Intergenerational Transmission of Behavioral Patterns: Similarity of Parents' and Children's Family-Life Trajectories

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Abstract
This study examines whether family-life trajectories during young adulthood are transmitted from parents to children and which mechanisms might explain the level of intergenerational similarity in these trajectories. A new indicator to measure similarity is compared with an indicator of similarity based on Optimal Matching (OM). Using data from the NSFH, it is shown that intergenerational transmission of family-life trajectories exists and that mechanisms of value socialization, role modeling and status inheritance influence the level of similarity between parents and children. The newly developed similarity measure is found to perform superior to the OM-based measure. Methodological and substantive implications of the findings are discussed.

INTRODUCTION

One of the key areas of sociological research is the extent to which behavior is transmitted from parents to children. Intergenerational transmission has been studied in such diverse areas as gender roles (Cunningham 2001; Moen et al. 1997), educational attainment (Mare and Maralani 2006), fertility (Barber 2001), occupational status (Blau and Duncan 1967; Hendrickx and Ganzeboom 1998), and health (Cardol et al. 2006; Rimal 2003). Although the strength of intergenerational transmission varies between areas and sometimes varies across cohorts, a major conclusion of these studies is that intergenerational transmission still is important in our society.

Most research has focused on the intergenerational transmission of specific behaviors rather than on the transmission of behavioral patterns. This is unfortunate because it is likely that parents will not just try to transmit specific behaviors to their children, but will rather try to transmit their 'way of life'. In addition, it is likely that children will be influenced by the general ways in which parents organize their lives and the general outlook of their parents rather than by specific behaviors or specific attitudes only. If so, one would expect that children tend to reproduce the life courses of their parents. However, little is known about the extent to which life courses of parents and children resemble each other and about the factors that influence the level of this resemblance. Major reasons for this state of affairs are the lack of appropriate data and the lack of appropriate methods. In order to study the transmission of life courses one needs data that include life-course information on parents and children. Such data are hard to collect. In addition, techniques are needed that allow the level of similarity of the life courses to be assessed. Only few techniques offer prospects in this respect (Abbott 1995; Abbott and Hrycak 1990; Billari and Piccaretta 2005; Elzinga 2005).

This study aims at advancing our knowledge about the intergenerational transmission of life courses by studying the transmission of family-life trajectories in young adulthood. In particular, two main questions will be answered. The first is whether or not intergenerational transmission of family-life trajectories (still) exists, despite the considerable differentiation and de-standardization of the young adult life course witnessed during the last decades (e.g. Elzinga and Liefbroer 2007; Shanahan 2000). To answer this question, a hypothesis is formulated about the level of similarity between family-life trajectories of parents and children compared to that of random dyads consisting of a person from the parental generation and a person from the children's generation. Testing this hypothesis constitutes a major methodological challenge given the paucity of methods to determine similarity amongst categorical time series. We will use two quite different methods to determine such similarities. One method is Optimal Matching (OM), first introduced by Abbott and his collaborators (e.g. Abbott and Hrycak 1990, Abbott and Tsay 2000, Brüderl and Scherer 2006). The second method is based on a metric that was newly developed by Elzinga (2005). We will compare the results obtained with these two methods and it will turn out that Elzinga's metric is superior to OM. In addition, the results show that the hypothesis about the existence of intergenerational transmission must be accepted.

The second research question pertains to the mechanisms that generate intergenerational transmission of family-life trajectories. Three important mechanisms are identified, namely value socialization, role modeling and status inheritance, and hypotheses are formulated about each of them. These hypotheses are tested with each

of the similarity measures. The results show that all three mechanisms are important to understand continuities in life-course patterns across generations. Again, results suggest that the newly developed similarity measure behaves superior to the one based on OM.

The article is divided into two main parts. The first part discusses whether intergenerational transmission of family-life trajectories exists. The hypothesis is introduced, methods to test the hypotheses are developed and it is tested using data on parent-child dyads from the National Survey of Families and Households (NSFH). In the second part of the paper, hypotheses on the mechanisms influencing transmission of family-life trajectories are formulated and tested, using the same data on parent-child dyads from the NSFH. The main results and implications are discussed in the concluding section.

TRANSMISSION OF FAMILY-LIFE TRAJECTORIES: DOES IT OCCUR?

Changes in family life and the transmission hypothesis

The process through which young adults gain independence from their family of origin and constitute a family of their own has changed considerably over the last decades. Important events in this process, like marriage and parenthood, have been postponed (Kohler et al. 2002; Schoen and Canudas-Romo 2005). Living in a one-person household and unmarried cohabitation, living arrangements that were uncommon during the 1950's and 1960's, have become much more popular since (Bumpass and Lu 2000; Goldscheider 1997). Finally, unions have become much more fragile, leading to a huge increase in dissolutions of both marital and non-marital unions (Teachman et al. 2000). As a result, the family-life course of current young adults differs substantially from that of their parents (Elzinga and Liefbroer 2007; Fussell and Furstenberg 2005; Shanahan 2000; Wu and Li 2005).

Given the profound changes in occurrence and timing of events in the family-life career, it is questionable whether intergenerational continuity in family-life trajectories of parents and children still exists. For instance, it could be argued that parental trajectories are no longer useful to orient young adults in their own transition to adulthood. Young adults are more likely to use contemporary cultural scripts diffused by the media and within youth cultures as a guideline. In addition, in a society in which the importance of autonomy is emphasized by parents and children alike, children may want to assert this autonomy with regard to crucially important decisions concerning family life. On the other hand, it could be argued that important mechanisms that could lead to intergenerational transmission of family-life trajectories, like value socialization (Barber 2000), role modeling (Bandura 1977) and status inheritance (Kalmijn et al. 2006), are likely to be operative even in a society that emphasizes individualism.

Although the importance of studying the transmission of family-life trajectories has been acknowledged (Teachman 2004; Thornton 1991; Wolfinger 2000), empirical research on the transmission of patterns is scarce. Most research that focuses on the transmission of the occurrence and timing of specific family-related events, like marriage, entry into parenthood and divorce, suggest intergenerational continuity in the timing of these events (Amato 1996; Barber 2000, 2001; Diekmann and Engelhardt 1999; Furstenberg et al. 1990; Wolfinger 1999). In addition, some

research shows that family-life trajectories of parents influence several aspects of their children's trajectories, like entry into unmarried cohabitation and marriage (Thornton 1991) or the timing and number of divorces in children's life (Wolfinger 2000). Based on these studies, it is plausible that at least some level of intergenerational transmission of family-life trajectories will exist.

Formulating this expectation as an explicit hypothesis is not straightforward, because the hypothesis should imply by what empirical phenomena the hypothesis could be falsified. Even if intergenerational transmission of family life-trajectories would be the single, dominant mechanism generating the trajectories of the next generation, the children's trajectories would not be expected to exactly copy the parent's trajectories. On the other hand, it is quite unlikely, even if intergenerational transmission would not exist, that the trajectories of parents and children are completely unlike. After all, most children become parents themselves. Therefore, we formulate the hypothesis on the transmission of trajectories in terms of similarity. In particular, the family-life trajectories of a parent and a child can be expected to be more similar to each other than the family-life trajectories of random dyads consisting of a person of the parental generation and a person of the child's generation (denoted as a 'random bi-generational dyad'). This leads to the following hypothesis:

H1 *On average, the similarity between family-life trajectories of parents and children is greater than the similarity between family-life trajectories of random bi-generational dyads*
(INTERGENERATIONAL TRANSMISSION HYPOTHESIS).

Measuring similarities between trajectories

Testing this hypothesis requires a definition of similarity, such that similarities between trajectories can sensibly be ordered and averaged. To arrive at such a definition, one might start with the observation that similarity between objects expresses the fact that two objects share a common attribute. If similarity is perfect, the two objects possess the attribute to the same degree and if similarity is less than perfect, one of these objects possesses less of the attribute than the other object. So, if we want to quantify similarity, we must be able to quantify the degree to which two objects share a certain attribute. Intuitively, this is related to the notion of distance in a space that is somehow characterized or spanned by the same attribute: similar objects are close in such a space whereas dissimilar objects are further apart, i.e. have a large distance to each other. So, we would like to see our notions of similarity to be related to notions of distance that pertain to the same attribute. Because distance has a precise mathematical interpretation, we start to discuss distance between trajectories and from these distances, we will construct a measure of similarity that has a useful and natural geometrical interpretation in the metric space. Therefore, we begin with some very general remarks on measures of distance and properties of measures of similarity that relate to distance.

Quantified distance is a function d operating on pairs of objects (x, y), such that the resulting numbers $d(x, y)$ satisfy the properties of a metric:

i. $d(x,x) = 0$ for all x
ii. $d(x,y) > 0$ for all $x \neq y$

iii.	$d(x,y) = d(y,x)$	for all pairs x, y
iv.	$d(x,y) \leq d(x,z) + d(z,y)$	for all triples x, y, z

The first property states that no object can be at two different locations. The second property stipulates that that no two distinct objects can be at the same location and the third property requires symmetry of distance. Finally, the fourth property, the so-called triangle-inequality, says that if two objects x and y are close to a third object z, then x and y cannot be very far apart. Obviously, any monotone transformation of a distance measure will still satisfy the above properties and therefore will be a distance measure too.

Intuitively, a measure of similarity $s(x,y)$ should satisfy quite similar properties. If we, for the sake of comparability, require that $0 \leq s(x,y) \leq 1$, we might demand that

i.	$s(x,x) = 1$	for all x
ii.	$0 \leq s(x,y) < 1$	for all $x \neq y$
iii.	$s(x,y) = s(y,x)$	for all pairs x, y
iv.	$s(x,y) \geq s(x,z)$ if $d(x,y) \leq d(x,z)$	for all triples x, y, z

The last property has a special status because it relates quantified similarity to a geometry, i.e. to a space in which the objects are represented by locations and wherein distance has properties that derive from our daily experience with space. So, it is advantageous to try to derive similarity from distance and therefore, we will start considering the quantification of distance between trajectories or sequences of states. Once the distances are well defined and computable, a quantification of similarity and its geometrical interpretation can be derived from it. However, as the relation between distance and similarity is not fully determined by the above axioms, such a derivation is bound to be informal and intuitive. Here, we will use and compare similarity measures that derive from two classes of distance measures: the edit-distances and the order-distances.

Edit-distances are widely employed in computational biology, electronic communication and in automated speech perception. The basic idea is that sequences are more distant if more edits are required to make them equal. Perhaps the most simple of these measures is the Hamming-distance (Hamming 1950): half of the minimum number of deletes required to make two equally long sequences equal. For example, let us consider two family-life trajectories constructed from the set of states as shown in Table 1: *x* = H S C S M and *y* = H S M S M. This pair has a Hamming distance of 1 since we only need to delete C from *x* and the first M from *y* to get *x'* = H S – S M = *y'*. However, there are many more edit-operations that could be used to transform one sequence into another: insert, swap, substitute, etc. An example of a metric that uses three edit-operations to define distance is the so-called Levenshtein-distance (Levenshtein 1966): the minimum number of deletes, inserts and substitutions required to make two sequences equal. A concise description of the algorithm to find this number can be found in e.g. Sankoff and Kruskal (1983). Instead of merely counting these edits, one could decide to weigh the counts differentially, depending on which character is deleted or inserted and/or depending on which characters are substituted for each other. Given an alphabet of states from

which the sequences are constructed, one then needs to specify a full matrix of such weights or costs. Abbott and his collaborators (Abbott 1984; Abbott and Forrest 1986) introduced this extended Levenshtein-metric into the social sciences under the name of Optimal Matching (OM). Since the early eighties, OM has been applied to many different social science problems, as witnessed by the review of Abbott and Tsay (2000).

However, the use of OM in the social sciences has been heavily criticized (e.g. Dijkstra and Taris 1995; Settersten and Mayer 1997; Wu 2000; Levine 2000; Elzinga 2003), mainly for two reasons. The first reason is that the edit-operations have no empirical interpretation in the social sciences and the second reason amounts to stating that OM cannot handle the durations that are normally associated with the states of social science categorical time series. Despite these criticisms, interesting applications of OM have continued to appear in the literature (e.g. Widmer et al. 2003; Brüderl 2004; Stovel and Bolan 2004; Billari and Piccarreta 2005).

In this paper, we concentrate on OM with unit-cost, i.e. the costs of substitution, insertion and deletion were all set to 1, regardless of the states involved.[1] The resulting distances $d_{OM}(x,y)$ were rescaled to distances $D_{OM}(x,y)$, such that the new distances had a maximum of 1 and we arbitrarily defined the similarity measure

$$s_{OM}(x,y) = 1 - D_{OM}(x,y).$$

Clearly, this definition satisfies the axioms mentioned above but, unfortunately, lacks a geometrical interpretation.

The second class of metrics – the order-metrics – uses the set of common subsequences. Given an n-long sequence, a subsequence arises by removing $0 \le k \le n$ characters from the sequence. Hence a subsequence consists of $n \ge n-k \ge 0$ characters that are in the same left-to-right ordering as in the originating sequence. Clearly, a n-long sequence may contain a large number of distinct subsequences: if its n characters are all distinct, it has as many as 2^n distinct subsequences. So, the size of the set $S(x)$ of distinct subsequences (including the empty subsequence) of the n-long sequence x ranges between $n+1$ and 2^n, depending on its number of distinct characters. A pair of sequences x and y may have relatively many subsequences in common or the set of common subsequences $S(x,y)$ may be very small. For example, x = H S C S M and y = H S M S M have 16 distinct common subsequences whereas x and z = H S SK CK have a set of common subsequences that has only 4 elements: H, S, H S and the empty subsequence.

Order-metrics use one or the other property of the set $S(x,y)$ to determine distance $d(x,y)$ and order-metrics differ by the properties they use. For example, the length of the longest common subsequence (LLCS) or the size $|S(x,y)|$ could both be used to construct different order metrics. Interestingly, the OM-metric becomes an order-metric if we set the cost of a substitution to 2 and the cost of deletions and insertions to 1: the resulting OM-metric is then equivalent to a metric build on the LLCS. So, apparently, the two classes touch.

[1] We also experimented with a weight matrix in which the weights were defined as (1 - the probability of experiencing the transition from one state to another). Results differed little from those obtained with using a unit-costs matrix.

To develop a more sophisticated order-metric, we first observe that a particular subsequence may or may not occur more than once, i.e. differently embedded, in one and the same sequence. For example, in the sequence u = H S C S C, the subsequence S C S occurs only once but H S C and S C both occur three times. Often, taking the number of occurrences of subsequences into account is relevant: for example, the fact that a job history includes many occurrences of the subsequence "unemployment followed by government-supported training" would be a significant fact in many respects. Therefore, one might instead count the number of matching subsequences $M(x,y)$: for each occurrence of a subsequence u in x or y, we count how often u is embedded in y or x and we sum all these counts. More specifically, let us write $|x|_u = r$ if the subsequence u is r times embedded in the sequence x. With this definition we specify the number of matching subsequences to be equivalent to

$$M(x,y) = \sum_{u \in S(x,y)} |x|_u \cdot |y|_u$$

and we use this quantity to define the metric

$$d_{MS}(x,y) = M(x,x) + M(y,y) - 2 \cdot M(x,y),$$

the number of occurrences of non-common subsequences. Again, actually calculating the quantity $M(x,y)$ is not trivial but Elzinga (2003, 2005) designed efficient algorithms.

Interestingly, the metric d_{MS} has a nice geometrical interpretation: it equals the squared Euclidean distance between two vectors **x** and **y**, the vectors representing the sequences x and y and $M(x,y)$ denoting the vector-product **x**·**y**. With this geometrical interpretation, it is only natural to use the (cosine of the) angle between these vectors to express similarity:

$$0 \le s_{MS}(x,y) = \frac{M(x,y)}{\sqrt{M(x,x) \cdot M(y,y)}} \le 1$$

So defined, s_M satisfies the demands that we formulated earlier: it ranges between 0 and 1, is symmetrical and it is anti-monotone with distance.

Evidently, neither OM nor the above order-metric deals with the durations that could be associated with the states that make up the sequences: the metrics rely on merely counting properties of certain combinatorial objects. Instead of just counting subsequences or their frequency of occurrence or their number of constituting characters, one might measure and eventually sum their associated durations. For example, consider the sequences $x = a/10, b/5, c/7, d/12$ and $y = a/6, b/8, a/12, c/8$ wherein states are denoted by the characters a, b, c and d and their durations by the figures that appear to the right of the slashes. So, the duration of state b in x was 5 units of time. Clearly, the duration of ab in x was 15 units of time whereas in y, it took only 14 units.

Now there are several quite different ways in which such associated durations can be dealt with. One way, the way that is common practice amongst users of OM, is to turn the state-property of duration into a property of a state-sequence by writing e.g. $x' = aabbbc$ instead of $x = a/2, b/3, c/1$. Once this is done and the durations have miraculously disappeared, one can apply some OM-algorithm to the resulting pairs of sequences (x', y') to generate distances.

Any other way will require to assign durations to common subsequences and to reformulate the property M. But this is not straightforward. For assigning

durations to subsequences is not always easy: in y above, we observed $a/6$ and $a/12$. So, it is not clear what duration we should assign to the state a as occurring in y or to any subsequence of y in which a occurs. Do we compromise on an average? Let us suppose that we have settled on some compromise. Then we still have to decide on how to assign durations to *common* subsequences. To explain how we proceeded, some additional notation is needed. Let $u \in S(x, y)$ be a k-long subsequence with $k \geq 1$, i.e. $u = u_1 \ldots u_k$. Now we write $t_x(u_i)$ for the time spent in the i^{th} state of u as a part of sequence x. With this notation, we might define the duration $t(u)$ of u as

$$t(u) = \sum_{i=1}^{k} t_x(u_i) \cdot t_y(u_i),$$

i.e. one treats the durations of single states as coordinates of a vector and calculates the duration of the common subsequence as an inner product of vectors.

What may be expected from these definitions of distance and similarity? Broadly speaking, d_{OM} and d_{MS} as defined above will not be dramatically different: both metrics will assign big distances to pairs of sequences that are very unlike each other and small distances to pairs that are have many common features. So, at the extremes, the metrics will hardly be discernable. However, it is for pairs that are not very unlike each other that the distances will be differently ranked by the two metrics. In this article we will examine whether using these two metrics will lead to differences substantive conclusions if applied to our topic of intergenerational transmission of family-life trajectories.

Data

To test the hypothesis on the intergenerational transmission of family-life trajectories, data on the family-life trajectories of parents and children are needed. Although the gathering of life-history data has become quite common in recent decades, few studies have collected such data on multiple generations within a family. Here, we use one of those rare surveys, the National Survey of Families and Households (NSFH) (Sweet, Bumpass and Call 1988; Wright 2003). The NSFH has a number of features that make it eminently suited to our purpose. First, it is a large-scale representative survey of families living in the USA. This allows one to get a picture of the process of intergenerational transmission in society-at-large, rather than in a specific subpopulation. Second, data were collected independently from parents and children. This reduces reporting bias that would occur if data were collected on both generations from either a parent or a child. Third, it is a prospective panel. The first interviews with parents and children were conducted while the child was on the brink of young adulthood, allowing the collection of attitudinal and relationship quality data from parents while their children were still young. Although no attitudinal data from children were collected in the first wave, this eliminates the chance that parental opinions have changed as a result of the family-life trajectories experienced by their children.

The first wave of the NSFH was conducted in 1987/1988, using a national, multi-stage area probability sample containing housing units drawn from 100 sampling areas. Within housing units one household member was randomly selected to be the main respondent. The response rate for main respondents was 74 percent. In

wave 1, specific information was collected on one randomly selected child (a so-called focal child) of the main respondent. The third wave was conducted in 2001-2003. In this wave (as in wave 2) independent information from the main respondent and the focal child was collected. In wave 3, focal children were between 18 and 34 years old. Attrition rates between waves 1 and 3 were 37 percent for main respondents and 52 percent for focal children (Wright, 2003). In all, in wave 3, 4,822 interviews were conducted with main respondents and 1,952 interviews were conducted with focal children. However, the number of parent-child dyads on which information is available is smaller, because not all parents of focal children responded in wave 3. In addition, we limited the analysis to biological children only. In all, 1,428 parent-child dyads were available for analysis.

These 1,428 parent-child dyads are a subset of the 5,222 parent-child dyads selected at random in wave 1. This subset is selective in a number of ways; sample selection is higher among black and Hispanic parent-child dyads, and it is lower among parents living in metropolitan areas, parents with a high level of educational attainment and among dyads with a relatively old child. To control for sample selection, the multivariate analyses presented in the second part of this paper are based on Heckman's sample selection model (Heckman 1979).

Construction of family-life trajectories

To construct the family-life trajectories of parents and children, union history data files for main respondents and focal children that were prepared by the NSFH team were used (downloadable from www.ssc.wisc.edu/nsfh). In addition, information on the timing of leaving and returning to the parental home and on the timing of the birth of children were taken from wave 1 for parents and from wave 3 for children. On the basis of this information, for each month between the ages of 15 and 30, a state indicator was constructed. We used 8 distinct states as described in Table 1.

Table 1 about here

These eight states consist of a cross-classification of four types of living arrangements with the presence of own children. If respondents were cohabiting or married and lived with parents at the same time, they were classified as cohabiting or married. If respondents who had children divorced or separated, it depended on with whom the child(ren) lived, whether respondents were classified as single without children or as single with children (lone parent).

The family-life trajectories of young adults have changed considerably between the generations of parents and the generation of children. Parents were born between 1923 and 1968 (average: 1950), and entered adulthood during a period in which entry into marriage and entry into parenthood occurred at a relatively young age and during which unmarried cohabitation was uncommon. Their children were born between 1968 and 1984 (average: 1976), and entered adulthood during a period in which marriage and parenthood were postponed and in which unmarried cohabitation became increasingly popular. These differences in the occurrence and timing of family-life events are reflected in Figures 1a to 1d. In these figures the proportion of parents respectively children in one of the eight household positions defined in Table 1 is presented by age and gender.

Figures 1a to 1d about here

In Figures 1a and 1b the family-life trajectories of the parental generation are presented. Caution in interpreting these figures is needed as these trajectories are not representative of the entire birth cohorts these parents belong to, because the trajectories of people who have not had children are not included. The fact that the sample is limited to parents will likely lead to an underestimation of the proportion of people that, during young adulthood, were in household positions without children. Nevertheless, these figures show clearly that, from their early twenties onwards, living as a married couple with child(ren) rapidly became the most practiced option. Unmarried cohabitation was virtually absent from the young-adult lives of the parental generation. Furthermore, a comparison of Figures 1a and 1b suggests that fathers made the transition to marriage and parenthood at a somewhat later age than mothers.

The household situation during young adulthood of the children of these parents is quite different. It is presented, again separately for men and women, in Figures 1c and 1d. Compared to their parents, the proportions living on their own and living in a consensual union are much larger, with a concomitant reduction in the proportion of men and women who spent part of young adulthood married with children.

Figure 2 about here

The family-life trajectories of children are also more diversified than those of their parents. To illustrate this growth of diversity, we calculated, for each age, the entropy of the distribution of household statuses, separately for fathers, mothers, sons and daughters (Billari 2001). The temporal development of this measure is shown in Figure 2. At early ages, the trajectories of parents were somewhat more diversified than those of children, reflecting that teenage marriage and teenage parenthood were more common among the older generation. During their twenties, these patterns clearly reverse, the trajectories of children becoming much more diversified than those of parents. This reflects temporal changes in family life trajectories, but also partly results from the fact that the first cohort is restricted to people who have become a parent at some stage in life. This restriction evidently leads to a downward bias in the entropy of the parental generation.

Table 2 about here

From Table 2, it is clear that the trajectories of the children show remarkable de-standardization. In this Table, we list the trajectories (without durations) that are followed by at least 2% of either cohort and we only used the trajectories of those children on which we have information on the full period of 15 years. The last two columns of Table 2 show the fractions of respondents in each generation that follow each of the trajectories shown. Note that in the parent generation, just two trajectories (H M MK and H S M MK) make up almost 55% of all trajectories. For the next generation, these two trajectories cover less than 10% of the trajectories. Among children, there is a wide variety of different trajectories, some implying postponement of family formation (e.g. H S), and some implying an increase in popularity of

unmarried cohabitation (e.g. H S C M MK). Clearly, the family-life trajectories of children are much more diversified than those of their parents. These differences are in agreement with what is known from other studies that document a trend towards differentiation and de-standardization of life courses of young adults (Shanahan 2000; Fussell and Furstenberg 2005; Wu and Li 2005; Elzinga and Liefbroer 2007).

Testing the intergenerational transmission hypothesis

We argued that, if intergenerational transmission of family-life trajectories occurs, similarities between trajectories of parents and children should, on average, be larger than similarities between trajectories of randomly chosen dyads consisting of a person of the parental generation and a person of the child's generation (a 'random bi-generational dyad'). To test this hypothesis, Table 3 presents average similarities between family-life trajectories calculated according to the formulae presented in the section on the measurement of similarity. In the left part of the Table, we show the results for the 349 dyads of which the children were observed until they reached the age of 30. However, restricting the analysis to children who have been observed until age 30 has two potential drawbacks. First, it severely reduces the number of cases, as all children that have not yet reached age 30 are excluded. In this case, only about a quarter of the total number of parent-child dyads on which information is available could be included in the analysis. As a result, statistical power is reduced and it becomes harder to find results that meet conventional levels of statistical significance. Second, limiting the sample to pairs in which the child has been observed until age 30 also makes the sample selective. It leads to an overrepresentation of children born to parents of relatively old birth cohorts. In addition, it leads to an overrepresentation of parent-child dyads in which children were born to relatively young parents. In both instances, the resulting selection of dyads could be biased. Finally, given the increase in the popularity of unmarried cohabitation, a sample that only includes children born before 1973 will include children with a relatively low likelihood of experiencing unmarried cohabitation compared to a sample that includes children born after 1973 as well. Given these limitations, it is preferable to analyze similarities in family-life trajectories in all parent-child dyads, irrespective of whether the observed trajectories of parents and children are of equal length. It is unclear, however, to what extent each of the similarity measures leads to robust conclusions when duration of observation varies. To examine this issue, we present the results of the same calculations in the right-hand part of Table 3 for all 1428 parent-child dyads.

The first two rows of Table 3 show the average similarity between trajectories of random parent-parent dyads and random child-child dyads.[2] The figures in these rows demonstrate that both similarity measures behave as they should: we expect the average similarity between parent-parent dyads to be higher than the average similarity between child-child dyads, because (a) all parent-parent dyads have in common that they have had a child at some stage of their life, whereas that is not true for child-child dyads, and (b) de-standardization of the life course has impacted the children's generation to a much larger extent than the parental generation. This is indeed what is observed in the left hand part of the Table, the part pertaining to the

[2] Bootstrapping was used to test whether similarities differed between different types of dyads. We only comment on differences if they are statistically different at the $p < .01$ level. Full results are available on request from the authors.

349 children that were observed until age 30. In the right hand part of the Table, the results for the OM-based similarity measure $\bar{s}_{OM}$ do not meet our expectations: similarity is larger for random child-child dyads than for random parent-parent dyads, suggesting that no de-standardization between generations has occurred. In contrast, s_{MS} behaves as expected; the average similarity between the children's trajectories is lower than the average similarity between parents' trajectories and the average similarity between trajectories of random bi-generational dyads are lowest.

Table 3 about here

Furthermore, it can be observed that in the first row, the figures are smaller in the right half of Table 3 than in the left half. This is not surprising since in the right half, parents from more recent birth cohorts and parents that entered parenthood at a relatively late age are included as well, increasing the heterogeneity of the parent-population. The results for the children generation show the opposite pattern: the figures rise when we go from the left half to the right half of Table 3. This is not surprising either when the patterns shown in Figure 2 are taken into account. In Figure 2, the average entropy is found to rise as children grow older. In the right part of Table 4, relatively many young children are included; i.e. the average entropy is reduced, with an increase in the average similarity of family-life trajectories as a result. In the last two rows of Table 3, the figures decrease when going from the left to the right half of the table; again, this could be expected since in the right half, both populations of parents and children will be less homogeneous.

To test our hypothesis that intergenerational transmission occurs, we have to compare the similarity measures for random bi-generational dyads (row 3) with those for parent-child dyads (row 4). Despite the fact that $\bar{s}_{OM}$ does not behave correctly, the similarity between trajectories of parent-child dyads is always higher than the similarity between trajectories from random bi-generational dyads, regardless of which similarity measure is used and regardless of the length of the spell that children were observed.[3] So, these results warrant the conclusion that intergenerational transmission of family-life patterns does occur, even during a period in which the family-life trajectories of young adults have undergone rapid differentiation and de-standardization.

MODELING SIMILARITY OF FAMILY-LIFE TRAJECTORIES

Mechanisms of intergenerational transmission

Once intergenerational transmission is established, it is useful to examine the mechanisms that underlie it. Similarities in the family-life trajectories of parents and children are usually attributed to *socialization* processes (Amato 1996; Glass et al. 1986; Grusec et al. 2000). Children are thought to behave in ways similar to their parents as a result of their adoption of the set of values, attitudes and norms that their parents adhere to. In addition, it has been suggested that the success of socialization depends on a host of factors, many of whom can be captured under the heading of

[3] Although the magnitude of the differences between the similarities of random bi-generational dyads and parent-child pairs may look rather small, the difference is actually highly significant.

role modeling (Youniss and Smollar 1985; Grusec et al. 2000). Socialization will be more effective, the better parents are able to act as a role model for their children. However, the importance of socialization as the mechanism of intergenerational transmission of values and behavior is not uncontested. *Status inheritance* or the intergenerational provision of opportunities has been suggested as an alternative mechanism producing similarities in behavioral patterns (Glass et al. 1986; Moen et al. 1997; Kalmijn et al. 2006). Here the basic idea is that parents and children act similar because they are or have been exposed to similar opportunity structures. We will briefly discuss how each of these mechanisms might lead to intergenerational transmission of family-life trajectories.

Value socialization. The mechanism of value socialization suggests that similarities in trajectories of parents and children result from the transmission of attitudes and values from parents to children. If value socialization is successful, the attitudes and values of children will resemble those of parents. If, in addition, it can be assumed that (a) the family-life trajectories of parents reflect –at least partially– their attitudes and values and (b) the family-life behavior of children – again, at least partially – reflects their attitudes, then value socialization will result in similarities in family-life trajectories. Intergenerational transmission of attitudes and values has been shown to occur with regard to important family-related attitudes, like attitudes towards divorce (Kapinus 2004), gender role ideology (Moen et al. 1997), intentions towards marriage and parenthood (Starrels and Holm 2000), and attitudes towards family formation (Axinn and Thornton 1993, 1996). In addition, parental values and attitudes have been shown to influence major decisions during young adulthood, like the route out of the parental home (Goldscheider and Goldscheider 1993), the choice between marriage and unmarried cohabitation (Axinn and Thornton 1993; Barber et al. 2002), and the timing of marriage and parenthood (Barber 2000; Barber et al. 2002). Most of these studies focus on the influence of specific attitudes on specific types of behavior. However, one would expect that similarity in family-life trajectories will result mainly from correspondences between parents and children in their more general values on family life, rather than in attitudes about very specific types of behavior. This leads to the formulation of the value socialization hypothesis:

H2 *The larger the similarity between the value-orientations of parents and children, the more similar their family-life trajectories will be* (VALUE SOCIALIZATION HYPOTHESIS).

Role Modeling / Observational Learning. The socialization perspective posits a relatively straightforward link between parental behaviors and children's behaviors: the latter resemble the former as a result of either the transmission of values or as a result of the more general phenomenon of social learning. Children internalize the behaviors and attitudes of their parents not just as a result of a conscious process of value socialization, but also as a result of less conscious processes of observational learning (Bandura 1977). Role modeling could be seen as a generic term that includes the diversity of ways in which parents influence the ideas of their children regarding appropriate behaviors and outlook towards life. Parents act as role models for the types of behaviors that are expected of their children as well. However, the success of role-modeling is not unconditional (Schönpflug 2001; Whitbeck and Gecas 1988; Grusec et al. 2000). Several factors have been identified that influence its success.

First of all, the extent of role modeling can be expected to depend on the presence of the parent. The more often a parent is absent, the less likely a child is to gain information ─ either from observing behavior or from verbal communication ─ on the value and behavioral preferences of the parent. For instance, it has been shown that the extent of intergenerational transmission of attitudes towards family formation varies by parental patterns of divorce and remarriage (Axinn and Thornton 1996). Secondly, the extent to which role modeling occurs can be expected to depend on the quality of the relationship between parent and child. The better the parent-child relationship is, the more likely it is that the child will internalize parental preferences (Grusec et al. 2000). Taris, Semin and Bok (1998) showed that attitudes towards sexual permissiveness are transmitted better if the relationship between mother and child is good than if this relationship is strained. Thirdly, the gender of the parent may be important. The gender socialization perspective suggests that a child is more strongly influenced by the same-sex parent than by the other-sex parent (Aldous and Hill 1965; Raley and Bianchi 2006). As a result, the family-life trajectories of same-sex parent-child dyads may resemble each other more strongly than the trajectories of opposite-sex parent-child dyads. Finally, age difference may be relevant. Given the rapid pace at which values about family issues have changed (Thornton and Young-DeMarco 2001), the larger the age difference between parent and child, the more difficult it might be to understand each other. All of these expectations could be viewed as special instances of a more general role modeling hypothesis:

H3 *The more a parent is a role model for the child, the more similar their family-life trajectories will be* (ROLE MODELING HYPOTHESIS).

Status Inheritance. Similarities between parents and children in family-related behaviors have often been viewed as being ─ at least partly ─ the result of the fact that parents and children face similar opportunity structures during young adulthood (Amato 1996; Glass et al. 1986; Kahn and Anderson 1992; Kalmijn et al. 2006). To the extent that choices regarding family life are influenced by the opportunities that young adults encounter, this similarity in opportunity structures could explain similarities in family-life choices. Extending this line of reasoning, similarity in family-life trajectories could result from the inheritance of status positions from parents to children. In order for this mechanism to be effective, two conditions have to be fulfilled. First, status positions have to be inherited from parent to child. A very extensive literature has shown this to be the case, both with regard to the intergenerational transmission of educational attainment (Korupp et al. 2002; Mare and Maralani 2006), and with regard to the intergenerational transmission of occupational status (Blau and Duncan 1967; Erickson and Goldthorpe 1992). Second, status positions have to influence the likelihood and the timing of family-life events. Many studies have shown that educational enrollment and educational attainment strongly influence the likelihood and timing of important family-life events like leaving home (Berrington and Murphy 1994; De Jong Gierveld et al. 1991; Mulder and Clark 2002), unmarried cohabitation (Berrington and Diamond 2000; Hoem 1986; Liefbroer and Corijn 1999; Thornton et al. 1995), marriage (Berrington and Diamond 2000; Blossfeld and Huinink 1991; Liefbroer and Corijn 1999; Thornton et al. 1995), and parenthood (Blossfeld and Huinink 1991; Rindfuss et al. 1996). Higher educated young adults leave home earlier, marry later and have their first child at a later age than young adults with relatively low levels of education. In addition, higher

educated young adults are more likely to opt for unmarried cohabitation than the less educated. Given that status positions are transmitted from parents to children and that status positions strongly influence the likelihood and timing of family-life events, we formulate the following hypothesis:

H4 *The more alike the status positions of parents and children, the more similar their family-life trajectories will be* (STATUS INHERITANCE HYPOTHESIS).

Variable construction

To test these hypotheses, a number of indicators for each of the three hypothesized mechanisms are constructed. Given that the dependent variable ─ the level of similarity of the family-life trajectories of parent and child ─ is dyadic, it seems natural to model the independent variables as dyadic variables as well ─ at least as far as possible. The basic idea is that family-life trajectories of parent-child dyads are more dissimilar, the less homogeneous dyads are with respect to attitudinal, role modeling and status characteristics. The construction of dyadic variables is relatively straightforward: if A_p constitutes the score of the parent on a variable and A_c the score of the child on that variable, the dyadic mean score is computed as $(A_p+A_c)/2$. In addition, two dyadic difference scores are calculated. The first dyadic difference variable, called parental surplus, is defined as $\max\{0, A_p-A_c\}$. It signifies the extent to which the parent has a higher score than the child. The second dyadic difference variable, called filial surplus, is defined as $\max\{0, A_c-A_p\}$. It signifies the extent to which the child has a higher score than the parent. The choice for two dyadic difference variables rather than the absolute difference score $|A_p-A_c|$ is based on the consideration that it is not a priori clear whether the effect of attitudinal similarity on similarity of family-life trajectories will be symmetric. For instance, an absolute difference measure of religiosity assumes that the similarity between parents and children will decrease as much when children are less religious than their parents as when children are more religious. By using two dyadic difference variables it can be tested whether this effect is indeed symmetric or not. A simple example illustrates our approach. If the parent visits church once a week and the child 0.25 times a week, the mean score of the parent-child dyad on the frequency of church visit variable is 0.63. A first dyadic difference variable indicates the extent to which parents visit church more often than their children. In this example the score on this parental surplus variable is 0.75. A second dyadic difference variable indicates the extent to which the child visits church more often than children. In this example the score of the dyad on this filial surplus variable is 0.

Table 4 about here

Value socialization. Two sets of indicators were used to test whether similarity in family-life trajectories depends on attitude similarity. First, information on frequency of church visit is used (data from wave 1 for parents and from wave 3 for children). Frequency of church visit has been found to correlate strongly with attitudes towards demographically relevant behaviors, like acceptance of unmarried cohabitation and divorce. This could imply that, as parents and children diverge more strongly in their religious practices, they will also be less similar in their family-life trajectories.

Frequency of church visit was recoded to the number of church visits per week. Second, a six-item scale tapping parents' and children's attitudes towards family issues was constructed. These items focus on the importance of marriage and a gender-specific organization of labor within the family. Data for parents were taken from wave 1. Unfortunately, data for children were not available in the first two waves of the NSFH, but were taken from wave 3. This has the drawback that the attitudes of children are measured during the transition to adulthood and could be influenced by their family-life trajectories. Earlier research has shown that reciprocal effects of behavior and attitudes are found (Axinn and Thornton 1993). If children's attitudes are influenced by their family-life trajectories, this could lead to an overestimation of the effect of value socialization on intergenerational transmission of family-life trajectories. The scales showed reasonable internal consistency (Cronbach's $\alpha = .73$ for parents and .65 for children). Scale scores range from 6 to 30, with a higher score indicating a more traditional view on family life. In Table 4, descriptive information on these and other independent variables are presented.

Role modeling. Four indicators were constructed to test the association between role modeling and the similarity of the family-life trajectories of parents and children. The quality of the parent-child relationship was assessed by the following question posed to the parent in wave 1: 'How would you describe your relationship with your child?'. Answer categories could run from 'very poor' (1) to 'excellent' (7). The occurrence of periods of non-coresidence between parent and child was a second indicator of role modeling. It is assumed that less role modeling occurs if parents and children do not live together during the whole of a child's youth. This was a dummy variable based on the answer to the question 'From birth to age 18, or until you left home to be on your own, was there ever a period of four months or more when you were NOT living with your biological father/mother?' The age difference between parent and child is the third indicator of role modeling. It is assumed that a parent will act less as a role model the larger the age difference with the child. Finally, the gender composition of the parent-child dyad is used as a fourth indicator of role modeling. It is assumed that the same-sex parent will act more as a role model than the parent of the opposite sex.

Status inheritance. Status inheritance was measured by the number of years of education that parents and children had attained. Again, information for parents was taken from wave 1, whereas information on children was taken from wave 3.

Control variables. A number of control variables were included in the empirical analyses. These variables were parental ethnicity (Caucasian, Hispanic, Black or other), region where the parents lived at the time of the first wave (Northeast, Centre, South or West), and whether or not parents lived in a metropolitan area at that time. Finally, in order to control for differences in length of observation of children, the number of months after age 18 for which information on the demographic trajectories of children was available was included in the analyses.

Analytic approach

We estimate Heckman's sample selection model (Heckman 1979) to test the hypotheses on the mechanisms leading to similarities between the family life trajectories of parents and children. The choice for Heckman's sample selection model rather than for a simple OLS regression is based on the fact that we have information on a subset of the original 5,222 parent-child dyads selected in the first

wave of the NSFH. It turns out that the selection equation and the regression equation are uncorrelated. Therefore, only the results for the regression equation will be presented.[4]

In line with the strategy used to establish the occurrence of intergenerational transmission of family-life trajectories, two sets of analyses are performed. A first set of analyses includes only parent-child pairs in which both parent and child have been observed until age 30 (N=349). A second set of analyses includes all parent-child pairs, irrespective of the length of observation of the child (N=1,428). A comparison of the results of both sets of analyses will show to what extent the similarity measures can handle right censoring of trajectories and, thus, are useful in studying similarities between trajectories of different length. These analyses are performed for both similarity measures defined earlier, the OM-based s_{OM} and the one employing time spent in matching subsequences s_{MS}.

Results on intergenerational transmission mechanisms

In Table 5, results of the regression step of Heckman's sample selection models are shown. In the left-hand part of Table 5, results based on the OM-measure of similarity are presented, whereas results based on the MS-measure are presented in the right-hand part of Table 5. For each measure, results are presented first for parent-child dyads in which information on the child was available for the full period between ages 15 and 30, followed by results for all parent-child dyads.

Table 5 about here

Before paying attention to the substantive results, we will discuss the estimates for duration of observation of the child. This variable is not included in the equations for dyads in which both parent and child have been observed until age 30, as all these children and parents are observed for the same number of years. In the equations for all dyads, the duration variable estimates to what extent the level of similarity between parents and children depends on the duration of observation of the child's family-life trajectory. With regard to the OM-based similarity measure s_{OM}, there is a statistically significant positive effect of the duration of observation of the child. This implies that the similarity between the family-life trajectories of parents and children is smaller the shorter children's family-life trajectories have been observed, and thus the larger the difference in length of the trajectories of parents and children is. This suggests that the ability for the s_{OM} measure to analyze trajectories of varying length is limited and that this measure should be used with caution. Duration of observation does not influence the level of similarity between the family-life trajectories of parents and children if the order-metric s_{MS} is used. This suggests that s_{MS} is well-suited to study the level of similarity between trajectories of varying length, at least in this application.

The value socialization hypothesis (H2) assumes that the family-life trajectories of parent-child dyads will be more dissimilar the more parents and children differ in their attitudes towards family issues and in their frequency of church visit. The results for this hypothesis are mixed and differ strongly by similarity

[4] Results for the full models can be obtained from the first author.

measure. With regard to church visit, all measures except s_{OM} for all dyads suggest that dyads which, on average, more frequently visit church, show more similar family-life trajectories. However, if H2 is correct, the effects of the parental surplus and/or the filial surplus estimates have to be negative. This is true as far as filial surplus is concerned for two of the four measures: among dyads that have been observed until age 30 if the s_{OM} measure is used and among all dyads if the s_{MS} measure is used. For the other two measures, the effect is in the expected direction, but fails to reach statistical significance. Thus, the results suggest that the family-life trajectories of parents and children differ particularly strongly if children are more frequent church visitors than their parents. With regard to our second indicator for value socialization, the attitude towards family life, the results are quite different. The dyadic mean effect is positive and statistically significant for all four similarity measures, indicating that family-life trajectories are more similar, the more parent-child dyads, on average, hold traditional, gender-specific ideas about family life. However, only for the two s_{MS} measures do we observe a statistically significant effect for one of the surplus measures. If a parent holds more traditional attitudes towards family issues than his or her child (as is the case for most parent-child pairs), than the larger the difference in attitudes, the less similar the family-life trajectories of parent and child are.

The role modeling hypothesis (H3) suggests that similarity of family-life trajectories is higher, the more the parent has acted as a role model. We used four indicators of strength of role modeling: quality of the parent-child relationship, parental separation during youth, the age difference between parent and child, and the gender composition of the parent-child dyad. With regard to the first of these indicators, quality of the relationship as measured at the time of the first wave of the NSFH, no significant effects are observed, although all signs are in the expected direction. With regard to the second indicator, whether or not parent and child had spent time in separate households during the child's youth, a statistically significant effect in the expected direction is observed for both s_{OM} measures and for s_{MS} for all dyads. In addition, although not reaching statistical significance, the effect of s_{MS} for dyads in which the child has been observed until age 30 is in the expected direction too. For age difference, no statistically significant effects at all are observed. However, the dyadic mean score for year of birth has a statistically negative effect for s_{MS} for all dyads. This suggests that the family-life trajectories of parents and children are less similar among dyads belonging to more recent parent-child cohorts. For the gender composition of the parent-child dyad clear effects are found for all four measures, although the effects do not conform to our expectation. Similarity is highest for father-daughter dyads and lowest for mother-son dyads. Father-son and mother-daughter dyads occupy an intermediate position. This unexpected finding could be explained by the fact that men, on average, experience union formation and childbearing a few years later than women do. This is true both for the generation of parents and that of children. However, both sons and daughters have postponed the transitions of union formation and childbearing relative to their parents. As a result, the timing of these important transitions in the lives of daughters comes to resemble that in the lives of their fathers, resulting in a relatively high similarity in the life courses of fathers and daughters. At the same time, the postponement experienced by sons increases the dissimilarity between their trajectories and those of their mothers.

The status inheritance hypothesis (H4) implies that similarity of family-life trajectories of parents and children will be lower the more dissimilar their educational experiences are. We find partial support for this hypothesis for all measures, except for s_{MS} for dyads in which the child has been observed until age 30. In general, it is observed that, if the child has a higher level of education than the parent, the larger the educational difference is, the more dissimilar the family-life trajectories are. However, this effect is much stronger for the s_{OM} measure than for the s_{MS} measure. In addition, the results of the models that include all dyads suggest that parent-child trajectories are more similar among dyads with a high mean level of educational attainment than among dyads with a relatively low level of educational attainment.

The explained variance if only dyads in which the child is observed until age 30 are included suggests that the s_{OM} and s_{MS} measures perform equally well. However, among all dyads the explained variance of the s_{OM} measure is higher than that of s_{MS} measure. This difference is due to two facts. First, it results from the fact that the s_{OM} measure is sensitive to the duration of observation of a child, whereas the s_{MS} measure does not depend on the duration of observation. Second, it results from the fact that the similarity of dyads if s_{OM} is used depends very strongly on the extent to which the child is higher educated than the parent.

DISCUSSION

Sociological research on intergenerational transmission tends to focus on the transmission of specific behaviors from parents to children. This article started from the contention that it is important to study the intergenerational transmission of behavioral *patterns* as well. The issue of the intergenerational transmission of family-life trajectories is a case in point. In recent decades, these trajectories have changed considerably, particularly as a result of the postponement of major life events like marriage and childbearing and of the increase in the occurrence of events that used to be relatively uncommon, like unmarried cohabitation and union dissolution. Given these changes in family life, the main substantive questions are whether any intergenerational transmission of family-life trajectories between parents and children still occurs and if so, which mechanisms are involved.

To answer these questions, we had to tackle a major methodological challenge: how to evaluate the similarity between such trajectories. So, we started out to discuss two different kinds of representations of categorical time series: through edit-distances or through order-distances. Within each of these classes, there are several possibilities to select particular metrics; some well-known and some less well-known. We decided to use the much debated OM-metric with unit-cost and the metric d_{MS} as recently proposed by Elzinga (2005). From these metrics, we constructed measures of similarity that adhere to the axioms we imposed upon such measures. Each of these similarity measures answers the methodological issue. But they do not perform equally well.

Apparently, as is illustrated by the results in Table 4, s_{OM} does not behave as expected in the sense that it does not pick up the effects de-standardization of the life course when the children's family life trajectories are of varying length. On the other

hand, s_{MS} does live up to expectations and clearly demonstrates intergenerational transfer to occur: average similarities of family life trajectories of parent-children pairs significantly exceed the average similarity between trajectories pertaining to randomly selected subjects from different cohorts.

Next, we tried to model the result of the intergenerational transmission, i.e. the similarities between family life trajectories of parent-child dyads, in terms of theoretically relevant dyadic quantities. From this exercise, we conclude that s_{OM} is quite sensitive to the length of the spell that the child was observed and that, therefore, s_{OM} is not very good in measuring similarities between trajectories if these trajectories differ (substantively) in length. On the other hand, we did not encounter this problem when trying to model s_{MS}. So, we conclude that s_{MS} is superior to s_{OM} when it comes to quantifying similarities between family life trajectories of unequal length. These findings suggest that modeling event histories or other categorical time series using distance-measures is possible and lead to new insights. In particular, the new class of order metrics as applied in this article offers promising results.

The results presented in this article also have important substantive implications. First and foremost, the results show that intergenerational transmission of family-life trajectories occurs, even in a society characterized by major changes in the timing of family-related events and in the occurrence of such events. Although the transition to adulthood among recent birth cohorts differs strongly from the transition to adulthood experienced by the generation of their parents, some level of intergenerational continuity still exists.

Three mechanisms have been hypothesized to be important in understanding the extent of intergenerational transmission of family-life trajectories. The value socialization mechanism is based on the idea that behavior is at least partly the expression of the values and attitudes that people hold. If parents are able to transmit these values to their children, similarity in behavioral patterns will result. However, the more the values of parents and children will differ, the more dissimilarity of family-life patterns can be expected. Some support for this mechanism of value socialization is obtained. Frequency of church visit and attitudes towards family issues could both be viewed as indicators of the kind of values people hold towards family-life. If a child visits church more frequently than his or her parent, a higher discrepancy in frequency of church visit decreases the similarity in family-life trajectories. At the same time, if a parent holds more traditional attitudes towards family issues, a higher discrepancy in family attitudes increases dissimilarity as well. Although these findings support the value socialization hypothesis, it is important to notice that these effects are not symmetrical. If the child holds more traditional attitudes towards family issues than the parent, the dissimilarity in trajectories does not rise with increasing discrepancy in family attitudes. A possible explanation for this finding could be that, if children hold more traditional attitudes towards family life than their parents, these children are also more likely to respect the family values their parents hold and to act accordingly. Another interesting finding is that intergenerational transmission is stronger among families that go to church often and hold traditional family attitudes than among families who visit church less frequently and hold less traditional family attitudes. An explanation for this finding could be that in the latter type of families one does not put a strong emphasis on the importance of specific family-related values, but rather stresses the importance that children should make autonomous and responsible choices. If so, the actual family-life choices of

children in such families could differ substantively from those preferred by the parents, but this would not necessarily constitute a problem to these parents as long as the choices their children make are based on autonomous and responsible assessments of the pros and cons of different behavioral options.

Role modeling is found to be another important mechanism underlying the intergenerational transmission of family-life trajectories. In particular, if a parent and a child have lived separated from each other during part of childhood, family-life trajectories are less similar. Intergenerational transmission varies with the age difference between parent and child; the larger this age difference is, the more dissimilar the family-life trajectories are. An interesting counterintuitive finding is that the family-life trajectories of fathers and daughters show the highest level of resemblance. This seemingly runs counter to the idea that role modeling is stronger in same-sex parent-child dyads than in opposite-sex parent-child dyads. However, a more likely explanation is that this is the result of the combined effect of the fact that men experience transitions like marriage and parenthood later than women and that the recent trend of postponement of these transitions have made that women among recent cohorts experience these events at about the same age as men from older birth cohorts.

Finally, the results of our analyses also underscore the importance of the status inheritance mechanism. If children are more highly educated than their parents, a higher discrepancy in level of education goes together with increased dissimilarity in family-life trajectories. This result suggests that similarity in family-life trajectories at least partly results from similarities in the educational and occupational careers of people. What goes on in the educational career of people strongly structures the timing and occurrence of events in family-life. Those with higher education postpone marriage and childbearing and are more likely to experience unmarried cohabitation (e.g. Berrington and Diamond 2000; Blossfeld and Huinink 1991; Thornton et al. 1995). That the educational system strongly structures the family-life trajectories of people can also be deduced from the fact that similarity in family-life trajectories is lower among families with ─ on average ─ a low level of educational attainment than among families with a high level of educational attainment. The family-life trajectories during young adulthood of the parents and children in the latter type of families have probably been structured by their experiences in the educational system to a much larger extent than the family-life trajectories of families who left the educational system at relatively young ages.

In sum, these results offer support for the idea that value socialization, status inheritance and role modeling all are important mechanisms in understanding intergenerational transmission of similarities in family-life trajectories. At the same time, these results open important avenues for future research. First of all, it needs to be stressed that this analysis does not offer a causal analysis of the factors that influence the transmission of family-life trajectories. An important reason for this is that a number of variables, in particular those pertaining to the children, have been measured simultaneously with or even after the events that constitute the family-life trajectory have taken place. For instance, it could well be that events in the family-life trajectory have influenced attitudes towards family issues and educational attainment of the children. Though hard to realize, measurements taken at the start of young adulthood of both parents and children would be ideal in this respect. Secondly, it would be worthwhile to study the relative contribution of different aspects of the family-life trajectories in determining the overall level of intergenerational

transmission. For instance, one could study to what extent the level of similarity depends on differences in the occurrence of specific events, like unmarried cohabitation and union dissolution or on differences in the timing of events and in the duration of states in the trajectories of parent and children. Thirdly, a final interesting issue for further research would be to study the interplay between family life careers on the one hand and the educational and occupational career on the other. To what extent are these careers interrelated and can similarities in the family-life trajectories of parents and children be explained by similarities in the educational and occupational trajectories of parents and children.

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Figure 1a Proportion of female parents in different household positions, by age

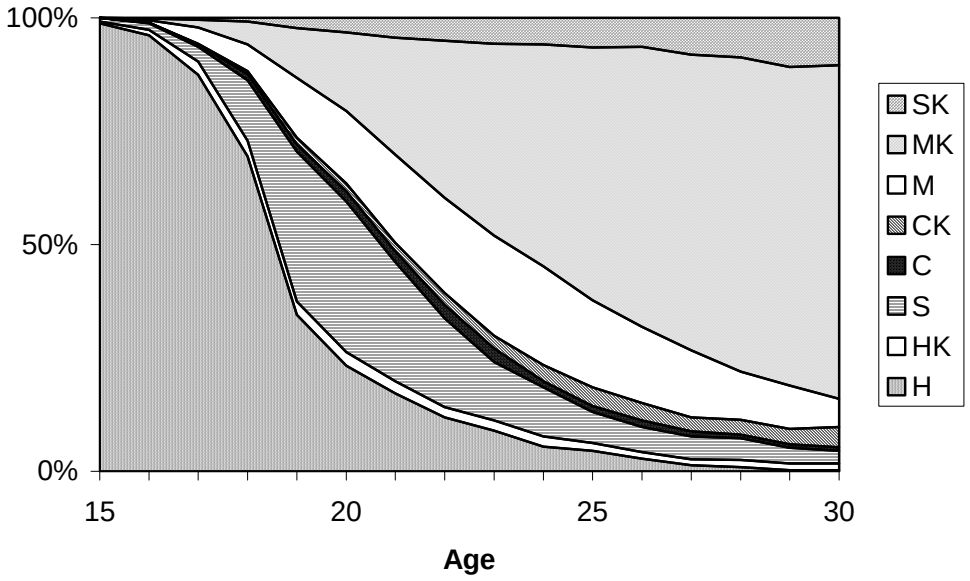

Figure 1b Proportion of male parents in different household positions, by age

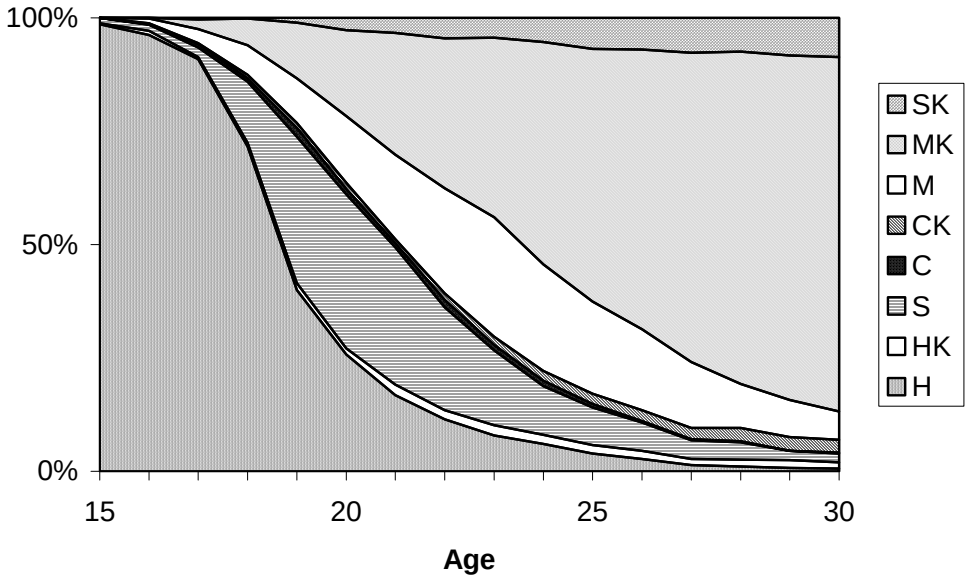

Figure 1c Proportion of female children in different household positions, by age

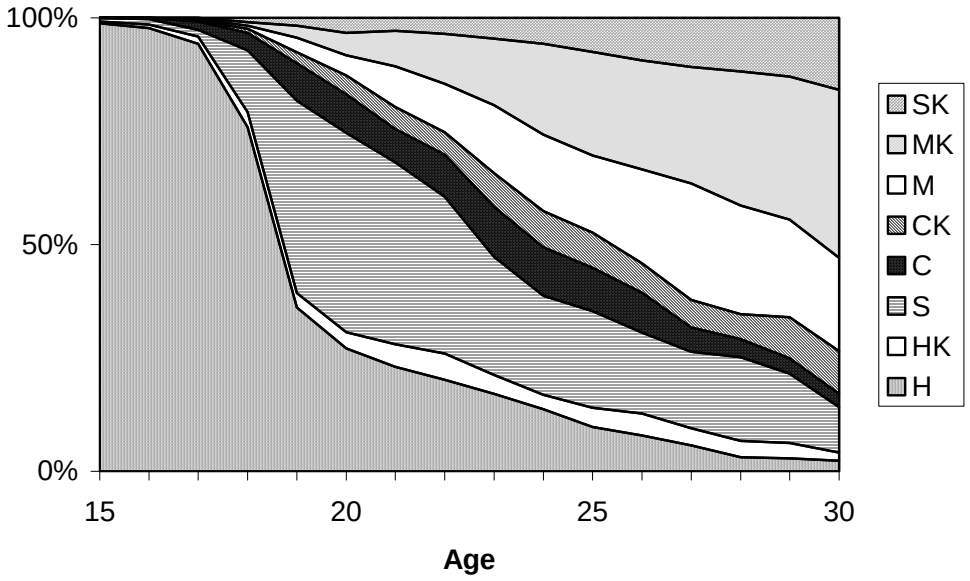

Figure 1d Proportion of male children in different household positions, by age

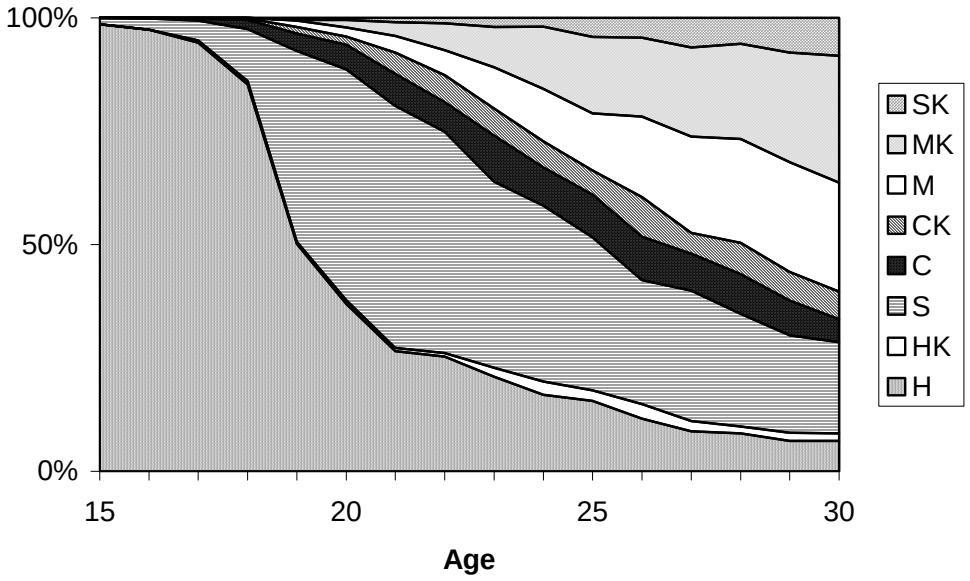

Figure 2 Age-pattern of relative entropy (vertical axis) in household positions

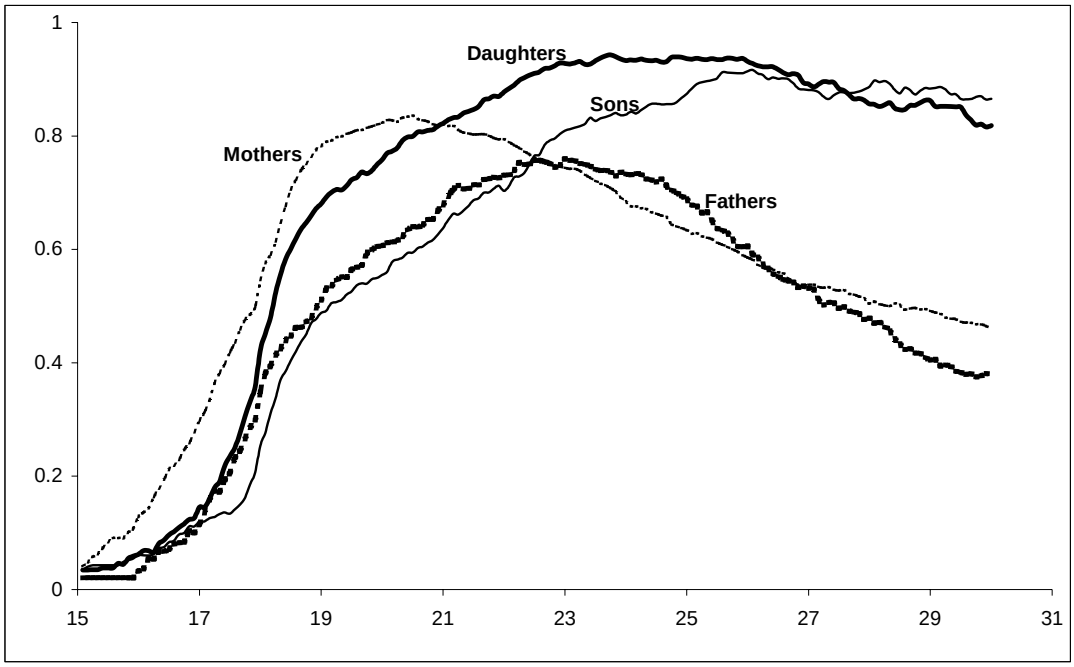

Table 1 Family-life positions that people can occupy during young adulthood

Number	Symbol	Description
1	H	Living in the parental home
2	S	Living without parents, partner and children
3	C	Cohabiting unmarried
4	M	Married
5	HK	Living in the parental home with child(ren)
6	SK	Living without parents or partner, but with child(ren)
7	CK	Cohabiting unmarried with child(ren)
8	MK	Married with child(ren)

Table 2 Family-life trajectories (durations ignored) that cover the full 15 years and are generated by at least 2% of the individuals in the cohort.

Trajectories						children	parents
H	S					.043	-
H	M	MK				.046	.313
H	S	M				.026	-
H	C	M	MK			.031	-
H	S	H	S			.031	-
H	S	M	MK			.054	.245
H	M	MK	SK			-	.023
H	S	C	M			.048	-
H	S	H	M	MK		.028	.071
H	S	C	M	MK		.040	-
H	S	H	S	M	MK	-	.023
"Miscellaneous"						.650	.322

Trajectories that are followed by less than 2% of the parents or the children are classified as "Miscellaneous".

Table 3 Average similarity of family-life trajectories for selected sets of dyads

	Children observed until age 30		All children	
	$\bar{s}_{OM}$	$\bar{s}_{MS}$	$\bar{s}_{OM}$	$\bar{s}_{MS}$
Random parent-parent dyads	0.52	0.45	0.46	0.35
Random child-child dyads	0.38	0.17	0.47	0.24
Random parent-child dyads	0.35	0.19	0.30	0.15
Parent-child pair	0.39	0.23	0.33	0.19

Table 4 Properties of independent dyadic and non-dyadic control variables

Variable	Mean	sd
Frequency of church visit (visits per week)		
Parent	0.68	0.88
Child	0.47	0.80
Dyadic mean	0.58	0.69
Parental surplus	0.41	0.72
Filial surplus	0.19	0.58
Attitude towards family issues		
Parent	14.46	4.44
Child	11.52	4.16
Dyadic mean	12.99	3.56
Parental surplus	3.70	3.76
Filial surplus	0.77	1.86
Quality of parent-child relationship	6.37	0.86
Periods of non co-residence of dyad during youth (yes=1)	0.18	0.39
Birth cohort (in years since start of 20th century)		
Dyadic mean	63.20	5.18
Filial surplus	26.70	5.57
Gender-composition of parent-child dyad		
Mother-daughter (reference category)	0.38	
Father-daughter	0.15	
Mother-son	0.33	
Father-son	0.14	
Level of education (years of schooling)		
Parent	13.55	2.47
Child	13.45	1.83
Dyadic mean	13.50	1.77
Parental surplus	0.95	1.60
Filial surplus	0.85	1.46
Parental ethnicity		
Caucasian (reference category)	0.84	
Hispanic	0.04	
Black	0.13	
Other	0.01	
Parental region		
Northeast	0.19	
Centre (reference category)	0.32	
South	0.32	
West	0.17	
Parent lives in metropolitan area (SMSA) (yes=1)	0.30	
Duration of observation of child (in months)	126.15	45.33

Table 5 Results of regression analyses of different similarity measures

Dependent variable	Optimal Matching ($\bar{s}_{OM}$)				Number of Matching Subsequences ($\bar{s}_{MS}$)			
	Only dyads in which child is observed until age 30		All dyads		Only dyads in which child is observed until age 30		All dyads	
	B	Std. Error	B	Std. Error	B	Std. Error	B	Std. Error
Constant	1.007	.836	.249	.396	.179	.964	.945†	.491
Duration of observation of child			.001*	.000			-.001	.001
Frequency of church visit								
Dyadic mean	.055*	.027	.010	.010	.094**	.031	.046**	.012
Parental surplus	-.031	.020	-.003	.007	-.027	.022	-.019†	.009
Filial surplus	-.053*	.025	-.018	.009	-.045	.028	-.033*	.011
Attitude towards family issues								
Dyadic mean	.012**	.004	.004**	.001	.012**	.004	.007**	.002
Parental surplus	-.001	.003	-.001	.001	-.009**	.003	-.004**	.001
Filial surplus	.002	.005	.002	.002	.003	.006	.005†	.003
Quality of parent-child relationship	.012	.010	.007	.005	.014	.012	.011†	.006
Parental separation during youth	-.073*	.033	-.038**	.010	-.060	.038	-.043**	.013
Year of birth								
Dyadic mean	-.001	.001	-.000	.000	-.000	.001	-.001**	.000
Age difference	.000	.001	.000	.000	-.000	.001	-.000	.000
Gender composition parent-child dyad								
Father-daughter dyad	.066†	.036	.045**	.013	.130**	.042	.053**	.016
Mother-son dyad	-.072**	.025	-.026*	.010	-.055†	.029	-.025*	.012
Father-son dyad	.020	.038	.033**	.014	.040	.041	.032†	.018

Level of education								
Dyadic mean	-.001	.006	.010**	.003	.002	.007	.010*	.004
Parental surplus	.001	.008	.004	.003	.006	.009	.005	.004
Filial surplus	-.021**	.007	-.017**	.003	-.002	.008	-.008*	.004
Black	-.062	.038	-.022	.015	-.063	.044	-.023	.018
Hispanic	-.082	.066	-.013	.025	-.079	.076	.003	.030
Other ethnic identification	.092	.138	.032	.042	.048	.160	.026	.053
Living in the Northeast	.040	.031	.021	.012	.041	.036	.039**	.015
Living in the South	-.006	.026	-.004	.011	-.004	.031	-.006	.013
Living in the West	.066*	.031	.032**	.012	.081*	.036	.023	.015
Living in a metropolitan area (SMSA)	-.021	.024	.012	.009	.011	.028	.011	.012
Mill's λ	-.025	.040	.005	.028	-.058	.046	-.007	.035
N	349		1428		349		1428	
R^2	0.233		0.253		0.241		0.169	

** p < .01, * p < .05, † p < .10