

Family Effects on Family Formation

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Introduction

Family of origin effects in an era of family upheaval

In recent decades the transition to adulthood and the process of family formation have changed considerably in most Western societies. This is reflected in changing patterns of timing and sequencing of important demographic transitions such as leaving the parental home, forming a coresidential union, getting married, and becoming a parent. A large body of research describes demographic trends by focusing on these classical transition markers. Recent evidence consistently indicates a postponement of marriage and parenthood, increased divorce rates, and higher levels of cohabitation and non-marital childbearing (Billari and Liefbroer 2010; Buchmann and Kriesi 2011; Shanahan 2000).

Sociological and demographic scholars coined several terms and concepts to characterize the newly emerging life course patterns (Brückner and Mayer 2005). Demographers, for instance, often refer to the concept of the *Second Demographic Transition* (Van de Kaa 1987; Lesthaeghe and Van de Kaa 1986). According to this perspective ideational, socioeconomic and technological changes equally brought about the new life course patterns. By acknowledging ideational changes the second demographic transition stresses the importance of postmaterialist and individualistic value orientations (Inglehart and Baker 2000; Inglehart 1970; Lesthaeghe and Neidert 2006). The focus on individual autonomy and agency and the resulting complexity of life courses is also reflected in sociological concepts such as de-standardization, pluralization, and individualization. Despite being widely used, these concepts often lack a clear definition and are used interchangeably. Brückner and Mayer (2005) address this conceptual ambiguity by providing concise definitions. According to them, de-standardization “implies that life courses become less similar and that the domination of specific types of life courses becomes weaker” (Elzinga and Liefbroer 2007: 227). The related concept of pluralization

refers “to an increase in the synchronous number of states or forms of life activity in a given population” (Brückner and Mayer 2005: 34). With regard to family trajectories in modern societies pluralization often has been used to describe the increased variety of family living arrangements reflected in the diffusion of cohabitation, same-sex marriages, and different kinds of blended families. Scholars and pundits alike often refer to the “interpretative concept” (Brückner and Mayer 2005: 34) of individualization to summarize the changing life course patterns resulting from processes like de-standardization and pluralization. The *Second Demographic Transition* literature as well as the proponents of the individualization perspective (Beck 1986; Giddens 1991) highlight, that individuals in modern societies exercise a great degree of agency in the construction of their (family) life courses. They are able and to some extent also forced to choose the timing and sequencing of transitions themselves (Beck 1986; Buchmann 1989). Accordingly, it has been argued that life courses are less determined by the family of origin than they used to be a few decades ago (Shanahan 2000). In view of the profound changes in family biographies it seems indeed plausible to expect “that the behavioural examples of the older generation do not have a strong influence on the behaviour of the younger generation” (Liefbroer and Elzinga 2012: 9).

In a similar vein, the family decline perspective (Popenoe 1993) also maintains a weakening parental influence on offspring’s life courses, yet for different reasons. David Popenoe, the most prominent proponent of this perspective argues that family structures are not just changing but eroding. He paints a bleak picture of contemporary families and claims

“that families have lost functions, power, and authority, that familism as a cultural value has diminished, and that people have become less willing to invest time, money, and energy in family life, turning instead to investments in themselves. Recent family decline is more serious than any decline in the past because what is breaking up is the nuclear family, the fundamental unit stripped of relatives and left with two essential functions that cannot be performed better elsewhere: childrearing and the provision to its members of affection and companionship” (Popenoe 1993: 527)

Increasing divorce rates, single-motherhood, female labor force participation and reduced fertility are considered epitomes of the decline. Growing up in this “era of family upheaval” has been argued to produce a “generation at risk” (Amato and Booth 1997) for whom parents might be less influential in shaping value orientations and life courses.

The assertion of vanishing family effects due to an increasing variety of family structures and ideational changes has spurred a large amount of research. Contrary to the family decline perspective, this research is not limited to the adverse effects of family change but also acknowledges that families still remain “a primary source of the individuals’ integration into society” (Bengtson, Biblarz, and Roberts 2002: 3). For instance, Bengtson and colleagues (2002) showed that the parental influence on achievement orientations remained remarkably stable across generations. Similarly, a large number of studies provides empirical support for the intergenerational transmission of values and behaviors despite the societal changes of previous decades (e.g., the contributions in Schönplüg 2009). The transmission processes, however, are not necessarily positive and some of them are also in accordance with the decline perspective. In the area of family research the abundant literature on the intergenerational transmission of divorce is probably the most prominent illustration of these adverse effects of intergenerational continuity (Amato 1996; Diekmann and Engelhardt 1999). In this sense, Elder’s classical notion of linked lives still holds today: “Each generation is bound to the fateful decisions and events in the other’s life course” (Elder 1985: 40).

Referring to this principle of the life course paradigm this dissertation contributes to the literature on persisting family of origin effects in times of “family upheaval”. The main focus will be on family effects on family formation. As mentioned above, family trajectories changed considerably across recent generations, yet family effects remained rather stable. Some scholars even argue that intergenerational continuities in marital (van Poppel, Monden, and Mandemakers 2008) or fertility behavior (Murphy 1999) increased over the generations.

The first study of this dissertation (*Beyond Transmission: Intergenerational Patterns of Family Formation among Middle Class*

American Families”) addresses the question of intergenerational continuities in family formation by innovatively applying multichannel sequence analysis to study family trajectories of parent-child dyads. This allows identifying intergenerational regularities in family formation beyond similarity and enhances the understanding of how family internal dynamics and macro-structural change govern intergenerational continuity and contrast in family formation.

In a similar vein, the second study (*“Sibling Similarity in Family Formation”*) proposes a novel research design that combines sibling comparisons and sequence analysis to analyze longitudinal family formation trajectories of siblings and unrelated persons. This approach studies family of origin effects on family formation from a different perspective and allows to examine, whether there is sibling similarity in family formation trajectories and if siblings’ shared background characteristics, such as parental education and childhood family structure, can account for similarity in family formation.

The third study (*“How Context Matters: Childhood Family Structure and Early Family Formation in East and West Germany”*) picks up on the relevance of childhood family structure by scrutinizing its impact on early (off-time) demographic transitions in different societal contexts. Focusing on the effect of ever having lived in an alternative family structure (i.e. not with both biological parents), this study examines the adverse effects of changing family structures. Moreover, it highlights how context-specific variations in the association of childhood living arrangements and family formation can enhance our understanding of the link between family structure, demographic behavior, and the reproduction of social inequality.

Although the three studies apply different methodological strategies and focus on different outcomes in various social contexts, they jointly approach the question of how the family of origin affects family formation in times of demographic change. Moreover, all three studies point to the role of family structure in the reproduction of social inequality across generations. Consequently they build on similar theoretical concepts and assumptions. Most importantly, they are informed by the main principles of the life course approach. In addition, they refer to several theoretical arguments that have been proposed to

study the link of childhood family structure and subsequent family formation. In the following sections, I introduce these theoretical concepts and discuss how the studies relate to them. Then I briefly summarize the three studies and their contributions to the research on family of origin effects on family formation.

Theoretical background

The life course perspective and family of origin effects on family formation

The three studies of this dissertation examine different aspects of family of origin effects on family formation. Throughout the dissertation, the term family formation will be used to refer to a set of events, which can be considered as traditional demographic markers of the transition to adulthood (Buchmann and Kriesi 2011): leaving the parental home, forming a coresidential union, getting married, and becoming a parent. Moreover, the first two studies also recognize processes of union dissolution and childbearing at higher-order parities. Due to data restrictions, however, not all transitions could be considered in each study. In the first two papers family formation is conceptualized holistically as a trajectory and analyzed by applying sequence analysis. The third study focusses on focal transitions within a traditional regression framework. Together trajectories and transitions represent “both the long and short view on analytical scope” (Elder 1985: 31) of the life course perspective.

Based on this perspective, I study family formation in different societal contexts based on the assumption that childhood experiences in the family of origin shape the subsequent life courses. More specifically, I focus on how the family related behavior of parents is associated with the family formation of their offspring.

In sum, these research goals clearly call for a family life course perspective (Elder, Johnson, and Crosnoe 2003; Elder 1994; Macmillan and Copher 2005) “which has been developed to explain the interplay between the individual’s life course, family members’ life courses, historical contexts and family contexts” (Bucx 2009: 31). The next sections give an overview of the guiding principles of the life course

perspective and briefly highlight how these principles are addressed by the three studies of this dissertation.

The principle of linked lives

According to Elder (1994: 6) “no principle of life course study is more central than the notion of interdependent lives”. This principle takes into account that individuals are embedded in social relationships which affect their life courses. Lifelong intergenerational bonds with parents and other kinship relations are particularly relevant in this regard. Parents, for instance, constitute *interpersonal contexts* that exert influence via socialization processes or the provision of emotional and economic resources. This has been illustrated in several classical studies that examined how times of economic hardship shape the life courses of children by affecting the lives of their parents (e.g., Elder 1999). The adverse effects of the Iowa farm crisis on child development, for instance, were largely moderated by the depressive feelings among parents that were caused by this economic crisis (Conger and Elder 1994).

In a similar vein, and with direct reference to family formation, a parental marital crisis also can affect the life courses of children through its consequences for parental behavior. Two recent review articles (Conger, Conger, and Martin 2010; McLanahan and Percheski 2008) address this argument and maintain that family economic hardship, parental marital problems, union dissolution, and re-partnering expose parents to stress and reduce their emotional and economic capabilities. This in turn can cause adverse parenting behavior, “such as harsh, uninvolved, and inconsistent childrearing practices” (Conger et al. 2010: 693), which critically affects children’s cognitive and emotional development as well as their subsequent life courses. Research on leaving the parental home (Bernhardt, Gähler, and Goldscheider 2005; Goldscheider and Goldscheider 1998), for example, has shown that an unpleasant home environment operates as a *push factor* that accelerates children’s transition to adulthood. The third study of this dissertation explicitly refers to this line of reasoning by examining how certain childhood living arrangements increase the risk of early family

formation. Similarly, the second study explores the influence of childhood family structure on the similarity of siblings' life courses. In addition, the second paper goes beyond the intergenerational dimension of linked lives by discussing the role of mutual sibling influences in generating similarities in family trajectories (Kuziemko 2006; Lyngstad and Prskawetz 2010). Taking a related perspective, the first study analyzes family trajectories of parents and children to examine under which conditions linked lives become similar lives. Whereas previous research on parent effects on family formation often equates parental influence with intergenerational similarity, the novel analytical approach taken in this study acknowledges intergenerational regularities in family formation beyond transmission. In this way the study illustrates that intergenerational research referring to the principle of linked lives is not limited to study the similarities in the life courses of parents and children.

The principle of life-long development

Next to the principle of linked lives Putney and Bengtson (2003: 150) consider the principle of life-long development to be “integral to research on multigenerational family processes”. Notwithstanding, Elder did not explicitly mention this rather abstract principle in his older writings. In a more recent contribution (Elder et al. 2003), however, he started his survey of the constituent elements of the life course paradigm with this principle. It conveys the basic idea that “human development and aging are lifelong processes” (Elder et al. 2003: 11). Research on developmental processes thus requires a long-term perspective. Elaborating on this basic idea, family researchers – including Elder himself – extended this principle by adding a second component to it. They maintain “that the relationships, events, and behaviors of earlier life stages have consequences for later life relationships, statuses, and wellbeing” (Bengtson, Elder, and Putney 2003: 494).

This proposition is essential for all studies of this dissertation. This is particularly true for studies 2 and 3 which explicitly model the effects of childhood family structure on subsequent family formation. Moreover, this principle highlights the relevance of studying early family formation

(as done in study 3) because early life course transitions might involve several adverse long-term consequences. Therefore, a family of origin effect on early home leaving or parenthood is not only interesting in its own right but also due to its implications for the subsequent life course. Early – off-time – family formation often entails negative consequences for the stability of partnerships or status attainment and thus contributes to the reproduction of social inequality (McLanahan and Percheski 2008). The path dependent accumulation of advantages and disadvantages over the life course has also been highlighted in closely related theories of cumulative inequality (Dannefer 2003; Ferraro, Shippee, and Shafer 2009).

The principle of timing

The previous section already raised the issue of timing which is covered in greater detail as one of the constituent elements of the life course paradigm. According to Elder and colleagues (2003: 12) the principle of timing holds that “[t]he developmental antecedents and consequences of life transitions, events, and behavioral patterns vary according to their timing in a person’s life”.

With regard to family of origin effects on family formation, timing matters in multiple ways. The literature refers to several theoretical mechanisms that assume age-specific effects of family living arrangements. The social control hypothesis (McLanahan and Bumpass 1988; Wu and Martinson 1993) is a good illustration of this point. In terms of children’s risk behavior, this hypothesis maintains that a lack of parental social control entails more detrimental effects during adolescence than during childhood (Albrecht and Teachman 2003; Teachman 2003). Consequently, study 3 considers changes in family structure at different ages to evaluate competing age-specific expectations about family of origin effects.

In addition, the study accounts for timing in a different way as it examines family of origin effects on *early* demographic transitions. As mentioned in the section on the principle of life-long development, life courses unfold differently depending on the timing of previous events. The appropriate timing of transitions depends on the respective

structural and normative contexts. Normative timetables that convey age expectations point to the concept of social age and the constructivist dimension of the life course approach (Hareven 1994; Neugarten, Moore, and Lowe 1965; Settersten and Hagestad 1996). Off-time transitions increase the risk of experiencing social or structural sanctions. Very early transitions to adult statuses, for instance, entail several detrimental consequences, such as poorer mental health and a higher likelihood of experiencing economic hardship (Elder et al. 2003; McLanahan and Percheski 2008). As all life course principles are interrelated timing matters also with regard to the principle of linked lives. Recent research, for example, hints at multigenerational consequences of the timing of demographic transitions by showing a robust association between a grandparent's age at parenthood and the cognitive achievements of their grandchildren even after controlling for parents' age at the birth of the grandchildren (Fomby, Krueger, and Wagner 2014).

Timing, of course, also plays an important role in the first two studies of this dissertation, that both use sequence analysis to identify similarities and differences in family trajectories of parents and children and among siblings. Exploring holistic trajectories, these studies simultaneously take into account the timing of transitions as well as the duration in different family statuses. In addition, the two studies implicitly incorporate the idea of social time tables by make use of (time-varying) transition frequencies to determine sequence distances (Lesnard 2010).

The principle of time and place

The life course approach stresses that individual development is shaped by multiple contexts. At least two principles reflect the contextual dimension of life courses. The first is the principle of linked lives which highlights the importance of meso-level contexts as reflected by family or peer relations. The second principle focuses on the macro-environment and “pertains to historical time and place, emphasizing the importance of social and historical context in shaping individual lives” (Bengtson et al. 2003: 494). The macro-level context affects individual life courses both directly and indirectly through its effects on the lives of significant

others, such as parents. This has been convincingly illustrated in the seminal life course studies on the consequences of the Great Depression (Elder 1999) and the Iowa farm crisis (Conger and Elder 1994). Trying to disentangle different analytical perspectives on the principle of time and place, Silverstein and Giarrusso (2011) distinguish three approaches which are all addressed either directly or indirectly in this dissertation: cultural Zeitgeist, great events, and institutional change.

The first conceptualization of time and place focusses on the “cultural Zeitgeist”, i.e. “the social climate to which birth cohorts are exposed at critical junctions in their lives” (Silverstein and Giarrusso 2011: 36). This idea is particularly relevant for the first and the third study of this dissertation. The analyses of the first paper are based on the life courses of two generations. The parent generation was born in the 1920s and 1930s, and their children the ‘baby boomers’ were born in the late 1940s and 1950s. The parent generation experienced the transition to adulthood during the “golden age of marriage” (Festy 1980). Virtually all members of this cohort married. Moreover, they also married at young ages and often had more than three children. The corresponding traditional family model viewed women as family caretakers and men as main breadwinners. The children of this generation, however, were the forerunners of the ideational change to which demographers refer in the theory of the second demographic transition. They challenged the role models of their parents and engaged in alternative lifestyles (Bengtson and Troll 1978; Cunningham 2008; Thornton and Young-DeMarco 2001). Accordingly, the first study shows that the consequences of the changing Zeitgeist were particularly pronounced for the comparison of family trajectories in mother-daughter dyads. Together with the expansion of higher education and increasing female labor force participation the ideational changes rendered mothers’ traditional trajectories unsuitable as a template for their daughters.

Whereas the first study approaches the principle of time and place and the idea of cultural Zeitgeist by focusing on the role of time and social change through the succession of cohorts (Alwin and McCammon 2003; Ryder 1965), the third study links it to the dimension of place. Study 3 highlights persisting differences in family formation between East and West Germany. Although West German institutions were rapidly

implemented in East Germany after the unification, life course patterns in the two parts of the country are very distinct (Diewald, Goedicke, and Mayer 2006). For instance, the transition to parenthood occurs at younger ages and childlessness is less common in East Germany (Goldstein and Kreyenfeld 2011). This suggests that the cultural differences regarding normative time tables, which already existed before the post-war separation (Klüsener and Goldstein 2014), still might be decisive in explaining differences in family formation.

Moreover, the study endorses the relevance of *great events* and *institutional change* for individual life courses. One of the immediate demographic consequences of the reunification – which undoubtedly marks the most important *great event* in recent German history – was the steep decline in East German fertility rates (Kreyenfeld 2003). Detailed analysis of fertility trends, however, showed that this was only a transitory phenomenon and East German fertility rates have been rising again after a few years and even surpassed the fertility rates of West Germany by 2008 (Goldstein and Kreyenfeld 2011). In contrast to the short-term drop in fertility, the institutional changes after the unification are of a more lasting character. Study 3 is exploring how these institutional changes might have changed the family of origin effects on early formation.

On a more general level, macro-level differences are implicitly present throughout this dissertation. Each paper studies family of origin effects in a different social context. As a reference to the European tradition of life course research (Mayer 2009), I briefly outline the institutional and cultural differences between these contexts making use of the welfare regime typology introduced by Esping-Andersen (1990). According to this typology the United States (study 1) and Finland (study 2) represent ideal-typical antipodes. However, both the liberal welfare regime of the USA and the social democratic welfare regime of Finland promote young people's autonomy and encourage early home leaving and union formation, yet by different means (Buchmann and Kriesi 2011). In liberal welfare states the early completion of education and a flexible labor market which allows for a fast – yet also somewhat uncertain – entry are accelerating the transition to adulthood. By contrast, the social democratic welfare regime enables early transitions by reducing the

amount of uncertainty through the generous provision of welfare benefits (Billari and Liefbroer 2010; Buchmann and Kriesi 2011). In sum, these two cases provide a noteworthy illustration of how different institutional environments can produce rather similar outcomes. The similarities in early family formation, however, are not matched with similar family living arrangements during childhood. In this respect a cross-national review on childhood experiences of family disruptions by Andersson (2002) illustrates the exceptional status of the United States. Using data from the Fertility and Family Survey and the US National Survey of Family Growth he shows that 40 percent of American children born in a union experience the separation of their parents by age 15. In Finland, the same figure is only half as high. These differences suggest that even if childhood family structure is equally correlated with subsequent outcomes in the United States and Finland (see Björklund, Ginther, and Sundström 2006 for such a finding in a comparison of Sweden and the USA) the aggregated family of origin effect on the macro-level should be stronger in the United States. The argument for stronger family background effects in the United States is further supported by the social stratification literature. Research in this field has consistently shown that the reproduction of social inequality is higher in the United States than in Scandinavian countries (Björklund et al. 2002).

Building on insights of comparative research, study 3 argues that the impact of the family of origin should be particularly weak in the GDR in which life courses were heavily shaped by the institutions of the socialist regime. By contrast, families are expected to play a more prominent role in the conservative welfare regime of West Germany, which promotes the principle of subsidiarity and places the family at the center of many of its policies (Esping-Andersen 1990; Neyer 2013). Encouraging very early formation the socialist GDR brought about family trajectories similar to those of the social democratic and liberal welfare regimes. Moreover, the experience of family disruption during childhood in the GDR was virtually as common as in the USA (Andersson 2002). Despite these surprising commonalities, the results of study 1 and 3 demonstrate an important difference between these institutional contexts. Whereas family of origin effects in the United States are associated with social status, the results of study 3 do not reveal such a

correlation in the socialist GDR. By contrast, the results for West Germany correspond closely with the findings from the United States.

Concluding remarks on the life course perspective

The previous sections outlined how the studies of this dissertation are embedded in a life course framework. I introduced four constituent principles of the life course paradigm as they were suggested by Elder and coauthors (2003) and discussed how they are addressed directly or indirectly throughout this dissertation. Moreover I highlighted how analytical tools and concepts, such as transitions, trajectories, and sequence analysis guided the analytical design of the three studies.

Despite its many benefits, the life course paradigm does not provide an explicit theoretical framework to develop hypotheses on the mechanisms linking experiences in the family of origin with subsequent family formation. Instead, “it establishes a common field of inquiry by defining a framework that guides research in terms of problem identification and formulation, variable selection and rationales, and strategies of design and analysis” (Bengtson et al. 2003:493). This limitation calls for theoretical perspectives tailored more specifically to the substantive questions of this dissertation.

Conceptual perspectives linking the family of origin with subsequent family formation

Although sociology has a longstanding tradition of studying family effects on child outcomes the literature does not provide a coherent theoretical framework for explaining the underlying mechanisms. Therefore, I draw on different theoretical perspectives which have been proposed to link childhood family structure with family formation during adulthood. Previous research (Amato 1993; Barber 2001; McLanahan and Bumpass 1988; Wu 1996) suggests four main mechanisms: economic hardship or status transmission, value socialization, social control, and stress caused by instability. In addition, I refer to the literature on the psychological and sociological literature on intergenerational transmission for the discussion of mechanisms that

foster or hinder the intergenerational transmission of values and behavior (Barber 2000; Schönplflug 2001). Although both literatures are related they are somewhat disconnected because they are tailored for distinct research questions. For the purpose of this introductory chapter, I will discuss the two strands of research jointly and denote their intersections. Unlike the principles of the life course approach the mechanism are addressed in greater detail in each study of this dissertation. Therefore, I will only briefly introduce them in the following section.

Economic hardship and status transmission

In the literature on family of origin effects economic hardship and status transmission are often discussed separately. On the one hand, research on the transmission of family related behavior maintains that intergenerational similarities are at least partly caused as a by-product of status transmission (Barber 2000; Liefbroer and Elzinga 2012). On the other hand, the economic hardship perspective (Ginther and Pollak 2004; McLanahan and Bumpass 1988) is used to explain how changes in family living arrangements, particularly caused by marital dissolution, affect parental resources and outcomes of children. It is based on the fact that a family's economic situation varies by family structure and supposes that economic deprivation has adverse effects for children's development.

Although the association between family structure and economic hardship is virtually uncontested, its causal assessment is at the center of a controversial debate (Conger et al. 2010; Ginther and Pollak 2004; McLanahan and Percheski 2008). As the information required to resolve the issue of causality are not provided by the data used in this dissertation the findings have to be interpreted with caution in terms of causal inference. However, each of the three studies finds an association between social origin and subsequent family formation. Even in the fairly egalitarian context of Finland (study 2), family formation patterns that go along with economic disadvantage are concentrated within families. By contrast, the case of the former socialist East Germany constitutes an exception. The findings of study 3 indicate an association

between a persons' social status and the timing of the transition to adulthood. Yet, the results show no association between social status and family structure during childhood.

Value socialization and transmission belts

Similar to economic hardship and status transmission the process of value socialization has been assessed from different analytical perspectives. In transmission research it is referred to as an *explanandum* (e.g., Knafo and Schwartz 2009; Schönplflug and Bilz 2009). In the literature relating childhood family structure to subsequent outcomes it is considered as an explanation (Barber 2000; e.g., Teachman 2003). Both perspectives are represented in this dissertation.

The first study, for instance, draws on the mechanisms which have been introduced in the psychological literature on the intergenerational transmission of values. According to a classification of Schönplflug (2001), two sets of mechanisms – so-called *transmission belts* – can be distinguished. Relational transmission belts emphasize the role of parenting styles and the relationship quality of parents and children whereas socio-developmental transmission belts consider aspects such as the child's developmental phase and its position in the sibling order (Schönplflug and Bilz 2009; Schönplflug 2001). The findings of study 1 are consistent with both mechanisms and indicate that birth order and parent-child relationship quality during adolescence are relevant for the intergenerational transmission of family formation. However, the data did not allow for a direct test of value transmission. The same is true for the other two studies, which used register and retrospective survey-data without (longitudinal) information on value orientations. The data used in study 3, however, allowed for an indirect assessment of the socialization perspective.

Social Control

The socialization perspective conveys that parents shape their children's values in a way that makes them "evaluate behaviors similarly to their parents; thus, by behaving in accordance with their own attitudes and

preferences, children may be conforming to their parents' wishes as well" (Barber 2000: 322). By contrast, the social control perspective describes a more direct way of parental influence. It refers to parents' attempts to exert control on behavior irrespective of the children's own preferences.

The effect of social control has been argued to vary by family structure. Particularly, single parent families are supposed to be less capable of controlling and monitoring their children (McLanahan and Bumpass 1988; Thomson, McLanahan, and Curtin 1992). Lacking supervision, children from disrupted family structures are at an increased risk of engaging in dating and sexual activities at younger ages than children from traditional two-parent families (Albrecht and Teachman 2003). As a result, they also might experience family formation earlier.

Although the social control perspective has a longstanding tradition in the research on family of origin effects, most empirical studies – including study 2 – report no or only limited support for this mechanism (Aquilino 1996; Teachman 2003; Wu and Martinson 1993). Moreover, the findings presented by Barber (2000) sound a note of caution regarding the “*lack of control*”-hypothesis. Barber illustrates, that children whose mothers favor early marriage and large families experience the transition to parenthood at younger ages than other children. Socialization and social control are put forward as explanation for this finding. With regard to social control Barber notes:

“Mothers' preferences have a strong impact on their children's first birth timing independent of the children's own preferences. In other words, regardless of what the children themselves want, they tend to behave as their mothers want them to.” (Barber 2000: 342)

Thus, if parental preferences for early family formation are more common in single-parent families the “*lack of control*”-argument outlined above might be misleading. Contrary to the conventional explanation, in this case a concentration of early family formation among children who have been raised by single mothers would indicate the presence of social control instead of its absence. An assessment of this explanation requires longitudinal information on the preferences of parents and children. Otherwise, neither an accurate identification of social control

nor an analytical separation of socialization and social control are feasible. Unfortunately, most datasets – including the data used in this dissertation – preclude such a detailed analysis. Therefore, explanations regarding social control should be considered with caution.

Family instability and social stress

Contrary to the previous mechanisms the instability and stress perspective is less data demanding. It emphasizes the adverse consequences of multiple changes in family living arrangements for parents and children. This perspective is based on the assumption that family instability often is accompanied by stress and that each additional transition results in an accumulation of adverse consequences (Amato 1993; Wu and Martinson 1993). Empirical tests of this mechanism usually involve an easy-to-measure indicator that counts the number of changes in family structure during childhood. Several studies support the instability perspective and document adverse consequences for several child outcomes, e.g. educational attainment (Aquilino 1996; Fomby and Bosick 2013) or the risk of premarital birth (Wu and Martinson 1993). Moreover, research on the intergenerational transmission of divorce has shown that children who experience parental re-marriage or multiple divorces have an elevated divorce risk (Wolfinger 2000).

In this dissertation the instability perspective is considered directly in study 3, which examines the association between family instability during childhood and early family formation. Moreover, the idea of instability is important for the sequence analysis conducted in the second study. According to the transmission literature, instability in parents' family formation produces instability in the family trajectories of their children. In sequence analysis, however this does not necessarily mean that the corresponding sequences are similar, because, as Tolstoy put it, "All happy families are alike; each unhappy family is unhappy in its own way". That means that there is only modest variation in traditional family trajectories, which, as a result, are rather similar to each other. By contrast, non-traditional family trajectories allow for much more diversity, leading to higher sequence distances.

Consequently, even if sequence dissimilarities between family members are high their family biographies might be similar in terms of being instable.

Concluding remarks on the perspectives and their empirical assessment

The previous section briefly reviewed the literature on the mechanisms used to explain family of origin effects on offspring's life courses. Although the mechanisms are not embedded in an integrated theoretical framework, they can be considered paradigmatic in so far as they are widely used and basically uncontested. However, with the partial exception of a recent paper by Liefbroer and Elzinga (2012), these mechanisms have not been applied together with sequence analysis. The discussion of the instability perspective denoted that the explanations used for regression based models are not always easily transferable to this alternative methodological approach. Notwithstanding, the results of the first two studies illustrate the applicability of the mechanisms in a sequence analysis framework. Moreover, study 3 highlights that the mechanisms operate context-specific. By qualifying how institutions can moderate the impact of the mechanisms, study 3 integrates the micro-level mechanisms with the life course principle of time and place. However, like most previous research the analyses are subject to data limitations. Ideally, an empirical assessment of the mechanisms would require longitudinal data from parents and their children covering a period of at least twenty years. In absence of this information, empirical tests of the mechanisms have to rely on indirect identification strategies which often make use of proxy indicators. By combining such indicators with context-specific hypotheses the results of study 3 provide a sounder basis for an interpretation in terms of the suggested theoretical perspectives. Thus, as long as appropriate longitudinal data are missing, comparative research designs could provide some remedy to the prevailing data limitations.

Summary of the three studies

In the following section I provide an overview of the three studies of this dissertation. I briefly introduce the specific research questions and

analytical strategies, before I move on to the findings and main contributions of each study.

Study 1: “Beyond Transmission: Intergenerational Patterns of Family Formation among Middle Class American Families”

Research on the intergenerational transmission of family formation often is confined to the question whether children show the same family behavior as their parents. This focus on similarities, however, loses sight of other regularities in parental influence on children’s family formation. The first study addresses this limitation conceptually and methodologically.

Instead of focusing on isolated focal events, parents’ and children’s family formation are conceptualized holistically as the process of union formation and childbearing between age 15 and age 40. Based on this analytical perspective, the study introduces the concept of intergenerational regularities in family formation. They are defined as 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 addition to similarity, intergenerational patterns comprise systematic deviation and contrast between parents’ and children’s family formation.

The study proposes three ideal-typical intergenerational patterns of family formation for the study population of white middle class Americans: strong transmission, moderate transmission, and contrast. In order to test whether these patterns exist, an innovative dyadic multichannel sequence analysis approach is developed. The results provide empirical support for the three proposed patterns.

In a second step the study examines which mechanisms determine who sorts into which specific intergenerational pattern. Structural driving forces and the role of status transmission are examined in terms of intergenerational social mobility and the role of gender. The results indicate that upward mobility and changing gender relations in education and employment are important predictors for moderated transmission. The children adapt to changing structural conditions by

postponing their family formation relative to their parents. This is particularly the case for mother-daughter dyads as women's educational and labor force participation considerably increased during the study period. In addition to structural mechanisms the study examined the role of family internal dynamics in terms of birth order effects and the quality of parent-child relationships. These transmission belts are especially relevant for parent-child dyads that are characterized by little social mobility. Children who report close emotional bonds to their parents and first born siblings are more likely to closely resemble them (strong transmission), 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.

In sum, this study contributes to the understanding of family of origin effects on family formation by using a novel research design and drawing attention to intergenerational regularities in family formation beyond direct transmission.

Study 2: "Sibling Similarity in Family Formation"

Similar to the first study the second paper develops an innovative analytical design to examine family of origin effects on family formation. It combines sibling comparisons and sequence analysis to analyze longitudinal family formation trajectories of siblings and unrelated persons. Finnish register data from 1987 until 2007 were used to construct family trajectories up to age 30 and to address three research questions: First, are family formation trajectories of siblings more similar than among comparable unrelated persons? Second, can shared parental background characteristics, such as parental education and early childhood family structure account for sibling similarity in family formation? Third, in which way is siblings' family formation more similar, i.e. are siblings more likely than unrelated persons to experience specific family formation patterns?

Findings show that siblings' family formation is moderately but significantly more similar than for unrelated dyads, also after controlling for crucial parental background characteristics. Equalizing siblings' and unrelated dyads' parental background characteristics adds surprisingly

little to account for sibling similarity in family formation. Instead, gender and the respondents' own education are more decisive forces in the stratification of family formation. Yet family internal dynamics seem to reinforce this stratification, such that siblings have a higher probability to experience similar family formation patterns. Particularly patterns that go along with economic disadvantage, e.g. family trajectories with early parenthood out of wedlock, are concentrated within families. This is in line with a growing body of research highlighting the importance of family structure in the reproduction of social inequality. Considering that Finland represents a rather egalitarian welfare state it can be expected that these effects are stronger in other social contexts.

Study 3: "How Context Matters: Childhood Family Structure and Early Family Formation in East and West Germany"

Contrary to the two previous studies, this research is based on a traditional regression based approach. It investigates the association between childhood living arrangements and early family formation in Germany. Drawing on persisting socio-environmental differences between East and West Germany the study examines whether the association of childhood family structure and the early transition to adulthood varies in different societal contexts.

In line with research from other countries, the analysis showed that children from non-traditional family structures experience important demographic transitions faster than children who have been raised by both biological parents. In addition to this rather ubiquitous association, the study revealed considerable context-specific differences that point to the long-term consequences of the post-war separation of East and West Germany. First, although increasing in relevance, family structure was less predictive for early family formation in East Germany. Second, the results indicated that the link between childhood family structure and the reproduction of social inequality, which was found in many studies from the United States, could only be replicated for West Germany. In East Germany, educational attainment did not mediate the effect of childhood living arrangements on early family formation, nor was it

associated with an increased probability of ever having lived in an alternative family structure. With regard to the theoretical framework outlined above the study shows that time and place affect the mechanisms that link the life courses of parents and children.

Summary

The three studies of this dissertation applied different methodological approaches to study family of origin effects on family formation. Despite these differences, they were all guided by the same theoretical principles and jointly demonstrated how families still matter in modern societies. The study on intergenerational regularities in family formation showed that structural changes might indeed render parental life courses inappropriate as templates for the next generation. However, the results also illustrated that still the majority of the children opts for family trajectories similar to those of their parents. In a similar vein, the second study revealed similarities in family trajectories of siblings in a country that is considered as one of the forerunners of the Second Demographic Transitions (Surkyn and Lesthaeghe 2004). Thus, even in highly individualistic societies life courses are still shaped by the experiences made in the family of origin.

Overall, the three studies point to the ubiquity of family of origin effects as they detect them by using different analytical designs in three different countries. At the same time, this dissertation draws attention to the importance of societal context. The third study showed notable differences in how childhood living arrangements affect the subsequent family formation in East and West Germany. Most importantly, the results indicated that the link between childhood family structure, subsequent family formation, and the reproduction of social inequality varies by context. This finding gives rise to the question under which conditions certain family structures go along with socioeconomic disadvantages. The data used in the dissertation did not allow to elaborate on this question in greater detail. However, the first two studies provide a new methodological toolkit which is easily transferable to address this and related research questions.

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Study 01

Beyond Transmission:

Intergenerational Patterns of Family Formation among Middle Class American Families

This chapter is coauthored with Anette E. Fasang.

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Introduction

The transition to adulthood and the process of family formation have changed considerably in recent decades. These changes are reflected in new emerging patterns of timing and sequencing of important 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 non-marital 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 socio-historical influences are expressed through this network of shared relationships" (Elder et al. 2003: 13). Kinship bonds and among them most prominently 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 e.g. 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 (Murphy and Knudsen 2002). Consequently, scholars interested in explaining family behavior also increasingly incorporate intergenerational models.

Most research on parent 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, when children adopt the same behavior as their parents, this is taken as evidence for intergenerational transmission of

family behavior. For instance, if children give birth to their first child at the same age, or if they have the same number of children as their parents, this indicates intergenerational transmission of fertility.

This focus on similarity loses sight of other regularities in parental influence on their 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 to study the full range of parent 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 20th century. While the main argument and the proposed research design are easily transferrable to the broader diversity of family forms, our specific theoretical elaboration and empirical findings address 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 age 15 and age 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 in analytical scope” (Elder 1985) 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). It 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 – 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 among middle class American families in the second half of the 20th 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 on 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 parent's 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 this variation has 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, non-marital childbearing, single motherhood, father absence, multipartnered fertility and family instability are strongly concentrated among lower educated and socio-economically disadvantaged families (Carlson and Furstenberg 2006; Carlson, et al. 2004; Ventura and Bachrach 2000).

As a consequence, the substantive content of intergenerational patterns of similarity and contrast in parents' and their children's family behavior will likely vary across the social structure as well. To develop a conceptual, theoretical and methodological approach for studying intergenerational patterns of similarity and contrast in family formation, in this paper we focus on American middle class families in the second half of the 20th century. In the parent generation of this population 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 there is more variety among the child generation (Teachman et al. 2000). As we will argue below, the general framework

is easily transferrable to cover the full diversity of family patterns in American society and other countries.

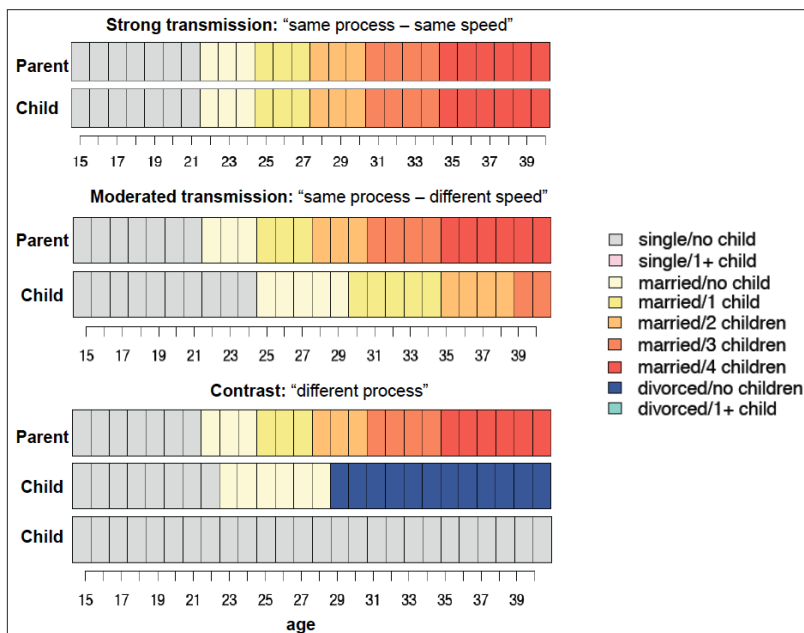


FIGURE 1: Three ideal-typical intergenerational patterns of family formation (view in color)

Figure 1 presents three ideal-typical intergenerational patterns of family formation for middle class American families. Each panel in figure 1 shows the stylized family formation processes of a parent and his or her child(ren) from age 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 first present each of the three ideal-typical patterns. Then we discuss mechanisms that could bring the respective patterns about. Finally, we consider which people would be 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* of family formation indicated by the impact of 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 among the child generation. We assume that different mechanisms operate in concert to generate the observed patterns and theorize 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 figure 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 20th 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 catalytic impact of transmission belts. Relational transmission belts are concerned with the role of parenting styles and the relationship quality of parents and children whereas socio-developmental 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; Schönplflug 2001; Sulloway 1997) argue 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 first-born and the parent-child relationship is amicable.

Moderated intergenerational transmission: "similar process – different speed". The second panel in figure 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 differs in two important respects: First, 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, i.e. a delay and decline of fertility, among the child generation compared to their parents (Bongaarts and Feeney 1998). Despite these differences, the family trajectories in the second panel of figure 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 might go along with extended periods of non-marital 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 wide-spread among the higher educated middle class

than among people of lower socioeconomic status (Bumpass and Lu 2000; Smock 2000).

For driving forces that will generate this pattern, one can first turn to the mechanisms listed above 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 strong transmission. As noted above, structural shifts, including the educational expansion, technological change and changing skill requirements on 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 the study population of middle class American families, social upward mobility is one indicator of the extent to which children partake in macro-structural changes. Social upward mobility will go along with delayed and decelerated family formation due to longer periods of post-secondary education and possibly re-training to meet higher and more volatile skill requirements on the labor market (Fussell and Furstenberg 2005). Even within the study population of middle-class Americans 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, Bengtson, and Lawton 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 where children not only experience family formation at a different pace than their parents but 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: first, in form of high family instability and parenthood out of wedlock, and second, in form of childlessness. For the middle class study population, intergenerational contrast in form parenthood out of wedlock and family instability 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 panel three of figure 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 the 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. Schönplflug 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 argue 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 to the close mother-daughter tie will be likely to sort into a *contrasting family formation pattern* of childlessness.

Theoretical Background: Intergenerational Patterns of Family Formation

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 40 is necessary to assume largely

completed family trajectories. After age 40 childbearing and marital events hardly occur for our two study cohorts. 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 40 with 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 socio-demographic variables and family internal dynamics – e.g. the parent-child relationship quality – are necessary to inform the mechanisms discussed above. These are lacking in most large household panel surveys. The Longitudinal Study of Generations (LSOG) meets all three of these requirements (for more details on the data, see Bengtson et al. (2002)).

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

¹ With less than five percent 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 is censored at some point between age 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 either the NSFH or the National Longitudinal Survey of Youth 1979 (NLSY79), or the Panel Study of Income Dynamics Child Development Supplement (PSID-CDS) since in all of these data sets the child generation is censored in the late 20s and early 30s.

eligible sample members and answered self-administered questionnaires on a wide range of topics: social attitudes, educational and occupational attainments, 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 age 15 and age 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 socio-historical conditions. The LSOG has been widely used to study intergenerational solidarity (Bengtson and Roberts 1991), the structure of intergenerational cohesion (Silverstein et al. 2010), as well as intergenerational similarities and differences in values, norms and opinions (e.g. Bengtson et al. 2009; Bengtson 1975; Gans and Silverstein, 2006). To our knowledge, this is the first study to fully exploit the unique intergenerational and longitudinal information on family formation processes in the LSOG.

We use data for two generations: the parent generation (G2), the ‘silent generation’ born in the 1920s and 1930s, and their children (G2) the ‘baby boomers’ who were born in the late 1940s and 1950s. For the unique linking of parents and children the year of birth of the children 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 deleting cases with inconsistent or incomplete information on marital history the sample size is reduced to 226 families with 342 parents and 305 children comprising 461 parent child-dyads. In 64 families (28.3%) we observe more than one child, i.e. 98 parents are included more than once in the sample. 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 only provide

information on one parent-child dyad.³ 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 the double occurrence of some individuals in multiple dyads described above. 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, i.e. 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 -.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), 'divorced, one or more children' (DC). Single and divorced with one or more children are combined into one sequence state each, because they occur very rarely in the study population.⁴ 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

³ Note that children from divorced families are overrepresented in the group for which we have information only for one parent: 76.8 percent of all parental divorces are observed in families with data on one parent only.

⁴ The mean duration spent in 'divorced, one or more children' is 0.6 years in the parent generation and 2.0 years in the child generation. The respective numbers for 'single, one or more children' are 0.2 years for parents and 0.3 years for children.

very rarely and thereby obscure rather than aid the identification of salient patterns.⁵

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, albeit 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 2000; Smock 2000). Below we discuss 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 – i.e. substitutions, deletions, or insertions – it takes to transform one sequence into another (for an introduction see MacIndoe and Abbott 2004). There has been a fair amount of debate about the added value of sequence analysis for social science research and life course related questions in particular (Billari 2001; Bonetti et al. 2013; Aisenbrey and Fasang 2010). 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). 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).

⁵ Allowing all parity and relationship status combinations that occur for at least one percent of person years in the sample yielded twelve family formation states that additionally separate divorce with higher order parities and marriage with five children. Using these twelve family formation states for all analyses yielded substantially the same results but less distinct family formation clusters indicated by worse cluster cut-off criteria. We therefore retain the specification of nine family formation states.

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 applications 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 to 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, family, and housing trajectories (see also Gauthier et al. 2010). We adopt this approach to dyadic sequences. Dyadic multichannel sequence analysis as proposed below 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 age 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 states than the parent in the entire observation window. With 9 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 works based on the logic of specifying dimension-specific substitution costs. We specify substitution costs as a combination of a theory-driven linear-interval cost scheme and a data-driven non-linear 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 non-linear 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 ‘single no child’ = 1 to ‘married four children’ = 9. The substitution cost matrix is given by the absolute difference between the hierarchically ordered family formation states (appendix table A1). For instance, substituting ‘single no child’ with ‘married four children’ costs 8, whereas substituting ‘married three children’ with ‘married four children’ costs only 1. This reflects that ‘married three children’ and ‘married four children’ are much more similar experiences compared to being ‘single without a child’.

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.

Appendix table A2 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. 0 is the lowest possible substitution cost when the probability to transition between two states is 100 percent. 2 is the highest possible substitution cost when the probability to transition between two states is zero. Within each generation, substitution of two states will be cheaper 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 A4), we weight the theory-driven linear-interval cost scheme, which is the same for both generations (table A1) with the generation-specific substitution costs derived from transition frequencies (table A3) 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. 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 - the generation-specific substitution costs for

M1C and M2C for the child generation (table A4). 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 A4). 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 most distant when both the pair of parents and the pair of children is very different from one another. Importantly, similarity *within* the dyad, i.e. 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 pair wise 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 cut-off criteria, including Point Biserial Correlation, Average Silhouette Width, and the Calinski-Harabasz index support a three clusters 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 analysis⁶ 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 cut-off criteria.

The three clusters closely correspond to the theoretically expected ideal-types (figure 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,

⁶ In addition the final cost specification, our results were robust to the following five other costs specifications: (1) Optimal Matching with constant substitution costs of 2 and indel costs of 1, (2) dynamic Hamming distance (DHD) (Lesnard, 2008), (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, (5) hierarchical costs weighted by transition rates were both were normalized to vary between 0 and one before multiplying them.

where again the parent-child dyad is the unit of 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 cut-off 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 up 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 (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 a representative of each of the three intergenerational family formation patterns.

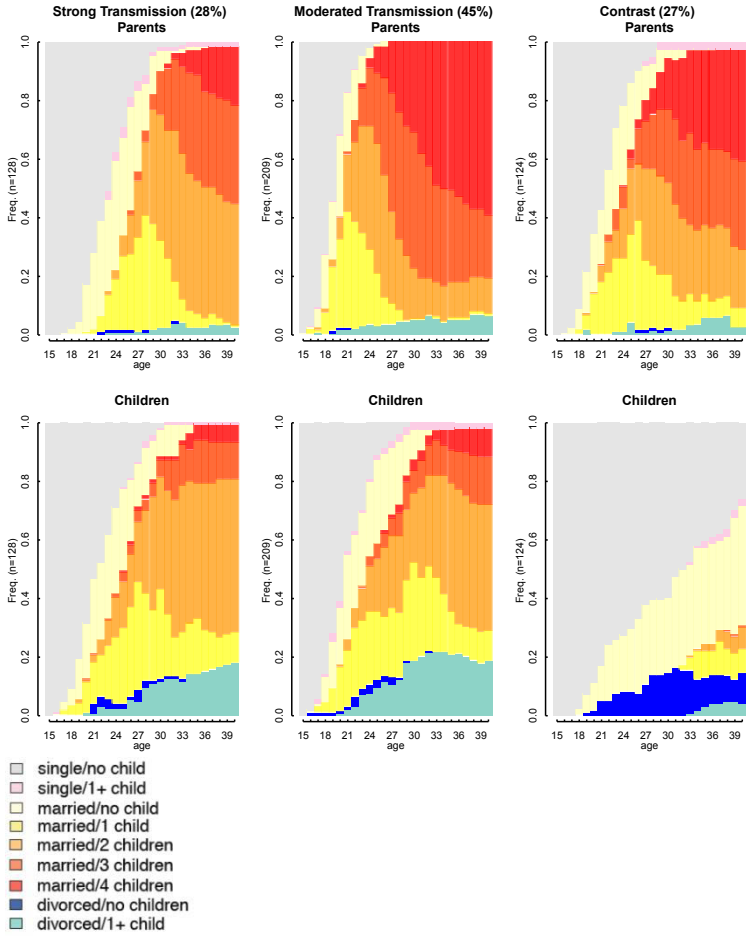


FIGURE 2: State distribution plots of intergenerational family formation clusters (view in color)

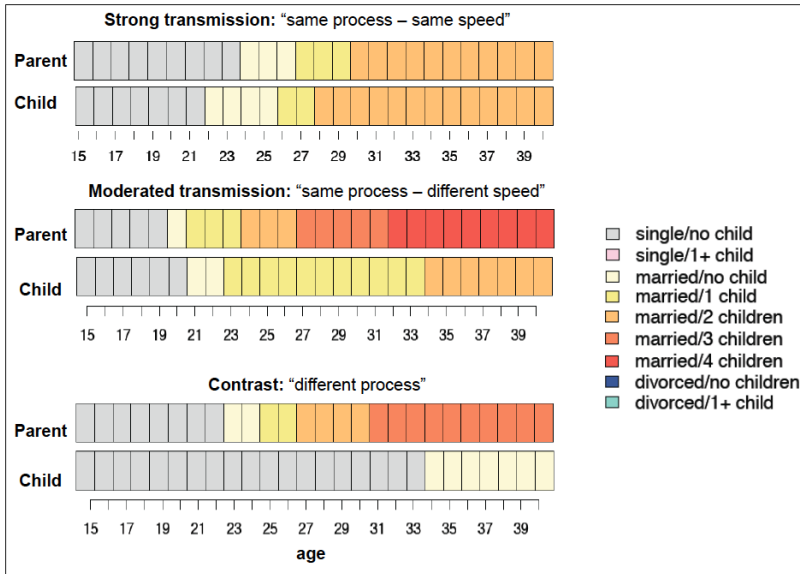


FIGURE 3: Medoid sequences as representatives of intergenerational family formation clusters (view in color)

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 zero and 100, where zero 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 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 (4.07)	22.70 (3.05)	26.27 (3.99)	25.32 (4.42)
Birth order (mean and sd)		1.67 (0.81)	1.67 (0.80)	1.66 (0.85)	1.67 (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 (2.83)	13.03 (2.41)	14.68 (2.90)	13.98 (2.80)
	Child	15.46 (2.26)	15.01 (2.25)	15.81 (2.60)	15.35 (2.37)
Difference in years of education (mean and sd)		0.63 (2.99)	1.98 (2.96)	1.13 (3.35)	1.38 (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	2 ^b	26
Parity at age 40 (mean and sd)	Parent	2.85 (0.83)	3.48 (0.75)	3.06 (0.92)	3.19 (0.87)
	Child	2.19 (0.75)	2.27 (0.87)	0.34 (0.69)	1.73 (1.16)
Affectual Solidarity Scale (mean and sd) ^c		4.34 (1.01)	4.25 (1.05)	3.93 (1.02)	4.19 (1.04)
Distance (mean and sd) ^d		16.80 (9.76)	25.93 (10.68)	49.99 (17.02)	29.87 (17.86)
Total (absolute and relative frequencies)		128 27.77%	209 45.34%	124 26.90%	461 100%

Notes: ^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 shows the results of a multinomial logistic regression on cluster membership, including dyadic covariates on gender combination, 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.⁷ 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) some 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.

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 at 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.

⁷ The five questionnaire items comprise: 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 understand you? 5. How well do you feel that you understand your mother/father?

TABLE 2: Multinomial logistic regression predicting intergenerational family formation clusters (N= 391 parent-child dyads)

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 at parent's gender specific mean)	0.288***	1.334	-0.734***	0.480	-0.447***	0.640
Dyad's average years of education (centered at gender specific mean)	-0.214*	0.807	0.050	1.051	-0.165*	0.848
Difference in years of education between parent and child (centered at 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 at gender specific mean)	0.0966**	1.101	-0.0713*	0.931	0.0253	1.026
Constant	0.858	2.358	-1.689**	0.185	-0.831	0.436
Pseudo-R ²			.29			

Notes: LSOG 1971-2000; robust standard errors were used to correct for clustering within families, results were robust using robust standard errors for child ID; OR = Odds Ratio; *** p<0.001, ** p<0.01, * p<0.05, + p<0.10

Strong transmission

The first group maps on closely to the ideal-type of *strong intergenerational transmission* (see figure 1) where children go through the same family formation states as their parents at the same pace. This pattern occurs for 28 percent 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 to 1927 in the total parent generation. The comparatively lower parity among this generation is in line with 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 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 to mother-daughter dyads their odds to be in the strong transmission rather than in the contrast pattern is twice as high (OR = 2.20), all else equal. With an Odds Ratio of 5.41 (=1/.184) 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 percent to be in the strong transmission group compared to 26 percent 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 percent of upwardly mobile mother-daughter dyads are in the strong transmission cluster.

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 percent (OR = 1.101). Similarly, the odds of sorting into the strong transmission compared to the moderated transmission group are increased by 7 percent (OR = 1/0.931) for a one unit increase on the affectual solidarity scale. Put differently, a child who reported high affectual solidarity to their parents has an 8 percentage point higher probability to be in this group than a child who reported low affectual solidarity (32 percent versus 24 percent,

calculated from table 2).⁸ 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 to the moderated transmission group are reduced by 66 percent (OR = .44) for a one-unit increase in birth order.

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 children less 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 percent of the LSOG sample. Note that intergenerational continuity remains relatively strong also in the moderated transmission group with a parent-child distance of 25.93 compared to 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, there are remarkable differences between the two *transmission clusters* both in terms of 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 to 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, i.e. additional years

⁸ 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.

of education to the parents education, increases the odds of being in the moderated transmission cluster compared to either the strong transmission (OR = 1.23) or the contrast group (OR = 1.12).

Further supporting the pivotal role of structural determinants, mother-daughter dyads are most likely to sort into *moderated transmission* (table 1 and table 2): their predicted probability to be in this group is 55 percent compared to a 22 percent probability for them to sort into *strong transmission*. Relative to their mothers, daughters part-took particularly strongly in 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, while 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; and 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 20th century among middle class Americans.

Concerning family internal dynamics, affectual solidarity is relatively high in the moderated transmission group but hardly impacts the probability to sort into this cluster: children who report low affectual solidarity have a predicted probability of 47 percent to be in the moderated transmission group compared to 46 percent for children who report high affectual solidarity – a difference of only one percentage point. Moreover, the regression results show that affectional solidarity only significantly impacts the odds of being in the moderated transmission group relative to the strong transmission (OR = .93) but not in comparison to the contrast group.

Intergenerational contrast

Intergenerational contrast shows a pattern where children experience very different family formation than their parents. They are not only distinct 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 only in their late 30s. Divorce from childless marriages is fairly common. This form of *intergenerational contrast* of childlessness among middle class American families accounts for a considerable 27 per cent of the sample, and thus 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 to parent-daughter dyads, arguably due to 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 understand 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 seven percentage point higher probability to sort into the *intergenerational contrast* cluster than children with high affectual solidarity (29 percent versus 22 percent). 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 ten percentage point higher probability to sort into *intergenerational*

contrast than first born children. It is important to note, however, that family internal dynamics only account for differences between the strong transmission and the contrast group in line with our expectations: Being a later born sibling (OR = 0.44) decreases the odds of being in the strong transmission group, whereas affectual solidarity increases (OR = 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 affectional 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 (OR = 2.48).

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 introduced 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 developed 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 impact of the gender constellation in the parent-child dyad that reflects changing gender relations in education and employment for the two generations. Considering family internal dynamics we include the relationship quality between parents and children and birth order among 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 first 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, structural change in employment and education indicated by educational upward mobility and gender constellation, is an important determinant of *moderated transmission*, where 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 20th 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 over the past decades has revived the debate about its limitations and merits to advance insight in specific fields of inquiry (Brzinsky-Fay and Kohler 2010; Blanchard, Bühlmann, and Gauthier forthcoming). In contrast to the relatively large and well-established sequence analysis literature on the de-standardization and pluralization of family formation (e.g. Bras et al 2009, Elzing 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 to 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 course processes beyond transmission. More generally, the dyadic multichannel approach holds potential for analyzing linked life course processes also among siblings, or within couples and peer networks.

The results have to be interpreted in the context of several limitations. Despite the unique advantages of the LSOG to study intergenerational patterns of family formation, we could not separate cohabiting and non-cohabiting relationships. We therefore might underestimate heterogeneity in the family formation sequences, particularly in the child generation in the *moderated transmission* and *contrast* patterns. Pre-marital cohabitation as a prelude to delayed marriage likely plays a role in the *moderated transmission group*. While it is unfortunate that we cannot examine it directly, pre-marital cohabitation would easily integrate into the conceptualization of this ideal-type and would therefore not invalidate the main conclusions of this study. Further, most likely some of the children in the *intergenerational contrast* pattern are in fact 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 parent and child generation remain meaningful. Moreover, the neglect of cohabitation does not alter the contrast theme of childlessness among this group.

The LSOG sample only allows insights about American middle class families in the second half of the 20th 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 is 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 sub-populations are a useful starting point to gain a more in-depth understanding of intergenerational family formation patterns.

Besides analyzing intergenerational patterns of family formation across 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) in the transition to adulthood and it could be fruitful to consider new markers of adulthood (Silva 2012) and 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).

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APPENDIX

TABLE A1: Linear interval substitution cost matrix based on substantive closeness of family formation states

	SNC	MNC	DNC	SC	DC	M1C	M2C	M3C	M4C
SNC	0								
MNC	1	0							
DNC	2	1	0						
SC	3	2	1	0					
DC	4	3	2	1	0				
M1C	5	4	3	2	1	0			
M2C	6	5	4	3	2	1	0		
M3C	7	6	5	4	3	2	1	0	
M4C	8	7	6	5	4	3	2	1	0

TABLE A2: Generation-specific transition rates between family formation states

PARENT GENERATION									
	SNC	MNC	DNC	SC	DC	M1C	M2C	M3C	M4C
SNC	.85	.13	.00	.00	.00	.01	.00	.00	.00
MNC	.00	.55	.01	.00	.00	.43	.00	.00	.00
DNC	.00	.50	.44	.00	.00	.06	.00	.00	.00
SC	.00	.00	.00	.95	.02	.02	.01	.00	.00
DC	.00	.00	.00	.00	.81	.05	.02	.08	.04
M1C	.00	.00	.00	.00	.01	.65	.34	.00	.00
M2C	.00	.00	.00	.00	.01	.00	.84	.15	.00
M3C	.00	.00	.00	.00	.01	.00	.00	.89	.10
M4C	.00	.00	.00	.00	.01	.00	.00	.00	.99
CHILD GENERATION									
	SNC	MNC	DNC	SC	DC	M1C	M2C	M3C	M4C
SNC	.90	.09	.00	.00	.00	.00	.00	.00	.00
MNC	.00	.78	.03	.00	.00	.19	.00	.00	.00
DNC	.00	.09	.87	.00	.03	.01	.00	.00	.00
SC	.00	.00	.00	.90	.00	.08	.02	.00	.00
DC	.00	.00	.00	.00	.91	.04	.04	.01	.00
M1C	.00	.00	.00	.00	.04	.77	.18	.00	.00
M2C	.00	.00	.00	.00	.03	.00	.93	.05	.00
M3C	.00	.00	.00	.00	.03	.00	.00	.91	.06
M4C	.00	.00	.00	.00	.02	.00	.00	.00	.98

TABLE A3: Data-driven generation-specific substitution costs based on transition rates

PARENT GENERATION									
	SNC	MNC	DNC	SC	DC	M1C	M2C	M3C	M4C
SNC	0								
MNC	1.87	0							
DNC	2	1.49	0						
SC	2	2	2	0					
DC	2	2	2	1.98	0				
M1C	1.99	1.57	1.94	1.98	1.93	0			
M2C	2	2	2	1.99	1.97	1.66	0		
M3C	2	2	2	2	1.91	2	1.85	0	
M4C	2	2	2	2	1.96	2	2	1.90	0

CHILD GENERATION									
	SNC	MNC	DNC	SC	DC	M1C	M2C	M3C	M4C
SNC	0								
MNC	1.91	0							
DNC	2	1.88	0						
SC	2	2	2	0					
DC	2	2	1.97	2	0				
M1C	2	1.81	1.99	1.92	1.92	0			
M2C	2	2	2	1.98	1.94	1.82	0		
M3C	2	2	2	2	1.96	2	1.95	0	
M4C	2	2	2	2	1.97	2	2	1.94	0

TABLE A4: Generation-specific substitution costs: theory driven cost specification
(table A1) weighted by generation-specific transition rates costs (table A3)

PARENT GENERATION									
	SNC	MNC	DNC	SC	DC	M1C	M2C	M3C	M4C
SNC	0								
MNC	1.87	0							
DNC	4.00	1.49	0						
SC	5.99	4.00	2.00	0					
DC	8.00	5.99	4.00	1.98	0				
M1C	9.93	6.26	5.81	3.96	1.93	0			
M2C	12.00	10.00	8.00	5.97	3.94	1.66	0		
M3C	14.00	12.00	10.00	8.00	5.73	4.00	1.85	0	
M4C	16.00	14.00	12.00	10.00	7.83	6.00	4.00	1.90	0

CHILD GENERATION									
	SNC	MNC	DNC	SC	DC	M1C	M2C	M3C	M4C
SNC	0								
MNC	1.91	0							
DNC	4.00	1.88	0						
SC	5.99	4.00	2.00	0					
DC	8.00	6.00	3.93	2.00	0				
M1C	9.98	7.24	5.97	3.83	1.92	0			
M2C	12.00	10.00	8.00	5.95	3.87	1.82	0		
M3C	14.00	12.00	10.00	8.00	5.88	4.00	1.95	0	
M4C	16.00	14.00	12.00	10.00	7.89	6.00	4.00	1.94	0

Study 02

Sibling Similarity in Family Formation

This chapter is coauthored with Anette E. Fasang, Aleksi Karhula, and Jani Erola.

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Introduction

Family of origin effects on family behavior are at the center of a controversial debate. On the one hand, growing evidence on profound social change in family formation with the proliferation of cohabitation, lone parenthood and diverse family forms questions, whether the family of origin still matters for peoples' family behavior (Elzinga and Liefbroer 2007; Fussell and Furstenberg 2005; Popenoe 1993; Shanahan 2000). On the other hand, several studies compellingly demonstrate continuing importance of the family of origin for peoples' family behavior (Liefbroer and Elzinga 2012; Murphy 2013). The broader relevance of the topic is highlighted by another line of research emphasizing the role of family structure in the reproduction of social inequality and the perpetuation of family disruption across generations (Carlson and England 2011; McLanahan and Percheski 2008).

Sibling studies have been the method of choice to study family of origin effects - everything siblings share - on socioeconomic outcomes such as education and occupational status (e.g. Conley 2008). To a lesser extent they have also been employed to examine family of origin effects on demographic outcomes such as family behavior. To date, sibling studies on family formation largely focus on isolated fertility transitions (Kuziemko 2006; Lyngstad and Prskawetz 2010). Yet, these fertility transitions are embedded in family formation trajectories that typically lead through cohabitation, marriage, then having one or more children, and possibly separation and re-partnering in between.

This paper combines the sibling approach with sequence analysis to scrutinize the impact of shared parental background characteristics on sibling similarity in holistic family formation trajectories. We address three research questions: First, are family formation trajectories of siblings more similar than among comparable unrelated persons? Second, can shared parental background characteristics account for sibling similarity in family formation? Third, in which way is siblings' family formation more similar, i.e. are siblings more likely than unrelated persons to experience specific family formation patterns?

Drawing on Finnish register data our empirical analysis employs (a) conditional assignment to build an analysis sample of sibling dyads and

comparable unrelated dyads, (b) sequence analysis to measure similarity in family formation within these dyads, (c) dyadic regression analysis to assess the impact of shared parental background characteristics, and (d) cluster analysis to examine in which way siblings' family formation is similar. To our knowledge this is the first study that combines a sibling design with sequence analysis to study family of origin effects on family formation. This analytical strategy aims to contribute to the literature in three regards.

First, this is the first study to establish the simple descriptive fact that siblings are more similar to one another also in their holistic family formation trajectories and not only in isolated fertility transitions. This is possible through the combination of a sibling design with sequence analysis. We thereby recognize the importance of linked lives within families (Elder et al. 2003) as well as the interdependence of multiple family formation events across the life course and the diversity of family formation processes (Wu and Li 2005).

Second, we compare sibling dyads with a control group of unrelated dyads that are identical with regard to important parental background characteristics. Siblings naturally share parental background characteristics, such as parental education and early childhood family structure that unrelated persons do not generally share. This compositional effect alone might generate sibling similarity in family formation. Our sibling design enables us to scrutinize to what extent these shared background characteristics account for sibling similarity in family formation.

Third, by employing sequence analysis and cluster analysis we can examine qualitative patterns of family formation and the nature of siblings' similarity in family formation. Beyond directly testing the impact of parental background characteristics on sibling similarity, we thereby show in which way siblings' family formation is more similar, i.e. which substantive family formation patterns are more likely to 'run in the family'.

Background and Theory

Family of origin effects on family behavior fall into two broad categories: shared parental background effects and mutual sibling influence. Sibling similarity in family formation can result from either or both of them.

Research on *parental background effects* focuses on intergenerational transmission – the degree to which parents and their children are similar in the occurrence and timing of focal family events: fertility (Barber 2001; Murphy and Knudsen 2002; Murphy 2013), marriage (Feng et al. 1999; Jennings et al. 2012; van Poppel et al. 2008), or divorce (Amato 1996; Amato and DeBoer 2001; Diekmann and Engelhardt 1999; Wolfinger 2000). Most of these studies find relatively modest but significant similarity between parents' and their children's family behavior. Two recent studies compare holistic family formation trajectories of parents and their children directly in a dyadic approach (Fasang and Raab 2014; Liefbroer and Elzinga 2012). Liefbroer and Elzinga (2012) conclude that in spite of profound social change in family formation over the past decades, there is persistent continuity in parents' and their children's family formation. Fasang and Raab (2014) show that in addition to strong intergenerational transmission, i.e. similarity, there are other systematic patterns between parental and filial family formation: a pattern of delayed transmission, and a pattern of intergenerational contrast, where children show systematically different family behavior from their parents.

Research on *sibling similarity* in family behavior has concentrated on particular aspects of fertility. Findings include that older siblings, particularly brothers, affect younger siblings' sexual initiation (Haurin and Mott 1990; Widmer 1997), sisters influence one another in the transition to first birth but not notably in second parity transitions (Lyngstad and Prskawetz 2010), the number of siblings affects own family size preferences (Axinn et al. 1994) as well as own fertility (Murphy and Knudsen, 2002). Further, girls' teenage pregnancy and premarital birth increase their sister's risk of experiencing these events as well (East 1998; East and Jacobson 2001; Powers 2001; Powers and Hsueh 1997). In these studies it is generally unclear both whether the sibling effect extends to the entire family formation process or only

specific transitions and how important shared parental background is relative to mutual sibling influence.

This paper aims to extend prior research by examining whether there is sibling similarity in holistic family formation trajectories and what could account for it if it exists. Specifically, we ask if sibling resemblance in family formation is mainly brought about by shared background characteristics. We thereby offer a detailed analysis of one of the two broad categories of family of origin effects - parental background and mutual sibling influence - that potentially generate sibling similarity in family formation. In particular, we examine parental background in terms of parental marital history as an indicator of children's early childhood family structure and parental education as an indicator for socio-economic background. While these two indicators can certainly not capture the full "package" of shared parental background effects, they are two central factors that have been shown to correlate considerably with other observable and unobservable parental background characteristics, such as parenting styles (Chan and Koo 2010; Lareau 2003). Subsequently, we discuss empirical findings and theoretical considerations on these two parental background characteristics.

Parental marital history and early childhood family structure

Research on the intergenerational transmission of family behavior persuasively shows that the structure of the family of origin is associated with family formation in adulthood. Children from disrupted families have a higher risk of divorce than children from intact families (Amato 1996; Diekmann and Engelhardt 1999). Moreover, children of divorce have lower overall rates of marriage (Erola et al. 2012; South 2001), although they tend to have an elevated risk of teenage marriage (Wolfinger 2003). In addition, children who experience several marital transitions or alternative living arrangements during childhood have a higher "risk of forming a first cohabitational union" (Teachman 2003). More generally, instable living arrangements during childhood promote instable family trajectories in adulthood (Carlson and England 2011).

Family structure is closely linked to economic inequalities. Children from disrupted families often grow up in single-parent households and

are more likely exposed to economic hardship (Amato 1996; McLanahan and Percheski 2008), which negatively affects children's status attainment (McLanahan and Sandefur 1994; Sigle-Rushton and McLanahan 2004). Low socioeconomic status, in turn increases marital instability (Amato 1996; Wolfinger 2005), as it is associated with a number of relationship stressors including higher incidences of poverty, substance abuse and domestic violence. Moreover, parents' own family experiences shape parental preferences for their children's family trajectories. Several studies report that divorced parents and their children are more tolerant toward non-traditional family forms (Axinn and Thornton 1996; Cunningham and Thornton 2006). Although, value transmission in families of separation is weaker than in intact families, parental preferences still affect their children's attitudes (van der Valk et al. 2008).

Siblings might be more similar in their family formation than unrelated persons, simply because they grow up in similar family structures and share their parents' marital history to a greater extent. Of course, there will be considerable variation in how two siblings experience events such as a parental divorce. They will generally experience divorce at different developmental stages and will have different coping resources available to them. However, compared to random unrelated persons, they are likely to share more of their parental marital history and early childhood family structure. If these factors are influential in generating sibling similarity in family formation, unrelated persons that share similar parental marital history and early childhood family structure experiences, should also be more similar in their family formation. Sibling similarity in family formation compared to unrelated persons should then be smaller once parental marital history and family structure of the family of origin are factored out.

Parental education

Parental education can influence their children's family formation *directly* and *indirectly* through the transmission of parental education to children's education. Socialization and social control theories (Barber 2000; Bernardi 2003; Starrels and Holm 2000) emphasize a *direct effect* of

parental education. Following this rationale, highly educated parents will increase the similarity of their offspring's family trajectories in two regards. First, highly educated parents have higher occupational aspirations for their children and are more likely to favor delayed family formation (Barber 2001; Plotnick 2007; Trent and South 1992). Through socialization parents shape their children's family plans in accordance with these preferences. Although the socialization effect is partly mediated by status transmission, several studies have shown an impact of parental education even after children's education has been taken into account. For instance, evidence from Norway shows a direct influence of parents' education on children's first union formation (Blom 1994; Wiik 2008). Second, parents with higher status are in a better position to exert social control. They likely have more educational and financial resources to influence their children to behave according to their preferences than lower educated parents (Axinn and Thornton, 1992; Barber 2001).

Indirect effects of parental education through intergenerational status transmission are rather obvious given the tight link between educational trajectories and family formation in developed societies. Parental education will then matter to the extent that it predicts children's own education. The prolongation of education during the last decades is seen as a major driver of postponement in the transition to adulthood (Billari and Liefbroer 2010; Fussell and Furstenberg 2005). Transitions like marrying and childbearing usually take place after a person left the educational system and reached some degree of financial independence. Although higher levels of education are often linked to individualization, educational institutions also standardize early life courses to be more uniform (Brückner and Mayer 2005; Mayer and Schoepflin 1989; Shanahan 2000). The standardizing effect of education continues into later adulthood for highly educated more than for lower educated persons whose lives unfold outside the grip of educational institutions at much younger ages.

Beyond structural effects, education is also related to children's own attitudes and preferences toward family formation. High education is associated with post-material values of self-realization and with liberal attitudes toward family formation (Inglehart and Baker 2000; Lesthaeghe and Neidert 2006; Trent and South 1992). Adolescents in higher

educational tracks expect and desire marriage and parenthood at older ages and see themselves at a lower risk of childbearing out of wedlock (Plotnick 2007).

Attitudinal differences by education are also important in structuring gender differences in family formation. To explain educational differences in teenage childbearing and lone motherhood, McLanahan and Percheski (2008) propose that motherhood plays a different role as a source of identity for higher and lower educated women. Lower educated women expect motherhood as psychologically more rewarding and view it as a more essential role in their life course. In contrast, highly educated women “have other possible sources of identity from which they can derive meaning and fulfillment.” (McLanahan and Percheski 2008: 262). In addition, the opportunity costs of parenthood are higher for highly educated women. Consequently, they more often postpone the transition to parenthood or remain childless than their lower educated counterparts.

For men on the other hand, both high and low education likely delays family formation compared to medium education, albeit for quite different reasons. Highly educated men delay family formation until they completed extensive education and are situated in an economically secure job, similar to highly educated women. In contrast, in view of the average increase in women’s education, lower educated men with few resources appear as less attractive marriage partners. Struggling to find a partner they postpone marriage and are more likely to live with their parents until later ages (Carlson and England 2011; McLanahan and Percheski, 2008).

Both indirect and direct effects of parental education suggest that siblings will be more similar in their family formation simply because they share parental education and are more likely to have similar educational trajectories themselves. If indirect and direct effects of parental education are important mechanisms generating sibling similarity in family formation, unrelated persons who share the same parental educational background will also be similar to one another in their family formation. Part of the sibling similarity in family formation should then vanish once parental education and own education of siblings and unrelated dyads are taken into account. Subsequently, we

empirically test to what extent two crucial parental background characteristics - parental marital history and parental education –account for sibling similarity in family formation.

Data and Methods

The Finnish register data

The empirical analysis uses Finnish register data that consists of a random sample of 1 percent of the population in 1970 (Österbacka 2004; Statistics Finland 1996). All subsequent family members were included in the sample. We use yearly panel data that was collected between 1987 and 2007 for the cohorts born 1969 to 1977 for whom we can construct family formation sequences from age 18 to age 30. Data requirements for the analysis are high: we need to follow individuals over several years to reconstruct their family formation process, and establish intergenerational links to parents and between siblings. Only people who have at least one sibling are included. This allows us to separate the impact of having any siblings from the specific impact of siblings and thus ensures greater rigor in the sibling design. People are identified as siblings if they have the same mother. Parents are identified through living in the same household as the newborn child. However, until 1987 data was only collected every 5 years. Accordingly, the children were aged 0-4 years when the information was available for the first time. The same applies to parental education, which we defined as the educational level of the highest educated parent in the household. In most cases (71.1 percent) both parents have the same level of education. For 16.8 percent father's education and for 10.6 percent mother's education was higher. For a remaining 1.5 percent data was only available on mother's level of education. We decided to use the earliest available education information for two reasons. First, this strategy ensures consistency in the measurement of parental education because it usually refers to the biological parents. Second, compared to other developmental stages socio-economic conditions during early childhood have been shown to matter most for predicting offspring outcomes in adulthood (Duncan and Brooks-Gunn 2000; Heckman 2006).

For assessing the effect of parental marital history we draw on children's family experiences up to age 18. Since siblings were defined by having the same mother we only refer to the marriage biographies of mothers. We decided against age-specific effects of childhood family structure because they were not supported by recent studies examining the effects of childhood living arrangements on the transition to adulthood (Musick and Meier 2010; Teachman 2003). Moreover, age-specific effects would prohibit creating a robust sample of sibling dyads and unrelated dyads with fixed family background by introducing too much complexity to the matching procedure described below.

Our starting sample comprised 11,803 individuals. We excluded persons with missing data or inconsistencies in the family trajectories. After this selection we only kept families with complete data on all siblings. These restrictions removed 25 percent of the starting sample and reduced the sample size to 9,266 individuals. From these data we extracted 4,994 unique sibling dyads and generated 9,263 unrelated dyads in a procedure detailed in the following. This adds up to a total of 14,257 dyads for which we can construct family formation trajectories from age 18 to age 30.

The timing and sequencing of family formation in the "third decade of life" (Fussel and Furstenberg 2005) is of particular interest as a "demographically dense phase" with multiple important life course transitions (Rindfuss 1991). In countries like Finland that are considered forerunners of the Second Demographic Transition (van de Kaa 1987; Surkyn and Lesthaeghe 2004) this is particularly true for two markers of the transition to adulthood: leaving the parental home and entry into a first union. Compared to other developed countries children start independent living early in Finland (Billari and Liefbroer 2010). By the age of 20 over half of the children left the parental home. Similarly, Finnish young adults experience a relatively early transition to a first union. The median age of entering a first union is approximately 22 for women and 24 for men born between 1969 and 1981 (Jalovaara 2012). Less than ten percent of all first unions are formal marriages (Finnäs 1995). After ten years 88 percent of cohabiting couples have separated or married (Jalovaara 2013). By the age of 30, almost half of the population has children, two thirds are living in a coresidential union or are

married, and about 20 percent live as singles (Statistics Finland 2013). Moreover, Finland is one of the forerunners in female labor force participation; 61 % in 1970 and 70 % as early as 1980 (OECD 2013). This lowers women's threshold to leave a partner since they are less bound by economic dependence (Jalovaara 2013). In sum, these stylized facts show that family formation sequences until age 30 in Finland provide plenty of variation to meaningfully examine differences between siblings and unrelated persons.

Moreover, the Finnish case can be considered a conservative test of the impact of shared parental background characteristics. Finland, along with other Scandinavian countries, represents a fairly egalitarian social democratic welfare state regime. In this context family of origin effects on offspring's family formation can be assumed relatively small compared to liberal and conservative welfare regimes as far as they are a by-product of status transmission. Stratification research has shown that the relationship of family background and socioeconomic status is comparatively low in Finland (Österbacka 2001; Solon 2002). In terms of educational and class mobility, the family of origin effect has even become somewhat weaker during the last decades (Kivinen, Hedman & Kaipainen 2007; Erola 2009). However, the modest intergenerational mobility effect does not imply that social status is irrelevant in Scandinavian countries. Evidence from Norway, for example, shows that parental education directly affects the entry into a first union (Wiik 2008). In addition, recent studies analyzing Finnish data demonstrate an educational gradient in family formation: persons with low education are more likely to experience early parenthood (Jalovaara and Miettinen 2013) and have a higher risk of partnership dissolution (Jalovaara 2013).

Analytical strategy

To address our research questions we constructed two analysis samples. We employed sequence analysis to quantify the difference between two family formation sequences in a dyad (RQ1), used dyadic regression analysis to identify which factors account for this difference (RQ2), and applied cluster analysis to explore substantive family formation patterns and sibling similarity within them (RQ3). In the following section we

explain in detail how we created the analysis samples and introduce the methods used.

Analysis sample

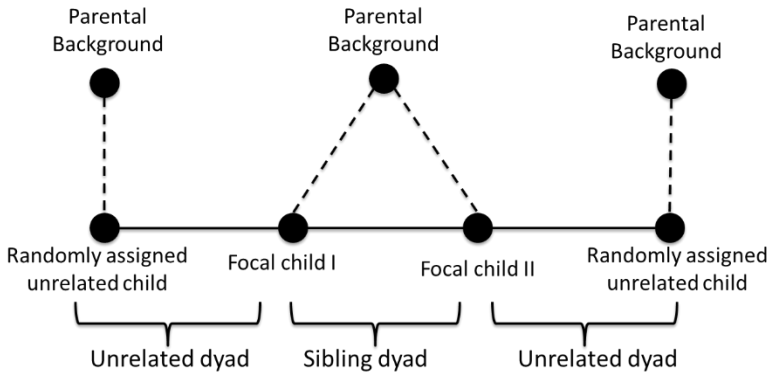
As illustrated in the upper panel of figure 1, siblings naturally share the same parental background characteristics, whereas this is generally not the case for unrelated dyads. As a result there is heterogeneity in parental background characteristics for most unrelated dyads but not for sibling dyads. This has two implications: First, it obscures the comparison of siblings and unrelated dyads, such that we are at risk of overestimating the difference between them. Second, it would lead to ambiguous reference categories in the dyadic regression for parental background characteristics: more combinations of parental background characteristics are possible for unrelated dyads than for sibling dyads. For example, siblings always share the same level of parental education, whereas in unrelated dyads one person might have highly educated parents but the other person not. We therefore construct two analysis samples: First, randomly assigning each sibling an unrelated person to generate dyads of unrelated persons (upper panel of figure 1). Second, to equalize the variation of parental background characteristics between sibling dyads and unrelated dyads, we perform a conditional assignment to generate unrelated dyads by assigning two individuals to one another conditional on sharing the same parental background characteristics (lower panel of figure 1).

The analysis samples are constructed as follows. To generate sibling dyads, each of the individual focal children in our sample is matched with a sibling. For two-child families there naturally is only one possible sibling match. In families with more than two siblings (10.5% of all families), we randomly chose a sibling. To ensure that the sample only contains unique sibling dyads we exclude doublets, i.e. a match of the same two siblings once treating sibling 1 as the first dyad member and once treating sibling 2 as the first dyad member. Below we describe the construction of analysis sample one and two using these sibling dyads. Note that the case numbers between analysis sample one and two marginally deviate, due to the exclusion of a few more doublet sibling

dyads that are generated during random assignment but not in conditional assignment.

Random Assignment

Parental education & marital history is the same for sibling dyads
usually different for unrelated dyads



Conditional Assignment

Parental education & marital history is the same for sibling and unrelated dyads

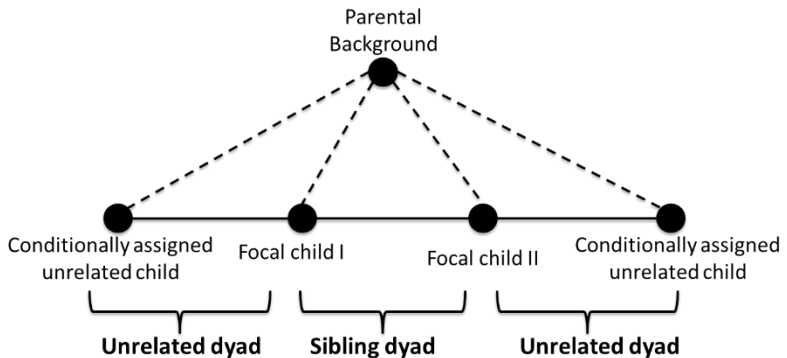


FIGURE 1: Random and conditional assignment of unrelated dyads

For the first analysis sample, we randomly assign unrelated persons to form 9,261 unrelated dyads and can compare them with 4,981 sibling dyads. To generate the second conditionally assigned analysis sample of unrelated dyads, each focal child is matched with an unrelated child conditional on sharing the same combination of three parental background characteristics: parental education (low, medium, high)¹, mothers age at first marriage (lowest 25 percent, middle 50 percent and top 25 percent of age distribution) and a dichotomous variable, whether the parents divorced. This yields 18 (3*3*2) possible combinations. Based on these conditions we are able to generate 9,263 unrelated dyads, i.e. there is a suitable unique unrelated match for virtually each individual in the sample. They can be compared to 4,994 sibling dyads. This conditional assignment simply equalizes the possible variance in observed parental background characteristics for sibling dyads and unrelated dyads. We later also include these parental background characteristics in the dyadic regression model to directly estimate their impact on similarity in family formation.

Methods

Sequence analysis is used to measure similarity between family formation sequences. We define ten family formation states combining residential situation, relationship status and the number of children: “single, parental home, no child” (SPH), “single, own home, no child” (SNC), “single, own home, 1+ child” (S1C), “cohabiting, no child” (CNC), “cohabiting, 1 child” (C1C), “cohabiting, 2+ children” (C2C), “married, no child” (MNC), “married, 1 child” (M1C), “married, 2 children” (M2C), “married, 3+ children” (M3C). Those who separate from a cohabiting relationship or divorce are considered “single” again, to prioritize their residential situation over their legal marital status. Divorce before age 30 is rare in Finland and cohabitation as a substitute for marriage is relatively common. “Single” generally refers to not being

¹ Levels of education are defined as follows: low = elementary and lower secondary; medium = secondary and lower university/polytechnic; high = higher university and higher polytechnic.

in a cohabiting or married relationship, but might include other relationship forms that we are unable to identify, such as living apart together.

To measure similarity in family formation optimal matching analysis, the most common form of sequence analysis in the social sciences, calculates pairwise distances between all sequences using two transformation operations – substitution and insertion/deletion of a state – to turn one sequence into another. The transformation operations are associated with specific costs and the distance between two sequences is given as the sum of these costs for aligning two sequences. For a comprehensive introduction see MacIndoe and Abbott (2004). Because the sequences are censored at age 30 and the timing and spacing of events is crucial in family formation, we chose an algorithm that emphasizes the timing of events in determining sequence similarity but nonetheless accounts for the order of family formation states as well. This can be achieved by using only substitution operations and no insertion/deletion operations in optimal matching (Aisenbrey and Fasang 2010; Lesnard 2010).

The substitution costs are specified to reflect both the substantive closeness of family formation states and the timing of transitions between them. Cleary, “married, 3+ children” is more similar to “married, 2 children”, than to “parental home, single, no children”. Therefore we specify a substitution cost matrix based on the substantive closeness of family formation states (appendix Table A1) where for instance the first substitution above comes at a cost of only 1 and the latter costs 11. To appropriately account for similarity in terms of timing, we combine this substitution cost matrix with the time point specific transition rates between family formation states (probability to transition from one state to another), such that the substitution of states between which transitions occur very frequently are less costly and generate less distance (Lesnard 2010).²

² For example, the relationship between age and the probability of transitioning from the parental home (SPH) to a single household without children (SNC) follows the form of an inverted-U shape: the substitution costs decrease from age 18 to 24 and increase again afterwards.

This results in a separate substitution cost matrix for each time point (year) by summing up the substantive substitution cost matrix and the time point specific transition probabilities for each year. The approach can be considered a modified version of the Dynamic Hamming measure (Lesnard 2010) that accounts for the timing and the order of family formation events at the same time. As a robustness check we conducted all analyses for three additional cost specifications in the sequence analysis: only Dynamic Hamming Distance, only substantive substitution costs in table A1, and Elzinga's Longest Common Subsequence metric (Elzinga and Liefbroer 2007). Although the regression results slightly varied 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 cut-off criteria (available upon request) and the highest explanatory power in the regression models and therefore was best suited to capture the variability in our data.

The output of the sequence analysis is a pairwise distance matrix that contains sequence distances for each possible combination of siblings and unrelated persons. Each of the 9,266 individual family formation sequences is compared to all other sequences in a pairwise comparison, which yields $\frac{N(N-1)}{2}$ comparisons = 42,924,745, i.e. cells in the distance matrix. This matrix is the basis for three sets of analyses that speak to our three research questions. First, to address the descriptive question, whether siblings' family formation is more similar than for unrelated dyads, we simply extract the distance values for the sibling dyads and the randomly assigned unrelated dyads (upper panel of figure 1) from the larger distance matrix. The distribution of the sequence distances among siblings is then compared to that among randomly assigned unrelated dyads.

Second, to test whether parental background characteristics account for sibling similarity in family formation we use the dyadic distances for the siblings and the unrelated dyads as the dependent variable in a dyadic regression. The independent variables include sibling status of the dyad, gender constellation, age difference, education, parental education, mother's age of first marriage and parental divorce. Table A2 in the appendix shows descriptive statistics on all independent variables and

the dyadic outcome measure used in the regressions. Sibling and unrelated dyads do not differ in parental background characteristics due to the conditional assignment of dyads but there are small differences for some of the remaining variables. Given the rarity of twins individuals in unrelated dyads have a higher probability of being born in the same year than siblings (11 vs. 3 percent). Siblings in turn have a higher chance of obtaining the same level of education than unrelated persons (52 vs. 44 percent).

We calculate three models. Model 1 (M1) is a baseline model using the first analysis sample of randomly assigned unrelated dyads and including only sibling status. Model 2 (M2) is the same as M1 but using the second analysis sample of conditionally assigned unrelated dyads that are equalized on parental background characteristics to resemble the sibling dyads. Model 3 (M3) is a fully interacted model by sibling status to identify sibling specific effects including the full set of covariates. M3 uses the conditionally assigned unrelated dyads that equalize variation on parental background characteristics and thus allows specifying the same reference categories for siblings and unrelated dyads. The dyads in our analysis samples are unique but by design the same individual can occur more than once in a sibling and an unrelated dyad. We therefore calculate robust standard errors.

Third, to examine whether siblings are concentrated in specific substantive family formation patterns, we apply Ward cluster analysis using the entire distance matrix. Several cluster cut-off criteria, including Point Biserial Correlation, Average Silhouette Width, and Hubert's C, support a five clusters solution (Hennig and Liao 2010; Kaufman and Rousseeuw 1990). We then examine whether siblings have a higher probability to be in the same family formation cluster than unrelated dyads, and whether this is particularly the case for specific substantive family formation patterns. The sequence analysis and the calculation of different cluster cut-off criteria were conducted using the TraMineR and the WeightedCluster packages in R (Gabadinho et al. 2011; Studer 2013).

Results

Is siblings' family formation more similar (RQ 1) and what role do shared parental background characteristics play for sibling similarity (RQ 2)?

We begin by establishing that sibling's family formation is significantly more similar than for unrelated dyads, particularly for same sex siblings. Figure 2 shows the distribution of the dyadic sequence distances for siblings (light grey line) and unrelated dyads (dark grey line) separately for the complete sample, opposite sex dyads, female dyads and male dyads for analysis sample one using the randomly assigned unrelated dyads. The distances are normalized between zero and 100, where zero indicates two identical sequences and 100 indicates the most dissimilar family formation trajectories. The width of the curves reflects 90 percent asymptotic confidence intervals. For all subgroups the two curves for siblings and unrelated dyads largely do not overlap indicating that in these locations of the distribution the difference between them is statistically significant. This difference is particularly pronounced for same sex siblings, where the gap between the two curves is largest (bottom graphs in figure 2).

Family formation sequences are most different for unrelated women followed by sisters, unrelated men and brothers. Note that sisters' family formation is still more different (42) than for unrelated men (38.9) up to the age of 30. Nonetheless, the difference between siblings and unrelated persons is slightly larger for sisters at $47.8 - 42 = 5.8$ compared to $38.9 - 33.9 = 5$ for brothers.

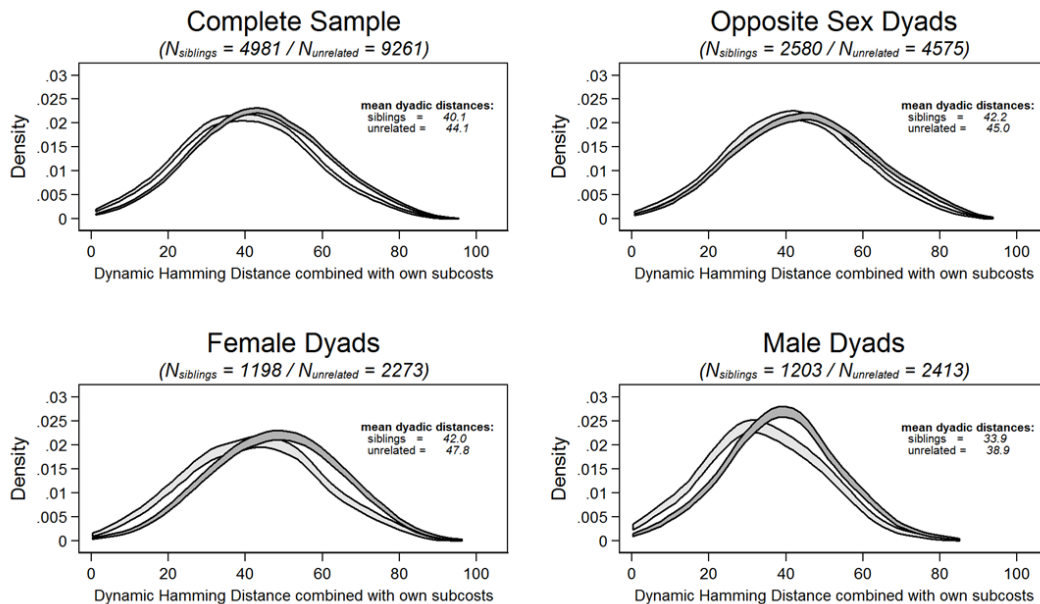
These findings underline the primacy of gender in structuring family formation in two regards. First, same sex siblings are much more similar to one another than opposite sex siblings. Second, the higher average distances for women might partly result from more complexity within individual family formation sequences. There might simply be more going on in women's trajectories with more family states and more frequent changes between them. A sequence complexity measure (Elzinga and Liefbroer 2007; Elzinga 2010) that captures the number and duration variation of different family formation states within individual sequences confirms significantly higher sequence complexity for women than for men (available upon request). If most men's family formation

events are simply delayed, expanding the observation window to age 40 might somewhat equalize this difference between men and women. However the significantly higher sequence similarity for brothers than for unrelated men also until the age of 30, suggests that the censoring does not majorly distort the analysis of sibling similarity in family formation. Our findings further highlight that women are much more actively engaged in family formation in the crucial years between age 18 and 30 that coincide with the accumulation of educational credentials and labor market entry and thus set the stage for future life-time labor market success.

Overall, the sibling effect, calculated as the difference in mean distance between siblings and randomly assigned unrelated dyads, is $44.1 - 40.1 = 4$. Sibling similarity after conditional assignment (table A2) is slightly reduced to $43.7 - 40.2 = 3.5$. The conditional assignment on parental background characteristics thus reduces sibling similarity by 12.5 percent, but siblings remain significantly more similar in their family formation also after conditional assignment.

The dyadic regression presented in table 1 further supports this finding. Negative coefficients indicate less distance and thus more similar family formation in a dyad. Model 1 (M1) shows that siblings are on average significantly more similar to one another than randomly assigned unrelated dyads by -3.94 on the distance measure that ranges from zero to 100. Except for rounding errors this corresponds almost exactly to the mean difference of 4.00 established in figure 2. Model 2 (M2) shows that this effect remains similar at a difference of -3.52 for siblings and conditionally assigned unrelated dyads corresponding to the 12.5 percent reduction in sibling similarity established above.

Even though many of the covariates in M3 significantly account for the variance in the dyadic distance measure and the adjusted R-square increases from 0.01 in M1 to 0.12 in M3, they add little to explaining sibling similarity. The sibling main effect remains significant when including the full set of covariates (M3), but is reduced to -2.69. Note that in M3 the coefficients for the main effects in the left column refer to the effects for unrelated dyads. The interaction effects in the right column capture the additional effects for siblings. We find only three significant sibling interactions: for sisters, twins and high education.



Note: Fixed-bandwidth kernel density with asymptotic confidence intervals. Case numbers marginally deviate from the conditionally assigned dyads in analysis sample two.

FIGURE 2: Distribution of sequence distances among sibling dyads and randomly assigned unrelated dyads (analysis sample one).

TABLE 1: OLS Regression predicting combined (Dynamic Hamming + own subcosts) dyadic distance

	M1 (random assignment)	M2 (conditional assignment)	M3 (conditional assignment)	
			Main Effects	Interaction Effects
Sibling indicator (ref.: Unrelated dyad)				
Sibling Dyad	-3.94 ^{***} (0.27)	-3.52 ^{***} (0.27)	-2.69 ^{***} (0.79)	
Gender Constellation (ref.: Opposite sex)				
Both female			2.74 ^{***} (0.41)	-2.39 ^{***} (0.70)
Both male			-6.91 ^{***} (0.39)	-1.19 (0.66)
Age Difference (ref.: 1 to 3 years)				
Born in same year			0.16 (0.53)	-7.20 ^{***} (1.70)
More than 3 years			0.89* (0.36)	0.23 (0.60)
Educational level (ref.: both low)				
Low-high			-4.74 ^{***} (0.65)	-0.48 (1.26)
Medium-low			-2.98 ^{***} (0.46)	-0.20 (0.79)
Both medium			-6.88 ^{***} (0.56)	0.13 (0.88)
Medium-high			-8.04 ^{***} (0.63)	-1.11 (1.02)
High-high			-9.12 ^{***} (0.93)	-2.94 [*] (1.40)
Parental educational level (ref.: Low)				
Medium			-1.48 ^{***} (0.40)	0.68 (0.62)
High			-3.63 ^{***} (0.65)	1.93 (1.00)
Mother's age at marriage (ref.: Average age)				
Late marriage			-1.93 ^{***} (0.42)	0.19 (0.68)
Early marriage			2.23 ^{***} (0.40)	0.04 (0.64)
Experienced parental divorce				
			2.28 ^{***} (0.44)	0.07 (0.70)
Constant	44.06 ^{***} (0.17)	43.70 ^{***} (0.17)	48.53 ^{***} (0.48)	
Observations	14,242	14,257	14,257	
Adjusted R-squared	0.01	0.01	0.12	

Note: Robust standard errors in parentheses; *** p<0.001, ** p<0.01, * p<0.05

Overall, the results support that sibling similarity in family formation is only moderately generated by the compositional effects of shared parental background characteristics in terms of early childhood family structure and parental education (RQ2). They affect similarity in family formation in the direction we would expect - but as can be seen from the interaction effects in M3 mostly for siblings and unrelated dyads alike.

The results from M3 substantiate the descriptive gender findings (figure 2): women are overall most different in their family formation but sisters are relatively more similar than brothers compared to conditionally assigned unrelated dyads of the respective sex. This is visible in the positive main effect for female dyads and the significant negative interaction for sisters. In contrast, unrelated men and brothers both are more similar to one another by 6.91 distance points than opposite sex dyads.

An age difference of more than three years increases sequence distance slightly by 0.89 for siblings and unrelated dyads - possibly a “mini cohort effect” for successive birth cohorts. There is a strong twin effect of -7.2 measured as siblings who were born in the same year. A closer examination of the sequences revealed that this effect is mainly driven by the joint experience of home leaving. The probability to leave the parental home in the same year is 27 percent for twins compared to only 13 percent for siblings, 13 percent for unrelated young adults who were born in the same year, and 11 percent for unrelated young adults who were not born in the same year.

The results support the paramount importance of education in structuring early life courses and family formation. The higher the dyads combined education, the more similar is their family formation for both siblings and unrelated dyads. This underlines the greater heterogeneity of family formation among the lower educated whose early life courses unfold outside of educational institutions from a much younger age. The only sibling-specific effect is that two highly educated siblings are significantly more similar in their family formation than two highly educated unrelated persons, net of controlling for parental education. Additional analyses (available upon request) on the interaction of gender and education show that education has a much stronger effect for female than for male dyads substantiating that women’s family

formation is more tightly interrelated with their educational and employment trajectories during the third decade of life.

High parental education generates more similar family formation for siblings and unrelated dyads alike, net of their own education. Apparently parental education has a direct impact beyond indirect effects through intergenerational status transmission as posited in socialization and social control theories. Possibly, highly educated parents make use of greater resources to guide their children's family formation, including financial support for a longer time into early adulthood. In contrast, children of lower educated parents might leave the radar of parental influence and establish independence at younger ages.

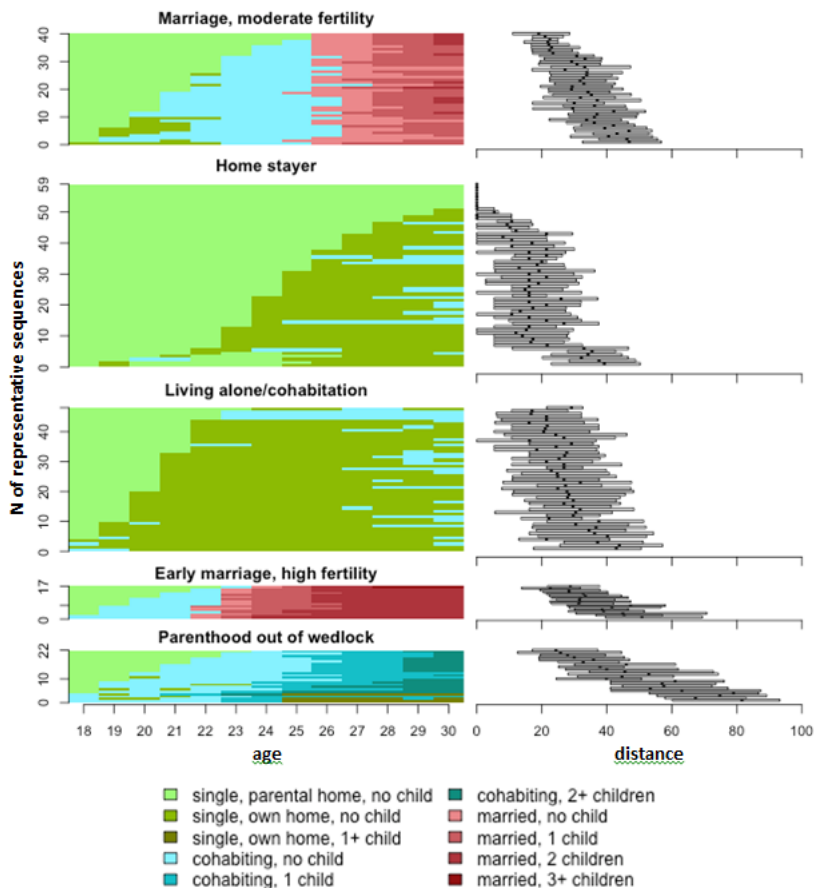
In line with our expectations, parental marital history as an indicator of early childhood family structure equally impacts similarity in family formation. Like education, the effects do not vary for siblings and unrelated dyads. Two members of a dyad are more similar to one another if their mother married late, likely by also delaying their own family formation. They are less similar to one another if their mother married young. This dissimilarity might be driven by intergenerational behavioral transmission: if they start family formation early themselves there is more going on early on in the sequences and the risk of future union disruption and instable family formation increases. Additional analyses substantiated that sequence complexity is indeed significantly higher for children whose mother's married young than for those whose mothers married late.

In line with previous research (McLanahan and Bumpass 1988; Wolfinger 2000), we find a similar pattern for divorce: calculating the complexity measure showed that children whose parents' divorced have more instable family formation themselves and are less similar to one another in their family formation, again within sibling and unrelated dyads alike. Parental divorce is a very different experience even for siblings in the same family depending on the age of the child, custodial arrangements and the level of parental conflict prior, during and after the divorce (Amato, 2000). Our results underline this heterogeneity in divorce experiences and refute a uniform impact of parental divorce on siblings' family formation.

We conclude that parental background characteristics impact similarity in family behavior much in line with our expectations, but contribute surprisingly little to explaining sibling similarity in family formation. To gain a deeper insight into the nature of this sibling similarity, we next directly examine whether siblings have a higher probability to experience the same substantive family formation patterns than unrelated dyads.

In which way is siblings' family formation similar (RQ 3)?

Figure 3 shows relative frequency sequence and dissimilarity-to-medoid plots (Fasang and Liao 2013) for the five family formation patterns derived with cluster analysis. The clusters are ordered ascending according to average education in each group starting with the most educated group in the top panel of figure 3. Within each cluster the sequences are sorted by the age of leaving the parental home for the first time. Each horizontal line in the left panel of Figure 3 represents one individual sequence, with different colors indicating different family formation states. It is impossible to plot all 9,266 sequences due to overplotting. The left panels of Figure 3 therefore show a selection of representative sequences for each cluster that comprise 2 percent of the sample (186 representative sequences). They are chosen as the medoid sequence (Aassve et al. 2007), the sequence with the minimum distance to all other sequences within equal sized frequency groups across the clusters (see Fasang and Liao 2013 for details). The dissimilarity-to-medoid plots in the right panels of Figure 3 indicate the degree of sequence variation within each cluster and thereby are informative about how homogeneous each family formation pattern is. They are box-plots of the mean and interquartile range of the pairwise sequence distances between the chosen representative medoid sequences displayed in the left panels of Figure 3 and the other sequences that this medoid represents. The size of the clusters is proportional to their relative frequency in the population. Table 2 shows descriptive statistics for the clusters. We subsequently describe the five family formation patterns referring to Figure 3 and Table 2.



Note: clusters sorted ascending according to highest educational level and sequences sorted according to age of first leaving the parental home (view in color). Size of clusters reflects proportion in population.

FIGURE 3: Relative Frequency Sequence Plot of the five family formation clusters

The highest educated cluster (66 percent medium or high education, table 2) at the top of figure 3 follows a “traditional” pathway of leaving the parental home, cohabitating, marrying in their late twenties and having one or two children by age 30. Only 26 percent of young adults in this group do not experience the transition to parenthood until age 30.

TABLE 1: Description of five family formation clusters

	Marriage, moderate fertility	Home stayer	Living alone, transitional cohabitation	Early marriage, high fertility	Extended cohabitation, parenthood out of wedlock	Total
Parental background						
<i>Parental Education</i>						
Low	0.56	0.59	0.59	0.72	0.75	0.62
Medium	0.32	0.31	0.30	0.25	0.22	0.29
High	0.12	0.09	0.11	0.03	0.03	0.09
<i>Mother's marriage age</i>						
Early marriage	0.27	0.23	0.29	0.39	0.36	0.28
Marriage at average age	0.51	0.49	0.48	0.46	0.47	0.49
Late marriage	0.23	0.28	0.23	0.15	0.17	0.23
<i>Experienced parental divorce</i>	0.16	0.16	0.23	0.19	0.25	0.19
Children's characteristics						
<i>Gender: Female</i>	0.54	0.34	0.49	0.70	0.69	0.50
<i>Educational level</i>						
Low	0.34	0.42	0.45	0.56	0.70	0.46
Medium	0.44	0.41	0.41	0.36	0.28	0.40
High	0.22	0.17	0.14	0.08	0.02	0.15
Children's demographic behavior						
<i>Median age at</i>						
Leaving parental home	22	25	21	20	20	22
First Cohabitation	23	26	22	20	21	23
First Marriage	26	-	-	23	-	-
First Birth	27	-	-	23	24	-
<i>Number of kids at age 30</i>						
Childless	0.26	0.85	0.86	0.02	0.06	0.56
Average number	1.15	0.19	0.16	2.46	1.72	0.78
(Standard Deviation)	(0.84)	(0.51)	(0.44)	(0.82)	(0.89)	(1.02)
Total	0.21	0.32	0.26	0.09	0.12	1.00
(Number of observations)	(1983)	(2939)	(2395)	(845)	(1104)	(9266)

In the middle of the educational distribution we find two groups that are characterized by childlessness (roughly 85 percent childless): the first is called “home stayers” because they leave the parental home at the latest age with a median home leaving age of 25 compared to age 22 in the total sample (table 2). The left panel of Figure 3 shows that this is the most homogenous group with low dissimilarities to the representative sequences displayed in the right panel. Extended living in the parental home is primarily a male experience (66 percent men). The second group with medium education, called “living alone/transitional cohabitation”, shows a pattern of establishing an independent household in the early twenties (median age 21) and moving in and out of transitional periods of cohabitation throughout their twenties. Finally, we find two smaller but highly distinct family formation patterns at the bottom of the educational distribution: “early marriage, high fertility” and “parenthood out of wedlock”. In these groups, roughly 70 percent

have the lowest level of education. The same is true for their parents. Compared to the population average their family formation is characterized by early parenthood (median ages 23 and 24) and high parities (2.46 and 1.72) either within marriage or out of wedlock in cohabiting unions and as single parents. Moreover, figure 3 illustrates that virtually all persons in these two patterns move directly into a co-residential union when leaving the parental home. The high distances to the medoid in the right panels of Figure 3 shows that these are particularly heterogeneous groups. The corresponding family formation experiences are primarily made by women (70 and 69 percent).

The clusters underline the stratification of family formation by education and gender visible in the dyadic regression (table 1): low education goes along with more eventful and variable family formation trajectories of high parities and parenthood out of wedlock. High education is associated with a “traditional” timing and sequencing of family formation and establishing a one- or two-child family secured in marriage by age 30. Another pattern that is characteristic for high and medium education is a relatively uniform delay of family formation (table 2). The two postponement clusters are the most prevalent patterns and represent more than half of the study population.

After establishing these main patterns of family formation among our cohorts of young adults in Finland, we can address research question three, whether siblings are concentrated in any of these patterns. Figure 4 shows the probability of the focal person’s dyad partners – siblings and conditionally assigned unrelated persons – to be in the same cluster as the focal persons. If two members of a sibling dyad have a higher probability to be in the same cluster than two members of an unrelated dyad this indicates that specific family formation patterns are concentrated within families and offers insights into the nature of sibling similarity in family formation. The line in the middle of figure 4 and the corresponding percentages show the overall probability to be in the same cluster as the focal person conditional on the focal person’s cluster membership. The graph sets this line to zero to illustrate deviations from the mean for siblings and unrelated persons.

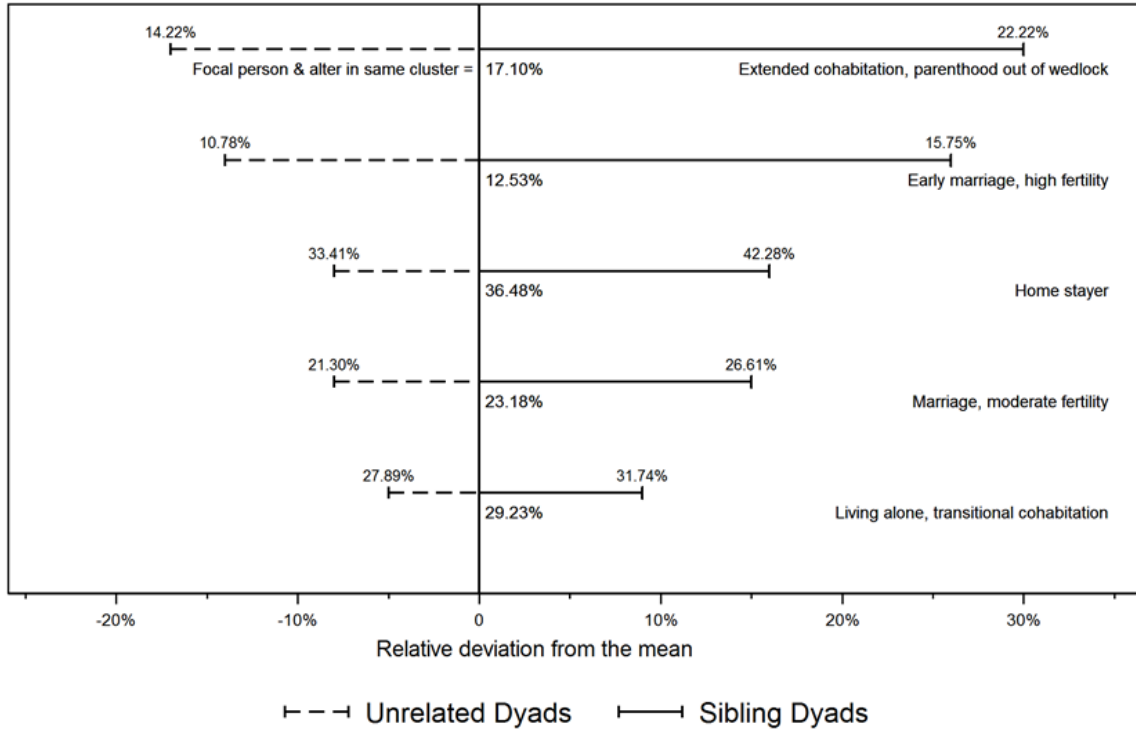


FIGURE 4: Focal person & alter in the same cluster: Conditional probabilities and relative deviations from overall mean

First, across all clusters siblings have a higher probability to be in the same group as the focal person (solid lines on the right of figure 4) than unrelated persons (dashed lines on the left). For instance, the mean probability to be in the “extended cohabitation, parenthood out of wedlock” group – given that the focal person is in this cluster – is 22 percent for siblings but only 14 percent for unrelated persons. This corresponds to a 29 percent deviation from the mean, i.e. a 29 percent higher probability for a sibling to be in the same cluster as the focal person than for the population average. The clusters in figure 4 are ordered descending according to the degree of sibling concentration within each group. Siblings particularly have a higher probability to be in the same cluster in the family formation patterns that are associated with educational disadvantage (see table 2): “Extended cohabitation, parenthood out of wedlock” and “early marriage, high fertility”.

Discussion

In this paper we propose a novel research design using sibling comparisons and sequence analysis to study family of origin effects on holistic family formation trajectories. Findings show that siblings are moderately but significantly more similar to one another in holistic family formation trajectories than unrelated persons. This is particularly the case for same sex siblings. Equalizing siblings’ and unrelated dyads’ parental background characteristics decreases the sibling similarity moderately by about 13 percent. Moreover, sibling similarity is particularly pronounced for sisters in family formation patterns of ‘extended cohabitation, parenthood out of wedlock’ and ‘early marriage, high fertility’. These family formation patterns are at the same time associated with economic disadvantage.

In addition to the moderate decrease of sibling similarity through parental background, the dyadic regression showed that parental background largely affects similarity in family formation for siblings and unrelated dyads in the same way. However, we want to highlight two notable sibling-specific interactions, which reduce sibling’s dissimilarity in family formation. First, twins, measured as siblings born in the same year, are much more similar in their family formation than other

siblings. On the one hand, shared genetic background may account for this twin effect (Kohler et al. 1999, 2002). On the other hand, twins also share more of their environment and socialization experiences than siblings. There might be a culture or norm for twins to jointly step through ‘rites of passage’ in the transition to adulthood, such as leaving the parental home together or orchestrating a double marriage. As noted above, our results indeed support a clustering of joined home leaving for twins. Small case numbers (133 twins) and the relatively crude twin indicator unfortunately prohibited further investigation of the twin effect in this study. Second, family formation is significantly more similar for highly educated siblings than for two highly educated unrelated persons, net of parental education. This corresponds with Conley and Glauber’s (2008) finding that sibling correlations in education and earnings are strongest among siblings from advantaged families. Our study suggests that this might also be the case for similarities in family formation. Arguably there is particularly strong mutual reinforcement of specific family formation patterns among highly educated siblings.

Overall, we conclude that the observed parental background characteristics and sibling interactions only play a relatively marginal role in generating sibling similarity in family formation. At the same time, the strong impact of respondents’ own educational level and gender supports continuing importance of the family of origin for shaping people’s family behavior. These effects might be even larger in countries with closed stratification systems in which intergenerational status transmission is stronger than in Finland. The same is true for the size of the sibling effect. Cross-national comparisons show relatively low sibling correlations in earnings for Nordic countries (e.g., Björklund et al. 2002). Systematic comparisons with countries representing other social mobility and welfare state regimes would be useful to test whether this also holds for sibling correlations in family formation. Nonetheless, our study supports that even in Finland siblings are notably and significantly more similar in family formation than unrelated persons.

At first glance, the explanatory power of the sibling effect might seem small, explaining only one percent of the variance as indicated by the \mathcal{R}^2 in table 1. Generally, sequence distances are a highly complex outcome where small effect sizes and relatively low \mathcal{R}^2 are common (see Liefbroer

and Elzinga 2012). Further, a comparison with the explanatory power of education puts the explanatory power of the sibling effect into perspective. An additional regression model including only education on the conditionally matched sample accounts for five percent of the variance indicated by R^2 (available upon request). This means that the sibling indicator accounts for as much as 20 percent of the variance in the sequence distances as education accounts for. Given the uncontested crucial relevance of education for demographic behavior, a sibling effect of this size, even if comparatively moderate, warrants future research. Family internal dynamics, such as parent-child relationship quality and mutual sibling influence, might generate the remaining unexplained sibling similarity. The moderate size of the sibling effect can also be interpreted in the context of these family internal dynamics. Although siblings share the same family of origin they also have many experiences that they do not share, such as differential parental treatment or sibling position (East and Jacobson 2000; Whiteman et al. 2011). Our findings support that overall, the mechanisms that generate sibling similarity in family formation outweigh such differentiating factors.

To gain a deeper insight into the nature of sibling similarity in family formation, we subsequently showed that substantive family formation patterns that are associated with economic disadvantage are concentrated within families. Sisters are concentrated in family formation patterns of ‘extended cohabitation, parenthood out of wedlock’ and ‘early marriage, high fertility’. That is, specific gendered family formation patterns and economic disadvantage are encapsulated within families and thus contribute to the reproduction of inequality (McLanahan and Percheski 2008). These results suggest that siblings reinforce one another in following family formation patterns stratified by education and gender. Further, unobserved parental effects could generate particularly strong sibling clustering in certain family formation patterns. East and Jacobson (2003: 395), for instance, point out that “the disproportionately high teenage birth rates among the sisters of childbearing teens” could be partly explained by the strained parenting of their mothers, which in turn was caused by the increased financial and emotional burdens following the first teenage motherhood in the family. In response to the negative parental treatment the younger

sisters of teenage mothers are more likely to engage in problem behavior and are at a high risk of early pregnancy as well.

To further improve our understanding of sibling similarity in family formation, future research should address several issues. First, lacking data on the relationship quality between parents and their children as well as among siblings, we were unable to account for possible moderating effects of these psychological characteristics. Close emotional relationships can function as 'transmission belts' (Schönpflug 2001) and could be one explanation for the remaining unexplained sibling similarity we observe. Second, more detailed indicators of parents' and siblings' social and occupational status would be desirable to assess family background effects in greater detail. In this study, we were able to rigorously scrutinize the impact of two crucial background factors that have been shown to correlate with many other potentially relevant parental background characteristics, such as parenting styles (Chan and Koo 2010; Lareau 2003). Third, we had no information on interactions between siblings and could not directly measure mutual sibling influence in family behavior - an important alternative explanation for the sibling similarity in family formation. Finally, the analysis of longer family formation trajectories until the age of 40 and beyond, would allow for studying potential variation of the degree of sibling similarity across the life course. Previous research suggests that family of origin effects are more pronounced for early transitions and diminish as people age. For instance Lyngstad and Prskawetz (2010), show that sibling's birth events influence the transition to first parenthood but lose relevance for higher order parities. The literature on older sisters' out-of-wedlock or teenage childbearing and their younger sister's risk of experiencing these events as well points into a similar direction (e.g., East and Jacobson 2001; Powers and Hsueh, 1997). Since men experience family formation events later than women an extension of the observation period might weaken the sibling-gender interaction we found for women and strengthen it for men.

In sum, our findings show that there is significant sibling similarity in family formation and that shared parental education and parental marital history add little to explaining this similarity. Instead education and gender stand out as major stratifying forces of family formation for

both siblings and unrelated dyads. Yet, sibling status seems to reinforce the impact of education and gender. As a result, compared to unrelated dyads siblings are particularly overrepresented in family formation patterns that go along with specific constellations of educational levels and gender. As our cluster results show, scrutinizing the nature and driving forces of sibling similarity in family formation can potentially improve our insight into the link between family behavior and the reproduction of social inequality. Combining a sibling design and sequence analysis offers insights both into the amount of similarity in the family formation trajectories of siblings and unrelated dyads and into the substantive content of this similarity in the family formation clusters. This approach is in principle easily transferable and might yield promising results when applied to other research questions, such as sibling similarity in educational and employment trajectories, or health trajectories.

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APPENDIX

TABLE A1: Substitution cost matrix

	SPH	SNC	CNC	MNC	SWC	C1C	M1C	C2C	M2C	M3C
SPH	0									
SNC	2	0								
CNC	4	2	0							
MNC	6	4	2	0						
SWC	8	6	5	5	0					
C1C	7	5	3	4	4	0				
M1C	8	6	4	2	5	2	0			
C2C	9	7	5	6	6	2	4	0		
M2C	10	8	6	4	7	4	2	2	0	
M3C	11	9	7	5	8	5	3	3	1	0

Note: SPH = “single, parental home, no child”, SNC = “single, own home no child”, S1C = “single, own home, 1+ child”, CNC = “cohabiting, no child”, C1C = “cohabiting, 1 child”, C2C = “cohabiting, 2+ children”, MNC = “married, no child”, M1C = “married, 1 child”, M2C = “married, 2 children”, M3C = “married, 3+ children”

TABLE A2: Descriptive Results

	Sibling dyads	Unrelated dyads	Total
Parental background			
<i>(fixed for sibling and unrelated dyads)</i>			
<i>Parental Education</i>			
Low			0.62
Medium			0.29
High			0.09
<i>Mother's marriage age</i>			
Early marriage			0.28
Marriage at average age			0.49
Late marriage			0.23
<i>Experienced parental divorce</i>			0.19
Children's characteristics			
<i>Gender constellation</i>			
Opposite sex	0.52	0.49	0.50
Both female	0.24	0.25	0.24
Both male	0.24	0.26	0.25
<i>Age difference</i>			
Born in same year	0.03	0.11	0.08
One to three years	0.62	0.54	0.57
More than three years	0.35	0.35	0.35
<i>Educational level</i>			
Low-high	0.06	0.10	0.08
Both Low	0.28	0.24	0.26
Low-medium	0.30	0.34	0.33
Both medium	0.18	0.16	0.17
Medium-high	0.12	0.12	0.12
Both high	0.06	0.04	0.04
<i>Dyadic Distance</i>	40.19	43.70	42.47
<i>(SD in brackets)</i>	(17.27)	(16.77)	(17.03)
Number of dyads	4994	9263	14257

Study 03

How Context Matters:

Childhood Family Structure and Early Family Formation in East and West Germany

Introduction

During the past decades, changes in family structure increased the diversity of childhood living arrangements in many affluent societies. Recent cohorts of children increasingly experience parental divorce, periods of single parenting, parental re-partnering, and re-marriage (Andersson 2002; Goldscheider 1997; Shanahan 2000). A large body of research investigated how children are affected by these changes. One preeminent strand of this literature compellingly shows that children who have not been raised by both biological parents differ from their peers from stable two parent families with regard to family formation (Cherlin, Kiernan, and Chase-Lansdale 1995; Fomby and Bosick 2013; McLanahan and Bumpass 1988). In comparison, they are more likely to experience demographic transitions such as leaving the parental home (Bernhardt, Gähler, and Goldscheider 2005; Goldscheider and Goldscheider 1998), cohabitation (Ryan et al. 2009; Teachman 2003), or having a first child (Hofferth and Goldscheider 2010) at younger ages. Evidence for the transition to marriage is inconclusive, indicating a similar accelerating effect for older cohorts and no or even an opposite effect for more recent cohorts (Erola, Härkönen, and Dronkers 2012; Wolfinger 2003). With regard to divorce research has consistently shown that children of divorce and even more so children who experience parental re-marriage or multiple divorces have an elevated divorce risk themselves (Amato and DeBoer 2001; Diekmann and Engelhardt 1999; Wolfinger 2000).

Most of this research has been conducted using data from the United States. However, the established mechanisms linking childhood family structure and later family formation behavior are rather generic and applicable to other contexts. International comparative research on the intergenerational transmission of divorce, for instance, indicates a consistent transmission effect in a wide array of developed countries (Dronkers and Härkönen 2008). Despite this consistency, there are noticeable cross-national differences in effect sizes pointing to the relevance of the larger contexts in which the effects of childhood family structure unfold. Varying effect sizes across cohorts, as they have been shown for the association of parental divorce and offspring marriage

behavior point to a similar direction, indicating that also the temporal context matters (Wolfinger 2011).

In contrast to the thoroughly examined transmission of divorce, the aforementioned association between childhood living arrangements and the timing of demographic transitions rarely has been studied outside the US. Previous research in this area indicates that children from alternative family structures are experiencing the transition to adulthood at younger ages than children from traditional families. Early family formation, in turn has been argued to affect the life chances of young adults in ways that reproduce social inequality (McLanahan and Percheski 2008). Consequently, cross-national differences in the association of childhood living arrangements and offspring family formation can contribute to our understanding of the intergenerational reproduction of family biographies and social inequalities.

In this vein, the present study adds to the literature by scrutinizing the link of childhood family structure and the early transition to adulthood in Germany. Although the German unification happened more than twenty years ago, the case of Germany provides insight into two very different contexts due to the long-term consequences of the post-war separation. Drawing on persisting differences in family formation between East and West Germany this research examines if the findings from previous research are also applicable in these contexts. In addition, using recent data from the German Family Panel (pairfam) allows for a comparison of two German cohorts and provides the opportunity to explore if family of origin effects on early family formation in East and West Germany are converging or remaining stable over time. More specifically, this paper addresses the following research questions: Are alternative family structures during childhood and early adolescence linked to early home leaving, cohabitation, and parenthood in Germany? Can the mechanisms identified in the mainly US-centric literature also be applied to the German context? Are there East-West differences with regard to the strength and the way in which childhood living arrangement affect the early transition to adulthood?

Background

In view of sociology's long-standing interest in family of origin effects this study is informed by several complementary and overlapping theoretical frameworks. At the most general level it is referring to three main principles of the life course paradigm (Elder, Johnson, and Crosnoe 2003; Elder 1994). First, the principle of linked lives implies that the family biographies of parents affect their offspring's life courses in multiple ways, for instance via socialization processes or the provision of emotional and economic resources. Second, life course theory focusses on the timing of transitions. In the present study, timing matters with regard to both the outcome and the key independent variable. For instance, the consequences of changes in childhood living arrangements might differ depending on whether they are experienced during early childhood or during adolescence. Moreover, the focus on early transitions in offspring's family biographies follows from the assertion that off-time transitions might entail negative consequences for status attainment or the stability of partnerships. Third, life course theory emphasizes the importance of socio-historical contexts. According to the principle of time and place, similar childhood living arrangements experienced in different historical times and places are likely to lead to very different outcomes. Consequently, a comparison of two German cohorts raised in very distinct societal and historical contexts provides valuable insights concerning the generalizability of previous research, which primarily has been conducted in the United States.

More specifically, research on social stratification and intergenerational family processes provides orientation for understanding how childhood living arrangements affect children's demographic behavior during adolescence. Previous studies (e.g., Amato 1993; Teachman 2003; Wu 1996) suggest four main mechanisms: economic hardship or status transmission, value socialization, social control, and stress caused by instability. These generic mechanisms have been used as explanations for early transitions to adulthood in a variety of contexts. Each perspective emphasizes different aspects of childhood family structure, such as the duration lived in a certain family type or the number of changes in family living arrangements (Teachman 2003; Wu and

Martinson 1993). After introducing the basic mechanisms and discussing the peculiarities of the German case, I develop expectations on how family of origin effects and the corresponding mechanisms might influence early family formation differently in the East and West German cohorts studied in this research.

Economic hardship and status transmission

The economic deprivation perspective emphasizes that family income varies by family structure (Axinn and Thornton 1992; Ginther and Pollak 2004). In general, children from traditional families with two married parents fare best in economic terms. In contrast, children raised in single mother households are at an increased risk of experiencing economic hardship. Changing household structure due to parental remarriage, however, has the potential to improve the financial situation (Amato and Kane 2011; Teachman and Paasch 1994). Consequently, the mediating power of economic hardship should predominantly pertain to single parent households.

Previous research proposes different mechanisms explaining how socioeconomic conditions mediate family structure effects on early demographic transitions. First, adverse economic conditions during childhood might create an unpleasant home environment which ‘pushes’ the children out of the parental home (Bernhardt et al. 2005). For instance, crowded housing due to scarce financial resources harms the quality of family relationships (Goldscheider and Goldscheider 1998; Kiernan 1992). In addition, economic pressure linked with parental conflict or divorce also increases the risk of harsh, inconsistent, and uninvolved parenting (Conger, Conger, and Martin 2010; McLeod and Shanahan 1993). Second, a lack of financial resources exacerbates parental opportunities to invest in the educational attainment of children (Conger et al. 2010). Leaving the educational system earlier, in turn, accelerates family formation. Finally, assortative mating patterns make it more likely that children from economically disadvantaged families will have partners with similar social backgrounds (Erola et al. 2012). Although, these couples tend to delay or to forgo marriage, they experience transitions to cohabitation and parenthood earlier than those

from advantaged backgrounds (McLanahan and Percheski 2008). Particularly in the United States, cohabiting unions are highly unstable. Together with the recent increase in non-marital childbearing, this instability led to a rising share of single mother households and a new generation experiencing instable family structures and economic disadvantage (Carlson and England 2011).

A considerable amount of the literature is concerned with the question whether the association of socioeconomic status and family structure is due to social causation or social selection (Conger et al. 2010; McLanahan and Percheski 2008). Given the exploratory focus of this study, however, it is of subordinate importance if a child experiences a certain family structure due to the socioeconomic characteristics of its parents or if the family structure is causing economic disadvantage. Instead, it is relevant if there is an association at all and to which extent it mediates the family structure effect on early demographic transitions in different contexts. In this sense, a vanishing effect of family structure under control of socioeconomic status is interpreted as evidence in support of the economic hardship perspective. Using a similar “descriptive regression” strategy, some scholars even argue that there is no genuine family structure effect on early family formation once family income is taken into account (Ginther and Pollak 2004). Most research, however, shows only a modest or even no mediating effect of socio-economic conditions during childhood (Amato and Kane 2011; Aquilino 1996; Hill, Yeung, and Duncan 2001; Musick and Meier 2010; Wu 1996).

As stated above, the economic deprivation mechanism is supposed to be most salient for children from single mother households. With regard to context, the economic hardship perspective should be of diminished explanatory power in an environment in which family structure is only moderately associated with socio-economic status (Engelhardt, Trappe, and Dronkers 2002).

Socialization and role modelling

This perspective posits that parents are crucial role models and socializing agents for their children. Several studies on the intergenerational transmission of family attitudes report that divorced

parents are more tolerant toward non-traditional family forms and socialize their children accordingly (Axinn and Thornton 1996; Cunningham and Thornton 2006; McLanahan and Sandefur 1994). Although, the transmission effects tend to be attenuated in families of separation, parental preferences still affect children's attitudes (Van Der Valk et al. 2008). Research on the intergenerational transmission of early childbearing, for instance, provides support for this view by showing that children of young mothers indeed hold preferences in favor of early family formation (Anderton et al. 1987; Barber 2000, 2001) (Anderton et al. 1987; Barber 2000, 2001). In general, these studies suggest that socialization and role modeling reinforce intergenerational similarities in family formation. Accordingly, non-traditional family living arrangements during childhood should contribute to the reproduction of non-traditional family trajectories in the offspring generation.

In the present study, non-standard demographic behavior refers to timing. Growing up in alternative family types increases the exposure to parental dating, sexual relationships, and cohabitation. This behavior arguably provides a role model of weak relationship commitment, which is likely to be transmitted to the children (Amato and DeBoer 2001; Ryan et al. 2009). As a result, children from alternative family structures are at higher risk of early family formation because they tend to hold liberal attitudes towards premarital sexual relationships, coresidential unions, and non-marital births (Amato and Kane 2011; Axinn and Thornton 1996; Carlson, McLanahan, and England 2004). Previous research on whether the effect of childhood living arrangements is stronger during early childhood or during late childhood and early adolescence is inconclusive (e.g., McLanahan and Bumpass 1988; Wu and Martinson 1993). The same is true for the relevance of duration in different family types (Chase-Lansdale, Cherlin, and Kiernan 1995; McLanahan and Sandefur 1994; Ryan et al. 2009). From a theoretical point, however, the socialization perspective suggests that the family of origin effect increases with duration of exposure to alternative family types. Similarly, family structure during early childhood should have a more salient influence, because during adolescence parents tend to lose influence and socialization agents outside the family of origin become increasingly important.

Next to duration and timing, contextual effects are also likely to moderate socialization effects. Boehnke and colleagues (2007), for instance, found that parent-child value similarity is higher in families distant from the *zeitgeist* than in families whose values are more conforming to the contemporary normative climate. In view of that, parents non-traditional family attitudes should be more easily transmitted to their children the stronger they diverge from traditional family values. Consequently, the socialization effect is expected to be weaker in societies with a higher share and acceptance of alternative family structures. This view is supported by Wolfinger's studies (1999, 2011) on trends in the intergenerational transmission of divorce in the United States. He reports that the intergenerational continuity in divorce is lower for recent cohorts due to the weakening stigma associated with marital dissolution. Engelhardt and collaborators (2002) come to a similar conclusion studying divorce transmission in East and West Germany. Using data on women's first marriages from 18 countries participating in the Fertility and Family Surveys Dronkers and Härkönen (2008), however, did not find support for the stigmatization hypothesis.

Social control

In contrast to socialization theory, the social control perspective highlights the importance of family structure during early adolescence (Wu and Martinson 1993). According to this perspective, parents' supervising capabilities vary by family structure. In particular, single-parent families are likely to control and monitor children less than two-parent families (McLanahan and Bumpass 1988; Thomson, McLanahan, and Curtin 1992). As a result, adolescents raised by single parents tend to engage in dating and sexual activities at younger ages (Albrecht and Teachman 2003; McLanahan and Bumpass 1988). This in turn increases the likelihood of early parenthood and union formation.

Whereas the social control literature consistently maintains adverse consequences of single motherhood, the expectations for stepparents or families with coresiding non-biological parents are more ambiguous. Theoretically, each additional adult potentially contributes to supervising

and controlling the children in the household. Empirical studies comparing biological parents and stepparents, however, come to a different conclusion. Stepparents' parenting efforts tend to be less intense (Hetherington, Bridges, and Insabella 1998; McLanahan and Sandefur 1994). Moreover, the children are more reluctant to accept their supervision and advise (Thornton 1991). Therefore, in terms of the social control perspective, all alternative families are alike; that is, they all supervise their children less than two biological parents (Thomson et al. 1992). Contrary to this assertion, most empirical studies report no or only limited support for the social control perspective (Aquilino 1996; Hill et al. 2001; Hofferth and Goldscheider 2010; Teachman 2003; Wu and Martinson 1993).

The broader context of childcare settings might be an important mediator in this regard. The relevance of social control should vary according to the degree in which childcare and the supervision of young adolescents takes place within the family context. If children, irrespective of family structure, spent most of their time outside the familial environment, other supervising and socializing agents become more influential. Thus, the adverse effect of limited parental supervision in alternative family structures is supposedly smaller in societal contexts in which institutions, such as full time schools or day care centers, provide supervision and control for the majority of children, irrespective of their family structure.

Instability and stress

The instability and stress perspective emphasizes the adverse consequences of multiple changes in family living arrangements for parents and children. Contrary to the previous perspectives, it suggests that changes in family structure are more important than specific types of family structure. Instability in family living arrangements often is accompanied by stress and each additional transition results in an accumulation of adverse consequences (Amato 1993; Wu and Martinson 1993).

Previous research has reported that the experience of family instability increases offspring's exposure to parental conflict, disruptions in

parenting, tensions in the relationship with parents, residential mobility, and uncertainty due to reconfiguration of the roles of family members (Conger et al. 2010). These factors often create an unpleasant home environment and might *push* the children to look for escape strategies such as early home leaving (Aquilino 1996) or cohabitation (Teachman 2003). Furthermore, multiple transitions in family structure have been linked to lower educational attainment (Aquilino 1996; Fomby and Bosick 2013; Hill et al. 2001), increased risk of premarital intercourse (Albrecht and Teachman 2003), premarital birth (Wu and Martinson 1993; Wu 1996), and nonresidential fatherhood (Hofferth and Goldscheider 2010). Despite this support for the instability perspective, other scholars argue that not all changes in family structure are equally stressful (Brown 2006; Shaff et al. 2008). Moreover, studies testing whether changes of family structure or the type of family structure are more important yielded mixed results. For instance, the findings of Wu (1996) and Teachman (2003) are in favor of the instability perspective, whereas the results of Ryan (2009) as well as of Fomby and Bosick (2013) indicate that the type of family structure is more important than the number of transitions. Given that the mechanisms used to explain how instability and stress affect offspring's family formation are referring to economic instability, social control, and value transmission (Hofferth and Goldscheider 2010; Teachman 2003) these inconsistencies are not very surprising. Methodologically, the difficulties in disentangling the effects of the number of transitions and the type of family structure are amplified by the small proportion of children who experience more than one change in family living arrangements.

These substantive and methodological considerations should also pertain to the way in which the stress caused by instability varies according to context. The stress perspective focusses on the number of transitions to explain the association between family instability and child outcomes. At the same time, it also incorporates the mechanisms proposed by the other perspectives and therefore partially refers to the same context specific expectations as described above. For instance, if changes in family living arrangements are a widespread phenomenon and are not considered a social stigma the stress effects are supposedly of moderate size. Nevertheless, the stress and instability perspective could be particular useful in exactly those contexts in which family

instability is common. Each single transition would not be as stressful and unsettling as in a low instability setting, but multiple transitions can foster an accumulation of stress and finally affect offspring's family formation. In a society, however, in which only very few children experience family instability already one change in family structure might result in noticeable effects.

One country, two contexts:

Persisting differences between East and West Germany

As noted above, previous research on the effects of the discussed mechanisms is largely based on evidence from the United States. The present study draws attention to how these effects might differ by context. In view of the separation after the Second World War, the case of Germany is particularly well suited for this purpose because it provides insight into two very different contexts, the socialist German Democratic Republic (GDR) and the capitalist Federal Republic of Germany (FRG). The following analyses are examining the life courses of two cohorts, which both experienced the consequences of the separation in 1949 and the unification in 1990. The first cohort was born around 1970. Members of this cohort at least partially experienced early transitions to adulthood in the separated Germany and in the time right after the fall of the wall. Being ten years younger the second cohort experienced childhood socialization in the divided Germany whereas adolescence and family formation were taking place after the unification.

The huge institutional and cultural differences between East and West Germany led to very distinct life course patterns within Germany. In the pronatalist regime of the FRG, family formation started at very young ages. In contrast, the transition to adulthood in West Germany was increasingly postponed since the 1970s. Family policies in the GDR fostered early childbearing particularly by providing very extensive childcare facilities for children of all age groups. Another incentive for early parenthood and marriage were the regulations on the mainly public housing market in the GDR that strongly favored married couples and single mothers. Thus, "family formation often was the most successful strategy for leaving the parental household" (Walper 1995: 5).

At the same time, the GDR aimed at the full-time labor market integration of women – including mothers. Compared to West Germany the higher labor market integration and more generous social and financial support for mothers increased the economic independence of women. As a result, marriage was less important for providing financial security to mothers in East Germany (Huinink, Kreyenfeld, and Trappe 2012). Moreover, the lower importance of religion and the historically weak nexus between the birth of the first child and marriage contributed to a rather high share of non-marital births, which still can be observed today (Becker, Lois, and Nauck 2010; Klüsener and Goldstein 2014; Schnor 2014). The same reasons as well as the young age at family formation also caused higher rates of marital dissolution (Engelhardt et al. 2002; Sharma and Silbereisen 2007). From a West German point of view, this led to a comparatively high prevalence of alternative family structures, i.e. unmarried or single parents with children.

In contrast to the GDR, the FRG can be characterized as a traditional male breadwinner model. The female labor force participation was considerably lower, particularly after the transition to parenthood. Childcare coverage was and still is lower than in East Germany. Finally, parenthood out of wedlock and divorces were less common. In sum, the traditional nuclear family with married parents, one or two children, and mothers with low labor force attachment was and to some extent still is the normative family model in West Germany. By contrast, the early onset of family formation with early parenthood, irrespective of marital status, and high labor force participation of mothers can be considered normative for the GDR. Although West German institutions were rapidly implemented in East Germany after the unification, life course patterns in the two parts of the country are still very distinct (Diewald, Goedicke, and Mayer 2006). For instance, in East Germany women are still one year younger when they have their first child and children are more often born out of wedlock than in West Germany (Goldstein and Kreyenfeld 2011; Kreyenfeld, Konietzka, and Walke 2011). In addition, the differences in marriage rates, childcare coverage, and full-time employment of mothers still can be observed today, albeit some of the differences became smaller over the last decades (Huinink et al. 2012; Schneider, Naderi, and Ruppenthal 2012). In sum, these substantial differences suggest that the effects of family living arrangements during

childhood on early family formation might vary in the two different contexts.

In the case of economic hardship, for instance, the extensive monetary and instrumental support for mothers in the GDR, irrespective of their marital status, alleviated the adverse consequences of single motherhood (Forkel and Silbereisen 2001; Sharma and Silbereisen 2007). After the unification, however, the financial situation of single mothers in East Germany deteriorated and increased their risk of experiencing economic hardship to over 30 percent in 1992 (Walper 1995: 14). Despite this decline, the economic disparities between children from intact families and single parent families remained smaller in East Germany (Joos 1997; Walper 2002). Moreover, Kreyenfeld and Martin (2011) showed that compared to nuclear families also stepfamilies more often report economic hardship in West Germany but not in East Germany. Thus, as far as the effect of family structure is mediated by the experience and the consequences of economic hardship and status transmission, its impact on early family formation should be weaker in East Germany for both study cohorts.

The expectations for the mediating power of social stress and socialization point in a similar direction. Although marriage was part of the ideal family concept in the GDR, the acceptance and support for alternative family structures was much higher than in West Germany (Sharma and Silbereisen 2007). As a result, marital dissolutions and single parenthood were less stigmatizing and stress producing for parents and children. Engelhardt and collaborators (2002), for instance, refer to this argument as an explanation for the absence of intergenerational divorce transmission in East Germany. In addition, they note that, contrary to the expectations of the stress perspective, parental divorce does not accelerate offspring's transition to marriage. Studies on home leaving also do not find supporting evidence for divorce as a push factor towards a faster transition to adulthood (Juang, Silbereisen, and Wiesner 1999; Silbereisen, Meschke, and Schwarz 1996). In a similar vein, Sharma and Silbereisen (2007) report for East Germany that children raised in single mother households do not differ from children who were living with both biological parents with regard to several social and family-related outcomes, such as display of

psychosomatic symptoms, perception of stress, and parent-child relationship quality. More negative social and family-related outcomes, however, were observed for adolescents from stepparent families. These children often experience multiple changes in family structure and therefore are particularly exposed to social stress, even in contexts that are more tolerant toward alternative family structures.

Similar to the mechanisms discussed so far, the social control perspective suggests that family structure effects should be less pronounced in East Germany. That is, because irrespective of family structure children in the GDR spend much more time outside the family environment than in the FRG. The regime transferred parts of the socialization and control function of the family to public institutions, such as full time schools or day care centers. Family structure effects caused by a lack of parental social control should be weaker in such a context. After the unification, however, the former institutions have been abolished or cut back. Childcare coverage in East Germany still was comparatively high but the number of children without any afternoon care increased as mother's labor force participation remained rather high and full time childcare supply decreased (Keiser 1992; Walper 1995). Accordingly, the detrimental effects of a lack of social control might have increased after the unification. In sum, however, the effects of an alternative family structure on offspring's transition to adulthood should still be weaker in East Germany due to the persisting normative and social differences outlined above.

Data and Method

Data

The analyses were based on data from the first three waves of the German Panel of Intimate Relationships and Family Dynamics (pairfam), release 4.0 (Huinink et al. 2011; Nauck et al. 2013). The data used for this research have been collected between 2008 and 2012 and provide detailed accounts of the respondents' family living arrangements during childhood and their own family biographies. Originally, the data comprise three birth cohorts born 1971–1973, 1981–1983, and 1991–1993. The following analyses were restricted to the two older cohorts

because the 1991 cohort was too young for fully studying the transition to adulthood. Data from release 3.0 of the project Demographic Differences in Life Course Dynamics in Eastern and Western Germany (DemoDiff) supplemented the pairfam data (Kreyenfeld et al. 2012). DemoDiff closely followed the pairfam questionnaire design and collected data from an additional sample of East German respondents. Using this additional sample ensured a sufficient sample size for separate models for the two birth cohorts in East and West Germany.

Sample construction

The baseline sample consisted of heterosexual respondents without migration background who permanently lived in East or West Germany. These criteria were met by 3782 respondents of pairfam and for 764 participants of DemoDiff, comprising a total baseline sample of 4546 cases. After restricting the sample to persons with full information on their family trajectories, i.e. data on partner and fertility biographies as well as on leaving the parental home, the case number reduced to 3951 (87 percent). Dropping cases with incomplete data on childhood living arrangements further reduced the sample to 3884 cases, i.e. 85 percent of the baseline sample. After these restrictions, only 6 percent of the remaining cases (241 respondents) had missing values on the variables used in the analyses. Thus, list wise deletion of missing values yielded a final sample size of 3643 cases (80 percent).

Measures

Early demographic transitions. The analyses examined the effects of childhood family structure on family formation focusing on three classical demographic transitions: home leaving, first cohabitation, and parenthood. Although the respondents from different family structures also vary in their demographic behavior at later ages, I am focusing on early transitions because they set the stage for later instabilities and adversities in the life courses of the affected persons. Early transitions were measured by generating binary variables based on non-parametric survivor functions for each of the three processes separately by gender,

region (East and West Germany), and cohort membership (1971 and 1981). I used the first quintile as a cut-off point to identify early transitions. Thus, respondents were coded one on the binary outcome measures if they belonged to the youngest 20 percent experiencing the transition. Table 1 shows the corresponding cut-off ages and illustrates that particularly East German women experience the transitions comparatively early.

TABLE 1: Cut-off ages for early demographic transitions (*first quartile of survivor function*)

	West Germany				East Germany			
	1971-1973		1981-1983		1971-1973		1981-1983	
	Women	Men	Women	Men	Women	Men	Women	Men
Leaving Home	18.7	19.8	18.7	20.1	17.9	18.5	17.5	18.6
Cohabitation	20.3	23.0	20.3	22.7	18.9	21.3	19.0	21.3
Parenthood	25.1	28.3	24.8	29.4	21.5	25.7	23.1	27.3

Childhood living arrangements. The family structure during childhood is the key independent variable. It is based on detailed retrospective accounts of the respondents' family experiences from birth up to age 18. According to previous research, I constructed several different variables to evaluate the impact of childhood family structure. The first measure was a simple binary indicator capturing if the respondent ever lived not with both biological parents up to age 18. For home leaving I only considered living arrangements up to age 14 in order to take into account endogeneity problems arising from the high share of respondents who left the parental home before the age of 18. The second variable was derived from the stress perspective and counted the number changes in family structure. Allowing for an indirect test of the socialization and the social control perspectives, the third variable was a variation of the first indicator that differentiated between four developmental phases: early childhood (age 0-5), late childhood (age 6-10), early adolescence (11-14), late adolescence (15-18). The fourth version of the independent variable was again motivated by socialization theory and measured the duration children spent in different family types. Due to deviations in the questionnaire design, it was not possible to construct the fine-grained versions of the family structure indicators with the DemoDiff sample. Consequently, case numbers for the analysis vary depending on which version was used.

Additional variables. In order to assess the explanatory power of the mechanisms described above additional variables were included in the multivariate models. Although the used indicators are rather indirect measures, together with the key independent variable they still allow for exploratory evaluation of the various mechanisms. For instance, additional family structure indicators, such as the number of (step) siblings and mother's age at birth of the respondent, point to the socialization and social stress as mediators of family of origin effects. Similarly, the child's level of education can be considered as a proxy for status transmission. If alternative family structures indeed go along with economic hardship and adverse effects on offspring's educational attainment the effect of the key independent variable should be mediated by this indicator. Finally, the retrospective assessment of childhood quality measured how happy respondents were during childhood. This indicator was used as a proxy for social stress.

Analytical strategy

I used binary logistic regressions to predict whether the family structure during childhood affects early family formation. All models were estimated separately for four subsamples that divided the sample by birth cohort and region of residence. The first models only included different versions of the key independent variable to get a first exploratory impression of the baseline effect of family structure. The Bayesian Information Criterion (BIC) was used to evaluate which of the four versions of the independent variable fitted the data best (Raftery 1995). Based on the BIC and the sake for parsimonious models, I used the simplest measure of family structure to estimate extended models. These models included additional variables to evaluate the mediating power of the mechanisms discussed above. Due to scaling effects, the resulting coefficients between the nested nonlinear models could not be compared as easily as across linear models. I therefore calculated predicted probabilities to compare the impact of family structure across the different estimations. As these probabilities still could be affected by scaling effects I also applied an adjustment method proposed by Karlson, Holm and Breen (2012). The results were robust to both specifications (results for KHB not shown).

Results

Descriptive Results

Family structure. Table 2 presents a descriptive overview of the family living arrangements during childhood. As expected, the probability of ever living not with both biological parents was higher in East Germany and increased for the younger cohort in both parts of the country. However, the majority of the respondents still lived in traditional nuclear families throughout childhood. Consequently, the average number of family structure transitions was rather low. Even children who ever lived in an alternative family structure only experienced 1.33 transitions on average and spent more than 50 percent of their childhood in a household with both biological parents (results not shown).

Outcomes and control variables. Table 3 shows information on all variables included in the regressions models separately by family structure. The distribution of the outcome measures illustrates that children from alternative family structures had a considerable increased probability to be among the youngest 20 percent experiencing early demographic transitions. This pattern was particularly pronounced in West Germany. For instance, 44 percent of the children from alternative family structures in the 1980 cohort are in the youngest home leaving quintile. For cohabitation and parenthood, these timing differences were smaller but still sizeable. In East Germany, the association between family structure and early demographic transitions was slightly weaker. Specifically, for the older cohort East-West differences were notable. For example, having ever lived in an alternative family structure involved an increased risk of early parenthood in West Germany (29%) but was not associated with becoming a young parent in East Germany (19%). In the 1981 cohort, however, the results were more similar in East and West Germany for all three transitions.

TABLE 2: Descriptive statistics on childhood family structure

	West		East	
	1971	1981	1971	1981
Ever in alternative family (up to age 14) ^a	0.10	0.14	0.12	0.16
N	1242	1031	360	393
Ever in alternative family (up to age 18)	0.15	0.19	0.21	0.26
N	1242	1031	661	709
Ever in alternative family ^a				
<i>age 0-5</i>	0.05	0.05	0.06	0.10
<i>age 6-10</i>	0.07	0.09	0.08	0.13
<i>age 11-14</i>	0.10	0.14	0.12	0.16
<i>age 15-18</i>	0.15	0.19	0.17	0.23
N	1242	1031	360	393
Number of transitions experienced (up to age 14) ^a	0.11 (0.40)	0.16 (0.47)	0.14 (0.43)	0.19 (0.56)
N	1242	1031	360	393
Number of transitions experienced (up to age 18) ^a	0.19 (0.52)	0.26 (0.63)	0.27 (0.61)	0.37 (0.80)
N	1242	1031	661	709
Proportion of childhood years (up to age 14) lived with... ^a				
<i>both parents</i>	0.94 (0.20)	0.93 (0.21)	0.94 (0.21)	0.90 (0.26)
<i>single parent</i>	0.03 (0.13)	0.03 (0.13)	0.03 (0.12)	0.05 (0.17)
<i>parent & partner</i>	0.02 (0.12)	0.03 (0.14)	0.03 (0.15)	0.05 (0.17)
<i>someone else</i>	0.01 (0.08)	0.00 (0.04)	0.00 (0.03)	0.01 (0.06)
N	1242	1031	360	393
Proportion of childhood years (up to age 18) lived with... ^a				
<i>both parents</i>	0.92 (0.22)	0.91 (0.23)	0.92 (0.22)	0.88 (0.28)
<i>single parent</i>	0.04 (0.14)	0.04 (0.14)	0.03 (0.13)	0.05 (0.17)
<i>parent & partner</i>	0.03 (0.13)	0.04 (0.15)	0.04 (0.16)	0.05 (0.18)
<i>someone else</i>	0.01 (0.09)	0.01 (0.05)	0.01 (0.04)	0.02 (0.07)
N	1242	1031	360	393

Note: Table presents means and standard errors (in brackets); ^aBased on pairfam data only; DemoDiff did not allow detailed reconstruction of childhood living arrangements

TABLE 3: Descriptive statistics for the variables used in the analysis

	West		East	
	1971	1981	1971	1981
Early home leaving				
<i>Intact family</i>	0.19	0.17	0.20	0.18
<i>Alternative family structure</i>	0.28	0.44	0.23	0.33
<i>Total</i>	0.20	0.20	0.20	0.21
Early cohabitation				
<i>Intact family</i>	0.18	0.17	0.18	0.17
<i>Alternative family structure</i>	0.34	0.32	0.29	0.30
<i>Total</i>	0.20	0.20	0.20	0.20
Early parenthood				
<i>Intact family</i>	0.19	0.17	0.20	0.19
<i>Alternative family structure</i>	0.29	0.29	0.19	0.24
<i>Total</i>	0.21	0.19	0.20	0.20
Gender (female)				
<i>Intact family</i>	0.54	0.52	0.49	0.51
<i>Alternative family structure</i>	0.63	0.52	0.56	0.65
<i>Total</i>	0.55	0.52	0.50	0.55
Mother's age at birth				
<i>Intact family</i>	27.30 (5.83)	27.13 (4.59)	24.95 (5.40)	24.74 (4.73)
<i>Alternative family structure</i>	25.58 (5.61)	25.63 (4.91)	22.96 (4.26)	23.27 (3.94)
<i>Total</i>	27.04 (5.82)	26.84 (4.68)	24.53 (5.24)	24.36 (4.58)
Number of siblings				
<i>Intact family</i>	1.60 (1.29)	1.39 (1.01)	1.28 (1.24)	1.23 (1.08)
<i>Alternative family structure</i>	1.36 (1.52)	1.18 (1.09)	1.04 (1.33)	0.93 (1.06)
<i>Total</i>	1.56 (1.33)	1.35 (1.03)	1.23 (1.26)	1.16 (1.08)
Number of step siblings				
<i>Intact family</i>	0.20 (0.72)	0.22 (0.82)	0.27 (0.80)	0.25 (0.71)
<i>Alternative family structure</i>	1.06 (1.63)	1.19 (1.48)	1.00 (1.33)	0.97 (1.22)
<i>Total</i>	0.33 (0.97)	0.40 (1.05)	0.42 (0.98)	0.43 (0.93)
Educational attainment: Abitur (or equivalent)				
<i>Intact family</i>	0.48	0.56	0.26	0.43
<i>Alternative family structure</i>	0.36	0.38	0.24	0.45
<i>Total</i>	0.46	0.52	0.25	0.44
Assessment of own childhood (0 = very satisfied; 10 = very dissatisfied)				
<i>Intact family</i>	1.90 (1.70)	1.51 (1.39)	1.63 (1.64)	1.64 (1.59)
<i>Alternative family structure</i>	3.12 (2.13)	2.80 (2.20)	2.42 (2.07)	2.88 (2.34)
<i>Total</i>	2.09 (1.83)	1.76 (1.65)	1.80 (1.77)	1.96 (1.89)

Note: Table presents means and standard errors (in brackets)

Table 3 presents additional family background indicators that have been shown to correlate with childhood family structure and early family formation. The results show, for example, that mother's age at birth was lower in alternative family structures than in traditional nuclear families. Furthermore, the total number of siblings, including stepsiblings, was higher in these family types. These results were found in East and West Germany. With regard to educational attainment, however, considerable regional differences occurred. Whereas children from nontraditional family structures were much less likely to achieve the Abitur in West Germany, family structure did not matter for educational attainment in East Germany. The educational gradient in West Germany even became stronger over time. By contrast, the assessment of childhood quality was similarly associated with family structure in East and West Germany and indicated higher levels of dissatisfaction for respondents who have not lived permanently with both biological parents during their childhood.

Multivariate Results

Baseline Models. The regression models shown in tables 4a – 4c add to the descriptive results by including different versions of the key independent variable. This allows exploring which aspects of childhood family structure are particularly influential to predict early demographic transitions. Overall, a comparison of the BIC values across the different models suggests that the simplest model with a binary indicator as a measure of childhood living arrangements fits the data best in most of the cases. In other words, just knowing that a child ever had not lived with both biological parents provides a sufficient basis to predict early family formation. That does not mean, however, that other aspects of family structure are irrelevant.

In line with the descriptive results, the estimates in tables 4a – 4c show that family structure was predictive in all models for West Germany. On average, having lived in an alternative family structure approximately doubled the odds of belonging to the group of respondents who experienced demographic transitions early. With the exception of the increasing effect for home leaving a comparison of effect sizes between cohorts revealed no clear trend.

TABLE 4a: Baseline logit models for early home leaving^a

	West		East	
Childhood Living Arrangements	1971	1981	1971	1981
Ever in alternative family (up to age 14)	1.66* (0.35)	3.81*** (0.73)	1.18 (0.46)	2.20** (0.67)
Constant	.24** (0.02)	0.20*** (0.02)	0.25*** (0.04)	0.23*** (0.03)
N	1242	1031	360	393
χ^2 (df)	5.39 (1)	45.53 (1)	0.18 (1)	6.44 (1)
BIC	1.74	-38.59	5.70	-0.47
Number of transitions experienced (up to age 14)	1.55** (0.24)	2.34*** (0.34)	0.90 (0.29)	1.84** (0.36)
Constant	.24** (0.02)	0.22*** (0.02)	0.26*** (0.04)	0.23*** (0.03)
N	1242	1031	360	393
χ^2 (df)	7.66 (1)	34.80 (1)	0.12 (1)	9.65 (1)
BIC	-0.54	-27.86	5.76	-3.68
Ever in alternative family				
<i>age 0-5</i>	0.47 (0.22)	1.04 (0.43)	0.31 (0.26)	0.53 (0.32)
<i>age 6-10</i>	1.93 (1.03)	0.97 (0.40)	2.30 (1.97)	3.70 (3.47)
<i>age 11-14</i>	1.51 (0.60)	3.84*** (1.17)	1.12 (0.75)	1.11 (0.89)
Constant	.24** (0.02)	0.20*** (0.02)	0.25*** (0.03)	0.23*** (0.03)
N	1242	1031	360	393
χ^2 (df)	9.01 (3)	45.54 (3)	2.71 (3)	9.61 (3)
BIC	12.37	-24.73	14.95	8.31
Proportion of childhood years lived with... (ref.: lived all years with both parents) ^b				
<i>single parent</i>	1.19 (0.62)	3.46* (1.80)	0.57 (0.71)	1.82 (1.20)
<i>parent & parent's partner</i>	2.73* (1.37)	12.11*** (5.96)	1.82 (1.45)	3.09+ (2.01)
Constant	.24** (0.02)	0.22*** (0.02)	0.25*** (0.03)	0.24*** (0.03)
N	1242	1031	360	393
χ^2 (df)	5.09 (3)	36.51 (3)	0.68 (3)	5.76 (3)
BIC	16.28	-15.69	16.97	12.16

Note: Odds Ratios and standard errors (in brackets) are shown; ^aBased on pairfam data only; DemoDiff did not allow detailed reconstruction of childhood living arrangements; ^bmodel controlled for years in other family structures;

*** p < 0.001, ** p < 0.01, * p < 0.05, + p < 0.10

TABLE 4b: Baseline logit models for early cohabitation

	West		East	
Childhood Living Arrangements				
Ever in alternative family (up to age 18)	2.28*** (0.40)	2.20*** (0.39)	1.93** (0.42)	2.20*** (0.44)
Constant	0.22*** (0.02)	0.21*** (0.02)	0.21*** (0.02)	0.20*** (0.02)
N	1242	1031	661	709
χ^2 (df)	21.41 (1)	18.51 (1)	8.68 (1)	15.27 (1)
BIC	-14.29	-11.57	-2.18	-8.71
Number of transitions experienced (up to age 18)	1.50*** (0.18)	1.45*** (0.16)	1.50** (0.21)	1.50*** (0.16)
Constant	0.24*** (0.02)	0.23*** (0.02)	0.22*** (0.02)	0.21*** (0.02)
N	1242	1031	661	709
χ^2 (df)	11.20 (1)	11.22 (1)	8.06 (1)	14.71 (1)
BIC	-4.08	-4.28	-1.56	-8.15
Ever in alternative family ^a				
<i>age 0-5</i>	1.37 (0.65)	0.87 (0.41)	0.83 (0.65)	2.00 (1.27)
<i>age 6-10</i>	0.83 (0.46)	0.88 (0.41)	1.16 (1.00)	1.33 (1.30)
<i>age 11-14</i>	0.57 (0.26)	0.49+ (0.21)	0.22+ (0.18)	0.37 (0.32)
<i>age 15-18</i>	3.32*** (0.88)	3.97*** (1.13)	6.26*** (2.97)	3.20** (1.28)
Constant	0.22*** (0.02)	0.21*** (0.02)	0.20*** (0.03)	0.21*** (0.03)
N	1242	1031	360	393
χ^2 (df)	25.98 (4)	25.68 (4)	14.73 (4)	15.04 (4)
BIC	2.52	2.08	8.81	-8.15
Proportion of childhood years lived with...				
(ref.: lived all years with both parents) ^{a b}				
<i>single parent</i>	1.53 (0.71)	1.27 (0.68)	0.26 (0.37)	2.51 (1.58)
<i>parent & parent's partner</i>	3.17* (1.49)	2.01 (0.95)	2.58 (1.88)	2.18 (1.36)
Constant	0.24*** (0.02)	0.23*** (0.02)	0.22*** (0.03)	0.22*** (0.03)
N	1242	1031	360	393
χ^2 (df)	11.08 (3)	13.64 (3)	5.25 (3)	15.25 (3)
BIC	10.29	7.17	12.41	2.67

Note: Odds Ratios and standard errors (in brackets) are shown; ^aBased on pairfam data only; DemoDiff did not allow detailed reconstruction of childhood living arrangements;

^bmodel controlled for years in other family structures;

*** p < 0.001, ** p < 0.01, * p < 0.05, + p < 0.10

TABLE 4c: Baseline logit models for early parenthood

	West		East	
Childhood Living Arrangements	1971	1981	1971	1981
Ever in alternative family (up to age 18)	1.71** (0.30)	2.00*** (0.37)	0.94 (0.22)	1.35 (0.28)
Constant	0.24*** (0.02)	0.20*** (0.02)	0.26*** (0.03)	0.23*** (0.03)
N	1242	1031	661	709
χ^2 (df)	8.63 (1)	13.58 (1)	0.08 (1)	2.11 (1)
BIC	-1.51	-6.65	6.42	4.46
Number of transitions experienced (up to age 18)	1.45** (0.17)	1.37** (0.15)	0.95 (0.15)	1.23* (0.13)
Constant	0.24*** (0.02)	0.21*** (0.02)	0.26*** (0.03)	0.23*** (0.02)
N	1242	1031	661	709
χ^2 (df)	9.32 (1)	7.52 (1)	0.10 (1)	3.70 (1)
BIC	-2.19	-0.58	6.39	2.86
Ever in alternative family ^a				
<i>age 0-5</i>	2.43+ (1.23)	0.70 (0.32)	0.52 (0.42)	0.76 (0.47)
<i>age 6-10</i>	0.43 (0.25)	0.90 (0.40)	0.59 (0.47)	4.92 (5.78)
<i>age 11-14</i>	1.13 (0.52)	1.32 (0.57)	1.53 (1.11)	0.50 (0.58)
<i>age 15-18</i>	1.80* (0.51)	1.90* (0.60)	1.34 (0.69)	0.71 (0.34)
Constant	0.23*** (0.02)	0.20*** (0.02)	0.27*** (0.04)	0.31*** (0.04)
N	1242	1031	360	393
χ^2 (df)	12.94 (4)	15.12 (4)	2.26 (4)	3.59 (4)
BIC	15.56	12.63	21.29	20.30
Proportion of childhood years lived with... (ref.: lived all years with both parents) ^{a b}				
<i>single parent</i>	1.73 (0.78)	1.93 (0.99)	2.11 (1.81)	1.91 (1.20)
<i>parent & parent's partner</i>	2.84* (1.34)	2.15 (1.02)	0.52 (0.48)	0.79 (0.55)
Constant	0.24*** (0.02)	0.21*** (0.02)	0.28*** (0.04)	0.30*** (0.04)
N	1242	1031	360	393
χ^2 (df)	7.50 (3)	11.69 (3)	1.18 (3)	1.86 (3)
BIC	13.87	9.12	16.48	16.06

Note: Odds Ratios and standard errors (in brackets) are shown; ^aBased on pairfam data only; DemoDiff did not allow detailed reconstruction of childhood living arrangements;

^bmodel controlled for years in other family structures;

*** p < 0.001, ** p < 0.01, * p < 0.05, + p < 0.10

In contrast to home leaving, the effect sizes of family structure were similar across cohorts and regions for cohabitation. Having lived in a nontraditional family household led to faster union formation in East and West Germany. A different pattern, however, occurred for fertility. The transition to early parenthood was not associated with family living arrangements during childhood in East Germany for the cohort born 1981. In the models for the younger cohort, the family structure effect only met conventional levels of statistical significance when it was measured by the number of changes in family living arrangements. In sum, these results suggest that family structure during childhood gained importance in predicting early family formation in East Germany, whereas its effects remained rather stable in West Germany.

With respect to the alternative model specifications, the results point to a timing effect that is in line with the expectations of the social control perspective. Family structure during adolescence had a stronger effect on family formation than early childhood experiences. Moreover, the results indicate that households including stepparents foster fast transitions to adulthood. This finding is in line with the stress perspective, because living in a stepparent family often implicates multiple changes in family structure. The positive effects for the number of experienced transitions provide additional support for this mechanism. Children from single parent households, however, usually experienced fewer transitions and did not differ systematically from children raised by both biological parents.

Extended Models. Based on the previous regressions the extended models displayed in tables 5a – 5c include additional variables to scrutinize the mechanisms described above. The bottom rows of the tables present predicted probabilities of belonging to the youngest 20 percent experiencing the respective demographic transition. The probabilities were calculated for children from nontraditional family structures and for respondents from traditional nuclear families. The differences between the respective values are presented in the last row of the table, named delta.

TABLE 5a: Extended logit models for early home leaving^a

	West								East							
	1971 (N = 1242)				1981 (N = 1031)				1971 (N = 360)				1981 (N = 393)			
Ever in alternative family (up to age 14)	1.66*	1.20	1.17	1.04	3.81***	3.34***	3.21***	2.77***	1.18	1.03	1.04	0.88	2.20**	2.29*	2.37*	1.98+
	(0.35)	(0.28)	(0.27)	(0.25)	(0.73)	(0.71)	(0.69)	(0.61)	(0.46)	(0.42)	(0.43)	(0.38)	(0.67)	(0.79)	(0.83)	(0.73)
Other family structure indicators																
<i>Mother' age at birth</i>		0.94***	0.95***	0.95***		0.94**	0.96*	0.97+		0.96	0.96	0.96		0.98	0.99	0.99
		(0.01)	(0.01)	(0.01)		(0.02)	(0.02)	(0.02)		(0.03)	(0.03)	(0.03)		(0.03)	(0.03)	(0.03)
<i>Number of siblings</i>		1.11+	1.07	1.06		1.03	0.98	0.97		1.16	1.18	1.16		1.31*	1.29*	1.25*
		(0.06)	(0.06)	(0.06)		(0.06)	(0.06)	(0.06)		(0.13)	(0.13)	(0.13)		(0.14)	(0.14)	(0.14)
<i>Number of Stepsiblings</i>		1.27***	1.23**	1.20***		1.09	1.06	1.02		1.16	1.16	1.11		1.13	1.10	1.08
		(0.09)	(0.08)	(0.08)		(0.08)	(0.08)	(0.08)		(0.18)	(0.18)	(0.17)		(0.15)	(0.15)	(0.15)
Educational attainment: Abitur (or equivalent)			0.50***	0.51***			0.32***	0.33***				1.52	1.56		0.41**	0.42**
			(0.08)	(0.08)			(0.06)	(0.06)				(0.44)	(0.45)		(0.12)	(0.12)
Assessment of own childhood				1.13**				1.18***				1.15+				1.11
				(0.04)				(0.06)				(0.09)				(0.08)
Constant	0.24***	0.19***	0.27***	0.27***	0.20***	0.19***	0.34***	0.34***	0.25***	0.20***	0.17***	0.18***	0.23***	0.15***	0.22***	0.23***
	(0.02)	(0.02)	(0.04)	(0.04)	(0.02)	(0.03)	(0.06)	(0.06)	(0.04)	(0.04)	(0.04)	(0.04)	(0.03)	(0.03)	(0.05)	(0.06)
χ^2 (df)	5.39 (1)	35.02 (4)	55.56 (5)	65.70 (6)	45.53 (1)	57.92 (4)	104.74 (5)	117.06 (6)	0.18 (1)	3.67 (4)	5.76 (5)	8.76 (6)	6.44 (1)	12.81 (4)	23.58 (5)	26.08 (6)
BIC	1.74	-6.53	-19.94	-22.96	-38.59	-30.17	-70.05	-75.43	5.7	19.87	23.67	26.56	-0.47	11.09	6.29	9.76
Predicted Probability																
<i>Intact family</i>	0.19	0.20	0.20	0.20	0.17	0.17	0.17	0.18	0.20	0.20	0.20	0.21	0.18	0.18	0.18	0.19
<i>Alternative family structure</i>	0.28	0.23	0.22	0.21	0.44	0.4	0.38	0.35	0.23	0.21	0.21	0.19	0.33	0.34	0.34	0.31
<i>Delta</i>	0.09*	0.03	0.02	0.01	0.27***	0.23***	0.21***	0.18***	0.03	0.01	0.01	-0.02	0.15*	0.15*	0.15*	0.12
	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.05)	(0.04)	(0.04)	(0.07)	(0.07)	(0.07)	(0.06)	(0.06)	(0.07)	(0.07)	(0.07)

Note: Odds Ratios and standard errors (in brackets) are shown; ^aBased on pairfam data only; DemoDiff did not allow detailed reconstruction of childhood living arrangements; *** p < 0.001, ** p < 0.01, * p < 0.05, + p < 0.10

TABLE 5b: Extended logit models for early cohabitation

	West								East							
	1971 (N = 1242)				1981 (N = 1031)				1971 (N = 661)				1981 (N = 709)			
Ever in alternative family (up to age 18)	2.28*** (0.40)	1.84** (0.35)	1.75** (0.33)	1.57* (0.31)	2.20*** (0.39)	2.17*** (0.43)	2.02*** (0.40)	1.94** (0.40)	1.93** (0.42)	1.96** (0.46)	1.97** (0.46)	1.92** (0.46)	2.20*** (0.44)	2.06*** (0.45)	2.16*** (0.47)	1.92** (0.44)
Other family structure indicators																
<i>Mother' age at birth</i>		0.95*** (0.01)	0.95*** (0.01)	0.96*** (0.01)		0.93*** (0.02)	0.94*** (0.02)	0.94*** (0.02)		0.99 (0.02)	0.99 (0.02)	0.99 (0.02)		0.97 (0.02)	0.98 (0.02)	0.98 (0.02)
<i>Number of siblings</i>		1.25*** (0.07)	1.19** (0.07)	1.19** (0.07)		1.12 (0.08)	1.09 (0.08)	1.09 (0.08)		1.12 (0.08)	1.10 (0.08)	1.10 (0.08)		1.05 (0.09)	1.01 (0.09)	0.99 (0.09)
<i>Number of Stepsiblings</i>		1.24** (0.08)	1.21** (0.08)	1.18* (0.08)		0.94 (0.08)	0.92 (0.08)	0.92 (0.08)		0.98 (0.10)	0.97 (0.10)	0.96 (0.10)		1.05 (0.11)	1.03 (0.11)	1.01 (0.11)
Educational attainment: Abitur (or equivalent)			0.44*** (0.07)	0.45*** (0.07)			0.51*** (0.08)	0.51*** (0.09)			0.65+ (0.16)	0.66+ (0.16)			0.43*** (0.09)	0.44*** (0.09)
Assessment of own childhood				1.11** (0.04)			1.04 (0.05)				1.05 (0.06)					1.10+ (0.06)
Constant	0.22*** (0.02)	0.14*** (0.02)	0.22*** (0.03)	0.22*** (0.03)	0.21*** (0.02)	0.18*** (0.03)	0.26*** (0.04)	0.26*** (0.04)	0.21*** (0.02)	0.19*** (0.03)	0.21*** (0.04)	0.21*** (0.04)	0.20*** (0.02)	0.19*** (0.03)	0.27*** (0.05)	0.28*** (0.05)
χ^2 (df)	21.41 (1)	54.39 (4)	82.47 (5)	89.58 (6)	18.51 (1)	39.49 (4)	56.70 (5)	57.30 (6)	8.68 (1)	10.94 (4)	14.16 (5)	15.02 (6)	15.27 (1)	18.01 (4)	35.94 (5)	39.72 (6)
BIC	-14.29	-25.89	-46.84	-46.83	-11.57	-11.74	-22.01	-15.67	-2.18	15.03	18.31	23.94	-8.71	8.25	-3.12	-0.33
Predicted Probability																
<i>Intact family</i>	0.18	0.19	0.19	0.19	0.17	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.17	0.17	0.17	0.17
<i>Alternative family structure</i>	0.34	0.29	0.28	0.27	0.32	0.31	0.3	0.29	0.29	0.3	0.3	0.29	0.3	0.29	0.3	0.28
<i>Delta</i>	0.15*** (0.04)	0.11*** (0.04)	0.09** (0.04)	0.07* (0.03)	0.14*** (0.04)	0.14*** (0.04)	0.12*** (0.04)	0.11*** (0.04)	0.12** (0.04)	0.12** (0.05)	0.12** (0.04)	0.11** (0.05)	0.14*** (0.04)	0.13*** (0.04)	0.13*** (0.04)	0.11** (0.04)

Note: Odds Ratios and standard errors (in brackets) are shown; *** p < 0.001, ** p < 0.01, * p < 0.05, + p < 0.10

TABLE 5c: Extended logit models for early parenthood

	West								East							
	1971 (N = 1242)				1981 (N = 1031)				1971 (N = 661)				1981 (N = 709)			
Ever in alternative family (up to age 18)	1.71** (0.30)	1.29 (0.25)	1.22 (0.24)	1.15 (0.23)	2.00*** (0.37)	1.74** (0.36)	1.56* (0.33)	1.42 (0.31)	0.94 (0.22)	0.85 (0.22)	0.86 (0.22)	0.75 (0.20)	1.35 (0.28)	1.26 (0.29)	1.33 (0.31)	1.12 (0.28)
Other family structure indicators																
<i>Mother' age at birth</i>		0.95*** (0.01)	0.96** (0.01)	0.96** (0.01)		0.89*** (0.02)	0.91*** (0.02)	0.91*** (0.02)		0.97 (0.02)	0.98 (0.02)	0.98 (0.02)		0.94** (0.02)	0.95* (0.02)	0.96* (0.02)
<i>Number of siblings</i>		1.23*** (0.07)	1.17** (0.06)	1.16** (0.06)		1.24** (0.10)	1.21* (0.09)	1.20* (0.09)		1.32*** (0.10)	1.29*** (0.09)	1.27** (0.09)		1.30** (0.11)	1.23* (0.10)	1.20* (0.10)
<i>Number of Stepsiblings</i>		1.30*** (0.09)	1.27*** (0.09)	1.25** (0.09)		1.03 (0.08)	1.01 (0.08)	0.99 (0.08)		1.14 (0.11)	1.12 (0.11)	1.08 (0.11)		1.11 (0.12)	1.07 (0.12)	1.04 (0.12)
Educational attainment: Abitur (or equivalent)			0.42*** (0.07)	0.42*** (0.07)			0.29*** (0.05)	0.29*** (0.05)			0.43** (0.12)	0.45** (0.12)			0.22*** (0.05)	0.23*** (0.06)
Assessment of own childhood				1.06 (0.04)				1.09+ (0.05)				1.20*** (0.06)				1.14* (0.06)
Constant	0.24*** (0.02)	0.16*** (0.02)	0.25*** (0.04)	0.25*** (0.04)	0.20*** (0.02)	0.14*** (0.02)	0.25*** (0.04)	0.26*** (0.04)	0.26*** (0.03)	0.17*** (0.03)	0.21*** (0.03)	0.21*** (0.04)	0.23*** (0.03)	0.16*** (0.03)	0.28*** (0.05)	0.30*** (0.05)
χ^2 (df)	8.63 (1)	43.08 (4)	75.88 (5)	77.97 (6)	13.58 (1)	60.93 (4)	111.61 (5)	114.45 (6)	0.08 (1)	14.95 (4)	25.70 (5)	37.09 (6)	2.11 (1)	18.43 (4)	66.69 (5)	72.89 (6)
BIC	-1.51	-14.58	-40.25	-35.22	-6.65	-33.18	-76.92	-72.82	6.42	11.03	6.77	1.87	4.46	7.83	-33.88	-33.5
Predicted Probability																
<i>Intact family</i>	0.19	0.2	0.2	0.2	0.17	0.17	0.18	0.18	0.2	0.21	0.21	0.21	0.19	0.19	0.19	0.2
<i>Alternative family structure</i>	0.29	0.24	0.23	0.22	0.29	0.26	0.24	0.23	0.19	0.18	0.18	0.17	0.24	0.23	0.23	0.21
<i>Delta</i>	0.10** (0.03)	0.04 (0.03)	0.03 (0.03)	0.02 (0.03)	0.12*** (0.03)	0.09* (0.04)	0.06* (0.03)	0.05 (0.03)	-0.01 (0.04)	-0.03 (0.04)	-0.02 (0.04)	-0.04 (0.04)	0.05 (0.04)	0.04 (0.04)	0.04 (0.04)	0.02 (0.04)

Note: Odds Ratios and standard errors (in brackets) are shown; *** p < 0.001, ** p < 0.01, * p < 0.05, + p < 0.10

Generally, the estimated direct effects in the extended models were as expected. With respect to the additional family structure indicators, this was particularly true for West Germany. Children of older mothers postponed their own family formation, whereas respondents from larger families with more siblings and stepsiblings had a faster transition to adulthood. With the exception of the regression on early parenthood (table 5c) the additional family structure indicators were of weaker explanatory power in East Germany. A comparison of the predicted probabilities substantiated this pattern and indicated that these variables mediated a considerable amount of the main family structure effect in West Germany but not in East Germany. The regression predicting early parenthood for the 1971 cohort (table 5c) is a good illustration of this point. The difference in predicted probabilities between children who ever lived in an alternative family structure and children from traditional two parent families was reduced from 10 to 4 percentage points after controlling for the additional family background indicators. Thus, the original difference was reduced by 60 percent. For the younger West German cohort these effects were less pronounced and in East Germany the family structure indicators hardly had any mediating effects at all.

The results for the educational attainment indicator followed a similar pattern. The main effect of higher secondary education was negative in East and West Germany indicating a postponement in family formation caused by longer periods of education. Additional analyses (not shown) revealed that the postponement effect slightly increased for the younger cohorts. In terms of mediation, educational attainment reduced the effect of living in an alternative family structure in West Germany for both cohorts but for none of the two East German cohorts. This finding points to stronger association between family structure and inequality in West Germany.

Results for the indicator assessing childhood quality, which was used as a proxy for stress, did not reveal a clear regional or cohort specific pattern. In the majority of the models being dissatisfied with the own childhood accelerated the transition to adulthood. The indicator also reduced the main effect of family structure, even after controlling for the previous described mediators.

Discussion

During the past decades, the share of children living in nontraditional family structures has increased in many modern societies. A large body of literature has studied the long-term consequences of the increasing complexity of childhood living arrangements for later family formation. Most of these studies have been conducted in the United States. Drawing on the theoretical and empirical contributions of this rich literature the aim of the present study was to examine these processes in a different societal context. The case of Germany was particularly well suited for this purpose. Due to the post-war separation, it allowed for testing the generalizability of the predominantly US-specific findings by providing insights into two different societal contexts. Moreover, the unique data source used for the analyses facilitated a comparison of two German cohorts and thus made it possible to scrutinize the stability of within country differences after the unification.

According to research from the United States, the findings indicate an increasing prevalence of nontraditional childhood living arrangements. As expected, alternative family types were more prevalent in East Germany. Already before the Second World War, parenthood out of wedlock has been more common in East Germany and this peculiarity has been reinforced by the socialist family policy during the post-war period. Similarly, timing differences in family formation between East and West Germany remained rather stable. Demographic transitions still occur faster in East Germany.

With respect to the effect of childhood living arrangement on early family formation, however, the within country differences were not as clear as expected. In West Germany, children from nontraditional family backgrounds consistently experienced the transition to adulthood faster than children from traditional two parent families. In East Germany, the effects were similar for early home leaving and cohabitation. This is particularly true for the younger cohort, which experienced the transitions approximately ten years after the unification. Next to these consistencies, the analyses also revealed notable differences in family structure effects between East and West Germany.

For instance, there was no significant effect of childhood living arrangements on home leaving for the older East German cohort. This might be due to two reasons. First, the comparatively small case number for this analysis statistically reduced the chance of obtaining significant effects. A sensitivity analysis (not shown) that considered the effect of living in an alternative family structure up to age 18 instead of age 14 supported this reasoning. Using this alternative indicator allowed for a bigger sample size and produced a moderate but significant effect. As mentioned above the results obtained by this alternative model specification, however, are subject to endogeneity problems. The second reason for the missing or weak family structure effect points to the situation on the housing market encountered by the respondents who were born around 1970 (Juang et al. 1999). The early home leavers in this cohort either had to find their first apartment within the GDR that strictly restricted access to housing for young unmarried adults without children or in the period directly after the fall of the wall that was characterized by a difficult housing market as well. These circumstances might have suppressed the family structure effect by forcing adolescents to postpone home leaving.

The findings on early parenthood revealed stronger and more robust context-specific differences than the analysis of early home leaving. Having lived in an alternative family structure was not associated with an early transition to parenthood in East Germany. At best, there is a small trend towards convergence for the younger cohort. The effect for East Germany, however, is still insignificant and considerably smaller than in the West. Persisting differences in fertility and marital behavior are likely to be the explanation of this result. Although the total fertility rates in East and West Germany converged two decades after the unification, there are still marked differences. First, compared to West Germany, the transition to parenthood occurs earlier in East Germany. Second, childlessness is less common (Goldstein and Kreyenfeld 2011). Third, parenthood out of wedlock was and is still much more prevalent in East Germany (Klüsener and Goldstein 2014). Although marriage lost some of its importance, it often continues to be prerequisite for parenthood in West Germany. Two-thirds of the cohort born 1971 has been married at the birth of the first child. In East Germany, less than 40 percent were married at this transition (Huinink et al. 2012). These

peculiarities may explain the stronger effect of childhood family structure in West Germany. The desire to marry before becoming parent is supposedly particularly strong for children from intact families in this part of the country. The majority of the early parenthood transitions, however, are non-marital births. Consequently, it is unlikely that children from traditional nuclear families will be among the youngest quintile experiencing the transition to parenthood. By contrast, the marital norm is weaker for children from alternative family structures, which in turn increases their likelihood of early parenthood. By contrast, young adults in East Germany, irrespective of their childhood living arrangements, are not exposed to such a strong marital norm.

The differences in the overall effect of childhood family structure raise the question if the mechanisms driving it vary by context as well. In general, the results provided some empirical support for all the mechanisms discussed in the previous literature. For example, the age specific effects of family structure during late childhood or adolescence support the social control perspective. In addition, the positive effects for the number of changes in childhood living arrangements in the baseline models are in line with the stress perspective. As expected, at least some of the models for East Germany indicated that multiple changes in family structure are slightly more predictive for early family formation than having ever lived in a nontraditional family. Nevertheless, both mechanisms, stress and social control, were supported in East and West Germany. With regard to educational attainment and the additional family structure indicators, however, the analyses yielded context specific findings. Both factors only mediated the main family structure effect in West Germany.

With regard to the mediation caused by mother's age at birth, research on the intergenerational transmission of fertility provides a plausible explanation. The vast majority of the transmission studies report evidence in support of intergenerational continuities in the age at first birth. Early parenthood, in turn, also accelerates other demographic transitions such as leaving the parental home or the formation of a first union. Recent research (Fasang 2014), however, did not find evidence for intergenerational continuities in childbearing in the GDR. The lack of a direct effect of mother's age at birth in the regressions for the East

German cohorts suggests that this pattern persisted after the unification. As a result, there is no evidence for a mediation of the family structure effect by the mother's age at birth in East Germany.

Also in line with the expectations, the proxy indicator used for testing the economic hardship and status transmission perspective did not moderate the effect of ever having lived in an alternative family structure for the East German sample. Already the descriptive results indicated that family structure is only associated with educational attainment in West Germany. Konietzka and Kreyenfeld (2005) reported similar findings for a comparison of the socioeconomic status of mothers in East and West Germany. They found only small differences with regard to educational level and the labor force participation between married and cohabiting mothers in East Germany. In a similar vein, other scholars have shown that even after the unification the status differences between children from intact families and single parent families remained smaller in East Germany (Joos 1997; Walper 2002).

The previous juxtaposition of the similarities and differences in effect sizes and mechanisms has to be interpreted in the context of several limitations. First, although pairfam and DemoDiff provide very valuable data sources, the case numbers for some of the regression models on the East German samples were rather small, prohibited more detailed models, and hampered the comparison of effects across subsamples as outlined in the discussion of the regression on early home leaving above.

Second, the observed convergence of the main family structure effect in East and West Germany is based on a comparison of only two cohorts one of which experienced the transition to adulthood in the exceptional historical period of the unification. Particularly for the respective East German cohort family structure effects might be obscured by this exogenous shock. However, theoretical considerations and previous research on older East German cohorts suggest that the weaker family structure effect for children who have been socialized in the GDR is not just a result of a period effect but due to the contextual differences between East and West Germany. With respect to the future development, a recent study of Lois (2014) suggests a continuation of the convergence trend. Analyzing the third pairfam-cohort that was born in the early 1990s this study examined family structure effects on early

home leaving and cohabitation. Lois (2014) does not explicitly compare East and West Germany but includes an East/West-dummy in her models and does not mention a context specific variation of the family structure effects.

Another limitation refers to the measures of the mechanisms. The availability of suitable indicators was limited by the questionnaire design and the retrospective approach of the present study. Prospective measures of family income and attitudes toward family formation, for instance, would have allowed for a more detailed account of the mechanisms. This, however, would require a long running panel study with an explicit focus on family processes. So far, there is no such study in Germany and pairfam has just started to provide a remedy to this shortcoming. Given this restriction, which is common in US studies as well, the analyses should be considered “descriptive regressions” (Ginther and Pollak 2004) that are a subject to endogeneity problems that preclude strict causal inferences.

Notwithstanding these limitations, the present study gives an explorative overview of family structure effects in East and West Germany and draws attention to context specific regularities and differences. On the one hand, the results suggest that the effects of childhood living arrangements on early family formation are a rather ubiquitous phenomenon in modern societies. Despite the marked socio-environmental differences between East and West Germany, the overall effect of childhood family structure was more similar than expected. In line with research from other countries, children from nontraditional family structures experience important demographic transitions faster than children who have been continuously raised by both biological parents.

At the same time, however, this study indicates that context matters. In spite of the observed convergence tendencies, there are still notable differences in effect sizes and in the way in which the family structure effects operate in the two parts of Germany. The most important finding in this regard, is the absence of the association between family structure and educational attainment in East Germany. This indicates that living in an alternative family structure does not necessarily involve educational disadvantages. In view of the increasing interest in the link

between family structure, demographic behavior, and the reproduction of social inequality (Carlson and England 2011; Conger et al. 2010; McLanahan and Percheski 2008), this a noteworthy finding that warrants further research. It gives rise to the question under which conditions alternative family structure and early family formation go along with socioeconomic disadvantages. Accordingly, future research should not only compare if the size of family structure effects varies by context but also if the socioeconomic consequences of these effects differ in various socio-cultural environments.

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