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Conference Paper

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Beiträge zur Jahrestagung des Vereins für Socialpolitik 2020: Gender Economics

Provided in Cooperation with:

Verein für Socialpolitik / German Economic Association

Suggested Citation: Malin, Lydia (2020) : The role of occupational segregation for gender-specific employment patterns in West Germany, Beiträge zur Jahrestagung des Vereins für Socialpolitik 2020: Gender Economics, ZBW - Leibniz Information Centre for Economics, Kiel, Hamburg

This Version is available at:

<https://hdl.handle.net/10419/224522>

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The role of occupational segregation for gender-specific employment patterns in West Germany

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Abstract

Despite increasing educational attainment and greater labor market participation of women in the last decades, occupational segregation and gender differences in employment patterns remain stable. While men continue to have fairly stable employment patterns, women's occupational trajectories are more affected by discontinuity and part-time work. Previous research on gender inequality in labor markets (LM) focused on individual- and macro-level influences on e.g. female labor supply and wages. This study adds to and extends previous research by focusing on men's employment patterns in occupations with different gender-types. Doing so, this analysis contributes to disentangle individual and contextual influences by comparing typical employment patterns of men in female-typical occupations with those of their female colleagues and those of men in male-typical occupations. By this means, the aim of this study is to detect the contribution of occupational settings to gender differentiation in employment patterns. Drawing on data from the German National Educational Panel Study (NEPS), I use sequence clustering to detect different types of employment patterns and following multinomial logistic regressions on cluster membership. The results show that employment patterns differ by gender and type of occupation. Most men do have continuous fulltime employment patterns, even in female occupations. However, men in female occupations are significantly more likely to have work interruptions for further education and part-time dominated employment trajectories compared to men in male-typical occupations.

Keywords: Career patterns, employment trajectories, work histories, gender-atypical occupations, sequence analysis, optimal matching, cluster analysis

1 Introduction

Although female labor force participation has significantly increased in the last decades, occupational gender segregation as well as substantial differences between men and women regarding typical employment patterns remain stable (e.g. Blau, Brummund, and Liu 2013; Cohen, Huffman, and Knauer 2009; Widmer and Ritschard 2009). Despite a general growth in career complexity, men continue to have fairly stable patterns of LM participation while women's occupational trajectories are more complex, and seem to be increasingly affected by discontinuity and part-time work (Widmer and Ritschard 2009; Jacobs 1999; Biemann, Zacher, and Feldman 2012). Brückner and Mayer (2005) further point out that women's and men's life courses are converging with respect to education and labor force participation, while gender differences due to the family formation nexus are persist across cohorts.

However, up to now there is only little research on whether gender differences in employment patterns are also affected by occupational opportunity structures (e.g. Hausmann, Kleinert, and Leuze 2015). The question whether occupation-specific modes of employment can explain gender differences in employment patterns remains open. Investigating men's employment patterns in female occupations and comparing them to those of women in the same type of occupation and to those of men in male-typical occupations, contributes to a greater understanding of gender differences in employment patterns and related disadvantages. If employment patterns of men and women in female-typical occupations are gender-independent, this will indicate that differences in employment patterns are not gender-driven but caused by occupation-specific opportunity structures for different work arrangements. Conversely, if employment patterns of men in female-typical occupations are more like those of men in male-typical occupations; this would indicate that the type of occupation does not matter for gender-differences in work arrangements.

Therefore, the focus of this paper is to investigate whether different types of employment patterns can be empirically identified and how they vary with respect to gender and gender-type of occupation. More precisely, testing competing explanations of economic and sociological theory, this paper asks: Do employment patterns differ between occupations with different gender composition – independent of gender? Are employment patterns of men in female-typical occupations more like those of women in female-typical occupations or to men in male-typical ones?

The dynamics and complexity of employment biographies cannot be analyzed by focusing on specific events or time points. However, the few studies on male employment trajectories over a longer time period do not consider the gender ratio within occupations and do not compare men with their female colleagues (e.g. Simonson, Laura R. Gordo, and Kelle 2015). Therefore, this study contributes to previous research in several respects: 1) it is the first quantitative study focusing on male employment patterns in female-typical occupations and thus taking into account occupational opportunity structures for different work arrangements; 2) by using a sequence analysis approach it captures the whole complexity of employment trajectories and does not restrict the analysis to a single outcome; 3) furthermore, this study contributes to the discussion on the validity of competing explanations of economics and sociology.

To analyze causes of different employment patterns, West Germany is a very interesting case because it is characterized by strong occupational gender segregation compared to other European countries, low occupational mobility and a high prevalence of gender-specific employment patterns due to traditional gender norms of a male breadwinner and female caregiver (Haasler and Gottschall 2015; Sainsbury 1999). Recent changes in work-family oriented policies cannot be observed within the time of observation covered by this study (Trappe, Pollmann-Schult, and Schmitt 2015). Thus, West Germany offers framework conditions for the most rigorous testing.

Drawing on monthly employment status information from starting cohort 6 of the German National Educational Panel Study (NEPS), I use sequence clustering to reveal different types of employment trajectories. Subsequently, cluster membership is used as dependent variable in multinomial logistic regressions to investigate the explanatory power of gender and gender-type of occupation.

2 Theoretical Explanations, Empirical Evidence and Hypotheses

Theoretical approaches that explain different employment patterns between men and women normally argue through division of gainful employment and domestic work. However, the various approaches built on different mechanisms for the distinction of gender-specific employment trajectories. In the following, the competing theoretical approaches of economics and sociology with the most direct explanations for gender-specific employment

patterns will be briefly summarized. Previous empirical evidence will be considered when formulating the hypotheses.

2.1 Self-Selection into Occupations with different work arrangements

Economic theories – for instance human capital theory – assume that educational and occupational decisions are based on cost-benefit calculations that aim at utility maximization. Becker (1993) argues that men and women invest in different forms of human capital due to their differences in biological commitment to the production and care of children. As women invest more physical effort during pregnancy, their interest to ensure optimal care for their offspring should be naturally higher than men's. Married (heterosexual) couples are assumed to be most efficient when women specialize on childcare and other household activities and thus on “human capital that raises household efficiency (...) [while] (...) men invest mainly in capital that raises market efficiency” (Becker 1993: 39). In line with this argument, men are more productive in the LM and thus have higher wages. Therefore, the logical consequence is that men allocate as much time as possible to gainful employment, to feed their families and protect their wives “against abandonment and other adversities” (Becker 1993: 30), while women allocate their time primarily in childcare and other household responsibilities.

Building on these basic assumptions, Polachek (1981) argued that women and men self-select into different occupations due to occupation specific levels of atrophy, “defined as the loss of earnings potential that can be attributed to periods of work intermittency” (Polachek 1981: 62). As women expect to have more intermittent employment trajectories compared to men who aim at permanent and full LM participation, women chose occupations, where interruptions are less costly. However, even Polachek admits the possibility of reverse causality, where choosing an occupation which facilitates times out of labor force lead to more intermittent employment patterns. This limitation also points to the weak assumption that adolescents already plan their LM participation (and family formation including partners employment) over the whole life cycle, when investing in human capital and choosing an occupation.

However, the economic perspective seems to be in line with the developmental history of occupations in West Germany. Many male-dominated occupations emerged or further developed in the course of industrialization, with a strong need for a fully available workforce (Busch 2013). Therefore, the growth of large firms aligned with the development of internal

labor markets to ensure employee retention and to reduce costs of searching for new employees (Sørensen and Kalleberg 1981). Consequently, intermittent employment careers and part-time work was not supported within this context. Contrary, tasks of female-typical occupations such as care giving were formerly organized by women within the households. The educational expansion, which facilitates access to education for a broader audience – including women, aligned with the development of female niches such as elderly or childcare (Busch 2013). As Krüger (2003) points out, the development of vocational training for women intended to be just a bridge between the end of school and marriage. The skills obtained during that time should prepare women for their later role within the household and at most qualify for secondary employment to improve the household income. Therefore, the aim of reconciliation of work and family obligations was a fundamental requirement for the development of female-typical occupations. Thus, it is assumed that female-typical occupations offer more opportunities for e.g. interruptions and part-time work for both, women and men:

H1: Employment patterns of men in female-typical occupations assimilate to those of their female colleagues.

Regarding employment patterns following occupational choice, economic theory further argues that the real household division of labor during the life course is the result of different bargaining power of men and women based on their productivity and related earnings potential (Lundberg and Pollak 1996). However, if the optimization of efficiency is the only mechanism for the differentiation of (gendered) employment patterns, it would be also rational that men specialize on housework and women on gainful work if their earnings potentials are reversed. However, previous research shows that this is rarely the case. Even if wives have higher earnings, husbands do not take over a higher share of housework or care responsibilities (e.g. Grunow, Schulz, and Blossfeld 2012). Especially the birth of a child relegates women more to the domestic sphere, which results in work interruptions and/or part-time employment, independent of their relative wages before giving birth (e.g. Kühhirt 2012; Schober 2013). Men's LM participation seems to be unaffected by their wife's contribution to the household income and the birth of a child. Thus, Grunow, Schulz, and Blossfeld (2012) draw the conclusion that gender norms appear to be more important for the explanation of gendered employment trajectories than economic rationalities.

2.2 Gender Norms, occupational choice and employment patterns

In contrast to economic approaches, sociologists emphasize the role of cultural gender norms for the explanation of gender-specific educational and occupational decisions and employment patterns. It is assumed that children are born without gender-specific differences, but develop gendered attitudes through the incorporation of societal constructed gender roles, especially within the nuclear family during childhood, and later on via interactions with their peer groups and wider social contexts (e.g. Parsons and Bales 1955; West and Zimmerman 1987; Stets and Burke 2000; Davis and Greenstein 2009). Traditionally, these gender norms assign the breadwinner role to men, while the family's caregiver and homemaker role is attributed to women. Due to social desirability, men focus on continuous and fulltime employment, while women's employment must be compatible with their domestic responsibilities. If gender-specific employment patterns are driven by traditional gender norms, the occupational setting should have no influence. Subsequently, the competing second hypotheses is

H2: Employment patterns of men in female-typical occupations do not differ from those of men in male-typical occupations.

Recent contributions from socialization research further developed the concept of a (primary) socialization within the family, shifting from more or less stable gender norms over the life course to a more dynamic socialization concept, which emphasizes the role of parenthood for the impact of traditional gender norms (Grunow 2013). While especially younger cohorts show egalitarian gender role attitudes and behaviors before entering parenthood, childbirth seem to be the key event, which results in a shift to more traditional gender role attitudes (e.g. Schober 2013; Kühhirt 2012). Reasons for this "re-traditionalization" due to parenthood are seen in 1) welfare policies which support a traditional division of labor for parents (Bühlmann, Elcheroth, and Tettamanti 2010) and 2) cultural norms of motherhood which had not changed simultaneously or to the same extent as general gender norms (Grunow, Schulz, and Blossfeld 2012). Especially in Western Germany, constraining social policies like the specific taxation of married couples (splitting the difference in spousal income) and the lack of childcare opportunities as well as the "cultural ideals of 'the good mother' who stays home with her children" (Grunow, Hofmeister, and Buchholz 2006), support work interruptions and following

part-time work for mothers. Therefore, a further hypothesis for the relevance of parenthood is formulated:

H3: Gender differences in employment patterns, independent of the gender-type of occupation, are mainly observable among parents.

3 Data, variables and analytic strategy

3.1 Data and Sample

To test the hypotheses developed in the last section, I use data from the NEPS, starting cohort 6 (see Blossfeld, Roßbach, and von Maurice 2011). This longitudinal dataset contains retrospectively collected information on adults' educational and employment biographies of individuals born between 1944 and 1986.

As the gender composition within occupations slightly varies over time, the gender composition within one specific year would be not appropriate for an analysis of long-time employment histories. Thus, I use the mean share of female employees between 2001 and 2011 within each occupation, categorized in the German classification of occupations (KldB1988 – 3 digit), provided by the German labor agency, to distinguish female-, mixed and male-typical occupations. Unfortunately, data of longer periods cannot be compared or put together due to data coding releases. I apply a dichotomous operationalization of gender composition, instead of a metric measure, because I do not assume a linear relationship. Furthermore, the gender-type of occupation is used to create groups and therefore needs to be categorical from a methodological point of view. Based on the mean share of female employees, occupations with “70 percent and more” are defined as female occupations, “over 30 to less than 70” as mixed occupations, and “30 and below” as male occupations. Lower (35/65 percent) and higher (25/75 percent) cut-off points have been used for robustness checks¹.

As the main gender differences are assumed to unfold during LM entry and family formation processes, this analysis follows individuals from their first significant job for a period of 15 years (180 months). The first significant job is defined as the first job between the age of 15

¹ With a stricter cut-off point of, for example 80 percent, there are too few cases and thus too small within group variance for analysis for e.g. men in female occupations. With a lower cut-off point, such as 60 percent, occupations that have a nearly balanced gender ratio are also defined as gender-typical.

and 35 that lasted at least 6 months as it was used in several studies (e.g. Lindemann and Kogan 2013; Smyth 2005). Jobs for career preparation, such as internships, traineeships, preparatory services and jobs as student worker are not considered. I excluded respondents who never had a first significant job or who have missing information for sample-defining characteristics, such as gender or date of birth. The analytical sample consists of 11.262 individual employment biographies of 5.411 women (48 percent) and 5.851 men (52 percent).

3.2 Methods

The purpose of this study is to analyze employment biographies of men and women in different occupational settings. These biographies are conceptualized as “categorical sequences, [...] represented by an ordered list of successive elements” (Studer and Ritschard 2016). The data contain one sequence per individual, which consists of 180 sequence element (month). Individual sequences with more than 30 percent (54 month) of missing information are deleted from the sample. Each element of these monthly employment histories is defined by one of the following mutually exclusive states (elements): (1) Full-time employment, (2) part-time employment, (3) education, (4) leave for family reasons, and (5) not employed, in education or training (NEET). Gaps of information are coded as further state (6).

To analyze gender-typicality of occupational biographies, I firstly visualize how (un)stable occupational decisions are over the course of observation time using sequence index plots. Following, I use dynamic distance measures for a hierarchical cluster analysis to identify a typology of employment patterns. In a third step, the resulting cluster membership of each individual sequence is used as dependent variable in multinomial logistic regressions.

The analysis of employment trajectories as sequences has the advantage that it takes into account it's full complexity (for more detailed discussion see e.g. Aisenbrey and Fasang 2010). Sequence analysis refers to the calculation of (dis)similarity measures (for further reading on different dissimilarity measures see (Studer and Ritschard 2016). The applied measure of dissimilarity in this study is the Dynamic Hamming Distance (DHD) which uses substitution costs derived from transition rates (Lesnard 2010). This dynamic measure has the advantage that more common changes represent lower costs, while rare changes are more costly. Thus, it is possible to take into account that e.g. times off for family reasons have a higher likelihood to occur during family formation time, which is not equally distributed through the 15 years following the first significant job, especially for individuals with different educational

attainment (see e.g. Stahl and Schober 2018). The optimal matching algorithm (OM) as alternative distance measure is used for robustness checks.

The distance matrix is the basis for the cluster analysis. Aim of the applied Ward's linkage cluster analysis is to group sequences that are most homogeneous within the groups and most different between the groups. To determine the appropriate number of clusters, several cut-off criteria are used.

After identifying various types of employment patterns, multinomial logistic regressions explain, how the gender-type of occupation can contribute to predict cluster membership. For this purpose, employment patterns of men in female-typical occupations are compared to those of men in other occupations and to those of women in female-typical occupations. This means, I analyze, if men with employment biographies predominantly in female-typical occupations, are found in the same clusters as their female colleagues or if they group with other men. To further test Hypotheses 3 on the relevance of parenthood, separate models for parents and non-parents are estimated.

3.3 Variables

The *dependent variable* for the multinomial logistic regression models is the cluster membership. Independent of gender-type of occupation male-typical employment biographies are expected to be more "stable" over time and thus characterized by continuously full-time employment. Female-typical employment patterns, on the opposite are expected to contain more part-time employment, to be more intermittent and thus more complex.

As the main research interest is to disentangle whether employment patterns are gender- or occupation driven, the main *explanatory variables* for the analysis are gender and the gender-type of occupational biography. The latter is a categorical variable for the most frequent gender-type of occupation most prevalent within the individual employment biography.

In addition to the explanatory variables, various *control variables* are included in the models. It is known for example that the complexity of employment patterns differ by cohort (Simonson, Gordo and Titova 2011; Simonson, Gordo and Kelle 2015), a categorical variable for birth cohort (1944 – 1955, 1956 – 1965, 1966 – 1975, 1976 – 1989) is included. Furthermore, the models contain the highest educational degree at time of LM entry and a

dummy for a later increase in educational degree; the marital status (if ever married within observation time) and the birth of children during observation time. Additionally, all models contain the age of respondent at LM entry and if the individual is born in West Germany or abroad. Individuals born in East Germany are excluded by sample definition.

4 Results

4.1 Descriptive Results

To analyze gender differences in employment biographies, I start by looking at the gender-typicality of occupations at LM entry. As it can be seen in Table 1, the labor market entry in a gender-typical occupation is a little bit more common among men (62.6 percent) compared to women (58.5 percent). This can probably be attributed to the higher number of male-dominated occupations compared to female-dominated ones. Furthermore, the same is true for the gender-type of occupation predominantly held through the observed employment biography. While about 63 percent of all men in the sample have an employment biography dominated by gender-typical occupations, this is true for 57 percent of the women.

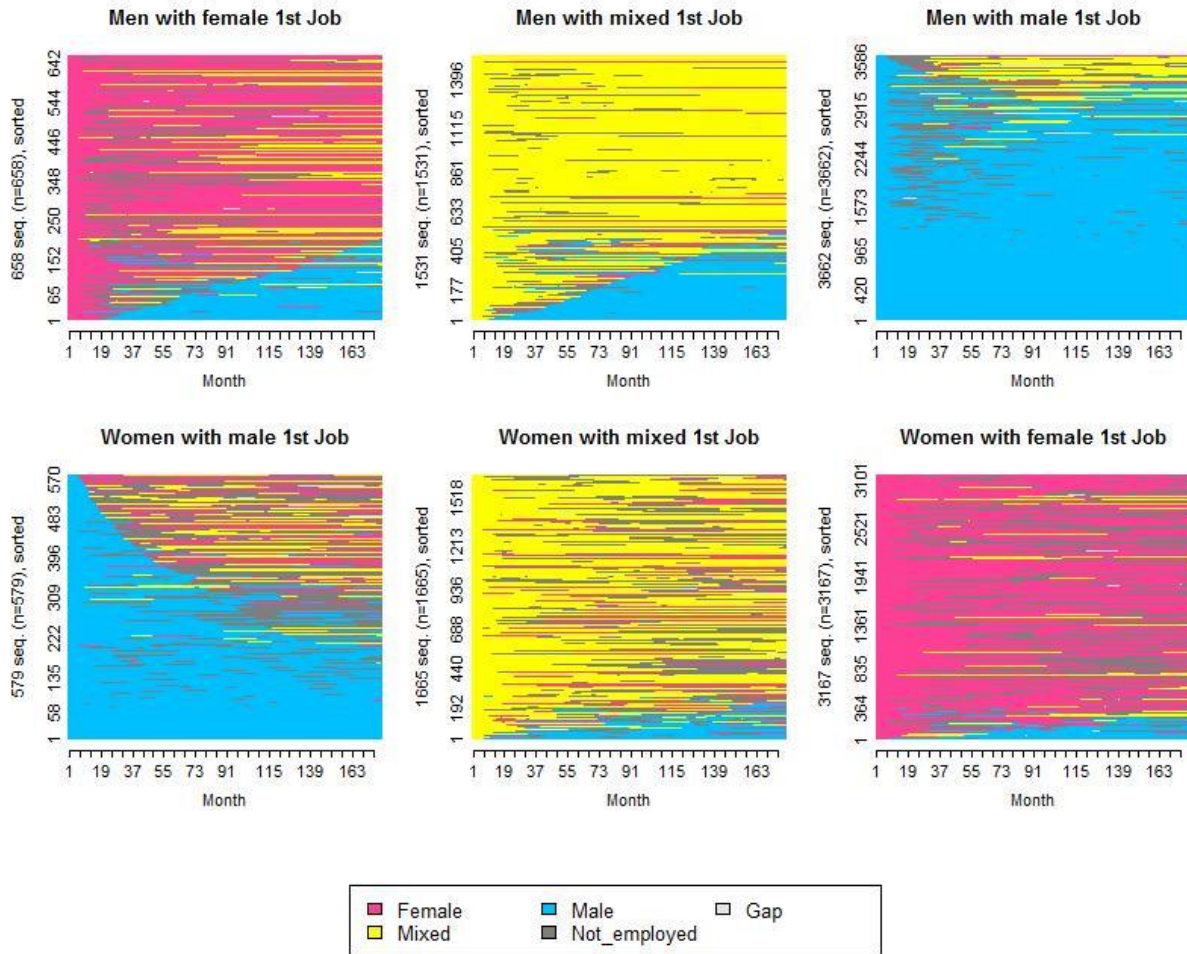
Table 1: Gender-type of first significant job and occupational biography
Percentage of women/men who start/remain in a job of the corresponding gender type

	Women	Men
Gender-type of first significant Job		
female	58.5	11.3
Mixed	30.8	26.2
male	10.7	62.6
Gender-type of employment biography		
female	57.0	10.8
Mixed	30.6	26.2
male	12.4	63.0

Data: NEPS SUF, SC6 D_8-0-0; N=11.262.

Looking at the occupational trajectories of men and women, it is obvious that gender-atypical occupational choices are more prone to occupational shifts later on (Figure 1). From all men entering the LM through a female-typical occupation, only about half continue to work in a female-typical occupation after 15 years. In contrast, nearly 80 percent of men, commencing their working life in a gender-typical occupation, are working in such an occupation at the end of observation time. For women the picture is similar, even though a greater share of women is not working at all at the end of observation time.

Figure 1: Occupational trajectories of men and women starting in different types of occupations
Sequence Index Plots by gender and gender-type of first significant job



Data: NEPS SUF, SC6 D_8-0-0.

4.2 Cluster Analysis

The cluster analysis of employment sequences results in six typical employment patterns, which are described in the following. Cluster1 consists of pervasive full-time employment biographies (n=7878) only interrupted shortly at the beginning of the employment trajectory (see Figure 2). Thus, it represents the typical employment pattern associated with the male breadwinner and is the most frequent observed employment pattern for both men (85.8 percent of all men) and women (55.2 percent of all women). Individuals in cluster 1 are predominantly male and mainly employed in male-typical occupations as expected. Furthermore, they are more likely to stem from older cohorts, which is consistent with the literature on de-standardization across cohorts. In comparison to members of cluster 2, they are better educated, but have fewer tertiary degrees than members of cluster 3.

Table 2: Overview of the Cluster Characteristics

	Cluster 1	Cluster 2	Cluster 3	Cluster 4	Cluster 5
Number of individual sequences in resp. cluster	8.006	374	1.032	1.391	459
Proportion of Men	62,7%	59,9%	34,8%	5,6%	37,0%
Proportion of mainly female occupation	26,2%	31,0%	47,2%	59,8%	40,3%
Proportion of mainly mixed occupation	27,6%	35,8%	32,3%	28,5%	25,1%
Proportion of mainly male occupation	46,2%	33,2%	20,5%	11,7%	34,6%
Socio-demography					
Individuals born between 1944 and 1955	36,8%	24,9%	33,6%	13,2%	26,4%
Individuals born between 1956 and 1965	38,3%	37,7%	34,7%	46,2%	35,5%
Individuals born between 1966 and 1975	22,2%	28,9%	28,5%	36,3%	30,9%
Individuals born between 1976 and 1989	2,7%	8,6%	3,2%	4,4%	7,2%
Individuals born abroad	9,4%	10,2%	9,4%	9,1%	13,7%
Average age at labor market entry	21,1	20,6	24,0	20,9	20,4
Individuals ever married in obs. time	75,3%	55,9%	80,2%	92,8%	69,1%
Average maximum number of children	1,3	1,0	1,5	2,0	1,5
Average duration with children during obs. time	41,7	26,0	56,4	57,9	52,9
Education					
Labor market entry without vocational degree	13,4%	40,1%	14,7%	11,6%	22,7%
Labor market entry with vocational degree	71,0%	52,4%	42,7%	75,6%	69,1%
Labor market entry with higher educational degree	15,6%	7,5%	42,5%	12,8%	8,3%
Individuals with increasing educational degree	9,5%	65,0%	7,6%	4,5%	7,6%

Data: NEPS SUF, SC6 D_8-0-0.

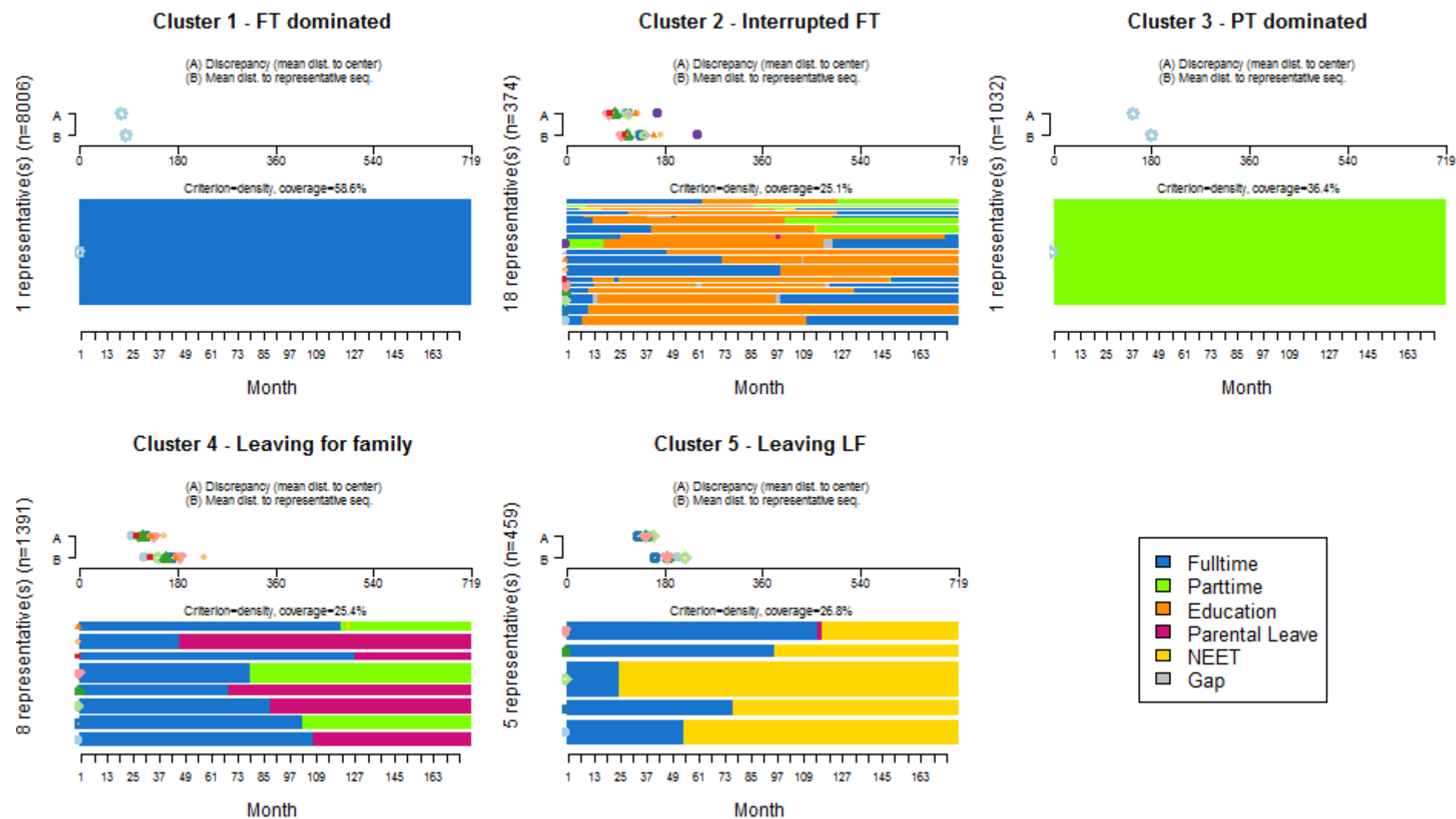
Cluster 2 is rather small (n=549) and contains career patterns with full-time employment with longer interruptions due to further education and training. 63.2 percent of all employment sequences in this cluster are represented by the sequences visualized in Figure 2. Members of cluster 2 are more or less equal distributed through female male and mixed occupations. They are further characterized by low education at labor market entry which increases due to the investment in further training. Furthermore, they are less likely to be married and have later and fewer children (Table 2).

Cluster 3 (n=1778) and 4 (n=620) contain typical employment patterns assigned to women, dominated by part-time work or times off for family reasons (Figure 2). Subsequently, their members are predominantly female – in cluster 4 almost exclusively – more often located in female-typical occupations (Table 2). Moreover, members of cluster 3 and 4 are characterized by a high share of married individuals with children. Individuals in cluster 3 (part-time dominated) are higher educated already at labor market entry. Subsequently, the average age at labor market entry is highest in this cluster.

Finally, cluster 5 pools employment patterns that are characterized by leaving the labor force (Figure 2). Members of this cluster are mainly female and during their employment time overrepresented in female-typical occupations. They are more often born abroad and comparatively low-educated. However, as these individuals are employed less than half of the observation time, and thus have only short durations of exposure to the disparate settings of occupations with different gender-type.

Based on these descriptive results, the membership in cluster 1 and 3 seem to be the most interesting, because they represent gender-typical employment biographies, but also a significant number of individuals of the opposite sex. Cluster 2 has only few members that do not vary greatly with respect to gender and gender-type of occupation. The obvious dominance of women in cluster 4 (family leave) can be attributed to the family policy during observation time, which disadvantaged men with respect to parental leave opportunities.

Figure 2: Representative Sequences by Cluster



Data: NEPS SUF, SC6 D_8-0-0;

4.3 Results of multinomial logistic regressions

Table 3 presents the average marginal effects of the main gender-type of occupation on cluster membership by gender and main gender-type of occupation for different subgroups (for the full models see appendix 1). The first model “All_men” compares men in different kinds of occupations. It shows that men in mixed or female-typical occupations have a significantly higher likelihood to be member of cluster 2 or 3 than men mainly employed in male-typical occupations. Thus, they are more likely to have longer interruptions for education or to work predominantly in part-time. Especially in female-typical occupations, men have a 6.4 percent higher probability to be in the part-time cluster. This indicates that occupations differ in their opportunity structure for part-time work.

However, do men in female-typical occupations assimilate to their female colleagues? With respect to part-time employment they do. As the results from the fourth model (All_FO) show, there are no gender-differences with respect to being in the part-time cluster within female-typical occupations. However, there are also noticeable gender differences regarding membership in cluster 2, 3 and 5. Men in female-typical occupations are significantly less likely to leave the LM for family reasons (cluster 4) compared to women in female-typical occupations. This result can probably be attributed to the family policy, as men do have no redress in law unlike women. In female occupations, men have a higher probability than women to have a fulltime employment with longer educational interruptions. However, this difference is rather small (Table 3).

To test hypotheses 3² regression models are estimated again firstly for the sub-sample of childless individuals and second for the sub-sample of parents (Table 3). The results indicate that childless men in different occupational settings are more similar than Fathers. While employment patterns of childless men do not differ significantly between male- and female-typical occupations, fathers working in female occupations show a significantly higher probability to have part-time dominated employment patterns than fathers in male-typical occupations. Furthermore, it is obvious that only the employment patterns of fathers in female occupations assimilate to those of their female colleagues regarding part-time work. Childless men are significantly less likely to have part-time dominated employment patterns

² H3: Gender differences in employment patterns, independent of the gender-type of occupation, are mainly observable among parents.

than childless women, even if they are mainly employed in female-typical occupations. This result contradicts previous research, which stated that gender differences are generally re-enforced by parenthood (e.g. Grunow et al. 2012). Contrary to previous findings, this study points to smaller gender differences for parents at least in female-typical occupations.

Table 3 Explaining the Type of Employment Pattern by Gender and Type of Occupation

Multinomial logistic regressions on cluster membership, average marginal effects

	All_Men	Childless_Men	Fathers	All_FO	Childless_FO	Parents_FO
Men						
Cluster 1				0.433*** (0.039)	0.086* (0.042)	0.539*** (0.049)
Cluster 2				0.018** (0.006)	0.028# (0.017)	0.014* (0.006)
Cluster 3				-0.023 (0.017)	-0.053* (0.025)	-0.012 (0.022)
Cluster 4				-0.452*** (0.052)	-0.080* (0.037)	-0.559*** (0.068)
Cluster 5				0.024* (0.011)	0.020# (0.011)	0.018 (0.016)
Main gender-type of occupation (Ref. Male)						
* female						
Cluster 1	-0.082*** (0.016)	-0.032 (0.029)	-0.104*** (0.020)			
Cluster 2	0.013# (0.008)	0.026 (0.018)	0.006 (0.008)			
Cluster 3	0.064*** (0.012)	0.022 (0.018)	0.080*** (0.015)			
Cluster 4	-0.000 (0.005)	-0.005 (0.006)	0.002 (0.007)			
Cluster 5	0.006 (0.008)	-0.011 (0.016)	0.015 (0.010)			
* mixed						
Cluster 1	-0.030** (0.010)	-0.015 (0.022)	-0.035** (0.012)			
Cluster 2	0.013* (0.006)	-0.001 (0.013)	0.017** (0.006)			
Cluster 3	0.024*** (0.007)	0.025# (0.014)	0.023** (0.008)			
Cluster 4	0.004 (0.004)	0.011 (0.008)	0.001 (0.004)			
Cluster 5	-0.011* (0.005)	-0.020# (0.011)	-0.007 (0.005)			

Note: # $p \leq 0.1$; * $p \leq 0.05$; ** $p \leq 0.01$; *** $p \leq 0.001$; Standard Errors in brackets; the model contains following control variables: cohort, age at labor market entry, born abroad, educational degree at labor market entry and change in degree within obs. time, number of children, duration with children in obs. time, and if ever married in obs. time; for the full model see appendix 1

Data: NEPS SUF, SC6 D_8-0-0; own calculations.

5 Summary and Discussion

Despite increasing female educational attainment and higher labor force participation, occupational gender segregation as well as gender differences in employment patterns, turn out to be very persistent phenomena. Most previous analyses on causes of gendered employment patterns focus on individual-level or macro-level explanations. This study extends existing research by looking at the influence of occupation-specific opportunities for different forms of employment. Thus, the focus of this paper is to investigate, if occupational opportunity structures contribute to explain gender differences in employment patterns. For this purpose, I compare men's employment patterns in female-typical occupations to those of their female colleagues and to those of men in male-typical occupations. Consequently, this paper asks: Do employment patterns differ between occupations with different gender composition – independent of gender? Are employment patterns of men in female-typical occupations like those of women in female-typical occupations?

Using monthly employment biographies from the NEPS, I apply sequence clustering in order to identify typical employment patterns and with multinomial logistic regressions for several subgroups I estimate in how far gender differences in employment patterns can be explained by occupational gender-type. Furthermore, I compare parents with childless men and women, to examine, if previous result of a re-traditionalization due to parenthood is observed across all occupations. Drawing from economic theory, which suggests that occupational choice reflect a choice for specific forms of employment, the first hypothesis was that: *Employment patterns of men in female-typical occupations are similar to those of their female colleagues (H1)*. The results show that men in female-typical occupations indeed do not differ from their female colleagues, but this is only true for part-time work. However, this result is driven by father's employment trajectories. If one analyses fathers and childless men separately, it becomes apparent that men without children do not differ in their employment patterns – irrespective of the occupational gender-type. A slight increase in part-time employment patterns is visible in mixed occupations. Therefore, looking at the sub-sample of men and women without children, the second competing hypothesis receives support as well. Based on sociological theories, which put the emphasis on cultural gender norms, the second hypothesis was that: *Employment patterns of men in female-typical*

occupations do not differ from those of men in male-typical occupations (H2). This is true for the childless sub-sample.

The differentiation between the two sub-groups was also object of the additional third hypothesis – building on previous research – and expected that: *Gender differences in employment patterns, independent of the gender-type of occupation, are mainly observable among parents (H3)*. This hypothesis must be rejected in this form. Gender differences in female-typical occupations disappear (at least for part-time dominated employment patterns) when comparing parents. Therefore, further research is needed to investigate the underlying mechanisms of this counter-intuitive result. It is possible that men who enter female-typical occupations are generally resistant to cultural gender norms, and that this facilitates both atypical occupational choice as well as atypical career patterns. Alternatively, it may be the occupational context, where part-time work is normal that also men are not considered deviating from a social norm when working mainly in part-time when having children. For future research, it would be interesting to examine if fathers with such female-typical employment patterns are more engaged in childcare or take on other family responsibilities.

I am aware that this study has several limitations. First, analyses of long employment trajectories collected retrospectively are prone to missing or incorrect data. Furthermore, it cannot be controlled for the context of partnership. It would also be interesting, if men in female occupations take on more family responsibilities because their female partners have higher earnings potentials. This leads to the next point: the data does not provide a proper measure for gender beliefs over time. It would be interesting to analyze if men with strongly egalitarian gender beliefs are more likely to select them-selves into female occupations or if men in female occupations adapt egalitarian gender norms from their surrounding environment at work.

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Acknowledgements

This paper uses data from the National Educational Panel Study (NEPS): Starting Cohort Adults, doi:10.5157/NEPS:SC6:8.0.0. From 2008 to 2013, NEPS data was collected as part of the Framework Program for the Promotion of Empirical Educational Research funded by the German Federal Ministry of Education and Research (BMBF). As of 2014, NEPS is carried out by the Leibniz Institute for Educational Trajectories (LIfBi) at the University of Bamberg in cooperation with a nationwide network.

Appendix

Appendix 1: Full models

Multinomial logistic regressions on cluster membership, average marginal effects

	All_Men	Childless_Men	Fathers	All_FO	Childless_FO	Parents_FO
Male						
Cluster 1				0.433*** (0.039)	0.086* (0.042)	0.539*** (0.049)
Cluster 2				0.018** (0.006)	0.028# (0.017)	0.014* (0.006)
Cluster 3				-0.023 (0.017)	-0.053* (0.025)	-0.012 (0.022)
Cluster 4				-0.452*** (0.052)	-0.080* (0.037)	-0.559*** (0.068)
Cluster 5				0.024* (0.011)	0.020# (0.011)	0.018 (0.016)
Main gender-type of occupation (Ref. Male)						
* female						
Cluster 1	-0.082*** (0.016)	-0.032 (0.029)	-0.104*** (0.020)			
Cluster 2	0.013# (0.008)	0.026 (0.018)	0.006 (0.008)			
Cluster 3	0.064*** (0.012)	0.022 (0.018)	0.080*** (0.015)			
Cluster 4	-0.000 (0.005)	-0.005 (0.006)	0.002 (0.007)			
Cluster 5	0.006 (0.008)	-0.011 (0.016)	0.015 (0.010)			
* mixed						
Cluster 1	-0.030** (0.010)	-0.015 (0.022)	-0.035** (0.012)			
Cluster 2	0.013* (0.006)	-0.001 (0.013)	0.017** (0.006)			
Cluster 3	0.024*** (0.007)	0.025# (0.014)	0.023** (0.008)			
Cluster 4	0.004 (0.004)	0.011 (0.008)	0.001 (0.004)			
Cluster 5	-0.011* (0.005)	-0.020# (0.011)	-0.007 (0.005)			
Cohort (Ref. 1944 - 1955)						
* 1956 - 1965						
Cluster 1	-0.023* (0.010)	-0.046* (0.021)	-0.016 (0.011)	-0.065*** (0.018)	0.022 (0.031)	-0.091*** (0.022)
Cluster 2	0.006 (0.006)	-0.001 (0.013)	0.009 (0.006)	-0.000 (0.007)	0.001 (0.019)	-0.001 (0.006)
Cluster 3	0.001 (0.006)	0.022# (0.012)	-0.005 (0.008)	-0.057*** (0.013)	-0.019 (0.019)	-0.071*** (0.016)
Cluster 4	0.006* (0.003)	0.011* (0.006)	0.005 (0.004)	0.127*** (0.014)	0.007 (0.015)	0.166*** (0.018)
Cluster 5	0.009* (0.005)	0.014 (0.011)	0.008 (0.005)	-0.005 (0.009)	-0.011 (0.011)	-0.003 (0.011)
* 1966 - 1975						
Cluster 1	-0.098*** (0.013)	-0.128*** (0.025)	-0.090*** (0.015)	-0.136*** (0.021)	-0.089* (0.037)	-0.152*** (0.024)
Cluster 2	0.011# (0.006)	0.014 (0.015)	0.010 (0.007)	0.001 (0.007)	0.013 (0.021)	-0.003 (0.007)
Cluster 3	0.048***	0.057***	0.046***	-0.030*	0.067*	-0.056**

	(0.009)	(0.016)	(0.011)	(0.015)	(0.028)	(0.018)
Cluster 4	0.013**	0.016*	0.013*	0.171***	-0.007	0.224***
	(0.004)	(0.007)	(0.006)	(0.017)	(0.016)	(0.021)
Cluster 5	0.026***	0.041**	0.021**	-0.006	0.016	-0.013
	(0.006)	(0.014)	(0.007)	(0.010)	(0.016)	(0.012)
* 1976 - 1989						
Cluster 1	-0.114***	-0.177**	-0.094*	-0.169***	-0.102	-0.195***
	(0.032)	(0.059)	(0.038)	(0.044)	(0.079)	(0.051)
Cluster 2	0.011	0.031	0.001	0.052**	0.084#	0.045*
	(0.011)	(0.027)	(0.011)	(0.020)	(0.050)	(0.022)
Cluster 3	0.077**	0.076	0.084*	-0.035	0.001	-0.046
	(0.028)	(0.047)	(0.035)	(0.033)	(0.052)	(0.040)
Cluster 4	0.004	0.037	-0.009***	0.107**	-0.037***	0.147**
	(0.009)	(0.028)	(0.002)	(0.037)	(0.011)	(0.046)
Cluster 5	0.022#	0.033	0.018	0.046#	0.053	0.049
	(0.013)	(0.030)	(0.014)	(0.027)	(0.050)	(0.033)
Born abroad						
Cluster 1	-0.053***	-0.087**	-0.039*	-0.015	-0.071	0.000
	(0.014)	(0.033)	(0.015)	(0.027)	(0.051)	(0.031)
Cluster 2	0.007	0.045*	-0.005	-0.000	0.021	-0.005
	(0.007)	(0.018)	(0.008)	(0.010)	(0.032)	(0.009)
Cluster 3	0.018#	0.007	0.019#	-0.023	-0.001	-0.032
	(0.010)	(0.022)	(0.011)	(0.019)	(0.035)	(0.022)
Cluster 4	0.010*	0.015*	0.009#	0.023	0.015	0.027
	(0.004)	(0.008)	(0.005)	(0.021)	(0.022)	(0.027)
Cluster 5	0.018**	0.020	0.015*	0.015	0.037*	0.010
	(0.006)	(0.018)	(0.006)	(0.011)	(0.016)	(0.014)
Age at beginning of first sign. Job						
Cluster 1	-0.006***	-0.008*	-0.005**	-0.010***	-0.013**	-0.008*
	(0.002)	(0.003)	(0.002)	(0.003)	(0.005)	(0.003)
Cluster 2	-0.000	-0.000	-0.000	0.000	0.001	0.000
	(0.001)	(0.002)	(0.001)	(0.001)	(0.003)	(0.001)
Cluster 3	0.006***	0.007***	0.006***	0.013***	0.007*	0.014***
	(0.001)	(0.002)	(0.001)	(0.002)	(0.003)	(0.002)
Cluster 4	0.000	-0.000	0.000	-0.002	0.003	-0.002
	(0.001)	(0.001)	(0.001)	(0.002)	(0.002)	(0.003)
Cluster 5	-0.001	0.001	-0.001	-0.002	0.003#	-0.004*
	(0.001)	(0.002)	(0.001)	(0.001)	(0.002)	(0.002)
Highest educational Degree at LM Entry (Ref. without vocational degree)						
* with vocational degree						
Cluster 1	0.054***	0.064*	0.048*	0.005	0.080#	-0.028
	(0.016)	(0.031)	(0.019)	(0.024)	(0.044)	(0.029)
Cluster 2	-0.000	0.005	-0.002	0.012#	0.021	0.011#
	(0.006)	(0.013)	(0.006)	(0.006)	(0.018)	(0.006)
Cluster 3	-0.026*	-0.025	-0.025#	-0.040*	-0.069*	-0.025
	(0.012)	(0.020)	(0.014)	(0.018)	(0.032)	(0.021)
Cluster 4	0.004	-0.002	0.006	0.033	-0.012	0.044#
	(0.005)	(0.008)	(0.005)	(0.020)	(0.024)	(0.026)
Cluster 5	-0.032**	-0.042#	-0.026*	-0.010	-0.021	-0.003
	(0.010)	(0.022)	(0.011)	(0.012)	(0.020)	(0.014)
* with higher educational degree						
Cluster 1	0.023	0.047	0.011	-0.131***	-0.197*	-0.143***
	(0.022)	(0.043)	(0.026)	(0.037)	(0.085)	(0.043)
Cluster 2	-0.006	-0.018	-0.001	0.009	-0.003	0.015
	(0.012)	(0.025)	(0.013)	(0.015)	(0.039)	(0.017)
Cluster 3	0.024	0.025	0.024	0.138***	0.234**	0.135***
	(0.016)	(0.027)	(0.019)	(0.031)	(0.080)	(0.034)

Cluster 4	0.005 (0.007)	0.008 (0.015)	0.005 (0.007)	0.007 (0.030)	-0.004 (0.034)	0.007 (0.038)
Cluster 5	-0.046*** (0.011)	-0.061* (0.024)	-0.039** (0.012)	-0.023 (0.017)	-0.031 (0.022)	-0.013 (0.020)
Advanced Further Training						
Cluster 1	-0.061*** (0.016)	-0.037 (0.035)	-0.068*** (0.018)	-0.010 (0.030)	0.354 (21.780)	-0.029 (0.037)
Cluster 2	0.088*** (0.006)	0.128*** (0.013)	0.073*** (0.007)	0.071*** (0.008)	0.127 (0.561)	0.059*** (0.009)
Cluster 3	-0.006 (0.012)	-0.053# (0.028)	0.009 (0.014)	0.041* (0.020)	0.050 (3.680)	0.065** (0.024)
Cluster 4	-0.007 (0.007)	-0.013 (0.013)	-0.005 (0.008)	-0.070* (0.029)	-0.515 (26.596)	-0.065# (0.036)
Cluster 5	-0.013# (0.007)	-0.025 (0.017)	-0.007 (0.007)	-0.032# (0.017)	-0.016 (0.577)	-0.030 (0.021)
Ever married in observation time						
Cluster 1	0.039*** (0.012)	0.047* (0.021)	0.031# (0.016)	-0.066** (0.022)	0.004 (0.030)	-0.084** (0.029)
Cluster 2	-0.023*** (0.006)	-0.036** (0.013)	-0.018** (0.007)	-0.025*** (0.006)	-0.057** (0.020)	-0.017** (0.007)
Cluster 3	0.003 (0.008)	0.009 (0.012)	0.001 (0.013)	-0.023 (0.014)	0.022 (0.019)	-0.029 (0.020)
Cluster 4	0.003 (0.004)	0.003 (0.006)	0.005 (0.007)	0.153*** (0.023)	0.032* (0.015)	0.174*** (0.031)
Cluster 5	-0.022*** (0.005)	-0.023# (0.013)	-0.020*** (0.006)	-0.039*** (0.009)	-0.002 (0.011)	-0.044*** (0.012)
Maximum Number of Children within Obs.Time						
Cluster 1	-0.004 (0.007)	0.000 (.)	-0.010 (0.008)	-0.107*** (0.011)	0.000 (.)	-0.124*** (0.013)
Cluster 2	0.006 (0.004)	0.000 (.)	0.006 (0.004)	0.000 (0.004)	0.000 (.)	-0.001 (0.004)
Cluster 3	0.003 (0.005)	0.000 (.)	0.006 (0.006)	-0.008 (0.008)	0.000 (.)	-0.001 (0.009)
Cluster 4	0.001 (0.002)	0.000 (.)	0.002 (0.003)	0.103*** (0.008)	0.000 (.)	0.107*** (0.012)
Cluster 5	-0.005 (0.004)	0.000 (.)	-0.003 (0.003)	0.013** (0.005)	0.000 (.)	0.020** (0.007)
Share of Month with Children						
Cluster 1	0.000# (0.000)	0.000 (.)	0.000 (0.000)	-0.001** (0.000)	0.000 (.)	-0.001*** (0.000)
Cluster 2	-0.000** (0.000)	0.000 (.)	-0.000* (0.000)	-0.000 (0.000)	0.000 (.)	-0.000 (0.000)
Cluster 3	-0.000 (0.000)	0.000 (.)	-0.000 (0.000)	0.001*** (0.000)	0.000 (.)	0.001*** (0.000)
Cluster 4	-0.000 (0.000)	0.000 (.)	-0.000 (0.000)	-0.000 (0.000)	0.000 (.)	-0.001# (0.000)
Cluster 5	0.000 (0.000)	0.000 (.)	0.000 (0.000)	0.001*** (0.000)	0.000 (.)	0.001*** (0.000)
N	5851	1622	4229	3717	860	2857

Note: # p≤0.1; * p ≤ 0.05; ** p ≤ 0.01; *** p ≤ 0.001; Predictions of average marginal effects for being in cluster 1-5; Standard Errors in brackets;

Data: NEPS SUF, SC6 D_8-0-0; own calculations.