the analyses, introduced us to and kept on supporting us with the Norwegian register data, and edited different versions of the manuscript.

Chapter 2 A New Perspective on the Generational Structures of Families: Generational Placements Over the Life Course

Abstract

This paper identifies typical generational structures of families over individual life courses (generational placement trajectories) and investigates changes in their prevalence across cohorts. The trajectories represent changing opportunity structures for intergenerational support and they are inherently dynamic. As of yet, they have not been analyzed holistically. With data from the German Ageing Survey (https://www.dza.de/en/research/deas), for men and women of the birth cohorts 1939–43, 1944–48, and 1949–53 (n=2,607), the occurrence, timing, and ordering of generational placements defined through the (simultaneous) presence of biological parents, children, and grandchildren up to the age of 60 is examined using sequence and cluster analyses. Cohort, gender, and regional differences are examined with multinomial logistic regressions. Six different typical patterns of individual trajectories were identified which ranged from clusters with multiple transitions early in life to more stable clusters with fewer transitions later. Most common were three-generation families, while patterns without children were most uncommon. Across cohorts, generational structures of families changed towards "more stable" trajectories. Clusters characterized by early (grand)parenthood were more likely experienced by women and individuals growing up in former East Germany. The presented patterns of individual trajectories reveal novel detailed insights into how the opportunity structures for intergenerational family support differ between individuals and develop across individual age and socio-historical context.

2.1 Introduction

The generational placement of an individual, that is, one's vertical position defined through the absence or presence of preceding and following generations within a family (Bengtson & Allen, 1993) is highly variable across the life course. Over time, family members of the older generation pass away, while younger generations can be born. While individuals can not only differ regarding the placements they ever experience, the age and order in which they enter a certain position might vary, too (Hagestad, 1988). Accordingly, a multitude of generational placement trajectories can emerge.

The generational placement reflects what kind of intergenerational family system is structurally available to an individual at a certain point in time and which social role an individual currently holds (Bengtson & Allen, 1993). For instance, this can range from being in a sandwich-position between grandparents and grandchildren, to individuals who do not have any living intergenerational kin. While it has been argued that the personal resources of an individual in terms of their support network can enhance or limit the chances for upward social mobility, intergenerational family relations are of special interest; they are considered a major source for support for individuals throughout their entire lives (Bengtson & Roberts, 1991; Hartnett et al., 2018; Manor, 2020; Szydlik, 2018). This not only entails the option to have access to support, but also the duty to be a support provider to others. The family support structure can, thus, either be a facilitator or deterrent to a positive outcome in various spheres of an individual's life (McIlvane et al., 2007, for instance).

It has been shown that all three dimensions, occurrence, timing, and ordering of certain generational placements are relevant to different personal outcomes: For instance, if the own parents are still alive when own children are born, they can provide childcare support (*ordering*): Mothers of young children who receive this grandparental support were shown to have a higher likelihood of participating in the labor market compared to mothers who were not supported (Aassve et al., 2012). Some individuals appear to plan the timing of their first birth according to the availability of grandparental childcare support (Pink, 2018), and some mothers advance their transition into retirement in accordance with their entrance into grandparenthood (Van Bavel & De Winter, 2013).

Regarding the *timing*, if grandchildren are born relatively late and the grandparents are quite old and might need help themselves, the parent might not be able rely on support from them, but rather might be facing a double burden instead. Individuals who became parents later in their lives were shown to support their older parents less frequently, compared to earlier parents, indicating a potential trade-off between informal caring duties (Gans et al., 2013). Early parents appeared to also be worse off over the live course considering their wealth, education, and employment (Johansen et al., 2020; Lersch et al., 2017). Moreover, having to experience the loss of a parent off-time, that is, unexpectedly early in life, instead of on-time has been shown to have severe negative consequences for overall well-being (Leopold & Lechner, 2015).

Lastly, the *occurrence* of a generational placement is also highly important. For instance, middle-aged individuals without children were shown to support their parents more extensively than their counterparts with children (Pesando, 2019) and they seemed to have a closer bond with their parents and individuals outside the family, while their overall social support networks appeared to be weaker (Albertini & Kohli, 2009). Moreover, parenthood was shown to be strongly associated with lower wealth in later life for women (Lersch et al., 2017) and a steeper decline in mental health over age (Giesselmann et al., 2018). Becoming a grandparent appears to have a positive influence on the grandparent's partnership stability (Brown et al., 2020), for instance.

Although it has been demonstrated that *life course* generational structures of the family matter (also see Aisenbrey & Fasang (2017) or Muller et al. (2020) for examples of the association between life course parenthood and employment), as of yet, it remains unclear what kind of generational placement trajectories are actually experienced. Previous research has examined the timing or ordering of specific role transitions or the occurrence and time spent in certain positions (Beaujouan, 2020; Leopold & Skopek, 2015a, 2015b; Margolis, 2016; Murphy et al., 2006). However, a holistic description of simultaneously the occurrence, timing *and* ordering, of generational placements that consider multiple dyadic relationships (i.e., the family system (see Fingerman & Bermann, 2000)), is still lacking. Thus, an encompassing description of the prevalence and, maybe even more importantly, the variations of opportunity structures for intergenerational support as processes is still lacking. Therefore, this paper, firstly, addresses the question, if and what kind of patterns of generational placement trajectories across individual life courses exist.

Since demographic trends are known to have affected the generational structure of families, the paper also investigates if these generational placement patterns differ in their prevalence across cohorts. The current paper thus adds to research on the changing form of families (Bengtson, 2001) and shared living time between the generations (Lauterbach & Klein, 2004; Leopold & Skopek, 2015a). Through the incorporation of the demographic and family life course perspective (Bengtson & Allen, 1993; Uhlenberg, 1996), changes in personal social support structures are examined as a function of ageing and of historical time. The current paper can identify changing needs for public social support systems, such as formal childcare provision, elderly care or pension payments, in particular in the light of ageing societies (Furstenberg et al., 2015).

Concluding, this research paper has two main goals: 1) identify typical patterns of generational placement trajectories of biological families; and 2) assess changes in their prevalence over time, that is, between cohorts. With that, variation within individuals (what structure is available at which age of an individual) and between cohorts is examined. Next to historical changes, stratification by gender and region is examined because demographic behavior is known to be influenced by the socio-cultural context and its gender-specific norms (Billari et al., 2011; Mayer, 2005).

For the current analysis, survey data from the German Ageing Survey DEAS (Klaus et al., 2017) is examined using sequence and cluster analysis, as well as multinomial logistic regression models. The DEAS provides demographic data for several biological family generations and allows for the reconstruction of life courses up to the age of 60 for three different birth cohorts born in Germany between 1939 and 1953, and for women and men. Using a German sample to answer the research questions seems to be advantageous because Germany comprises an average example within Europe and, more generally, the "Western" context: as regards the general demographic trends, Germany is neither a pioneer nor a lagger. Moreover, the strength of intergenerational relationships can be considered intermediate (Hank, 2007, for instance).

2.2 Background

2.2.1 Theoretical Framework and Previous Studies

Bengtson and Allen (1993) have early acknowledged the "multiple time clocks" of families as an integral part of the *family life course perspective over time*: they argue that, embedded in the socio-historical context (historical clock), individuals age (ontogenetic clock) and within their family proceed through different generational placements (generational or processual clock). Changes in generational placement "alter interactions or selves" (Bengtson & Allen, 1993, p. 471), meaning that each family transition inevitably affects the *social role* individuals occupy and thus, the way they are connected to other members of their family. For instance, the birth of a child shifts children to being parents (they are now, for the first time, in the role of the main caregiver to another person, by definition) and parents to being grandparents. This transition affects the relationship between all generations within one family—whether they themselves were responsible for that transition or not (Hagestad, 1988)—and stretches farther than the two-generation bond between two immediately consecutive generations (Gilligan et al., 2018). The concept of linked lives between multiple generations is another core component of the life course perspective (Bengtson et al., 2005; Gilligan et al., 2018).

In the current analysis, this framework is used to describe generational structures of families over individual life courses *and* over time through individual generational placement trajectories. The generational placements can then be understood as indicators of whether an individual is in a role in which they potentially can rely on support from others or have to provide it. These opportunity structures can enhance or limit social mobility and, dependent on the socio-historical context, likely lead to different outcomes; the expectations attached to each specific generational placement role are dependent on current norms and values (Bengtson et al., 2005; Uhlenberg, 1996), as well as on present social policies and structures, such as public childcare provision or elderly care (Mayer, 2005). Importantly, the generational placements reflect the opportunity structure for support, not whether or not this support is eventually provided or the quality of the intergenerational relationship (see, for instance, Bengtson et al., 2002; Lowenstein, 2007).

Previous research focusing on (changing) generational structures of families has applied parts of the multigenerational family life course framework to specific research questions, such as historical or regional stratification in the timing and sequencing of grandparenthood (Leopold & Skopek, 2015a, 2015b), the occurrence of and time spent in grandparenthood (Margolis, 2016), the proportion of elderly parents with living children (Murphy et al., 2006), and (cohort differences in) family formation as process outcomes (see Aisenbrey & Fasang, 2017; Jalovaara & Fasang, 2017; Raab & Struffolino, 2019; Van Winkle, 2018). Some of these studies account for multiple generations but focus on point-in-time outcomes; others apply the life course perspective but do not account for more than two generations at a time or do not account for the socio-historical context.

So far, it has not been examined what kind of generational structures of families exist over individual life courses and over time. Thus, within and between individual variation with regard to the structures of intergenerational family of multiple generations has not received enough attention. It remains unclear how individual ageing, transitions to different generational placements, and historical time have interacted on a holistic level. The current analysis can contribute to an expanded background knowledge about the occurrence of potentially very heterogeneous structures of intergenerational support networks, and put the above-mentioned literature applying different perspectives on specific multigenerational phenomena into a broader context.

2.2.2 Demographic Trends

Generational placements are determined by the demographic behavior of multiple generations. In the Western European context, trends from high to low fertility levels and the postponement of parenthood, as well as from uniform to highly variable forms of family and partnerships, have been observed from the 1960s onwards—potentially as a result of increasingly individualistic norms (also see Second Demographic Transition) (Lesthaeghe, 2010; Van De Kaa, 1987). The trend towards declining fertility was accompanied by increases in life expectancy, in particular for the older population (Lesthaeghe, 2010).

Life expectancy at birth as well as at higher ages has increased continuously since the turn of the twentieth century (Federal Statistical Office (Destatis), 2021a) due to major medical and technical improvements and lifestyle changes. Women have a higher life expectancy than men, which is to a part based on biological factors but is largely caused by differences in health-related lifestyle, such as incidence of smoking (Luy & Wegner-Siegmundt, 2013). Historical regional differences in life expectancy have been shown to have developed heterogeneously across Germany over time (see Haines & Kintner, 2000, for a detailed analysis). After Germany was divided, it was only after isolation of the East, that is the German Democratic Republic

(GDR), from the West, that is the Federal Republic of Germany (FRG), in the 1960s that mortality started to differentiate more clearly as a result of different investments in the health care systems, leaving former East Germans, in particular adults, with a lower life expectancy (Nolte et al., 2000).

As regards fertility, *age at birth* of the first child for married women in Germany has undergone a steep increase since the end of the 1960s, from around age 25 to 30, on average (Federal Institute for Population Research, 2021). Age at first childbirth in marriages was lower in East Germany but from re-unification in 1989 onwards, former East Germans strongly delayed first childbirth so that at the turn of the millennium, they had converged with former West Germans. To date, women at first childbirth are almost one year younger, on average, in former East Germany, where non-marital births remain more common (Klüsener & Goldstein, 2016). Also, entrance into grandparenthood has been postponed; the East-West-gap is larger than that for parenthood (Leopold & Skopek, 2015a).

Over cohorts, the number of children born per woman strongly declined, from 2.2 children for women born 1933–37 to 1.6 children for women born 1959–63, while the share of childless women rapidly increased, from 10 % to 18%, respectively (Federal Statistical Office (Destatis), 2019, 2021c). Whereas only small regional differences persisted in the number of children born per mother, the share of childless women in former East Germany has been considerably smaller (8%) and remained virtually stable compared to the level and development in former West Germany. It has been reported that men are more frequently childless than women, at least in more recent cohorts (Kreyenfeld & Konietzka, 2017). However, a joint analysis of both genders regarding fertility is seldom made (Kohli & Albertini, 2009; Lappegård, 2014, for instance), often due to data restrictions for the male population.

Social institutions, policies, and norms followed much more gender egalitarian and pronatalist views in the GDR compared to the FRG (see Kreyenfeld, 2004, for a detailed overview of these policies). This might have led to a more dissimilar demographic behavior between men and women in the FRG (also see Billari et al., 2011, for the influence of norms on fertility). Moreover, these policies triggered two different roles of the family (Kreyenfeld, 2004): individuals in the FRG lived in accordance with the male-breadwinner-female-homemaker concept which encouraged women to stay home for childrearing. At the same time, opportunity costs for childbearing and -rearing were high for these women, so that childlessness and a higher age at first birth were very pronounced in the FRG. In contrast, women in the GDR were encouraged to bear (many) children early. Incorporation of mothers in the labor force was not only welcomed but resembled a moral obligation. As regards intergenerational relationships, they were shown to be perceived as closer among the former East German population right after Unification; potentially due to closer geographic proximity, higher importance for social exchange, and a feeling of "the family" against the system with an isolation from the public into the private (Szydlik, 1996); this difference appears to persist until today (Arránz Becker & Steinbach, 2012).

Lastly, the simultaneous increase in longevity and the decline in fertility have induced discussions about historical changes in the amount of shared living time between different generations (Bengtson, 2001; Hagestad, 1988; Lauterbach & Klein, 2004). The generational placement trajectories are able to capture the interplay of these demographic trends and thus can contribute to a more in-depth understanding of how the generational structure of families have changed.

2.2.3 Expectations

While expectations about the number of emerging patterns of generational placement trajectories are difficult to formulate due to the explorative nature of the study and the multitude of possible combinations, expectations regarding specific transitions and their stratification by cohort, gender, and region are more straight-forward. Few patterns without parenthood are expected, while the majority is expected to experience parenthood with variations in its timing; an earlier transition into parenthood is expected for members of the earlier-born cohorts, women, and individuals born in former East Germany. Accordingly, these groups are also expected to experience a pattern with (earlier) grandparenthood. As regards the occurrence and timing of the parental death, patterns with an earlier death of the parents are expected to become less prevalent over time and to be less prevalent among the former West German population. Moreover, due to loosening age norms regarding fertility behavior over time (Settersten, 2003) and more gender egalitarian values in former East Germany (Kreyenfeld, 2004), the patterns are expected to differ more strongly by gender in earlier-born cohorts and the former West German population.

2.3 Method

2.3.1 Data

To analyze typical generational placement trajectories and their predictors within multigenerational biological families in Germany, data from the German Ageing Survey DEAS (Klaus et al., 2017) is analyzed. This study is particularly useful because it targets individuals in the second half of their lives, that is, between 40 and 85, and retrospective demographic information not only on the respondent but the respondents' parents, children, and grandchildren is available. This allows for a reconstruction of relevant life course information covering several generations over a large share of the respondents' lives. Sample selection is stratified by age group (40–54, 55–69, and 70–85), gender, and region (East/West Germany) (Klaus et al., 2017). In contrast to other potentially eligible datasets, such as the GSOEP or SHARE, DEAS data is based on representative cross-sectional samples which contain information for three generations. DEAS is, thus, not affected by panel attrition or limited to analyzing two generations only.

The analytical sample was constructed using all first-time, that is cross-sectional, respondents from the waves 2008 (n = 6,205) (Motel-Klingebiel et al., 2019) and 2014 (n = 6,001) (Mahne et al., 2019) and no panel information was used. Only from 2008 onwards was information on the births of grandchildren gathered. The analytical sample was constructed following two considerations. First, because a cohort comparison is at the core of the study, the analytical sample comprised individuals from the birth cohorts 1939–43 (early war cohort), 1944–48 (war cohort), and 1949–53 (post-war cohort) only (n = 7,709 individuals excluded). Individuals who were born earlier were not included because mortality, and with this a potential survivor bias, increases strongly (see Table A 2-1) (results using a sample including earlier born respondents yielded robust results, see Additional Analyses in paragraph 2.7.1). Second, as is usual in sequence analysis, the time axis was constructed along the age of the respondent instead of historical time. For this analysis, the age range was set from 0 to 60. This age limit was chosen so that transitions into grandparenthood could be included. However, observing individuals only until this age poses the disadvantage of examining those who potentially entered early into grandparenthood, thus underestimating (age at) grandparenthood and parental death (see also the discussion section) (see also Leopold & Skopek, 2015b, for a more thorough discussion of different sources of bias when analysing grandparenthood).

Individuals born after 1949 (post-war cohort) had not yet reached age 60 in 2008 and were not included in the analytical sample when interviewed in 2008 to not having to deal with incomplete life course trajectories (n = 730 individuals excluded; 3,767 remaining). Thus, individuals from the post-war cohort were only sampled once, and not twice like individuals from the two other cohorts. In order to counterbalance this smaller sampling probability of the post-war cohort in relation to the two earlier-born cohorts (1:2), weights of the factor 2 were employed. A second factor accounted for a larger sample size in 2014 compared to 2008. Moreover, the cross-sectional post-stratification weights provided in the scientific use files by DEAS were applied to all respondents in order to address the stratification of the sample by design, that is age group, gender, and region (Engstler et al., 2019a, 2019b). A robustness check revealed that the weights modified the relevant demographic information in the way expected (see Additional Analyses in paragraph 2.7.1).

The sample was restricted to individuals born in former West and East Germany because the number of participants born elsewhere (or with missing information) was too small (n = 216). It was also limited to individuals who grew up with both of their biological parents (n = 773 or 23% dropped); respondents in DEAS are asked by whom they grew up all or most of their childhood until age 16 which determines whether data on the biological parents or other caregivers, such as the grandparents or step-parents, is comprised. Individuals from the early-war and war cohort were excluded more frequently, potentially but not exclusively due to the consequences of WW II. While it might be problematic to exclude this rather larger share of respondents, keeping individuals in the sample for whom it is unknown how the absence of one parent is associated with the generational placement trajectory is assumed to impose a larger disadvantage. Further observations were excluded due to item non-response on the date of the death of the parent (only if both parents had died or if it was unknown whether both parents were still alive, n = 82), and of the birth of biological children (n = 6) and grandchildren (n = 74). If the birth of the first child was reported to have happened prior to the respondent's twelfth birthday (n = 2) or the youngest grandchild was born before the oldest child's twelfth birthday (n = 7), these respondents were excluded as well. The final analytical sample comprised n = 2,607 individuals with annual information from birth until age 60, which results in 159,027 person-years.

2.3.2 Operationalization of Generational Placement

This paper, for the first time, applies methods of sequence analysis to the concept of generational placements. Individual trajectories of generational placements were constructed over the ages 0 to 60. Based on the year of death of the parents (Generation G1), the births of the children (Generation G3) as well as of grandchildren (Generation G4) (see following subsections), the occurrence, timing, and ordering of three different elements comprising generational placements, that is, being a child (i.e. having at least one parent), a parent (i.e. having at least one child), and a grandparent (i.e. having at least one grandchild), can be identified (see Figure 2-1 for two exemplary trajectories). The corresponding information is retrospectively provided by the respondents themselves (*Generation G2*). Six exclusive states, namely being a "child" (G1*G2*), a "child and parent" (G1*G2*G3), a "child, parent, and grandparent" (G1*G2*G3G4), a "parent" (*G2*G3), a "parent and grandparent" (*G2*G3G4), and being "without biological ancestors or descendants" (*G2*), were defined.

The analysis did not include the *number* of living parents and (grand)children because this would inflate the number of states from six to at least twelve, and with this unnecessarily complicate the identification of typical patterns. Moreover, despite a relatively high and maybe even increasing importance of more complex family compositions in Germany (Steinbach et al., 2016), for this analysis, generational placements were defined through the absence/presence of *biological* family only because the share of adoptive or step-families was fairly small

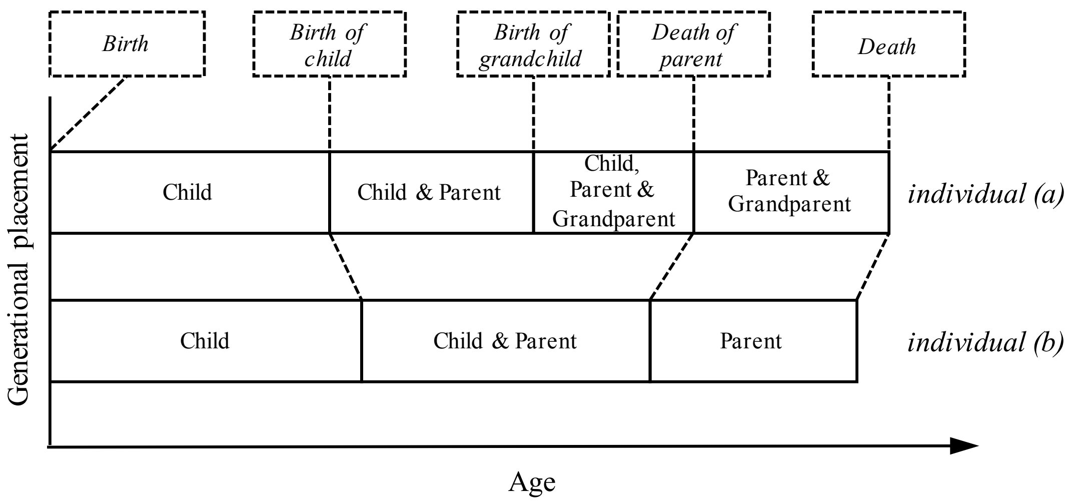

Figure 2-1 *Exemplary Trajectories of Timing and Sequencing of the Individual's Generational Placements Over the Life Course.*

Note. Defining life events in italics.

(4%). Lastly, because it is not assessed whether the respondent's grandparents are still alive or if great-grandchildren exist, the *number of existing generations* within one family might even be underestimated. In the following, the operationalization of the defining biographical events is discussed in more detail.

2.3.2.1 Death of Biological Parents (G1)

When a respondent reported that both biological parents had died, the year of the death of the parent who died last was translated into the respondent's age at this death. The death of the first parent to have died was not considered in this analysis because it did not lead to a change in the generational placement.

2.3.2.2 Birth of First Biological Child (G3) and Grandchild (G4)

Due to data privacy, the scientific use files of the DEAS contain some of the birth dates of children and grandchildren only in a categorized format. Upon request, the German Centre of Gerontology (DZA) identified the oldest of the biological children and their children and provided these data for this analysis. The birth year of the first child was then translated into the age of the respondent at entrance into parenthood.

The operationalization of the birth of the first grandchild was somewhat restricted due to the DEAS questionnaire. To reduce the burden of participation in the survey, it was only assessed for some of the respondent's children whether these children were biological. If more than one grandchild per child existed, the child for which this information was requested was provided randomly. Hence, relying on the birth dates of the grandchildren for whom the relationship to the parent was available might bias the age of the birth of the first grandchild. Therefore, the oldest grandchild among all of the respondent's grandchildren was selected, irrespective of their relationship to the parent. Comparing the birth year of the youngest of all grandchildren with that of the grandchildren for whom it is known that they are biological resulted in a perfect match in 65% of the cases. Only 9% of the cases were overestimated by more than five years.

2.3.2.3 Generational Placements Over Time

On a yearly basis, the respondents can progress from one state to another, however with certain (natural) restrictions: for instance, once having lost both parents, one can no longer change to the state involving "being a child" (G1). Moreover, the states used to identify the generational placement do not consider potential deaths of the children (G3) or grandchildren (G4). Although 3.1% (weighted) of the respondents who were parents reported at least one date of a child's death, only in 0.4% (weighted) of cases did these deaths led to a (permanent) shift in generational placement. For all other cases, the death of a child either led only to a temporal shift in generational placement that was reversed at a later point (through the birth of another child) or did not change the generational placement at all (other living children existed).

2.3.3 Analytical Approach

To examine if and what kind of individual typical patterns of generational placement trajectories exist, sequence and cluster analyses are applied. Subsequently, multinomial logistic regressions assess stratification by cohort, gender, and region. These methods are particularly useful to answer the current research questions because they focus on individual life course trajectories instead of aggregate indicators. Meaningful variations within and between typical individual trajectories can be analyzed. Moreover, because the generational placement is a categorical variable, life course methods to analyze continuous outcomes, such as growth curves models, do not fit the research questions well. However, applying sequence analysis entails some drawbacks; these are elaborated on in the discussion section.

2.3.3.1 Sequence and Cluster Analysis

As the first step, sequence analysis is used to identify and describe the individual generational placement trajectories using the statistical software *R* and the *TraMineR*-package (Gabadinho et al., 2011). Next, the distances, that is, differences, between the trajectories are generated; on the basis of these they are subsequently clustered into groups of similar trajectories. The clusters identified help to reduce the complexity of the data and can be interpreted as *typologies* of generational placement trajectories. A variety of different distance measures exists, and the choice of an adequate measure is dependent on the characteristic that should be highlighted and thus be theoretically driven (Studer & Ritschard, 2014). For this analysis, the most important characteristic to separate the generational placement trajectories is whether the individuals have experienced the same generational placements, that is, the *occurrence* of states. For instance, individuals who have ever experienced becoming a parent are assumed to be more similar to each other than individuals who have never become a parent, irrespective of when they became parents. Because the states used in this analysis already contain a pre-determined sequencing due to the above-mentioned (natural) restrictions, the only characteristic distinguishing trajectories further when the occurrence of states is identical is *timing*. For example: two individuals have both exclusively experienced the states "being a child" (G1) and "being a parent" (G3); once they have entered parenthood in this analysis, the respondents continue to be in a generational placement, including this state. This also holds for entering grandparenthood and losing the second parent. Imagining the frame of observation as five years only, the example trajectories could look like [G1*G2* G1*G2* G1*G2* *G2*G3 *G2*G3] and [G1*G2* *G2*G3 *G2*G3 *G2*G3 *G2*G3]; their only difference is in timing.

Chi-square is a measure that accounts for distances between state distributions in proportion to the time spent in that state within a certain sequence. When the length of the sequence that should be compared is set to the overall sequence length, here 61, then Chi-square is a position-wise measure: at each age, it is assessed if the current states differ or not. Thus, applying Chi-square with this feature makes it a measure that is very sensitive to timing, in particular to small time changes (Studer & Ritschard, 2014). There are other distance measures that have been shown to be timing-sensitive, such as the Hamming distance; it is an optimal matching distance without insertion-deletion costs and is based on the count of common attributes (Studer & Ritschard, 2014). In contrast to the identified clusters using Chi-square, with the same number of clusters, clusters based on Hamming distance first separated further between different timings in the transition to parent- and grandparenthood, while only one cluster with childless individuals was identified. Overall, clusters based on Chi-square distance appeared to be more homogeneous within the groups with smaller variation in the timing of transitions to different generational placements and thus showed to be more trustworthy. Despite the difference in the further separation of the childless between Chi-square and Hamming, the majority of the individuals sorted into clusters with similar characteristics.

After the dissimilarities between all trajectories were calculated, different clusters were identified using the Partitioning Around Medoids algorithm (PAM) provided by the *WeightedCluster*-package (Studer, 2013). This method aims to identify the best separations of the data into a pre-determined number of groups and strives towards maximizing a global criterion. A medoid is a trajectory that best represents all trajectories of the same group by having the smallest sum of weighted distance to all these trajectories. Because the algorithm itself does not necessarily identify the best trajectories to start with as medoids, these initial medoids were defined using a hierarchical clustering "Ward", as is recommended (see Studer, 2013, for more detailed elaborations on the advantages and disadvantages of PAM versus hierarchical clustering algorithms). Next to considering interpretability of the suggested clusters, PAM performed better on several quality measures, such as Hubert's C or the weighted average silhouette width (ASWw), than the popular "Ward" algorithm and was therefore applied.

2.3.3.2 Multinomial Logistic Regression

As a last step, multinomial logistic regressions test if the probability of being sorted into one of the clusters is stratified by cohort membership (*1939–43*, *1944–48*, and *1949–53*), the region that the individual grew up in (*former West Germany FRG* and *former East Germany GDR*), and gender, as well as by an interaction of gender with cohort and region. The results for region were largely consistent compared to an alternative operationalization based on the region that the individual mainly lived in between 1949 and 1990 (results upon request). Unfortunately, no other potentially relevant time-constant variables, such as the parents' socio-economic status/education or the existence of siblings when the respondent was young (only assessed in 2014) are available for the data under study. Individual characteristics such as educational attainment or income are not accounted for because they are time-variant, and the causal relationship between these variables and generational placement trajectories as a process outcome is unclear and potentially bi-directional. Because multinomial logistic regressions can only be interpreted in relation to the base outcome, average marginal effects and their contrasts are reported as well.

2.4 Results

2.4.1 Generational Placements Across Cohorts

Indicators characterizing the generational placements are displayed by cohort in Table 2-1. The average age at each generational placement transition has increased across the cohorts. Moreover, the share of (grand)parents and those who have lost both biological parents has decreased. More detailed insight is provided by Figure 2-2, which displays the distribution of generational placements at each age for all respondents separately by cohort. The plots can be understood as 61 stacked bar plots placed next to one another displaying the changing proportions of generational placements as the individuals age. At birth, all individuals are in the generational placement "child" (G1*G2*), indicating that they have at least one living biological parent. As the individuals age, the share of individuals in this generational placement, naturally, decreases. The other generational placements increase in their relative occurrence, but somewhat

Table 2-1 *Means and Standard Deviations (in Parentheses) of Relevant Variables by Cohort*

	1939–43	1944–48	1949–53	Total	ANOVA/χ^2 p-value
Number of biological children (at interview)	1.95 (1.13)	1.68 (1.04)	1.73 (1.09)	1.79 (1.09)	.00
Parent until age 60	0.90 (0.30)	0.86 (0.34)	0.85 (0.36)	0.87 (0.34)	.02
Age at birth of first child	25.86 (4.69)	25.83 (5.24)	26.61 (5.64)	26.13 (5.23)	.00
Number of grandchildren (at interview) [a]	2.73 (2.40)	1.72 (1.72)	1.58 (1.86)	2.00 (2.07)	.00
Grandparent until age 60	0.59 (0.49)	0.50 (0.50)	0.46 (0.50)	0.51 (0.50)	.00
Age at birth of first grandchild	51.26 (5.55)	51.69 (5.71)	52.17 (5.48)	51.70 (5.59)	.04
Both parents dead until age 60	0.73 (0.45)	0.66 (0.47)	0.60 (0.49)	0.66 (0.47)	.00
Age at death second parent	47.42 (9.23)	48.27 (8.90)	49.79 (8.97)	48.50 (9.09)	.00
Age at interview	69.47 (3.26)	64.53 (3.37)	63.03 (1.45)	65.51 (3.89)	.00
Respondent is female	0.50 (0.50)	0.52 (0.50)	0.50 (0.50)	0.51 (0.50)	.71
Grew up in former East Germany	0.23 (0.42)	0.20 (0.40)	0.25 (0.43)	0.23 (0.42)	.02
Proportion	.31	.31	.37	1	

Note. N = 2,607 (weighted); significance testing on group differences is based on ANOVA for continuous and on χ^2-tests (here: corrected F-statistics because of weights (Rao & Scott, 1984)) for categorical variables; [a] note that the number of grandchildren at the time of the interview cannot be compared over cohorts because members of the earlier born cohorts were older at the time of the interview and, thus, had a higher chance of having more grandchildren.

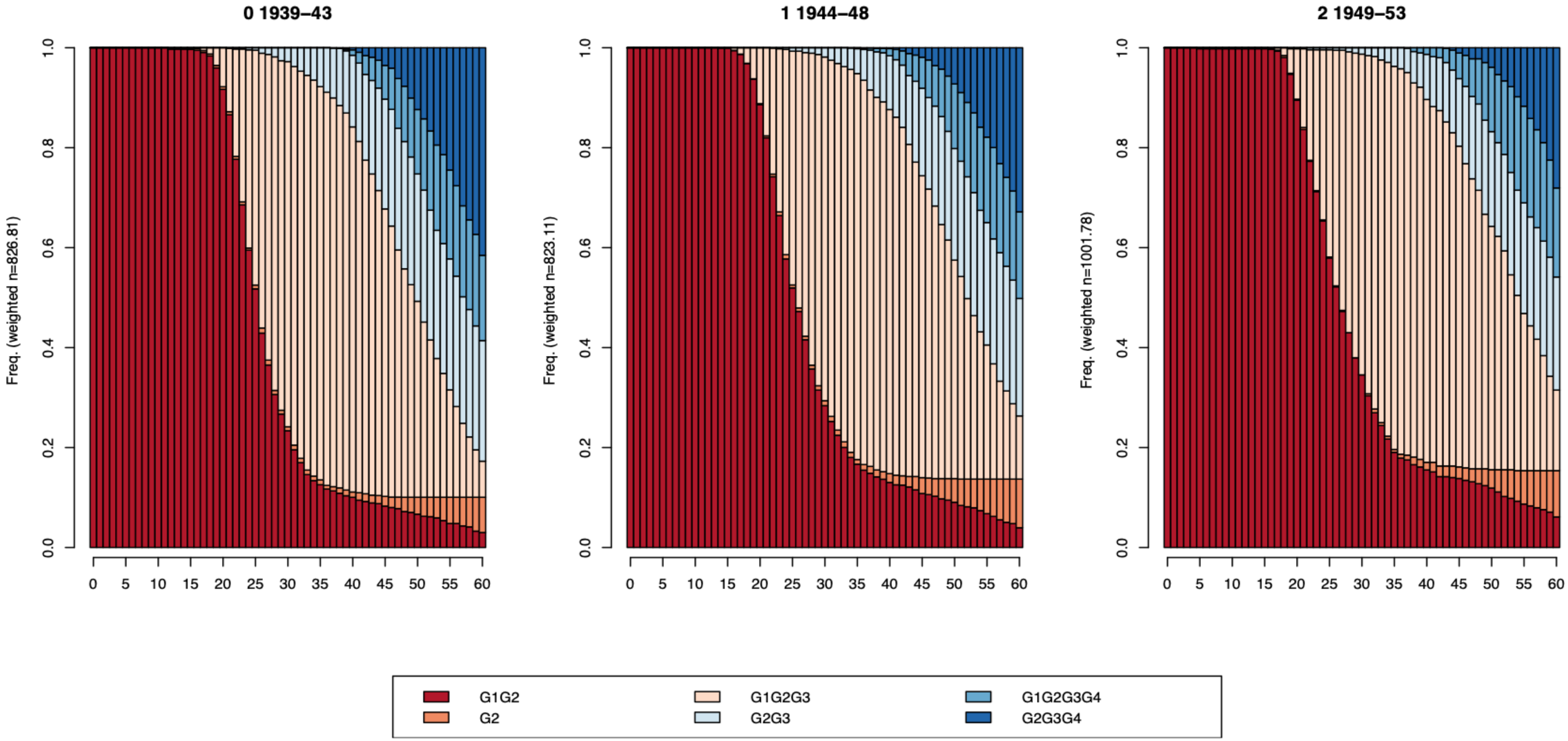

Figure 2-2 *Share of Individuals in Each Generational Placement Over Age by Cohort (State Distribution Plot)*

differently between the cohorts. Most notably, the distribution of generational placements at age 60 varies between cohorts: while clearly most members of the earliest born cohort are simultaneously parents and grandparents (*G2*G3G4 and G1*G2*G3G4), the generational placements in which respondents have remained children (G1) seem to become more common at this age. As expected, the age at which the distributions start changing also differs between cohorts: across historical time, the onset of parenthood (G3) and grandparenthood (G4), as well as parental death, is postponed and seems to spread more slowly. Despite the insights gained from the data contrasting cohort aggregate indicators, it remains unclear how generational placements develop over the life course on the individual level, and whether or how they have changed over cohorts. Inter-individual variation might be occluded when remaining on the aggregate level only.

2.4.2 Typical Generational Placement Trajectories

Sequence and cluster analysis identified a six-cluster-solution which performed best comparatively, and overall performed well on the measures of the quality of partition, such as the weighted average silhouette width (.47) and Hubert's C (.05) (Studer, 2013). Moreover, the Clusterwise Jaccard Bootstrap method (Hennig, 2007) did not raise concerns about the clusters being instable. Six clusters already allowed for a substantially clear differentiation between the groups while the eight-cluster-solution further separated the childless (by timing of parental death) and the third cluster (later referred to as the four-generation family) (also by timing of parental death). Therefore, the six-cluster-solution was preferred above the eight-cluster-solution. Figure 2-3 shows the trajectories of all respondents grouped by cluster. The graphs consist of horizontal lines stacked on top of each other; each refers to one life course from age 0 to 60. They should be read from left to right. The trajectories are sorted starting at the top with the most representative sequence of each cluster. In the following, each cluster is briefly described and contrasted with the other clusters.

The largest share of individuals (34%) experienced a trajectory which is characterized by a somewhat late age at entrance into parent- and grandparenthood compared to the other clusters, while the parents also pass away relatively late in the respondent's life course (cluster 1, Figure 2-3; see Table 2-2 for an overview and Table A 2-2 for detailed descriptive statistics by cluster). This results in a largely stable three-generation family (G1*G2*G3) in which the respondents spend a large share of their lives as children and parents. This has been labelled *later three-generation family*. At the age of 60, more than a third of individuals in this cluster have also already become grandparents, and—assuming that the respondents can expect more years to live and that more of them become grandparents—this family continues to contain three

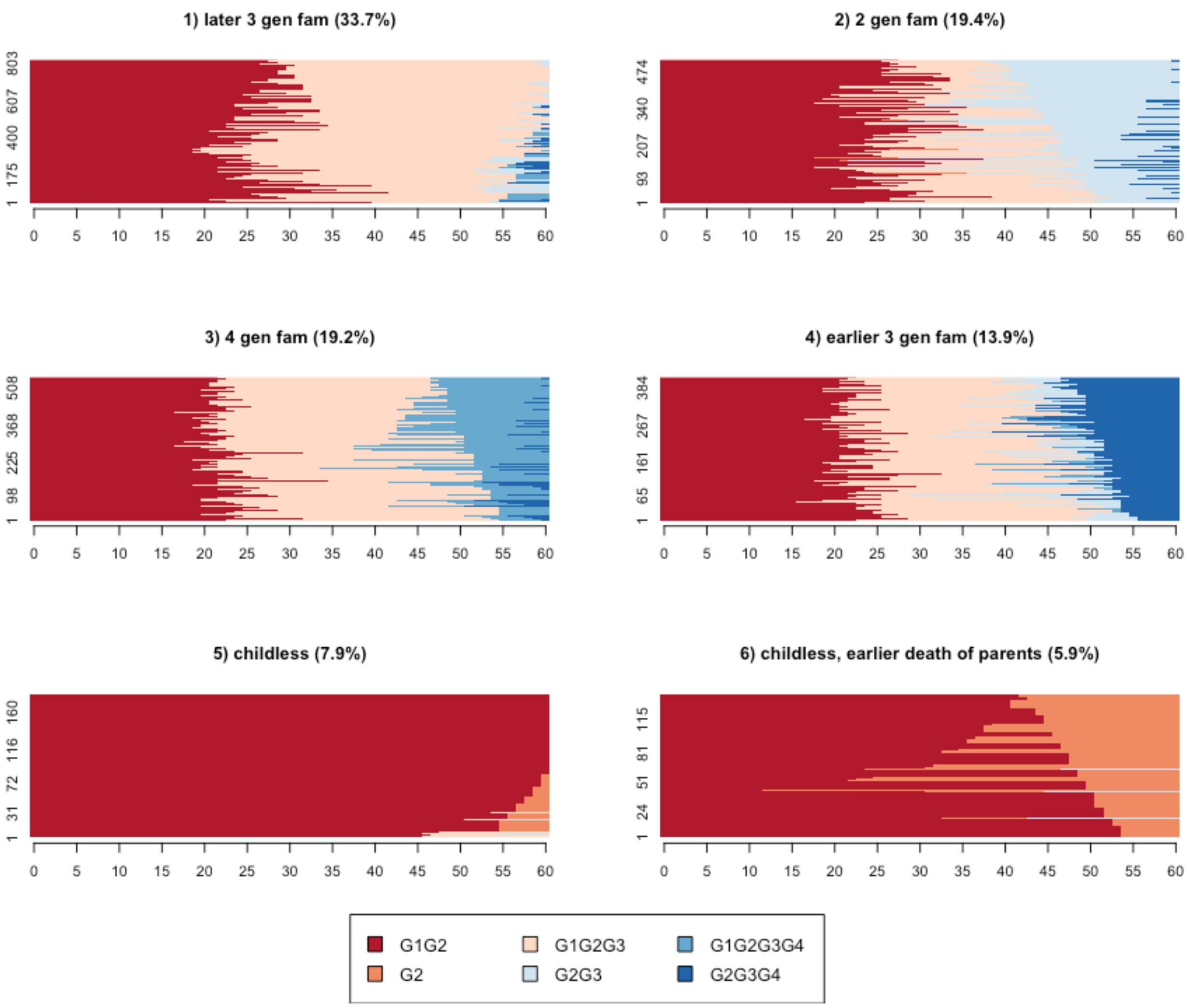

Figure 2-3 *Sequence Index Plots of Clusters of Generational Placement Trajectories*

Note. N = 2,607 (weighted)

generations at the same time (*G2*G3G4). Because respondents in this cluster typically become grandparents at a point very close to when their own parents die, great-grandparenthood (G1G4) occurs almost never. As it appears, this cluster seems to depict a norm trajectory which every third person is likely to follow.

The later three-generation family is fairly similar to the cluster labelled the *two-generation family* (19%, cluster 2). While entrance into parent- and grandparenthood occurs at the same age, on average, these respondents' parents die earliest compared to all other clusters. Thus, not only do children and parents (G1*G2*) share the least living time (41 years), being a child and a parent at the same time is a state that the respondents also do not experience for too long. In other words, grandparents G1 and grandchildren G3 share only around 13 years of living time, on average, which is why this cluster mostly consists of two generations. Because almost every third respondent in this cluster had become a grandparent by the age of 60, however, the intergenerational family structure might change towards a three-generation family (*G2*G3G4) later in their lives.

Table 2-2 *Occurrence and Timing of Transitions by Clusters of Generational Placement Trajectories*

	(1) Later three-generation family	(2) Two-generation family	(3) Four-generation family	(4) Earlier three-generation family	(5) Childless	(6) Childless with earlier death of parents
Parental death	(Late)	Early	(Late)	Early/medium	(Late)	Early/medium
Parenthood	Late	Late	Early	Early	–	–
Grandparenthood	(Late)	(Late)	Early	Early	–	–

Note. Late, medium, and early refer to the average age at the transitions of each respective cluster in relation to the average age of the transition in all other clusters; brackets indicate that this transition did not occur to all individuals within the cluster until age 60; clusters are sorted from left to right in decreasing prevalence; for more detailed information about occurrence and timing of transitions see Table A 2-2.

In contrast, with a repetitively early entrance into parent- and grandparenthood and the late death of their own parents, around 19% of the respondents find themselves in a double sandwich position for, on average, 8.5 years of their lives (up to the age of 60) (cluster 3, *four-generation family*). This is the only cluster in which great-grandparenthood (G1G4) is effectively present; it is also the cluster in which grandparents and grandchildren (G1G3) exhibit the longest periods of shared living time (34 years).

Very similar to the four-generation family in terms of timing of parent- and grandparenthood is cluster 4, the *earlier three-generation family* (14%). Individuals in this cluster, however, lose their parents earlier. As with the other three-generation family cluster (cluster 1), the transition to grandparenthood and losing the second biological parent occurs at a similar age, so that great-grandparenthood is not present in this cluster. Individuals are simultaneously a parent and a child (G1*G2*G3) for, on average, 22 years; this is more than in the two-generation family but less than in the later three-generation and four-generation families. Overall, this cluster appears to be a somewhat compressed version of the later three-generation family.

Lastly, two clusters are compiled by individuals who do not have any children. The clusters are differentiated by the timing of the death of the parents, leaving some individuals biologically kinless (in terms of intergenerational kin) from around their second half of life onwards. This group was labelled *childless, early death of parents* (cluster 6, 6%). In contrast, 8% of all individuals have no children while they have, compared to all other clusters, the most shared living time with their own parents (G1*G2*) (58 years, on average) (cluster 5). These are referred to as the *childless*.

Summing up, six clear patterns of generational placement trajectories could be identified which vary in their occurrence of generational placement as well as in the timing and ordering of the relevant transitions. The largest share of individuals experiences three-generation families; as expected, most uncommon are patterns without children.

2.4.3 Stratification by Cohort, Gender, and Region

To determine whether the prevalence of these clusters of generational placement trajectories, and with that the opportunity structures for intergenerational support within families, has undergone a historical change, cohort differences on experiencing certain generational placement trajectories were analyzed, estimating multinomial logistic regression models. Stratification by gender and region were also examined (Table A 2-3).

Cohort differences were present for most of the clusters, which indicates that the well-known demographic trends have not only altered the generational structures of Germany as a society, but those of individual families, too. To not compare the logistic regression estimates of the categorical variable cohort to only one base category (here 1939–43), average adjusted predictions were calculated and compared pairwise (Figure 2-4). These indicate a significant difference in the probability of being sorted into a specific cluster for one cohort compared to each of the other cohorts (Table A 2-4). Over historical time, individuals appear to increasingly more likely experience the more stable generational placement trajectories: compared to the other cohorts, members of the more recent cohorts were significantly more likely to experience the later three-generation family as well as the childless cluster, while they were significantly less likely to be part of the two-generation family and the earlier three-generation family (Figure 2-4). For the four-generation family cluster and the childless cluster with an earlier death of the parents, no change in prevalence over cohorts was found. Differences over cohorts were substantively most pronounced for the two three-generation families and the childless: while individuals born between 1939 and 1943 had a 1 in 4 chance of experiencing the later three-generation family, individuals born only 10 years later had a 1 in 3 chance of doing so. This equals an increase of around 36%. Even more striking, the chances of being part of the earlier three-generation family decreased from around 20% to 10% by almost 50% and the probability of remaining childless almost doubled, from 5.7% to 10.1%, over the same time period.

Apart from changes in the occurrence of typical generational placement trajectories over time, differences by gender and region were found (Table A 2-5, positive average marginal effects indicate a higher likelihood for women and individuals born in former East Germany, respectively). The probability of experiencing a certain cluster was only stratified by *gender* to a limited degree: women compared to men were significantly more likely to be part of only the four-generation and the earlier three-generation family but less likely to experience the later three-generation family. The female-dominated patterns have an early entrance into parent- and grandparenthood in common. This is in line with the expectation that women, on average, become parents earlier than men. In contrast, *regional differences* were found for all of the

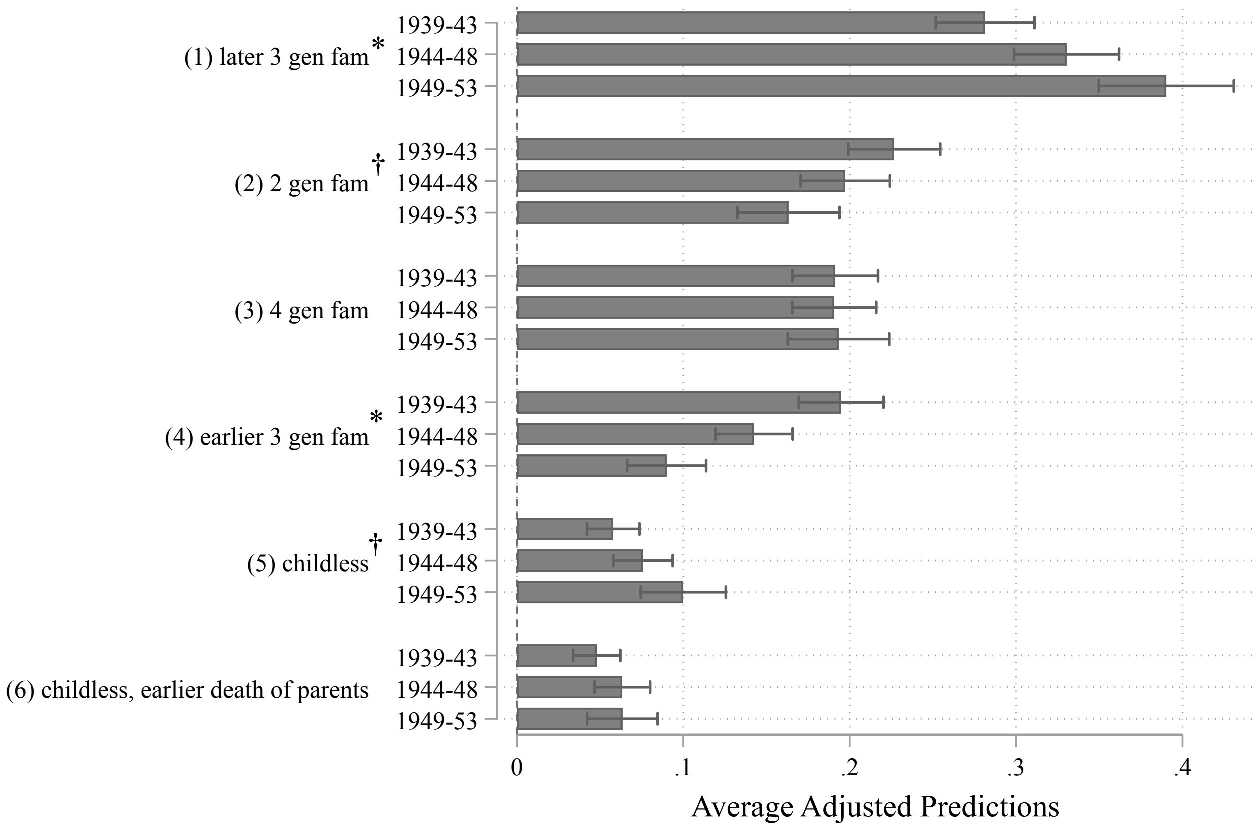

Figure 2-4 *Average Adjusted Predictions of Cohort by Cluster*

Note. N = 2,607; based on multinomial logistic regressions without interaction terms (Table A 2-3, Model A); confidence intervals refer to testing the predictions to be equal to 0 and do not refer to the significance level of the comparisons.
* Significant cohort difference between all cohorts.
† Significant cohort difference between one or two pairs of cohorts (Table A 2-4).

clusters: individuals who grew up in former West Germany were significantly more likely to experience the later three-generation and the two-generation family, and the two clusters without children. They were less likely to experience the remaining two clusters, the four-generation and the earlier three-generation family, which are both characterized by young parent- and grandparenthood. Thus, in accordance with the expectations, patterns characterized by childlessness and later parenthood appear to be dominant in former West Germany.

Although gender differences were found only for three clusters, they might be unevenly distributed across cohort and region. Figure 2-5 depicts the marginal effects of gender by cohort and region. The estimates can be interpreted as the probability for women of being sorted into the respective cluster by subgroup. As regards *gender differences by cohort*, no clear pattern

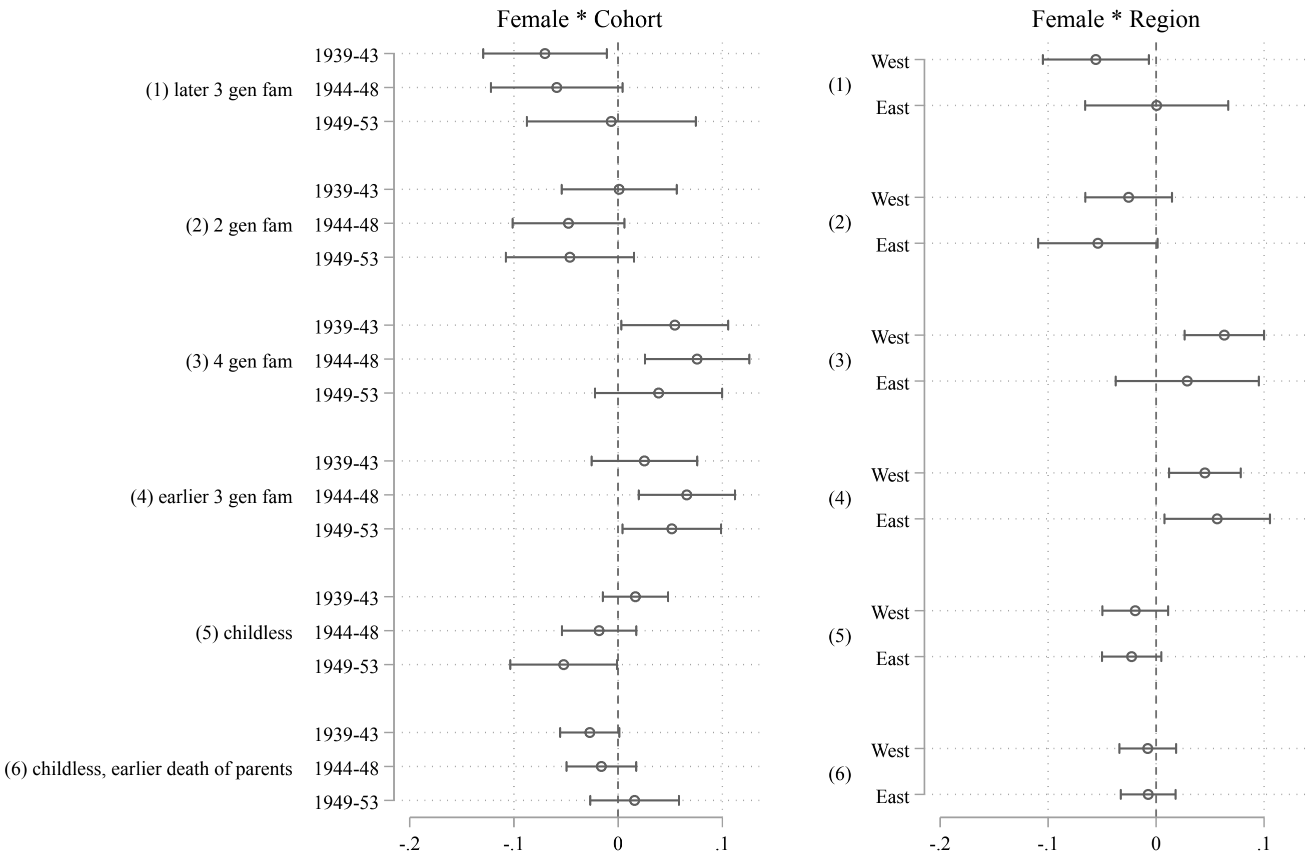

Figure 2-5 *Average Marginal Effects of Gender on Cluster Membership by Cohort and Region*

Note. N = 2,607; based on multinomial logistic regressions from Table A 2-3, Model B; positive values indicate a higher likelihood for females; based on separate logistic regressions with interaction terms gender*cohort and gender*region; 95% confidence intervals.

(of decreasing gender norms, for instance) became evident. Women were less likely to experience the later three-generation family if they belonged to the earliest born cohort and to experience the childless cluster if they were part of the post-war cohort. The higher likelihood for women of experiencing the four-generation family and the earlier three-generation family was found for only two cohorts each. Concerning gender differences by region, only if they had grown up in former West Germany was it more likely for men to be part of the later three-generation family, but it was more likely for women to be part of the four-generation family. Women exhibited a significantly higher likelihood of being sorted into the earlier three-generation family cluster, irrespective of where they grew up. These results only very limitedly support the expectation to find weaker gender norms for the former East German population.

Additional analyses using cohorts born between 1923 and 1954 identified highly similar patterns of generational placement trajectories as well as similar associations with cohort, gender, and region (see paragraph 2.7.1.1 in the Appendix).

2.5 Discussion

This study applied a family life course perspective (Bengtson & Allen, 1993) to investigate the structures of intergenerational family systems across individual life courses and their changes over historical time. Empirically, generational placement trajectories for individuals in Germany were analyzed with sequence and cluster analysis. Through the lens of single individuals, generational structures of biological families containing up to four generations simultaneously were displayed—for women and men. Subsequently, changes in the prevalence of typical trajectories across cohorts, as well as stratification by gender and region, were assessed using logistic regressions.

Six different clusters of typical generational placement trajectories, that is, typical generational structures within families, were identified: the later three-generation family (34%); the two-generation family (19%); the four-generation family (19%); the earlier three-generation family (14%); the childless (8%); and the childless with an earlier death of the parents (6%). The typical trajectories varied in their combination of living generations at a time and the timing of transitions into parent- and grandparenthood, and parental death.

Overall, there seems to be considerable stability within the generational structures of families despite visible changes in fertility and mortality patterns over historical time: the order of transitions, that is, the births and deaths of preceding and following generations, remained largely stable and the three-generation family, in particular with later transitions, continued to be the dominant pattern. However, the demographic trends have clearly left their mark, in particular regarding the occurrence of parenthood and the timing of the transitions. Importantly, though, they affected the generational structures of families in a way that was always mutual: for instance, the increasing share of childless individuals was found only for the pattern in which the parents died later in the respondent's life, and the postponement of parenthood did not lead to an increased prevalence of two-generation families (in which the parents die earlier) but only of later three-generation families (in which parents die later). Also, prevalence of the earlier three-generation family declined. This probably reflects the decline and postponement of childbirth in combination with an increase in life expectancy (Beaujouan, 2020; Lesthaeghe, 2010). Over time, individuals appeared to more likely experience clusters that are more stable or transform somewhat slower, meaning that fewer generational placement transitions occurred later throughout the life course. This was in line with the expectations.

Although all transitions have been postponed to a higher age, this does not necessarily indicate changing challenges for individuals over time: for instance, integration into the labor market has also seen a postponement due to increased number of years spent in education and a later transition into retirement (see also Leopold & Skopek, 2015a, for instance). Thus, interconnected life stages might still run parallel to one another.

The current analysis further demonstrates that parents and children, in particular, had increasingly more living time together (G1*G2*). Despite a raising share of individuals who remained childless, which resulted in fewer parent–child (*G2*G3) and grandparent–grandchild (*G2*G4 and G1G3) dyads, these individuals were decreasingly vertically kinless because their parents lived longer. Moreover, in more recent cohorts, fewer grandchildren were born without their grandparents alive and these grandchildren had more shared living time with their grandparents (G1G3). However, in an analysis using the same data but a sub-sample of parents only, the authors concluded that the shared living time between grandparents (G2) and grandchildren (G4) of the next generation might not increase but is likely to remain stable in the future (Leopold & Skopek, 2015a). Shared living time between great-grandparents and great-grandchildren (G1G4) did not appear to have changed over time. The overall relatively large and stable share of people experiencing this placement contrasts with the sparsity of the literature on the special needs of individuals in this "double sandwich" position (see Manor, 2020).

Next to identifying historical trends in typical patterns of generational structures of families, the current study was also able to contrast men's and women's fertility and mortality patterns—which is seldomly carried out. Women are considered to be the "kin keepers" in families with regard to emotional support and caregiving for grandchildren; also, structurally, they spend more living years as parents and grandparents than men. Women were more likely experiencing the four-generation and the earlier three-generation pattern while the later three-generation family was dominated by males. Thus, timing of parent- and grandparenthood appeared to be the strongest driver for gender differences. The expected weaker gender stratification over cohorts due to the loosening of age norms or for individuals growing up in former East Germany due to the more egalitarian welfare state system could not be supported in this analysis.

Lastly, the regional dispersion of typical family structures was in line with the expectation that individuals socialized in former West Germany were more likely to be part of clusters characterized by a later parent- and grandparenthood and childlessness. The timing of parental death did not influence regional stratification indicating that differences in fertility prevail differences in mortality. Overall, region was the only determinant that was able to significantly predict all of the cluster memberships and the size of the estimators was substantively the largest. This underlines the important role of macro-structural contexts for the demographic composition of a society (Mayer, 2005; Van Winkle, 2018).

Some limitations of the current study need to be mentioned. Because of limitations in the questionnaire, the sample comprised individuals who grew up with both of their biological parents only. The early-war and war cohorts were most strongly affected by this restriction, potentially but not exclusively due to the consequences of WW II. Thus, the study results should only be generalized to this specific subpopulation. Moreover, the analyses are based on survey data and are subject to right-censoring to reduce mortality bias. The transitions that have been observed in this study, thus, tend to be those that happened relatively early in the respondents' lives. This issue is particularly problematic for the age at death of the second parent and entrance into grandparenthood (Leopold & Skopek, 2015b). Thus, some individuals might be classified as not being grandparents although they might become grandparents later in their lives. Next to the problem of censoring, mortality might still systematically affect the sample: in particular, individuals from the earlier-born cohorts are those who had reached a relatively late age at the time of the interview. But even for the later-born cohorts, individuals who had died earlier are just not part of the sample, and if mortality is associated with the generational placement trajectory, the results might be biased. While the use of register data might reduce these sorts of bias, such data are not available for Germany. Moreover, using survey data enables subsequent analyses of information usually not available in register data, such as on well-being, health, or economic situation as outcomes of the generational placement trajectories, for instance.

Future research might also include further family generations, such as (great)grandparents, to provide a more complete picture of the generational structure of the family, or account for ties to non-biological parents and children and the number of family ties. This was not feasible with the current data nor with sequence analysis, which is restricted in the number of states it can usefully handle. The current analysis has already shown an increasing stability in the generational structures of the family. Considering that the size of potential family networks is larger when more dyads are considered or it is further extended in more complex families (not only do individuals have biological parents, but further step-parents) (Klaus et al., 2012), this might indicate an even larger increase in the intergenerational family members structurally available to individuals. Lastly, further insights could be gained using qualitative or mixed method designs to better understand what these dynamic generational structures entail.

2.6 Conclusion

In conclusion, the analysis of typical generational placement trajectories has been able to draw a holistic picture of the generational structures of biological families in Germany and their evolution over time. The current paper produced four main findings. First, six typical patterns of generational placement trajectories that capture considerable variation across the individual life course as well as between life courses could be identified: the most common is the later three-generation family, while patterns without children are most uncommon. Second, the generational structures of families have changed over time, towards “slower” or “more stable” trajectories. Stable clusters, such as the later three-generation family or the childless cluster with a later death of the parents, have become more dominant over time, while trajectories with earlier transitions have become less common. This, in turn, results in overall more shared living time between several generations and promises stable opportunity structures for intergenerational support. Third, the few identified gender differences in typical generational placement trajectories can predominantly be assigned to differences in fertility behavior but not mortality with females experiencing clusters characterized by early (grand-)parenthood. Fourth, stratification of typical trajectories was most pronounced between regions, highlighting the great influence of social policy regimes and societal norms and culture for demographic behavior.

In sum, the generally most important and stable personal support network of individuals appears to have strengthened over time. More recent cohorts might have the possibility of relying on informal support provision for a much larger share of their lives, while they might also have to care for their parents for a longer time (Kalmijn, 2018). Also, given that parents and children seem to adapt to particular situations of need in order to provide support (Fingerman et al., 2009; Steinbach et al., 2020), the increasing availability of a stable support network seems promising. Previous research has argued that individuals might, in fact, increasingly rely on the support of specific family members rather than the family as a system as a consequence of increased shared living time (Hagestad, 1988). Because the influence on each other's lives across the generations might also increase (see Song & Mare, 2019, for educational mobility), social policy mechanisms might need to be further strengthened in order to tackle increasing inequalities based on the cumulation of advantage/disadvantage over multiple generations (Gilligan et al., 2018).

While on the aggregate level, the decline and postponement of parenthood as well as gains in life expectancy are also evident, the patterns of individual trajectories presented reveal a more detailed and holistic insight into how the opportunity structures for intergenerational family support develop over the individual life course and differently between individuals. Thus, these structures are displayed as a function of ageing *and* of historical time through integrating the demographic and family life course perspective (Bengtson & Allen, 1993; Uhlenberg, 1996). The individual trajectories might be closely interrelated with other spheres of individual life. Future research might use the current study and its perspective on multigenerational families as a process outcome as a starting point for a more differentiated examination of the consequences of the generational structures of families for individual later life outcomes, such as physical and mental health, social integration, and overall well-being.

2.7 Appendix

2.7.1 Additional Analyses

2.7.1.1 Earlier Born Cohorts

Arguably, the choice of cohorts is to some degree arbitrary. The current cohorts cover only 15 years and are in themselves relatively small (five years each). To check if the findings might also be extended to a larger time span, the analyses were re-run using a broader sample ranging from the birth years 1923–1954, with intervals of nine years for each cohort (*1923–30*, *1931–38*, *1939–46*, and *1947–54*). The advantage of being able to observe historical change over a larger period encounters the disadvantage of a potentially stronger survivor bias: because individuals in the earliest born cohorts were interviewed between the ages of 70 and 86, they represent a very special group in their initial birth cohort, namely those who have survived to this age. Thus, the generalizability of these findings is threatened.

The results of the analysis with this extended sample were overall consistent with the main findings: the same general patterns of generational placement trajectories were identified and also the share of individuals pertaining to each of these typical clusters was similar. The trends observed regarding historical change were also consistent with the patterns found in the current analysis.

2.7.1.2 Unweighted Data

Weights are applied to counterbalance potential biases regarding certain sample characteristics in order to more closely reflect the actual population under study and make descriptive results generalizable. In order to check whether the weights developed in this study work in the way they are expected to do, robustness checks were conducted comparing fertility and mortality indicators for the sample with and without weights. The current weights accounted for: 1) the stratification by age group, gender, and region (constructed by the DEAS); and 2) a smaller share of individuals from the post-war cohort that was included in the analytical sample because of a younger age at interview in 2008. Thus, without these weights, later-born cohorts—with a higher age at (grand-)parenthood (postponement of first childbirth) and lower age at loss of the second parent (increase in life expectancy)—should be strongly underrepresented in the sample. In line with Germany's demographic trends, the descriptive statistics *without* weights indicated a younger age at parent- and grandparenthood, and a lower share of parents and grandparents at age 60, as well as higher mortality among the parent generation, compared to the sample when weighting was applied.

2.7.2 Tables

Table A 2-1 *Estimated Population Survival Rate Until Interview by Cohort and Gender*

	1927-32		1933-38		1939-43		1944-48		1949-53	
Interview in	male	female	male	female	male	female	male	female	male	female
2008	0.73	0.85	0.61	0.77	0.81	0.90	0.87	0.93	0.92	0.95
2014	0.58	0.75	0.41	0.60	0.71	0.84	0.80	0.89	0.86	0.93

Note. Indicates the share of survivors until the average age at interview per cohort based on 2008/10 period life table (Federal Statistical Office (Destatis), 2021b); cohorts used in this analysis are underlined.

Table A 2-2 *Description of the Clusters; Means and Standard Deviations (in Parentheses)*

	Cluster							
	(1)	(2)	(3)	(4)	(5)	(6)		
	Later three-generation family	Two-generation family	Four-generation family	Earlier three-generation family	Childless	Childless with earlier death of parents	Total	ANOVA/ χ^2 p-value
Age at birth of first biological child	27.98	27.76	22.86	22.94	.[a]	.[a]	26.13	.00
	(4.83)	(5.00)	(3.07)	(3.08)	(.)	(.)	(5.23)	
Age at birth of first grandchild	57.60	56.50	48.45	48.97	.	.	51.70	.00
	(1.97)	(2.86)	(4.49)	(4.27)	(.)	(.)	(5.60)	
Age at death second parent	56.37	40.91	57.05	44.80	57.58	45.01	48.50	.00
	(2.60)	(7.92)	(2.46)	(6.06)	(1.87)	(8.02)	(9.10)	
Parent	1	1	1	1	0.06	0.02	0.87	.00
Grandparent	0.35	0.33	1	1	0.00	0.00	0.51	.00
Both parents dead	0.50	1	0.35	1	0.41	1	0.66	.00
Respondent is female	0.47	0.46	0.58	0.59	0.44	0.47	0.51	.00
Grew up in former East Germany	0.19	0.19	0.38	0.29	0.11	0.12	0.23	.00
Cohort								
1939-43	0.26	0.37	0.31	0.44	0.23	0.26	0.31	.00
1944-48	0.31	0.32	0.30	0.32	0.31	0.34	0.31	.95
1949-53	0.43	0.31	0.38	0.24	0.47	0.40	0.37	.00
Proportion	.34	.19	.19	.14	.08	.06	1	

Note. N = 2,607 (weighted); significance testing on group differences is based on ANOVA for continuous and on χ^2-tests (here: corrected F-statistics because of weights (Rao & Scott, 1984)) for categorical variables.

[a] Mean and standard deviation not reported because n negligibly small for these subgroups.

Table A 2-3 *Multinomial Logistic Regression Models of Cluster Membership (Relative Risk Ratios)*

	Cluster									
	(2) Two-generation family		(3) Four-generation family		(4) Earlier three-generation family		(5) Childless		(6) Childless with earlier death of parents	
	A	B	A	B	A	B	A	B	A	B
Cohort (ref. *1939-43*)										
1944–48	0.74*	0.86	0.84	0.80	0.62**	0.52**	1.12	1.51	1.13	1.02
	(0.10)	(0.16)	(0.12)	(0.16)	(0.09)	(0.11)	(0.24)	(0.43)	(0.26)	(0.30)
1949–53	0.52***	0.66*	0.71*	0.84	0.33***	0.28***	1.26	2.06*	0.96	0.73
	(0.08)	(0.14)	(0.11)	(0.19)	(0.06)	(0.08)	(0.28)	(0.60)	(0.24)	(0.25)
Female	0.97	1.38	1.55***	1.98**	1.64***	1.52	0.87	1.84	0.99	0.75
	(0.12)	(0.28)	(0.19)	(0.45)	(0.22)	(0.33)	(0.16)	(0.58)	(0.20)	(0.27)
Former East	1.03	1.23	2.67***	3.47***	1.78***	1.94**	0.52**	0.67	0.61*	0.70
	(0.15)	(0.24)	(0.34)	(0.65)	(0.25)	(0.40)	(0.12)	(0.19)	(0.15)	(0.23)
1944–48 * Female		0.73		1.07		1.32		0.55		1.29
		(0.20)		(0.30)		(0.39)		(0.23)		(0.60)
1949–53 * Female		0.59		0.74		1.26		0.35*		1.82
		(0.19)		(0.23)		(0.48)		(0.16)		(0.94)
East * Female		0.69		0.62		0.82		0.58		0.76
		(0.20)		(0.16)		(0.23)		(0.27)		(0.38)
Size of cluster	.19	.19	.19	.19	.14	.14	.08	.08	.06	.06
F	9.32	5.52	9.32	5.52	9.32	5.52	9.32	5.52	9.32	5.52
p(F)	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00

Note. N = 2,607 (weighted); relative risk ratios with "later three-generation family"-cluster as base outcome; standard errors in parentheses. *** $p < .001$. ** $p < .01$. * $p < .05$.

Table A 2-4 *Pairwise Contrasts Between Average Marginal Effects of Cohort on Cluster Membership*

		(1) Later three-generation family	(2) Two-generation family	(3) Four-generation family	(4) Earlier three-generation family	(5) Childless	(6) Childless with earlier death of parents
Cohort	1939 vs 1944	-0.05	n.s.	n.s.	0.05	n.s.	n.s.
	1939 vs 1949	-0.11	0.06	n.s.	0.10	-0.04	n.s.
	1944 vs 1949	-0.06	n.s.	n.s.	0.05	n.s.	n.s.

Note. N = 2,607 (weighted); based on multinomial logistic regressions by cluster without interaction terms; contrasts only shown if significant on 0.05-level; n.s. indicates not significant.

Table A 2-5 *Average Marginal Effects of Gender and Region on Cluster Membership*

	(1) Later three-generation family	(2) Two-generation family	(3) Four-generation family	(4) Earlier three-generation family	(5) Childless	(6) Childless with earlier death of parents
Female	-0.04*	-0.03	0.06***	0.05***	-0.02	-0.01
	(0.02)	(0.02)	(0.02)	(0.01)	(0.01)	(0.01)
Former East	-0.08***	-0.04*	0.16***	0.05**	-0.05***	-0.03***
	(0.02)	(0.02)	(0.02)	(0.02)	(0.01)	(0.01)

Note. N = 2,607 (weighted); based on multinomial logistic regressions by cluster without interaction terms; standard errors in parentheses.
*** $p < .001$. ** $p < .01$. * $p < .05$.

Chapter 3 Life-Course Generational Placements and Well-Being in Later Life

Co-authored by Karsten Hank

Abstract

Previous research has demonstrated that family transitions, specifically births and deaths of preceding and following generations within families, are associated with individuals' later-life well-being and health. However, life course, family systems, and role theories suggest that this relationship might be complex because, as individuals age, they might experience multiple such events and their effects might be interconnected. Therefore, this study asks whether and how transitions into and out of multiple intergenerational family roles are associated with later-life well-being and health. We account for the occurrence, timing, and ordering of the parents' death and the birth of the first child and grandchild. To this end, we use the concept of 'generational placement trajectories'. They capture the vertical position of individuals in their intergenerational family over age and reflect the changing family roles and kinship reservoir of individuals across their life course. Applying sequence, cluster, and regression analyses to data from the German Ageing Survey (n = 3,617), we investigate associations between generational placement trajectories from birth to age 60 and four dimensions of later-life well-being and health, namely life satisfaction, depressiveness, functional limitations, and physical health problems. Results support, first, the notion of salutary effects of a larger kinship reservoir and multiple social roles in the family and, second, indicate that the timing of transitions matters for various later-life wellbeing and health outcomes. Importantly, the effect of temporal deviations from the 'normative' family life course might be affected by individual socio-economic differences. We enhance previous research by demonstrating that the occurrence, timing, and ordering of transitions into and out of multiple kin relations and family roles across the life course relate to individuals' later-life well-being and health.

3.1 Introduction

A plethora of studies provide evidence of family relationships' key role in individuals' well-being and health across the entire life course and particularly at older ages (Thomas et al., 2017; also see Umberson & Thomeer, 2020). Importantly, health and well-being in later-life are not only influenced by older adults' current family relationships (e.g., Arpino et al., 2018; Milkie et al., 2008), but also by the 'long (and cumulative) arm' of family ties during earlier stages of the life course (e.g., Chen et al., 2017).

Next to the quality of these relationships (e.g., Damri & Litwin, 2019; Merz et al., 2009), even the mere presence or absence of family relations—as a '*kinship reservoir*' or, more generally, a '*relational reserve*'—might matter (e.g., Cullati et al., 2018; McIlvane et al., 2007). Because transitions into or out of kin relationships shape and change individuals' roles as well as the basic opportunity structure for social interaction and the exchange of support within families (e.g., Sauter et al., 2021; Umberson et al., 2010), their occurrence and timing during the life course have been investigated as potential predictors of individuals' subsequent well-being and health (e.g., Di Gessa et al., 2020; Williams et al., 2015).

One important shortcoming in much of the previous literature is its focus on how *singular* family role transitions, such as losing a parent (e.g., Leopold & Lechner, 2015), entering parenthood (e.g., Mirowsky, 2005), or becoming a first-time grandparent (e.g., Sheppard & Monden, 2019), affect health and well-being. However, across the *life course*, most individuals actually experience *multiple* such transitions (the loss of parents and the birth of children or even grandchildren). Moreover, each of these transitions constitutes more than just a change in a specific dyadic relationship, but occurs within a *family system* (e.g., Fingerman & Bermann, 2000). Taking a family systems rather than a dyadic perspective is consequential, because next to merely assessing direct associations between particular role transitions and health outcomes, we are then also able to consider such transitions' indirect relationship with well-being resulting from 'spillovers' to other family ties: Both the birth and the death of family members affect, for example, individuals' *generational placement* and have been shown to impact multigenerational relationship qualities in the family system (e.g., Kim et al., 2019; Tanskanen, 2017).

We enhance previous research by addressing the question of whether and how the occurrence, timing, and ordering of transitions into and out of multiple kin relations and family roles across the life course relate to individuals' later-life well-being and health. Our study thus primarily takes a *life course perspective* (e.g., Elder, 1994; George, 2003; Shuey & Willson, 2021), but also speaks to – and integrates – role theory and family systems theory. Taken together, these approaches suggest that individuals are embedded in a dynamic family system, in which the individual might take on multiple social roles and which constitutes a 'kinship reservoir' that can change over the life course. One's "kinship reservoir refers to a pool of relatives present in the focal individual's life, whether they are significant family members of the focal individual or not. […] The family ties that constitute this reserve can be activated, reactivated or deactivated over the lifecourse, depending on the current needs of the focal individual" (Sauter et al., 2021, p. 3). This does not apply to relationships with intimate partners, though. While acknowledging the importance of partnership histories for individuals' health (e.g., Kravdal et al., 2012; Williams et al., 2015), the current investigation therefore focuses on *intergenerational relations*. Moreover, we propose that this 'bundle' rather than one specific (dyadic) kin relation or family role transition at a particular point in time should be considered as a driver of later-life health and well-being.

Accordingly, our study builds on recent work by Hünteler (2022), who empirically identified distinct clusters of '*generational placement trajectories*'. These clusters reflect typical patterns and dynamics of the structural availability of intergenerational family relations—the 'kinship reservoir' of parents, children, and grandchildren—across individual life courses:

Some experience a trajectory with barely any change in their generational placement (merely losing their role as a child when their parents die, but never entering parenthood or grandparenthood), whereas others find themselves moving up the 'generational ladder'—from being a child to being a parent to being a grandparent—at great speed, maintaining several intergenerational family roles at the same time. Generational placement trajectories thus efficiently describe the vertical position of individuals in relation to other living generations in their family over time. This comprehensive and dynamic approach captures simultaneously the occurrence, timing, and ordering of transitions into or out of multiple intergenerational family roles, enabling us to explore their joint association with individuals' later-life well-being and health.

Our analysis is based on two cross-sectional rounds of the *German Ageing Survey* (DEAS; Klaus et al., 2017), collected in 2008 and 2014, whose data not only provide rich retrospective information on respondents' family biographies, but also an array of current well-being- and health-related measures. These allow us to assess four distinct physical and psychological aspects of the multidimensional concepts of health and well-being (potentially bearing different associations with the generational placement trajectories), namely: *Life satisfaction* (as an indicator of subjective well-being), *depressiveness* (as an indicator of psychological distress), *functional limitations* (as an indicator of the individual's inability to perform specific tasks), and *physical health problems* (such as respiratory problems, cancer, or insomnia).

The remainder of this article is structured as follows: The next section provides the theoretical and empirical background of our study. It is followed by a thorough description of the data and methods used in the empirical analysis. We then present our findings, which we eventually discuss in the concluding section.

3.2 Theoretical and Empirical Background

3.2.1 The Life Course Perspective

Over their life course, individuals can experience a multitude of family transitions triggering changes in social status and family roles. Individual transitions are considered to be embedded within larger (long-term) trajectories that are shaped by the occurrence, timing, and ordering of multiple such events. Differences in these trajectories might result in varying (long-term) consequences of the same social phenomenon across groups of individuals. Thus, life histories rather than singular life events have been considered in studies investigating family transitions' and positions' contribution to shaping individuals' later-life health (e.g., Kravdal et al., 2012; see also Gilligan et al., 2018). Speaking to the life course principle of *timing* (Elder, 1994), non-normative or 'off-time' transitions (trajectories, respectively)—such as early parenthood or the early death of a parent—are of particular interest because of their potentially negative health implications (e.g., George, 2003): (How) does it matter for later life well-being and health, whether, and for how long, one (still) has parents (e.g., Kamis et al., 2022; Leopold & Lechner, 2015; Marks et al., 2007) or whether, and when, one has children (e.g., Mirowsky, 2005; Nomaguchi & Milkie, 2020) or grandchildren (e.g., Di Gessa et al., 2020; Sheppard & Monden, 2019)?

Moreover, the life course principle of *linked lives* is also fundamental to our study. Arguably, families constitute the most proximate social context within which individual pathways are embedded: "A classic example of the effects that the transition of one family member has on other members can be seen in the transition to parenthood, which creates a *counter-transition* […] to grandparenthood for the older generation […]. The timing and quality of shared transitions and experiences have *ripple effects* […] on the lives of other members of the family unit beyond just the individual at its epicenter, similar to a pebble […] dropped into a pond" (Shuey & Willson, 2021, p. 179, italics in the original). The life course perspective is thus closely related to family systems theory, in which family ties are conceptualized as sets of interdependent, reciprocally influential subsystems (e.g., Fingerman & Bermann, 2000). Along these lines, recent studies have pointed to the importance of accounting for individuals 'em-beddedness' in multiple simultaneous kin relations to advance our understanding of how family functions as a principal determinant of adult health and well-being (see Kim et al., 2019; Patterson, Margolis, et al., 2020).

3.2.2 Intergenerational Family Roles and Well-Being: Underlying Mechanisms

Various mechanisms have been discussed to explain the nexus between intergenerational family positions and well-being and health (see, for example, Sheppard & Monden, 2019), but *role theory* is a particularly obvious candidate: It proposes that transitions into new social roles may affect individuals' health and well-being in both positive (role enhancement) or negative (role strain) ways. Because each role is usually associated with both demands and rewards (Nomaguchi & Milkie, 2020), its net effect is difficult to determine a priori—and predictions become even more difficult if multiple roles are considered simultaneously (e.g., Reid & Hardy, 1999). Especially in middle-adulthood, individuals may be placed in an intergenerational 'sandwich' position (e.g., Grundy & Henretta, 2006; Wiemers & Bianchi, 2015), whose specific challenges and risks of role strain have been shown to be associated with well-being and health (e.g., Do et al., 2014; Hodgdon & Wong, 2019). Such consideration of multiple simultaneous family roles corresponds to a perspective stressing the importance of accounting for individuals 'embeddedness' in the family system and their interconnectedness throughout their lives (linked lives) as a determinant of adult health and well-being (see Kim et al., 2019; Patterson, Margolis, et al., 2020). Moreover, it might be relevant if transitions into and out of these family roles are experienced on-time, that is in accordance with the normative expectation (timing).

Next to role theory, the concept of the *kinship reservoir*, a sub-form of relational reserves that reflects a dimension of social capital, contributes to explaining how the vertical position within the family system might be associated with an individual's well-being and health (Cullati et al., 2018). A reserve (in contrast to resources) can be understood as a more indirect source of support to overcome adverse life events. Throughout the life course, the relational reserve can change in density or size. Considering intergenerational biological families, the reserve increases upon the birth of a child or grandchild and decreases, when one's parents die. The larger the reserve, the more potential there is to turn its elements into active ties who support an individual in times of need. Thus, having more family members along vertical lines may enhance later-life health and well-being. Conversely, lack of intergenerational family ties constitutes a specific form of vulnerability which may reduce an individual's well-being and health (Cullati et al., 2018).

3.2.3 Intergenerational Family Roles and Well-Being: Previous Empirical Findings

Ample research has investigated associations between transitions into or out of specific family roles (affecting one's generational placement) and individuals' health and well-being. *Parental death*, for example, has been shown to be associated with drops in life satisfaction (Leopold & Lechner, 2015) as well as declining mental and physical well-being (Kamis et al., 2022; Marks et al., 2007). Importantly, negative effects appear to be stronger if adult children lose a parent 'off-time', that is, at younger ages (Kamis et al., 2022; Leopold & Lechner, 2015).

Studies investigating associations between *parenthood* and well-being and health across the life course (e.g., Nomaguchi & Milkie, 2020; Quashie et al., 2021) cover a broad range of outcomes, ranging from life satisfaction and happiness (e.g., Myrskylä & Margolis, 2014; Pollmann-Schult, 2014) to mortality (e.g., Henretta, 2007; Kravdal et al., 2012). Specifically, having had an 'early' first birth has been found to be associated with subsequent lower quality of life and lower (self-rated) general health (e.g., Grundy & Foverskov, 2016; Mirowsky, 2005;

Read & Grundy, 2011), a higher propensity to report long-standing illness and physical health problems (e.g., Grundy & Foverskov, 2016; Hank, 2010; Henretta, 2007), as well as more depressive symptoms (e.g., Henretta et al., 2008; Mirowsky & Ross, 2002). Some findings indicate, however, that 'late' transitions into motherhood might be associated with adverse health outcomes in later-life as well (e.g., Hank, 2010; Mirowsky, 2005). Whether individuals enter parenthood 'off-time'—that is, deviating from the 'normative' life course—thus appears to have a stronger effect on their subsequent health and well-being than the transition as such (see Koropeckyj-Cox et al., 2007).

This is also reflected in negative associations of being unmarried at the time of the first birth and later-life physical health outcomes (e.g., Hank, 2010; Henretta, 2007) as well as in cross-national variation in the extent to which *childlessness* is associated with lower psychological well-being: Huijts, Kraaykamp and Subramanian (2013) found that the disadvantage in psychological well-being of childless people to be smaller in countries with tolerant norms towards childlessness. Overall, however, childlessness does not seem to be consistently associated with older adults' health: In a comprehensive study, Quashie and colleagues (2021) found a fairly unsystematic pattern of childless older adults' risk of poor health across various health outcomes and societal contexts.

Finally, whereas Ellwardt, Hank and Mendes de Leon (2021) found that early grandmotherhood increases women's mortality risk (compared to non-grandmothers), recent studies suggest that the transition to *grandparenthood* per se does not substantially affect individuals' life satisfaction or depressive symptoms (Di Gessa et al., 2020; Sheppard & Monden, 2019; but see Tanskanen et al., 2019). Importantly, though, some research indicates a positive association of grandparental status and active grandparenting with, for example, older adults' subjective well-being (Arpino et al., 2018) and fewer difficulties with activities of daily living (Danielsbacka et al., 2019).

3.2.4 Intergenerational Relationships and Generational Placement Trajectories in Germany

Our study's focus lies on the *structural availability of intergenerational family ties* across individual life courses (e.g., McIlvane et al., 2007; Sauter et al., 2021), as reflected in generational placement trajectories (Hünteler, 2022). The generational placement indicates the vertical position that individuals take within the family system. That is, the presence or absence of preceding (parents) and subsequent (children) generations in the family determines the position of the individual; accordingly, births and deaths lead to shifts in an individual's generational placement over time. Thus, generational placement *trajectories* capture the individual's changing position within the intergenerational family across their life course. When considering biological parents, children, and grandchildren, nine distinct generational placements are possible, ranging from individuals without any intergenerational kin relations to those being a child, parent, and grandparent at the same time.

Hünteler's (2022) analysis of German cohorts born between 1939 and 1953 revealed six typical generational placement trajectories observed from birth through age 60. They differ with regard to (a) the number of simultaneous vertical roles in the family system as well as (b) the timing and ordering of intergenerational role transitions. Table 3-1 depicts the distribution of the six clusters as well as whether and when individuals in these clusters typically experienced the considered family transitions. The two trajectories with the fewest transitions comprise permanently *childless* individuals, with a further distinction between clusters of individuals who lost their parents early (6%) and those who lost them later in life (8%). All other trajectories comprise individuals who became parents: The '*two generations*' cluster (19%) consists of individuals who experienced a trajectory in which the death of both parents occurred prior to the birth of their first child. The two '*three generations*' clusters, where individuals had children before they lost their own parents and became grandparents around the time their

Table 3-1 *Distribution and Characteristics of Typical Generational Placement Trajectories in German Cohorts Born 1939–1953 (Occurrence and Timing of Transitions)*

	Cluster					
	Childless (early)	Childless (late)	Two generations	Three generations (early)	Three generations (late)	Four generations
Parental death	Early / medium	(Late)	Early	Early / medium	(Late)	(Late)
Transition to parenthood	-	-	Late	Early	Late	Early
Transition to grandparenthood	-	-	(Late)	Early	(Late)	Early
Cluster size (%)	6	8	19	14	34	19

Note. Brackets indicate that the transition does not occur for all individuals within that cluster until age 60. For more detailed information about the occurrence and timing of transitions see Hünteler (2022) as well as Table A 3-1 in the Appendix.

parents died, are further differentiated by a different timing of transitions: For some, the transitions occurred early in the life course (14%), and for others—the quantitatively most prevalent pattern—they occurred later (34%). Finally, the '*four generations*' cluster (19%) exhibits a similar ordering of transitions, but the timing was such that grandparenthood occurred prior to the death of the second parent (that is, individuals experienced for some time the family roles of being a child, parent, and grandparent simultaneously).

Across cohorts, the prevalence of clusters was shown to be fairly stable. However, a trend towards trajectories with later role transitions— which are thus more 'stable'— became evident. Moreover, only few gender differences existed: Women, compared to men, and individuals who grew up in the former Eastern parts of Germany were more likely to experience trajectories characterized by early transitions into parenthood and grandparenthood (in the 'three generations (early)' and the 'four generations' clusters).

3.2.5 Hypotheses

From the theoretical considerations and previous empirical findings described above, we derive the following general hypotheses about how the generational placement trajectories identified by Hünteler (2022) might be associated with later-life health and well-being:

- *Hypothesis 1a:* A larger intergenerational kinship reservoir—as observed in the 'three' and 'four' generation clusters—is associated with *more* favourable outcomes because it provides more opportunities (1) to (re-)activate family ties in order to seek support in times of need and (2) to take on multiple active family roles simultaneously (role enhancement).
- *Hypothesis 1b:* A larger intergenerational kinship reservoir is associated with *less* favourable outcomes because (1) it creates more potential obligations to support others and (2) forces individuals into multiple active family roles simultaneously (role strain).
- *Hypothesis 2:* 'Off-time' transitions, such as parental loss at younger ages or teenage motherhood, which are characteristic for the 'childless (early)' or 'three generations (early)' clusters, are associated with *less* favourable outcomes because they constitute deviations from the 'normative' family life course.

Importantly, individuals' *socio-economic status* has been shown to impact both the occurrence and timing of family role transitions (Skopek & Leopold, 2017; e.g., van Roode et al., 2017) as well as health and well-being (e.g., Saint Onge & Kueger, 2021). The expected associations between generational placement trajectories and the later-life outcomes considered in our study might thus be partially affected by their joint association with individuals' socio-economic characteristics.

- *Hypothesis 3:* (Bivariate) Associations of generational placement trajectories and later-life health and well-being become weaker—or even disappear—if individuals' socio-economic status is accounted for.

3.3 Data and Methods

3.3.1 Data

The data for our analysis were derived from two cross-sectional rounds of the *German Ageing Survey* (DEAS; Klaus et al., 2017), collected in 2008 and 2014. DEAS is a nationally representative study of non-institutionalized adults aged 40 to 85, providing rich information on various dimensions of well-being as well as demographic data on respondents' parents, children, and—from 2008 onwards—grandchildren. From the initial sample of 12,206 first-time respondents, we excluded (a) 5,381 individuals younger than age 60 to allow considering grandparenthood in our analysis and (b) 1,773 individuals aged 75 or older to avoid potential survivor bias. Thus, only respondents born between 1933 and 1954 were included in the analytic sample. Because respondents provided demographic information only on their two primary caregivers during childhood, those who did not grow up with both of their biological parents (1,102) were excluded, just as observations with item non-response on the birth or death dates of parents (124), children (10), or grandchildren (100). Respondents were also excluded if the birth of the youngest (grand-)child was reported to have happened prior to the parent's 12th birthday (11), if information on any of the four outcome variables (83) or partnership status, education, or labour force status (5) was missing. The final analytical sample thus comprises a total of 3,617 observations. Note, however, that two of the dependent variables (see below), namely life satisfaction and physical health problems, were assessed using an additional paper-and-pencil drop-off questionnaire that respondents filled out and returned after the main interview. Analyses including these two variables are thus based on a smaller sample of 2,753 respondents.

Item non-response in the independent variable relative income position (11%) was imputed using multiple chained equations (MICE) (White et al., 2011) which contained the incomplete dependent variables before they were case-wise deleted. Results based on complete case analysis were largely consistent with the analyses based on the imputed data. Finally, weights were applied to the analyses in order to correct for the initial sample's stratification by age, gender, and region as well as potential selectivity in returning the additional drop-off questionnaire when applicable (see Klaus et al., 2017).

3.3.2 Dependent Variables

We considered four *outcome variables*, capturing different dimensions of later-life well-being and health: (1) Global *life satisfaction*, as an indicator of subjective well-being, was assessed in DEAS' drop-off questionnaire and was measured by the average rating of five items such as "In most ways my life is close to my ideal." using a 5-point scale ranging from 1 – *strongly agree* to 5 – *strongly disagree* (given at least three of the items had been answered) (Pavot & Diener, 1993). The scale was recoded so that higher values indicated higher satisfaction with life (Cronbach's alpha = .84).

(2) *Depressiveness*, as an indicator of psychological distress, was assessed using a German short form of the CES-D scale. This scale was constructed as the sum of 15 items assessing the frequency of a variety of feelings, thoughts, and mental states, such as feeling fearful or sleeping restlessly over the past week, with categories ranging from 0 – *rarely or none of the time (less than 1 day*) to 3 – *most or all of the time (5 to 7 days)*. If at least eight items had been answered, the average was calculated and then multiplied by 15. The scale ranged from 0 to 45, with higher scores indicating higher levels of depressiveness (Cronbach's alpha = .85).

(3) *Functional limitations*, as an indicator of the individual's inability to perform specific tasks, were measured by respondents' evaluations using a part of the SF-36 scale on health which included limitations in ten activities of daily living (0 – *no, not limited at all* to 2 – *yes, limited a lot*; recoded). Given at least nine of the ten items were answered, the sum of the ratings was calculated so that individuals with no limitations at all scored 0 and those with strong limitations in all activities scored 20 (Cronbach's alpha = .92).

(4) Finally, the number of *physical health problems* (e.g., respiratory problems, cancer, or insomnia) was reported by respondents based on a list provided in the drop-off questionnaire. Ranging from 0 to 12 in our sample, a higher number of problems mentioned reflected worse physical health.

3.3.3 Independent Variables

Our main *explanatory variable* of interest is the respondent's *generational placement trajectory*. Applying sequence and cluster analysis using the packages *TraMineR* (Gabadinho et al., 2011) and *WeightedCluster* (Studer, 2013) in the programme *R*, we reproduced the six clusters of generational placement trajectories identified by Hünteler (2022) as follows: we defined the trajectories according to if and when individuals transitioned into parent and grandparenthood or lost their second parent on an annual basis from birth through age 60. Combining these three transitions, six exclusive states are possible, ranging from having no intergenerational kin alive to being a child, parent, and grandparent simultaneously. The big advantage of sequence analysis is that no assumptions about the underlying distribution are necessary, such as in latent class analysis, and that the calculation of the differences between the trajectories can be chosen in accordance with theoretical considerations. Because of its sensitivity to differences in timing, we used the Chi-square measure to group the trajectories into clusters of similar trajectories (Studer & Ritschard, 2016). As shown in previous research (Hünteler, 2022) and in contrast to other distance measures, such as optimal matching, the clusters were not only well separated considering the number of simultaneously living intergenerational family members (relevant for *Hypotheses 1a and 1b*) but also the age at which specific transitions occurred (relevant for *Hypothesis 2*). Based on the calculated distances, different clusters were identified using the Partitioning Around Medoids algorithm (PAM), with the starting point of the algorithm defined through the hierarchical clustering 'Ward', as is recommended (Studer, 2013). This method strives towards maximizing a global criterion and it performed better on several quality measures and different numbers of clusters than the 'Ward' algorithm.

In line with Hünteler's findings (2022), the analyses suggested a six- and an eight-cluster-solution. Six clusters already allowed for a substantively clear differentiation between the groups, whereas the eight-cluster-solution further separated the two childless (by timing of parental death) and the third cluster (the 'four generations' pattern) (also by timing of parental death). Additionally, six clusters performed comparatively better and overall well on the measures of the quality of partition, such as the weighted average silhouette width (.46) and Hubert's C (.05) (Studer 2013). Therefore, the six-cluster-solution—which virtually produced the same clusters as described above (Table 3-1)—was preferred above the eight-cluster-solution. For the regression analyses, depending on which cluster respondents belonged to, they were assigned a value of 1 in one of the following binary indicators (0 otherwise): 'childless (early)', 'childless (late)', 'two generations', 'three generations (early)', 'three generations (late)' (reference category), 'four generations'. See Table A 3-1 in the Appendix for descriptive statistics of the cluster characteristics.

Finally, we account for a broad set of *control variables*: Next to basic demographic characteristics, namely age (and its square; 66.9 years on average), gender (52% female), partnership status (81% having a partner), and migration background (8%), we pay particular attention to indicators of individuals' socio-economic status (as proposed in *Hypothesis 3*): Education (based on the International Standard Classification of Education: low (0–2; 11%), medium (3–4; 54%), or high (5–6; 35%)), employment status (working (15%) vs. retired (73%) vs. not employed (12%)), relative income position (operationalized as percentage points of the mean of the equivalent net income of the German population; 117 on average (missing values were imputed)), social class (up to middle class (48%) vs. upper (middle) class (52%), operationalized by respondents' and their partners' (last) occupational position). Moreover, we control for respondents' current region of residence: East Germany (18%) vs. West Germany (82%). This seems important, because the cohorts in our sample were born prior to Unification and despite considerable convergence after Unification, both regions still tend to differ with regard to, for example, transitions to parenthood (Hank & Huinink, 2016) and grandparenthood (Leopold & Skopek, 2015a), their prevalence of typical generational placement patterns (Hünteler, 2022), as well as health (Lampert et al., 2019). See Table A 3-1 in the Appendix for descriptive statistics of these variables by clusters of generational placement trajectories.

3.3.4 Analytical Approach

We ran two linear regression models for each outcome variable that included the generational placement patterns as the main independent variable. This is a well-established procedure to test for the associations between family trajectories and individual later-life outcomes (Comolli et al., 2021; Jalovaara & Fasang, 2020; Kapelle & Vidal, 2022). The first model tested the bivariate relationship between generational placement clusters and the later-life outcomes, whereas the second model additionally included the control variables. The second model thus estimated the association of the generational placement trajectory with the well-being indicators independent of socio-demographic differences. To facilitate interpretation, we calculated the overall sample mean of each well-being indicator and the deviations from it for each family pattern. This allows for an assessment of cluster differences that is independent from any reference category (like in the original regression models). These deviations from the sample mean were calculated using the Stata-ado *mimrgns* (Klein, 2014). Additionally, we calculated pairwise contrasts for each of the typical patterns in order to investigate differences between specific pairs of clusters more in-depth.

3.4 Results

Linear regression models were estimated for each later-life outcome in order to assess their bivariate and multivariate associations with the previously identified six clusters of generational placement trajectories. Table 3-2 exhibits deviations of the predicted cluster means from the overall sample mean (full regression results are displayed in Table A 3-2 in the Appendix).

Considering the bivariate models (Table 3-2, Model 1), two clusters stood out: Individuals in the 'childless (early)' cluster were worst off in three out of the four dimensions of health and well-being considered in the analysis. That is, compared to the overall sample mean, they reported significantly lower life satisfaction as well as higher levels of functional limitations and (marginally significant) depressiveness. In contrast, those in the 'three generations (late)' cluster scored best, that is, they reported the lowest levels of functional limitations and (marginally significant) depressiveness as well as the fewest physical health problems. Similarly, individuals in the 'childless (late)' cluster exhibited lower levels of functional limitations and (marginally significant) depressiveness than the sample mean. Whereas these bivariate findings indicate that the timing of changes in one's generational placement might indeed matter, and that trajectories vary particularly in regard to their association with functional limitations (which we also observe in the 'three generations (early)' and – marginally significant – 'four generations' clusters), a consistent overall pattern did not emerge. Being in the 'two generations' cluster, for example, was merely associated with being more likely to have a higher number of physical health problems, and individuals in the 'four generations' cluster were the only ones clearly exhibiting above-average levels of depressiveness.

The multivariate models (Table 3-2, Model 2) accounted for differences in clusters' socio-demographic composition and, importantly, for socio-economic status (see Table A 3-1 and *Hypothesis 3*). Some of the previously significant relationships were no longer statistically

Table 3-2 *Deviations of Predicted Cluster Means From Overall Sample Mean Based on Linear Regressions*

	Overall sample mean	Cluster: Childless (early)	Childless (late)	Two generations	Three generations (early)	Three generations (late)	Four genera-tions
		Model 1 (bivariate)					
Life satisfaction	3.84	-.20 *	-.05	-.01	.03	.01	.04
Depressive-ness	6.31	.85 †	-.10	.00	-.22	-.29 †	.48 *
Functional limitations	3.45	.92 **	-.50 *	.01	.62 **	-.57 **	.29 †
Physical health problems	3.12	.25	-.31 †	.22 *	.15	-.16 *	-.06
		Model 2 (multivariate) [a]					
Life satisfaction	3.84	-.13 †	-.01	-.04	.05	-.01	.06 †
Depressive-ness	6.31	.58	-.25	.26	-.62 **	.00	.20
Functional limitations	3.45	.86 **	-.38	.14	.22	-.29 **	.08
Physical health problems	3.12	.26	-.24	.23 *	.02	-.09	-.08

Note. N = 3,617 (weighted); own calculations, based on DEAS 2008, version 3.2, and DEAS 2014, version 4.0.

[a] See Table A 3-2 in the Appendix for full display of multivariate regression results.

† $p < .10$. * $p < .05$. ** $p < .01$.

significant. All remaining relations suggest that the generational placement patterns are directly associated with later-life well-being to some degree. Individuals in the ‘childless (early)’ cluster continued to exhibit worse health and well-being outcomes than individuals in other clusters: Compared to the overall sample mean, they reported (marginally significant) lower life satisfaction and the highest level of functional limitations (vs. all clusters characterized by late parental death; see pairwise comparisons in Table A 3-3 in the Appendix). The initially suggested health advantage of individuals in the ‘three generations (late)’ cluster partially disappeared and now merely pertained to a lower level of functional limitations (vs. those characterized by early parental loss; Table A 3-3). Individuals’ levels of *functional limitations*, thus, seem to depend on the *combination* of (a) the timing of one's parents' death and (b) the occurrence and timing of one's own transition to parenthood: Only individuals who experienced parental loss *and* entry into parenthood *'late'* enjoyed a health advantage (that is, a below average level of functional limitations), whereas only those who experienced an 'early' parental loss *and* did not become a parent themselves exhibited a significant health disadvantage.

Life satisfaction turned out to be significantly below average in the '*childless (early)*' cluster (vs. those characterized by early parenthood; Table A 3-3) and above average in the '*four generations'* cluster (vs. 'childless (early)' and 'two generations'; Table A 3-3). That is, individuals in the cluster with the fewest living generations for the longest period of time (due to early loss of the parents and no transition into parenthood) seemed to be least satisfied with life, whereas those with the largest kinship reservoir were most satisfied. These differences in life satisfaction might point to processes of *compensation* (when one's new role as a parent replaces the loss of one's role as a child, especially if both transitions occur early in the life course) and an *additive advantage* (if the benefits associated with 'late' parental death were supplemented by having own children).

Once socio-demographic characteristics and socio-economic status were controlled for, *depressiveness* was found to be significantly below the sample mean in the 'three generations (early)' cluster (vs. all but the 'childless (late)' cluster; Table A 3-3) – and only here – which was not the case in the bivariate model. The significantly higher number of *physical health problems* reported by individuals exhibiting a 'two generations' generational placement trajectory (vs. clusters characterized by 'late' parental death; Table A 3-3) was, however, consistently found in models with and without controls. Finally, none of our health and well-being measures exhibited a statistically significant association with the 'childless (late)' cluster in the multivariate analysis, indicating that socio-demographic and socio-economic characteristics rather than the generational placement trajectory itself were the drivers of the seemingly better health outcomes observed among individuals in this cluster in the bivariate model.

Such *compositional effects* also seem to explain the overall weak pattern of associations between generational placement trajectories and later-life well-being and health: For life satisfaction, gender, partnership status, migration background, class membership, and residence in East Germany seemed to be influential, whereas, for depressiveness and functional limitations, age (U-shaped), education, and labour force status appeared to matter as well. For physical health problems, only age, education, and labour force status were relevant. Relative income was significantly associated with all outcomes, but the size of the estimator was zero.

3.5 Discussion

Against the background of ample research indicating a key role of family relationships in individuals' well-being and health across the life course (e.g., Umberson & Thomeer, 2020), the present study set out to provide a more comprehensive exploration of the nexus between the structural availability of intergenerational family ties and well-being and health in a nationally representative sample of older Germans aged 60 to 74. Building primarily on a life-course perspective (complemented by family systems and role theorical considerations), we investigated associations between the occurrence, timing, and ordering of transitions into or out of multiple intergenerational family positions over time (that is, 'generational placement trajectories'; Hünteler, 2022) and four distinct dimensions of health and well-being in later life.

Two main findings emerged from our study: *First*, our analysis did not reveal a systematic pattern of associations between specific clusters of generational placement trajectories and the various indicators of well-being and health considered here. Importantly, several of the initially observed bivariate correlations between individuals' generational placement trajectories and later-life health and well-being disappeared once we controlled for individuals' socio-economic characteristics. Consistent with *Hypothesis 3*, these associations, where we observed them at all, were thus not independently driven by specific sets of life course vertical positions in the family system, but rather by their interplay with socio-economic positions typically associated with generational placement trajectories as well as health and well-being. Along similar lines, Comolli, Bernardi and Voorpostel (2021), for example, found work and family (that is, partnership and childbearing) trajectories to be jointly associated with (subjective, relational, and financial) well-being at older ages (see also Tosi & Grundy, 2021).

Second, some statistically significant associations remained even in our fully controlled models. Whereas these correlations are difficult to interpret—statistically as well as theoretically—in terms of their underlying causal mechanisms, they still provide two important insights: To begin with, the *structural availability of intergenerational family ties* and the *number of simultaneous intergenerational family roles* seems to matter. Those with two or fewer ties (that is, a small kinship reservoir) are more likely than the average to suffer from higher levels of functional limitations ('childless (early)') or more physical health problems ('two generations'), whereas those in the three-generations clusters, for example, report lower levels of depressiveness ('early') or functional limitations ('late'). Rather than supporting *Hypothesis 1b*, this result supports *Hypothesis 1a* and the notion of salutary effects of a larger demographic reserve ('kinship reservoir') and multiple social roles ('role enhancement') in the family (see, for example, McIlvane et al., 2007). While role strain might play a role for some individuals, role enhancement might outweigh potential negative consequences, on average.

At the same time, and in line with *Hypothesis 2*, the *timing of intergenerational family role transitions* appears to be relevant as well. Those in the 'early' and 'late' three-generations clusters seem to enjoy different 'health benefits', and those in the 'early' childless cluster tend to experience health disadvantages, whereas their 'late' counterparts do not. This finding points to the key tenet of life course theory that it matters whether a transition occurs 'on-time' or 'off-time'. Negative life events occurring 'off-time', such as an early parental death, have been proposed to exhibit particularly strong negative effects on individuals' well-being, for example (Leopold & Lechner, 2015). Importantly, the effect of such deviations from the 'normative' family life course need not be a direct one, but it might also be mediated through effects on the individual's educational attainment or socio-economic status (e.g., Patterson, Verdery, et al., 2020).

Overall, our analysis has demonstrated that individuals' later-life well-being seems to depend, in part, on the interplay between the occurrence, timing, and ordering of transitions into and out of multiple vertical family roles, underlining the importance of the two life course principles of 'timing' and 'linked lives'. Our findings highlight the complexity of their interaction, considering their direct and indirect relationships with health and well-being. Still, the present study is not without limitations: *First*, we exclusively focused on intergenerational relationships with biological parents, children, and grandchildren. Obviously, though, meaningful social roles in families may also result from *step*-relations (e.g., Ganong & Coleman, 2017) as well as *intra*generational relationships with siblings (Hank & Steinbach, 2018), for example, and might thus also be relevant for later-life health and well-being. *Second*, whereas DEAS provides detailed information on respondents' family biographies (allowing us to assess individuals' life course generational placement trajectories), comprehensive measures of respondents' health and socio-economic status are not available retrospectively and the analyses were restricted to individual who grew up with birth of their biological parents. Moreover, DEAS' potential for longitudinal analyses is very limited (the longitudinal sample is rather small, both in terms of the number of follow-up interviews after 2014 and the number of panel participants). We are thus neither able to identify health trajectories, nor can we properly assess the issue of reversed causality (that is, health limitations earlier in life might affect individuals' generational placement trajectories, whose causal effect on later-life well-being we would ideally like to identify). The same applies to individuals' life course socio-economic position, which is—to some extent—endogenous to both family (e.g., Aisenbrey & Fasang, 2017) and health (e.g., Niedzwiedz et al., 2012) trajectories.

Despite these limitations, our study contributes in several ways to *advancing research* investigating the role of family ties in individuals' (later-life) health and well-being: By taking a more comprehensive perspective which, conceptually, integrates life course, family systems, and role theories and, empirically, considers transitions into and out of multiple kin relations over time, as reflected in individuals generational placement trajectories, the current analysis demonstrates that even in the absence of one coherent pattern the number *and* timing of inter-generational family role transitions bear statistically significant associations with a variety of health outcomes at older ages. Further investigation of these relationships, particularly explorations of the causal mechanisms underlying them, appear to be important and promising tasks for future research.

The immediate *practical implications* of our study seem somewhat more limited. However, our findings indicate that older adults with a smaller intergenerational relational reserve and fewer family roles across their life course might experience disadvantages in health and well-being (partially affected by socio-economic inequalities). This contributes to recent debates about the consequences of 'kinlessness' in later-life for individuals' health (e.g., Margolis et al., 2022), the alternatives to 'ageing alone' in the absence of close kin (e.g., Mair, 2019), and, relatedly, if and how interventions aiming to support adults 'ageing solo' can actually compensate lacking family ties (e.g., Lowers et al., 2022).

3.6 Appendix

Table A 3-1 *Biographical and Sociodemographic Cluster Characteristics; Means and Standard Deviations (in Parentheses)*

	Cluster							
	Childless (early)	Childless (late)	Two generations	Three generations (early)	Three generations (late)	Four generations	Total	ANOVA/ χ^2 p-value
Cluster characteristics [a]								
Parent	.02	.06	1	1	1	1	.88	.00
Number of biological children	. [d]	. [d]	1.96	2.35	1.94	2.33	1.84	.00
	(.)	(.)	(0.88)	(1.02)	(0.81)	(1.02)	(1.11)	
Age at birth of first child	. [d]	. [d]	27.84	23.19	27.92	22.58	26.05	.00
	(.)	(.)	(4.96)	(3.10)	(4.79)	(2.96)	(5.14)	
Grandparent	.00	.00	.35	1	.39	1	.54	.00
Number of grandchildren	. [d]	. [d]	1.36	3.23	1.32	3.28	2.04	.00
	(.)	(.)	(1.66)	(1.98)	(1.49)	(2.48)	(2.07)	
Age at birth of first grandchild	.	.	56.34	48.71	57.16	47.60	51.36	.00
	(.)	(.)	(3.09)	(4.30)	(2.12)	(4.51)	(5.71)	
Both parents dead	1	.46	1	1	.51	.36	.68	.00
Age at death of second parent	44.02	56.90	41.01	45.00	56.24	56.85	48.29	.00
	(7.73)	(2.06)	(7.77)	(6.34)	(2.62)	(2.62)	(8.94)	
Control variables [b]								
Age at interview	66.06	65.92	67.37	67.96	66.47	66.71	66.86	.00
	(4.68)	(4.41)	(4.49)	(4.43)	(4.56)	(4.42)	(4.54)	
Female	.46	.49	.48	.58	.49	.59	.52	.00

Table A 3-1 *Biographical and Sociodemographic Cluster Characteristics; Means and Standard Deviations (in Parentheses) (continued)*

	Cluster							
	Childless (early)	Childless (late)	Two generations	Three generations (early)	Three generations (late)	Four generations	Total	ANOVA/ χ^2 p-value
With partner	.67	.63	.86	.79	.84	.83	.81	.00
Education								
Low	.10	.06	.10	.18	.07	.15	.11	.00
Middle	.49	.52	.53	.60	.50	.59	.54	.00
High	.41	.41	.37	.22	.43	.26	.35	.00
Employment status								
Working	.13	.19	.16	.09	.19	.14	.15	.00
Retired	.74	.68	.74	.80	.69	.73	.73	.00
Not employed	.13	.13	.10	.11	.12	.13	.12	.81
Relative income [c]	118.03	128.24	123.03	104.10	127.44	97.17	116.96	.00
	(67.44)	(104.93)	(136.25)	(110.85)	(89.99)	(57.91)	(100.74)	
Upper middle and upper class	.53	.56	.52	.39	.63	.42	.52	.00
Migration background	.08	.06	.05	.07	.09	.10	.08	.07
Living in former East Germany	.12	.10	.12	.27	.13	.30	.18	.00
Size of Cluster (%)	5	7	20	16	34	18		

Note. N = 3,617 (weighted); significance testing on group differences is based on ANOVA for continuous variables and on χ^2-tests (here: corrected F-statistics because of weights) for categorical variables.

[a] Variables censored at age 60, that is the end of the family trajectory.

[b] Variables assessed at interview.

[c] Missing values were imputed.

[d] Mean and standard deviation not reported because n negligibly small for these subgroups.

Table A 3-2 *Linear Regression Models Displayed as Beta Coefficients (Standard Errors in Parentheses)*

	Life satisfaction		Depressiveness		Functional limitations		Physical health problems	
	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)
Generational placement trajectory (ref. *Three generations (late)*)								
Childless (early)	-0.21*	-0.12	1.14*	0.57	1.48***	1.15**	0.41	0.35
	(0.09)	(0.08)	(0.49)	(0.47)	(0.38)	(0.36)	(0.23)	(0.23)
Childless (late)	-0.06	0.01	0.19	-0.26	0.07	-0.09	-0.15	-0.15
	(0.06)	(0.06)	(0.43)	(0.42)	(0.29)	(0.28)	(0.18)	(0.18)
Two generations	-0.02	-0.03	0.29	0.26	0.58**	0.43*	0.38**	0.32*
	(0.04)	(0.04)	(0.29)	(0.29)	(0.22)	(0.21)	(0.13)	(0.13)
Three generations (early)	0.02	0.06	0.07	-0.62*	1.19***	0.51*	0.31*	0.11
	(0.04)	(0.05)	(0.31)	(0.31)	(0.24)	(0.24)	(0.13)	(0.14)
Four generations	0.03	0.07	0.77*	0.19	0.86***	0.37	0.10	0.01
	(0.04)	(0.04)	(0.33)	(0.33)	(0.22)	(0.22)	(0.12)	(0.12)
Age		0.15		-3.07***		-3.23***		-1.02**
		(0.12)		(0.90)		(0.64)		(0.35)
Age^2		-0.00		0.02***		0.02***		0.01**
		(0.00)		(0.01)		(0.00)		(0.00)
Female		0.10**		0.61**		0.35*		0.09
		(0.03)		(0.22)		(0.16)		(0.09)
With partner		0.32***		-2.13***		-0.82***		-0.18
		(0.04)		(0.32)		(0.23)		(0.12)
Educational level (ref. *low*)								
medium		0.10		-1.10**		-0.73*		-0.56**
		(0.06)		(0.42)		(0.31)		(0.18)
high		0.09		-1.57***		-1.30***		-0.34
		(0.06)		(0.45)		(0.33)		(0.20)

Table A 3-2 *Linear Regression Models Displayed as Beta Coefficients (Standard Errors in Parentheses) (continued)*

	Life satisfaction		Depressiveness		Functional limitations		Physical health problems	
	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)
Employment status (ref. *working*)								
retired		-0.01		0.89*		1.24***		0.44**
		(0.06)		(0.40)		(0.29)		(0.16)
not employed		-0.02		0.50		0.59*		0.33
		(0.07)		(0.41)		(0.27)		(0.19)
Relative income		0.00***		-0.00**		-0.00***		-0.00
		(0.00)		(0.00)		(0.00)		(0.00)
Upper class		0.08*		-0.67**		-0.58***		-0.18
		(0.03)		(0.24)		(0.17)		(0.10)
Migration background		-0.26***		1.00*		0.30		0.23
		(0.07)		(0.46)		(0.32)		(0.19)
East Germany		-0.10**		0.59*		0.38*		0.07
		(0.03)		(0.24)		(0.18)		(0.10)
Observations	2,750	2,750	3,617	3,617	3,617	3,617	2,750	2,750
R^2	.01	.08	.00	.06	.01	.07	.01	.04

Note. Weighted data; own calculations, based on DEAS 2008, version 3.2, and DEAS 2014, version 4.0; R^2 reflects the average R^2 of the models across all imputed data sets.
* $p < .05$. ** $p < .01$. *** $p < .001$.

Table A 3-3 *Significant Pairwise Contrasts of Average Marginal Effects of Cluster Membership on Later-Life Outcomes*

	Childless (early)				Childless (late)				Two generations				Three generations (early)				Three generations (late)			
	LS	D	FL	PH	LS	D	FL	PH	LS	D	FL	PH	LS	D	FL	PH	LS	D	FL	PH
Childless (early)																				
Childless (late)			-1.2																	
Two generations								0.5												
Three generations (early)	0.2	-1.2								-0.9										
Three generations (late)			-1.1								-0.4	-0.3		0.6	-0.5					
Four generations	0.2		-0.8						0.1			-0.3		0.8						

Note. N = 3,617 (weighted); own calculations, based on DEAS 2008, version 3.2, and DEAS 2014, version 4.0; based on multivariate linear regression models in Table A 3-2; contrasts only shown if significant on .05-significance level; LS – life satisfaction; D – depressiveness; FL – functional limitations; PH – physical health problems.

Chapter 4 It all Runs in the Family? A Life Course Perspective on Intergenerational Family Positions and Wealth Accumulation

Co-authored by Theresa Nutz and Jonathan Wörn

Abstract

Prior research has widely acknowledged the consequences of a variety of specific family transitions (e.g., death of a parent) for individual wealth holdings. However, individual's wealth accumulation is a non-linear long-term process that is subject to multiple family transitions occurring at different life stages and in various orderings. They might mutually shape wealth accumulation both in the shorter and longer run. We combine sequence, cluster, and regression analyses to describe how the accumulation of wealth between ages 40 and 64 differs by typical patterns of family life courses using Norwegian register data of individuals born in 1953 (N = 47,945). We consider the death of the parent generation and the transition into grandparenthood as the main family events in this age group, while additionally distinguishing by entry into parenthood. Individuals with a later transition into (grand)parenthood occupied stable and high wealth positions over time. Individuals without children exhibited a steady increase in their relative wealth. Additionally, experiencing parental death later in life was associated with increasing wealth, whereas early parental death was not. These results held net of potential selection by socio-economic status. Pronounced and even increasing wealth differences over the life course seem to be associated with the interplay of the occurrence and timing of multiple family transitions.

4.1 Introduction

Wealth is a crucial indicator of social inequality because it determines access to important resources, such as educational achievement, labor market outcomes, and health services (for an overview see Killewald et al., 2017). Therefore, wealth plays an important role for individual well-being in different areas of life, including physical and mental health as well as life satisfaction (Halbmeier & Grabka, 2019; Pfeffer & Killewald, 2018). While partnerships or marriage are important contexts for the accumulation of wealth (Kapelle & Vidal, 2022; Nutz & Gritti, 2022), the *intergenerational* transmission of wealth has been discussed as a major mechanism for social reproduction (Hällsten & Pfeffer, 2017; Hansen & Wiborg, 2019). Inheritances, in particular, have been among the strongest drivers of the increasing wealth inequalities across societies (Adermon et al., 2018; Piketty, 2014; but see Benton & Keister, 2017). At the individual level, wealth is not only transferred from one generation to another upon death, but family members exchange wealth across generations throughout their lives (*inter-vivos*). For instance, parents support their children upon the birth of a grandchild or their divorce (Leopold & Schneider, 2011). Inter-vivos exchanges are, thus, frequently linked to such family *transitions*. Additionally, not merely becoming a parent but being a parent might decrease the opportunities for individuals to accumulate as much wealth as those without children (Van Winkle & Monden, 2022). Similarly, grandparents can support their grandchildren not only through bequests but through transfers of money or other assets while they are alive (Galster & Wessel, 2019). Thus, being in a specific family *position* might also affect individual wealth holdings because they shape the incentives, opportunities, or necessities to accumulate, decumulate, or transfer wealth (Lersch et al., 2017; Pfeffer & Killewald, 2018; Van Winkle & Monden, 2022).

So far, prior research has mostly focused on the consequences of *single* family-transition into specific family positions for individual wealth holdings (Leopold & Schneider, 2011;

Lersch et al., 2017; Piketty, 2011). However, throughout the course of their lives, individuals might actually experience the death of their parents *and* become a parent or even a grandparent. These transitions and family positions might jointly affect an individual's wealth holdings. For instance, in contrast to individuals without children, parents might not be able to improve their wealth holdings as much with the inheritances they receive because they might use it to cover the financial costs of children rather than investing it in stocks. Thus, building on this *life course* perspective, the current study investigates the association of *multiple* family events and positions with individual wealth accumulation (Killewald et al., 2017). Moreover, the age at which individuals become a parent or receive a bequest might matter for how (much) it affects their wealth accumulation process because some life phases are considered more important for investing than others (Lersch et al., 2017). Thus, the life stage (*timing*) at which such family events occur might also play a role (Kapelle & Vidal, 2022; Lersch et al., 2017). Lastly, changes in wealth might not only arise immediately after such transitions occur but *gradually* or at a *later* point in life (Gopi Shah Goda & Streeter, 2021). By focusing on single family events or wealth assessments at a single point-in-time, prior literature has not addressed this "broader picture". Thus, it remains unclear how the co-occurrence of multiple family events and positions, as well as the timing when the occur, are associated with wealth accumulation across the life course.

Therefore, in this study, we address the following research question: Which long-term wealth trajectories are associated with typical intergenerational family life courses? While the quality of intergenerational relationships, such as their closeness, might matter for inter-vivos exchanges of resources (Min et al., 2022), previous research has also demonstrated that the mere occurrence of intergenerational family events and their timing seems relevant for wealth accumulation, in particular the death of parents and the transition into parenthood. Therefore, we pay particular attention to experiencing the death of the parent generation and distinguish between parents and individuals without children. Moreover, we directly observe wealth accumulation around the transition into grandparenthood as a central life course event with different typical directions of wealth transmission and accumulation. Through the inclusion of these three different intergenerational family transitions and positions, we examine the family as a system (Fingerman & Bermann, 2000, for instance) and move beyond a dyadic perspective (Gilligan et al., 2018). We aim to provide an *encompassing description* of how intergenerational family events and positions are related to wealth accumulation over the individual life course. Against this background, we do not intend to investigate their causal relationship but focus on the description of their association over time. Nonetheless, to inform our expectations and the interpretation of our findings, we rely on the findings of previous research investigating mechanisms of how these specific family transitions and positions might affect wealth holdings.

The current analysis integrates research on the intergenerational transmission of wealth (Pfeffer & Killewald, 2018) and the family life course perspective (Bengtson & Allen, 1993; Gilligan et al., 2018). Addressing major components of the life course framework (Bernardi et al., 2019; Elder, 1994), our study describes the joint development of two different but arguably *linked life domains*, family and wealth, and addresses the interconnectedness of different individuals (*linked lives*). Members of different generations might be connected because they transfer wealth with one another and because demographic behavior of one family member impacts that of another, like becoming a grandparent when one's children become parents. Furthermore, one might expect long term effects of *earlier events,* which in turn may shape *later-life outcomes,* while the *timing* of these life events might play a key role.

Our analyses are based on Norwegian register data of individuals born in 1953. We rely on wealth measures available for the period 1993 – 2017, resulting in an observed age range from 40 to 64 years, which covers the death of the parent generation and the transition into grandparenthood for many individuals. Additionally, although we do not directly observe the wealth accumulation around the occurrence of this event, we have information about whether and when these individuals have become parents. In a first step, typical life-course family trajectories, so-called *generational placement trajectories* (Hünteler, 2022), are identified using sequence and cluster analysis. They combine information about whether, when, and in which order the death of the parent generation and the transitions into (parent- and) grandparenthood occurred. Subsequently, wealth accumulation patterns across the observation period are compared between the family clusters using linear regression models. Lastly, in order to describe the association between family dynamics and wealth accumulation net of potential selection mechanisms, that is after eliminating some alternative explanations for the displayed association, multivariate linear regressions controlling for an individual's sociodemographic background are employed.

4.2 Background

4.2.1 Family Over the Life Course

Following the family life course perspective, we understand the family as a dynamic concept that changes its composition across the individual life course and in alignment with the current socio-temporal context (Bengtson & Allen, 1993). Within the family system, family members are directly and indirectly linked across generations (from grandparents through parents to grandchildren) and affect each other's lives through transmitting and exchanging values, norms, (family) behavior, and (socio-economic) resources like wealth (Gilligan et al., 2018; Mare, 2011; Pfeffer & Killewald, 2018). Thus, through various pathways, social inequalities are reproduced across (multiple) generations (Gilligan et al., 2018; Killewald et al., 2017).

In the current study, we focused on multiple intergenerational family transitions—deaths and births of preceding and following generations, which shape the structure of the family—and how they might jointly be associated with wealth accumulation over time. Therefore, we applied the concept of *generational placements* (Hünteler, 2022), which defines one's vertical position in the family system, that is, whether an individual is a child, parent, and/or grandparent at a given point in time. Over time and through experiencing specific family transitions, such as the death of both parents, individuals can transition from one generational placement (being a child and a parent) to another (being a parent only). Accordingly, generational placement *trajectories* describe the individual position within their intergenerational family system over the life course and therefore consider the family structure as a process (Hünteler, 2022).

The generational placement is associated with specific social roles – and therefore normative expectations regarding the provision or receipt of intergenerational support (Bengtson & Allen, 1993; Hagestad, 1988). Furthermore, the generational placement determines the so-called *kinship reservoir*, that is, a specific form of social reserve comprised of members of individuals of different generations, which an individual can activate as resources in times of need (Cullati et al., 2018; Sauter et al., 2021). Previous research focusing on Germany has reported typical yet distinct patterns of generational placement trajectories, with differences by gender and region as well as changing prevalence over birth cohorts, in accordance with the trends of the Second Demographic Transition (Hünteler, 2022).

For the current study, generational placement trajectories provide us with the means to characterize combinations of multiple family *transitions* (their timing and ordering) as well as the resulting change in family *position*. While we assume that family transitions might directly trigger the release or receipt of wealth, we argue that also the position in the intergenerational family in and of itself might be consequential for wealth accumulation.

4.2.2 Wealth Over the Life Course

Wealth accumulation is a life course process (Killewald et al., 2017) that develops in interdependence with generational placement trajectories. As stated by the original life cycle theory, wealth accumulation follows an inverse u-shaped form over the life course (Modigliani, 1986).

Individuals are born holding little wealth, steadily accumulating wealth throughout working life before decumulating wealth at retirement, that is, after the loss of their labor earnings. Hence, wealth is seen to be primarily accumulated through savings and investments of *self-generated surplus income* over the individual life course.

However, this simplified perspective disregards that wealth does not increase with equal intensity for everyone. Many individuals are—fully or temporarily—excluded from access to economic resources to accumulate wealth (Hansen & Toft, 2021), for instance during periods following financially burdensome life course events such as unemployment or parenthood (Lersch et al., 2017). Further, wealth accumulation is not only shaped by one's inputs but also considerably influenced by the *receipt (or the transmission) of wealth* across generations, that is, transfers between the living (e.g., Hällsten & Pfeffer, 2017). Whereas the receipt and transmission of wealth is strongly associated with individuals' life course events (Leopold & Schneider, 2011), their intergenerational family transitions and positions should also shape the receipt and transmission of wealth.

4.2.3 Family and Wealth

The receipt and transmission of wealth has been shown to be strongly related to intergenerational family transitions and positions, particularly parental death (Boserup et al., 2016) as well as (the transition into) parenthood (Lersch et al., 2017; Yamokoski & Keister, 2006) and grandparenthood (Leopold & Schneider, 2011). Both family positions and wealth accumulation are dynamic life-course processes, and specific family events have been shown to affect wealth holdings over long periods (Gopi Shah Goda & Streeter, 2021; Lersch et al., 2017) and until later life (Pfeffer & Killewald, 2018). Even before experiencing a family transition, wealth holdings might change just by the anticipation of a transition (Boserup et al., 2016, for parental death) or the wish for this transition to happen (Cox & Stark, 2005, for the birth of grandchildren). Additionally, previous research has suggested that multiple family transitions, such as childbirth and marriage, might interact in their association with wealth accumulation (Kapelle & Vidal, 2022).

It is likely that family patterns are not the only driver behind the stratification of individuals' wealth trajectories. Instead, the association between wealth trajectories and family patterns might (partly) exist because both are inherited from the family of origin. For example, an individual with wealthier (grand)parents is likely (1) to accumulate more wealth through direct financial intergenerational support throughout life as well as through larger investments into education – that are usually associated with higher returns to income – or the provision of a safety net that allows for riskier investments (Galster & Wessel, 2019); (2) to become a (grand)parent themself later because of the investments into education and the associated postponement of becoming a parent (Kravdal & Rindfuss, 2008); (3) to experience a later death of their own parents, given a higher life expectancy of wealthier individuals (Attanasio & Hoynes, 2000). Over time, the transmission of family and health behavior might also further reinforce this process (Gilligan et al., 2018; Mare, 2011). Nevertheless, the mechanisms described in this study are assumingly part of this larger transmission process, so we understand them as contributing to the overall trend of increasing social inequality across generations.

The current study aims to provide a more encompassing description of wealth accumulation trajectories and their development both prior to and (long) after experiencing various intergenerational family transitions. Accounting for the interplay between these multiple family transitions while also considering their timing and ordering, is not only empirically but also theoretically demanding. Based on findings of previous research and theoretical arguments, we formulate expectations on the family-wealth-associations in the following paragraphs. In this discussion, we address how experiencing family *transitions* and occupying family *positions* could affect self-generated wealth as well as wealth transfers and elaborate on how not only the occurrence, but also the timing of such events within the life course, might matter.

4.2.3.1 Birth of children and parenthood

Although the current study does not observe wealth accumulation around the time of first childbirth, long-term associations of childbirth and wealth are very likely to persist until later in life (see the arguments of linked lives and cumulative inequality). Therefore, we also elaborate on this family transition and the resulting family position of being a parent and derive some expectations.

Following the overview provided by Van Winkle and Monden (2022), two scenarios are possible when comparing wealth of *parents* to that of individuals without children: Transitioning into parenthood might decrease the possibility to obtain disposable income (that can be saved or spent) because parenthood can limit participation in the labor market while at the same time it increases household costs. Thus, parenthood might be associated with smaller wealth accumulation in the long term. In contrast, individuals planning to become parents might save more money to be able to afford children and to bequeath their wealth to following generations (Van Winkle & Monden, 2022). In addition, the need for and actual acquisition of larger housing might also result in higher levels of wealth for individuals with children in the long run (Feijten & Mulder, 2005). Empirically, previous research of the parenthood-wealth-association has however been inconclusive and very context sensitive (Van Winkle & Monden, 2022).

Considering the *timing of parenthood*, early parenthood, which we understand as occurring earlier in an individual's life course relative to the population under study, might reduce the opportunities to accumulate wealth considerably. This is because the monetary costs associated with children might reduce individuals' ability to accumulate wealth in early-adulthood, a life phase where the accumulation of starting capital for large-scale investments like housing is crucial (see also early investment advantage in Lersch et al., 2017). For instance, individuals who spent more time in a partnership before becoming parents—which likely correlates with a higher age at first childbirth—were shown to possess higher quality housing net of their socio-economic status, potentially as a result of being able to accumulate wealth longer without having to deal with the costs of children (Feijten & Mulder, 2005). It was argued that this could result in long-term wealth advantages (cumulative advantage), which indeed was supported empirically by findings showing a smaller likelihood of individuals who became parents later (vs. earlier) in their life to move out of homeownership in mid- and later-adulthood (ages 45 – 80) (Herbers et al., 2014). Also, considering the returns to receiving a bequest, Benton and Keister (2017) suggested that individuals who became parents later (vs. earlier) in their life increased their wealth holdings more strongly over a period of 30 years after receiving the bequest. However, it should be noted that reversed causality is likely, as (first) childbirth might also require a certain level of wealth, postponing family formation until individuals have achieved sufficient financial security (Nau et al., 2015).

Because previous research was inconclusive, we do not have a clear expectation regarding differences between parents and individuals without children. Comparing wealth accumulation between parents, we expect individuals who became parents earlier in life to have lower wealth holdings than individuals who became parents later. Over the observation period, the difference between those becoming parents early or late might possibly increase, considering the possibility for cumulative inequality.

4.2.3.2 Having parents alive and parental death

The death of parents is frequently linked to the receipt of bequests in the form of money or property that usually leads to an increase in wealth holdings of the subsequent generations. Some individuals might also receive advancements of their inheritance not only to reduce potential tax deductions from these transfers (Boserup et al., 2016), but also as a means to be supported when they are in need (Gulbrandsen & Langsether, 2003).

Next to the absolute value of the inheritance, the life stage (timing) at which individuals experience parental death might be decisive regarding the subsequent strength of the wealth increase upon the parents' wealth transmission. Most inheritances occur in the children's mid- to late-adulthood when they have already entered and potentially established their processes of wealth accumulation and family formation. *Early parental deaths* indicate early receipts of bequests. They might enable greater wealth accumulation in a life phase when access to starting capital is decisive to make large-scale investments (Gulbrandsen & Langsether, 2003). For instance, the purchase of one's own housing is a common large-scale investment occurring in early- to mid-adulthood (between ages 25 and 35) (Gulbrandsen & Langsether, 2003). It is typically associated with high purchase costs which might be facilitated through a bequest. From the parental perspective, following the assumption of an inverse u-shaped form of wealth accumulation over the life course, parents who pass away earlier, that is in their mid-adulthood and around pre-retirement age, might be likely to have accumulated wealth close to their personal maximum. After many years of wealth accumulation throughout adulthood, they might not have spent it yet to ensure their economic well-being at retirement after the loss of labor income. Therefore, individuals experiencing their parents' deaths earlier in life might inherit a larger value.

In contrast, the receipt of *later bequests*, that is, occurring when individuals themselves might be in the pre-retirement stage and well-established in terms of lifetime wealth accumulation, was shown to be associated with a larger financial benefit (Benton & Keister, 2017). Individuals in this more established life stage might already have accumulated larger economic resources, which enable them to make investments in even larger and more profitable assets with these additional means compared to younger individuals who ceteris paribus have a smaller financial base. As wealth grows exponentially due to its compound interest effect, a larger stock of resources creates larger profits, resulting in a cumulative wealth advantage over time. Additionally, financial resources are not only transferred upon death of parents but also as *inter-vivos transfers* (Albertini & Kohli, 2013). Later parental death might allow for more or better targeted financial transfers because parents, while they are alive, can support their children longer and specifically when their children are in need. Also, in a more indirect way, parents can potentially longer function as supporters through giving advice or serving as credit-worthy back-up for their children when it comes to purchasing real estate (Galster & Wessel, 2019)—which has been discussed as particularly important in the Norwegian housing market (Hansen & Toft, 2021). From the parental perspective, however, parents who pass away later in life might be likely to have dissaved (larger shares of) their wealth throughout retirement and might thus inherit a smaller value to their heirs.

We focus on the death of the second parent because in the case of death of the first parent, the surviving spouse is the direct inheritor of the spouse's wealth per default (Norwegian Ministry of Children and Equality, 2009). The intergenerational transmission of property is typically postponed until the surviving spouse dies as well. In line with these regulations, we consider the death of the second parent to trigger the transmission of wealth to the legal heirs of the next generation. While the surviving parent might downsize their wealth upon the death of their spouse and transmit it to the following generations at this point, we assume that most transfers occur upon the death of the second parent.

Concluding, we expect the death of the second parent to be associated with an increase in individuals' wealth. Regarding differences in timing of parental death, associations in either direction seem plausible.

4.2.3.3 Birth of grandchildren and grandparenthood

A positive association between grandparent's and grandchildren's wealth seems to be largely backed up by empirical evidence for various contexts and to be stable even when accounting for the link through the parents (Boserup et al., 2016; Galster & Wessel, 2019; Hällsten & Pfeffer, 2017; Pfeffer & Killewald, 2018). However, the ways in which this wealth is transmitted seem ambiguous and context specific and it remains an empirically open question as to whether the correlation is the product of direct transfers or more indirect grandparent-grandchild-connections. Direct financial transfers would result in a reduction of the wealth of grandparents (which are the subject of interest here) whereas indirect connections would not.

In the U.S. context, inheritances and gifts seemed to only play a minor role for the grandparent-grandchild-wealth correlation, while transmission through indirect channels (education, business ownership) appeared to be more important (Pfeffer & Killewald, 2018). In contrast, research using Norwegian register data concluded that economic factors, like bequests, financial transfers, and the developmental context provided by grandparents prevailed over socialization (attitude towards homeownership, for instance), as a pathway for grandchildren to acquire (more expensive) housing (Galster & Wessel, 2019). While substantial parts of these associations were mediated through the parents' socio-economic status, direct monetary transfers, in the form of bequests or gifts, from grandparents to grandchildren remained to be highly relevant. These findings suggest that the wealth of grandparents would decrease through the support they provide to their grandchildren. Although we might not observe this kind of transfer in our study because potentially existing grandchildren are still quite young while we examine their grandparents' wealth holdings, the considerations suggest that there indeed might be a direct link between the wealth of grandparents and grandchildren. Lastly, grandparents might transfer financial resources not only to their grandchildren directly but to their children when they become parents in order to support them. However, empirical evidence seems to be mixed. Some evidence from Germany suggests that parents provided more instrumental but less material or financial support to their children around the time the children themselves became parents (Min et al., 2022), although real estate appeared to be transmitted more likely the year before own children became first-time parents and at consecutive births of grandchildren (Leopold & Schneider, 2011). Country-comparative research concluded that direct financial transfers of money from grandparents to their children did not seem to be triggered by the presence of grandchildren in Scandinavian (or Mediterranean) countries, although it did in Continental Europe (Albertini & Kohli, 2013).

The role of *timing of grandparenthood* for individual wealth holdings or intergenerational transfers has, to our knowledge, not yet been studied in previous research. Also, from a theoretical perspective, we would not expect the age of becoming a first-time grandparent to be associated with personal wealth. However, considering that the timing of parenthood is transmitted across generations, potential disadvantages/advantages associated with an earlier/later parenthood might be transmitted to or even enhanced for the following generation. According to the concept of cumulative inequality, this would result in higher/lower support needs of the individual's children and grandchildren and might thus trigger more/fewer financial transfers from grandparents to following generations, respectively.

Concluding, while the evidence is mixed, we expect that individuals becoming or being grandparents might reduce their own wealth holdings because they transfer (some of) it to their grandchildren or their children with own children. We do not expect the timing of grandparenthood to be associated with wealth.

4.3 The Norwegian Case

4.3.1 Wealth

The case of Norway is particularly interesting because—despite being considered among the most equal countries regarding income in Europe—wealth inequalities are comparatively high and have even increased in recent years (Hansen & Toft, 2021; Pfeffer & Waitkus, 2021; Wiborg & Grätz, 2022). There is the paradox of Norway as a social democratic welfare state following the Nordic model with universal and egalitarian policies and generous public benefits (Esping-Andersen, 1990); the Norwegian welfare state is characterized by centralized wage bargaining, active labor market policies, and strong unions, resulting in small wage differentials compared with other countries (Barth et al., 2014). However, Norway introduced the deregulation of its economy in the mid-1980s and turned to marketized policies in terms of housing and financial assets (Hansen & Toft, 2021; Poppe et al., 2016). Although the Norwegian model strongly regulates employees' working lives, it does only weakly regulate capital (Toft & Hansen, 2022). As the financial market broadened access and expanded offers of mortgages and financial credits, Norway has turned towards a high-homeownership country between 1960 and 1980, where residential property has become the norm and rental housing associated with economic insecurity (Sørvoll & Nordvik, 2020). In 2020, 80.8 percent of the population were homeowners compared with an average of 66.0 percent in the Euro area (Eurostat, 2022) and around 63.0 percent in the U.S. between 2012 and 2014 (Pfeffer & Waitkus, 2021). However, housing wealth has become more unequally distributed in the Norwegian population after the 1990s, as the share of low-income homeowners decreased considerably (Sørvoll & Nordvik, 2020).

The economic Norwegian structures favor the intergenerational reproduction of inequality through the transmission of housing property. In addition to direct inheritances, inter-vivos transfers, that is economic transfers from the parental (Albertini et al., 2007; Hansen & Wiborg, 2019) as well as from the grandparental generations to their (grand)children (Galster & Wessel, 2019), are highly relevant for descendants' housing wealth. Particularly in the urban areas of Norway, housing property is frequently transferred across generations, which affects the socioeconomic status of the following generations (Galster & Wessel, 2019). Further, children with wealthy ancestors are more likely to successfully save and invest their incomes, as they are economically secured to invest in more profitable but risky assets (Toft & Friedman, 2021). In addition, with a comparatively large share of Norway's population in debt, acquiring debt might constitute a successful investment strategy for children with a wealthier background while it might be a potential downward spiral for individuals with less favorable financial backgrounds (Hansen & Toft, 2021). Concluding, Norway is a context in which wealth inequalities are likely to increase over time through the accumulation of advantage and disadvantage across multiple generations that we see in many other high-income countries, such as the U.S. .

4.3.2 Wealth During and After Marriage

The Norwegian matrimonial property regime regulates the way spouses divide wealth within marriage and in the case of divorce and widowhood. The regime is based on the Marriage Act from 1991 (Norwegian Ministry of Children and Equality, 2009). Whereas personal wealth, including wealth accumulated before marriage as well as received gifts and inheritances both before and during marriage, remains in one's individual ownership in principle, spouses' economic situations are strongly interlinked. Beyond "common wealth", that is wealth legally owned by both spouses, the Marriage Act emphasizes support obligations within marriage that also define the right to access and benefit from the spouse's personal wealth, making it factually "joint wealth". For example, property acquired by one spouse can become joint wealth as due consideration for the non-owning spouse focusing on unpaid work. In the form of marriage settlements, couples can also define individual "separate wealth", which is however limited to wealth that is not used by both partners, thus excluding housing or household goods. In the case of divorce, the net value of all assets except this separate wealth is equally divided among both ex-spouses. Hence, married couples build strong economic units that share large parts of their wealth per default in Norway. Accordingly, we measure wealth as couple-equivalized wealth in this study (that is the sum of the individual's and the spouse's wealth reports divided by two; see also paragraph 4.4.3).

4.4 Data and Methods

4.4.1 Data and Sample

For the current analysis, we used data from the Norwegian Population Register and the Norwegian Tax Register. The population register contains complete and reliable demographic information of all individuals born after 1953 in Norway, their parents as well as their descendants. Wealth data are only available for the years 1993 – 2017. The analyses were based on individuals born in 1953 (n = 73,149; here referred to as focal individuals from generation G2) so we observed their wealth between ages 40 – 64 and covered many transitions into grandparenthood as well as parental deaths during that period. In addition, we distinguished between individuals with and without children. Therefore, in this analysis, we could directly observe family transitions and their resulting generational placements spanning four generations, which we expected to be crucial for the accumulation and transmission of wealth and the resulting wealth trajectories.

The selected sample was further restricted in order to obtain a balanced sample over the full observation period, that is, to observe the sample individuals without gaps or censoring. In addition, it was necessary to identify both parents to determine their death, which was not feasible if the sample individuals were born outside of Norway and their parents never migrated to Norway (see also Figure 4-1). We opted for analyzing a clearly defined sample so we case-wise deleted individuals who were not born in Norway (n = 12,074) from the sample. Additionally, individuals who passed away before 2017 (the end of the observation period, n = 6,581) or ever emigrated during the observation period (n = 2,863) were case-wise removed from the sample. Lastly, we limited the analyses to individuals whose both parents could be identified and were born in Norway (n = 3,345 dropped).

The analyses relied on couple-equivalized wealth (see paragraph 4.4.3). Therefore, the individual's spouses needed to be identified and their reported wealth holdings added to the individual data. Based on the population register, the spouses' ids were merged to the individuals. Gaps in the spouse's id (n = 34 person-years) were filled with the spouse's id of previous/following years, given they were registered as continuously married. Moreover, in

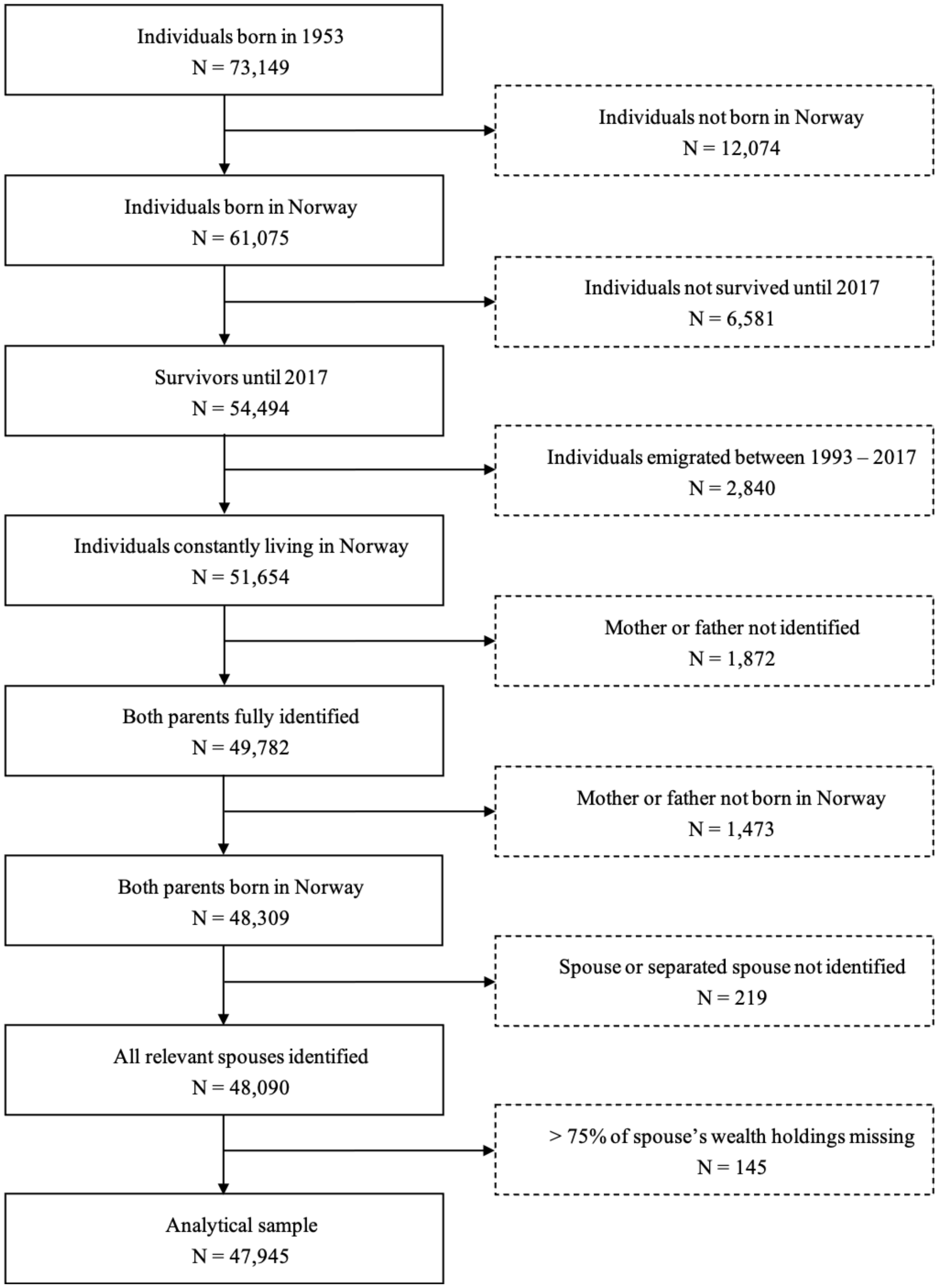

Figure 4-1 *Sample Selection Process*

Note. N refers to individuals.

case a person was registered as married in year *t* but the spouse's id was only provided from *t*+1 onwards, the spouse's id was copied to *t* as well (n = 387 person-years). We excluded n = 219 individuals where the spouse's id was missing in all the years they were married. Lastly, individuals were excluded if spousal wealth was missing for more than 75% of their respective marriage duration (n = 145 individuals). The final analytical sample contained family and wealth trajectories of 47,945 individuals covering the years 1993 – 2017 summing up to 1,191,125 person-years (balanced panel).

4.4.2 Generational Placement Trajectories

Generational placements describe the vertical position of an individual within their intergenerational family system. *Generational placement trajectories* capture these positions across an individual's life course so that they also account for when and in which order the transitions into the respective positions occurred (Hünteler, 2022) (see also paragraph 4.2.1). The trajectories were used as the grouping variable for identifying and describing differences in wealth by family structure and family transitions across the individual life course. We used the Norwegian Population Register to derive the necessary information on births on deaths of preceding and subsequent generations.

Following (Hünteler, 2022), generational placements were defined by three different family transitions (death of the parent generation, birth of the first child, birth of the first grandchild), and each individual could hold multiple generational positions at the same time. These included the presence of alive parents (G1), the presence of own children (G3) and the presence of own grandchildren (G4). We referred to the individuals in our sample as G2. Generational placements ranged from individuals without any intergenerational biological ties to individuals who were in the position of being a child, parent, and grandparent at the same time.

We ran a sequence and cluster analysis to identify typical generational placement trajectories, our grouping variable. More specifically, we used the Chi-square distance measure, which is sensitive to differences in timing (Studer & Ritschard, 2016), to calculate the differences between all the individual trajectories. Subsequently, the partitioning around medoids cluster algorithm was applied to identify typical patterns of these trajectories that were similar within but different between each of the clusters (Studer, 2013). We restricted the observation of the family trajectories to the observation period of wealth (1993 – 2017) because we were interested in their association with wealth in this period of life. In addition to observing the family trajectories over this period, we had information about family transitions occurring prior to 1993, which we used for an additional description in the analyses, most importantly whether and when individuals became parents.

4.4.3 Wealth Accumulation

For the analyses, we used two measures of wealth: gross and net wealth percentile ranks (see, for instance, Hansen & Toft, 2021; Nutz & Gritti, 2022). While *gross* wealth represents financial capital and taxable real capital, *net* wealth equals gross wealth minus debts. Because housing plays a crucial role for wealth in Norway generally (Sørvoll & Nordvik, 2020) and it is often associated with larger debts due to mortgages, considering both gross and net wealth seems relevant.

Financial capital refers to any taxable wealth in bank accounts, stocks, and bonds. Because we cannot account for unlisted stocks, the taxable financial capital might be underestimated for the very rich (Hansen & Toft, 2021). *Real capital* contains the total taxable value of real estate, land and forest, and others related to businesses. For real estate, the share of the estimated market value that was taxable varied across time and region (Statistics Norway, 2022). For instance, between 1993 and 1999, the taxable amount of real estate used as the primary place of residence equaled 17% of its estimated market value in Norway's capital Oslo and its adjacent area, Bærum. While the data do not allow to distinguish between real estate and other components of real capital, the real capital of most people in Norway arguably consists largely of real estate. Therefore, in order to adjust for the variations in the taxable share of real estate, we calculated the market value of real capital as taxable value * 100 / 17 for the above-mentioned region and period, for instance. *Debts* included any form of debt (also mortgages) to any Norwegian or foreign creditors.

All the information on wealth holdings was based on the individuals' reports to the tax authorities. For married individuals—whose personal wealth is strongly interlinked under the Norwegian matrimonial property regime—"individual" wealth of some individuals might be overestimated if they report all the shared wealth alone or, likewise, underestimated, if their spouse does so. Therefore, the analyses were based on *couple-equivalized wealth*; while an individual was married, wealth was calculated as the sum of the individual's and their spouse's wealth reports divided by two. After divorce, we relied only on the individual's wealth without accounting for the wealth of the ex-spouse. In Norway, couples have to be formally separated at least for one year before they can file for legal divorce. During the separation period, couples are married in legal terms, so we assumed that spouses' personal wealth was best represented by the couple's average wealth per spouse (couple-equivalized). For years registered as unmarried, widowed or divorced, we relied on the individually reported wealth holdings. We did not account for the potentially shared wealth of unmarried cohabiting couples in the analyses because childless cohabiting couples can only be identified from 2005 (or from 1987 if they had mutual children or own housing). Addressing this group would substantially reduce our observation window beginning in 1993. Despite relatively high proportions of unmarried cohabitation in Norway compared with other European countries (Kasearu & Kutsar, 2011), a high share of individuals was married in the 1953 birth cohort (see Table 4-2 further below).

Although register data provide almost full information on all individuals, some wealth and region indicators were *missing* in single years for individuals (n = 0 observation-years missing in wealth, n = 3,531 in region) and/or their spouses (n = 189 observation-years missing in wealth, n = 2,556 in region), because they were emigrated, for instance. As wealth and region tend to remain relatively stable over time, these values were imputed from preceding and subsequent years (forward-backward-fills). In cases where an uneven number of years was missing, we filled the middle gap (year t) with the average of the t-1 and t+1 wealth holding (backward fill for region in those cases).

Finally, we calculated *percentile ranks* for our gross and net wealth measures, for each year, in relation to all the members of the analytical sample (Hansen & Toft, 2021). We opted to use percentile ranks in order to, firstly, make the trajectories independent from the absolute levels of wealth and thus minimize the problem of outliers within the strongly left-skewed distribution of wealth—in which few very rich individuals holding large shares of the overall wealth are concentrated at the right of the distribution—, and secondly, tackle the issue of underestimation of absolute wealth of the very rich. In light of comparably high levels of wealth inequality in Norway, where the relative position should also reflect unequal absolute wealth holdings, the relative wealth position should also indicate the individuals' economic situations. Beyond absolute levels of wealth, the relative measure thus adequately represents individuals' economic standing in the society.

4.4.4 Control Variables

In order to estimate the family-wealth-associations net of potential socio-economic selection mechanisms or, in other words, excluding some alternative explanations for why family and wealth are associated, we included a set of control variables in the regression models. For instance, compared to men, women tend to both become grandparents earlier (Leopold & Skopek, 2015a) and hold lower levels of individual wealth (Killewald et al., 2017). If not controlled for gender, results might indicate that family patterns characterized by early grandparenthood are associated with lower wealth holdings which could be interpreted as early grandparenthood causing less advantageous wealth trajectories. The "real" underlying cause of this association might, however, be the *selection* of women into both trajectories. Following the same logic, we controlled for gender (male/female), highest education (Grundy & Kravdal, 2010; Killewald et al., 2017) (ISCED-11: low (0–2), medium (3–5), high (6–8); missings are set to medium (n = 575 person-years)), current marital status (Grundy & Kravdal, 2010; Kapelle, 2022) (unmarried, married, widowed, divorced, separated), and region individual currently lived in (Oslo & Bærum (capital and adjacent area); rest of Akershus (county surrounding Oslo); Stavanger, Bergen, Trondheim (other metropolitan cities); rest of Norway) (Galster & Wessel, 2019; Grundy & Kravdal, 2010).

Even though we include this set of control variables, we emphasize that our analyses do not examine the mechanisms or underlying causes of the changes in wealth. Rather, we provide a description of individual wealth accumulation trajectories and how they are stratified by experiencing typical intergenerational family life courses.

4.4.5 Analytical Strategy

In order to investigate how wealth accumulation across the life course is associated with typical family patterns, we, first, identified clusters of typical generational placement trajectories for the observation period 1993 – 2017 using sequence and cluster analyses as explained in paragraph 4.4.2. Second, in a bivariate regression model, we included wealth percentile ranks as the dependent variable and family cluster, age, and a family cluster X age-interaction as the independent variables. To describe the wealth accumulation process across the life course and facilitate interpretation, we plotted the average predicted percentile ranks by age and family cluster. Third, in a multivariate regression, we added socio-demographic indicators as control variables to examine the association between family and wealth dynamics, net of potential selection mechanisms. Again, the wealth trajectories were described using plotted average predicted percentile ranks by family pattern across age. Using sequence and cluster analysis combined with regression models has the advantage that the associations between multiple intergenerational family transitions and positions as well as their timing and ordering with wealth accumulation can be examined holistically (see, for instance, Kapelle & Vidal, 2022).

4.5 Results

4.5.1 Description of Family Patterns

Using sequence and cluster analyses, we identified five typical generational placement patterns (Figure 4-2). The quality of partition can, overall, be considered to be good, with an Average Silhouette Width of .45, Hubert's C of .07, and R^2 of .53 (Studer, 2013). Separation into more than five clusters did not increase the quality of partition nor did it add to a better separation in substantial terms. Clusters based on Optimal Matching with constant or transition-based substitution costs and indel costs of 1 yielded almost identical results (97% of the trajectories were

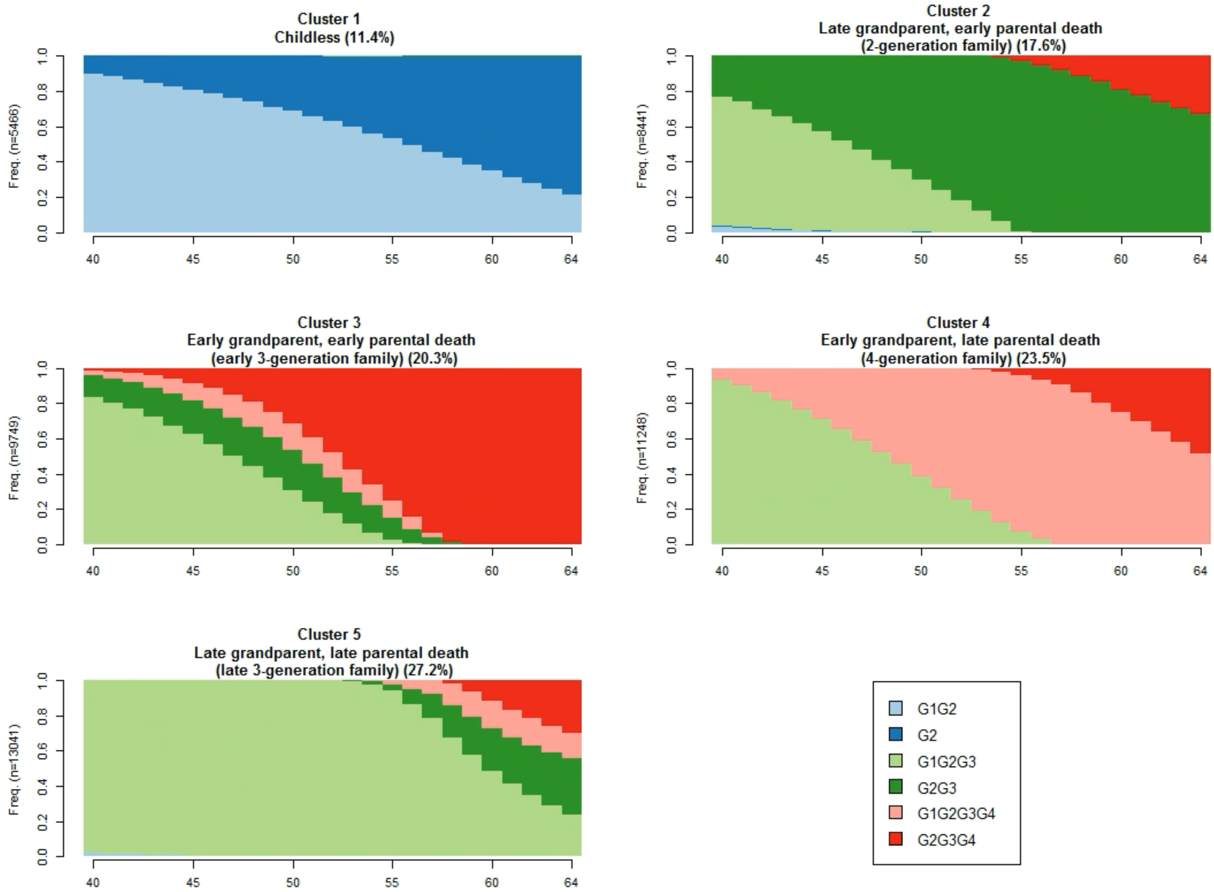

Figure 4-2 *State Distribution Plot of Generational Placement Patterns*

Note. N = 47,945.

sorted into the same clusters). Therefore, we evaluate the presented cluster solution as stable and trustworthy.

Cluster 1 (12%) was the only pattern that consisted of *childless* focal individuals (G2) whose both parents had died when the focal individuals were 52 years, on average (see also Table 4-1). Cluster 2 (18%) was characterized by an early parental death (G1) around the time when the focal individuals were aged 45 years, and a late transition into parenthood (G3) and grandparenthood (G4) (average ages of 28 and 60, respectively). Thus, focal individuals in this cluster spent the longest average period of all in a *2-generation family* in which they had children (G3), but their own parents were no longer alive. On average, the birth of

Table 4-1 *Description of Cluster Characteristics at Age 64; Means and Standard Deviations (in Parentheses)*

	(1) Childless	(2) Late grand-parent, early parental death	(3) Early grand-parent, early parental death	(4) Early grand-parent, late parental death	(5) Late grand-parent, late parental death	ANOVA/ χ^2 p-value
Parent	0.01 [a]	1.00	1.00	1.00	1.00	0.00
Number of children	0.01 [a]	2.22	2.44	2.50	2.24	0.00
	(0.10)	(0.92)	(0.95)	(0.98)	(0.92)	
Age at transition to	55.63 [a]	28.20	23.12	22.44	28.05	0.00
parenthood	(2.54)	(6.04)	(3.44)	(3.15)	(5.46)	
Grandparent	0.00	0.33	1.00	1.00	0.44	0.00
Number of	0.00	0.57	2.28	2.38	0.78	0.00
grandchildren	(.)	(0.89)	(0.83)	(0.89)	(0.97)	
Age at transition to	.	59.74	50.25	48.48	59.73	0.00
grandparenthood	(.)	(2.83)	(5.00)	(5.03)	(2.52)	
Both *parents dead*	0.78	1.00	1.00	0.49	0.62	0.00
Age at death of	51.50	45.41	48.32	60.12	59.77	0.00
second parent	(9.06)	(7.43)	(7.09)	(2.93)	(2.68)	
Observations	5,466	8,441	9,749	11,248	13,041	
Percentage of total	11	18	20	24	27	

Note. N = 47,945; significance testing on group differences is based on ANOVA for continuous and on χ^2-tests for categorical variables.

[a] Because individual trajectories are sorted by an algorithm into the clusters according to the similarity to other trajectories (which is sensitive to timing), some individuals who became parents at a high age were sorted into the childless cluster.

grandchildren (G4) occurred around 14 years after their own parents (G1) had passed. Focal individuals in Cluster 3 (20%) experienced an early parental death (G1) at around age 48 and an early entrance into parenthood (G3) and grandparenthood (G4) (at around ages 23 and 50, respectively), whereas focal individuals in Cluster 5 experienced all of these transitions relatively late (parenthood at age 28, grandparenthood and age at death of second parent at age 60). Both Clusters 3 and 5 were thus characterized by a *3-generation family* structure in which the birth of grandchildren (G4) and the death of the second parent (G1) occurred within a short period of time (two years and one year, respectively), so that the family always consisted of three generations alive at the same time—albeit in a changing composition (G1-G2-G3 and G2-G3-G4). Cluster 4 was characterized by an early transition into parenthood (G3) and grandparenthood (G4) at around ages 22 and 48, respectively, and a late parental death (G1) (average age 60), so that all *four generations* under consideration were alive simultaneously for an average of approximately 15 years, and great-grandparenthood (G1-G4) occurred. These generational placement patterns mirror findings from Germany for a similar cohort, except that in Norway only one instead of two childless clusters—which differed by the timing of parental death (G1) (early and late)—were identified (Hünteler, 2022).

Table 4-2 contains the sociodemographic composition of the clusters. Most notably and in line with previous research (Grundy & Kravdal, 2010; Leopold & Skopek, 2015a), Clusters 2 and 3—characterized by early (grand)parenthood—contained the highest shares of women, of individuals with low or medium education, and of individuals living in rural areas of Norway. Differences between the clusters by the timing of parental death were much less pronounced. The childless cluster was characterized by the highest share of individuals with low education, and a majority of the individuals in this cluster were male, unmarried, and/or living in the capital Oslo.

Table 4-2 *Sociodemographic Composition of Clusters (Means)*

	(1) Childless	(2) Late grand-parent, early parental death	(3) Early grand-parent, early parental death	(4) Early grand-parent, late parental death	(5) Late grand-parent, late parental death	ANOVA/ χ^2 p-value
Female	0.41	0.46	0.56	0.58	0.46	0.00
Highest education						
Low (0-2)	0.23	0.15	0.23	0.20	0.12	0.00
Medium (3-5)	0.47	0.51	0.57	0.59	0.49	0.00
High (6-8)	0.29	0.34	0.20	0.21	0.40	0.00
Marital status 1993						
Unmarried	0.72	0.12	0.04	0.03	0.10	0.00
Married	0.20	0.75	0.79	0.80	0.78	0.00
Widowed	0.00	0.01	0.01	0.01	0.00	0.72
Divorced	0.06	0.09	0.12	0.13	0.09	0.00
Separated	0.01	0.03	0.04	0.04	0.03	0.00
Marital status 2017						
Unmarried	0.60	0.07	0.03	0.02	0.06	0.00
Married	0.27	0.67	0.69	0.70	0.68	0.00
Widowed	0.03	0.04	0.05	0.05	0.04	0.01
Divorced	0.10	0.20	0.21	0.21	0.20	0.00
Separated	0.00	0.01	0.01	0.01	0.01	0.00
Region 1993						
Oslo, Bærum	0.21	0.13	0.06	0.05	0.13	0.00
Rest of Akershus	0.07	0.09	0.08	0.07	0.09	0.00
Stavanger, Bergen, Trondheim	0.12	0.10	0.10	0.10	0.11	0.54
Rest of Norway	0.60	0.68	0.76	0.78	0.66	0.00
Region 2017						
Oslo, Bærum	0.18	0.11	0.06	0.05	0.13	0.00
Rest of Akershus	0.07	0.09	0.07	0.07	0.09	0.02
Stavanger, Bergen, Trondheim	0.11	0.10	0.09	0.10	0.11	0.17
Rest of Norway	0.65	0.70	0.78	0.79	0.67	0.00
Median wealth [a]						
Total gross 1993	137,859	176,384	168,663	168,502	181,654	0.00
Total gross 2017	333,985	342,279	292,868	307,608	391,827	0.00
Total net 1993	88,211	121,289	115,769	114,973	123,297	0.00
Total net 2017	290,919	286,825	240,802	254,471	335,552	0.00
Observations	5,466	8,441	9,749	11,248	13,041	
Percentage of total	12	18	20	23	27	

Note. N = 47,945; significance testing on group differences is based on ANOVA for continuous and on χ^2-tests for categorical variables.

[a] US dollar, adjusted for inflation.

4.5.2 Wealth Accumulation by Family Pattern

4.5.2.1 Family-Wealth-Trajectories

Figure 4-3 depicts the predicted average wealth percentile ranks across age by family cluster together with the median age of the family transitions that occurred during the observation period (find the according regression models in Table A 4-1 in the Appendix). The clusters clearly differed in the level as well as the development of wealth over time, similarly in gross and net wealth. However, the trajectories appeared to be slightly more concentrated and less dispersed for net wealth. The timing of the transitions to parenthood and grandparenthood within each cluster is strongly correlated. Therefore, in the following, we sometimes describe

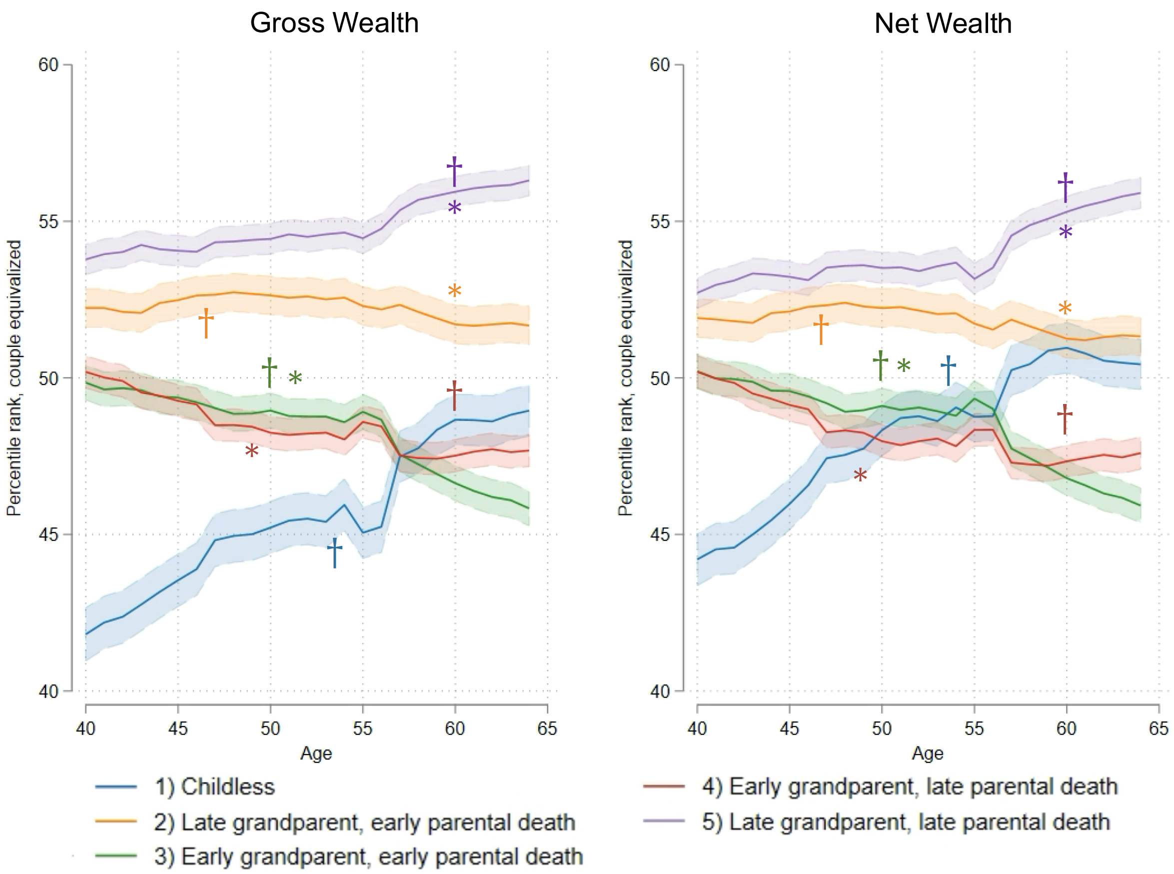

Figure 4-3 *Predicted Wealth Percentile Ranks Across Age by Family Cluster, Bivariate (95% Confidence Intervals)*

Note. N = 47,945; † Median age at death of second parent; * Median age at birth of first grand-child.

the results in relation to both transitions simultaneously, although their association with wealth might differ in substantial terms (see our argumentation in the Background and Discussion).

Three main patterns emerged that can be grouped by the *occurrence and timing of (grand)parenthood*: first, individuals sorted into the childless cluster (Cluster 1) clearly exhibited the lowest wealth position at age 40 but reached the wealth levels of the early-(grand)parenthood-clusters at age 57 and even surpassed them later on (slightly, considering gross wealth, and clearly, considering net wealth). Second, individuals with an early transition into (grand)parenthood (Cluster 3 and 4) exhibited a medium but consistently slightly decreasing wealth position, resulting in the lowest gross and net wealth ranks at age 64. Third, the consistently highest levels of wealth were observed for the two clusters characterized by a late transition into (grand)parenthood (Cluster 2 and 5).

Next to the occurrence and timing of (grand)parenthood, the *timing of parental death* might be associated with an additional fanning out over time: From age 55 onwards, individuals in the *later 3-generation-family pattern* (Cluster 5) started to experience the death of the second parent (see Figure 4-2). Around the same time, this cluster experienced a pronounced increase in wealth (see Figure 4-3). However, for the cluster with a similar median age at transition into (grand)parenthood but an early parental death, we did not observe a change in the average wealth accumulation trajectory around the time more and more individuals in this cluster experienced parental death (Cluster 2, *2-generation family*). Analogously for the two clusters with early (grand)parenthood, individuals in the cluster in which the parental death occurred later (Cluster 4, *4-generation-family*) showed a more stable wealth position compared to those with an earlier parental death (declining wealth position) (Cluster 3, *earlier 3-generation family*).

These findings illustrate that wealth trajectories differ not only by *whether* but also by *when* individuals experience parental death or become parents and grandparents. Investigating the accumulation of wealth across time allows for insights that are impossible to draw when considering wealth at only one point in time. Specifically, the pronounced and steady increase in the relative wealth position of individuals without children between ages 40 and 64 (overtaking the rank of individuals with early (grand)parenthood, for instance) demonstrates the need for a long-term investigation of the parenthood-wealth-nexus. Furthermore, wealth trajectories also differed by combinations of the timing of the transitions into (grand)parenthood *and* parental death. Specifically, only the clusters in which parents passed away later in life exhibited a notable average increase in relative wealth—especially so if they also became (grand)parents later (but not earlier) in life (see also Benton & Keister, 2017).

The differences in the average wealth positions between the family clusters ranged between twelve and ten percentiles for gross wealth in 1993 and 2017, respectively. In absolute terms, these differences were quite substantial and—in line with growing wealth inequalities over individual life courses—increasing over the observation period. While in 1993, the difference between the lowest and the highest average predicted gross wealth ranks (42^{nd} vs. 53^{rd} percentile) reflected an absolute difference of around 27,000 U.S. dollar (adjusted for inflation), in 2017 the difference between the highest and lowest ranks (46^{th} vs. 56^{th} percentile) was associated with an absolute difference of around 63,000 U.S. dollar. For net wealth, these differences were highly similar.

Lastly, we have to address a potential bias in the estimation of real capital, which might be responsible for changing wealth positions from 2010 onwards. The evaluation procedure of the value of housing by the Norwegian tax authorities changed in 2010. Prior to 2010 it was related to the year the property was built in, afterwards the value has been assessed using a hedonic price calculation, which also considers the property size, number of rooms, etc. Because a change in the level of wealth between 2009 and 2010 might be due to the changed evaluation strategy and not related the family patterns, we might overestimate the family-wealth-association. However, despite a small bump in the average wealth accumulation trajectories around this period, the overall wealth accumulation pattern did not seem to be disrupted but to follow are larger and stable trend. We also conducted a robustness check with individuals born in 1956 which suggests that this short-term disruption might indeed related to the changed evaluation strategy (period effect).

4.5.2.2 Family-Wealth-Trajectories net of Socio-Demographic Differences

Figure 4-4 depicts the average wealth trajectories by family pattern as predicted from a linear regression model that accounts for gender and highest education (time-invariant), as well as marital status and region (time-variant). Control variables were held constant (as observed) for the predictions.

As to be expected, differences between the clusters became weaker after controlling for socio-demographic differences. Still, the overall strong stratification of the wealth accumulation patterns remained largely comparable to the findings based on the bivariate models, suggesting that wealth accumulation patterns are stratified by typical family patterns, net of gender, region, education, and marital status. Some differences between the models with and without controls did appear: first, while family patterns with children (Clusters 2 to 5) clearly differed already at age 40 in the bivariate models, in the multivariate models, these family patterns showed the same wealth positions at age 40 and started to differentiate only thereafter so that they exhibited pronounced differences at the end of the observation period. Thus, it seems that socio-demographic differences largely explain the previously found differences in mid-adulthood wealth between the clusters with children (but not that compared to the cluster without children).

Second, the initial difference in the wealth ranks of the childless and the family patterns with children became smaller in the multivariate models. Considering net wealth, the *childless* cluster reached the same level as Cluster 5 with late (grand)parenthood and late parental death from age 50 onwards and surpassed individuals with late (grand)parenthood and early parental death (Cluster 2). Thus, in relative terms, they improved their wealth more strongly over the observation period when controlled for socio-demographic differences.

Additional regression analyses that contained each control variable separately (available upon request) revealed that education might have been most important in reducing the level difference between the clusters with children, particularly at age 40. Marital status appeared to be the main variable to increase the overall relative wealth position of individuals without children, indicating that marriage is associated with substantial wealth premiums irrespective of the presence of children (Lersch, 2017).

Overall, the multivariate models indicate that the differences in the wealth holdings in the early forties are due to socio-demographic differences; however, the differentiation of wealth

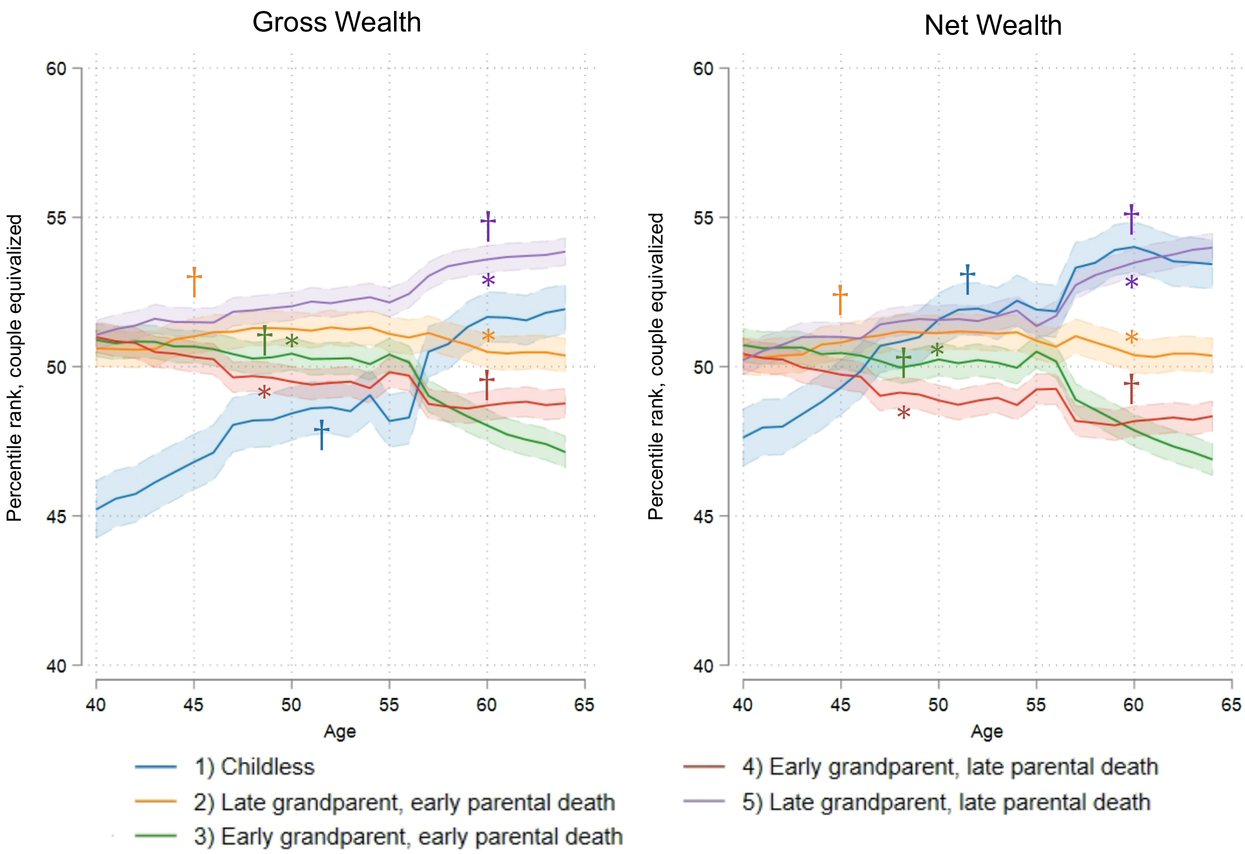

Figure 4-4 *Predicted Wealth Percentile Ranks Across Age by Family Cluster, Multivariate (95% Confidence Intervals)*

Note. N = 47,945; † Median age at death of second parent; * Median age at birth of first grandchild.

accumulation patterns by intergenerational family trajectory up until age 65 is not based on these socio-demographic differences between the clusters. This result therefore supports our assumption that family trajectories are strongly interlinked with stratification in wealth accumulation over the life course.

4.5.3 Robustness Checks

We conducted several robustness checks (available upon request). First, we replicated the analyses with individuals born in 1956, that is three years later than individuals from the main sample. The identified clusters were highly comparable between the two cohorts, with differences occurring in the expected direction. For example, the share of individuals in the later 3-generation family was larger, which is in line with the postponement of fertility and mortality described by the second demographic transition (see also Hünteler, 2022). Results of the regression analyses were also very similar, supporting the robustness of our overall conclusions. Moreover, it seems as if the small observable fluctuations in the overall wealth accumulation trajectories around 2001/02 or 2008–10, for instance, relate to period rather than age effects. Potential explanations for these deviations might be related to the introduction of the Euro and its effect on the strength of the Norwegian Krone as well as the 2008 financial crisis and the change in assessment of the value of housing (see description of results above), respectively.

Second, because we expected the individual wealth reports to be affected by a reporting bias for individuals living in a couple, we conducted the analyses using individually reported instead of couple-equivalized wealth percentile ranks. As expected, the stratification of the wealth accumulation by the family clusters differed between the two operationalizations. In line with our assumption, it seems as if the wealth reports to the tax authorities differ by gender, which can in turn explain the differences by family pattern: for instance, because men have a higher likelihood of experiencing the childless cluster and these men have a higher wealth rank than childless women, on average, the childless cluster ranked overall higher compared to the couple-equivalized rank. Thus, we are confident that the use of couple-equivalized wealth ranks helped to reduce this reporting bias.

Lastly, we additionally controlled for the number of children because they might influence the opportunities/necessities (larger housing necessary) and constraints (potentially more time at least one parent might not be active in the labor market) for acquiring wealth. The regression results and predicted wealth accumulation patterns were virtually unaffected by this modification, with the coefficient of the number of children only being significant in the model for gross wealth. This points to the possibility that opportunities and constraints might outweigh one another when accounting for debts.

4.6 Discussion

This study provided an encompassing description of the life-course association of individual gross and net wealth with multiple family transitions and their resulting positions in the intergenerational family system. The analyses were based on registers for virtually the full Norwegian population born in 1953. In a two-step procedure, we first identified five distinct family clusters that differed in the occurrence, timing, and ordering of the death of the second parent and the transition into (grand)parenthood, using a combination of sequence and cluster analysis. In a second step, we ran bivariate and multivariate linear regression analyses to describe wealth accumulation during ages 40 to 64 for these family clusters.

Wealth accumulation was most strongly stratified by the occurrence and timing of *(grand)parenthood*, with the highest relative wealth rankings observed among those experiencing these transitions later in life. Only the two clusters with relatively early transitions into (grand)parenthood showed a long-term decline in their wealth ranks. Individuals without children started at the relatively lowest wealth position at age 40 but caught up with (and partly overtook) the clusters with early (grand)parenthood by age 64. As regards the *loss of own parents*, clusters with a later (vs. earlier) death of the second parent held relatively more wealth from the mid-fifties onwards, given timing of entry into (grand)parenthood. Accounting for the socio-demographic composition of the clusters, firstly, shrank the wealth-rank differences between clusters with children at the start of the observed age-interval but did not explain the differences between the clusters later on, while it, secondly, increased the overall relative wealth position of the childless individuals.

The stratification of wealth accumulation by family patterns was largely similar considering gross and net wealth ranks, although differences in net wealth ranks were somewhat less pronounced. Most notably, net wealth ranks of individuals without children were overall higher compared to their gross wealth ranks. Comparing absolute levels of financial and real capital as well as debts suggested that this is likely the result of childless individuals having less real capital and also substantially less debt than individuals with children (see Figure A 4-1, Figure A 4-2, and Figure A 4-3 in the Appendix). Thus, differences in net and gross wealth ranks might reflect larger investments for parents during mid-adulthood, who usually acquire larger housing that is, for many, associated with a large amount of debt. Additionally, individuals with children generally face higher household costs than individuals without children, so they might not be able to pay off these debts as quickly over the life course.

Considering the family patterns as a whole, although a larger kinship reservoir (Cullati et al., 2018) might be beneficial for individuals in some aspects of life, such as mental well-being (Hünteler & Hank, n.d.), for wealth this seems to be less the case. In the current study, we find that individuals experiencing the *4-generation family* pattern exhibited one of the lower and decreasing relative wealth trajectories. In contrast, the patterns characterized by the fewest simultaneously living generations, the *childless* and the *2-generation family,* showed the strongest increase in their relative wealth or had a consistently high and largely stable wealth position, respectively. Thus, our analyses imply that wealth as a resource (or reserve) seems to be bound to the family as a whole, meaning that individual wealth holdings correlate with the number of living kin in a family and depend on its distribution among different members or generations (see also Hansen, 2014; Keister, 2003). Nonetheless, there is a large difference in the individual wealth position between individuals from the two *3-generation-family* clusters. This supports the life-course principle of social timing, meaning that the life stage in which and the duration for how long specific family events and positions, respectively, are experienced seem relevant. Moreover, the results suggest that (non)conformity with standard life courses might matter. This is because individuals of the most common family pattern, the *late 3-generation family* (late (grand)parenthood, late parental death), exhibited the highest wealth position over the full observation period across all models, both in gross and net wealth holdings. This is in line with the notion that standard life courses are the product of the macro structures in a society which might, in turn, most easily be aligned with the existing societal norms and the welfare state structure (Mayer, 2005). Thus, individuals with such standard life courses might face the optimal conditions to acquire high levels of individual wealth (Kapelle & Vidal, 2022).

Considering the single family-transitions and -positions, in particular for the question whether *parenthood* is associated with wealth, our investigation across the individual life course demonstrates that there is no simple answer because the wealth differences by parenthood are highly variable over age (see also contrasting theoretical argumentation in Van Winkle & Monden, 2022): Individuals without children exhibiting the lowest wealth rankings at age 40 is potentially the result of lower needs (and therefore incentives) to acquire (larger) housing and/or incentives to generate savings to provide for the family. The striking increase in the relative wealth position of childless individuals, in turn, could have been facilitated by larger consumption by parents and their restricted opportunities to generate as much disposable income as individuals without children. Additionally, over time, parents might increasingly transmit wealth to their children and grandchildren to support them via inter-vivos transfers, which does not equally apply to childless persons. Regarding the *timing of parenthood*, our results supported the expected (long-lasting) association of a later transition into parenthood with higher and potentially increasing relative wealth holdings compared to individuals with an earlier transition (although the transition was not directly observed). This lends evidence for, firstly, the importance of access to wealth in early adulthood as a life phase critical for large-scale investments that can be disrupted by an early parenthood and, secondly, the cumulative advantage of such investments over time (see Herbers et al., 2014, for instance).

Our results suggest that *parental death* and the potentially associated receipt of bequests and the timing when they are received play an important role for individual wealth accumulation processes. Our findings support previous research implying that later (vs. earlier) bequests might be associated with higher returns to one's wealth (Benton & Keister, 2017)—potentially because individuals might use bequests differently depending on the age at which they are received; bequests received earlier might primarily be used for consumption and to cover the costs of child-rearing, while bequests received later, in contrast, might be used to invest in new or expand existing assets. This might be particularly feasible for those becoming a parent later or for childless individuals who might have accumulated a considerable amount of assets until late adulthood, that is, when they receive these bequests. In addition, childless individuals might benefit from not sharing potential bequests with their own children. Lastly, individuals who experienced the death of their parents later in life might have also benefited from a longer shared life in which they could have been supported by their parents—financially, instrumentally and emotionally.

Finally, our results regarding the association of (the transition into) *grandparenthood* and wealth accumulation are less clear. The wealth accumulation patterns did not consistently diverge from their previous trend around the time individuals in a cluster started to become grandparents. However, one might not have to expect immediate substantial wealth changes upon the birth of the first grandchild: previous research has remained inconclusive regarding the ways (or life stage) in which the empirically established grandparent-grandchild-wealth-association was maintained (direct financial transfers vs. transmission of social capital or socialization, for instance) (Galster & Wessel, 2019; Pfeffer & Killewald, 2018). Thus, becoming or being a grandparent might not be linked to direct and major changes in personal wealth holdings—especially at the population level—because grandparents might support their grandchildren more indirectly. Additionally, grandparents might transfer financial resources on several occasions to their (grand)children (prior to, upon, or (long) after the birth of grandchildren). In Norway, for instance, grandparents were shown to play a crucial role for their grandchildren to acquire (more expensive) housing through direct financial transfers (inter-vivos and as bequests) (Galster & Wessel, 2019; Hansen & Wiborg, 2019). However, the observation period in the current study might not fully cover this transmission channel because the oldest grandchildren of the individuals under study were still very young while we observed them. The channels of wealth transmission related to grandparenthood might just be too diverse, and the timing of the transition into grandparenthood too variable for us to reliably investigate them.

4.6.1 Limitations

Despite using one of the best wealth databases there are, this study is not free from limitations. *First*, the family transitions considered might be underestimated because of the examination of a still-living birth cohort and right-censoring of the observation period. In particular, the age at death of the second parent as well as (age at) the transition into grandparenthood might in fact be higher (Leopold & Skopek, 2015b). Moreover, the sample did not include individuals with a first- or second-generation migration background, so the results cannot be generalized to this part of the population. *Second*, the family trajectories are limited to biological parents, children, and grandchildren. However, other family members, such as grandparents, siblings, or step-

(grand)children, might matter for individual wealth accumulation as well. Moreover, although we considered shared wealth holdings for married individuals, we did not account for partnership transitions, such as marriage or divorce, or for the partner's family transitions. Thus, future research might want to extend the number and kind of family ties and events considered to investigate other potentially relevant components of the family-wealth-relationship. *Third*, as discussed above, our wealth measure is an approximation of the market value of real and, in parts, financial capital. Although we adjusted these measures, wealth holdings might still be biased and, particularly of the very rich, underestimated. Moreover, we cannot account for the changed assessment of real estate in 2010, so future research might want to conduct research in other (Nordic) countries that do not suffer from this change. Also, although couple-equivalized wealth assumingly yields more reliable results than wealth holdings based on individual reports, it might be biased around the time of marriage and divorce if shared wealth was merged or split not exactly when these transitions were registered. *Lastly*, the identified associations might be subject to reversed causality, meaning that not wealth was affected by the family transitions or controls but (also) vice versa. Moreover, the control variables might not be fully exogeneous to the wealth accumulation process nor the family trajectories. Thus, controlling for these variables might reduce the actual (real) strength of the family-wealth-association leading us to underestimate their relationship.

4.6.2 Conclusion

Previous research implies that the (intergenerational) family network might be one of the most important channels for the transmission of wealth and therefore a crucial source of increasing social inequalities in today's societies. Across multiple generations, wealth can be transmitted and can determine the—more or less advantageous—pathways for future generations (Gilligan et al., 2018; Mare, 2011). For instance, wealthy (grand)parents are likely to not only transfer their wealth to their children and grandchildren, but also to facilitate their access to good health and higher education. This in turn might lead to a later transition into parenthood, an increased life expectancy for themselves and their children and grandchildren, and to a cumulative wealth advantage because they started their lives embedded in an economically well-equipped family context. These considerations suggest that our findings might be the product of prior wealth inequalities. However, this does not contradict our findings. Rather, the associations and patterns we identified depict one channel of how these wealth inequalities could be transmitted across generations through and within typical family trajectories. Across individual life courses, the inequalities might further increase due to cumulative advantage/disadvantage.

Our study provided, for the first time, a *long-term description* of the family-wealth-association across the individual life course while considering the *interplay* of the occurrence, timing, and ordering of *multiple* family transitions and positions. Future research might want to use the current study as a starting point to further examine heterogeneities of wealth accumulation within typical generational placement trajectories and to investigate the life-course consequences of specific family transitions in more detail to shed light on the underlying mechanisms. Moreover, in light of continuously changing (cohort) fertility rates (trend from the 'Nordic model' with high and stable fertility to low and late fertility, for instance (Hellstrand et al., 2021)) combined with potentially further increasing life expectancy, rates of divorce and remarriage (Zahl-Olsen et al., 2019), and family complexity (Van Winkle & Fasang, 2021), the *inter*generational as well as *intra*generational family structure might continue to change over the next decades—importantly, possibly stratified by the socio-economic background of an individual and their family. This might alter the kind and strength of the intergenerational transmission paths of wealth. Through country comparative research or once data for more recent cohorts are available, the contribution of the family-wealth-associations for social inequalities might better be clarified.

4.7 Appendix

4.7.1 Tables

Table A 4-1 *Linear Regression Models of Gross and Net Wealth Percentile Ranks Displayed as Beta Coefficients (Clustered Standard Errors in Parentheses)*

	Gross wealth		Net wealth	
	(1) Bivariate	(2) Multivariate	(3) Bivariate	(4) Multivariate
Family cluster (ref. *later 3-generation family)*				
Childless	-11.93***	-5.85***	-8.48***	-2.60***
	(0.50)	(0.56)	(0.50)	(0.55)
2-generation family	-1.67***	-0.45	-0.90*	0.12
	(0.40)	(0.39)	(0.40)	(0.40)
Earlier 3-generation family	-3.95***	-0.17	-2.49***	0.50
	(0.38)	(0.37)	(0.38)	(0.38)
4-generation family	-3.74***	-0.08	-2.65***	0.20
	(0.36)	(0.36)	(0.36)	(0.36)
Female		-1.60***		0.06
		(0.21)		(0.21)
Region (ref. *Oslo, Bærum*)				
Rest of Akershus		-0.84		-0.74
		(0.46)		(0.47)
Stavanger, Bergen, Trondheim		-6.54***		-7.13***
		(0.44)		(0.45)
Rest of Norway		-11.67***		-9.56***
		(0.35)		(0.36)
Highest education (ref. *low*)				
Medium		10.79***		10.22***
		(0.29)		(0.29)
High		18.89***		15.70***
		(0.32)		(0.32)
Marital status (ref. *unmarried*)				
Married		8.14***		8.29***
		(0.43)		(0.42)
Widowed		17.34***		16.10***
		(0.74)		(0.75)
Divorced		-0.34		-3.66***
		(0.49)		(0.48)
Separated		3.40***		-2.04***
		(0.59)		(0.58)
N	1,198,625	1,198,625	1,198,625	1,198,625
R^2	0.014	0.110	0.009	0.091

Note. Estimates of age-dummies and the age X cluster-interaction not shown (available upon request).

4.7.2 Figures

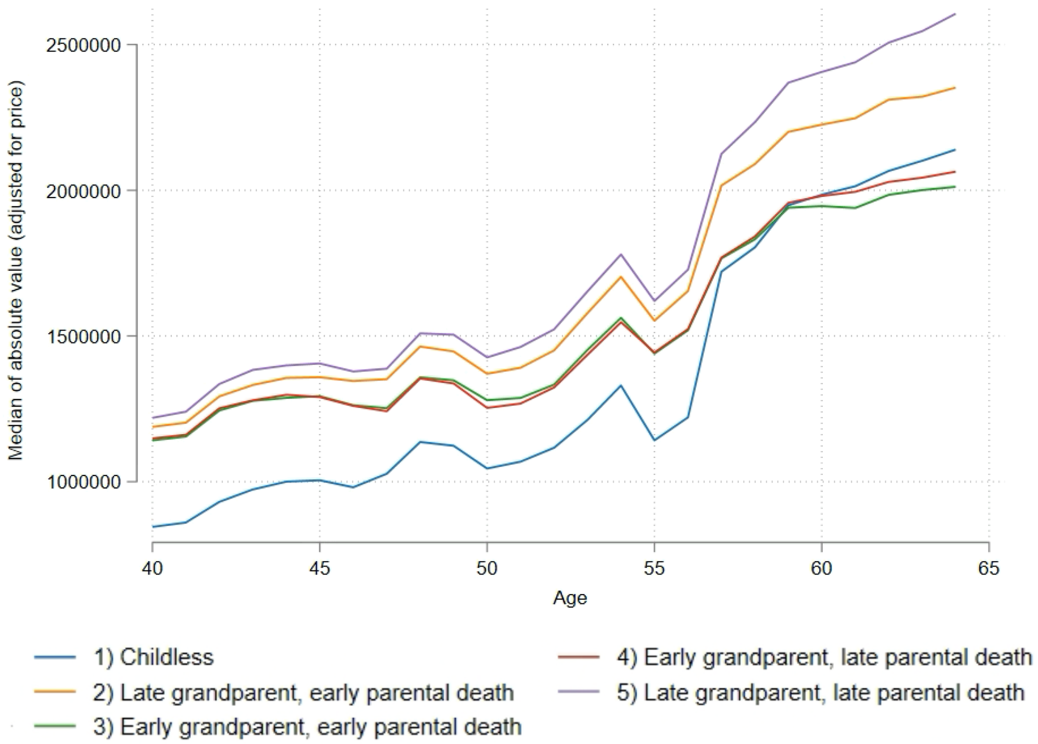

Figure A 4-1 *Median Adjusted Real Wealth Across Age by Family Pattern*
Note. N = 47,945; Norwegian krone NOK; adjusted for variable taxable share of real estate; couple-equivalized; adjusted for inflation.

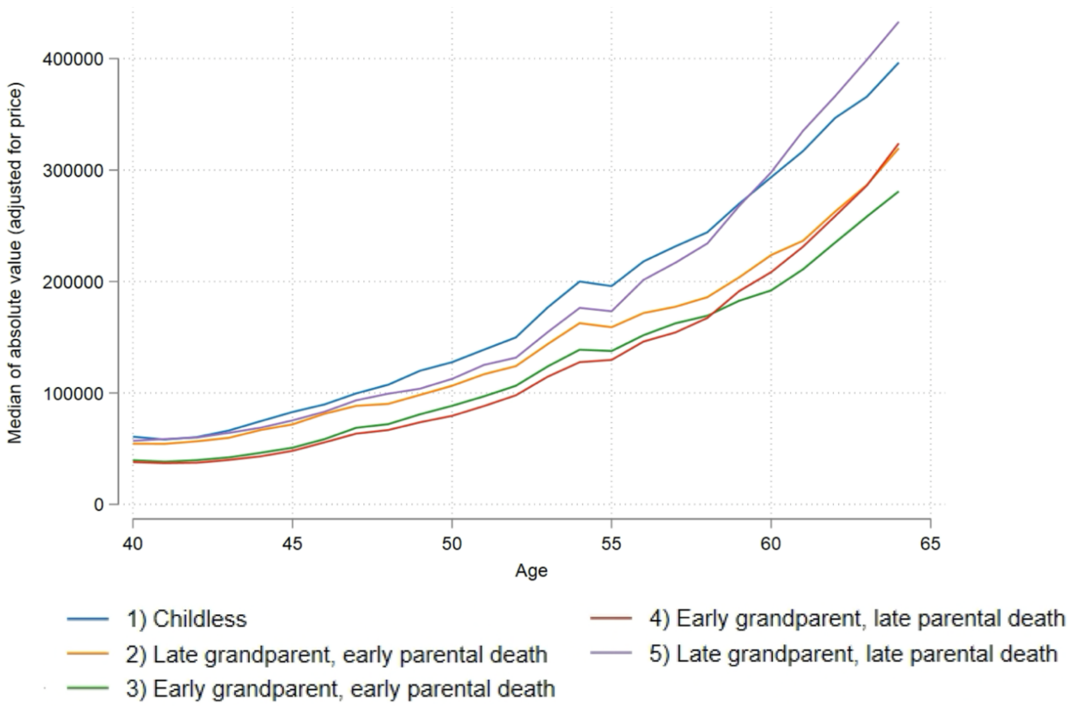

Figure A 4-2 *Median Financial Wealth Across Age by Family Pattern*
Note. N = 47,945; Norwegian krone NOK; couple-equivalized; adjusted for inflation.

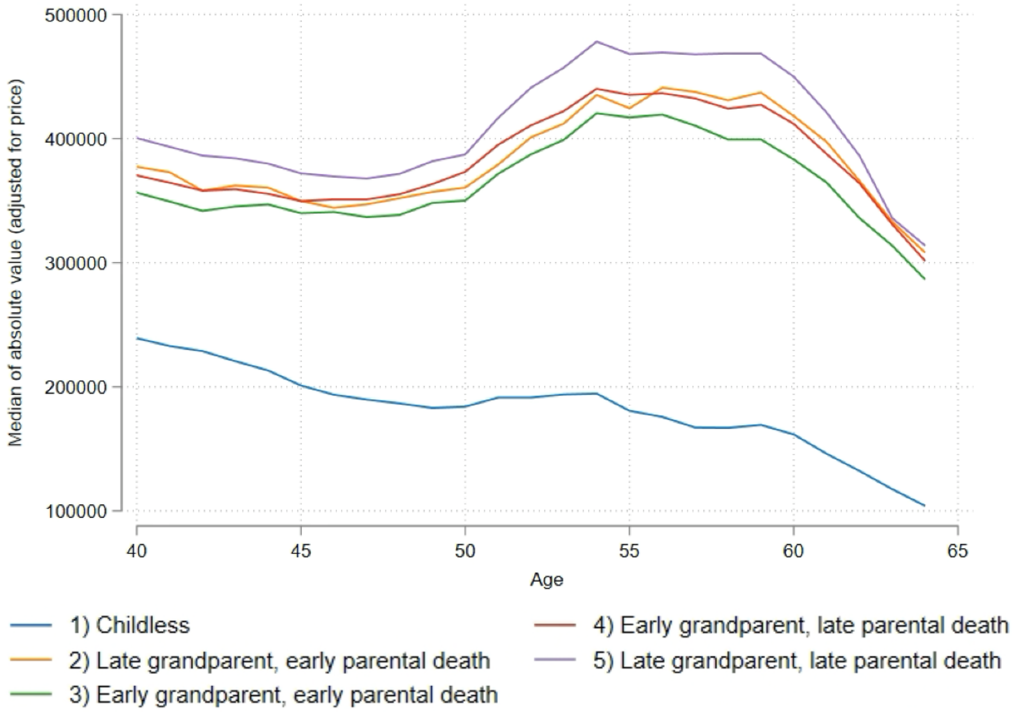

Figure A 4-3 *Median Debts Across Age by Family Pattern*
Note. N = 47,945; Norwegian krone NOK; couple-equivalized; adjusted for inflation.

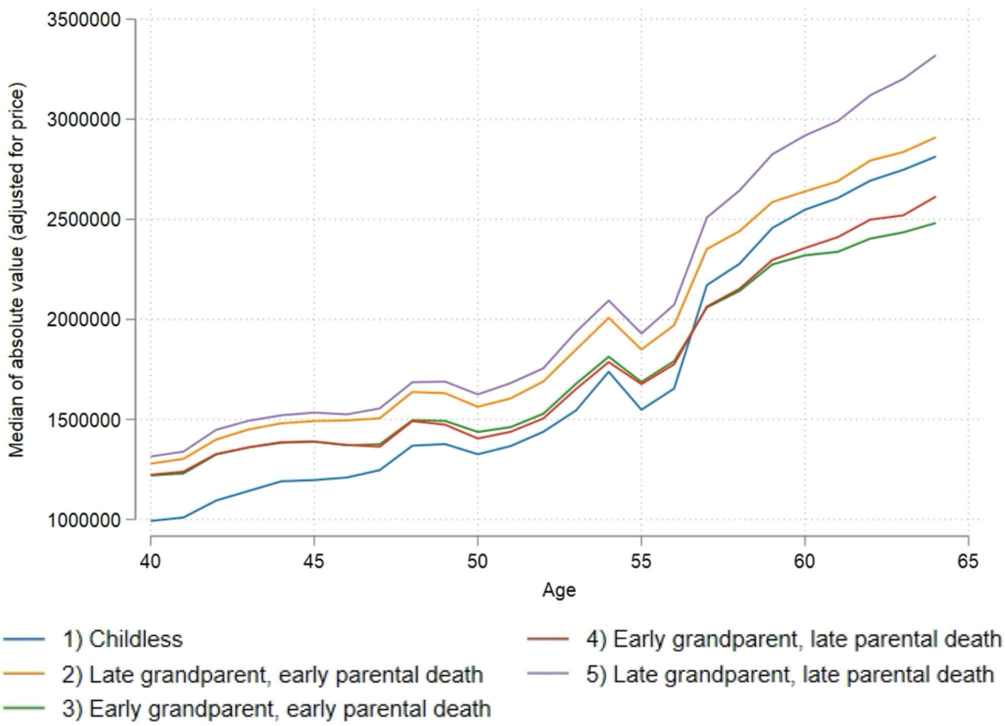

Figure A 4-4 *Median Adjusted Gross Wealth Across Age by Family Pattern*
Note. N = 47,945; Norwegian krone NOK; adjusted for variable taxable share of real estate; couple-equivalized; adjusted for inflation.

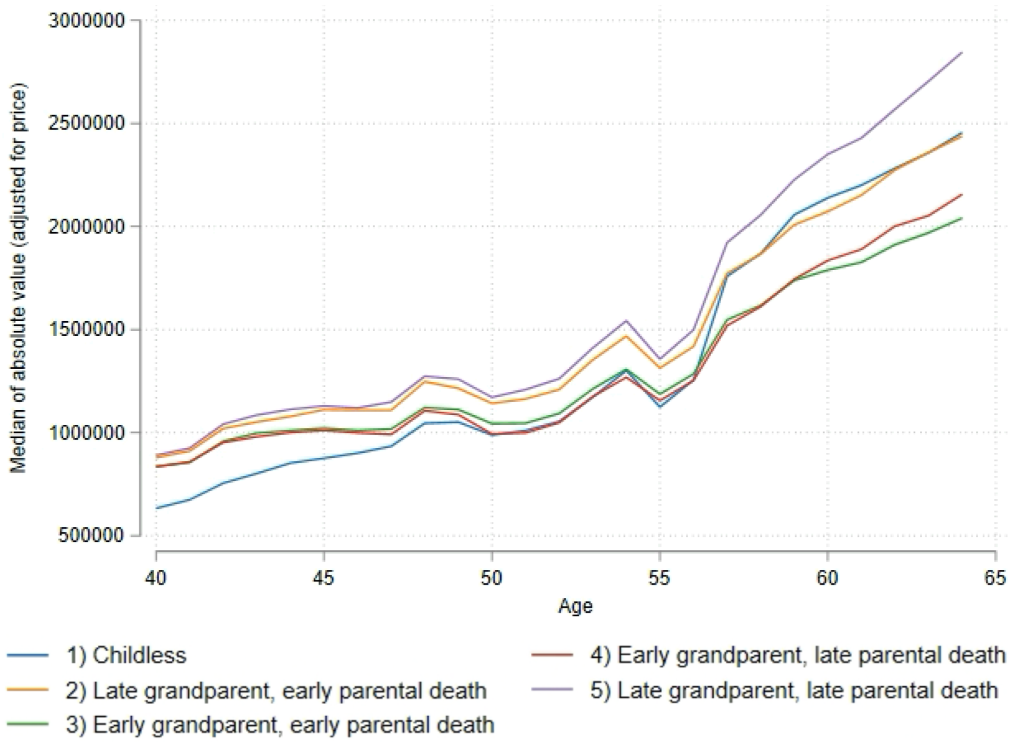

Figure A 4-5 *Median Adjusted Net Wealth Across Age by Family Pattern*
Note. N = 47,945; Norwegian krone NOK; adjusted for variable taxable share of real estate; couple-equivalized; adjusted for inflation.

Chapter 5 Literature

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