Interdependencies in mothers' and daughters' work-family life course trajectories: Similar but different?

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Abstract:

Women's life courses underwent substantial changes in the family and work domains in the second half of the 20th century. The associated fundamental changes in opportunity structures and values challenged the importance of families of origin for individual life courses, but recent research suggests enduring within-family reproduction of women's family behavior and work outcomes. We revisit this issue by studying two complementary types of intergenerational associations in women's work-family trajectories. On the one hand, we examine similarities across mothers' and daughters' work-family trajectories to address the direct within-family reproduction of female life courses (intergenerational persistence). On the other hand, we examine systematic associations between work-family trajectories that are typical in each generation to address intergenerational interdependencies over and beyond direct reproduction that account for individual and societal constrains and opportunities faced by each generation (intergenerational correspondence). We use a within-dyad approach to sequence analysis and examine combined work-family trajectories between the ages 18 to 35 of two generations of women, born in 1930–1949 and in 1958–1981, within the same family drawn from the German Socio-Economic Panel. Overall, we find evidence of small but non-trivial persistence in work-family trajectories across generations that is partly attributed to within-family mechanisms of reproduction. In addition, we find correspondence across typical trajectory patterns of each generation, without daughters necessarily resembling their mothers' trajectories. The strength of the intergenerational associations varies by social background and socio-political context. Our findings improve and nuance our understanding of the reproduction of female life courses across generations.

Keywords: intergenerational transmission, women, life course, sequence analysis, Germany

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Introduction

In Germany and many other societies, women's typical life courses underwent substantial changes in the family and work domains in the second half of the 20th century. Women's educational attainment outpaced men's attainment, women substantially increased their labor force participation, and women increasingly entered high-status and well-paid occupations previously reserved for men (England 2010; Grave and Schmidt 2012; Trappe et al. 2015). At the same time, the transition into parenthood and further childbearing has been increasingly delayed in most post-industrialized societies, leading to overall lower fertility (Frejka and Sobotka 2008; van Winkle 2018).

Against the backdrop of these fundamental societal changes, which profoundly reshaped typical female life course patterns, we examine the interdependence between work-family life course trajectories across generations within families. We propose two complementary measures of intergenerational interdependence. On the one hand, we examine *intergenerational persistence* to assess the extent to which mothers' work-family life courses are (still) reproduced in their daughters' life courses. As the aim is to address direct reproduction across generations, objective similarities in the work-family trajectories of mothers and daughters can be used as evidence for intergenerational persistence.

On the other hand, we nuance ideas of intergenerational processes over and above the persistence of mothers' life courses in the next generation and examine *intergenerational correspondence,* or the extent to which typical work-family patterns of the mother and the daughter generation are systematically associated. We consider this an assessment of intergenerational interdependencies, which is sensitive to the divergent individual and societal opportunities and constraints faced by mothers and daughters when negotiating their life courses. Even if persistence in mothers' life courses within families is small, we argue that mothers' life courses may still influence their daughters' life courses, as observed through the

correspondence between mothers' and daughters' typical life courses, which do not necessarily resemble each other. Hence, we aim to answer the following research question: *What are the relevant intergenerational interdependencies in work-family life courses between mothers and daughters?*

Previous research has documented a variety of factors influencing key aspects of women's work-family trajectories, that is, the combined sequence of employment states and family states over the life course. Most of this research focuses on contemporaneous factors such as women's education, marital status, or their preferences. Much less is known about antecedent factors such as the impact of mothers' employment and childbearing on their adult daughters' employment and childbearing. Theoretically, an intergenerational reproduction of labor market participation and family formation can be explained through mechanisms such as socialization within families, social control, provision of resources, and status inheritance (Platt and Polavieja 2016; van Putten et al. 2008). Studying intergenerational processes is important for our understanding of contemporary female life courses, which often remain gendered despite much progress towards gender equality (Ridgeway 2011). One explanation put forward for this stall in the gender revolution (England 2010) is the intergenerational reproduction and persistence of traditional life course trajectories, in which women's care work is prioritized over wage work (Platt and Polavieja 2016; van Putten et al. 2008).

We extend previous research on intergenerational reproduction by, first, examining persistence in combined work-family trajectories, that is, the extent to which mothers' work-family life course is similar to their adult daughters' life courses. There is a growing literature on within-family persistence in family formation patterns using sequence analysis methods (Fasang and Raab 2014; Liefbroer and Elzinga 2012; van Winkle et al. 2016), but these studies do not consider the work domain. At the same time, studies on persistence in the work domain exclusively apply a point-in-time approach by examining mothers' employment and their daughters' behavior at discrete ages (Platt and Polavieja 2016; van Putten et al. 2008). This is

problematic, since employment and family are highly interrelated life domains that compete with each other for (time) resources, particularly among women in recent birth cohorts (Huinink and Kohli 2014). One could expect, for instance, that persistence in family trajectories across generations in some families may be contrasted by substantial changes in work trajectories. Furthermore, comparisons of outcomes across generations at specific ages may hide significant heterogeneity in the underlying long-term trajectories. In this study, we combine the literature on persistence in the work and family domains by acknowledging that mothers' and daughters' combined work and family life courses are interdependent within individuals and across generations (Mayer 2009). Intergenerational reproduction may unfold gradually as a process across work-family trajectories and not only at specific points in time.

Second, we extend previous literature by examining whether and how typical patterns of mothers from the post-war cohorts and those of their daughters relate to each other. We consider this an important aspect when comparing life courses across generations beyond direct persistence, an aspect that has not received sufficient attention so far. Earlier studies on intergenerational persistence in trajectories (Fasang and Raab 2014; Liefbroer and Elzinga 2012) focused on whether mothers' trajectories are reproduced by their daughters' trajectories. Given that fundamental changes in societies profoundly reshaped women's life courses, it may be insufficient to only look at within-family persistence to understand intergenerational processes. Low intergenerational similarity in work-family trajectories within families may coexist with high correspondence between typical work-family trajectories across generations; in other words, typical patterns in one generation may be associated with substantially different but typical patterns in the next generation. For instance, mothers with more family-oriented work-family trajectories than other women in their generation may have daughters with more family-oriented work-family trajectories than other women in their own generation without mothers' and daughters' trajectories being directly similar.

Third, these intergenerational interdependencies may be further influenced by changes in individual endowments (e.g., increasing educational attainment between generations) or by structural changes (e.g., specific historical circumstances experienced by one generation but not by the other). Hence, we extend previous research by studying how intergenerational interdependence in work-family trajectories may vary due to different opportunities and constraints faced by mothers and daughters. For instance, daughters who are more highly educated than their mothers may be able to pursue different work-family trajectories. Furthermore, the life course perspective emphasizes how within-family processes of reproduction are shaped by societal conditions and institutions (Mayer 2009). Hence, fundamental structural changes between generations may substantially affect these intergenerational associations. To illustrate this point, we choose German reunification and compare East Germany, a context of profound institutional change after reunification, with West Germany, a context of relative institutional continuity.

In the present study, we compare the work-family trajectories of two generations of women aged between 18 and 35 within the same families. Data are drawn from the Socio-Economic Panel Survey, a large and high-quality multipurpose household panel study. To examine the extent of intergenerational interdependence of work-family trajectories, we compare mothers born between 1930 and 1949 in East and West Germany with their daughters, born between 1958 and 1981. We use a within-dyad approach to sequence analysis to answer our research question. We find evidence for small but non-trivial persistence in work-family trajectories from mothers to daughters. Part of the observed persistence is due to processes that operate within the family. We find variations to this general result across socio-political contexts and social background. In addition to this, we find correspondence across typical trajectory patterns specific to each generation—without daughters' trajectory patterns necessarily resembling their mothers'.

Background

Previous research

Our study is informed by two main strands of empirical literature that separately examine intergenerational interdependence in the family and work domains. First, a large number of studies provide evidence of parallel progression at specific ages of particular demographic events such as fertility, marriage, and divorce in various societies (Amato and Patterson 2017; Barber 2001; Erola et al. 2012; Fasang 2015; Kolk 2014). This literature assumes that life courses can be understood as achieved outcomes at a given age, which have the same meaning within and across generations. Empirically, evidence of intergenerational transmission is often limited because outcome matches at a given age may obscure different pathways towards these outcomes.

To overcome these shortcomings, recent studies adopted a holistic approach by which trajectories are defined as successions of family statuses held over time. These studies capitalized on the collection of life history data in recent years in combination with sequence analysis to enable comparisons of entire life course trajectories between parents and their children. Liefbroer and Elzinga (2012) examined similarity in family trajectories from age 15 to 30 between two generations in the United States. They found that whereas typical trajectories changed substantially between generations, parent-child dyads were about 20% more similar than other unrelated dyads. Similarity was higher in dyads with highly educated parents. In a study of two generations of middle-class families in the United States, Fasang and Raab (2014) identified three types of intergenerational similarity: strong transmission, moderate transmission, and intergenerational contrast pattern. Strong emotional bonds are associated with strong transmission, poor relationship quality is associated with a contrast pattern, and upward educational mobility between generations is associated with moderate transmission. Similar patterns were identified for Germany, where families in West Germany are more likely

to exhibit strong transmission and families in East Germany are more likely to exhibit intergenerational contrast (van Winkle et al. 2016). This strand of literature provides important insights into the intergenerational interdependence of family formation, but it ignores the work domain. In addition, it is limited by only considering direct similarity between mothers and daughters (allowing, however, for delays and repetition in transitions in the daughter generation), neglecting potential associations of typical patterns across generations.

A second strand of literature deals with intergenerational interdependence in the work domain. In the sociological status attainment literature, mothers' occupational status has received attention only recently and was shown to have a distinct influence on daughters' status attainment beyond fathers' status (Beller 2009). Regarding labor force participation, van Putten et al. (2008) found mothers' participation not to influence their daughters' participation in the Netherlands, but daughters with working mothers worked more hours. In a recent study, McGinn, Ruiz Castro, and Lingo (2018) examined how maternal employment affects adult daughters' employment in 29 countries (including Germany). They found positive associations between mothers being employed and daughters being employed, daughters' supervisory responsibility, work hours, and incomes. Daughters of working mothers were more likely employed regardless of their mothers' social class, but the associations with other employment characteristics were influenced by social class. In addition, daughters raised in contexts with high female employment were less influenced by their mothers' employment regarding their supervisory responsibility and work hours. This strand of literature focuses on point-in-time outcomes without considering the embeddedness of these outcomes in more complex trajectories and the interrelatedness of work-family trajectories.

Intergenerational transmission of women's work-family trajectories

Although it is not our aim to test the concrete mechanisms, we acknowledge that any intergenerational interdependence of work-family trajectories may operate through multiple—

complementary rather than mutually exclusive—mechanisms of reproduction. A first important group of mechanism refers to processes of *socialization* and *social control* as a direct influence of mothers on daughter's life courses. Both refer to the notion that parents purposively aim to affect their children's behavior in a way that they perceive as desirable. Parents' potential and possibility to influence their children's behavior varies by parental education and socioeconomic position. More highly educated parents, for example, not only have higher occupational aspirations for their children and are more likely to favor delayed family formation but are also more likely to influence their children's behavior according to their preferences than less-educated parents (Barber 2001; Raab et al. 2014). Parents with higher education might engage more actively in the long-term planning of their children's future and know more about risks such as early parenthood or work-related choices in early adulthood (Kim and Schneider 2005; Wiik 2009). Moreover, *social learning* theory holds that children learn about certain behaviors and their consequences from observing and imitating their parents (e.g., Bandura 1977). Hence, such direct intergenerational influence can be transmitted through parents' attitudes and influence as well as through their actual behaviors (e.g., Moen et al. 1997; Platt and Polavieja 2016).

In addition, parents may transmit not only specific attitudes, values, and preferences but also social, cultural, and economic resources, thereby exerting an indirect influence on their children's life courses. Thus, *provision of parental resources* is another noteworthy mechanism of parental influence on children's behavior (e.g., Liefbroer and Elzinga 2012; Moen et al. 1997). From this perspective, parents provide resources for the child to reach particular aims— that is, to attain higher education and better career chances—that in turn affect a child's actual employment and family. Hence, the findings of higher mother-daughter similarity for highly educated mothers (Liefbroer and Elzinga 2012) might be interpreted in this way. The results of Sirniö et al. (2017) also indicate that higher parental education is positively associated with smooth work-family trajectories in early adulthood, that is, trajectories characterized by high

educational attainment, stable labor market integration, and late parenthood, whereas lower parental resources are associated with patterns featuring less favorable transitions.

Last but not least, *genetic inheritance* may contribute to the association of mother's and daughter's life courses. In recent research, the family of origin has increasingly been considered a social *and* genetic point of departure to explain status attainment and social mobility (e.g., Diewald et al. 2015). Along the same lines, a growing body of research suggests that there might be genetic transmission of family-related behaviors (in particular for fertility; see Mills and Tropf 2015).

Intergenerational transmission and generation-specific constraints and opportunities

Intergenerational transmissions are challenged if daughters face a different set of opportunities and constraints than their mothers. These new opportunities and constraints might be due to, for example, educational expansion, changing gender norms about appropriate behavior, or profound structural changes affecting employment conditions or family policies.

On the aggregate level, there has been great change in women's employment and family behavior over time; for example, female (and maternal) employment clearly increased across cohorts (e.g., Trappe et al. 2015). A substantial share of women in younger generations remains childless, especially among the highly educated. Childlessness among higher educated women has traditionally been more widespread in West Germany than in East Germany, and the gap decreases in younger cohorts (Kreyenfeld and Konietzka 2017).

On the individual level, daughters' work-family trajectories may be different from their mothers'. That is, we could expect little persistence or direct reproduction of mothers' life courses. At the same time, due to socialization, social control, provision of resources, and status inheritance, daughters from the same *type* of mothers may have similar work-family trajectories. That is, daughters' work-family trajectories may be different but still correspond to their mothers' trajectories by sharing common features or some similarity given the different

institutional and structural conditions each generation faced. For instance, working mothers may socialize their daughters into re-integrating in the labor market after childbirth despite differential fertility behavior across generations. Alternatively, contrasting patterns between mothers and daughters could emerge as reactions to changing contexts of opportunities. For instance, stay-at-home mothers may socialize their daughters into postponing fertility and re-integrating in the labor market after childbirth given the greater educational and labor market opportunities for daughters.

In addition, the strength and direction of these intergenerational associations in work-family trajectories might be moderated by the different opportunities and constraints each generation faces. At the micro-level, persistence in work-family trajectories may depend on the changes in the individual endowment of mothers and daughters. If daughters stay longer in education and achieve higher educational attainment than their mothers, both their work and family life courses may develop differently compared to their less educated mothers, because higher educational attainment may lead to postponement of family formation and opens employment opportunities and prospects (Blossfeld and Huinink 1991). The empirical results of Fasang and Raab (2014) regarding the moderate intergenerational transmission of family trajectories among highly educated daughters support such an expectation (see also van Winkle et al. 2016).

At the macro level, structural changes across time affect intergenerational interdependencies in work-family trajectories (van Winkle et al. 2016). The existence of two German states between 1949 and 1990 provides a unique opportunity to examine the role of socio-political contexts for intergenerational interdependence.[1] Referring to values and attitudes, Liefbroer and Elzinga (2012: 2) argue that "in a society that emphasizes the

[1] However, there is evidence for demographic differences between both parts of Germany pre-dating the division in 1949 (Klüsener and Goldstein 2016).

importance of autonomy, children may want to assert their autonomy with regard to crucially important decisions concerning family life." In this case, intergenerational persistence would be lower in more open societies.

Life course sociologists, furthermore, emphasize that institutional conditions set opportunities and constraints for individuals' life courses such as labor market or family policies. Regarding our interest in work-family trajectories, the institutional support for reconciling paid work and care work is central. In the socialist society in East Germany, the government aimed to achieve greater gender equality through female labor market participation while supporting high birth rates (Trappe 1996). This policy of high female labor market attachment was accompanied by generous childcare and family leave benefits allowing women to reconcile employment with care. In West Germany, by contrast, the male breadwinner model was the prevailing model of households' division of labor (Trappe et al. 2015). Work-family policies such as maternity leave, limited provision of childcare, and taxation contributed to this model.

After the collapse of state socialism in Eastern Europe in 1989, East and West Germany were reunified in October 1990, with East Germany adopting the institutional conditions of West Germany. In the reunification process, East Germany saw a rapid and enormous transformation of institutions and industrial restructuring, whereas West Germany remained almost unchanged. Following reunification, female employment in East Germany changed tremendously due to these economic and societal transformations (Rosenfeld et al. 2004). Research evidence supports these differences in intergenerational transmissions of family trajectories in East and West Germany. Fasang (2015) finds strong transmission of fertility in the West Germany but not in East Germany, arguing that the totalitarian regime in East Germany suppressed transmission. In line with these findings, Morosow and Trappe (2018), looking at women in re-unified Germany, find a still weaker correlation in the timing of fertility in East compared to West Germany. Using a holistic view on family formation trajectories, van

Winkle et al. (2016) find daughters' family trajectories to be less similar to their mothers' trajectories in East Germany compared to West Germany (see also Engelhardt, Trappe and Dronkers [2002] for intergenerational transmission of divorce).

The present study

In the present study, we build on two pioneering applications of within-dyad sequence comparisons to assess the intergenerational interdependence of life course trajectories (Fasang and Raab 2014; Liefbroer and Elzinga 2012) to make three innovative contributions to the literature on intergenerational reproduction in the work and family domains.

First, we examine *within-family persistence in combined work-family trajectories* of mothers and daughters (i.e., mothers have daughters with similar work-family trajectories). To this end, we look at (dis-)similarities between the trajectories of mothers and daughters (from comparisons of sequences of annual work and family states between ages 18 and 35) as a measure of the degree of persistence. We deploy a counterfactual design to assess whether any persistence we find operates through the family by comparing related dyads to unrelated dyads of mothers and daughters. Similarity for related dyads measures the degree of correlation in work-family trajectories between mothers and daughters, which could result from both family and societal mechanisms. In contrast, similarity for unrelated dyads measures the correlation in work-family trajectories between two random, unrelated women from two generations, which could only result from societal mechanisms. Thus, a significant larger average similarity among related dyads than among unrelated dyads is used as evidence for persistence resulting from family-related mechanisms. Overall, we expect to find modest persistence in work-family trajectories between mothers and daughters, with such persistence partly operating through family-related mechanisms.

Second, we extend the knowledge on intergenerational associations by addressing the cross-generational *correspondence of typical trajectories from each generation*. To this end,

we study the relationships between mothers' clustered work-family trajectories and daughters' clustered work-family trajectories. This allows us to examine the overall correspondence between the typical work-family trajectory patterns of each generation using measures for categorical variables. It also sheds light on the specific patterns of the mother generations that have continuity in the daughter generation, as well as on the links between mothers' and daughters' patterns that keep less or little resemblance to each other.

Third, we examine *variation in these intergenerational associations* by assessing variations in intergenerational interdependencies across different opportunities and constraints faced by each generation. As an example of changing individual opportunities, we look at educational mobility between mothers and daughters. We expect intergenerational interdependence to be lower if daughters attained higher education than their mothers. Regarding structural change, we study the variation in persistence for mother-daughter dyads by comparing mothers in East Germany and West Germany. For East Germany, we expect less interdependence between generations than for West Germany due to the profound institutional changes affecting the East German daughter generation.

To make meaningful comparisons across generations, we draw two groups of birth cohorts that are relatively homogeneous within groups and relatively heterogeneous between groups. The mother generation includes women born between 1930 and 1949 who became mothers between 1958 and 1981 and experienced a post-war life course. The daughter generation (born between 1958 and 1981, accordingly) experienced substantive shifts in female life courses compared to earlier generations. On average, women in the daughter generation displayed higher educational attainment, later entry into the labor market, fewer and later marriages, and lower fertility than the mother generation. Additionally, most of the work-family life course of the mother generation developed in opposed institutional settings in East and West Germany (1949–1989). In contrast, the daughter generation saw some or most of their work-family life course develop under a unified socio-political context (since 1990).

Method

Data and Sample

Our data demands are high, because we need to link comprehensive information on work-family trajectories between two generations within families. We use the German Socio-Economic Panel (SOEP; doi: 10.5684/soep.v33.1; Goebel et al. [2018]), a representative longitudinal study of private households in West and East Germany, conducted since 1984 and 1990, respectively. The survey has a genealogical design by which children are followed when they move out of the parental household. This makes SOEP a good fit for our research purposes, because it enables us to link female survey respondents from two generations within one family. The combination of a prospective panel structure with retrospective employment and family histories allows for comparing the two generations over a long period of adulthood.

Our main sample consists of female respondents who are mothers (here called the mother generation, born between 1930 and 1949) and daughters (daughter generation, born between 1958 and 1981) of another respondent and part of the same household for at least one survey wave. Additionally, for sample inclusion, mothers and daughters have to be observed at least until age 35 to not have missing information on key analytical variables, and to have lived either in East Germany or in West Germany prior to reunification in 1990. [2] After exclusions, our sample consists of 651 daughters and their 574 mothers, a sample size comparable to that in other studies using a similar approach (Fasang and Raab 2014).[3] While 535 daughters lived in West Germany in 1989, 116 daughters lived in East Germany in 1989. For our analytical purposes, we also draw additional respondents of the mother and daughter generations. On the one hand, we need to match mothers with unrelated women from a random sample of survey

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[2] We tested the sensitivity of results to changes in the birth cohort range of each generation and by excluding women with an (in-)direct immigration background, but results remain virtually unchanged.
[3] Several daughters are linked to the same mother.

respondents of the daughters' same five-year age group. Additionally, we will assess typical patterns in work-family life courses of the mother and daughter generations using a wider, more representative random sample of women within the birth cohort ranges of each generation (including only mothers among those women of the mother generation). Our sample of women of the mother generation amounts to 3,228; our sample of women of the daughter generation amounts to 3,370.

Measurement

We use a yearly calendar from age 18 to age 35 to describe work-family trajectories. We choose the lower age limit based on the compulsory schooling age in Germany. Extending the life courses up to age 35 enable us to examine early and continued work-family development during young adulthood. We combine information regarding women's children parity (no child, one child, two or more children) and employment activity (education, full-time employed, part-time employed, not employed) to build state sequences. We disregard partnership status in our combined work-family states to keep the number of possible state sequences manageable for our analysis. Since partnership status has fewer consequences for the intersections between work and family than childbearing,[4] we assume that leaving this state aside will have little effect on our outcomes. Additionally, we do not differentiate being in education by parity because of very few observed cases in education with children for the two generations, arguably due to societal norms about the order of these events (Blossfeld and Huinink 1991). Numbers are relatively low among childless women in part-time employment, and for that reason we include them together with non-employed childless women in a combined state that reflects low attachment to the labor market. After these considerations, our

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[4] Results from previous research show stronger associations between female employment and childbearing / number of children than between female employment and partnership status (Aassve et al. 2006). Despite empirical associations between marital status and employment in Germany, many have eroded in the second half of the 20th century (Buchholz et al. 2006).

sequence alphabet consists of nine differentiated states: "in education," "full-time employed with no child," "full-time employed with one child," "full-time employed with two or more children," "not full-time employed with no child," "part-time employed with one child," "part-time employed with two or more children," "not employed with one child," and "not employed with two or more children."

Figure 1 shows the yearly sample distributions (as proportions) of the nine work-family states between ages 18 and 35 for the mother and the daughter generations comparing East and West Germany. As prior research has shown, the daughter generation spent more time in education and in full-time employment before motherhood than the mother generation. Women of the mother generation transitioned early to first and second child, either remaining full-time employed (in East Germany) or moving out of the labor force (in West Germany). Compared to the mother generation, most women in the daughter generation had fewer children before age 35, and were more often in part-time employment after motherhood.

Figure 1. State distribution plots of work-family life courses by respondent's generation
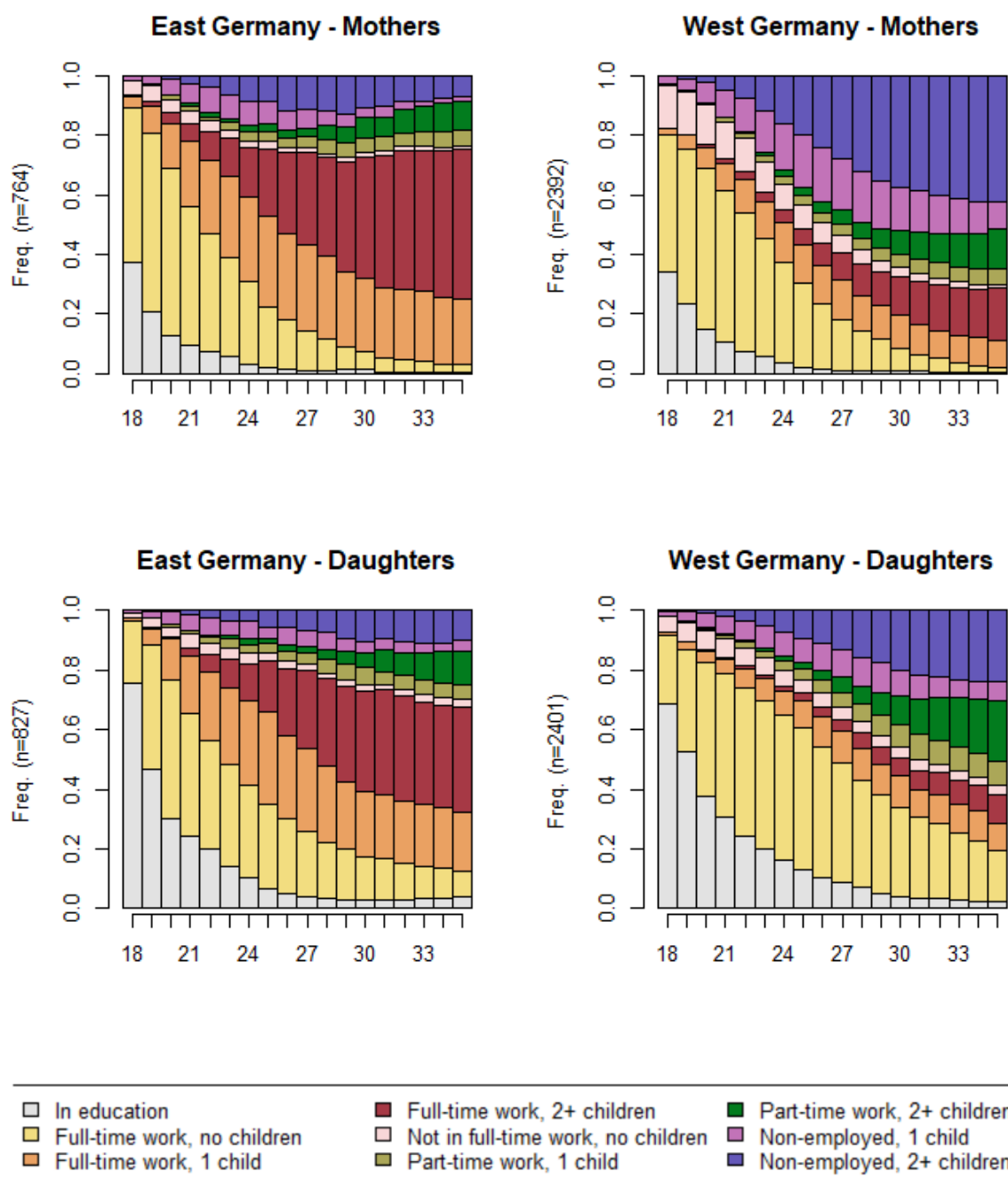
Data: SOEP v33.1 (1984-2016; unweighted). Notes: Cross-sectional state frequencies by age of combined employment status and children parity states between age 18 and age 35.

Analytical strategy

Our analysis proceeds in several steps. First, we compute similarities in work-family trajectories between each pair or sequences for the complete sample. To this end, we deploy an Optimal Matching (OM) distance metric with constant costs (substitution=2; indel=1). This renders a metric that emphasizes (dis-)similarity in the duration and order of states across sequences, which is appealing for comparisons across generations, as equal sequence matches are not expected.[5] Because distances are calculated across each pair of sequences of the two-generation sample, the range of our distances correspond to the minimum and maximum difference across and within generations. We normalize the distances from the resulting matrix and generate similarities using the following formula

$$s(x, y) = 1 - \frac{d(x, y) - \min d}{\max d - \min d}$$

where *s* denotes the similarity between sequences x and y, *d* is the distance between sequences x and y, and *min d* and *max d* are the minimum and maximum distances observed in our sample. The similarity *s* ranges from 0 (largest dissimilitude in our sample) to 1 (largest similitude in our sample), and thus, its values can be interpreted as a proportion of similarity between a pair of sequences within the sample range, and they can be averaged across groups for within-sample comparisons. We then extract similarities relating to each pair of sequences of related mother-daughter dyads—where mothers are matched to their daughters—and for unrelated mother-daughter dyads—where mothers are matched to random, non-related women from the generation of daughters (within the same five-year age group and region). For related mother-

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[5] To assess the sensitivity of results to the metric of choice, we replicated analysis using sequence alignments that emphasize the timing of work-family states (Dynamic Hamming Distance metric) or based on combinatorial approaches rather than sequence alignments (Longest Common Subsequence metric). We note that results from sensitivity analyses do not change our main conclusions.

daughter dyads, average within-dyad similarities reflect the degree of persistence within the family in work-family trajectories. For unrelated dyads, average within-dyad similarities reflect general cross-generational continuity in work-family trajectories. Comparing both (related and unrelated) average within-dyad similarities, we address the question of whether work-family trajectories persist within families, beyond wider societal processes that feed cross-generational persistence. On average, if individuals within families (i.e., related mother-daughter dyads) are more similar to each other than two unrelated individuals of each generation (i.e., unrelated mother-daughter dyads), this will be evidence of persistence within families. We use bootstrapped standard errors (1,000 replications) and confidence intervals to assess statistical differences in average similarities across types of dyads. To elaborate on potential mechanisms of persistence, we compare similarity of dyads by mothers with different levels of educational attainment.

Next, we identify typical trajectory patterns of each generation and address whether the resulting patterns correspond across generations. Using cluster analysis on the matrix of distances, without prior normalization, we generate two typologies for typical work-family trajectory patterns of the mother's generation and the daughter's generation. We use visualization (Sankey diagram) and report measures of association between nominal variables (Cramér's V) to assess the match of work-family trajectory patterns across generation.

Last, we address variations in these intergenerational associations by generational changes such as educational expansion and profound structural change. Here, we examine average within-dyad similarity by daughters' education relative to maternal education, as well as by comparing results between dyads of mothers in East Germany and West Germany.

Results

Persistence of work-family life courses

We first show results to address the extent to which work-family life courses persist between mothers and their daughters. Table 1 shows averages and bootstrapped standard errors with 95% confidence intervals of similarities across two types of dyads consisting of respondents for the mother generation and (i) their daughters (related dyad) and (ii) unrelated respondents of the daughter generation (unrelated dyad). Based on normalized OM distances, the average similarity among related dyads is about 0.33, with a 95% bootstrap confidence interval of 0.32 and 0.35. That is, about one-third of the work-family trajectories in the daughter generation persists from the trajectories of their own mothers. The average similarity of related dyads is statistically different from the average similarity of unrelated dyads, which is about 0.29, with a 95% bootstrap confidence interval of 0.27 and 0.30. Comparing confidence intervals for average similarities across related and unrelated dyads, we obtain initial evidence of persistence across generations to be higher within families (related dyads) than in the wider society (unrelated dyads). In particular, the work-family trajectories of mothers are 15% more similar to those of their own daughters than to those of any random women in the daughter's birth cohort.

Table 1. Average similarity in work-family life courses (dyadic normalized distances)

	Average similarity	SE	95% CI	
			LB	UB
Related dyad	0.334	0.008	0.317	0.350
Unrelated dyad	0.286	0.008	0.271	0.301

Data: SOEP v33.1 (1984-2016; unweighted). Similarity measures are based on normalized OM distances. CI= Confidence intervals based on bootstrap with 1,000 replications.

We now assess variation in persistence across socio-political contexts and social background by examining similarities across groups (Table 2). Regarding the socio-political context, we note that differences in average similarity of related dyads between East German mothers and their daughters (0.36; CI: 0.32-0.39) and West German mothers and their daughters (0.33; CI: 0.32-0.39) are not significant. As in our overall result, average similarity of related dyads is higher than the average similarity of unrelated dyads in East and West Germany (differences are only statistically significant for West German mothers and their daughters using a strict 95% CI).

We find substantive variation in average similarity across generations by maternal education. Confirming results of earlier research, average similarity is lowest when mothers have lower levels of education, increasing significantly with mothers' educational attainment. The average similarity of related dyads is 0.31 (CI: 0.29-0.32) when mothers have low levels of education, 0.38 (CI: 0.35-0.42) when mothers have intermediate levels of education, and 0.41 (CI: 0.37-0.46) when mothers have high levels of education. Persistence is higher within families because the average similarity of related dyads is systematically higher than the average similarity of unrelated dyads across all maternal education groups (differences are only statistically significant for the relatively larger low maternal education group using a strict 95% CI).

Table 2. Average similarity in work-family life courses by socio-political context and social background.

	Average similarity	SE	95% CI		N
			LB	UB	
Residence in 1989					
East Germany					
Related dyad	0.356	0.019	0.319	0.394	116
Unrelated dyad	0.308	0.017	0.276	0.342	116
West Germany					
Related dyad	0.329	0.009	0.312	0.347	527
Unrelated dyad	0.283	0.009	0.266	0.300	527
Maternal education					
Low					
Related dyad	0.309	0.010	0.290	0.328	455
Unrelated dyad	0.262	0.009	0.244	0.281	455
Intermediate					
Related dyad	0.380	0.018	0.345	0.415	137
Unrelated dyad	0.343	0.017	0.310	0.376	137
High					
Related dyad	0.413	0.023	0.367	0.459	59
Unrelated dyad	0.339	0.021	0.297	0.381	59
Daughter's education relative to maternal education					
Lower					
Related dyad	0.319	0.029	0.263	0.376	40
Unrelated dyad	0.333	0.029	0.276	0.391	40
Equivalent					
Related dyad	0.347	0.013	0.321	0.374	267
Unrelated dyad	0.270	0.012	0.247	0.294	267
Higher					
Related dyad	0.325	0.110	0.303	0.346	344
Unrelated dyad	0.293	0.011	0.272	0.315	344

Data: SOEP v33.1 (1984-2016; unweighted). Similarity measures are based on normalized OM distances. CI= Confidence intervals based on bootstrap with 1,000 replications.

Regarding daughters' education relative to maternal education, we find no differences in persistence because confidence intervals of related dyads across groups cross each other. Instead, we find higher persistence within the family than by chance when daughters and mothers have the same level of education. In such case, the positive difference between average similarity of related dyads and of unrelated dyads is statistically significant. This is not the case for the large group of daughters who attained higher educational levels than their mothers, and

for the small group of daughters who attained lower educational levels than their mothers. In such cases, there is no statistical difference between average similarity among related dyads and among unrelated dyads.

<div align="center">Correspondence of work-family life trajectories</div>

To account for generational changes in work-life course patterns, we show results of the analysis of correspondence between typical work-family trajectories that are specific to each generation. Using cluster analysis, we generated two typologies of work-family life course patterns, one for each generation.[6] We decided to use 5-group and 6-group cluster solutions, for mothers and daughter generations respectively, as an optimal trade-off between group size and theoretical interpretation of groups. The grouped sequences are visually represented in Figure 2 for the mother generation and in Figure 3 for the daughter generation.[7]

The most common pattern among women of the mother generation (27.5%) is that of "stay-at-home mothers," in which women enter motherhood early, have two or more children, leave any employment activity by the time of the first or second child, and remain non-employed until age 35. This pattern applies to one-third of all mothers (35.0% of all women), many with low educational attainment (78.6% of cluster), and is considered the typical post-war pattern for West German women (97.0% of cluster). The second largest pattern for the mother generation ("late work dis-attachment"; 28.2% of all women) denotes delayed childbearing up to age 30 combined with lower work intensity after motherhood. Two additional groups are similar in that women start families early but, after short childbirth-related interruptions, return to full-time work. The difference across groups lies in the levels of fertility. In one relatively small group (8.4% of all women), women had only one child until

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[6] Empirical support using cluster cut-off criteria (see Figure A1 in the online appendix) suggested optimal cluster solutions between 4 and 6 groups for each generation.
[7] The visual description is interpreted with support of additional information presented in Table A1 in the online appendix.

age 35—a pattern we call "work-focused" mothers. Women in the other group ("work and family combined"; 17.9% of all women) had a second (and higher-order) child shortly after the first. Mothers in these two groups are often both highly educated and highly concentrated in East Germany, where wider institutional and cultural support was available to working mothers. The last group ("return to part-time work"; 10.5% of all women) features longer employment interruptions after childbirth, followed by returns to part-time employment.

Fig 2. Sequence index plots of work-family life courses (mother generation)
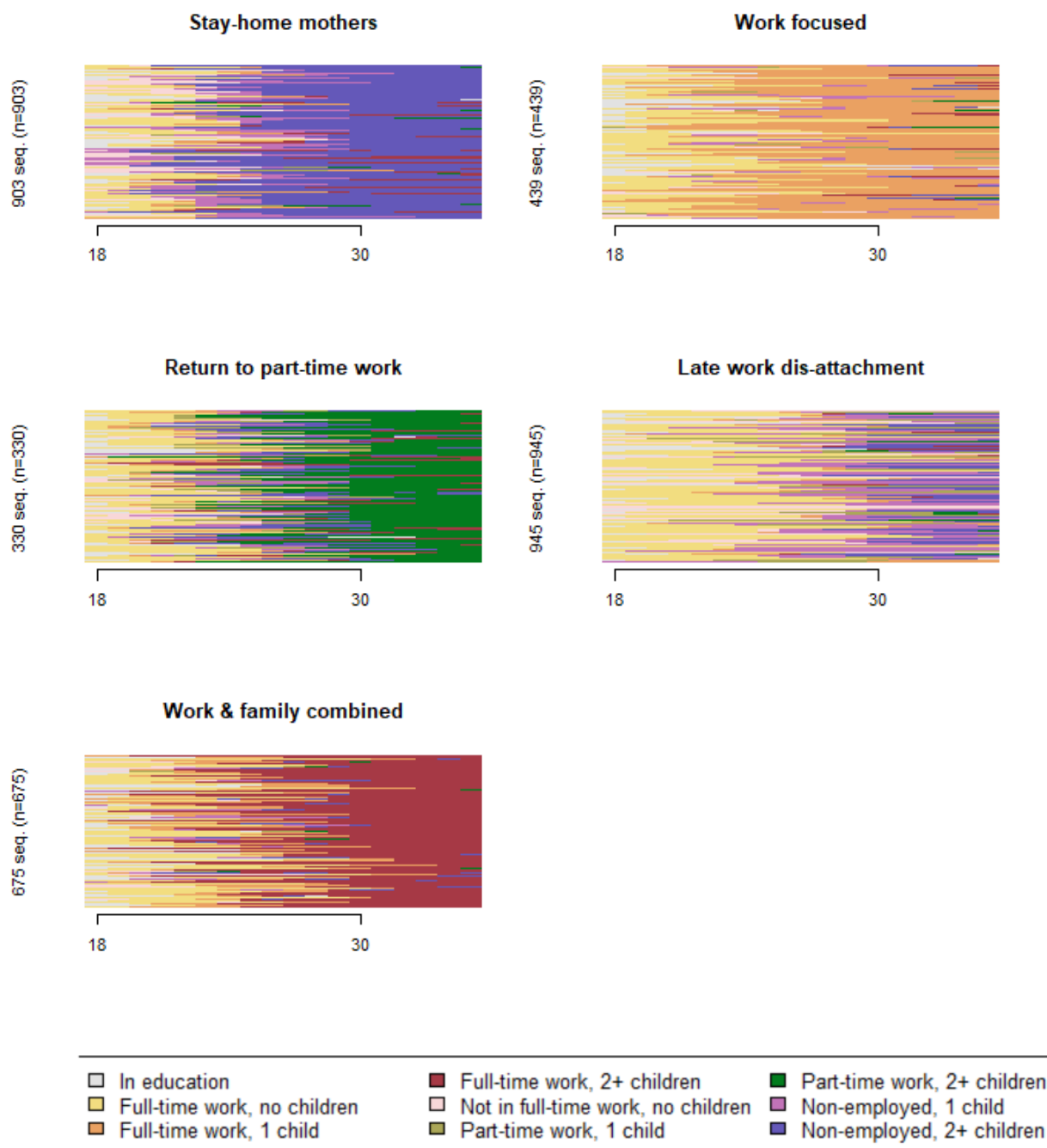
Data: SOEP v33.1 (1984-2016; unweighted). Notes: horizontal stacked bars depict individual sequences of combined employment status and children parity states over successive years from age 18 to age 35.

Fig 3. Sequence index plots of work-family life courses (Daughter generation)
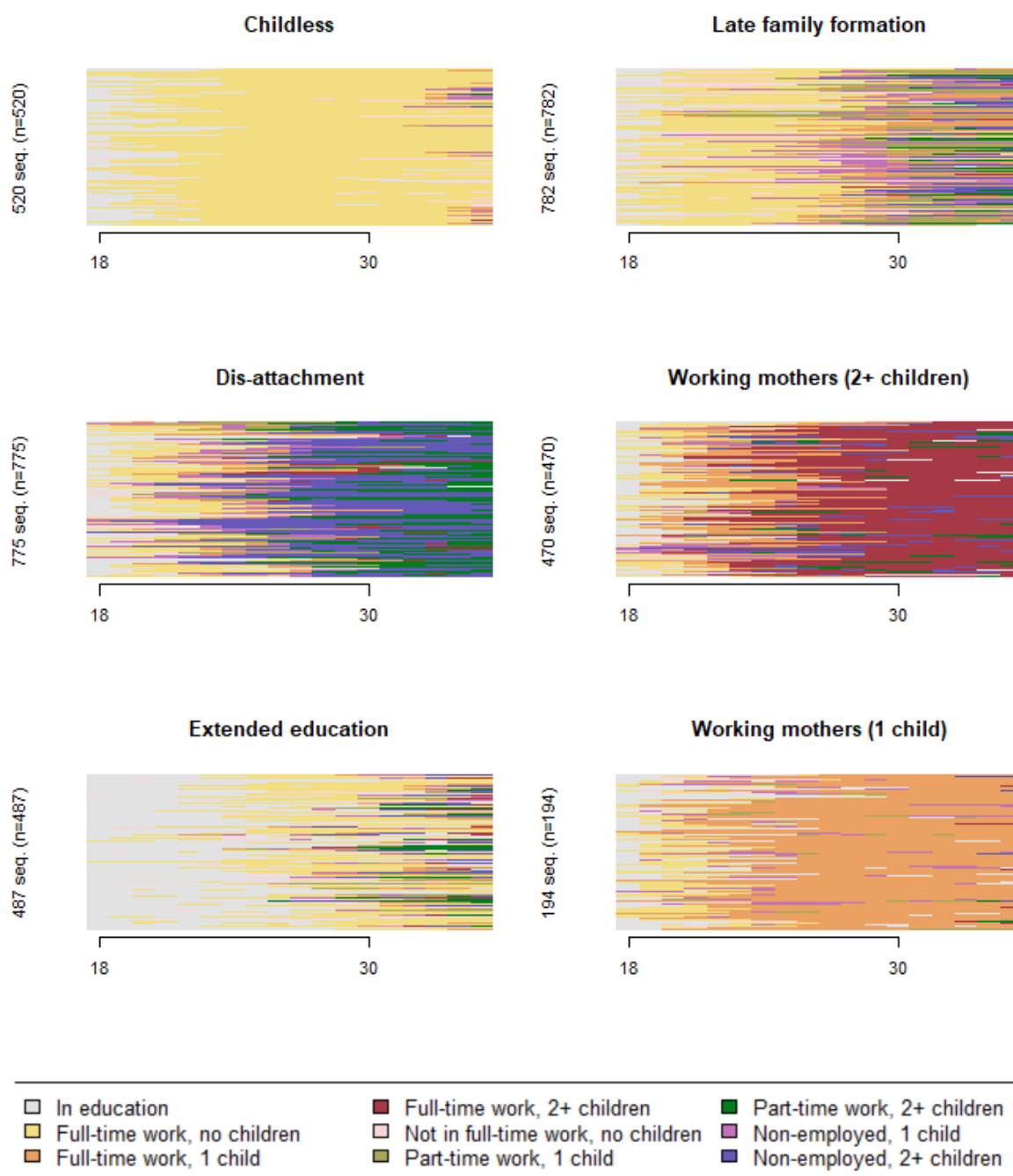
Data: SOEP v33.1 (1984-2016; unweighted). Notes: horizontal stacked bars depict individual sequences of combined employment status and children parity states over successive years from age 18 to age 35.

Some (relatively smaller) work-family trajectory patterns of the daughter generation partly resemble those of the mother generation. The daughter's "dis-attachment" pattern (18.4% of all women) features interruptions from full-time employment after childbirth combining non-employment spells with returns to part-time employment. This is a typical pattern among daughters from West Germany, resembling the "stay-at-home mothers" and the "return to part-time work" pattern of the mother generation. The daughters' pattern "working mother (1 child)" (3.8%) resembles the mother's pattern "work-focused" in that women only have one child and return to full-time employment after a short childbirth interruption. The patterns differ in that daughters have children earlier and have mothers who are relatively less educated than women in the "work-focused pattern." Similarly, the daughter's "working mothers (2 children)" pattern (4.6%) also features high fertility and post-childbirth full-time employment as in the mothers' "work and family combined" pattern but features more employment interruptions and relatively less educated mothers as well. The three (relatively larger) remaining daughters' patterns contrast with those of the mother generation. One sizeable pattern ("childless," 24.9%), featuring women who spent most of the time in full-time work and remained childless up to age 35, did not appear in the mother generation. Another pattern featured "extended education" (19.5%) with late entry into employment and delayed childbearing. This was typical among daughters with highly educated mothers. Last, a pattern of "late family formation" (28.7%) features a generalized delay in the transition to first child, with diverse employment situations after childbirth.

In what follows, we examine the correspondence between work-family trajectory patterns of mothers and daughters to examine whether and in what respect typical maternal life courses are related to typical (but potentially different) daughters' life courses. Figure 4 shows the relationships between mothers' and daughters' work-family trajectory patterns. The width of the grey links between types of trajectories indicates the relative number of dyads with the linked patterns in the mother and daughter generation. Note here and for the following results

that absolute cell sizes in the underlying cross-tabulation of mothers' and daughters' clusters of work-family trajectories are small (see Table A.1 in the online appendix). Therefore, results should be treated cautiously.

Considering Figure 4, we find preliminary evidence for a correspondence of patterns across generations in our data. For instance, women in the pattern "stay-at-home mothers" are more likely (than expected by chance) to have daughters in patterns "late family formation," "dis-attachment," and "working mothers (2+ children)." These daughters' patterns feature high fertility levels similar to those of their mothers but with variations on fertility timings and work intensity after childbirth. Women in the pattern "stay-at-home mothers" are less likely to have daughters in patterns displaying a career focus and lower/delayed fertility: "childless," "extended education," and "working mothers (1 child)." Mothers in the pattern "returning to part-time work" are more likely to have daughters in the "childless" pattern. Daughters of mothers in the "late work dis-attachment" pattern—who display fertility delays—are most likely to be in the "extended education" pattern than would be expected by chance. At the same time, daughters of mothers in the "late work dis-attachment" pattern are less likely to be in patterns that display relatively earlier fertility: "dis-attachment," "working mothers (2+ children)," and "working mothers (1 child)" patterns. Mothers in the "work and family combined" pattern—who combine high fertility with full-time work—are less likely to have daughters who turn to part-time or non-employment after childbirth ("dis-attachment" pattern). Instead, they are more likely to have daughters who stay in employment after childbirth: "working mothers (2+ children)" and "working mothers (1 child)" pattern. Finally, mothers in the "work-focused" pattern are more likely to have daughters in the relatively similar "working mothers (1 child)" pattern.

Based on the inspection of the data, we find correspondence between mothers' and daughters' patterns, which are comparable in terms of sequence structure or in the focus on either family or employment without being directly similar. We clearly see this common focus

despite little pattern resemblance in the correspondence of high fertility in daughters' patterns with the mothers' "stay-at-home mother" pattern, and the correspondence of full-time employment after childbirth in daughters' patterns with the mothers' "work-focused" and "work and family combined" patterns. That is, evidence suggests that mothers who are similar to each other in their work-family trajectory pattern tend to have daughters who are similar to each other in their work-family trajectory pattern. Despite this, we find evidence of correspondence among patterns that emerged in the daughter generation only and have neither resemblance nor similar focus with any of the mothers' patterns (i.e., childlessness, extended education, and later family formation). This suggests that despite the overlap between persistence and correspondence, these measures also capture different types of intergenerational interdependence.

Fig 4. Correspondence between mothers' and daughters' work-family trajectory patterns
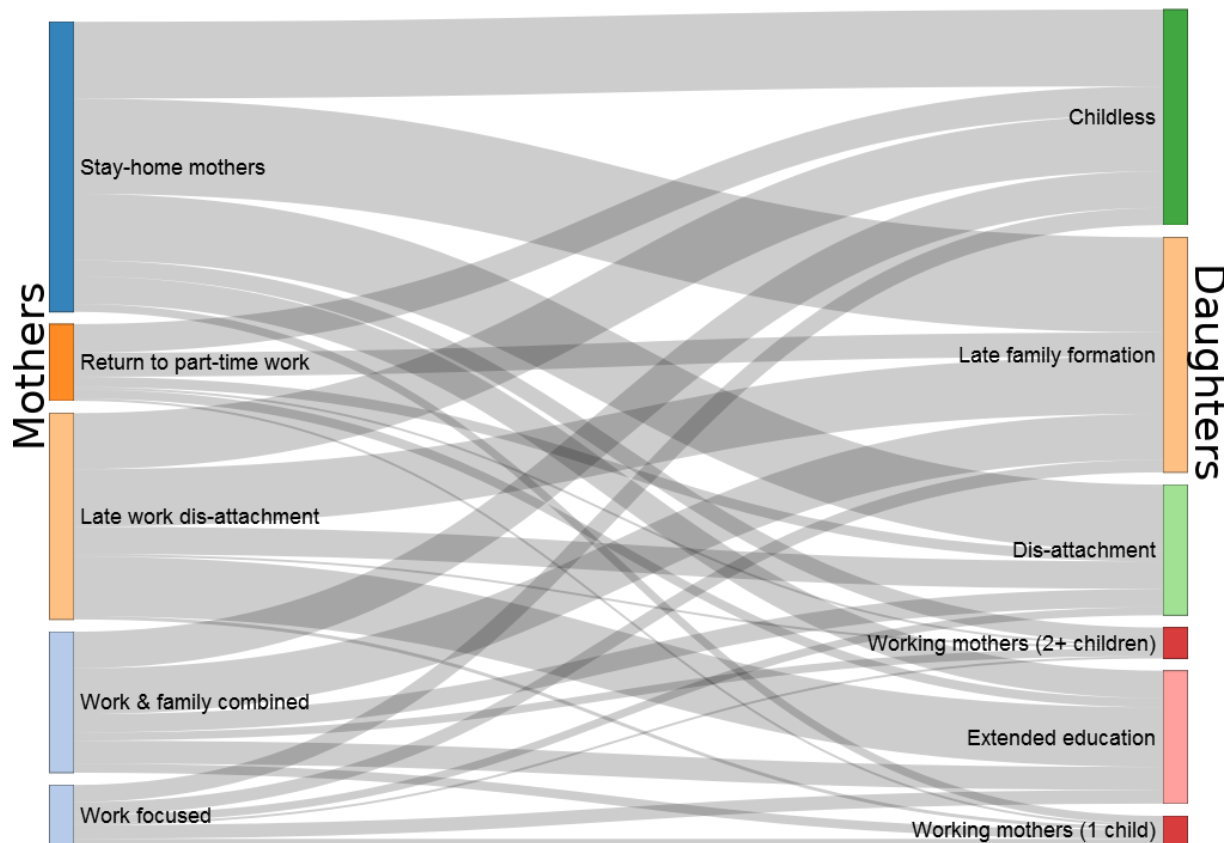
Data: SOEP v33.1 (1984-2016; unweighted)
Note: See Table A2 in the online appendix for the underlying cross-tabulation.

After having described the flows between the different typical patterns of each generation, we now quantify the degree of the association between mothers' and daughters' clusters using Cramér's V, which is bounded between 0 and 1, where a higher value indicates a stronger association.[8] For the complete sample, we find a small association of 0.14. The 95% confidence interval does not include 0. Thus, we find evidence of small and statistically significant correspondence in our data.

Table 3. Measures of correspondence between typical patterns in the mother and daughter generation

	χ^2	p-value	Cramér's V	95% CI for V	
				LB	UB
Total	55.59	0.00	0.14	0.11	0.18
Mother's education					
Low	36.33	0.01	0.14	0.09	0.18
Intermediate	34.56	0.02	0.25	0.18	0.32
High	29.03	0.09	0.35	0.25	0.46
Region					
East Germany	20.73	0.41	0.20	0.13	0.28
West Germany	53.31	0.00	0.16	0.12	0.20

Data: SOEP v33.1 (1984-2016; unweighted)
Note: p-value based on Fisher's exact test due to small expected cell sizes; Confidence interval for Cramér's V based on bootstrap with 1,000 replications.

We also compute measures of association for different social groups. Differentiating the sample by mothers' education shows substantially stronger correspondence among mothers with intermediate and high education compared to mothers with low education. For mothers

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[8] An alternative way to measure correspondence is by using measures of segregation. If daughters are segregated in particular work-family trajectories by their mothers' trajectories, this would be evidence of persistence. We computed the Theil information theory index H (cf. Reardon and Firebaugh 2002) to measure segregation, and results are similar to those presented here (see Table A3 in the online appendix). Note that segregation measures can also be thought of as measures of association between nominal variables.

with high education, their trajectories are associated with their daughters' trajectories with 0.35 (0.25 for mothers with intermediate education), while for mothers with low education the association is only 0.14. The 95% confidence intervals do not overlap. Although the difference in associations between mothers with intermediate and high education is substantial in size, our data do not allow us to reject the null of no difference.

Next, we consider differences in correspondence between East and West Germany (defined by mother's residence). We note that based on the χ^2 test, we cannot reject the null of statistical independence between mothers' and daughters' work-family trajectories in East Germany. This is despite a relatively large Cramér's V for East Germany (substantially larger than for West Germany), where the 95% confidence interval does not include 0. For West Germany, we find clear evidence of an association between mothers' and daughters' work-family trajectories, which we interpret as a clear correspondence of trajectory patterns.

Conclusion

Despite fundamental changes in work and family life courses across generations, fragmented research evidence suggests that women's family behaviors as well as work outcomes are reproduced across generations. In the present study, we bring together these strands of research by examining two complementary measures of the interdependence (persistence and correspondence) of combined work-family life courses among two generations of women within the same families drawn from the German Socio-Economic Panel. We adopt a trajectory approach and deploy within-dyad sequence analysis to study intergenerational associations of wider life course patterns from age 18 to 35 instead of studying specific outcomes at given ages. Specifically, we examine whether mothers' work-family trajectories persist into the next generation, and whether we can identify any correspondence of typical trajectory patterns that are specific to each generation. We also assess whether these associations vary across socio-political contexts and social background.

To address the extent to which patterns of mothers' work-family life courses persist, we first assess similarities of sequences of combined work and family states across women from two generations. On average, one-third of the mothers' trajectories persist in the daughter generation. This relatively modest resemblance of mothers' and daughters' trajectories was to be expected, given that life courses underwent substantial changes across the generations under study. It was our interest to assess the extent to which intergenerational persistence operates within the family—through various mechanisms of reproduction—beyond the relevant societal processes that underlie continuity and change in life courses. To this end, we compared similarity within related dyads (consisting of a mother and a daughter) with similarity within unrelated dyads (consisting of a mother and a random, unrelated woman in the daughters' birth cohort). Our results show significantly larger average similarity among related dyads than among unrelated dyads, suggesting that persistence partly operates through family-related mechanisms.

This finding aligns with previous research on the intergenerational reproduction of family trajectories. For the United States, Liefbroer and Elzinga (2012) found that about 20% of the persistence in family trajectories from parents to children (of any gender) is due to family-specific processes. In our analyses, this percentage is similar (15%), despite the fact that we only examine women's trajectories and also account for the work domain, which has shifted dramatically across generations because of educational expansion and massive entry of women in the labor force. We note, however, that one should keep in mind that 85% of the persistence in mother's trajectories is operated through wider societal processes of stability and change in women's life courses. This partly includes gender inequalities in public and private spheres that keep women from following non-gendered life courses.

Second, we examine whether there is correspondence across typical patterns that are specific to each generation. Our results suggest that the overall levels of correspondence are significant but modest. Results also show evidence of correspondence between

mother/daughter patterns where the family or work orientation of the trajectories was reproduced—without patterns necessarily resembling each other. However, we also find some correspondence across mother/daughter patterns that had less or no common trajectory focus. These results in part reflect the fact that most daughters followed three typical contemporary patterns (i.e., childlessness, extended education, and later family formation) that show little resemblance with any of the typical patterns of the mother generation.

These findings support our notion of similar but different life courses, and unveil more subtle ways of reproduction of work-family life courses than have so far been proposed in the literature. To date, the bulk of the literature has focused on assessing exact matches or similarity in the trajectories of mothers and daughters—what we called persistence. The idea of correspondence, by contrast, suggests that two women with similar trajectories will have daughters with similar trajectories—without daughters' trajectories necessarily resembling their mothers'. We propose that such a correspondence addresses mechanisms of intergenerational reproduction of life courses that cannot be addressed by measuring only exact or similar outcomes across generations, for instance when life courses of each generation were supported by different institutions.

We also investigated the intersections of these intergenerational associations in work-family trajectories with social backgrounds—examining variation by maternal education and by daughters' educational mobility—as well as across socio-political contexts—examining variation between mothers and daughters in West Germany, a context of institutional continuity across generations, and mothers and daughters in East Germany, a context of institutional contrast across generations. Regarding maternal education, we find higher levels of intergenerational interdependence (persistence and correspondence) with increasing maternal education. Similar associations were found in related research addressing intergenerational correlations of family trajectories in Germany (Fasang and Raab 2014; van Winkle et al. 2016). However, our results on the intergenerational persistence of highly educated mothers'

trajectories might largely result from societal processes of intergenerational continuity, given that the average similarity of unrelated dyads was also substantial. These results suggest that core elements of the work-family trajectories of the small group of highly educated mothers (e.g., longer spells of education, full-time employment, and postponed and smaller families) have gained popularity among larger shares of women in the daughter generation. Finding persistence within the family when there is no educational mobility of daughters (but not when daughters attain more education than their mothers) reinforces the idea that the core elements of the trajectories of highly educated mothers are more popular for the subsequent generation.

Contrary to our expectations, we did not find significant differences in intergenerational persistence or correspondence in work-family trajectories across East and West Germany. However, we do find that persistence partly operates through the family in West Germany, but not in East Germany. This suggests that in the West German context of relative institutional stability across generations, mothers' trajectories have a stronger influence on their children's trajectories. Instead, institutional contrast across generations in East Germany does not equate with an influence of mothers' trajectories larger than the one exerted by societal processes of continuity and change. In accord with this, one could argue that the trajectories of mothers in East Germany were forged in a context of dominant egalitarian gender ideology, which may have gained popularity in the wider contemporary society over typical trajectories of mothers in West Germany, where a male breadwinner model prevailed.

We note some limitations of our study and avenues for future research. Owing to the high data requirements for our analyses (i.e., work and family histories of mothers and daughters from age 18 to 35), we could not draw related dyads for all women of each generation from the original sample, which keeps us from making strict inferences regarding the overall population. In addition, we note that some sub-group analyses (i.e., highly educated mothers) should be replicated with larger sample sizes than the ones available to us. Future research could further elaborate on the relevance of persistence and its connection with correspondence. We note that

at least part of the observed correspondence in our analyses may be due to persistence. It is also worth for future research to address the extent to which persistence conflates the persistence of traditional (gendered) patterns of the bulk of mothers as well as the diffusion of novel patterns of some pioneering mothers (e.g., highly educated mothers who postpone family formation) into the next generation. Finally, future research should investigate the specific mechanisms that operate for the intergenerational interdependence among women's long-term trajectories that our research has unveiled. Understanding such mechanisms is useful when designing policies that support equal opportunity over the life course.

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Online Appendix

Figure A1. Cut-off criteria for cluster solutions by generation

Mother generation   *Daughter generation*
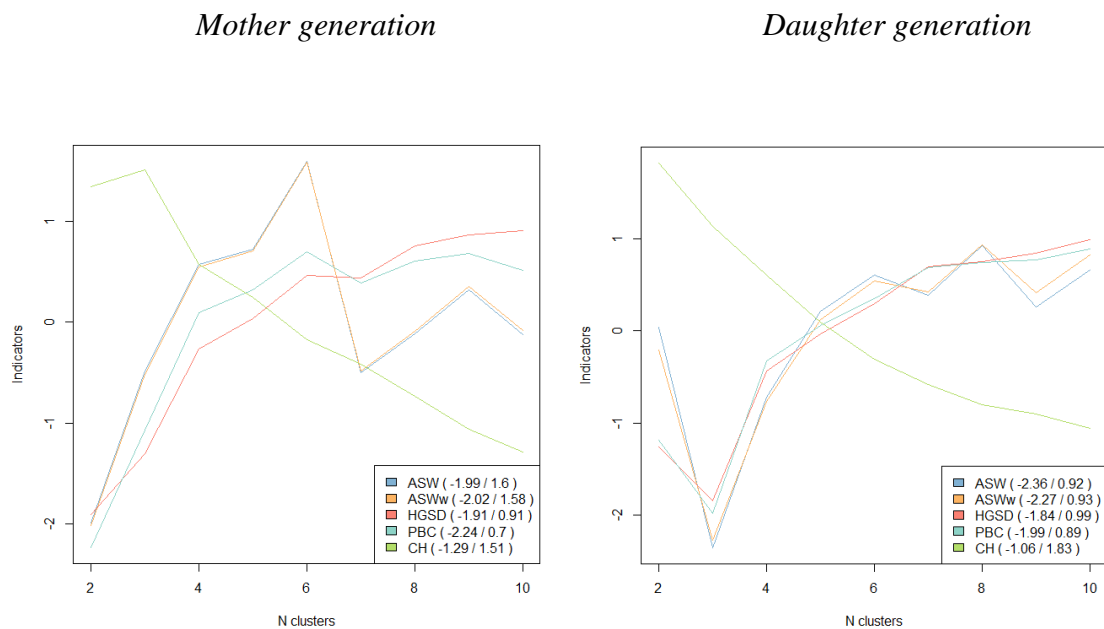
Data: SOEP v33.1 (1984-2016; unweighted). Notes: ASW-Average silhouette width; ASWw-Average silhouette width (weighted); HGSD-Hubert's Sommers´ D; PBC-Point Biserial Correlation; CH-Calinski-Harabasz index.

Table A1. Cluster frequencies and characteristics by respondent's generation

| | Cluster | | Residence in 1989 | Mother education | |
	N	% column	% row East Germany	% row Medium	% row High
Mother generation					
Stay-at-home mothers	201	35.0	3.0	18.9	2.5
Work focused	48	8.4	50.0	25.0	22.9
Return to part-time work	60	10.5	15.0	21.7	10.0
Late work dis-attachment	162	28.2	14.8	25.9	7.4
Work and family combined	103	17.9	42.7	21.4	19.4
Overall	574	100	18.6	22.1	9.4
Daughter generation					
Childless	162	24.9	19.8	25.3	3.1
Late family formation	187	28.7	16.0	17.7	5.9
Dis-attachment	120	18.4	11.7	15.0	4.2
Working mothers (2+ children)	30	4.6	20.0	16.7	10.0
Extended education	127	19.5	18.9	26.8	25.2
Working mothers (1 child)	25	3.8	40.0	24.0	12.0
Overall	651	100	17.8	21.0	9.1

Data: SOEP v33.1 (1984-2016; unweighted).

Table A2. Cross-tabulation of frequencies of mothers' and daughters' work-family trajectories

Mothers		Childless	Late family formation	Dis-attachment	Working mothers (2+ children)	Extended education	Working mothers (1 child)	Total
					Daughters			
Stay-at-home mothers	observed	67	83	58	14	24	7	253
	expected	70.5	76.8	42.7	10.1	43.5	9.4	
Work-focused mothers	observed	15	11	7	2	12	5	52
	expected	14.5	15.8	8.8	2.1	8.9	1.9	
Return to part-time work	observed	25	21	9	2	8	2	67
	expected	18.7	20.3	11.3	2.7	11.5	2.5	
Late work dis-attachment	observed	49	50	24	2	52	3	180
	expected	50.1	54.7	30.4	7.2	30.9	6.7	
Work & family combined	observed	32	40	16	7	20	8	123
	expected	34.3	37.4	20.8	4.9	21.1	4.6	
Total	observed	188	205	114	27	116	25	675

Data: SOEP v33.1 (1984-2016; unweighted)

Table A3. Information theory index for segregation in daughters' work-family trajectories by mothers' work-family trajectories

	Information theory index H	95% CI	
		LB	UB
Total	0.03	0.01	0.04
Education			
Low	0.03	0.01	0.05
Intermediate	0.09	0.03	0.15
High	0.17	0.07	0.27
Region			
East Germany	0.07	0.02	0.12
West Germany	0.03	0.01	0.06

Data: SOEP v33.1 (1984-2016; unweighted)
Note: Confidence interval based on bootstrap with 1,000 replications.