The transition to adulthood in Germany. Results of a sequential analysis with data from the pairfam panel study

1. Background

The transition to adulthood is a complex, multi-dimensional status passage and a developmentally dense period in the life-course in which young people do the crucial steps to achieve mental, social and economic independence from their parental home, respectively, on the macro level, the parents' generation [1-4]. The decisions made in this period of life usually result in a comprehensive restructuring of individual life circumstances and biographical status [1].
The transition to adulthood can be described by the "big five" role transition markers comprising completion of full-time education, entry into paid employment, independent living arrangements (leaving the parental home), romantic partnership, and parenthood [5]. On the one hand, these transitions are strongly interrelated [3]. On the other hand, not only are the timing, interrelations and sequences of status transitions variable, but it is also unclear which transitions will be mastered on the way to adulthood [4]. Nevertheless, in contrast to other periods of life, the transition to adulthood is characterized by a high density of life events [2]. "Major decisions and role changes in most areas of life are occuring during a short, overlapping period for the majority of the population" (Rindfuss 1991: 498; zit n.: [2]).

In the last decades, the transition to adulthood has been marked by profound changes in many Western countries. These include, in particular, (a) a temporal shift of important life events (e.g., completion of full-time education, entry into paid employment, marriage, and birth of the first child) in coincidence with a preponement of cohabitation onset into younger age, (b) a decoupling of the major life events (like leaving the parental home, cohabitation and marriage), as well as (c) a differentiation of private living forms after leaving the parental home [1, 4]. While in the 1950s and 1960s the timing for leaving the parental home, entry into paid employment, getting married and family formation were close together, today these transitions are largely independent of each other (for example, family formation without marriage) [4].
Thus, in recent decades a new period in life course has been established that is located between youth and adulthood. Already in 1968 Keniston introduced the concept of "post-adolescence" [6]. Hurrelmann used in 1999 the term "post-youth phase" ("Nachjugendphase") [7], and Arnett established in 2000 the concept of "emerging adulthood" [8].
(…)

State of research

Meanwhile, there are numerous life course studies based on sequence analysis in demographic and social science. These studies differ with regard to the studied domains (familial or/and working domains) as well as the age ranges or cohorts included, and the detailedness of data (monthly or yearly status information).
Focusing on young adulthood, there are some studies that cover only the employment biography on the basis of annual information (Simonson et al. [17] (employment history (yearly) of women aged 15-45 in Germany) or Schoon et al. [15] (employment history (yearly) of women and men aged 17-23 in Great Britain). For the analysis of the transition to adulthood more detailed (monthly) information on life events are rational, because in this life period many events happen in a short period of time.

An example of this is the study of Anyadike-Danes et al. [18] analyzing the employment history of women aged 16-29 in Great Britain using monthly information.
Other studies concentrate in turn exclusively on family biography (Kleinepier et al. [19] (family trajectories of women aged 16-30 in the Netherlands). In sum, the family history of young adults is more rarely investigated than the educational and employment history [4].
Both family and employment history are analyzed, for example, by Aassve et al. [20] (women aged 13-30 (monthly), Great Britain), Robette [21] (women and men aged 18-35 (yearly), France), Koelet 2015 (women and men aged 14-29 (monthly), Belgium), Sironi [22] (women and men aged 15-35, Italy and the US); Sabbath et al. [23] (women aged 16-50 (yearly), US), Widmer and Ritschard [24] (women and men aged 20-45 (yearly), Switzerland), Schwanitz [25](women and men aged 18-34 (monthly), 8 European countries (without Germany)).
All in all, there are many studies that only involve women [17, 18, 20, 23], maybe because there is a greater variety in life courses of women than men when it comes to combining work and family life [24].
Studies of family related trajectories fairly consistently found that young women's life courses are becoming more de-standardized and the variation in the types of trajectories is increasing [24, 26]. According to the education and employment history, the results are less consistent. With regard to Germany, Simonson et al. [17] observed for young women an increase of discontinuous careers and part time employment biographies as well as a decrease of housewife biographies. Comparing young women and men, Widmer and Ritschard [24], for example, found for Switzerland that women's employment trajectories became more diverse over time, while that's not the case for young men. Comparison of countries using sequence analysis show a similarity in the main development trends, but at the same time there are also significant differences between countries which are related to societal, legal and cultural disparities [21, 25, 27]. Robette [21] found for example, that in southern European countries young people leave the parental home late, while in northern European countries, leaving the parent's home occurs at an earlier age. According to the author, these differences in pathways reflect social, cultural and institutional differences between societies, for instance between the Mediterranean familialistic model and the Nordic public welfare model. According to Lesnard et al. [27], the transition to adulthood in 20 European countries remains marked by their historical family systems although some convergence between male and female patterns in the passage to adulthood in Northern and Western Europe occurs. Schulenberg and Schoon (2012) concluded that country differences in completing the five transition markers are largest around age 25 and relatively small before age 20 and after age 35. Therefore, results from other countries cannot simply be transferred to Germany.

With regard to Germany, there are some studies analyzing work or family related life courses using sequence analysis. Beyond the study mentioned above of Simonson et al. [17] concentrating on the employment history of women, Struffolino et al. [28] examine family trajectories from age 18 to 40 in East and West Germany. They found family life courses more de-standardized in the West compared to the East part of Germany. The sequence analysis from Wahrendorf [29], Wahrendorf et al. [30] and Hoven et al. [31] refer to older ages in life course (from the age of 30 years, respectively 50 years upwards). Madero-Cabib and Fasang [32] identified groups of typical work–family life courses from ages 20 to 59 for older cohorts born 1920–1950 in West Germany and Switzerland analyzing the financial well-being in retirement.
Thus, for Germany, until now there is no study analyzing all transition events in young adulthood simultaneously and in detail. Therefore, the aim of the study is to describe the different patterns of

transition to adulthood in Germany considering the transition events (a) completion of education, (b) entry into the labor market, (c) leaving parental home, (d) cohabitation and (e) family formation. We try to identify a typology of transition patterns and investigate differences in the found patterns by gender, cohort and education.

Research questions

- Which different life course patterns can be identified in young people in Germany?
- Are there any differences in the life course patterns in young people by gender, cohort and education as well as their mother's education?

2. Method

2.1 Data

We used data from the 2008-launched German Family "Panel Analysis of Intimate Relationships and Family Dynamics" (pairfam), which is a DFG-funded project and coordinated by six universities in Germany [33]. The study was initiated to provide an extended empirical basis for advances in partnership and family research in Germany and is a multi-disciplinary, longitudinal study. The major substantive fields covered by the pairfam panel are couple dynamics and partnership stability, childbearing, parenting and child development, and intergenerational relationships. The German Family Panel is scheduled to run for 14 years, ending in 2022 [33].

The initial sample of wave 1 (2008/2009) consists of 12,402 respondents (anchors) born in three birth cohorts: 1991-1993, 1981-1983, and 1971-1973 (**multi-cohort approach**). These anchor persons were selected randomly from all persons living in private households in Germany. The design implements a **multi-actor approach**, i. e. the anchor's partner and – from the second wave onwards – also the anchor's parents and/or stepparents as well as all children at the age of 8 to 15 living in the household are included in the survey. All anchor persons as well as their partners, parents, and children have been yearly repeated interviewed **(panel approach).** The initial sample of wave 1 (2008/09) consists of 12,402 anchor persons of the three birth cohorts plus 3,743 partners [33]. Up to now there are 10 waves conducted.

Starting with wave 3, information on anchors' life courses was collected retrospective with the Life History Calendar (LHC). Monthly information regarding partnership, employment and residential history were collected.

For the sequence analysis we used data from wave 3 (2010/2011). The sample consists of the cohorts 1981-83 and 1971-73. We excluded the anchor persons born in the years 1991-93 because no full information regarding the life course up to 27 years existed for the youngest cohort. The sample size comprises 2,290 anchors born in 1981-83 and 2,479 anchors born in 1971-73. The response rate for the initial wave was 36.9% overall. For the cohort born in 1981-83 it was round about 33%, and for the cohort born in 1971-73 32% [33]. Detailed information on panel mortality can be found on the homepage of the pairfam panel study.

We created a complete monthly sequence of events for the age of 18 to 27 (120 months for each participant). Information on the living arrangement status, parental status, and activity status were combined for the sequence analysis. If less than 12 months were missing between monthly information for each status, we imputed values, otherwise we left the missing values. Respondents with missing data on more than 50% of the months at least at one of the three statuses were not

included in the analysis. The final sample size for the analysis comprises 2,000 women (53%) and 1,771 men (47%). The sample characteristics are shown in Table 1.

Table 1: Sample characteristics

(…)

2.2 Variables

Variables for sequence analysis

Living arrangement status includes the groups (a) "living at the parental home", (b) "living in a partner household" (cohabiting or married) and (c) "living alone and others". The last category includes also persons who are living with other adult persons which are not partners. All living arrangement statuses are reversible. ***Parental status*** is divided into two groups: having a child or not having a child. We take into account only biological children. The parental status is not reversible. We do not take into account the number of children and whether the person is living with the child(ren) in the same household. The information on ***activity status*** we have grouped in three categories: (a) "in education" for those who are still either in school, university or vocational training; (b) "employed" for all persons who are active at the labour market, without differentiating between full or part time working, and (c) "inactive and others (neither in education nor in employment)" including unemployed persons, home makers, and persons in parental leave. The activity status is reversible. Each month, a young adult's status is defined by the cross-combination of information on the living arrangement, partner and activity statuses. All in all, we distinguished 18 different statuses.

Independent variables

As independent variables we used **gender** (female vs. male), **cohort** (born 1971-73 vs. 1981-83), **migration status** (yes vs. no) measured by the country of birth (Germany vs. all other countries of birth), **region** (place of living in Western Germany vs. Eastern Germany), and **maternal education**. The maternal education is based on the anchor's information and was categorized in "lower secondary education (Hauptschule)", "intermediate education (Mittlere Reife)" and "upper secondary education (Abitur)".

2.3 Statistical analysis

The analytical approach of this study includes sequence analysis, cluster analysis using optimal matching (OM), and multinomial logistic regression analysis.

We conducted a sequence analysis with the above described 18 statuses using the statistical software program R. Sequence analysis does not yield any classifications, but creates sequences which can be used in cluster analysis. For identification of typologies we used Optimal Matching (OM), an approach measuring dissimilarities between two sequences that are defined as the least weighted number of edits that are necessary to make them identical. "Each of the three kinds of transformations used in OM (insertion, deletion and substitution) is given a cost and the total minimum cost to match two sequences is used as a measure of their dissimilarity (Abbott & Tsay, 2000). There is no golden rule how to best assign the transformation costs, but several authors have advocated the use of transition rates in order to get to data-driven transformation costs (e.g. Billari & Piccarreta 2005; Aassve et al. 2007)" (Schwanitz 2015. The aim of the cluster analysis was to identify

groups of persons who have similar life courses (small differences within a cluster and big differences between the clusters). The number of clusters was selected according to content criteria.

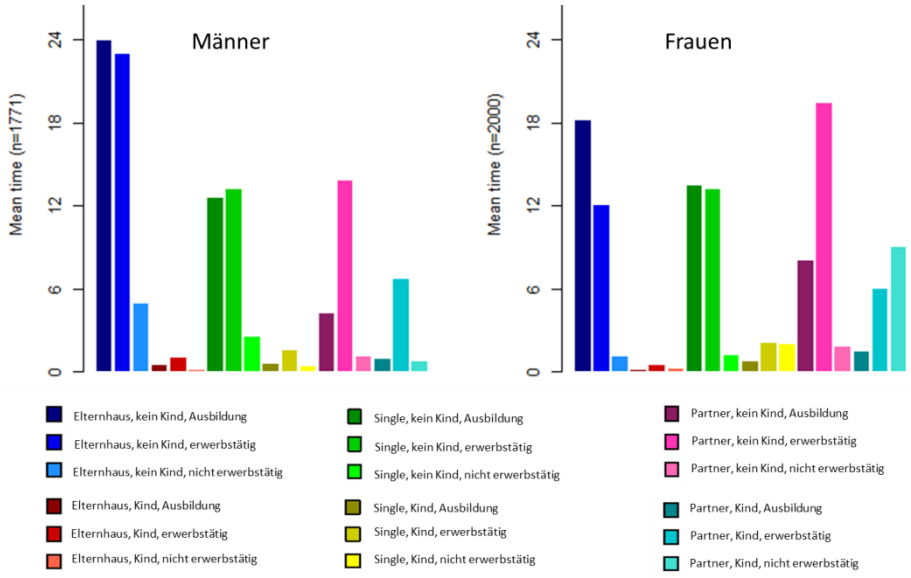
In the next step, we describe the found clusters with regard to gender, cohort, migration status, region, and maternal education by using the longitudinal weight provided in the pairfam data set. After the descriptive analysis, the identified clusters become outcome variables in a multinomial logistic regression model to determine the factors predicting cluster membership. For better interpretation of the results, we calculated predicted probabilities (predictive margins) of cluster membership. An advantage is that the predicted probabilities are adjusted for all independent variables included in the model. The descriptive analysis as well as the multinomial regression was done with Stata/SE14 (StataCorp, College Station, TX, USA). Significance was set at p = 0.05.

3. Results

3.1 Results of the sequence analysis

Figure 1 gives an overview about differences in the life courses of young women and men. Young men without children are living longer in the parental home than young women, regardless of their activity status. Younger women started earlier living in cohabitation, also regardless of their activity status. On average, young mothers are not working for nearly 9 or 10 months. In young fathers it is an average of 1 month.

Figure 1: Living arrangement, parental and activity statuses stratified by gender



3.2 Description of the cluster

The result of the sequence and cluster analysis was a 9-cluster-solution. Figure 2 presents the chronograms for the 9 clusters (Figure 2).
In the two largest clusters, more than 60% of respondents still lived in their parents' home at the age of 25. While cluster 1 (late parental home leave, prolonged education) comprises those late parental

home leavers which are in education for a long time (n=577), cluster 2 consists of young adults who live also with their parents up to the mid-20s, while they are already in paid employment. This is the largest cluster (n=603). Two other clusters include young adults who started living on one's own early (without cohabitation with a partner). Cluster 3 consists of those young adults who are in education for a long time (n=376), while cluster 4 involves those with an early gainful employment (n=423). Cluster 5 and 6 contains young adults who started living in cohabitation early in life. Again, cluster 5 includes those with a long education (n=289) and cluster 6 with an early transition into partnership, early completion of education and early transition to employment (n=480). Until age of 26, 23% of all young adults have made the transition to parenthood. They are sorted into 3 clusters: Cluster 7 consists of early working parents (n=347), and cluster 8 involves young parents who are neither in education nor employed, e.g. homemakers or unemployed persons (n=215). Cluster 9 is a mixed group of parents in diverse living arrangements and activity statuses, such as single parents or parents living at the parental home (n=461).

Figure 2: Chronograms for the 9-cluster-solution

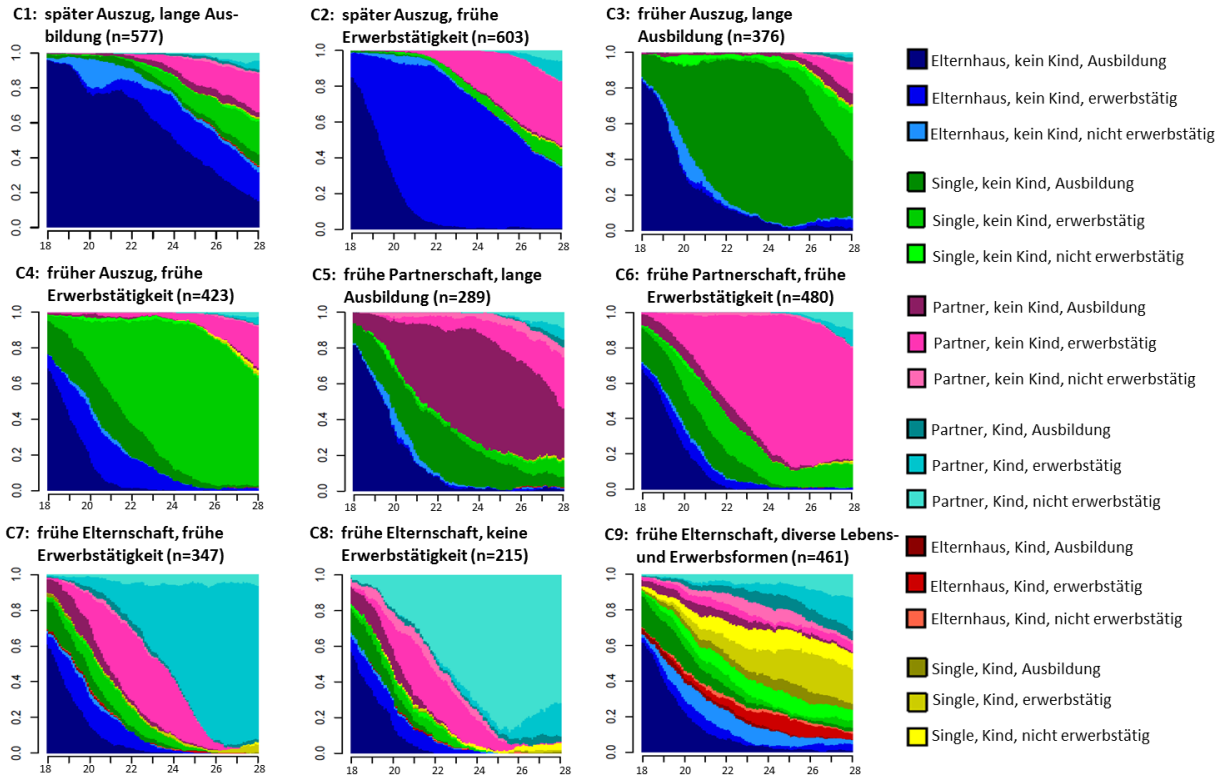


Table 2: Description of clusters (proportion in % per cluster)

	n (abs.)	n (in %)	Gender		Cohort		Maternal education			Migrant		Region		Education of ancher person		
	(not weighted)	(weighted)	Men	Women	1981-1983	1971-1973	Low	Medium	High	No	Yes	West	East	Low	Medium	High
C1	577	15.8	57.5	42.5	60.1	39.9	32.1	47.7	20.2	75.5	24.5	86.0	14.0	4.1	17.4	78.5
C2	603	15.5	64.6	35.4	41.7	58.3	56.0	37.1	6.9	75.5	24.5	85.4	14.6	27.3	51.3	21.4
C3	376	12.3	59.0	41.0	47.2	52.8	29.4	33.5	37.1	74.3	25.7	84.1	15.9	0.8	5.3	93.8
C4	423	12.6	50.1	49.9	36.1	63.9	46.5	38.2	15.3	66.9	33.1	79.9	20.1	15.5	46.3	38.1
C5	289	8.0	31.9	68.1	52.5	47.5	26.6	35.9	37.5	59.9	40.1	74.3	25.7	0.9	12.3	86.8
C6	480	12.2	34.4	65.6	46.4	53.6	41.1	43.2	15.7	65.9	34.1	81.6	18.4	12.8	49.6	37.6
C7	347	7.9	57.4	42.6	39.4	60.6	47.5	39.8	12.7	53.8	46.2	79.1	20.9	24.5	56.8	18.6
C8	215	4.3	7.9	92.1	45.9	54.1	52.4	40.2	7.4	52.5	47.5	84.5	15.5	29.7	48.9	21.5
C9	461	11.4	49.9	50.1	54.8	45.2	43.1	42.4	14.5	56.0	44.0	71.3	28.7	24.0	37.2	38.8
Total	3.771	100.0	50.0	50.0	47.5	52.5	41.1	40.0	18.9	66.9	33.1	81.1	18.9	14.5	35.1	50.4
P value			<0.001		<0.001		<0.001			<0.001		<0.001		<0.001		

Prävalenzen (unadjustiert)	Cluster 1:	Cluster 2:	Cluster 3:	Cluster 4:	Cluster 5:	Cluster 6:	Cluster 7:	Cluster 8:	Cluster 9:
Total	15.8 (14.5-17.2)	15.5 (14.3-16.8)	12.2 (11.0-13.6)	12.6 (11.4-14.0)	8.0 (7.1-9.1)	12.2 (11.1-13.4)	7.9 (7.0-8.9)	4.3 (3.7-5.0)	11.4 (10.3-12.6)
Gender									
Male	18.2 (16.2-20.3)	20.0 (18.0-22.2)	14.5 (12.5-16.7)	12.6 (10.9-14.6)	5.1 (4.1-6.4)	8.4 (7.1-9.9)	9.1 (7.7-10.6)	0.7 (0.4-1.2)	11.4 (9.8-13.2)
Female	13.5 (11.8-15.3)	11.0 (9.6-12.6)	10.0 (8.6-11.7)	12.6 (10.9-14.5)	10.9 (9.4-12.7)	16.0 (14.3-17.9)	6.7 (5.7-7.9)	7.9 (6.8-9.1)	11.4 (10.0-13.0)
Cohort									
1981-83	20.0 (18.0-22.1)	13.6 (12.0-15.4)	12.2 (10.4-14.1)	9.6 (8.1-11.3)	8.9 (7.5-10.5)	11.9 (10.4-13.7)	6.6 (5.5-7.9)	4.1 (3.4-5.1)	13.1 (11.5-15.9)
1971-73	12.0 (10.4-13.9)	17.2 (15.4-19.2)	12.3 (10.6-14.3)	15.4 (13.5-17.5)	7.3 (6.1-8.7)	12.5 (10.9-14.1)	9.1 (7.8-10.6)	4.4 (3.6-5.4)	9.8 (8.4-11.5)
Maternal education									
Low	12.6 (10.9-14.6)	21.0 (18.8-23.3)	9.1 (7.4-11.2)	14.0 (12.0-16.2)	5.4 (4.2-6.8)	12.3 (10.6-14.3)	9.0 (7.6-10.7)	5.1 (4.1-6.2)	11.5 (9.8-13.5)
Medium	19.2 (16.9-21.7)	14.2 (12.3-16.4)	10.7 (8.8-12.9)	11.8 (9.9-13.9)	7.5 (6.0-9.3)	13.3 (11.5-15.3)	7.8 (6.4-9.3)	4.0 (3.1-5.1)	11.6 (9.9-13.7)
High	17.3 (14.2-20.9)	5.6 (3.8-8.1)	25.1 (21.2-29.4)	10.0 (7.2-13.6)	16.6 (13.6-20.1)	10.2 (7.9-13.2)	5.3 (3.6-7.7)	1.6 (0.9-2.7)	8.4 (6.3-11.2)
Migration									
No migrant	17.9 (16.2-19.6)	17.5 (15.9-19.2)	13.6 (12.0-15.4)	12.6 (11.1-14.2)	7.2 (6.2-8.4)	12.0 (10.7-13.5)	6.4 (5.4-7.4)	3.4 (2.7-4.1)	9.5 (8.3-10.9)
Migrant	11.7 (9.8-13.9)	11.5 (9.6-13.7)	9.5 (7.7-11.7)	12.6 (10.5-15.1)	9.7 (7.9-11.9)	12.6 (10.8-14.7)	11.0 (9.3-13.1)	6.2 (5.0-7.6)	15.2 (13.0-17.6)
Region									
West	16.8 (15.3-18.4)	16.3 (14.9-17.9)	12.7 (11.3-14.2)	12.4 (11.1-13.9)	7.4 (6.4-8.5)	12.2 (11.0-13.6)	7.7 (6.7-8.8)	4.5 (3.8-5.2)	10.0 (8.9-11.3)
East	11.8 (9.4-14.6)	12.0 (9.5-15.0)	10.3 (8.0-13.3)	13.4 (10.5-16.9)	11.0 (8.4-14.1)	11.9 (9.6-14.6)	8.8 (6.9-11.1)	3.5 (2.5-5.0)	17.4 (14.5-20.6)
Education anchor person									
Low	4.5 (2.8-7.0)	29.1 (25.2-33.4)	0.7 (0.2-2.1)	13.5 (10.4-17.3)	0.5 (0.2-1.5)	10.7 (8.3-13.8)	13.4 (10.7-16.6)	8.7 (6.7-11.2)	18.9 (15.7-22.5)
Medium	7.9 (6.5-9.5)	22.7 (20.3-25.3)	1.9 (1.1.-3.2)	16.6 (14.4-19.2)	2.8 (2.0-4.0)	17.3 (15.2-19.5)	12.8 (11.0-14.8)	5.9 (4.8-7.3)	12.1 (10.3-14.2)
High	24.7 (22.4-27.1)	6.6 (5.4-8.0)	22.8 (20.5-25.2)	9.5 (8.0-11.3)	13.9 (12.2-15.8)	9.1 (7.7-10.7)	2.9 (2.2-3.9)	1.8 (1.3-2.5)	8.8 (7.3-10.5)

Table 2 describes the clusters along sociodemographic factors. Regarding gender differences, young men are living longer in the parental home than young women do (C1, C2). In contrast, young women started living in cohabitation early in life than men, regardless of their activity status (C5, C6). The cluster of early parents who are neither in education nor employed consists nearly exclusively of women (C8).

The stratification of the clusters by cohort shows that in the older cohort (born 1971-73) young people started working earlier in life course than the cohort born 1981-83. This is true for all family arrangements. Especially in cluster 4 which is characterized by an early parental leave and move in an own household without a partner, as well as in cluster 7 which is characterized by an early transition into parenthood and employment the older cohort is more frequently represented. Instead, the later born cohort (born 1981-83) is much more represented in cluster 1 and cluster 9. On the one hand, this means that adults of the younger cohort delay their leaving from the parental home, while they are in education. On the other hand, the high proportion of the young cohort in cluster 9 could be interpreted as a trend toward an increase of diversification and pluralization of family forms in young adulthood.

With regard to the migration status it is striking that the proportion of migrants in the two clusters with late parental leave are low (C1, C2), while in all clusters of early parenthood the proportion of migrants is higher than in the other clusters (C7, C8, C9).

According differences between East and West Germany, young adults living in East Germany are more presented in the cluster comprising those who are started early cohabiting combined with a long education period (C5). Furthermore, the proportion of young adults from East Germany is high in the cluster of early parenthood combined with diverse living arrangements and activity statuses (C9).

A particularly high proportion of anchors with a highly educated mother can be found in cluster C3 and C5. Both clusters are characterized by a long education period and an early parental leave. However, in the cluster which is marked by a long stay in the parental home as well as a long education period (C1) the proportion of mothers with a high education is not that high. Mothers with a high education are less common in cluster C2 (late parental home leave, early employment) and C8 (early parenthood, non employment). In those both clusters the proportion of mothers with low education is highest.

Furthermore, it can be seen that long periods in education are associated with a higher level of school-leaving qualification (C1, C3, C5). A higher proportion of a low level of education can be found in the clusters involving early parents (C7, C8, C9) as well as in cluster 2 which is characterized by the coincidence of living in the parental home for a long time and early employment.

3.3 Results of the multinomial regression

Table 3: Multinominal regression predicting cluster membership: relative risk ratios (RRR) and standard errors (Ref: Cluster 2: late parental home leave, early employment); main effect model

	Cluster 1: Late parental home leave, prolonged education	Cluster 3: Early Single household, prolonged education	Cluster 4: Early Single household, early employment	Cluster 5: Early partnership, prolonged education	Cluster 6: Early partnership, early employment	Cluster 7: Early parenthood, early employment	Cluster 8: Early parenthood, non-employment (inactivity)	Cluster 9: Early parenthood, divers living arrangement and activity statuses
Gender								
Male (Ref.)								
Female	**1.40 (0.19)***	1.29 (0.20)	**1.85 (0.28)*****	**3.94 (0.69)*****	**3.54 (0.53)*****	1.35 (0.22)	**20.72 (6.60)*****	**1.76 (0.27)*****
Cohort								
1981-83 (Ref.)								
1971-73	**0.57 (0.08)*****	1.09 (0.18)	**1.40 (0.22)***	0.89 (0.15)	0.98 (0.14)	1.31 (0.22)	1.04 (0.21)	**0.67 (0.10)***
Maternal education								
Low (Ref.)								
Medium	**2.24 (0.36)*****	**1.87 (0.36)****	1.17 (0.21)	**1.75 (0.36)****	**1.51 (0.25)***	1.11 (0.21)	1.04 (0.24)	1.06 (0.19)
High	**4.94 (1.27)*****	**11.41 (3.05)*****	**2.68 (0.80)****	**10.38 (2.86)*****	**2.88 (0.79)*****	1.80 (0.55)	0.91 (0.35)	**1.97 (0.56)***
Migration								
No migrant (Ref.)								
Migrant	0.84 (0.17)	0.72 (0.17)	1.36 (0.30)	1.31 (0.29)	**1.50 (0.29)***	**2.98 (0.61)*****	**3.60 (0.85)*****	**1.89 (0.40)****
Region								
West (Ref.)								
East	0.77 (0.18)	1.00 (0.28)	1.11 (0.29)	1.23 (0.32)	0.82 (0.19)	0.66 (0.17)	**0.43 (0.13)****	1.31 (0.33)

Table 4: Predicted probabilities of cluster membership (95% confidence intervals presented for approximate tests of significance).

	Cluster 1:	Cluster 2:	Cluster 3:	Cluster 4:	Cluster 5:	Cluster 6:	Cluster 7:	Cluster 8:	Cluster 9:
Gender									
Male	18.3 (16.1-20.6)	19.4 (17.1-21.7)	14.4 (12.1-16.6)	12.8 (10.8-14.8)	5.2 (4.0-6.4)	9.0 (7.4-10.5)	8.9 (7.4-10.4)	0.6 (0.3-0.9)	11.5 (9.6-13.3)
Female	13.9 (12.0-15.8)	10.6 (8.9-12.2)	10.1 (8.4-11.8)	12.9 (10.9-14.8)	11.1 (9.3-12.8)	17.3 (15.2-19.3)	6.5 (5.3-7.7)	6.7 (5.5-7.9)	11.0 (9.4-12.6)
Cohort									
1981-83	21.2 (18.8-23.5)	14.2 (12.3-16.1)	11.4 (9.5-13.4)	10.6 (8.8-12.4)	8.0 (6.4-9.5)	12.4 (10.6-14.3)	6.6 (5.3-7.9)	1.9 (1.3-2.6)	13.7 (11.7-15.6)
1971-73	13.1 (11.1-15.0)	15.3 (13.2-17.4)	13.4 (11.3-15.5)	16.1 (13.8-18.4)	7.6 (6.2-9.1)	13.2 (11.4-14.9)	9.3 (7.7-10.8)	2.2 (1.4-2.9)	9.9 (8.2-11.6)
Maternal education									
Low	12.3 (10.4-14.3)	20.6 (18.1-23.1)	8.5 (6.7-10.4)	14.4 (12.0-16.7)	5.6 (4.2-7.0)	12.4 (10.4-14.4)	9.4 (7.7-11.1)	2.9 (1.9-3.8)	13.8 (11.6-16.0)
Medium	20.0 (17.4-22.7)	15.0 (12.7-17.2)	11.6 (9.3-13.8)	12.3 (10.1-14.4)	7.1 (5.5-8.8)	13.6 (11.5-15.7)	7.6 (6.1-9.1)	2.2 (1.3-3.0)	10.7 (8.7-12.7)
High	17.0 (13.5-20.5)	5.8 (3.6-7.9)	27.2 (22.7-31.7)	10.7 (7.3-14.1)	16.2 (12.9-19.5)	10.0 (7.3-12.6)	4.7 (2.9-6.6)	0.7 (0.3-1.2)	7.6 (5.3-10.0)
Migration									
No migrant	18.9 (16.8-21.0)	15.9 (14.0-17.9)	14.9 (12.8-17.1)	12.9 (11.0-14.9)	7.7 (6.3-9.1)	12.1 (10.4-13.8)	5.9 (4.9-7.0)	1.5 (0.9-2.0)	10.1 (8.5-11.7)
Migrant	12.1 (9.4-14.8)	12.2 (9.7-14.8)	8.3 (5.9-10.6)	13.4 (10.4-16.5)	7.8 (5.8-9.8)	13.9 (11.2-16.6)	13.6 (10.8-16.3)	4.0 (2.6-5.4)	14.7 (11.6-17.8)
Region									
West	17.3 (15.3-19.2)	14.7 (13.0-16.5)	12.4 (10.6-14.2)	12.9 (11.2-14.6)	7.5 (6.3-8.7)	13.3 (11.7-14.8)	8.5 (7.3-9.7)	2.4 (1.7-3.1)	10.9 (9.4-12.5)
East	13.9 (10.3-17.6)	15.4 (11.4-19.3)	12.9 (8.5-17.3)	14.9 (10.3-19.6)	9.6 (6.5 -12.7)	11.3 (8.2-14.4)	5.9 (3.9-7.8)	1.1 (0.5-1.7)	15.0 (10.9-19.0)

4. Discussion

Summary

Using the sequence analysis, different life courses in young adulthood can be identified.
Regarding gender differences, we found young men living longer in their parents' home, while young women started earlier cohabiting with a partner and formation of a family.
Time trends can be identified by looking on the differences by cohort. We found a trend toward a longer education phase in life as well as a prolonged leave of the parental home.
According to education, long education periods in life course correspond with high qualification levels.

Comparison of the results with the state of research

With regard to gender differences, ”parenthood, however, remains an event which often re-sets gender relations within families, with much evidence suggesting that mothers adapt their work patterns in response to the birth of a child, while fathers do not” (Mc Munn et al. 2015).

There is a discussion whether there is a increasing polarization into fast versus slow transitions (Jones, 2002), i.e. a distinction between those who take a slower route to adulthood involving longer education and delayed assumption of adult roles, and those who follow the traditional fast track transition leaving school at minimum age, followed by early entry to the labour market and family formation (Schoon 2016). It became clear in our analysis that the social origin (mother's education) has an important influence on the transition to adulthood. Thus, the choices of young adults are embedded in social constraints (Schoon et al. 2016).

Are nowadays the demographic events still relevant to young adults as markers of adulthood? Or do they may have new and individualistic indicators and markers of maturity and adulthood? (Robette 2010) “However, the few studies dealing with this issue show that traditional markers are still significantly linked to the feeling of being an adult (Shanahan, Porfeli, Mortimer, & Erickson, 2005)” (Robette 2010).

(to be further continued)

Strengths and weaknesses of the analysis

A mayor limitation of the analysis is that the partner, parent and activity statuses have been roughly subdivided. Thus, we did not distinguished between full-time and part-time employment nor parental leave and unemployment which are especially issues for young mothers. Furthermore, periods in military or civilian service which were obligatory for men in the examined cohorts could not be categorized separately in the sequences. Furthermore, we did not differentiate between married and cohabiting women and men. We also did not consider whether a young mother or father were living in the same household with their child(ren). A partner not living in the household of the anchor person was also not taken into account in the analysis. Furthermore, we did not consider “Living-Apart-Together”-relationships, which became an essential role in young adulthood (Konietzka & Tatjes). Nowadays, the working and family histories are too divers and complex to consider them in all their facets in a sequence analysis.

Another problem is that “the difficulty of clearly defining the occurrence of an event. For example, leaving the parental home is an increasingly complex process. The transition to total residential independence is gradual. As a consequence of prolonged education and the delay in entering a stable job and attaining financial independence, new residential situations are developing, such as living in multiple households at the same time. For example, some students live alone during the week, but with their parents during week-ends and holidays” (Robette 2010).
Another limitation of the analysis is the focus on the timing of trajectories while the "quality" of the transitions is neglected. This is especially the case analyzing the educational biography because staying in the educational system for a long time can mean that someone completes this period with a high education degree or that someone has started several training programs but without completion. According to Konietzka and Huinink [1] vocational or university education is a universal component of the transition to working life in Germany. Their successful completion represents THE central foundation for the future chances of income and an independent living.
The high numbers of missing values especially regarding the employment status were a further problem in the data analysis.
Furthermore, it has to be mentioned that the cluster analysis is an explorative analysis. Thus, there is no defined specification how the numbers of clusters have to been selected or which distance measures in the optimal matching procedure has to be chosen.
Although we used longitudinal data we cannot solve the problem of causality versus selectivity. The sequence analysis is mainly descriptive.

Despite all the limitations, the sequence analysis allows an intelligible description of life courses in their complexity. The main strength of the study is that we used monthly information on activity, parental and partner statuses for a period of 10 years, so we could describe the transition to adulthood in detail. The exploratory findings illustrate the great heterogeneity in the transition to adulthood regarding timing and sequencing of important biographical events in Germany.
An interesting aspect that would be worth exploring in more detail is the intersection of gender and education for timing and sequencing of important biographical events in life course in women and men.

In a further analysis step, we will examine the association of the different identified pathways into adulthood with health and health behaviour. Consequently, using retrospective data on important transition events in young adulthood will help us to analyze health inequalities in a life course perspective.

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