Demography
DOI 10.1007/s13524-014-0322-9

Beyond Transmission: Intergenerational Patterns of Family Formation Among Middle-Class American Families

Anette Eva Fasang · Marcel Raab

Abstract Research about parental effects on family behavior focuses on intergenerational transmission: that is, whether children show the same family behavior as their parents. This focus potentially overemphasizes similarity and obscures heterogeneity in parental effects on family behavior. In this study, we make two contributions. First, instead of focusing on isolated focal events, we conceptualize parents' and their children's family formation holistically as the process of union formation and childbearing between ages 15 and 40. We then discuss mechanisms likely to shape these intergenerational patterns. Second, beyond estimating average transmission effects, we innovatively apply multichannel sequence analysis to dyadic sequence data on middle-class American families from the Longitudinal Study of Generations (LSOG; $N = 461$ parent-child dyads). The results show three salient intergenerational family formation patterns among this population: a strong transmission, a moderated transmission, and an intergenerational contrast pattern. We examine what determines parents' and children's likelihood to sort into a specific intergenerational pattern. For middle-class American families, educational upward mobility is a strong predictor of moderated intergenerational transmission, whereas close emotional bonds between parents and children foster strong intergenerational transmission. We conclude that intergenerational patterns of family formation are generated at the intersection of macro-structural change and family internal psychological dynamics.

Electronic supplementary material The online version of this article (doi:10.1007/s13524-014-0322-9) contains supplementary material, which is available to authorized users.

A. E. Fasang (✉)
Humboldt-University Berlin, Humboldt-Universität zu Berlin, Unter den Linden 6, 10099 Berlin, Germany
e-mail: anette.fasang@hu-berlin.de

A. E. Fasang · M. Raab
WZB Berlin Social Science Center, Wissenschaftszentrum Berlin für Sozialforschung, Reichpietschufer 50, 10785 Berlin, Germany

M. Raab
e-mail: marcel.raab@wzb.eu

Published online: 22 August 2014

Keywords Family formation · Intergenerational transmission · Sequence analysis · Demographic trajectories · Parent-child dyads

Introduction

The transition to adulthood and the process of family formation have changed considerably in recent decades. These changes encompass new emerging patterns of timing and sequencing of demographic transitions, such as leaving home, getting married, and becoming a parent. Several studies show a postponement of marriage and parenthood, increased divorce rates, and higher levels of cohabitation and nonmarital childbearing (Bumpass and Lu 2000; Goldscheider 1997; Shanahan 2000).

Despite these changes, the family remains a primary source of individuals' integration into society, and life courses continue to be shaped by experiences made in the family of origin (Bengtson et al. 2002; Elder 1994). Life course theory emphasizes the importance of family relations in the principle of linked lives, which states that "lives are lived interdependently and sociohistorical influences are expressed through this network of shared relationships" (Elder et al. 2003:13). Kinship bonds including parent-child relations are core networks of such shared relationships. Parental influence on children's life courses has been studied across several disciplines with regard to numerous outcomes, such as values and norms (Acock and Bengtson 1978; De Vries et al. 2009), educational and occupational attainment (Blau and Duncan 1967; Mare and Maralani 2006), and health (Coneus and Spiess 2012). More recent accounts also acknowledge the importance of family structure in the family of origin for the reproduction of inequality (McLanahan and Percheski 2008) and for the demographic composition of the filial generation (Kolk 2014; Murphy and Knudsen 2002; Murphy 2013). Consequently, scholars interested in explaining family behavior also increasingly incorporate intergenerational models.

Most research on parental effects on family formation equates parental influence with intergenerational similarity (transmission). These models on intergenerational transmission are usually limited to isolated focal transitions, such as fertility (Barber 2000; Murphy 1999); divorce (Amato 1996; Wolfinger 2000) and, to a lesser extent, marriage (Feng et al. 1999; van Poppel et al. 2008; for an exception, see Liefbroer and Elzinga 2012). Generally, children adopting the same behavior as their parents is taken as evidence for intergenerational transmission of family behavior. For instance, children giving birth to their first child at the same age or having the same completed fertility as their parents indicates intergenerational transmission.

This focus on similarity loses sight of other regularities in parental influence on children's family formation. Such regularities are empirically stable patterns in which parents' family trajectories are systematically linked to the family behavior of their children, even if the trajectories are not the same for parents and children. In fact, they might be quite the opposite, for example, if there is a group of parents who have many children, but their children have no or very few children themselves. Such contrast patterns would not indicate direct intergenerational transmission of family behavior, but they would suggest that some mechanisms—operating on the individual, dyadic, or societal level (Silverstein and Giarrusso 2011)—link a specific parental family behavior to a different family behavior among their children.

We argue that by focusing on average effects for focal demographic transitions or certain aspects of family formation (e.g., parity), traditionally applied regression-based methods and their extensions—such as event-history and multilevel models—have limitations for studying the full range of parental effects on their children's family behavior. Therefore, traditional approaches tend to overemphasize intergenerational similarities and obscure the heterogeneity of intergenerational patterns of family formation. For example, if the empirical distribution is indeed such that children of specific parents cluster into same or contrast family formation patterns, average effects on isolated family formation events give a poor representation of both the same and contrast parent-child dyads.

In American society, family behavior varies widely across the social structure (Carlson and England 2011a). This study focuses on intergenerational patterns of family formation among middle-class American families in the second half of the twentieth century. Although our main argument and the proposed research design are easily transferrable to the broader diversity of family forms, our specific theoretical elaboration and empirical findings pertain to this segment of the population. We address two research questions. First, do we find distinct intergenerational patterns of transmission and contrast in family formation among middle-class American families? Second, which mechanisms determine who sorts into specific intergenerational family formation patterns?

Our contribution to the study of intergenerational transmission of family formation is twofold. First, instead of focusing on isolated focal events, we conceptualize family formation holistically as the process of union formation and childbearing between ages 15 and 40. Second, beyond estimating average transmission effects, we identify salient intergenerational family formation patterns, including a contrast pattern. This allows us to theorize about the mechanisms that generate intergenerational family formation patterns among middle-class American families.

The sequential conceptualization of family formation addresses the problems of the "short view on analytical scope" (Elder 1985:31) caused by exclusively focusing on single events and enables us "to study a complex set of life-course trajectories as they actually take place, providing ideal types of trajectories that can be interpreted and analysed in a meaningful way" (Aassve et al. 2007:371). A process-oriented sequential perspective on family formation thereby recognizes the interdependency of multiple family formation events and acknowledges the diversity of family formation processes (Wu and Li 2005:112), even within selected segments of the population. Based on recent demographic trends and the intergenerational transmission literature, we introduce three ideal typical patterns of intergenerational family formation among middle-class families—namely, strong transmission, moderated transmission, and a pattern of intergenerational contrast—and develop hypotheses about which mechanisms might bring them about.

Drawing on data from the Longitudinal Study of Generations (LSOG) (Bengtson et al. 2002), we jointly examine family trajectories of middle-class parents born around 1920 to 1930 who experienced their family formation process roughly between 1935 and 1960 and their children who experienced their own family formation between 1955 and 1990. The analyses thus cover intergenerational family formation of middle-class American families in the second half of the twentieth century. We use multichannel sequence analysis (Gauthier et al. 2010; Pollock 2007) and cluster analysis to identify empirical regularities in family formation of parent-child dyads beyond direct intergenerational transmission. Our hypotheses about who most likely sorts into the proposed ideal types are tested in multinomial logistic regression models.

Theoretical Background: Intergenerational Patterns of Family Formation

Current research provides ample evidence for the transmission of family behavior but widely neglects alternative accounts of parental influence. Hence, the picture of intergenerational patterns of family formation remains incomplete. We therefore conceptualize intergenerational patterns of family formation as regularities in parents' and children's family formation that include similarity but also comprise patterns of systematic deviation and contrast.

In American society, family patterns vary substantially by education and other indicators of social class, and these variations have been growing across the past decades (Carlson and England 2011b; McLanahan and Percheski 2008; Western et al. 2008). Highly educated persons are more likely to marry, less likely to divorce, and less likely to have children out of wedlock (Goldstein and Kenney 2001; Martin 2006). More generally, nonmarital childbearing, single motherhood, father absence, multipartnered fertility, and family instability are strongly concentrated among lower-educated and socioeconomically disadvantaged families (Carlson and Furstenberg 2006; Carlson et al. 2004; Ventura and Bachrach 2000).

As a consequence, the substantive content of intergenerational patterns of family formation will likely vary across the social structure. To develop a conceptual, theoretical, and methodological approach for studying intergenerational patterns of similarity and contrast in family formation, we focus in this article on American middle-class families in the second half of the twentieth century. In this parent generation, the empirical distribution of family formation states signifies a model often referred to as a "traditional family" pattern with early stable marriage and high parities, whereas the child generation exhibits more variability in family formation (Teachman et al. 2000). As we will argue later, the general framework is easily transferrable to cover the full diversity of family patterns in American society and in other countries.

Figure 1 presents three ideal-typical intergenerational patterns of family formation for middle-class American families. Each panel in Fig. 1 shows the stylized family formation processes of a parent and his or her child(ren) from ages 15 to 40. They differ in terms of the type of process (different family formation states) and the pace of the process (the timing and sequencing of family formation states). In the following section, we present each of the three ideal-typical patterns. Then we discuss mechanisms that could bring about the respective patterns. Finally, we consider which people are likely to sort into the respective patterns given that certain mechanisms shape intergenerational regularities in family formation. In particular, we scrutinize two sets of mechanisms that structure intergenerational patterns of family formation. First, we examine structural driving forces indicated by intergenerational social mobility and gender-specific effects that reflect changing gender relations in education and employment. Second, we consider family internal dynamics in terms of the relationship quality between parents and children and birth order in the child generation. We assume that different mechanisms operate in concert to generate the observed patterns and theorize

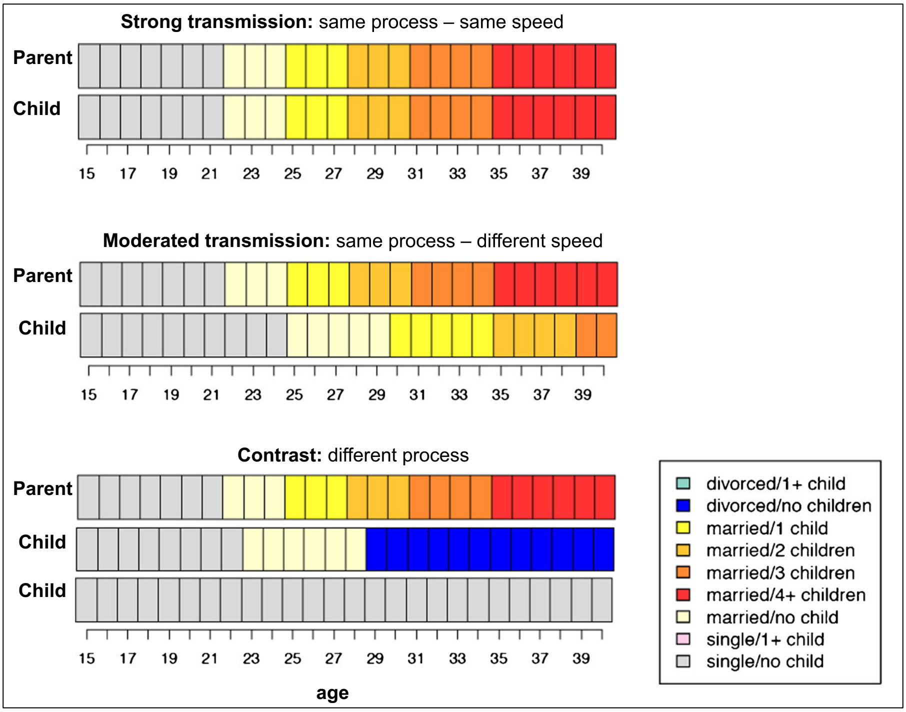

Fig. 1 Three ideal-typical intergenerational patterns of family formation

about combinations of conditions under which people will most likely sort into a respective family formation pattern.

Strong Intergenerational Transmission: "Same Process, Same Speed"

The top panel in Fig. 1 displays a parent-child dyad in which the child experiences the same family formation process at the same speed as the parent. For middle-class American families in the second half of the twentieth century, strong transmission will contain early and stable marriages with two or more children in the parent and the child generation. The 1950s and 1960s mark the heyday of the traditional nuclear family as a historically exceptional period of high birthrates, high marriage rates, low divorce rates, and high stability of traditional male breadwinner families, especially for middle-class families (Cherlin 1992; Modell et al. 1976). One prominent mechanism that would generate strong transmission of traditional family formation among middle-class families is intergenerational status inheritance (Barber 2000; McLanahan and Bumpass 1988). If parents and their children make similar educational and occupational choices and face similar opportunity structures, resemblance in family formation might simply arise as a by-product of this status transmission.

Contrary to the ad hoc assumption that same-sex dyads should be particularly likely to sort into strong transmission, changing gender relations in education and employment across generations suggest otherwise. Women generally start their active family formation phase earlier than men of their generation, and there was an overall delay of family formation across generations (Furstenberg 2010). The greater influx of women into higher education and the labor market since the 1960s renders mothers' traditional very early family formation particularly unsuitable as a template for their children. Daughters who delay family formation as they seek to combine work and family in greater numbers might in fact approach their fathers' later timing and sequencing of family formation. This reasoning suggests that both father-son and father-daughter dyads are most likely to sort into a strong transmission pattern.

Moreover, psychological studies emphasize the reinforcing impact of transmission belts. Relational transmission belts are concerned with the role of parenting styles and the relationship quality of parents and children, whereas sociodevelopmental transmission belts, among other things, consider the child's developmental phase as well as the child's sibling position. Several authors (e.g., Johnson and Stokes 1976; Schönpflug 2001; Sulloway 1997) argued that firstborns are more likely to conform to parental norms, whereas later-born children are more susceptible to peer or sibling influence. Two recent studies on the intergenerational transmission of fertility (Booth and Kee 2009; Steenhof and Liefbroer 2008) support this line of reasoning by showing that the parental impact on the timing and quantum of fertility is most pronounced for firstborns. Taken together, strong transmission of traditional family formation is most likely to occur for father-child dyads, in which both dyad members have the same social status, the child is firstborn, and the parent-child relationship is amicable.

Moderated Intergenerational Transmission: "Similar Process, Different Speed"

The second panel in Fig. 1 shows a child who experiences a family formation process that is similar to the parents' traditional family pattern in terms of the family formation states that occur, but that differs in two important respects. First, we see later onset of family formation in the child's biography with a postponement of both marital and birth events. Second, the child's parity at age 40 is lower than the parental parity. This corresponds to both a tempo and a quantum effect—that is, a delay and decline of fertility—among the child generation compared with their parents (Bongaarts and Feeney 1998). Despite these differences, the family trajectories in the second panel of Fig. 1 are quite similar, and we label this ideal type "moderated transmission" of the traditional middle-class family pattern. In addition to a delay and protraction, moderated transmission possibly is consistent with extended periods of nonmarital cohabitation as a prelude to delayed marriage. For our child generation, cohabitation is likely to play a relevant but moderate role given that steep increases in cohabitation occurred only for younger cohorts and cohabitation is less widespread among the higher-educated middle class than among people of lower socioeconomic status in the United States (Bumpass and Lu 2000; Smock 2000).

For driving forces that will generate this pattern, one can first turn to the mechanisms listed earlier for strong transmission: essentially, there is similarity in parents' and children's family formation. One can think about strong transmission as a main effect that interacts with other forces to generate a moderation of this transmission. As noted earlier, structural shifts—including the educational expansion, technological change, and changing skill requirements in the labor market—induced a postponement of family formation among the child generation as they adapted to these changing circumstances (Brückner and Mayer 2005; McLanahan 2004; Shanahan 2000). A pattern of moderated transmission is then most likely to occur for parent-child dyads in which the children partake strongly in these structural changes. For middle-class American families, social upward mobility is one indicator for the extent to which children partake in macro-structural changes. Social upward mobility will be associated with delayed and decelerated family formation because of longer periods of postsecondary education and possibly retraining to meet higher and more-volatile skill requirements in the labor market (Fussell and Furstenberg 2005). Even within our study population, relatively small differences in average years of education will be highly consequential if they translate into intergenerational differences in school continuation decisions and grade progression (Mare 1980, 1981).

In sum, moderated transmission of the traditional family patterns is most likely to occur under the same conditions as strong transmission with the exception of upward mobility instead of status maintenance across generations. Further, this pattern will be particularly likely for mother-daughter dyads. On the one hand, mother-daughter relationships tend to be emotionally close, fostering strong transmission (Silverstein et al. 1997). On the other hand, changing gender relations on the labor market will moderate this transmission as daughters find new ways of balancing education, employment, and family formation. For our study population, we assume moderated transmission as the most frequent pattern of intergenerational family formation. The profound macro-structural shifts across the two generations will induce moderation of the intergenerational transmission of family formation for many middle-class American families by delaying the timing of focal events in the family formation process, particularly for upwardly mobile children and for daughters relative to their mothers.

Intergenerational Contrast: “Different Process”

This pattern comprises intergenerational dyads in which children not only experience family formation at a different pace than their parents but also go through entirely different family formation states. Against the blueprint of the traditional American family pattern of early marriage and high parities among the parent generation, intergenerational contrast can take the form of two basic contrasting family patterns among the child generation: (1) high family instability and parenthood out of wedlock, and (2) childlessness. For our middle-class population, intergenerational contrast in the form of family instability and parenthood out of wedlock is unlikely because these family patterns have been concentrated among lower-class families in American society (Ellwood and Jencks 2004; Ventura and Bachrach 2000). We therefore assume that childlessness among the child generation will be the middle-class–specific form of intergenerational contrast. Stylized examples of contrast patterns of childlessness are given in the third panel of Fig. 1. The parent again follows a family formation process of early marriage and high parities, whereas the children remain childless within or outside of marriage.

Similar to the pivotal role of macro-structural change for moderated transmission, we assume that family internal dynamics will be crucial driving forces for sorting into a pattern of intergenerational contrast of childlessness, including the relationship quality between parents and children and birth-order effects. Relationship quality between parents and their children could work both ways in affecting the likelihood of intergenerational contrast. On one hand, amicable parent-child relationships could encourage intergenerational contrast if they imply more unconditional parental support of diverging choices that children make for their own family formation. On the other hand, amicable parent-child relationships could reinforce parents' function as role models for their children and encourage strong transmission, thereby decreasing the likelihood of intergenerational contrast (e.g., Schönpflug 2001). Poor relationship quality to parents has been linked to lower fertility intentions among the child generation (Merz 2012) and is more prevalent among cohabiting than among married couples (Nock 1995). Moreover, in terms of gender-specific effects, the particularly close emotional relationships between mothers and daughters (Silverstein et al. 1997) suggest that, on average, poorer relationship quality among all other gender constellations in the parent-child dyad will increase their likelihood of intergenerational contrast.

Another rationale for intergenerational contrast in family formation can be found in the birth-order literature. In a contested debate, several scholars have argued that firstborns will adhere most closely to the authority and role models observed in their parents (Booth and Kee 2009; Freese et al. 1999; Johnson and Stokes 1976; Murphy and Knudsen 2002; Sulloway 1997). In contrast, later-born children will strive to minimize direct competition with their older siblings by establishing their own niches within the family and follow contrasting paths to their older siblings and parents, including contrasting family behavior.

In addition to family internal dynamics, structural factors in terms of education and upward mobility are also likely to affect the odds of sorting into an intergenerational contrast pattern of childlessness. Given higher opportunity costs of having children, high education might increase the likelihood of sorting into a contrast pattern of childlessness. In sum, among American middle-class families, children who have a disharmonious relationship to their parents, later-born siblings, highly educated children, and all other gender constellations compared with the close mother-daughter tie will be likely to sort into a contrasting family formation pattern of childlessness.

Data and Sample

The data requirements for answering our two research questions on whether these ideal-typical intergenerational patterns of family formation exist among American middle-class families and what determines who sorts into them are high. First, information on family trajectories from age 15 to at least age 40 is necessary to assume largely completed family formation. After age 40, childbearing and marital events hardly occur for our two study generations. According to the Human Fertility Database (2013), the deviation between completed fertility (1.971) and fertility at age 40 (1.937) is only 0.034 for a person born 1953 (average birth year of the child generation). Also, marriages are rarely observed after age 40 for our study population. Age at first marriage and divorce rates are very low, and remarriages occur at rather young ages.

Even in 2001, the median age at second marriage was well below age 40: 35.1 for men and 32.7 for women (Kreider 2005).[1] Censoring in the early 30s is a problem in most potentially suited data sets.[2] Second, we need to identify intergenerational links between parents and children, which is usually not possible at all or only for very limited case numbers in surveys that are not explicitly based on a multigenerational design. Third, data on both standard sociodemographic variables and family internal dynamics—for example, the parent-child relationship quality—are necessary to inform the mechanisms discussed earlier. These are lacking in most large household panel surveys. The LSOG meets all three of these requirements.[3]

The LSOG is a four-generation study that was administered in seven waves (1971–2000). The 1971 starting sample consists of 2,044 individuals, aged 16–91, from 328 three-generation families who were drawn randomly from 840,000 members of a California health maintenance organization (HMO) in the greater Los Angeles area. The sampling units were grandparents (generation 1) of three-generation families. The grandparents, their spouses (G1s), their adult children (G2s), and their grandchildren who were aged 16 or older (G3s) were eligible sample members and answered self-administered questionnaires on a wide range of topics: social attitudes, educational and occupational attainment, family formation, and intergenerational relationships. The sample is generally representative of white, economically stable middle-class families (Bengtson et al. 2009:330). The LSOG combines prospective measurement with retrospective accounts, which enables us to analyze complete family formation sequences of parents and their children between ages 15 and 40. In addition, the LSOG provides "uniquely detailed measurements" (Bengtson et al. 2002:15) of family internal dynamics and at the same time allows us to examine the family formation of parents and their children under different sociohistorical conditions. The LSOG has been widely used to study intergenerational solidarity (Bengtson and Roberts 1991), the structure of intergenerational cohesion (Silverstein et al. 2010), and intergenerational similarities and differences in values, norms, and opinions (e.g., Bengtson 1975; Bengtson et al. 2009; Gans and Silverstein, 2006). To our knowledge, this is the first study to fully exploit the unique intergenerational and longitudinal information on family formation in the LSOG.

We use data for two generations: (1) the parent generation (G2), the so-called silent generation born in the 1920s and 1930s, and (2) their children (G2), the Baby Boomers born in the late 1940s and 1950s. For the unique linking of parents and children, the child's year of birth is used (G3s) and validated with information from the birth biographies of their parents (G2s). The resulting starting sample consists of 279 families (434 parents and 305 children). After we omit cases with inconsistent or incomplete information on marital history, the sample size is reduced to 226 families

[1] With less than 5 % in 2001, the share of people marrying three or more times is still very low. The remarriage rates for the cohorts in our study are even lower than that. We therefore observe the great majority of all marriages and remarriages.

[2] Using data from the National Survey of Families and Households (NSFH) that are censored at some point between ages 18 and 30, Liefbroer and Elzinga (2012) showed that results based on sequence analysis with optimal matching are very sensitive to censoring. We therefore cannot use the NSFH, the National Longitudinal Survey of Youth 1979 (NLSY79), or the Panel Study of Income Dynamics Child Development Supplement (PSID-CDS) because the child generation is censored in the late 20s and early 30s in all these data sets.

[3] For more details on the data, see Bengtson et al. (2002).

with 342 parents and 305 children, comprising 461 parent-child dyads. In 64 families (28.3 %, or 98 parents) we observe more than one child. Therefore, parents from these families occur in more than one parent-child dyad in the sample. They form a parent-child dyad with each of their children. For 156 children (51.1 %), we have both the mother-child dyad and the father-child dyad. These children enter the analysis sample twice. For the remaining 149 children (48.9 %), the data provide information on only one parent-child dyad.[4] The majority (66.4 %) of the single-parent dyads are mother-child dyads.

We conducted several robustness checks to test the sensitivity of our results to this double occurrence of some individuals in multiple dyads. Specifically, we calculated the sequence and cluster analyses for two additional subsamples. First, we used data on only one randomly chosen parent in each family: that is, either the father-child or the mother-child dyad. Second, we drew a sample of only one randomly chosen parent-child dyad for each family. This reduces case numbers considerably, but the substantive results were robust. As for the complete sample, cluster-cutoff criteria supported a three-clusters solution, and the substantive intergenerational patterns remained the same.

Core characteristics of our analysis sample—such as parity, divorce rate, and age of first marriage—correspond closely to national statistics (cf. Kreider 2005; Human Fertility Database 2013). For example, parity at age 40 deviates by 0.17 from the American average for the parent generation and by –0.20 for the child generation.

Information on marital status and parity is combined to specify nine family formation states: single, no child (SNC); single, one or more children (SC); married, no child (MNC); married, one child (M1C); married, two children (M2C); married, three children (M3C); married, four or more children (M4C); divorced, no children (DNC); and divorced, one or more children (DC). Single and divorced with one or more children (SC and DC) are combined into one sequence state each because they occur very rarely in the study population.[5] Creating separate states for each number of children in combination with "single" and "divorced" would greatly increase the number of family formation states that occur very rarely and thereby obscure rather than aid the identification of salient patterns.[6]

Unfortunately, we cannot consistently identify cohabitating and living-apart-together relationships with the LSOG. They are subsumed under the category "single." As outlined in the theoretical section, cohabitation would likely occur more frequently among the child generation in a moderated transmission and contrast pattern, although the increase in cohabitation was smaller among the middle class than in other segments of American society and not yet drastic for our study generations (Bumpass and Lu

[4] Children from divorced families are somewhat overrepresented in the group for which we have information for only one parent: 76.8 % of all parental divorces are observed in families with data on one parent only.

[5] The mean duration spent in DC is 0.6 years in the parent generation and 2.0 years in the child generation. The respective numbers for SC are 0.2 years for parents and 0.3 years for children.

[6] Allowing all parity and relationship status combinations that occur for at least 1 % of person-years in the sample yielded 12 family formation states that additionally separate divorce with higher-order parities and marriage with five children. Using these 12 family formation states for all analyses yielded substantially the same results but less-distinct family formation clusters indicated by worse cluster cutoff criteria. We therefore retain the specification of nine family formation states.

2000; Smock 2000). In the discussion section, we explain how the lack of information on cohabitation might affect our results.

Methods

We use sequence analysis (Abbott 1995) to group similar intergenerational family formation processes. The degree of similarity between sequences is determined by the minimum number and the type of operations—that is, substitutions, deletions, or insertions—required to transform one sequence into another.[7] There has been a fair amount of debate about the added value of sequence analysis in the social sciences and in life course research in particular (Aisenbrey and Fasang 2010; Billari 2001; Bonetti et al. 2013). Initial critics (Levine 2000; Wu 2000) spurred a wave of technical advances that increasingly establish sequence analysis as a complementary method in family demography (e.g., Aassve et al. 2007; Bonetti et al. 2013; Bras et al. 2010; Fasang 2014). One of these recent developments is the analysis of dyadic data with sequence analysis, which opens new possibilities for the interpretation of sequence distances (Liefbroer and Elzinga 2012).

We contribute to this literature by proposing an application of multichannel sequence analysis to dyadic sequences to study intergenerational family formation processes. Instead of individual sequences—the standard fair in sequence analysis in family demography (e.g., Aassve et al. 2007; Bras et al. 2010)—we take the parent-child dyad as the unit of analysis. The parent's and the child's family formation each constitute one dimension of a dyadic intergenerational family formation sequence. We use multichannel sequence analysis (MSA) to compare every parent-child dyad with every other parent-child dyad to determine similarity between dyads (on multidimensional sequences; see Blair-Loy 1999; Gauthier et al. 2010; Han and Moen 1999; Pollock 2007; Stovel et al. 1996).

Pollock (2007) originally proposed MSA to study parallel processes, such as simultaneous employment and family trajectories (see also Gauthier et al. 2010). We adopt this approach to dyadic sequences. Our proposition of dyadic multichannel sequence analysis directly relates to the theoretical concept of intergenerational patterns of family formation. The main advantage is that it enables us to identify contrasting parent-child patterns. MSA creates combined sequence states from the parent and child trajectories (dimensions). For example, if the parent is single and has no children (SNC) at age 20 and the same is true for the child, this is combined to the state [SNC SNC], where first the parent's and then the child's family formation state is displayed. Two hypothetical dyadic intergenerational sequences *A* and *B* from ages 16 to 20 can be noted as follows:

Age	16	17	18	19	20
Dyad *A*	[MNC MNC]	[MNC MNC]	[M1C M1C]	[M1C M1C]	[M2C M2C]
Dyad *B*	[MNC SNC]	[MNC SNC]	[M1C SNC]	[M1C SNC]	[M2C SNC]

A shows a parent-child dyad of strong transmission, where the parent and child experience the same process at the same pace. *B* shows a parent-child dyad of intergenerational contrast, where the child goes through different family formation

[7] For an introduction to sequence analysis, see MacIndoe and Abbott (2004).

states than the parent in the entire observation window. With nine family formation states in each generation, there are potentially 81 (9 × 9) combinations of parent-child family formation states, of which 70 occur empirically in our analysis sample. MSA is based on the specification of dimension-specific substitution costs. We specify substitution costs as a combination of a theory-driven linear-interval cost scheme and a data-driven nonlinear cost scheme to account for the substantive closeness of different family formation states as well as their generation-specific relevance. Related strategies of weighting linear-interval cost schemes with nonlinear terms are proposed in Stovel (2001) and Stovel and Bolan (2004).

First, to account for the substantive closeness of family formation states, we generate a linear-interval cost scheme by hierarchically ordering the states from SNC = 1 to M4C = 9. The substitution cost matrix is given by the absolute difference between the hierarchically ordered family formation states (Table S1 in Online Resource 1). For instance, substituting "single no child" (SNC) with "married four children" (M4C) costs 8, whereas substituting "married three children" (M3C) with "married four children" (M4C) costs only 1. This reflects that M3C and M4C are much more similar experiences compared with being SNC.

Second, to account for the generation-specific relevance of different family formation states, we calculate substitution costs based on the generation-specific transition rates between family formation states (probability to transition from one state to another) (Gabadinho et al. 2011; Rohwer and Trappe 1997). In regression-based analysis of fertility transmission, Anderton et al. (1987) followed a similar logic to take into account cohort-specific fertility patterns by using relative rather than absolute fertility as the key indicator.

Table S2 in Online Resource 1 shows transition rates between family formation states for each generation. For example, the probability to transition from "married, one child" (M1C) to "married, two children" (M2C) is .34 in the parent generation. It is considerably lower, at .18, in the child generation. Based on these transition rates, substitution costs SC between state i and state j are calculated as

$$SC_{ij} = 2 - p_{ij} - p_{ji},$$

where p_{ij} denotes the transition rate from state i to state j, and p_{ji} denotes the transition rate from state j to state i. Substitution costs based on transition rates are bound by 0, and 2. Zero is the lowest possible substitution cost when the probability to transition between two states is 100 %. The highest possible substitution cost is 2 when the probability to transition between two states is zero. Within each generation, substitution of two states will cost less and thus amount to lower overall distance between two sequences if transitions between these states occur frequently. For example, transitioning from M1C to M2C was more frequent and, in that sense, more normative in the parent generation than in the child generation. Substitution costs based on generation-specific transition rates generate less distance when substituting these two states in the parent generation than in the child generation.

Note that despite some confusion about the relationship between substitutions and transitions in the earlier sequence analysis literature, there is no logical or practical connection between the two in the context of the optimal matching algorithm (see Abbott 2000:68; Halpin 2010:366–367; Wu 2000). Substitutions happen between individual sequences at one point in time, whereas transitions happen within an individual sequence between two time points. In our application, we make use of the transition frequencies to specify substitution costs, but there is no direct connection between substitution operations and transitions between states.

For the final substitution cost specification (Table S4, Online Resource 1), we weight the theory-driven linear-interval cost scheme, which is the same for both generations (Table S1, Online Resource 1) with the generation-specific substitution costs derived from transition frequencies (Table S3, Online Resource 1) by multiplying these two substitution cost matrices (see Stovel and Bolan 2004). We can thereby simultaneously account for the substantive difference between family formation states as well as their generation-specific relevance. Insertion-deletion (indel) costs are set very high to ensure that they will never be used in order to emphasize similarity in terms of the timing of family formation states (see Lesnard 2010).

MSA aligns the dyadic intergenerational sequences by combining the substitution costs for each dimension. For example, substituting the combined state [M1C M1C] with [M1C M2C] for two parent-child dyads comes at a cost of 1.82, which is the generation-specific substitution cost for M1C and M2C for the child generation (Table S4). Substituting [M1C M1C] with [M2C M1C] comes at a cost of 1.66, and substituting [M1C M1C] with [M2C M2C] comes at a cost of 3.54 (1.66 + 1.82) (Table S4). Two intergenerational family formation sequences are most similar if the two parents follow the same trajectory and both children follow the same trajectory. They are more distant when either the parents or the children are similar to one another, and they are most distant when both the pair of parents and the pair of children are very different from one another. Importantly, similarity within the dyad—that is, between the parent and the child—does not contribute to the distances between parent-child dyads. This enables us to find contrasting intergenerational patterns, if they exist.

The output of MSA is a pairwise distance matrix for each pair of parent-child dyads. This distance matrix is used in a ward cluster analysis to group the sequences into salient intergenerational patterns. Several cluster cutoff criteria—including point biserial correlation, average silhouette width, and the Calinski-Harabasz index—support a three-cluster solution (Hennig and Liao 2010; Kaufman and Rousseeuw 1990; Milligan and Cooper 1985). To explore robustness of the findings, we applied six alternative cost specifications in the sequence analysis[8] and ran cluster analyses for each of the resulting distance matrices. Although the results varied slightly across cost specifications, the substantive findings were robust. The cluster analysis based on our proposed combined cost specification produced the best cluster solutions according to several cluster cutoff criteria.

The three clusters closely correspond to the theoretically expected ideal types (Fig. 1) and thus also meet the criterion of construct validity. We subsequently describe the three intergenerational patterns and analyze determinants of sorting into them in a multinomial logistic regression, where again the parent-child dyad is the unit of

[8] In addition the final cost specification, our results were robust to the following five other cost specifications: (1) optimal matching with constant substitution costs of 2 and indel costs of 1, (2) dynamic Hamming distance (DHD) (Lesnard 2010), (3) substitution costs based on overall (non-time-dependent) transition rates and indel costs of 1, (4) only the hierarchical cost specification without weighting it by generation specific substitution costs, and (5) hierarchical costs weighted by transition rates, where both were normalized to vary between 0 and 1 before they were multiplied.

analysis. Given that we observe multiple dyads within 140 families, we calculated robust standard errors to account for this clustering by family ID in the regression model. We also observe 156 children with two parents but cannot simultaneously calculate robust standard errors for the family ID and the child ID. Therefore, we separately calculated the models with robust standard errors for the child ID. The results were robust. The sequence analysis and the calculation of different cluster cutoff criteria were conducted using the TraMineR and the WeightedCluster packages in R (Gabadinho et al. 2011; Studer 2013).

Results

Figure 2 shows state distribution plots of the three clusters of intergenerational family formation: a pattern of strong transmission, a cluster of moderated transmission, and a group of intergenerational contrast. They sum the frequency of each family formation state at each time point (Gabadinho et al. 2011). Different family formation states are indicated by different colors. We chose a sequential color space with different shades of heat colors that reflects the hierarchical ordering of the sequence states (Fasang and Liao 2013; Zeileis et al. 2009). Figure 3 displays the medoid sequence: the sequence with the smallest sum of distances to all other sequences (Aassve et al. 2007) for the parent and child generation as representatives of each of the three intergenerational family formation patterns.

Table 1 shows descriptive information on the three clusters, including the average sequence distance between the parent and child generation within each group. These distances between parents and children are calculated using a unified version of the combined substitution costs for the complete sample based on transition frequencies between states across both generations. They are normalized between 0 and 100, where 0 indicates two identical sequences and 100 indicates the most dissimilar family formation trajectories. The average sequence distance between parents and children is 16.8 in the strong transmission group and much higher at 49.99 in the contrast group.

Table 2 shows the results of a multinomial logistic regression on cluster membership, including dyadic covariates on gender constellation, educational level and educational differences, birth order, and affectual solidarity to the parents reported by the child as a teenager as a measure of emotional closeness to the parent. The solidarity scale was constructed based on five items assessing the relationship to each parent separately. The reliability of the scale was high for affection to mothers ($\alpha = .89$) and to fathers ($\alpha = .88$) alike.[9] We subsequently discuss the three intergenerational family formation patterns with regard to the descriptive and the regression results displayed as coefficients and odds ratios. To ease the interpretation (Long and Freese 2006), the main regression results are discussed as predicted probabilities (average marginal effects) for specific combinations of characteristics of the parent-child dyads calculated from the coefficients presented in Table 2.

[9] The five questionnaire items comprise the following questions. (1) Taking everything into consideration, how close do you feel is the relationship between you and your (parent, study child, etc.) at this point in your life? (2) How is communication between you and your mother/father—exchanging ideas or talking about things that really concern you at this point in your life? (3) Overall, how well do you and your mother/father get along at this point in time? (4) How well do you feel your mother/father understands you? (5) How well do you feel that you understand your mother/father?

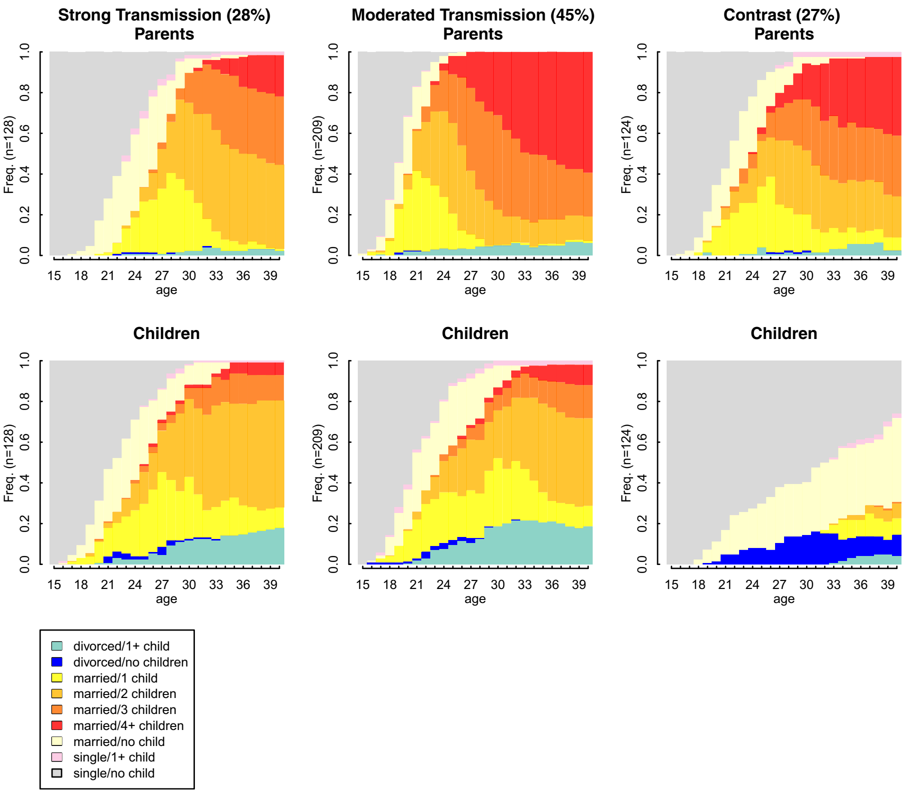

Fig. 2 State distribution plots of intergenerational family formation clusters

Several variables are systematically associated with gender: dyad's educational level, difference in years of education, and age difference between parent and child. To address these hidden interactions and to facilitate the interpretation of the results, we centered the variables on their gender-specific means. Gender differences, associations between the two educational variables, and between-age difference and birth order were also considered for the calculation of the predicted probabilities. For instance, predicted probabilities for different birth orders take into account that the dyadic age difference varies by birth order and parent's gender. For a firstborn, for example, the dyadic age differences used to estimate the predicted probabilities are 22 years for mother-child dyads and 25 years for father-child dyads.

Strong Transmission

The first group maps on closely to the ideal type of strong intergenerational transmission (see Fig. 1) in which children go through the same family formation states as their parents at the same pace. This pattern occurs for 28 % of the LSOG sample. In this group, parents show fairly late family formation relative to their own generation. They are also the oldest parent cohort, with an average year of birth in 1924 compared with 1927 in the total parent generation. The comparatively lower parity among this generation is in line with

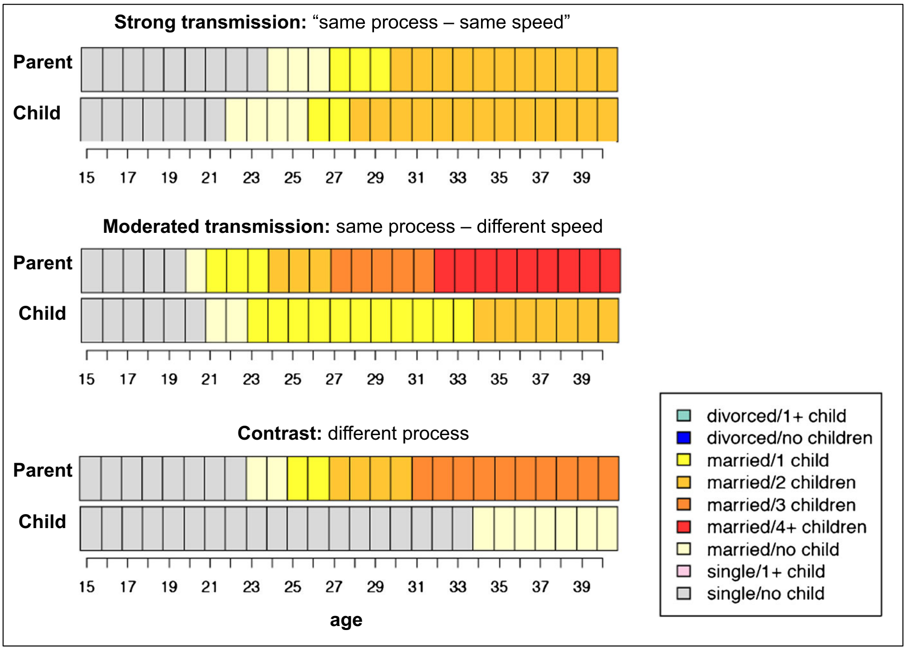

Fig. 3 Medoid sequences as representatives of intergenerational family formation clusters

previous research showing that the cohorts born between 1914 and 1924 were the hardest hit by the Great Depression during their transition to adulthood, which suppressed their fertility levels (Wu and Li 2005). These parents thus already corresponded more closely to the delayed and lower parity family formation processes that became more prevalent among the child generation.

The findings support our expectations on the macro-structural determinants of strong transmission, indicated by educational mobility and gender constellation. Dyads that show no educational mobility are most likely to sort into this pattern across all gender constellations. This finding supports that strong transmission of family formation at least partly results as a by-product of intergenerational status transmission. In addition, especially father-daughter dyads are significantly more likely to sort into this pattern (Table 2). Compared with mother-daughter dyads, their odds of being in the strong transmission rather than in the contrast pattern are twice as high (odds ratio = 2.20), all else equal. With an odds ratio of 5.41 (= 1/.185), the positive effect for father-daughter dyads to be in the strong transmission versus the moderated transmission group is even more pronounced. In terms of predicted probabilities, father-daughter dyads with the same education have a probability of 42 % to be in the strong transmission group, compared with 26 % for mother-daughter dyads with the same education (calculated from the regression coefficients in Table 2). Overall, mothers' very early family formation is no longer suitable as an exact template for their daughters' family formation. For upwardly mobile daughters, this effect is even stronger: only 18 % of upwardly mobile mother-daughter dyads are in the strong transmission cluster.

Table 1 Descriptive statistics on intergenerational family formation clusters

		Strong Transmission	Moderated Transmission	Contrast	Total
Year of Birth (median)	Parent	1924	1929	1926	1927
	Child	1953	1953	1953	1953
Age Difference (mean and SD)		28.69	22.70	26.27	25.32
		(4.07)	(3.05)	(3.99)	(4.42)
Birth Order (mean and SD)		1.67	1.67	1.66	1.67
		(0.81)	(0.80)	(0.85)	(0.82)
Gender Constellation (relative frequencies within each column, %)	Mother-Daughter	28.13	40.67	28.23	33.84
	Father-Son	20.31	12.44	23.39	17.57
	Mother-Son	12.50	24.88	25.00	21.48
	Father-Daughter	39.06	22.01	23.39	27.11
Years of Education (mean and SD)	Parent	14.84	13.03	14.68	13.98
		(2.83)	(2.41)	(2.90)	(2.80)
	Child	15.46	15.01	15.81	15.35
		(2.26)	(2.25)	(2.60)	(2.37)
Difference in Years of Education (mean and SD)		0.63	1.98	1.13	1.38
		(2.99)	(2.96)	(3.35)	(3.13)
Educational Attainment (%)	Both No College	5.47	17.22	5.65	10.85
	Parent Some College	7.81	6.22	8.87	7.38
	Child Some College	28.91	37.32	25.81	31.89
	Both Some College	57.81	39.23	59.68	49.89
Age First Marriage (median)	Parent	24	20	22	21
	Child	22	21	27[a]	22
Age First Birth (median)	Parent	27	21	24	23
	Child	26	24	—[b]	26
Parity at Age 40 (mean and SD)	Parent	2.85	3.48	3.06	3.19
		(0.83)	(0.75)	(0.92)	(0.87)
	Child	2.19	2.27	0.34	1.73
		(0.75)	(0.87)	(0.69)	(1.16)
Affectual Solidarity Scale (mean and SD)[c]		4.34	4.25	3.93	4.19
		(1.01)	(1.05)	(1.02)	(1.04)
Distance (mean and SD)[d]		16.80	25.93	49.99	29.87
		(9.76)	(10.68)	(17.02)	(17.86)
Total (absolute and relative frequencies, %)		128	209	124	461
		27.77	45.34	26.90	100

[a] 28.23 % of the children in this cluster remain unmarried until age 40.

[b] 77.42 % of the children in this cluster remain childless until age 40.

[c] 15.18 % of the children have a missing value for the affectual solidarity scale.

[d] Normalized between 0 and 100.

Table 2 Multinomial logistic regression predicting intergenerational family formation clusters

Variable	Strong Transmission vs. Contrast		Moderated Transmission vs. Strong Transmission		Moderated Transmission vs. Contrast	
	b	OR	*b*	OR	*b*	OR
Gender Constellation of the Dyad (ref. = mother-daughter)						
Father-son	0.124	1.132	–1.413**	0.243	–1.289**	0.276
Mother-son	–0.678	0.507	0.233	1.263	–0.445	0.641
Father-daughter	0.788**	2.199	–1.688***	0.185	–0.900**	0.406
Age Difference Between Parent and Child (centered on parent's gender-specific mean)	0.288***	1.334	–0.734***	0.480	–0.447***	0.640
Dyad's Average Years of Education (centered on gender-specific mean)	–0.214*	0.807	0.0495	1.051	–0.165†	0.848
Difference in Years of Education Between Parent and Child (centered on gender-specific mean)	–0.0916	0.912	0.206**	1.229	0.114†	1.121
Sibling Position	–0.821**	0.440	1.729***	5.635	0.908**	2.479
Affectual Solidarity Scale: Child's Affect to Parent (centered on gender-specific mean)	0.097**	1.101	–0.071*	0.931	0.025	1.026
Constant	0.858	2.358	–1.689**	0.185	–0.831	0.436
Pseudo-R^2	.29					

Notes: $N = 391$ parent-child dyads. Robust standard errors were used to correct for clustering within families, and results were robust using robust standard errors for child ID. OR = odds ratio.

Source: LSOG 1971–2000.

$^{\dagger}p < .10$; $^{*}p < .05$; $^{**}p < .01$; $^{***}p < .001$

The second set of mechanisms—family internal dynamics—also play a role for strong intergenerational transmission. A one-unit increase on the affectual solidarity scale increases the odds of being in the strong transmission rather than the contrast cluster by 10 % (odds ratio = 1.101). Similarly, the odds of sorting into the strong transmission compared with the moderated transmission group are increased by 7 % (odds ratio = 1 / 0.931) for a one-unit increase on the affectual solidarity scale. Put differently, children who reported high affectual solidarity to their parents have an 8 percentage point higher probability of being in this group than children who reported low affectual solidarity (32 % vs. 24 %, calculated from Table 2).[10] In addition, earlier-born children are more likely to adhere to the family formation pattern observed in their parents and have higher odds of being in the strong transmission group than their later-born siblings. For instance, the odds of being in the strong transmission group compared with the contrast group are reduced by 66 % (odds ratio = 0.44) for a one-unit increase in birth order.

[10] We used the first (= 3.6) and the third quartile (= 5.0) on the affectional solidarity scale as thresholds for low and high affectual solidarity for calculating the predicted probabilities.

Moderated Transmission

The second group of moderated intergenerational transmission shows a pattern of children who experience a similar family formation process as their parents but with later onset and at a slower pace. All focal transitions in the family formation process occur later, and they have, on average, 1.2 fewer children than their parents at age 40. As expected, in view of profound macro-structural change, moderated transmission is the modal pattern for the study generations, accounting for 45 % of the LSOG sample. Note that intergenerational continuity remains relatively strong in the moderated transmission group, with a parent-child distance of 25.93 compared with 16.80 in the strong transmission pattern and a considerably higher distance of 49.99 in the third group of intergenerational contrast (Table 1). Despite some similarities, particularly among the child generation, the two transmission clusters differ remarkably in terms of both patterns and determinants. For instance, parents of the moderated transmission group start family formation earlier and have the highest parities, approximating the modal values of the middle-class parent generation in our sample (Table 1).

Parental education is lowest in the moderated transmission group, leaving room for the highest average educational upward mobility of 1.98 years compared with 1.38 years in the total sample. The regression results in Table 2 underline the importance of educational upward mobility for moderated transmission of family formation in the context of structural labor market change: each year of upward mobility—that is, additional years of education to the parents education—increases the odds of being in the moderated transmission cluster compared with either the strong transmission (odds ratio = 1.23) or the contrast group (odds ratio = 1.12).

Further supporting the pivotal role of structural determinants, mother-daughter dyads are most likely to sort into moderated transmission (Tables 1 and 2): their predicted probability of being in this group is 55 %, compared with a 22 % probability of sorting into strong transmission. Relative to their mothers, daughters were affected particularly strongly by macro-structural changes as women increasingly made inroads into higher education and the labor market and adapted their early life courses to new structural requirements. Taken together, father-daughter dyads are overrepresented in the strong transmission and underrepresented in the moderated transmission group, but the opposite is true for mother-child dyads.

These findings have two implications. First, daughters became more similar to their fathers in their family formation. Second, gender differences in family formation are declining across generations. This can be illustrated with the median ages of focal family formation transitions across genders and generations: women's median age at first birth is 22 for the parent and 25 for the child generation. For men, the respective ages are 25 and 26. Note that both fathers' and daughters' median age at first birth is 25, and the age difference between men and women declines from three years in the parent generation to one year in the child generation. The latter supports a convergence of women's and men's early life courses across the second half of the twentieth century among middle-class Americans.

Concerning family internal dynamics, affectual solidarity is relatively high in the moderated transmission group but hardly affects the probability of sorting into this cluster: children who report low affectual solidarity have a 47 % predicted probability of being in the moderated transmission group, compared with 46 % for children who report high affectual solidarity—a difference of only 1 percentage point. Moreover, the regression results show that affectual solidarity significantly impacts the odds of being in the moderated transmission group only relative to the strong transmission (odds ratio = 0.93) but not in comparison with the contrast group.

Intergenerational Contrast

Intergenerational contrast shows a pattern where children experience very different family formation than their parents. They are distinct not only through later timing along the sequence, but also through the absence of most of the parents' family formation states. The parents' family formation roughly corresponds to the average of the parent generation in terms of the timing and sequencing of focal transitions and parity at age 40 (Table 1). The children, in contrast, remain childless: many of them do not get married or do so only in their late 30s. Divorce from childless marriages is fairly common. Because this form of intergenerational contrast of childlessness among middle-class American families accounts for a considerable 27 % of the sample, it cannot be dismissed as a mere outlier or extreme phenomenon against the norm of some form of transmission.

In support of the opportunity cost argument, intergenerational contrast in terms of childlessness is characterized by high parental education and the highest education among the child generation (Table 1). Even after controlling for education, parent-son dyads are slightly overrepresented compared with parent-daughter dyads, arguably because of the higher prevalence of poor relationship quality between parents and sons relative to daughters (Silverstein et al. 1997) beyond what is factored out by the affectual solidarity scale. Contrary to the moderated transmission group, structural determinants are of relatively minor importance for intergenerational contrast of childlessness. Instead, family internal dynamics that play out in emotional closeness between parents and children as well as sibling order help to explain which children tend to contrast their parent's family behavior rather than to emulate it: children who reported low affectual solidarity to their parents as teenagers have a 7 percentage point higher probability of sorting into the intergenerational contrast cluster than children with high affectual solidarity (29 % vs. 22 %). Results further support that later-born siblings seek their own niches to avoid sibling competition and therefore deviate more from parental role models: across all dyadic gender constellations, fourth and later-born children consistently have a 10 percentage point higher probability of sorting into intergenerational contrast than firstborn children. However, family internal dynamics account for differences only between the strong transmission and the contrast group, in line with our expectations: being a later-born sibling (odds ratio = 0.44) decreases the odds of being in the strong transmission group, whereas affectual solidarity increases (odds ratio = 1.10) the odds of strong transmission relative to the contrast group. The results are less clear-cut for the comparison of the contrast and the moderated transmission pattern: after taking all covariates into account, the descriptive difference with regard to affectual solidarity vanishes and is insignificant in the regression model. Moreover, later-born siblings are even more likely to be in the moderated transmission group than in the contrast group (odds ratio = 2.48).

In sum, the empirical analyses corroborate most of our theoretical expectations, particularly about the driving forces of sorting into the strong transmission versus the contrast group. One exception is that not only mother-daughter dyads (as we expected) but also father-daughter dyads are less likely to sort into intergenerational contrast. Apparently, sons are more likely to show contrasting family behavior regardless of the parent gender. In line with our theoretical consideration, the defining characteristics of the moderated transmission group are educational upward mobility and mother-daughter gender constellation, whereas differences to the other two groups on family internal dynamics are less clear-cut.

Discussion

This study draws attention to intergenerational regularities in family formation beyond direct transmission. Our contribution to the literature is twofold. First, instead of focusing on similarity in isolated focal events, we introduce the concept of intergenerational patterns of family formation as regularities in longitudinal union formation and childbearing sequences of parents and their children. In addition to similarity, intergenerational patterns comprise systematic deviation and contrast between parents' and children's family formation, which has been overlooked in the transmission literature to date. Second, we innovatively apply multichannel sequence analysis in a dyadic design to study these intergenerational patterns empirically. Based on the discussion of family internal dynamics and macro-structural change as two sets of mechanisms that potentially govern intergenerational continuity and contrast in family formation, we develop three ideal-typical intergenerational family formation patterns: strong transmission, moderated transmission, and intergenerational contrast. Structural driving forces are examined in terms of intergenerational social mobility and the gender constellation of the parent-child dyad that reflects changing gender relations in education and employment between the two generations. Considering family internal dynamics, we include the relationship quality between parents and children and birth order in the child generation. We assume that the two sets of mechanisms operate in concert and that specific combinations of them will increase the likelihood of sorting into one intergenerational pattern of family formation rather than another.

The results map on closely to the three ideal types. Additional regression analyses corroborate that the decisive differences between strong transmission and intergenerational contrast to the traditional middle-class family pattern reside in family internal dynamics: children who report close emotional bonds to their parents and later-born siblings are more likely to closely resemble them, whereas children who report poor relationship quality to their parents and later-born siblings are particularly likely to sort into a contrast pattern of childlessness. However, both strong transmission and intergenerational contrast are particularly common among parent-child dyads that experience little educational mobility. Instead, the second set of mechanisms—namely, structural change in employment and education indicated by educational upward mobility and gender constellation—is an important determinant of moderated transmission, in which children go through similar family formation states as their parents but at a slower pace. For American middle-class families, educational upward mobility came with a delay and protraction of children's family formation relative to their parents as they adapted to changing structural conditions during the second half of the twentieth century. This is particularly the case for mother-daughter dyads as women made substantial inroads into the labor market during this time.

In addition to a conceptual and substantive contribution, our study aimed at developing an innovative dyadic sequence analysis approach to study intergenerational family formation patterns. The rapid technical development of sequence analysis throughout the past decades has revived the debate about its limitations and merits to advance insight in specific fields of inquiry (Blanchard et al. 2014; Brzinsky-Fay and Kohler 2010). In contrast to the relatively large and well-established sequence analysis literature on the destandardization and pluralization of family formation (e.g., Bras et al. 2010; Elzinga and Liefbroer 2007), Liefbroer and Elzinga (2012) only recently pioneered dyadic sequence analysis to study intergenerational links. In contrast to our approach of taking dyads as units of analysis in multichannel sequence analysis, they compared the family formation of parents directly with their children's family formation within dyads. To our knowledge, the present study is the first application of multichannel sequence analysis to dyadic sequences to study intergenerational continuities and discontinuities in life courses. This approach uniquely enables the identification of systematic deviation and contrast between parents and children and therefore is promising to further broaden insights on intergenerational regularities in life courses beyond transmission. More generally, the dyadic multichannel approach holds potential for analyzing linked life courses also among siblings, or within couples and peer networks.

The results must be interpreted in the context of several limitations. Despite the unique advantages of using the LSOG to study intergenerational patterns of family formation, we cannot separate cohabiting and noncohabiting relationships. We therefore might underestimate heterogeneity in the family formation sequences, particularly in the child generation in the moderated transmission and the contrast patterns. Premarital cohabitation as a prelude to delayed marriage likely plays a role in the moderated transmission group. Although it is unfortunate that we cannot examine it directly, premarital cohabitation would easily integrate into the conceptualization of this ideal type and would therefore not invalidate the main conclusions of this study. Further, some of the children in the intergenerational contrast pattern are, in fact, likely to be cohabiting and not single. Given the still pronounced legal and normative supremacy of marriage in the United States for both the parent and the child generation, differences in marriage between the two generations remain meaningful. Moreover, the neglect of cohabitation does not alter the contrast theme of childlessness among this group.

The LSOG sample allows insights about American middle-class families only in the second half of the twentieth century. In view of this restriction, it is rather surprising that we find as much heterogeneity in intergenerational family formation even within this select group. In principle, the conceptual framework and study design are easily transferrable to cover the full diversity of family formation across American society with appropriate data that are not yet available. Nationally representative data would likely reveal additional intergenerational patterns and multiple forms of transmission and intergenerational contrast. For instance, following the findings of McLanahan and Bumpass (1988) and Wu and Li (2005, 2008), strong transmission of instable family formation is likely to occur among families that are exposed to concentrated disadvantage and poverty. Because family patterns and social class are tightly intertwined in American society (Carlson and England 2011a), the types and the content of intergenerational patterns as well as the mechanisms that govern them will vary greatly across the social structure. Therefore, targeted analyses of specific subpopulations are a useful starting point to gain a more in-depth understanding of intergenerational family formation.

Besides analyzing intergenerational family formation in other segments of the population, it would be interesting to broaden the specification of intergenerational sequences in future research. “Familial and nonfamilial transition markers increasingly overlap” (Shanahan 2000:670) in the transition to adulthood, and it could be fruitful to consider new markers of adulthood (Silva 2012) as well as parallel processes of employment and residential mobility to understand intergenerational patterns of early-adult life courses. Finally, the driving forces and mechanisms behind intergenerational patterns of family formation should be related to other inequality outcomes to enhance our understanding of their role in the reproduction of inequality across generations (McLanahan and Percheski 2008).

Acknowledgments We thank Editor Pamela Smock, former Editor Stewart Tolnay, and three anonymous reviewers of *Demography* for detailed and instructive comments that greatly benefited the manuscript. We are indebted to the participants of the writing workshop of the research unit *Social Policy and Inequality* at the WZB for insightful comments in the early stages of the manuscript. We gratefully acknowledge support from the Center for Research on Inequalities and the Life Course at Yale University and the German Academic Exchange Service (DAAD) for a research visit of Marcel Raab in New Haven, where we had the initial idea for this project.

References

Aassve, A., Billari, F. C., & Piccarreta, R. (2007). Strings of adulthood: A sequence analysis of young British women’s work-family trajectories. *European Journal of Population, 23,* 369–388.

Abbott, A. (1995). Sequence analysis: New methods for old ideas. *Annual Review of Sociology, 21,* 93–113.

Abbott, A. (2000). Reply to Levine and Wu. *Sociological Methods & Research, 29,* 65–76.

Acock, A. C., & Bengtson, V. L. (1978). On the relative influence of mothers and fathers: A covariance analysis of political and religious socialization. *Journal of Marriage and the Family, 40,* 519–530.

Aisenbrey, S., & Fasang, A. E. (2010). New life for old ideas: The “second wave” of sequence analysis bringing the “course” back into the life course. *Sociological Methods & Research, 38,* 420–462.

Amato, P. R. (1996). Explaining the intergenerational transmission of divorce. *Journal of Marriage and the Family, 58,* 628–640.

Anderton, D. L., Tsuya, N. O., Bean, L. L., & Mineau, G. P. (1987). Intergenerational transmission of relative fertility and life course patterns. *Demography, 24,* 467–480.

Barber, J. S. (2000). Intergenerational influences on the entry into parenthood: Mothers’ preferences for family and nonfamily behavior. *Social Forces, 79,* 319–348.

Bengtson, V. L. (1975). Generation and family effects in value socialization. *American Sociological Review, 40,* 358–371.

Bengtson, V. L., Biblarz, T. J., & Roberts, R. E. (2002). *How families still matter. A longitudinal study of youth in two generations*. Cambridge, UK: Cambridge University Press.

Bengtson, V. L., Copen, C. E., Putney, N. M., & Silverstein, M. (2009). A longitudinal study of the intergenerational transmission of religion. *International Sociology, 24,* 325–345.

Bengtson, V. L., & Roberts, R. E. L. (1991). Intergenerational solidarity in aging families: An example of formal theory construction. *Journal of Marriage and the Family, 53,* 856–870.

Billari, F. C. (2001). Sequence analysis in demographic research. *Canadian Studies in Population, 28,* 439–458.

Blair-Loy, M. (1999). Career patterns of executive women in finance: An optimal matching analysis. *American Journal of Sociology, 104,* 1346–1397.

Blanchard, P., Bühlmann, F., & Gauthier, J.-A. (2014). *Advances in sequence analysis: Theories, methods and applications (Series: Life Course Research and Social Policy* (Vol. 2)). New York, NY: Springer.

Blau, P. M., & Duncan, O. D. (1967). *The American occupational structure*. New York, NY: John Wiley & Sons, Inc.

Bonetti, M., Piccarreta, R., & Salford, G. (2013). Parametric and nonparametric analysis of life courses: An application to family formation patterns. *Demography, 50,* 881–902.

Bongaarts, J., & Feeney, G. (1998). On the quantum and tempo of fertility. *Population and Development Review, 24,* 271–291.

Booth, A. L., & Kee, H. J. (2009). Intergenerational transmission of fertility patterns. *Oxford Bulletin of Economics and Statistics, 71,* 183–208.

Bras, H., Liefbroer, A. C., & Elzinga, C. H. (2010). Standardization of pathways to adulthood? An analysis of Dutch cohorts born between 1850 and 1900. *Demography, 47,* 1013–1034.

Brückner, H., & Mayer, K. U. (2005). The de-standardization of the life course: What it might mean and if it means anything whether it actually took place. In R. Macmillan (Ed.), *The structure of the life course. Standardized? Individualized? Differentiated?* (pp. 27–54). Amsterdam, The Netherlands: Elsevier.

Brzinsky-Fay, C., & Kohler, U. (2010). New developments in sequence analysis. *Sociological Methods & Research, 38,* 359–364.

Bumpass, L., & Lu, H.-H. (2000). Trends in cohabitation and implications for children's family contexts in the United States. *Population Studies, 54,* 29–41.

Carlson, M. J., & England, P. (Eds.). (2011a). *Social class and changing families in an unequal America*. Stanford, CA: Stanford University Press.

Carlson, M. J., & England, P. (2011b). Social class and family patterns in the United States. In M. J. Carlson & P. England (Eds.), *Social class and changing families in an unequal America* (pp. 1–20). Stanford, CA: Stanford University Press.

Carlson, M. J., & Furstenberg, F. F., Jr. (2006). The prevalence and correlates of multipartnered fertility among urban U.S. parents. *Journal of Marriage and Family, 68,* 718–732.

Carlson, M. J., McLanahan, S., & England, P. (2004). Union formation in fragile families. *Demography, 41,* 237–261.

Cherlin, A. J. (1992). *Marriage, divorce, remarriage*. Cambridge, MA: Harvard University Press.

Coneus, K., & Spiess, C. K. (2012). The intergenerational transmission of health in early childhood—Evidence from the German Socio-Economic Panel Study. *Economics and Human Biology, 10,* 89–97.

De Vries, J., Kalmijn, M., & Liefbroer, A. C. (2009). Intergenerational transmission of kinship norms? Evidence from siblings in a multi-actor survey. *Social Science Research, 38,* 188–200.

Elder, G. H. (1985). Perspectives on the life course. In G. H. Elder (Ed.), *Life course dynamics trajectories and transitions, 1968–1980* (pp. 23–49). Ithaca, NY: Cornell University Press.

Elder, G. H. (1994). Time, human agency, and social change: Perspectives on the life course. *Social Psychology Quarterly, 57,* 4–15.

Elder, G. H., Johnson, M. K., & Crosnoe, R. (2003). The emergence and development of life course theory. In J. T. Mortimer & M. J. Shanahan (Eds.), *Handbook of the life course* (pp. 3–19). New York, NY: Springer.

Ellwood, D. T., & Jencks, C. (2004). The uneven spread of single-parent families: What do we know? Where do we look for answers? In K. M. Neckerman (Ed.), *Social inequality* (pp. 3–78). New York, NY: Russell Sage Foundation.

Elzinga, C. H. & Liefbroer, A. C. (2007). De-standardization of family-life trajectories of young adults: A cross-national comparison using sequence analysis. *European Journal of Population, 23,* 225–250.

Fasang, A. E. (2014). New perspectives on family formation: What can we learn from sequence analysis? In P. Blanchard, F. Bühlmann, & J.-A. Gauthier (Eds.), *Advances in sequence analysis: Theories, methods and applications* (Life Course Research and Social Policy, Vol. 2). New York, NY: Springer.

Fasang, A. E., & Liao, T. F. (2013). Visualizing sequences in the social sciences: Relative frequency sequence plots. *Sociological Methods & Research*. Advance online publication. doi:10.1177/0049124113506563

Feng, D., Giarrusso, R., Bengtson, V. L., & Frye, N. (1999). Intergenerational transmission of marital quality and marital instability. *Journal of Marriage and the Family, 61,* 451–463.

Freese, J., Powell, B., & Steelman, L. C. (1999). Rebel without a cause or effect: Birth order and social attitudes. *American Sociological Review, 64,* 207.

Furstenberg, F. F., Jr. (2010). On a new schedule: Transitions to adulthood and family change. *Future of Children, 20*(1), 67–87.

Fussell, E., & Furstenberg, F. F., Jr. (2005). The transition to adulthood during the twentieth century: Race, nativity, and gender. In R. A. Settersten Jr., F. F. Furstenberg Jr., & R. G. Rumbaut (Eds.), *On the frontier of adulthood: Theory, research, and public policy* (pp. 29–75). Chicago, IL: University of Chicago Press.

Gabadinho, A., Ritschard, G., Müller, N. S., & Studer, M. (2011). Analyzing and visualizing state sequences in R with TraMineR. *Journal of Statistical Software, 40,* 1–37.

Gans, D., & Silverstein, M. (2006). Norms of filial responsibility for aging parents across time and generations. *Journal of Marriage and Family, 68,* 961–976.

Gauthier, J.-A., Widmer, E. D., Bucher, P., & Notredame, C. (2010). Multichannel sequence analysis applied to social science data. *Sociological Methodology, 40,* 1–38.

Goldscheider, F. (1997). Recent changes in U.S. young adult living arrangements in comparative perspective. *Journal of Family Issues, 18,* 708–724.
Goldstein, J. R., & Kenney, C. T. (2001). Marriage delayed or marriage forgone? New cohort forecasts of first marriage for U.S. women. *American Sociological Review, 66,* 506–519.
Halpin, B. (2010). Optimal matching analysis and life-course data: The importance of duration. *Sociological Methods & Research, 38,* 365–388.
Han, S.-K., & Moen, P. (1999). Clocking out: Temporal patterning of retirement. *American Journal of Sociology, 105,* 191–236.
Hennig, C., & Liao, T. F. (2010). Comparing latent class and dissimilarity based clustering for mixed type variables with application to social stratification. *Journal of the Royal Statistical Science, Series C (Applied Statistics), 62,* 309–369.
Human Fertility Database. (2013). Max Planck Institute for Demographic Research (Germany) and Vienna Institute of Demography (Austria). Retrieved from www.humanfertility.org
Johnson, N. E., & Stokes, C. S. (1976). Family size in successive generations: The effects of birth order, intergenerational change in lifestyle, and familial satisfaction. *Demography, 13,* 175–187.
Kaufman, L., & Rousseeuw, P. J. (1990). *Finding groups in data: An introduction to cluster analysis*. Hoboken, NJ: John Wiley & Sons, Inc.
Kolk, M. (2014). Understanding transmission of fertility across multiple generations—Socialization or socioeconomics? *Research in Social Stratification and Mobility, 35,* 89–103.
Kreider, R. M. (2005). *Number, timing, and duration of marriages and divorces: 2001* (Current Population Reports P70-97). Washington, DC: U.S. Census Bureau.
Lesnard, L. (2010). Setting cost in optimal matching to uncover contemporaneous socio-temporal patterns. *Sociological Methods & Research, 38,* 389–419.
Levine, J. H. (2000). But what have you done for us lately? Commentary on Abbott and Tsay. *Sociological Methods & Research, 29,* 34–40.
Liefbroer, A. C., & Elzinga, C. H. (2012). Intergenerational transmission of behavioural patterns: How similar are parents' and children's demographic trajectories? *Advances in Life Course Research, 17,* 1–10.
Long, J. S., & Freese, J. (2006). *Regression models for categorial dependent variables using Stata*. College Station, TX: Stata Press.
MacIndoe, H., & Abbott, A. (2004). Sequence analysis and optimal matching techniques for social science data. In A. Bryman & M. Hardy (Eds.), *Handbook of data analysis* (pp. 387–406). London, UK: Sage Publications.
Mare, R. D. (1980). Social background and school continuation decisions. *Journal of American Statistical Association, 75,* 295–305.
Mare, R. D. (1981). Change and stability in educational stratification. *American Sociological Review, 46,* 72–87.
Mare, R. D., & Maralani, V. (2006). The intergenerational effects of changes in women's educational attainments. *American Sociological Review, 71,* 542–564.
Martin, S. P. (2006). Trends in marital dissolution by women's education in the United States. *Demographic Research, 15*(article 20), 537–560. doi:10.4054/DemRes.2006.15.20
McLanahan, S. (2004). Diverging destinies: How children are faring under the second demographic transition. *Demography, 41,* 607–627.
McLanahan, S., & Bumpass, L. (1988). Intergenerational consequences of family disruption. *American Journal of Sociology, 94,* 130–152.
McLanahan, S., & Percheski, C. (2008). Family structure and the reproduction of inequalities. *Annual Review of Sociology, 34,* 257–276.
Merz, E.-M. (2012). Fertility intentions depend on intergenerational relations: A life course perspective. *Family Science, 3,* 237–245.
Milligan, G. W., & Cooper, M. C. (1985). An examination of procedures for determining the number of clusters in a data set. *Psychometrika, 50,* 159–179.
Modell, J., Furstenberg, F. F., Jr., & Strong, D. (1976). The timing of marriage in the transition to adulthood: Continuity and change, 1860–1975. *American Journal of Sociology, 84,* S120–S150.
Murphy, M. (1999). Is the relationship between fertility of parents and children really weak? *Biodemography and Social Biology, 46,* 122–145.
Murphy, M. (2013). Cross-national patterns of intergenerational continuities in childbearing in developed countries. *Biodemography and Social Biology, 59,* 101–126.
Murphy, M., & Knudsen, L. B. (2002). The intergenerational transmission of fertility in contemporary Denmark: The effects of number of siblings (full and half), birth order, and whether male or female. *Population Studies, 56,* 235–248.

Nock, S. L. (1995). A comparison of marriages and cohabiting relationships. *Journal of Family Issues, 16,* 53–76.
Pollock, G. (2007). Holistic trajectories: A study of combined employment, housing and family careers by using multiple-sequence analysis. *Journal of the Royal Statistical Society: Series A (Statistics in Society), 170,* 167–183.
Rohwer, G., & Trappe, H. (1997). *Describing life courses. An illustration based on NLSY data*. Florence, Italy: European University Institute.
Schönpflug, U. (2001). Intergenerational transmission of values: The role of transmission belts. *Journal of Cross-Cultural Psychology, 32,* 174–185.
Shanahan, M. J. (2000). Pathways to adulthood in changing societies: Variability and mechanisms in life course perspective. *Annual Review of Sociology, 26,* 667–692.
Silva, J. M. (2012). Constructing adulthood in an age of uncertainty. *American Sociological Review, 77,* 505–522.
Silverstein, M., Bengtson, V. L., & Lawton, L. (1997). Intergenerational solidarity and the structure of adult child–parent relationships in American families. *American Journal of Sociology, 103,* 429–460.
Silverstein, M., Gans, D., Lowenstein, A., Giarrusso, R., & Bengtson, V. L. (2010). Older parent-child relationships in six developed nations: Comparisons at the intersection of affection and conflict. *Journal of Marriage and Family, 72,* 1006–1021.
Silverstein, M., & Giarrusso, R. (2011). Aging individuals, families, and societies: Micro–meso–macro linkages in the life course. In R. A. Settersten & J. L. Angel (Eds.), *Handbook of sociology of aging* (pp. 35–49). New York, NY: Springer.
Smock, P. J. (2000). Cohabitation in the United States: An appraisal of research themes, findings, and implications. *Annual Review of Sociology, 26,* 1–20.
Steenhof, L., & Liefbroer, A. C. (2008). Intergenerational transmission of age at first birth in the Netherlands for birth cohorts born between 1935 and 1984: Evidence from municipal registers. *Population Studies, 62,* 69–84.
Stovel, K. (2001). Local sequential patterns: The structure of lynching in the Deep South, 1882–1930. *Social Forces, 79,* 843–880.
Stovel, K., & Bolan, M. (2004). Residential trajectories: Using optimal alignment to reveal the structure of residential mobility. *Sociological Methods & Research, 32,* 559–598.
Stovel, K., Savage, M., & Bearman, P. (1996). Ascription into achievement: Models of career systems at Lloyds Bank, 1890–1970. *American Journal of Sociology, 102,* 358–399.
Studer, M. (2013). *WeightedCluster library manual: A practical guide to creating typologies of trajectories in the social sciences with R* (LIVES Working Papers, 24). Geneva, Switzerland: University of Geneva Institute for Demographic and Life Course Studies.
Sulloway, F. J. (1997). *Born to rebel. Birth order, family dynamics, and creative lives*. New York, NY: Vintage Books.
Teachman, J. D., Tedrow, L. M., & Crowder, K. D. (2000). The changing demography of America's families. *Journal of Marriage and Family, 62,* 1234–1246.
van Poppel, F., Monden, C., & Mandemakers, K. (2008). Marriage timing over the generations. *Human Nature, 19,* 7–22.
Ventura, S. J., & Bachrach, C. A. (2000). *Nonmarital childbearing in the United States, 1940–99* (National Vital Statistics Reports, 48(16)). Hyattsville, MD: National Center for Health Statistics.
Western, B., Bloome, D., & Percheski, C. (2008). Inequality among American families with children, 1975 to 2005. *American Sociological Review, 73,* 903–920.
Wolfinger, N. H. (2000). Beyond the intergenerational transmission of divorce: Do people replicate the patterns of marital instability they grew up with? *Journal of Family Issues, 21,* 1061–1086.
Wu, L. L. (2000). Some comments on "Sequence analysis and optimal matching methods in sociology: Review and PROSPECT." *Sociological Methods & Research, 29,* 41–64.
Wu, L. L., & Li, J.-C. A. (2005). Historical roots of family of diversity: Marital and childbearing trajectories of American women. In R. A. Settersten Jr., F. F. Furstenberg Jr., & R. G. Rumbaut (Eds.), *On the frontier of adulthood: Theory, research, and public policy* (pp. 110–149). Chicago, IL: University of Chicago Press.
Zeileis, A., Hornik, K., & Murrell, P. (2009). Escaping RGBland: Selecting colors for statistical graphics. *Computational Statistics & Data Analysis, 53,* 3259–3270.