Divorce divide, educational divide? Parental education level and family histories as interwoven forces in the reproduction of social inequality

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1. Introduction

Education and divorce are connected in a complex manner. In the first place, educational level can be seen as predictor of divorce. Although divorce once was considered as innovative behavior, mainly seen in higher social classes (Kalmijn, Vanassche, & Matthijs 2011), the educational gradient of divorce is now increasingly becoming negative in western countries (Härkönen & Dronkers, 2006). Martin (2004) uses the term 'Divorce Divide' to indicate the process in society in which lower educated people have a significantly higher risk of divorce than those with a higher educational level. Secondly, there is large empirical evidence that family instability in its turn is associated with lower educational achievements of children. Given that educational level is a strong predictor of one's future socioeconomic status in society, family instability has the potential to strengthen social inequality across generations (McLanahan & Percheski, 2008). As described by Conger, Conger & Martin (2010), there is a complex interaction between socio-economic status, family processes and the development of children, with important selection and causation effects, that ensure and may even reinforce the intergenerational transmission of social inequality.

The research on the effects of family life on educational achievement to date has tended to focus on the effects of family structure rather than on the effects of previous family transitions. This has been identified as one of the major gaps in the current literature on the consequences of divorce by Amato (2010). In this paper, we argue that the complete family history during childhood and adolescence is important when studying the relationship between family and children's educational achievement. Only a life-course perspective can grasp crucial differences in the family contexts of children, as family histories can unfold in many ways after a parental divorce (Cavanagh, Schillier, & Riegle-Crumb, 2006; Tillman, 2007). The majority of divorced mothers and fathers starts a new cohabitation relationship or remarry quite short after divorce (Lodewijckx, 2005). These new unions may also not last, resulting in higher order union dissolutions or divorces. The family trajectories of children following parental divorce may therefore vary from a stable single parenthood, a stable stepfamily formation, to very turbulent trajectories in which states of single parenthood are altered with states of stepfamily

configurations. Combined with the age of the child at time of divorce, this results in an enormous variety of family trajectories.

The aim of the article is twofold and contains a theoretical and methodological strand. Theoretically, we want to contribute to the research literature by applying a conditional life-course approach when studying the association between the family trajectories of children and their educational outcomes. Therefore, we analyze the association between the complete family history of children between birth and age 18 and their educational outcomes at three different moments in time (transition from primary school to secondary school, end of secondary school and end of the educational career). Most studies have focused on divorce as a single event while this is just one of the many family transitions children can experience. Amato (2010) sees great potential in a multiple transition perspective, taking into account all family transitions. We explicitly focus on the moderating effect of the educational level of parents. Recent reviews stress the importance of more attention to the heterogeneity of outcomes, instead of looking merely at average effects (Amato, 2010; Brown, 2010). In answering these questions, we apply the technique of sequence analysis, which only recently found its way into family and educational sociology. We explore its possibilities by constructing different measures of family histories of children, based upon the relationship histories of their parents.

2. Life-course approach to children's educational outcomes

The life-course approach provides a theoretical framework for linking children's family history to their educational achievement. According to this approach, changes in the life course of children influence their developmental trajectory (Elder, 1998). The concept of 'linked lives' is central in this approach: children live their lives interdependently with others in their environment. Especially changes in the family structure are supposed to have a strong effect on children's development (Elder, 1998; Heard, 2007a, 2007b). Within the life course perspective, transitions are typically considered over a long stretch of time (Mayer, 2009). Translated to the topic of the present study, one should consider children's complete family history when studying the effect of the family on educational achievements. The latter is especially important

as demographic and social evolutions have made family structures more complex and diverse the past decades. The family is no static institution, but a 'dynamic set of parental relationships', including marriage, divorce, remarriage and cohabitation (Cavanagh et al., 2006, p. 2). Each parental relationship change constitutes a transition in the family structure trajectory of children. Family transitions always take place in the context of earlier experiences of children. This means that the reaction of children to a family transition depends on earlier experiences with changes in the family (Strochsen, Roos & Brownell, 2009).

Past research has yet demonstrated that children's family history has an effect on their educational outcomes (e.g. Stroschein, Roos, & Brownell, 2009; Heard, 2007; Cavanagh et al., 2006; Osborne & McLanahan, 2007; Hill, Yeung, & Duncan, 2001; Martinez & Forgatch, 2002; Sun & Li, 2009). Most studies show that a parental divorce experience and a high number of family transitions are significantly related to lower educational attainment of children (Heard, 2007a, 2007b; Martinez & Forgatch, 2002; Sun & Li, 2009). A small number of studies have also included the different types of family structures in children's family history into the analysis (e.g. Stroschsein, Roos and Brownell, 2009; Osborne & McLanahan, 2007; Cavanagh et al., 2006). More research on this topic is much needed, as it can be expected that not all transitions are equally harmful for children (Amato, 2010).

Another limitation of previous research on the relation between family history and education is that most studies only include a measurement of educational achievement at one moment in time. Including measurements of the dependent variable at different points, can enable us to gain more insight in the adjustment of children to ongoing post-divorce changes in a number of ways (Sun & Li, 2009). First of all, it may help us to get a better understanding of the adjustment period of children to family transitions: e.g. do effects of family transitions persist or only take place in the short-term? Secondly, it may be informative for investigating whether educational difficulties already take place before the family transition. Especially with regard to divorce, there are indications that troubled family relations before divorce also have a strong effect on children's well-being and academic achievement (Amato, 2010). Thirdly, including different

measurement points of family structure and educational achievement allows to investigate the effect of the timing of the family transition. The results of previous studies concerning the effect of timing are slightly ambiguous: whereas some studies claim that younger children suffer more from family transitions (Cavanagh & Huston, 2008), others suggest that mostly adolescents show lower academic achievement following a change in family structure (Brown, 2010).

3. Resources deprivation, stress and moderators

The mechanisms through which family transitions have an effect on children's educational outcomes are described in the resources deprivation perspective and the stress perspective. These two perspectives have mostly been used to explain the negative association between parental divorce and the educational attainment of children (e.g. Albertini & Dronkers, 2009; Cavanagh, Schiller & Riegle-Crumb, 2006; Tillman, 2007). In the resource deprivation perspective the focus is put on the decline in the available capital in the family after divorce (e.g. Fischer, 2004; Manning & Lamb, 2003; Schriner, Mullis, & Schlee, 2009). Less financial resources (e.g. Astone & McLanahan, 1991; Fischer, 2004; Pong, Dronkers, & Hampden-Thompson, 2003; Pong & Ju, 2000), less parental involvement and lower parental expectations (e.g. Astone & McLanahan, 1991; Pong, Dronkers, & Hampden-Thompson, 2003) and changes in housing or school (e.g. Amato, 2005; McLanahan & Sandefur, 1994) can lead to lower educational attainment. The stress perspective focuses on the role of stress: a divorce often goes together with a number of stressors for children, such as parental conflict, less effective parenting styles, and moving to a different neighborhood. The emotional stress children experience during the divorce process, causes negative outcomes, such as difficulties in school (Amato, 2000).

There is however a large variability in the decline of resources and stress children experience after a divorce (Amato, 2010). Similar to children's adjustment to divorce, there is a large heterogeneity in the reactions of children to post-divorce transitions. Some children are more resilient to the negative consequences of such transitions and may even fare better than those in single-parent families. There are some protective factors that moderate the effects of family structure transitions on children's educational achievement (Jeynes, 2006). In this study, we will

focus on the moderating effect of parental educational level. Previous research has shown that there is a lower likelihood of a post-divorce decline in resources in families with higher educated parents. Parents who have received higher education will suffer less from economic deprivation after divorce, because they have more chances at the labor market. Also, children of higher educated parents are believed to receive more parental support after divorce, and in this manner, find it easier to cope with the stress of family dissolution (Mandemaekers, Monder, & Kalmijn, 2010). In other words, parental educational level may function as a protective factor for the negative effects of divorce on children. This has been confirmed by past research: children of lower educated divorced parents have lower educational attainment than children of lower educated married parents, whereas no differences were found between children of higher educated divorced and married parents (Albertini & Dronkers, 2009). Others, however, find no association (Evans, Kelley, Wanner, 2001).

We may distinguish roughly two main family formations of mothers and fathers following divorce, that is single parenthood and a stepfamily configuration. The research literature is still rather inconclusive regarding wich family formation is more or less beneficial for children and there are different views on which transitions and subsequent family structures are the most challenging and which are beneficial. Jeynes (2006) discusses for example two opposite views on stepfamily formation within the research literature. The transition school of thought focuses on stepfamily formation as a difficult transition for children. The resiliency school of thought argues that children adapt very well to such transitions and that children in stepfamilies, despite a higher number of transitions, may fare better than those in single-parent families. Again, we argue that is important to integrate ideas from both perspectives by asking which factors make children more or less resilient for specific family transitions. Sweeney (2010) discusses in a recent review article the mechanisms by which stepfamilies may matter for children. Next to selectivity effects, stepfamilies may be a beneficial family structure by increasing the economic and parental resources of the child. A new partner of the parent can be beneficial for the social, cultural, financial and human capital in the family (e.g. Spruijt, 2007; Wagmiller, Gershoff, Veliz, & Clements, 2010). This increase in family resources can be expected to have positive effects on

the educational achievements and well-being of children, considering the importance of resources for child development. This idea of recompensation of the loss of resources is however not always confirmed in the literature (e.g. Amato & Keith, 1991; Jeynes, 2006; Manning & Lamb, 2003; Raley, Frisco, & Wildsmith, 2005; Tillman, 2007). On the other hand, according to the stress perspective, the arrival of a new stepparent may cause stress for the child, leading to more negative child outcomes (e.g. Kurdek, 1994; Wu & Thomson, 2001). The latter illustrates again the importance of a complete family history perspective: each transition implies a new family structure and each following family structure requires an additional transition. It is therefore important to study both dimensions simultaneously in order to distinguish their individual effects on child outcomes. As stated by Stroschein et al. (2009, p. 87): "*there is a need for research that moves beyond the debate between family structure and family instability and distinguishes among the different types of transitions that are experienced over the course of childhood*".

4. Data and methods

4.1 Data

The data come from the project Divorce in Flanders (DiF), a large-scale survey containing information on 1025 intact and 3525 dissolved marriages (Mortelmans et al., 2011). Using a multi-actor perspective, both (ex-)partners, their child, their parents, and their new partners in case of a divorce were questioned via Computer Assisted Personal Interviewing (CAPI). The research sample of the present study is limited to marriages with at least one child. Also, partners who had more than one divorce were excluded from the sample. We use information from the partner questionnaire to reconstruct the relationship histories of mothers and fathers following divorce. The educational outcomes of the children are obtained from the child data. For each reference marriage including children, a target child was selected at random, with preference for a child living in the parental home. All children are born within the selected reference marriage, which entails all children in the research sample are born in the same family configuration. Children had to be at least ten years old to participate in the DiF study. Depending on whether the child still lived with the parents or not, they were questioned by

CAPI in the parental home or contacted by mail and web survey at their own place. As the goal is to reconstruct the family history of children between birth and age 18, the research sample is limited to children of age 18 years or older.

Multi-actor non-response rates lead to different subsamples according to which information is used and combined. From a single-actor perspective, we have information on the trajectory of divorced mothers for 1047 children and on the trajectory of divorced fathers for 876 children. These two subsamples are used to construct a typology of mother and father trajectories using sequence analysis. In a next step, these typologies and other measures of family histories are related to the educational outcomes of the child. These subsamples are limited to marriages in which a target child participated and also includes marriages that remained intact. There are 802 observations with complete mother histories and 631 observations with complete father histories than can be related to the educational outcomes of the target child. Both subsamples contain 273 marriages that remained intact. For this last group, participation of one parent is sufficient for obtaining mother and father history.

4.2 Dependent variables

We look at the educational attainment of children at three different time points: during the transition from primary school to secondary school (around age 12), at the end of secondary school (around age 18) and at the end of their educational career (different age according to start and duration of higher studies). The regular trajectory in both primary and secondary school consist of six years.

At the start of secondary school, we distinguish between the general educational track (GET) and other educational tracks. At the end of secondary school, four different educational tracks are distinguished: the General (GET), Technical (TET), Arts (AET) and Vocational (VET) educational track. The General educational track is considered as the highest educational level and prepares children for higher education. TET and AET are considered as the second highest educational level, with some continuing further studies and others not. We will combine those

in the AET and those in the TET into one group. VET is directed towards learning specific professions and hence prepares for labor market participation. Although in theory there is no gradation in the classification of these tracks, the reality of pupils starting in GET, changing to TET and ending in VET is known as the cascade-system. In the VET, most pupils do not obtain the certificate of higher secondary education, as this is conditional of successfully finishing an additional seventh year of secondary education.

For the final educational level, we make a distinction between those who obtained a certificate of lower secondary education, those who obtained a certificate of higher secondary education and those who obtained a certificate of post-secondary or higher education. The final educational level is only computed for respondents who indicated to have ended their studies (n=609).

4.3 Independent variables

4.3.1. Control variables

We control for the *sex* and *year of birth* of the child. In all models, boys are included as reference category and the year of birth is centered around its mean (1985).

The educational level of the parents is operationalized as the highest educational level of mother and father, in which we distinguish three categories: 1) no certificate of higher secondary education, 2) certificate of higher secondary education and 3) higher education (both academic and non-academic). Depending on the model, it is treated as a categorical variable with the highest educated group as reference category or as a metric variable (range 0-2).

4.3.2. Parental divorce and family history

The variable *parental divorce experience* distinguishes between no parental divorce experience, parental divorce between birth and age 11, parental divorce between age 12 and 18 and parental divorce after age 18. These three categories are included as dummy variables into the model.

Next, four measures of *family history* are included in the analyses. These measures were calculated by using techniques of sequence analysis in TraMinerR (Gabadinho, et al., 2011.) Sequence analysis was introduced in the social sciences by Abbott and Hrycak in 1990 but has only been recently applied in population and family studies (Aassve et al. 2007; Bras et al. 2010; Elzinga and Liefbroer 2007; Schumacher, Moreels & Matthijs 2012). The family trajectories of the children are represented as sequences of family states of mother/father between birth and age 18, expressed in sequences of 216 months. We distinguish three different family statuses: 1) Mother living with father (Both parents), 2) Mother/father living single (Single parent) and 3) Mother/father living together with new partner (Stepfamily).

A first measure of family history covers the *number of transitions*. This is a frequently used measure of family (in)stability, expressing the number of changes in family configuration of respectively mother and father. A transition can be the dissolution of a marriage or cohabitation relationship, or the start of a new cohabitation/marriage relationship. This measure does not distinguish between different types of transitions nor does it take into account the timing of transitions or duration in specific family states.

The second measure is *within sequence entropy*. This expresses the diversity in family statuses within a family trajectory and varies with the time spend in each status. Children whose parents stayed together from birth until age 18 have an entropy of 0. Maximum entropy is obtained when the three distinct family states return 72 times within one sequence. Gabadinho et al. (2011, 78) describe entropy as "*the `uncertainty' of predicting the states in a given sequence"*. In this study, we will use the Shannon entropy measure, as this is calculated in TraMineR (Gabadinho, et al., 2011, 77). A disadvantage of the entropy measure is that it only indirectly takes into account the number of transitions in terms of variety in family statuses. In other words, entropy does not distinguish between trajectories with a similar total duration in specific family situations but differences in the number of transitions between those family statuses.

The third measure of family history is *turbulence.* This is a measure of sequence complexity, based upon the number of subsequences and the variance of duration in each state (Elzinga &

Liefbroer, 2007). The more distinct subsequences within a family trajectory, the more turbulent the trajectory. The degree of turbulence is hence depending on both the number of states and the repetition of the states (Elzinga 2008). Children whose parents stayed together from birth until age 18 have a turbulence of 1.

Table 1 contains the categorical variable age-specific divorce experience and the three metric measures of family histories for mothers and fathers. More than two on three children their parents are divorced, corresponding to the disproportional selection of one third intact reference marriages and two third dissolved marriages in the original sample. The largest proportion of children with divorced parents experienced the divorce before the start of secondary school, while a small proportion their parents divorced when they were older than 18.

The degree of entropy, turbulence and transitions are calculated only for the group of children whose parents ever divorced. The ranges of the three variables are quite different, and hence or the mean and standard deviation. They show however, as a result of their definitions, a strong association. The measures of entropy and turbulence show the strongest association (0.77, p<.001 for mothers and .82, p<.001 for fathers), followed by the association between entropy and the number of transitions (0.58, p<.001 for mothers and 0.77, p<.001 for fathers). The association between the measure of turbulence and the number transitions is still strong but the smallest for both mothers and fathers (0.57, p<.001 for mothers and 0.60, p<.001 for fathers).

Table 1: Parental divorce experience, transitions, entropy and turbulence

All children	%	Children with divorced parents	Mean	S.E.	Range
Parents not divorced	29	Transitions mother after divorce	1.8	1.6	0-5
Parents divorced between age 0 & 11	40	Entropy mother trajectory age 0-18	0.5	0.3	0-1
Parents divorced between age 12 & 18	22	Turbulence mother trajectory age 0-	4.7	2.8	1-15
Parents divorced after age 18	8	N		529	
N	942	Transitions father after divorce	1.3	1.0	0-7
		Entropy father trajectory age 0-18	0.5	0.3	0-1
		Turbulence father trajectory age 0-18	4.4	2.7	1-15
		N		358	

The fourth measure of family history describes the *family trajectories of mother and father*. Ward method was used as clustering method to aggregate the individual sequences into a reduced number of meaningful groups based upon the optimal matching distance matrix (Gabadinho et al. 2011). These groups represent a specific type of family history. These distances are the minimal numbers of insertions, deletions and substitutions that are necessary for transforming one sequence into another. We used the default insertion/deletion cost of one and a substitution cost matrix with constant value two. The distance matrix contains the distances between all pairs of sequences in the data set (Gabadinho et al. 2011). The number of clusters was determined by choosing the cluster solution with the highest average silhouette width. Five solutions were tested (with 5, 6, 7, 8, 9 and 10 clusters). For the trajectories with mother, the 6-cluster solution showed the highest average silhouette width (ASW=0.53). For the father trajectories, the 9-cluster solution showed the highest average silhouette width (ASW=0.54).

Figure 1 presents the sequence frequency plot for the trajectories with mother, plotting the most frequent sequences for six clusters. Figure 2 presents the transversal age distribution of the family states among nine clusters of individual family trajectories with father. We use different presentation strategies for mothers and fathers as illustration for the possibilities of graphical presentations in TraMineR. In globo, the same information can be deducted from both types of plots.

We begin with discussing the family trajectories with mother. Cluster one contains children whose parents stayed together until they were (almost) 18 years old and divorced later. Most of these children experienced the same stable two-parent family configuration during childhood and youth (before age 18) as children whose parents never divorced. Cluster two and six contain children whose mother went living together with a new partner. In the second cluster, the transition to a post-divorce stepfamily formation happened on average before or during primary school, while children in the eight cluster mostly made this transition during secondary school. All children in these clusters experienced at least two family transitions. Most lived a relatively short time within a single parenthood configuration, followed quite quickly by a stepfamily

configuration. The third, fourth and fifth cluster refer to trajectories of single motherhood with declining age of experiencing the transition to this family status. Most children in these clusters experienced only one family transitions before 18, that is the divorce of their parents resulting in single motherhood.

The first, second, sixth and eight cluster for fathers represent trajectories of fathers remaining single after divorce, with declining age of the child at parental divorce. Most of these children experienced no additional transitions with father after the parental divorce. The second and fourth cluster mainly contain fathers that repartnered fast following divorce, with most experiencing an additional transition from single fatherhood to a stepmother family following parental divorce. The target child was younger at the time of parental divorce in cluster four compared to cluster two. The seventh cluster corresponds to the first of the mothers containing children whose parents mainly divorced after they reached age 18. The last cluster contains children whose father remained a substantial amount of time single following divorce and repartnered later, with one additional transition following parental divorce.

Figure 1: Sequence frequency plot for 6-cluster solution family trajectories with mother age 0-18
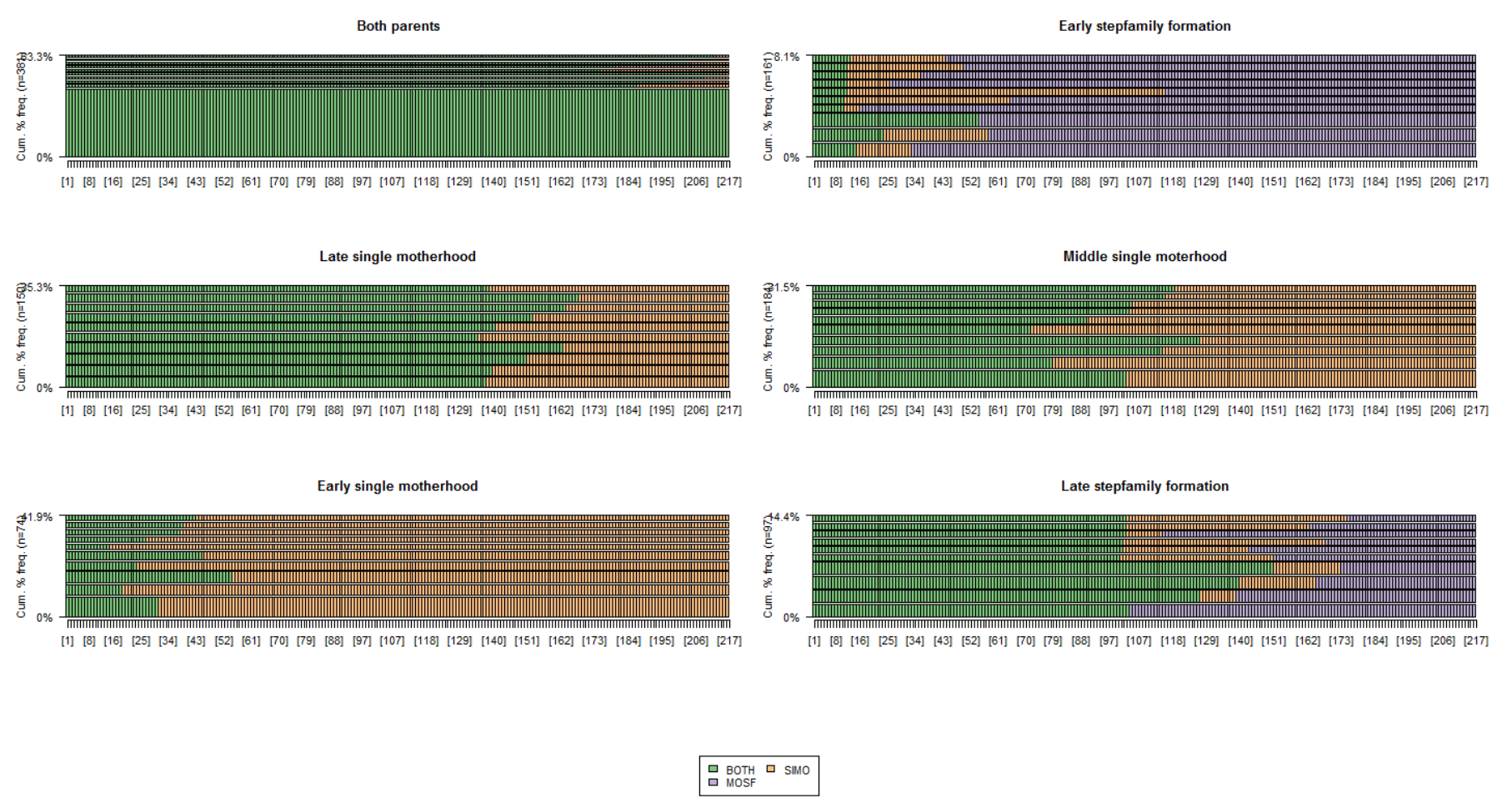
Figure 2: State distributions plots for 9-cluster solution family trajectories with father age 0-18
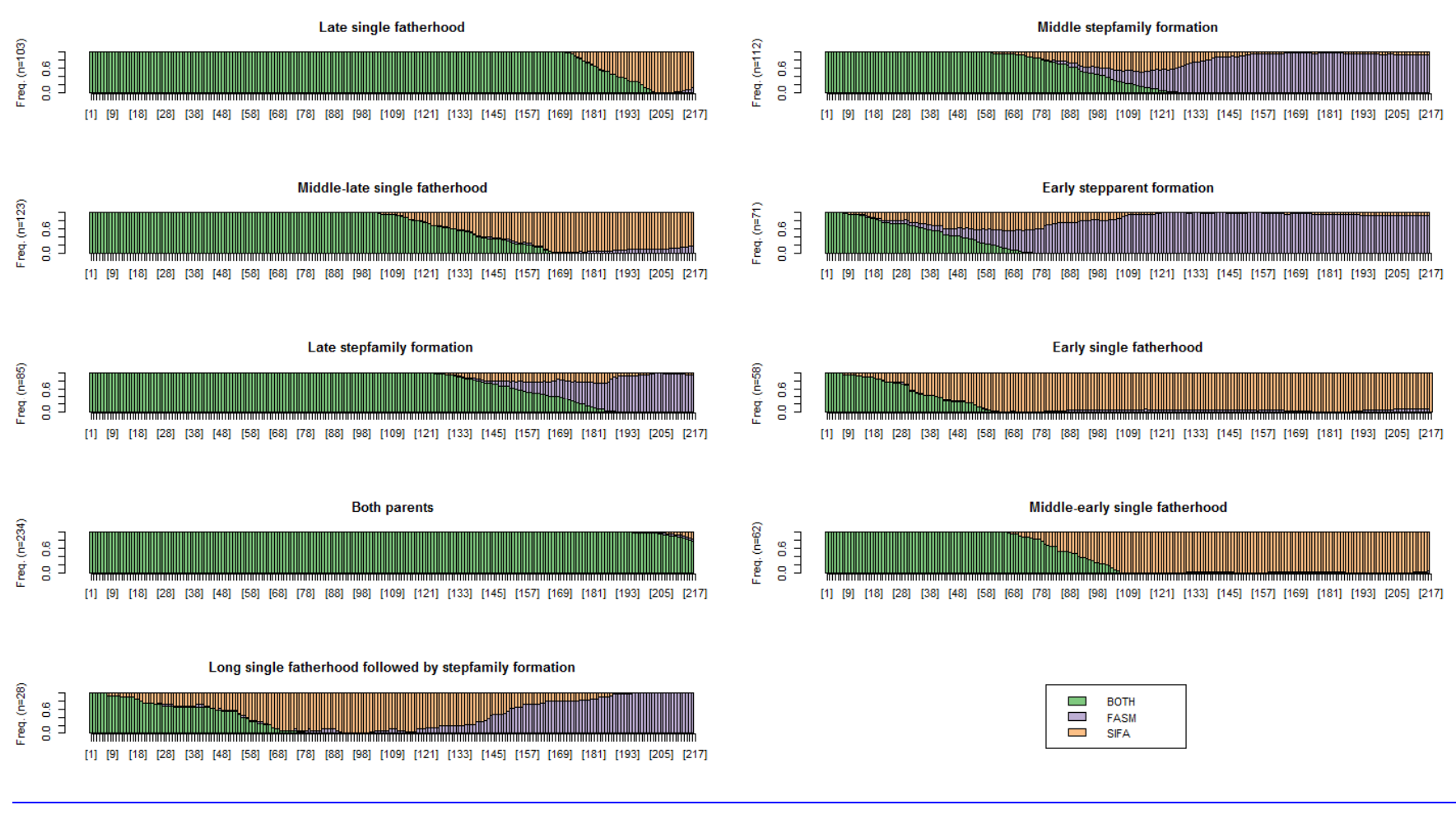
4.4 Analytical strategy

In this study, the different measures of family history are related to the academic achievement of children at three different moments in time. Models are presented separately for the trajectories of mothers and fathers. The main tables always contain the results including the interaction terms between the educational level of the parents and the family measure. The models including only direct effects are included in Appendix. All dependent variables require logistic regression, estimating respectively the chance 1) not to start secondary school in the general education track, 2) to end secondary school in respectively the technical educational track and the vocational track compared to the general educational track and 3) to obtain respectively no certificate of secondary education and a certificate of higher education compared to a certificate of secondary education. All models contain the control variables sex and year of birth of the child, although the coefficients are sometimes not presented in order to be more concise. The educational level of the parents is treated as a metric variable, expect in the models for the family history typologies of mothers and fathers to reduce the number of interaction terms and avoid quasi-complete separation of data points.

5. Results

We first discuss the results for the control variables across all models (see tables in Appendix). The results are very similar for the three educational outcomes, representing the progressive unfolding of the educational career. The girls in our sample are more likely to choose the general educational track at the start of secondary school, to finish secondary school in general track and obtain more often a higher educational level than boys. Children from more recent birth cohorts have a lower chance on a high educational level, which is partially an statistical artifact of the sample criteria. Children of more recent birth cohorts who are still in higher education are underrepresented in the analysis of the final educational level, as they often have not yet finished their educational career. Finally, the educational level of the parents is very predictive

for the three measures of academic achievement, representing the strong reproduction of inequality in educational level across generations.

Next, the results for the age-specific parental divorce experience are presented in Table 2. Overall, parental divorce experience is not related to the educational track at the beginning of secondary school. However, children with lower educated parents who experienced a divorce after they reached age 18 have a higher chance not to be in GET in the first year of secondary school. In other words, later life transitions appear to be predictive for earlier transitions in the educational career. A parental divorce experience during childhood (0-11 years) or adolescence (12-18) is increasing the chances on ending secondary school in VET for children of lower educated parents. Regarding the final educational level, the effect of divorce is not conditional of the educational level of the parents, but there is a significant lower chance on obtaining a high educational level if parents divorced between age 0 and 18. The impact of divorce on the final educational level hence seems to be long-lasting.

Table 2: Results divorce experience at different ages

	Start secondary school (Ref =GET)			End secondary school (Ref = GET)						Final educational level (Ref = Medium)					
	Other			**TET**			**VET**			**Low**			**High**		
	B	S.E.	e^B	B	S.E.	e^B	B	S.E.	e^B	B	S.E.	e^B	B	S.E.	e^B
Intercept	-1.28	(0.23)	0.28	-0.42	(0.21)	0.66	-1.53	(0.30)	0.22	-1.50	(0.64)	0.22	0.60	(0.32)	1.81
Girls	-0.42	(0.15)	0.66***	-0.67	(0.16)	0.51***	-0.52	(0.19)	0.60***	-0.22	(0.28)	0.80	0.85	(0.20)	2.34***
Year of birth child	0.02	(0.02)	1.02	0.02	(0.02)	1.02	0.04	(0.02)	1.04*	0.02	(0.03)	1.02	-0.13	(0.02)	0.88***
Divorce age 0-11	-0.27	(0.31)	0.76	0.06	(0.27)	1.07	0.22	(0.39)	1.25	-0.56	(0.83)	0.57	**-1.15**	**(0.39)**	**0.32****
Divorce age 12-18	-0.11	(0.35)	0.90	-0.04	(0.31)	0.96	-0.18	(0.48)	0.84	-0.40	(0.88)	0.67	**-0.90**	**(0.42)**	**0.41***
Divorce age >18	-1.15	(0.77)	0.32	-0.20	(0.46)	0.82	-0.44	(0.80)	0.64	0.56	(1.32)	1.75	0.58	(0.69)	1.79
Low educated parents	1.31	(0.46)	3.72**	1.53	(0.52)	4.61**	1.73	(0.67)	5.63***	0.39	(0.91)	1.47	-2.07	(0.56)	0.13***
Medium educated parents	1.29	(0.29)	3.64***	1.01	(0.31)	2.76**	1.70	(0.39)	5.46***	-0.08	(0.76)	0.92	-1.67	(0.40)	0.19***
Div. age 0-11 X Low. Educ.	0.79	(0.58)	2.20	0.67	(0.74)	1.96	**1.71**	**(0.86)**	**5.51***	0.97	(1.11)	2.63	0.32	(0.77)	1.38
Div. age 0-11 X Med. Educ.	0.22	(0.40)	1.25	-0.12	(0.42)	0.89	0.17	(0.51)	1.19	1.15	(0.96)	3.17	0.71	(0.53)	2.04
Div. age 12-18 > Low. Educ.	0.50	(0.70)	1.65	0.41	(1.00)	1.51	**2.11**	**(1.08)**	**8.24***	0.95	(1.26)	2.58	0.51	(0.96)	1.66
Div. age 12-18 X Med. Educ.	0.04	(0.46)	1.04	0.24	(0.48)	1.27	0.42	(0.62)	1.52	0.79	(1.05)	2.20	0.50	(0.60)	1.65
Div. age >18 X Low. Educ.	**2.27**	**(1.02)**	**9.68***	1.00	(1.03)	2.71	1.67	(1.30)	5.32	-0.10	(1.59)	0.90	-1.15	(1.04)	0.32
Div. age >18 X Med. Educ.	0.47	(0.88)	1.61	-0.51	(0.67)	0.60	-0.05	(0.95)	0.95	-0.03	(1.53)	0.97	-0.05	(0.84)	0.95
N	933			895						608					
-2LL	1043.67 (df=13)			1727.63 (df=26)						992.50 (df=26)					

Table 3 presents the results for the trajectories of mothers. The odds ratios for the models with significant interaction terms are also graphically presented in Figure 1. Children who spent most of their childhood and youth with a single mother have a higher chance of not starting secondary school in GET than children in families with married parents. Only one interaction term between the mother trajectories and educational level reaches the .15 significance level, but the general tendency is that the association between the trajectory and the educational track at start of secondary school is stronger for children with lower educated parents. For example, children with lower educated parents that experienced an early transition to single motherhood have five times as much chance not to start secondary school in GET.

The likelihood of ending secondary school at TET-level instead of GET-level is not depending on the family trajectory with the mother. This trajectory is however strongly associated with the likelihood of ending secondary school in VET instead of GET. Children whose mother experienced the transition to single motherhood (early or later) have twice as much chance to end in VET. The effect decreases however with increasing educational level of the parents.

A late transition to single motherhood (during the final years of secondary school) is especially detrimental for the final educational level of children with lower educated parents. An early transition to single motherhood (before or during primary school) remains predictive of the final educational level of children, independent of the educational resources of parents. These results demonstrate differences between educational groups in the importance of the timing of specific transitions for children's educational achievement. Children with higher educated parents are less vulnerable for later family transitions than children with lower educated parents, but they are equally vulnerable regarding the effect of long-term single motherhood.

Table 3: Results trajectory with mother from birth to age 18

	Start secondary			End secondary school						Final educational level					
Variables	**Other**			**TET**			**VET**			**Low**			**High**		
	B	S.E.	e^B	B	S.E.	e^B	B	S.E.	e^B	B	S.E.	e^B	B	S.E.	e^B
Intercept	0.65	(0.32)	1.92*	1.36	(0.38)	3.88***	1.08	(0.44)	2.94*	-1.36	(0.58)	0.26*	-2.07	(0.42)	0.13***
Girls	-0.46	(0.17)	0.63**	-0.57	(0.18)	0.56**	-0.60	(0.21)	0.55**	0.06	(0.32)	1.06	1.04	(0.22)	2.82***
Year of birth child	0.04	(0.02)	1.04*	0.02	(0.02)	1.02	0.06	(0.02)	1.06**	0.04	(0.04)	1.04	-0.13	(0.02)	0.88***
Both parents	0.13	(0.47)	1.14	0.11	(0.56)	1.11	0.25	(0.63)	1.28	0.86	(0.76)	2.37	0.51	(0.59)	1.67
Early single motherhood	**1.68**	**(0.89)**	**5.35°**	1.43	(1.24)	4.17	1.56	(1.27)	4.77	0.62	(0.97)	1.85	-0.93	(1.21)	0.39
Early stepfamily formation	0.35	(0.61)	1.42	0.22	(0.75)	1.24	0.62	(0.80)	1.86	0.31	(0.95)	1.36	-0.61	(0.82)	0.54
Late single motherhood	0.28	(0.67)	1.32	0.66	(0.92)	1.94	**1.58**	**(0.96)**	**4.87°**	-0.92	(1.20)	0.40	**-2.90**	**(1.28)**	**0.06***
Late stepfamily formation	0.48	(0.66)	1.62	0.93	(1.00)	2.55	**1.87**	**(1.05)**	**6.47°**	**1.48**	**(0.96)**	**4.39°**	-0.07	(1.08)	0.93
Middle single motherhood	0.19	(0.57)	1.21	0.60	(0.82)	1.82	**1.47**	**(0.85)**	**4.33°**	**1.25**	**(0.84)**	**3.48°**	0.64	(0.78)	1.90
Educational level parents (Educ.)	-0.88	(0.21)	0.41***	-0.90	(0.23)	0.41***	-1.20	(0.28)	0.30***	-0.17	(0.45)	0.84	1.21	(0.27)	3.34***
Both parents X Educ.	-0.42	(0.34)	0.66	-0.19	(0.36)	0.83	-0.27	(0.44)	0.77	-0.46	(0.66)	0.63	-0.18	(0.41)	0.84
Early single motherhood X Educ.	-0.75	(0.60)	0.47	-0.69	(0.76)	0.50	-0.26	(0.77)	0.77	-0.62	(1.00)	0.54	-0.09	(0.83)	0.92
Early stepfamily formation X Educ.	**-0.76**	**(0.48)**	**0.47°**	-0.18	(0.47)	0.83	-0.36	(0.54)	0.70	-1.64	(1.24)	0.19	-0.04	(0.54)	0.96
Late single motherhood X Educ.	-0.11	(0.45)	0.89	-0.22	(0.56)	0.80	-0.68	(0.63)	0.51	0.90	(0.90)	2.46	**1.21**	**(0.80)**	**3.37°**
Late stepfamily formation X Educ.	-0.53	(0.51)	0.59	-0.74	(0.65)	0.48	**-1.49**	**(0.78)**	**0.23***	-1.11	(1.13)	0.33	-0.14	(0.94)	0.87
Middle single motherhood X Educ.	-0.05	(0.39)	0.95	-0.38	(0.51)	0.68	**-0.87**	**(0.58)**	**0.42°**	-0.34	(0.66)	0.71	**-0,95**	**(0,52)**	**0.39°**
N	795			761						508					
-2LL	868.46 (df=15)			1460.21 (df=30)						803.46 (df=30)					

Figure 2 Conditional odds ratio's for family trajectories mothers

Conditional odds ratio's for start primary school (Other versus GET)

◆ Low educ   ◆ Middle educ   ◆ High educ

| | Parents never divorced | Both parents untill 18 (p=.22) | Early single motherhood (p=.21) | Early stepfamily formation (p=.11) | Late single motherhood (p=.80) | Late stepfamily formation (p=.59) | Middle single motherhood (p=.89) |

Conditional odds ratio's end secundary school (VET versus GET)

◆ Low educ   ◆ Middle educ   ◆ High educ

| | Parents never divorced | Both parents untill 18 (p=.54) | Early single motherhood (p=.73) | Early stepfamily formation (p=0.51) | Late single motherhood (p=.28) | Late stepfamily formation (p=.05) | Middle single motherhood (p=.13) |

Conditional odds ratio's final educational level (High versus medium)

◆ Low educ   ◆ Middle educ   ◆ High educ

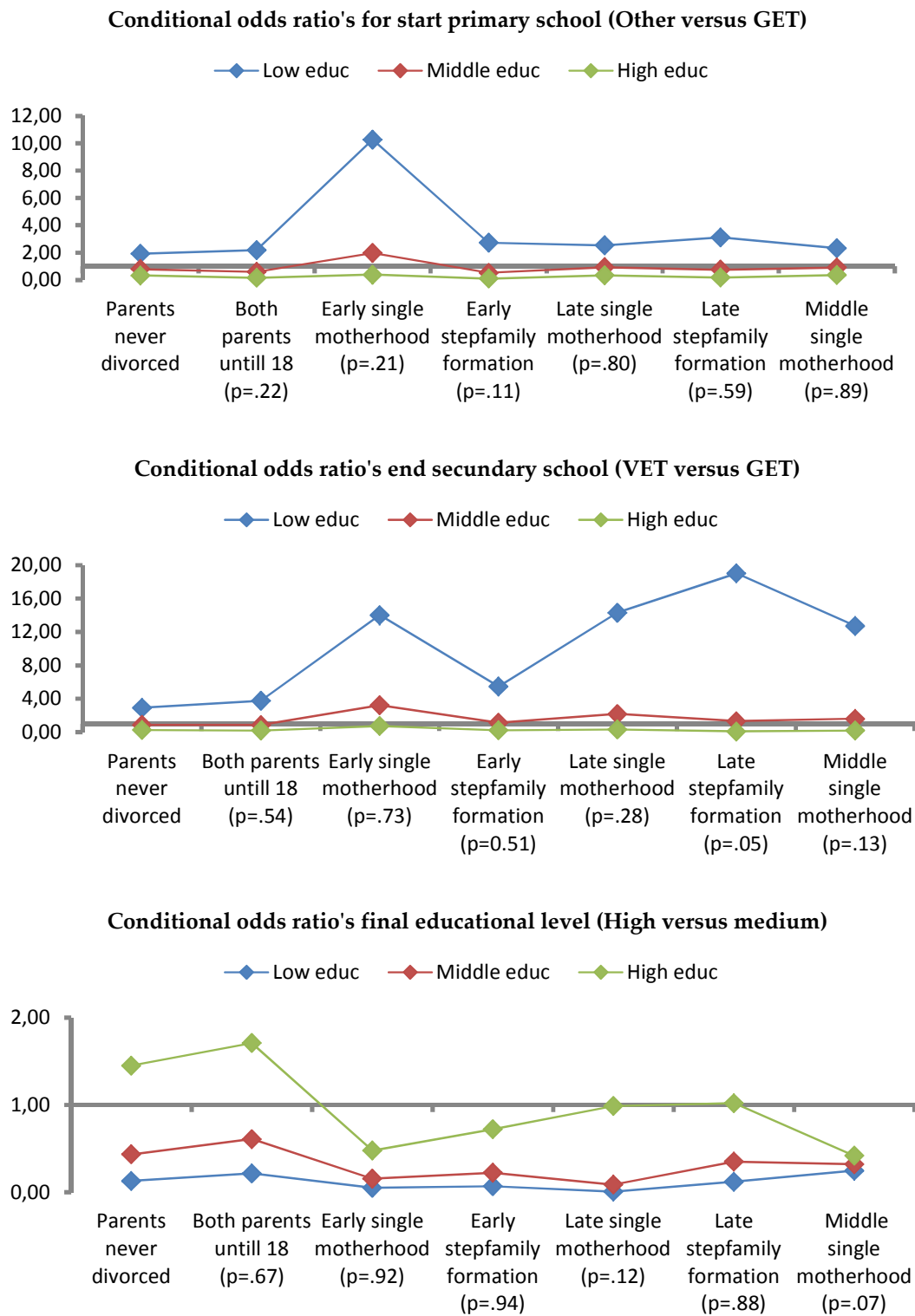| | Parents never divorced | Both parents untill 18 (p=.67) | Early single motherhood (p=.92) | Early stepfamily formation (p=.94) | Late single motherhood (p=.12) | Late stepfamily formation (p=.88) | Middle single motherhood (p=.07) |

Table 4 contains the results for the trajectories of fathers. Overall, single fatherhood following parental divorce is associated with a higher chance to end secondary school in VET and a lower chance on a higher educational level. Stepmother configurations starting at a young age is especially for children with lower educated parents associated with a lower chance to start and end secondary school in GET. Within these group, an early transition to a stepmother configuration seems of more influence than an early transition to stable single fatherhood. Further, there is an effect of mid-late single parenthood on educational track in the final year of secondary school: children with a family history characterized by mid-late single parenthood, have a higher probability of ending secondary school in VET, as compared to GET.

Some of the interaction terms between father trajectories and educational level are significant at the .15 level. They indicate that father family trajectories have a stronger negative effect on the educational outcomes of children with lower educated parents than on the outcomes of children with higher educated parents. The conditional odds ratios for the models with significant interaction terms are graphically presented in Figure 2.

Table 4: Results trajectory with father from birth to age 18

Variables	Start secondary Other B	S.E.	e^B	End secondary school TET B	S.E.	e^B	VET B	S.E.	e^B	Final educational level Low B	S.E.	e^B	High B	S.E.	e^B
Intercept	0.68	(0.33)	1.97*	1.36	(0.39)	3.89***	0.89	(0.45)	2.44*	-1.42	(0.61)	0.24*	-1.67	(0.42)	0.19***
Girls	-0.49	(0.19)	0.61**	-0.63	(0.20)	0.53**	-0.33	(0.24)	0.72	-0.31	(0.38)	0.73	0.45	(0.25)	1.57°
Year of birth child	0.04	(0.02)	1.04*	0.01	(0.02)	1.01	0.05	(0.03)	1.05*	-0.01	(0.04)	0.99	-0.12	(0.03)	0.88***
Both parents	0.41	(0.62)	1.51	-0.08	(0.82)	0.93	**1.37**	**(0.82)**	**3.95°**	0.95	(0.85)	2.59	-1.09	(0.82)	0.34
Early single fatherhood	1.38	(1.09)	3.97	2.45	(2.03)	11.55	2.25	(2.09)	9.49	0.79	(1.22)	2.20	-1.51	(1.60)	0.22
Early stepparent formation	**1.91**	**(1.21)**	**6.74°**	2.61	(2.24)	13.61	**4.74**	**(2.27)**	**114.58***	0.12	(1.33)	1.13	-1.11	(1.42)	0.33
Late single fatherhood	-0.48	(0.79)	0.62	-0.47	(1.19)	0.63	1.41	(1.23)	4.12	1.19	(1.23)	3.29	-0.13	(1.58)	0.88
Late stepfamily formation	0.15	(0.70)	1.16	0.42	(0.99)	1.53	0.80	(1.06)	2.23	0.57	(1.18)	1.78	0.58	(0.99)	1.79
Early single fatherhood & late stepfamily	-2.86	(2.49)	0.06	-0.91	(2.25)	0.40	-0.77	(2.26)	0.46						
Mid-early single fatherhood	0.03	(1.11)	1.03	-1.93	(1.45)	0.15	-0.95	(1.25)	0.39						
Mid-late single fatherhood	0.47	(0.73)	1.60	-0.08	(1.16)	0.93	**2.13**	**(1.16)**	**8.43°**	**2.62**	**(1.34)**	**13.69***	-0.90	(1.48)	0.41
Middle stepfamily formation	-0.95	(0.73)	0.39	0.76	(1.19)	2.14	1.50	(1.18)	4.48	0.47	(1.15)	1.61	-2.38	(2.12)	0.09
Educational level parents (Educ.)	-0.89	(0.21)	0.41***	-0.89	(0.23)	0.41**	-1.16	(0.28)	0.31***	-0.14	(0.46)	0.87	1.13	(0.26)	3.08***
Both parents X Educ.	-0.63	(0.47)	0.54	-0.26	((0.53)	0.77	-0.85	(0.58)	0.43°	-0.72	(0.83)	0.49	0.68	(0.58)	1.97
Early single fatherhood X Educ.	-1.01	(0.82)	0.36	-0.74	(1.16)	0.48	-0.47	(1.22)	0.62	-1.00	(1.33)	0.37	0.37	(1.02)	1.45
Early stepparent formation X Educ.	**-1.25**	**(0.79)**	**0.29°**	-1.37	(1.20)	0.26	**-2.65**	**(1.32)**	**0.07***	0.66	(1.00)	1.93	0.57	(0.92)	1.76
Late single fatherhood X Educ.	0.25	(0.54)	1.29	0.35	(0.71)	1.42	**-1.35**	**(0.94)**	**0.26°**	-0.36	(0.93)	0.70	-0.26	(0.92)	0.77
Late stepfamily formation X Educ.	-0.29	(0.52)	0.75	0.07	(0.62)	1.07	-1.25	(0.95)	0.29	-0.60	(1.24)	0.55	-1.09	(0.80)	0.34
Early single father & late step X Educ.	1.52	(1.61)	4.57	0.40	(1.56)	1.49	0.83	(1.56)	2.29						
Mid-early single fatherhood X Educ.	-0.18	(0.68)	0.83	1.13	(0.81)	3.10	0.54	(0.78)	1.71						
Mid-late single fatherhood X Educ.	-0.05	(0.49)	0.95	0.45	(0.68)	1.57	**-1.15**	**(0.80)**	**0.32°**	**-2.47**	**(1.35)**	**0.09°**	-0.07	(0.88)	0.93
Middle stepfamily formation X Educ.	**0.90**	**(0.49)**	**2.45°**	-0.64	(0.78)	0.53	-0.57	(0.78)	0.57	0.05	(0.83)	1.05	0.54	(1.17)	1.72
N	625			598						382					
-2LL	698.34			1125.19						610.20					

Figure 3 Conditional odds ratio's for family trajectories fathers

Conditional odds ratio's for start primary school (Other versus GET)

Conditional odds ratio's end secundary school (VET versus GET)

Conditional odds ratio's final educational level (Low versus Medium)
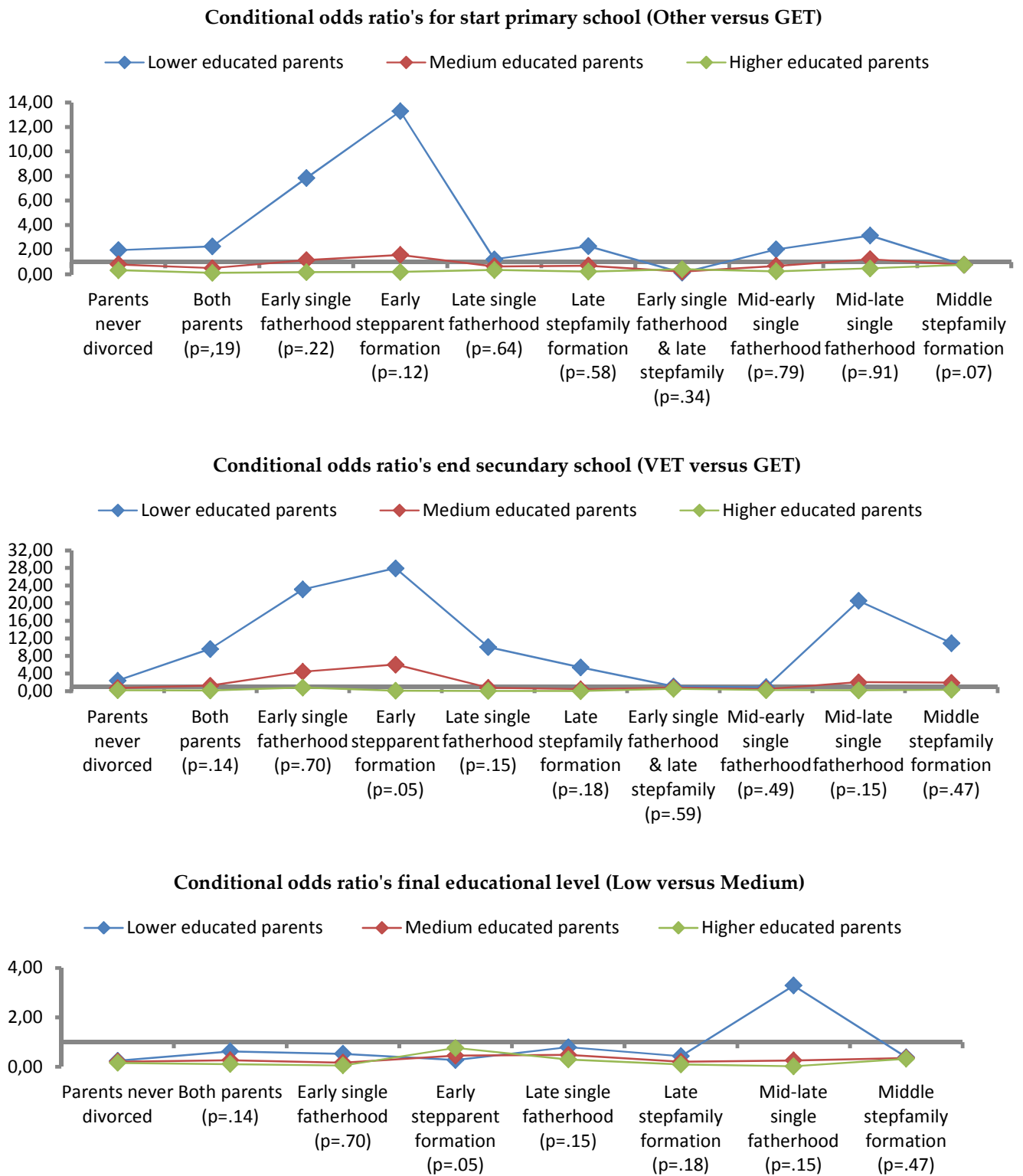

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Table 5 and 6 contain the results for the different measures of variability and instability in the family history of mother and father. More entropy in the mother and father trajectory is associated with lower educational outcomes. We find no indications for a stronger association between the degree of entropy and educational outcomes for children with lower educated parents. Reversely, we find an interaction effect in the opposite direction regarding the degree of entropy with father and the chance on not starting secondary school in GET. These findings may be interpreted as a weaker intra-generational transmission of educational level for higher educated parents in case of a high level of entropy in the family trajectory of divorced fathers (Biblarz and Raftery 1993, 1999; Couch & Lillard 1997).

Only the amount of turbulence and the number of transitions in the mother trajectory are associated with lower educational outcomes, not those of father. Additional analyses show however that the association between the turbulence and number of transitions of fathers, and child outcomes is stronger for children living at least part-time with father. The stronger association between the family variability and instability of mother and child outcomes is hence partially due to the higher amount of children living with mother.

If we compare the model fit for the three measures across all models, the differences are overall very small, not favoring one measure above another.

Table 5: Results measures of entropy, turbulence and transitions trajectory divorced mothers from birth to age 18 child

	Star secondary school (Ref =GET)			End secondary school (Ref = GET)						Final educational level (Ref = Medium)					
	Other			TET			VET			Low			High		
	B	S.E.	e^B	B	S.E.	e^B	B	S.E.	e^B	B	S.E.	e^B	B	S.E.	e^B
Entropy mother	**1.09**	**(0.68)**	**2.97°**	0,25	(0,52)	1,29	0,44	(0,76)	1,55	0.01	(1.40)	1.01	-0.66	(0.69)	0.52
Low educated parents	2.92	(0.63)	18.51***	2,45	(0,73)	11,63***	2,92	(0,86)	18,50***	1.03	(1.03)	2.80	-2.17	(0.71)	0.11**
Medium educated parents	1.89	(0.52)	6.63***	1,01	(0,45)	2,75*	1,86	(0,59)	6,44***	0.88	(0.98)	2.41	-0.93	(0.54)	0.40°
Low educ. X entropy	-0.99	(1.06)	0.37	0,09	(1,44)	1,09	1,20	(1,58)	3,32	0.18	(1.77)	1.20	0.18	(1.32)	1.20
Med. educ. X entropy	-0.62	(0.83)	0.54	0,20	(0,77)	1,22	-0,02	(0,97)	0,98	-0.60	(1.64)	0.55	-0.49	(0.96)	0.61
-2LL		*561.25*			*957.81*						*541.01*				
Turbulence mother	0.07	(0.07)	1.07	-0,03	(0,06)	0,97	0,05	(0,08)	1,05	0.04	(0.15)	1.05	**-0.19**	**(0.08)**	**0.83***
Low educated parents	2.78	(0.62)	16.17***	2,30	(0,83)	9,99**	2,63	(0,94)	13,82**	1.13	(1.09)	3.10	-2.60	(0.78)	0.08***
Medium educated parents	1.43	(0.48)	4.17***	0,72	(0,46)	2,05°	1,78	(0,59)	5,91**	0.38	(1.06)	1.46	-1.51	(0.60)	0.22*
Low educ. X turbulence	-0.09	(0.12)	0.92	0,04	(0,19)	1,04	0,20	(0,20)	1,22	0.00	(0.19)	1.00	0.11	(0.15)	1.12
Med. educ. X turbulence	0.02	(0.08)	1.02	0,09	(0,09)	1,09	0,02	(0,10)	1,02	0.03	(0.17)	1.04	0.07	(0.11)	1.08
-2LL		*560.91*			*953.97*						*533.97*				
Transitions mother	0.12	(0.11)	1.12	0,01	(0,10)	1,01	0,05	(0,13)	1,05	0.03	(0.28)	1.03	**-0.38**	**(0.15)**	**0.69***
Low educated parents	2.48	(0.47)	11.96***	1,93	(0,58)	6,92***	2,70	(0,65)	14,82***	1.04	(0.82)	2.82	-2.37	(0.62)	0.09***
Medium educated parents	1.40	(0.36)	4.05***	1,05	(0,33)	2,87**	1,71	(0,43)	5,52***	0.30	(0.77)	1.35	-1.48	(0.44)	0.23***
Low educ. X transitions	-0.06	(0.18)	0.94	0,40	(0,32)	1,49	**0,49**	**(0,34)**	**1,64°**	0.03	(0.33)	1.03	0.22	(0.27)	1.24
Med. educ. X transitions	0.08	(0.14)	1.08	0,03	(0,14)	1,03	0,07	(0,17)	1,08	0.13	(0.31)	1.13	0.23	(0.20)	1.26
-2LL		*558.69*			*956.17*						*534.16*				
N (three models)		*524*			*499*						*333*				

Note. In all models we control for sex and year of birth (results not presented)

Table 6: Results measures of entropy, turbulence and transitions trajectory divorced fathers from birth to age 18 child

	Star secondary school (Ref =GET)			End secondary school (Ref = GET)						Final educational level (Ref = Medium)					
	Other			TET			VET			Low			High		
	B	S.E.	e^B	B	S.E.	e^B	B	S.E.	e^B	B	S.E.	e^B	B	S.E.	e^B
Entropy father	**1.79**	**(0.79)**	**5.98***	0.78	(0.60)	2.19	2.19	(2.19)	2.85	1.14	(1.89)	3.13	-1.25	(0.75)	0.29°
Low educated parents	3.22	(0.76)	25.02***	1.07	(1.01)	2.90	2.90	(2.90)	39.33***	1.88	(1.40)	6.53	-3.65	(1.23)	0.03**
Medium educated parents	2.45	(0.60)	11.56***	1.18	(0.52)	3.27*	3.27	(3.27)	14.41***	0.98	(1.37)	2.65	-1.71	(0.59)	0.18**
Low educ. X entropy father	**-2.59**	**(1.28)**	**0.08***	2.10	(2.09)	8.15	8.15	(8.15)	1.62	-1.25	(2.26)	0.29	2.46	(2.17)	11.72
Med. educ. X entropy father	**-1.94**	**(0.95)**	**0.14***	-0.92	(0.89)	0.40	0.40	(0.40)	0.34	-0.28	(2.10)	0.75	0.76	(1.06)	2.13
-2LL	*391.05*			*641.77*						*364.42*					
Turbulence father	0.09	(0.08)	1.09	0.08	(0.07)	1.09	0.12	(0.10)	1.13	0.05	(0.16)	1.05	-0.12	(0.09)	0.89
Low educated parents	2.48	(0.70)	11.89***	2.40	(1.09)	10.97*	4.06	(1.13)	57.95***	0.81	(1.17)	2.26	-3.21	(1.13)	0.04**
Medium educated parents	2.11	(0.54)	8.25***	1.21	(0.56)	3.35*	2.74	(0.71)	15.51***	0.84	(1.09)	2.31	-1.65	(0.63)	0.19**
Low educ. X turbulence father	-0.13	(0.13)	0.88	-0.11	(0.22)	0.90	-0.08	(0.22)	0.93	0.10	(0.21)	1.11	0.16	(0.25)	1.17
Med. educ. X turbulence father	**-0.16**	**(0.10)**	**0.86***	-0.11	(0.11)	0.90	-0.13	(0.13)	0.88	-0.02	(0.19)	0.98	0.08	(0.13)	1.08
-2LL	*395.01*			*643.96*						*367.14*					
Transitions father	0.27	(0.24)	1.31	0.06	(0.21)	1.07	0.21	(0.33)	1.23	0.13	(0.61)	1.14	-0.27	(0.28)	0.76
Low educated parents	2.47	(0.65)	11.87***	0.49	(0.93)	1.64	3.03	(0.93)	20.67**	1.64	(1.14)	5.15	-3.37	(1.10)	0.03**
Medium educated parents	1.78	(0.48)	5.93***	0.85	(0.47)	2.33°	2.40	(0.63)	11.00***	0.92	(1.06)	2.52	-1.42	(0.56)	0.24*
Low educ. X transitions father	-0.46	(0.42)	0.63	**1.59**	**(0.95)**	**4.89°**	1.02	(0.95)	2.78	-0.42	(0.76)	0.66	0.71	(0.67)	2.03
Med. educ. X transitions father	-0.27	(0.27)	0.76	-0.08	(0.27)	0.92	-0.20	(0.37)	0.80	-0.16	(0.64)	0.86	0.10	(0.35)	1.11
-2LL	*395.93*			*641.98*						*367.78*					
N (three models)	*354*			*336*						*230*					

Note. In all models we control for sex and year of birth (results not presented)

6. Conclusions and discussion

The aim of this study was twofold. First, we wanted to explore alternative measures of family histories of children. Secondly, we aimed at investigating the association between these measures and the educational outcomes of children, focusing on the question how this association is moderated by the educational level of the parents.

The family histories of children were measured by variables stemming from the technique of sequence analysis. This technique was used to construct a categorical classification and three metric measures of the relationship history from mothers and fathers from child perspective, that is from birth of the child until age 18. In this manner, the family history of children during the complete childhood was included in the analyses. The used typology based upon optimal matching distances creates new ways of looking at family histories, allowing to find patterns in the very heterogeneous family histories of children. Both timing and nature of the transitions to specific family structures are taken into account. This allows to study the effects of transitions, specific family structures and the time spend in specific family structures simultaneously.

 Next to a typology of family trajectories, three different measures of instability and variability in family histories were constructed. Comparing the results for the measures of entropy, turbulence and transitions, we did not find indications of one measure being more predictive than others for the outcomes studied. One of the reasons for this lack of difference may be found in the characteristics of the research sample. The sample mainly consist of stable post-divorce family trajectories of mothers and fathers, because one of the sample restrictions of the DiF-sample is the exclusion of men and women who divorced twice or more. The relationship dissolutions in the research sample are hence related to divorced men and women who lived together with a partner without being married. Especially in earlier divorce cohorts (which mainly consist our sample), remarriage was still the norm and unmarried cohabitation less common. It is plausible that the measures of entropy, turbulence and number of transitions will

be more distinctive from one another if there is more heterogeneity in the relationship history of mothers and fathers, including more higher-order relationship dissolutions.

Secondly, we investigated the association between family instability and educational attainment. Children whose parents divorced during childhood or youth, in general obtain a lower educational level. As educational differences are one of the major drivers of social inequality in contemporary society, this finding stresses the importance of family histories when studying educational chances of children. Additionally, we found evidence for a considerable stronger association between family transitions and educational achievements for children of lower educated parents. As family instability is increasingly present in lower educated families, it creates an additional obstacle in the battle for equal educational chances. Children of lower educated parents have less cultural capital at home (Bourdieu, 1980), they are increasingly experiencing more family instability than children with higher educated parents (Härkönen & Dronkers, 2006; Slattery, Bruce, Halford, & Nicholson, 2011) and the impact of family instability on their educational outcomes appear to be stronger than for children of higher educated parents. Together, these mechanisms entail a reproduction and even reinforcement of social inequality.

A finding that needs further exploration is that parental divorce after age 18 is associated with educational outcomes around the transition to secondary school, that is around age 12 for children with lower educated parents. Following the basis rules of causation theory, the parental transition cannot be the cause of an educational lag preceding the divorce in time. Underlying family processes may be of importance here (Dronkers, 1999). The results suggest in certain way that postponing divorce until children are adults seems to work out better for higher educated mothers but not for lower educated mothers.

The fact that we find a strong, social class-independent influence of parental divorce on the final educational level also deserves further attention. The findings suggest that parental divorce influence children of higher educational mainly at the moment of transition to higher education.

Based upon the current study, we cannot conclude whether this is by the fact that they do not tend to start higher education after graduating from secondary school or because they do not successfully complete higher education.

The results show that transition to a stepmother configuration (father living with a new partner) before or during primary school is especially detrimental for children with lower educated parents. As stepmother families are found to be one of the more challenging family situations for all family members (Ganong & Coleman 2004), educational resources may be of particular importance to adapt more easily to these family transition and structure. Another explanation may be that if the parental divorce occurs if the child is very young and fathers re-partner fast after divorce, fathers invest less in their children, who mainly reside with mother. This loss of father support may be less easy to compensate for lower educated mothers.

In the present sample, the children who perform worse following parental divorce in general are those whose parents remain single. These results suggests that stepfamily formation may buffer some of the negative influences of parental divorce on educational outcomes of children. An important remark is however that most stepfamilies in the sample are stable stepfamilies. We may therefore better concludes that stable stepfamily formation following parental divorce may compensate the loss of parental resources due to parental divorce.

One of the challenges for future research is to combine information on mother and father trajectories. As an increasing amount of children with divorced parents spend a considerable amount of time in both parental households, we can 't neglect their two-folded family histories. The data that was used in the present study thus not allow to combine information on the complete childhood and youth trajectory of children from mother and father because of limited sample size.

Seen there are different indications that divorce has become more strongly associated with negative outcomes in more recent cohorts (Evans, Kelley, Ward, 2001; Amato 2001) and we have

indications that more vulnerable groups within society bare the largest consequences, there are important challenges related to this issue for many societies in which equal educational chances are high on the political agenda.

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Appendix 1: Basic models for parental divorce experience at different ages

	Start secondary school (Ref =GET)			End secondary school (Ref = GET)						Final educational level (Ref = Medium)					
	Other			TET			VET			Low			High		
	B	S.E.	e^B	B	S.E.	e^B	B	S.E.	e^B	B	S.E.	e^B	B	S.E.	e^B
Intercept	-1.40	(0.18)	0.25***	-0.41	(0.18)	0.66*	-1.76	(0.24)	0.17***	-2.05	(0.44)	0.13***	0.38	(0.24)	1.46°
Girls	-0.44	(0.15)	0.65**	-0.67	(0.16)	0.51***	-0.52	(0.19)	0.60**	-0.22	(0.28)	0.81	0.88	(0.20)	2.40***
Year of birth child	0.02	(0.02)	1.02	0.02	(0.02)	1.02	0.05	(0.02)	1.05*	0.02	(0.03)	1.02	-0.13	(0.02)	0.88***
Divorce age 0-11	-0.06	(0.19)	0.94	0.03	(0.20)	1.04	**0.50**	**(0.23)**	**1.66***	0.32	(0.36)	1.38	**-0.77**	**(0.24)**	**0.46****
Divorce age 12-18	-0.03	(0.21)	0.97	0.04	(0.23)	1.05	0.28	(0.27)	1.32	0.25	(0.43)	1.28	**-0.62**	**(0.28)**	**0.54****
Divorce age >18	-0.34	(0.30)	0.71	-0.31	(0.31)	0.73	-0.28	(0.39)	0.75	0.50	(0.52)	1.65	0.28	(0.34)	1.33
Low educated parents	2.00	(0.23)	7.38***	2.00	(0.32)	7.40***	3.11	(0.34)	22.46***	1.04	(0.41)	2.82*	-2.03	(0.32)	0.13***
Medium educated parents	1.40	(0.17)	4.04***	0.98	(0.17)	2.66***	1.85	(0.21)	6.34***	0.64	(0.37)	1.89°	-1.27	(0.22)	0.28***
N	*933*			*895*						*608*					
-2LL	*1051.11 (df=7)*			*1737.30 (df=14)*						*997.97 (df=14)*					

Appendix 2: Basic models for trajectories mothers and fathers from birth to child age 18

Variables	Start secondary school (Ref =GET) Other			End secondary school (Ref = GET) TET			VET			Final educational level (Ref = Medium) Low			High		
	B	S.E.	eᴮ	B	S.E.	eᴮ	B	S.E.	eᴮ	B	S.E.	eᴮ	B	S.E.	eᴮ
Intercept	0.99	(0.23)	2.68***	1.67	(0.28)	5.29***	1.57	(0.31)	4.82***	-1.09	(0.41)	0.34**	-1,92	(0,33)	0.15**
Girls	-0.47	(0.17)	0.63**	-0.58	(0.18)	0.56**	-0.62	(0.21)	0.54**	0.03	(0.32)	1.03	1.00	(0.22)	2.72***
Year of birth child	0.04	(0.02)	1.04*	0.02	(0.02)	1.02	0.06	(0.02)	1.06**	0.04	(0.03)	1.04	-0.13	(0.02)	0.88***
Both parents	**-0.38**	**(0.23)**	**0.68°**	-0.18	(0.24)	0.83	-0.14	(0.29)	0.87	0.43	(0.45)	1.54	0.31	(0.29)	1.36
Early single motherhood	**0.70**	**(0.38)**	**2.02°**	0.49	(0.46)	1.63	**1.06**	**(0.49)**	**2.89***	0.14	(0.66)	1.16	**-1.01**	**(0.54)**	**0.37°**
Early stepfamily formation	**-0.53**	**(0.30)**	**0.59°**	-0.07	(0.30)	0.93	0.14	(0.36)	1.15	-0.77	(0.68)	0.47	**-0.63**	**(0.37)**	**0.53°**
Late single motherhood	0.14	(0.28)	1.15	0.28	(0.31)	1.33	**0.67**	**(0.36)**	**1.96°**	0.18	(0.53)	1.19	**-1.12**	**(0.40)**	**0.33****
Late stepfamily formation	-0.14	(0.35)	0.87	-0.22	(0.38)	0.80	0.08	(0.43)	1.08	0.74	(0.64)	2.09	-0.19	(0.55)	0.83
Middle single motherhood	0.11	(0.28)	1.11	-0.04	(0.31)	0.97	0.33	(0.35)	1.39	**0.86**	**(0.46)**	**2.36°**	**-0.65**	**(0.38)**	**0.52°**
Educational level parents	-1.14	(0.12)	0.32***	-1.09	(0.14)	0.34***	-1.55	(0.16)	0.21***	-0.44	(0.23)	0.64°	1.09	(0.16)	2.98***
N	795			761						508					
-2LL	873.52 (df=9)			1468.04 (df=18)						815.35 (df=18)					
Intercept	0.32	(0.24)	1.37	1.36	(0.30)	3.90***	1.47	(0.33)	4.34***	-0.98	(0.42)	0.37*	-1.89	(0.35)	0.15***
Girls	0.45	(0.18)	1.56*	-0.61	(0.20)	0.54**	-0.38	(0.23)	0.69°	-0.37	(0.36)	0.69	0.52	(0.24)	1.68*
Year of birth child	0.03	(0.02)	1.03°	0.01	(0.02)	1.01	0.05	(0.02)	1.05*	-0.01	(0.04)	0.99	-0.13	(0.03)	0.88***
Both parents	-0.32	(0.30)	0.72	**-0.50**	**(0.32)**	**0.61°**	0.31	(0.34)	1.37	0.31	(0.51)	1.36	-0.18	(0.33)	0.84
Early single fatherhood	0.18	(0.47)	1.20	1.31	(0.61)	3.70*	**1.39**	**(0.69)**	**4.03***	-0.04	(0.84)	0.96	**-0.96**	**(0.63)**	**0.38°**
Early stepparent formation	0.15	(0.41)	1.16	0.06	(0.46)	1.06	**0.73**	**(0.51)**	**2.08°**	0.81	(0.68)	2.24	-0.42	(0.55)	0.66
Late single fatherhood	-0.14	(0.39)	0.87	-0.03	(0.42)	0.97	0.05	(0.51)	1.05	0.63	(0.68)	1.87	-0.69	(0.55)	0.50
Late stepfamily formation	-0.16	(0.41)	0.85	0.44	(0.43)	1.56	-0.24	(0.58)	0.79	-0.06	(0.86)	0.94	-0.48	(0.68)	0.62
Early single father, late stepfamily	-0.80	(0.81)	0.45	-0.35	(0.76)	0.70	0.36	(0.79)	1.43	0.71	(1.20)	2.03	-0.17	(0.82)	0.84
Mid-early single fatherhood	-0.20	(0.53)	0.82	-0.04	(0.53)	0.96	0.02	(0.68)	1.02	-1.31	(6.40)	0.00	-0.54	(0.77)	0.58
Mid-late single fatherhood	0.41	(0.33)	1.51	**0.56**	**(0.38)**	**1.75°**	**0.87**	**(0.43)**	**2.38***	0.29	(0.65)	1.34	**-0.97**	**(0.48)**	**0.38***
Middle stepfamily formation	0.21	(0.36)	1.23	-0.12	(0.44)	0.89	**0.66**	**(0.45)**	**1.94°**	0.53	(0.61)	1.69	**-1.53**	**(0.53)**	**0.22****
Educational level parents	-0.97	(0.13)	0.38	-0.88	(0.16)	0.42***	0.42	(0.19)	0.20***	-0.49	(0.25)	0.61*	1.26	(0.19)	3.51***
N	625			598						405					
-2LL	711.11(df=9)			1147.18 (df=18)						649.37 (df=18)					

Appendix 3: Basic models for measures of entropy, turbulence and transitions for trajectories divorced mothers and fathers from birth to child age 18

	Star secondary school (Ref =GET)			End secondary school (Ref = GET)						Final educational level (Ref = Medium)					
	Other			TET			VET			Low			High		
	B	S.E.	e^B	B	S.E.	e^B	B	S.E.	e^B	B	S.E.	e^B	B	S.E.	e^B
Entropy mother	0.64	(0.41)	1.89°	0.28	(0.38)	1.33	0.61	(0.44)	1.85	-0.22	(0.61)	0.80	**-0.85**	**(0.44)**	**0.43***
Low educated parents	2.50	(0.34)	12.20	2.48	(0.45)	11.92***	3.48	(0.49)	32.61***	1.10	(0.52)	2.99*	-2.11	(0.44)	0.12***
Medium educated parents	1.50	(0.26)	4.49	1.11	(0.23)	3.05***	1.85	(0.29)	6.39***	0.57	(0.48)	1.76	-1.16	(0.30)	0.31***
-2LL	*472.57 (df=5)*			*959.61 (df=10)*						*541.60 (df=10)*					
Turbulence mother	**0.06**	**(0.04)**	**1.07°**	0.00	(0.04)	1.00	**0.08**	**(0.05)**	**1.08°**	0.06	(0.06)	1.06	**-0.14**	**(0.05)**	**0.87****
Low educated parents	2.42	(0.32)	11.20***	2.47	(0.45)	11.79***	3.50	(0.49)	32.96***	1.15	(0.52)	3.17*	-2.14	(0.45)	0.12***
Medium educated parents	1.53	(0.23)	4.64***	1.11	(0.23)	3.04***	1.85	(0.29)	6.37***	0.55	(0.48)	1.74	-1.19	(0.31)	0.30***
-2LL	*561.90(df=5)*			*958.26(df=10)*						*534.71 (df=10)*					
Transitions mother	**0.14**	**(0.06)**	**1.15***	0.04	(0.07)	1.04	**0.12**	**(0.08)**	**1.13°**	0.10	(0.11)	1.10	**-0.23**	**(0.09)**	**0.79****
Low educated parents	2.35	(0.32)	10.54***	2.46	(0.45)	11.72	3.43	(0.49)	30.81	1.07	(0.52)	2.91*	-2.06	(0.45)	0.13***
Medium educated parents	1.54	(0.24)	4.67***	1.11	(0.23)	3.04	1.85	(0.29)	6.37	0.54	(0.48)	1.72	-1.13	(0.30)	0.32***
-2LL	*559.49 (df=5)*			*958.84 (df=10)*						*535.76 (df=10)*					
N (three models mothers)	*524*			*499*						*333*					
Entropy father	0.35	(0.47)	1.42	0.37	(0.30)	1.45	**0.63**	**(0.35)**	**1.88***	0.54	(0.67)	1.71	**-0.80**	**(0.51)**	**0.45°**
Low educated parents	1.89	(0.40)	6.62***	1.64	(0.39)	5.17***	2.94	(0.42)	18.86***	1.24	(0.62)	3.45*	-2.66	(0.69)	0.07***
Medium educated parents	1.36	(0.29)	3.91***	0.86	(0.21)	2.37***	1.95	(0.26)	7.05***	0.77	(0.57)	2.15	-1.37	(0.36)	0.26***
-2LL	*329.84 (df=5)*			*1162.79 (df=10)*						*366.83 (df=10)*					
Turbulence father	-0.01	(0.05)	0.99	0.04	((0.05)	1.04	0.06	(0.06)	1.06	0.06	(0.08)	1.07	-0.07	(0.06)	0.93
Low educated parents	1.87	(0.36)	6.49***	1.93	(0.59)	6.92***	3.26	(0.61)	41.49***	1.24	(0.62)	3.45*	-2.63	(0.68)	0.07***
Medium educated parents	1.40	(0.27)	4.04***	0.74	(0.29)	2.11**	2.14	(0.36)	8.54***	0.77	(0.57)	2.16	-1.33	(0.36)	0.27***
-2LL	*397.52 (df=5)*			*645.66 (df=10)*						*368.21 (df=10)*					
Transitions father	0.04	(0.12)	1.04	0.07	(0.14)	1.08	0.06	(0.15)	1.07	-0.06	(0.19)	0.94	-0.18	(0.16)	0.83
Low educated parents	1.88	(0.36)	6.52***	1.94	(0.59)	6.93***	3.72	(0.61)	41.35***	1.16	(0.62)	3.20*	-2.61	(0.68)	0.07***
Medium educated parents	1.39	(0.27)	4.02***	0.73	(0.29)	2.07*	2.13	(0.36)	8.40***	0.73	(0.57)	2.07	-1.30	(0.35)	0.27***
-2LL	*397.45 (df=5)*			*646.41 (df=10)*						*369.49 (df=10)*					
N (three models fathers)	*354*			*336*						*230*					