Identity and marriage. A bidirectional approach based on evidence from Finland.

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Abstract

Psychological factors such as personality traits or skills have been increasingly studied with regards to family formation processes such as marital behavior in previous demographic research. Identity has received less attention as a predictor of important partnership outcomes although identity formation belongs to the crucial developmental process in adolescence. We aim to address this gap by examining the bidirectional association between identity and marriage using longitudinal survey data from Finland. We apply event-history analyses in order to study the prospective power of identity dimensions on marriage risks. Furthermore, we conduct fixed effects linear regression models for examining identity development over time based on marital status. All analyses are conducted using both the variable- and the person-oriented approach. Preliminary findings from the regression models suggest that identity uncertainty is negatively, and identity certainty making is positively associated with marriage risks over time. Results based on cluster analyses support these findings, i.e. committers are more likely to get married than explorers. Mixed findings with regards to identity development have emerged. Whereas identity certainty remains stable over time among married individuals, it decreases among singles. Identity uncertainty, however, has not shown different developments over time according to marital status.

Introduction

Psychological factors have been increasingly studied in previous demographic research. Personality traits have been shown to shape fertility (Jokela et al., 2009; Peters, 2023), marital behavior (Jokela et al., 2011; Lundberg, 2012), and dissolution processes (Boertien et al., 2017; Lundberg, 2012). Additionally, leadership skills are linked with family formation processes (Jokela & Keltikangas-Järvinen, 2009; Peters & Barclay, 2022). Another psychological concept is identity, which has increasingly gained attention in social sciences since the mid of the 20th century (Côté, 2006), when Erikson has published his work (Erikson, 1950, 1968). Nevertheless, the role of identity for demographic outcomes is less explored.

According to Erikson (1968), identity formation is a crucial developmental task for individuals in their adolescence. Teenagers form their identity by thinking about their future (e.g. career or family goals) and entering commitments (e.g. onset of romantic relationships, entering the labor market) according to their own desires, attitudes, and values. These processes are essential for the transition to adulthood that comes along with different challenges and responsibilities. In the past, identity formation was considered to start and proceed in adolescence but in contemporary societies, prolongations to higher ages (late twenties, early thirties) have regularly been observed (Côté, 2016).

Partnership formation belongs to the most crucial life events. Individuals in liberal societies may choose which type of family status they prefer, whether and when to start a romantic relationship, cohabitation, or to get married. Romantic relationships are positively linked with a number of positive life outcomes such as happiness (Kohler et al., 2005) and mental health (Braithwaite & Holt-Lunstad, 2017). As Erikson (1968) argues, intimacy can only be developed at well-advanced stages of identity formation. Consequently, identity formation is conditional for the development of serious romantic relationships (e.g. cohabitation or marriage). However, little is known about the relationship between identity and the formation of stable partnerships.

Our study addresses this gap in previous research by examining the two-way relationship between identity and marriage. We make use of the longitudinal Finnish Educational Transitions (FinEdu) Studies, which has followed young Finns over time. We approach our research question by examining both, 1) the effect that identity takes on marriage risks over time, and 2) identity development by marital status.

Theoretical Background

The concept of identity

Identity is a complex concept that consists of various different dimensions describing *sameness* and *continuity* of individuals (Erikson, 1968). These terms are closely intertwined with each other. Sameness (or coherence) relates to the self-perception in different life domains (van Doeselaar et al., 2018). i.e. if individuals feel or behave similarly in different contexts. For instance, individuals may be confident at both work and family life, which points at a high level of coherence. Continuity, however, reflects the time component of the self (van Doeselaar et al., 2018). Therefore, continuity describes to which extent individuals stay the same over time (van Doeselaar et al., 2018).

Erikson considers political, religious, or occupational facets of identity (Erikson, 1950, 1968). Subsequent researchers have built upon his work and distinguished more carefully between personal (values, future plans) and social life domains (gender, nationality) of identity (Côté, 2006; Marcia, 1993; Meeus, 2011). Therefore, one may speak of social and personal identity (Côté, 2006), which may overlap each other. Nevertheless, both form identity. As mentioned above, (personal) identity is a precondition for stable partnerships and, therefore, determines family formation processes such as marriage. One key domain of personal identity is the individual (un)certainty about future life plans (Mannerström et al., 2019), which may also include intimate relationships.

Based on Erikson's theory, the identity status model has been evolved in identity research (Marcia, 1966, 1993). According to this model, identity consists of four statuses along the two processes "exploration of alternatives" (individuals explore their options) and "commitment" (individuals commit with one option) (Marcia, 1993). Regarding partnerships, exploration may mean that individuals are dating potential partners in order to find their best fit. People may commit with a partner by cohabiting or getting married. Depending on the presence of exploration and commitment, individuals may belong to one of the following identity statuses: 1) identity diffusion (neither exploration of alternatives nor commitment); 2) foreclosure (commitment without exploration); 3) moratorium (exploration with little commitment); and 4) identity achievement (exploration and commitment) (Marcia, 1993). Several adaptations of this model were proposed. For instance, different dimensions of exploration and commitment have been explored (Luyckx, Goossens, & Soenens, 2006) in order to capture the dynamic component of identity. Exploration can be subdivided into *exploration in breadth* (exploring alternatives before commitment) and *exploration in depth* (assessing the option after commitment), and commitment into *commitment making* (commitment process or presence) and *identification with commitment* (identifying oneself with the chosen option) (Luyckx, Goossens, Soenens, et al., 2006). Luyckx and colleagues (2008) have extended this identity model further by adding a third exploration dimension. Their key argument is that exploration in breadth and depth are positively connected with openness, curiosity, or other identity

formation outcomes (e.g. self-reflection) (Luyckx et al., 2008). However, exploration is also linked to higher psychological distress and self-rumination, which is captured by the third exploration dimension "ruminative exploration" (psychological distress; uncertainty about own goals, plans, or commitments) (Luyckx et al., 2008).

Variable- vs. person-oriented approach

Identity may be operationalized by a variable- or person-oriented approach. Both approaches look at the individual from different theoretical perspectives, which also affects the methodological operationalization of identity. The variable-oriented approach considers human beings as a number of variables that can be separated from each other (Bergman & Trost, 2006). Therefore, the analytical design is typically based on linear statistical models including available identity measures as separate explanatories (Bergman & Trost, 2006). Contrary, person-oriented approaches understand individuals as a whole, or as a complex system with different facets (behaviors, attitudes, biological characteristics, etc.) (Bergman & Trost, 2006). Consequently, person-oriented approaches usually use some kind of class analyses (Bergman & Trost, 2006). The number of potential identity clusters may vary between studies (Waterman, 2015), but is typically derived from the four-cluster model (Claes et al., 2018), which is in line with the identity status model by Marcia (1993). However, Marcia's model is based on the two general dimensions (exploration, commitment), which are present or not. Therefore, only four different statuses may be obtained. Since the number of dimensions has been more specified (exploration in breadth/depth, ruminative exploration, commitment making, identification with commitment), more recent studies have found at least five different clusters (Mannerström et al., 2018, 2021) although the 4-cluster structure has also emerged (Claes et al., 2018). In our analyses, we focus on the 5-cluster solution but other solutions are shown in the appendix.

Previous research has discussed a number of options on how to combine the variable- and the person-oriented approach (Bergman & Trost, 2006). For instance, one may argue theoretically from a person-oriented perspective but run analyses according to the variable-oriented approach, or combine both types of approaches (Bergman & Trost, 2006). We aim for the latter option since an application of both approaches may provide a more complete picture of the nexus between identity and marital behavior. We argue that both approaches may be considered as complements that also address different research questions (Bergman & Trost, 2006). Using a person-oriented approach, for instance, may represent the uniqueness of individuals relatively well (Crocetti & Meeus, 2014) but cannot show potential associations that relate to specific identity dimensions such as the variable-centered approach does.

Developmental tasks

Previous research has examined several periods of identity development over life course, ranging from childhood to late adulthood, and all of them are linked with different developmental tasks (Colarusso, 1992; Havighurst, 1948). Love and work are central elements of these developmental tasks, which have played a great role in various theoretical perspectives (Erikson, 1968; Havighurst, 1948; Mayseless & Keren, 2014). Identity formation in adolescence and young adulthood has received particular attention (Erikson, 1956) since several transitions happen during these periods, e.g. finishing school, entry into labor market, parenthood, or the formation of a stable partnership (cohabitation, marriage) (Graber & Brooks-Gunn, 1996; Settersten Jr., 2012). Achieving these developmental tasks is positively linked with life satisfaction (Howard et al., 2010) and wellbeing (Schoon et al., 2012).

Completion of developmental tasks has been postponed in many high-income countries. For instance, the transition from completing education to entering the labor market has been postponed over time in Germany (Brückner & Mayer, 2005). One reason may be that young people face difficult labor market conditions such as high youth unemployment rates in Southern Europe (Eurostat, 2022a) or high graduate unemployment in the UK (MacDonald, 2011; UK Government, 2022). These socio-economic uncertainties in young ages may also be a reason for marriage and parenthood delays (Mary, 2012; Settersten Jr., 2012). In line with observed postponements of developmental tasks stands the de-standardization thesis, which claims more diversity in life trajectories, in particular in Northern and Northwestern Europe (Brückner & Mayer, 2005; Buchmann & Kriesi, 2011). However, the extent of de-standardization depends on the specific transitions (e.g. marriage, parenthood) and varies between countries (Buchmann & Kriesi, 2011).

Identity and Partnering

Regarding the impact of identity on partnering processes, only a few studies have been published to date. Beyers and Seiffge-Krenke (2010) have found that early identity development (age 15) is positively linked with partnership intimacy in young adulthood (age 25). Additionally, identity achievement – measured at age 24 – predicts higher intimacy within the partnership at age 25 (Beyers & Seiffge-Krenke, 2010). In line with this, identity in young and mid-adulthood (age 20, 31, 42, 54) is positively linked with intimacy of the same and higher ages (Sneed et al., 2012). Furthermore, identity consolidation (investment in new responsibilities and evaluating these) is positively linked with the probability to get married in young adulthood, even if this correlation appears to be rather weak (Pals, 1999). On the other hand, evidence from a sample of Dutch young adults suggests that friendship-related identity

measures (friend commitment, friend exploration, friend reconsideration) from adolescence are not linked with relationship status in emerging adulthood (21-25 years) (Branje et al., 2014). In general, however, there is stronger evidence indicating that more progressive stages of identity are positively associated with romantic relationships, which is reflected in our first hypothesis:

Hypothesis 1

More firm identity (commitment making, identification with commitment, achievement cluster) is positively linked with the transition into marriage in young adulthood.

Identity formation and stability

Previous research has demonstrated changes in identity statuses over age and time (Kroger et al., 2010). This may also be based on different challenges that emerge in different stages of the life course (Havighurst, 1948; Mayseless & Keren, 2014) such as the transition from education to work entry in young/mid-adulthood vs. the transition into retirement in late adulthood. This leads to some fluctuation in identity processes, which may also explain partially why research on identity and family formation is scarce.

Identity formation has been considered to start when tentative identifications from childhood appear useless (Erikson, 1968). This suggests that identity formation begins in adolescence and young adulthood, and previous research has examined identity status changes in these young ages (Kroger et al., 2010). According to Erikson, identity formation is a slow development of ego (Erikson, 1968) that may even include throwbacks, which lead to several cycles of identity formation (Luyckx et al., 2014). Previous experiences and identity levels, in turn, may determine identity formation processes in later ages as well (Côté, 2016).

According to the identity status model by Marcia (1993), identity formation typically starts with diffusion or foreclosure and develops towards moratorium or achievement (Kroger et al., 2010), which may be considered as progressive development. However, certain processes or life events may change this identity configuration and a new identity formation process may start. For instance, individuals may explore academic disciplines (in breadth) before specific choices can be made (commitment) and evaluated (exploration in depth) (Luyckx et al., 2014). If the chosen academic discipline is not satisfying, the entire process may start again in order to find a more appropriate field (Luyckx et al., 2014). This may be easily translated to partnering processes as well: romantic relationships may turn to cohabitation/marriage, remain in this status, or get dissolved and a new process may start.

Several studies, based on both longitudinal and cross-sectional data, have examined stability of personal identity over adolescence and young adulthood (Kroger et al., 2010). Most often, progressive developments (towards achievement) have emerged (Meeus, 2011). However, a non-neglectable proportion of individuals does not change in personal identity over time in adolescence (Kroger et al., 2010; Meeus, 2011). For instance, a meta-analysis has shown that, among longitudinal studies, 36% of the adolescents experience progressive trends in identity over time, whereas 49% show no changes, and 15% regressive trends (Kroger et al., 2010). Furthermore, progressive developments have been found to be rather slow (Meeus, 2011). However, identity trajectories vary across cultural contexts (Fadjukoff & Kroger, 2016). For instance, progressive identity developments have been found in mid-adulthood in Finland (Fadjukoff et al., 2016) whereas relatively stable patterns have been found in Japan (Shirai et al., 2016), or among romantic relationships in Sweden (Wängqvist et al., 2016).

Previous research using longitudinal data from Finland has examined identity formation and development among young adults (Mannerström et al., 2019) and within (mid-)adulthood (Fadjukoff et al., 2016). Since we are examining identity in young adulthood in our study, the work by Mannerström and colleagues (2019) is of particular interest for us. Their study uses a variable-centered approach, i.e. identity dimensions are treated separately. According to the authors, Finns in young adulthood show decreases in all five identity processes (ruminative exploration, exploration in breadth/depth, commitment making, identification with commitment), in general (Mannerström et al., 2019). Evidence from Finns in mid-adulthood however, indicates identity developments towards achievement and increasing commitment over time (Fadjukoff et al., 2016). Given that we use the same data as Mannerström and colleagues (Finnish Educational Transitions Studies), we expect to find the same patterns but also hypothesize changes in the most recent wave (2020) based on the work by Fadjukoff and colleagues (2016).

Marital status is expected to moderate identity development since marriage belongs to the essential developmental tasks, as suggested above. Marriage is a partnership-specific commitment, and, therefore, commitment scores are expected to be higher among married individuals compared to singles.

Hypothesis 2

Identity scores fluctuate in young adulthood, i.e. we expect decreases in commitment and exploration among young adults, but increasing scores in mid-adulthood. In general, however, married individuals are expected to show lower exploration and higher commitment scores than singles.

Although Mannerström and colleagues (2019) have already examined identity development according to the completion of developmental tasks (such as marital status), we extend this existing research by a) one additional observation point four years later (which may be much time in young adulthood), and b) addressing not only the variable-centered approach but also the person-oriented approach using identity clusters. Potential gender differences shall not be extensively examined in our study due to two reasons. First, previous studies have not found large differences between men and women in identity development (Beyers & Seiffge-Krenke, 2010; Fadjukoff et al., 2010; Kroger, 1997); and second, the data that we use have not shown gender differences in identity development in previous research either (Mannerström et al., 2019).

Context in Finland

Compared to other high-income countries, Finland shows similar patterns regarding the timing of several developmental tasks in young adulthood. For instance, the first-time graduation age in upper secondary education in Finland is very similar to other OECD countries (OECD, 2022). Furthermore, the average age of first-time entrants into tertiary education in Finland (23 years) is only slightly above OECD average (22 years) (OECD, 2022). Similar conclusions can be drawn with regards to the first-time graduation age in tertiary education, which is approximately 27 years in Finland (OECD, 2017). However, many students in Finland work during their studies so that the transition from education to work entry is blurred (Mary, 2012).

Young adults from contemporary societies may desire an economically stable situation before family formation and, therefore, postpone fertility and marriage. As one indicator, for instance, the total fertility rate of Finland dropped in the last decade from 1.87 (2010) to an all-time low of 1.35 in 2019 (Human Fertility Database (HFD), 2022; Official Statistics Finland, 2023b), and age at first childbirth has continuously increased for both genders (Official Statistics Finland, 2021). In line with fertility postponements, average age at first marriage has increased in the last decades in Finland (Official Statistics Finland, 2018). The average age at first marriage was 32 years for women and 34 years for men in 2019, which was slightly above OECD average (OECD Family Database, 2021).

On the other hand, young Finns distinguish from their international peers with respect to the timing of other developmental tasks. For instance, Finns leave parental home at an average age of 21.2 years, which is more than five years below the EU average (Eurostat, 2022b). In their 20s, Finns live to a higher proportion in cohabitation (31%) (Eurostat, 2016), compared to the average within the OECD (OECD Family Database, 2016). Furthermore, Finland has the highest average graduation age of students from post-secondary non-tertiary programs

(42 years) among all OECD countries (average: 31 years) (OECD, 2022). Compared to other Nordic countries such as Sweden, the population of Finland is relatively homogeneous (Fadjukoff & Kroger, 2016). For instance, the proportion of foreign-borns in Finland is comparatively low among OECD countries (OECD, 2023). Only approximately 7% of the registered individuals in Finland were born in a foreign country (Official Statistics Finland, 2023a).

Data and Measures

Longitudinal data stem from the Finnish Educational Transitions (FinEdu) Studies and have been collected between 2004-2020. Among others, key topics of this survey are personal aims, beliefs, education, and career. Two samples were followed over time starting in the lower or upper secondary school in Kuopio (Eastern Finland), Espoo or Vantaa (Helsinki region). Members from sample 1 (707 participants at wave 1) belong to the younger cohort (born around 1988) and have been interviewed in nine waves. New classmates were included in the sample when students transitioned to secondary education. Respondents from sample two (614 participants at wave 1) were born around 1986 and interviewed in eight waves. Students were interviewed via paper questionnaires, telephone interviews, or online questionnaires (after respondents completed school). In the most recent wave from 2020/21, 456 (cohort 1988) and 398 (cohort 1986) individuals participated.

For examining the bidirectional association between identity and marriage, we address two different research questions – 1) identity effect on marriage risks over time, and 2) identity development according to marital status. Therefore, our analyses are based on two different samples. For research question 1), we restrict the sample to all individuals who have never been married by the first time of identity collection (2011). This sample consists of 866 individuals and has been followed until a) the most recent wave in 2020, b) the event happened (marriage), or c) dropout of the study.

Regarding research question 2), no restrictions are required and we receive a sample of 947 individuals in 2011. However, we also control for age as additional covariate in these models. Therefore, the sample size reduces to 845 respondents. Samples from research question 1) and 2) are relatively similar in their decompositions (except marital status). Thus, we present information on sample 1 in this manuscript and show characteristics of sample 2 in the appendix.

Identity measure and marital status

Personal identity has been measured in waves 2011, 2016 and 2020 by eleven items of the Dimensions of Identity Development Scale (DIDS). These items represent five different identity dimensions: 1) *ruminative exploration* (e.g. 'I worry about what I want to do with my life'), 2) *exploration in breadth* (e.g. 'I think about different things I might do in the future'), 3) *exploration in depth* (e.g. 'I think about whether my future plans match with what I really want'), 4) *commitment making* (e.g. 'I know which direction I am going to follow in my life'), and 5) *identification with commitment* (e.g. 'My future plans give me self-confidence'). We calculated the standardized mean values for each identity dimension to make estimates of different development dimensions comparable. Cronbach's Alpha values were calculated in order to examine internal consistency, and values were high at each time point: 0.83 (ruminative exploration), 0.76 (exploration in breadth), 0.88 (exploration in depth), 0.88 (commitment making), and 0.89 (identification with commitment) in wave 2011. Corresponding values for 2016 were 0.80, 0.77, 0.76, 0.89, 0.86 and for 2020: 0.83, 0.82, 0.76, 0.89, 0.89. The measure of exploration in depth has to be considered with caution though since previous research points at relatively low internal consistency for this dimension (Mannerström et al., 2017).

Analyses based on the variable-centered approach were conducted using the standardized measures as predictors separately. With regards to the person-oriented approach, we have applied K-means clustering procedures and latent profile analyses in order to obtain different identity clusters based on the standardized identity variables.

Marital status has been received by a categorical variable about the life situation of the participants (1 "Single", 2 "Cohabitation", 3 "Married", 4 "Divorced"). Over observation time, different versions of the life situation were applied in the questionnaires (e.g. whether individuals were dating or in a common-law marriage). However, a new indicator has been created according to the categories above for unification purposes. For the first part of our research question (marriage as outcome), we coded the event of interest binary (0 "Never married", 1 "Married"). With regards to the second part of our research question (identity development), we used the more specific information about the life situation of the respondent, i.e. the measure with the four different statuses "Single", "Cohabitation", "Married", "Divorced".

Covariates

Our analyses include a set of covariates. First, *sex* provides information about the gender of the respondent (1 "Female", 2 "Male"). Additionally, we control for the *cohort* (0 "1986", 1 "1988") since participants are at slightly different stages of identity development, depending on

their age. Parental occupation is represented in the covariate *collar_parents* (0 "Both Parents White Collar", 1 "Mother White Collar, Father Blue Collar", 2 "Mother Blue Collar, Father White Collar", 3 "Both Parents Blue Collar", 4 "Unknown"). Further analyses using indicators for mothers and fathers separately have revealed similar patterns so that this information has been combined to one variable (estimates for mothers and fathers separately are available upon reasonable request). Additionally, we control for the current educational level (1 "Secondary" 2 "Post-Secondary/Tertiary" 3 "Unknown"), income groups (in quintiles), and the life situation at baseline categorized as shown above (1 "Single", 2 "Cohabitation", 3 "Married", 4 "Divorced"). Parenthood is included as dummy variable (0 "No Children" 1 "Children").

Methods

In order to address our research questions, we apply a mixture of statistical methods. First, piecewise-constant hazard models were run to examine the impact of personal identity on marriage risks over time. We have chosen this approach since our data does not provide detailed information on the timing of marriage (only marital status in each wave). Therefore, we assume constant hazard risks of getting married within specific time intervals, i.e. between the observations. The analyses start in 2011, which is the first wave in which identity has been collected. All participants who were never married by then belong to the risk population. Individuals are followed until they experience the event, drop out of the study, or the end of the study in 2020 – whichever comes first. We run a number of piecewise-constant hazard models including different numbers of covariates. In a first model, we explore the association between each dimension of the exploration and commitment processes and marriage, without any other control variable:

$$h_{ij}(t|x_i) = h_{0j}(t)exp\{\beta_0 + \beta_1 id\_dimension_{i,t}\} \tag{1}$$

Furthermore, we include all covariates except the other identity dimensions:

$$h_{ij}(t|x_i) = h_{0j}(t)exp\{\beta_0 + \beta_1 id\_dimension_{i,t} + \beta_2 gender_i + \beta_3 cohort_i + \beta_4 education_{i,t} +$$
$$\beta_5 income\_group_{i,t} + \beta_6 lifesit\_baseline_i + \beta_7 collar\_parents_i + \beta_8 parent_i\} \tag{2}$$

Eventually, we include all covariates and the other identity dimensions:

$$h_{ij}(t|x_i) = h_{0j}(t)exp\{\beta_0 + \beta_1 id\_dimension_{i,t} + \beta_2 gender_i + \beta_3 cohort_i + \beta_4 education_{i,t} +$$
$$\beta_5 income\_group_{i,t} + \beta_6 lifesit\_baseline_i + \beta_7 collar\_parents_i + +\beta_8 parent_{i,t} +$$
$$\beta_9 id\_dimension2_{i,t} + \beta_{10} id\_dimension3_{i,t} + \beta_{11} id\_dimension4_{i,t} + \beta_{12} id\_dimension5_{i,t}\}$$
$$\tag{3}$$

Equations (1), (2), and (3) represent piecewise-constant hazard models with the hazard h on each time point t that depends on the vector of explanatories x of each individual i in time interval j. The baseline hazard h_0 is time-varying and depends on the respective interval j, and is multiplied by the exponentiated sum of the model intercept β_0 and the included explanatory variables, which are also multiplied by the corresponding coefficient β. In equation (1), we only control for the respective identity dimension. We add further covariates in equation (2): *gender* represents the gender, and *cohort* the birth cohort of the respondent – both covariates are constant over time. The variable *education* relates to the current educational level, and *income_group* to the current income level (measured as quintiles) of the participant. These two indicators are allowed to vary over time (index t). Furthermore, we control for the civil status at baseline (*lifesit_base*), the most recent information on parental occupation (*collar_parents*), and parenthood (*parent*). Model (3) includes all explanatories from equation (2) and, additionally, the other identity dimensions in order to check potential changes when controlling for all identity measures altogether. With regards to the person-oriented approach, we use clusters received from K-means cluster analyses (solutions with two to twelve clusters) so that a categorical explanatory (two to twelve categories) is received. This new variable is included in the model of equation (3) instead of the five identity processes. The underlying time scale of all event-history models is calendar time. Analyses using age as time scale have also been run. Estimates are very similar and are available upon reasonable request.

Second, we are interested in identity developments over time based on marital status. For this purpose, we run generalized least squares fixed effects models on standardized mean values of identity dimensions. Fixed effects approaches allow us to control for unobserved and time-constant heterogeneity such as parental background information or childhood experiences. We chose fixed effects models over random effects approaches since the Hausman test suggests a better fit using fixed effects. Random effects models were also run and shown in the appendix though. Models on identity development control for the covariates that are presented above and may vary over time (besides all time-constant unobserved heterogeneity). The model can formally be written as:

$$y_i = \beta_0 + \beta_1 education_{i,t} + \beta_2 income\_group_{i,t} + \beta_3 lifesit_{i,t} + \beta_4 parent_{i,t} + \alpha_i \qquad (4)$$

In equation (4), the outcome y for each individual i depicts the respective identity dimension, which depends on the life situation, educational level, income group, and parental status of the respondents, which are allowed to vary over time (index t). The model assumes a linear association between independent variables and outputs with estimated intercept β_0 and coefficients β_1- β_7. The unobserved and time-constant factors are included in α_i.

Regarding the person-oriented approach, we conducted latent profile analyses based on standardized mean values of all five identity dimensions. Therefore, the model can be written as:

$$\sigma_i^2 = \sum_{k=1}^{K} \pi_k \left(\mu_{i,k} - \mu_i \right)^2 + \sum_{k=1}^{K} \pi_k \sigma_{i,k}^2 \tag{5}$$

Equation (5) mainly addresses the mean values (μ) and variances σ^2 for each individual i and each latent profile k. The proportion of all individuals in the profile is represented by π_k and K stands for the total number of profiles, which may vary between two and eight in our case. Additionally, we include age in the analyses in order to receive identity developments over age.

Results

Descriptive Statistics

Table 1 below shows univariate statistics of all included variables in the event-history analyses in the observation years between 2011 and 2020 (except identity measures). The sample started with 866 participants in 2011, from which 449 have been followed until 2020 – the others left the study for different reasons (e.g. no-participation or experiencing the event). Approximately 60% of the sample were female, and 54.16% have come from the younger birth cohort (1988). Education of the sample has been relatively high (73.72% received post-secondary or even tertiary education by year 2020), which is due to the fact that secondary school students have been followed over time since the first observation in 2004. In line with this, most recent information regarding parental occupation (when participants were still in school age) suggests that parents belonged most often to white collar workers (43.53% in wave 2011). The majority of the sample did not live with a partner at the first wave in 2011 (56.81%). Since the information on life situation is used for the event of interest (marriage), we included life situation at baseline (either single or cohabited) as time-constant covariate in our models. Thus, the proportion of singles at baseline has been dominant throughout observation time (around 60% at each wave) although the civil status has actually changed towards cohabitation and marriage as can be seen in Figure A1 in the appendix. In early stages of the study, the vast majority has not entered parenthood yet (95.61% in 2011), while 71.71% of the respondents have received at least one child by 2020. Additionally, income levels have increased over time.

Table 1 about here

Figure 1 below depicts the trajectories of the mean scores from all five identity process dimensions among individuals who have never been married by 2011. Whereas ruminative exploration and exploration in depth remain stable at comparatively low levels (approximately 2.6 and 2.8, respectively), decreases in the other dimensions can be detected. Mean scores of exploration in breadth decline from 3.89 (2011) to 3.69 (2016), and do not change much anymore in 2020 (3.71). Decreases in the commitment dimensions appear to be more continuous throughout observation time. Average commitment making scores decline from 3.68 in 2011 to 3.41 in 2020, and identification with commitment shows similar trends (3.51 in 2011; 3.24 in 2020). Corresponding values are shown in Table A1 in the appendix in more details. In the wave of 2013, personal identity has not been collected so that scores are assumed to remain constant throughout wave 2013. Descriptive trajectories using the sample 2) (identity development, including married and divorced individuals in 2011) shows similar patterns (see Fig. A2).

Figure 1 about here

Table 2 below contains descriptive information of marriage risks by identity processes (here categorized according to average scores in 1 '1- below 2', '2- below 3', '3- below 4', and '4 and higher'). In general, Table 2 shows that marriage risks decrease with higher exploration and lower commitment. Both ruminative exploration and exploration in depth show similar patterns: marriage risks decrease with higher scores but the highest groups (3 and 4) do not differ much anymore in terms of their marriage risks. Exploration in breadth appears to follow a different trend: marriage risks increase from category 1 to 2 but then remain relatively stable across higher scores. The relatively low marriage risk in group 1 may also be based on the very low number of events over time in that group (2). Commitment processes, however, are positively associated with marriage risks. Both commitment making and identification with commitment show increasing risks with higher scores.

Table 2 about here

Referring to the person-oriented approach in our analyses, we run factor analyses with different cluster solutions (2-8 clusters). For simplification purposes, we only focus on one solution (five clusters), but other cluster solutions also seem reasonable and are shown in the appendix (Fig. A3-A8).

Figure 2 depicts mean values of all standardized identity dimensions in five different clusters, which are named as following: diffusion (661 observations; 25.15% of all observations), achievement (697; 26.52%), moratorium (290; 11.04%), late moratorium (440; 16.74%), and searching moratorium (540; 20.55%). Diffusion is characterized by low exploration and commitment, which is represented by lower-than-average scores on all identity dimensions in Fig. 2. Individuals from the cluster 'achievement' report relatively low scores on ruminative exploration and exploration in depth but high commitment (commitment making and identification with commitment). This cluster could also be named 'foreclosure', according to the theory. However, individuals who show high commitment and low exploration may have rather achieved their status in young adulthood. Participants belonging to the cluster 'moratorium' show reversed patterns (high on exploration, low on commitment), and similar patterns are received for "late moratorium" (higher commitment compared to "moratorium"). Searching moratorium is characterized by higher scores on all dimensions (compared to the averages). This 5-cluster solution is used as predictor for marriage in piecewise-constant hazard models, as shown in the main results on the person-oriented approach.

Figure 2 about here

Main results

Marriage risks (variable-oriented approach)

Figure 3 below shows hazard ratios (HR) as point estimates and corresponding 95%-confidence intervals from piecewise-constant hazard models with marriage as event of interest. Estimates come from models (1), (2), and (3), so that a group of three estimates of the same color in Fig. 3 belongs to the same identity dimension. Blue lines represent estimates of ruminative exploration, red lines stand for exploration in breadth, and green lines for exploration in depth. Commitment processes are shown by yellow (commitment making) and black lines (identification with commitment). Dashed lines belong to estimates from model (1), i.e. with the respective identity dimension as only explanatory for marriage risks. Solid lines represent findings from model (2) (identity dimension + further covariates, but without other

identity dimensions). Long-dashed lines stand for model (3), i.e. all considered variables are included.

Findings suggest that ruminative exploration is negatively associated with marriage risks over time. The HR from model (1) is 0.74, which means that one additional standard deviation above the average score of ruminative exploration is linked with 0.74 times the risk to get married. This association does not change drastically when further covariates (gender, birth cohort etc.) are added to the model (equation (2), HR: 0.77). Including other identity dimensions can only partly explain this relationship since the hazard ratio for ruminative exploration in model (3) is still 0.85 although the statistical uncertainty is getting larger.

Exploration in Breadth does not show meaningful associations with marriage risks over time. The rather weak positive correlation (HR: 1.07) disappears when further covariates from model (2) are included (HR: 1.03). Taking also the other identity dimensions into account (model (3)) reduces the HR further to 0.92, but statistical uncertainty is large for all point estimates. Exploration in depth is negatively related to marriage since HR are below 1 (0.84 in model (1), and 0.85 in model (2)). This association vanishes though once other identity dimensions are included (equation (3), HR: 1.02).

Commitment processes are positively linked with marriage risks over time. With each additional standard deviation of commitment making, individuals show 1.34 times higher risks to get married (equation (1)). This magnitude declines to 1.29 if further explanatories are included (model (2)) but it remains clearly positive. Including the other identity dimensions (model (3)) results in a weaker but still positive association (HR: 1.19). Identification with commitment shows similar patterns, just on a slightly lower level. However, in model (3), no association can be found.

Figure 3 about here

Marriage risks (person-oriented approach)

Figure 4 below depicts point estimates and 95%-confidence intervals of hazard ratios (HR) on marriage risks over time relating to the 5-cluster solution (person-oriented approach). Estimates from 2- to 8-cluster approaches are shown in the appendix (Fig. A9-A14). The reference group is the cluster 'moratorium' (high on exploration, low on commitment) in all models. This group was chosen as reference since it is part of all cluster solutions (besides 'achievement' – low on exploration, high on commitment).

Figure 4 demonstrates that all clusters show higher marriage risks than the reference category (moratorium), including the 'diffusion'-cluster (low exploration, low commitment). Individuals from the clusters 'diffusion' and 'achievement' show almost two times larger marriage risks, and the HR of the cluster 'searching moratorium' is still 1.64 but statistical uncertainty is large. Marriage risks between "moratorium" and "late moratorium" are comparatively similar (HR: ???). Similar patterns can be detected for the other cluster solutions (Fig. A9-A14).

Figure 4 about here

Identity Development (variable-oriented approach)

Identity development over time by marital status based on the variable-centered approach does not reveal distinct trends for the exploration dimensions. Findings suggest only small variation over time, e.g. slight increases between 2011 and 2016 and slightly decreasing estimates afterwards (ruminative exploration and exploration in depth), or opposite trends (exploration breadth). Estimates are shown in the appendix (Fig. A15-A17). Contrary, commitment process dimensions (commitment making, identification with commitment) show more distinct patterns over time and by marital status. Both dimensions decrease in scores between 2011 and 2016, and remain relatively stable by 2020. Predictive margins of singles and married individuals are very similar in 2011 and 2016. However, in the most recent wave (2020), differences appear. Predictive margins of singles decrease whereas estimates from married respondents remain stable. Developments are shown in Fig. 5 (commitment making) below and Fig. A18 (identification with commitment) in the appendix.

Figure 5 about here

Identity Development (person-oriented approach)

With regards to identity development based on the person-oriented approach, we applied latent profile analyses using two to five different classes. Higher numbers of profiles were tested but led to computational restrictions. According to the Akaike information criterion (AIC) and Bayesian information criterion (BIC), no clear suggestion can be made with regards to the number of profiles. We stick with five identity profiles, in line with previous research. Latent profiles were created over all observations in the entire study period, but individuals were

allowed to switch profiles over time. Figure A19 visualizes predicted averages of all identity dimensions in each profile (diffusion, early foreclosure, foreclosure, moratorium, late moratorium). Profiles are similar to patterns that emerged from the factor analyses as shown in Fig. 2 above. Distributions of identity dimensions within the 3- and 4-cluster solution is shown in Fig. A20 and Fig. A21 in the appendix.

Figure 6 below shows the predicted probabilities to belong to the five latent profiles over age in young adulthood. The predicted probability for the latent class 'diffusion' is approximately 0.10 in youngest ages (22 years) and increases steadily to 0.22 at age 35. The largest group across the entire considered age range is 'early foreclosure'. The corresponding proportion is 0.42 at age 22 but declines to 0.31 at age 35. The profile 'foreclosure' shows a similar trend as 'diffusion' but the increase is less steep (0.15 at age 22 to 0.20 at age 35). Similarly, predicted probabilities to belong to 'moratorium' increase from 0.09 (age 22) to 0.14 (age 35). Predicted probabilities for 'late moratorium' decline over age from 0.26 (age 22) to 0.11 (age 35). Trajectories using three and four profiles can be seen in Fig. A22 and Fig. A23 in the appendix.

Figure 6 about here

Additional Checks

We have conducted further analyses on the association between identity and stable relationships. First, we explored potential impacts that identity may take on cohabitation risks using the variable- (Fig. A24) and the person-oriented approach (Fig. A25). According to the variable-centered approach, the association between identity and cohabitation risks appears to be similar to the results on marriage. Regarding the person-oriented approach, cohabitation analyses reveal smaller effects with larger uncertainty. Only diffusion shows a negative association with cohabitation risks, which is contrary to our previous analyses on marriage. Second, analyses on identity development have also been run using random effects although these models were rejected by the Hausman test. Nevertheless, we show estimates in the appendix (Fig. A26-A30). Patterns support our findings from fixed effects approaches.

Furthermore, we have examined potential gender differences. However, no meaningful difference could have been detected in analyses on marriage risks using the variable-oriented approach (Fig. A31-A35) or the person-oriented approach (Fig. A36-A39). Additionally, no gender-specific differences in identity development using the variable-centered approach could have been found (Fig. A40-A44, based on random effects).

Discussion

Conclusion

Our study has examined the bidirectional association between identity and marriage in young adulthood using both a variable- and a person-oriented approach based on longitudinal Finnish survey data. For these purposes, we applied a set of different statistical models such as piecewise-constant hazard models, generalized least squares fixed effects, cluster analyses, and latent class analyses.

Our findings are partly in line with previous research and our developed hypotheses. Although the association between identity and marriage has been overlooked so far, a few studies on identity and partnership outcomes point towards a positive correlation between firm identity (high on commitment, achievement) and relationship outcomes (Beyers & Seiffge-Krenke, 2010). Therefore, we expected these more advanced stages of identity to be linked with higher marriage risks in young adulthood (hypothesis 1). Our expectations have been met by the analyses. Exploration dimensions are negatively, and commitment processes positively, associated with marriage in younger ages. This finding is supported by analyses using five identity clusters. Individuals belonging to the 'moratorium'-cluster (high exploration, low commitment) show lowest marriage risks, and groups with higher commitment scores (achievement) are linked with higher marriage risks. One exception of this pattern is the cluster 'diffusion' (low on exploration, low on commitment), which is also associated with higher marriage risks, compared to the cluster 'moratorium'. This may be based on the distribution of identity dimension scores across clusters, as shown in Fig. 2. 'Diffusion' is characterized by higher commitment and lower ruminative exploration scores compared to the cluster 'moratorium'. This may indicate that individuals in 'diffusion' are not as committed to life plans (which may include marriage) but they do not tend to worry about this uncertainty as much as respondents from 'moratorium'. Furthermore, uncertainty and anxiety may be unbeneficial traits for finding a partner, which may partly explain differences in marriage risks between the clusters 'diffusion' and 'moratorium'.

Additionally, identity may change over time (Kroger et al., 2010). Therefore, we addressed identity development by marital status in the second part of our research question. We expected decreasing trends over all measured identity dimensions based on previous research using the same data (Mannerström et al., 2019). However, previous studies have also suggested developments towards more firm stages, i.e. decreasing exploration, increasing commitment, and towards the status 'achievement' (Fadjukoff et al., 2016). Therefore, a

reversal of from Mannerström and colleagues (2019) observed trends may have also been possible (hypothesis 2). Our findings suggest increases in ruminative exploration and exploration in depth between the first two waves (2011-2016), which changed to minor decreases by 2020. Furthermore, exploration in breadth, commitment making, and identification with commitment show reversed patterns (decreases by 2016, slight increases by 2020). Declining commitment scores between 2011 and 2016 may result from postponements in several developmental tasks in young adulthood (parenthood, marriage, completion of education) as discussed in the section on the Finnish context. Young Finns may explore several options in various life facets until their early 30s before they commit to a new form of living (as parents, spouses etc.). Furthermore, the meaning of life plans may change over age in young adulthood, i.e. in adolescence/young adulthood, individuals may think of educational paths whereas some years later they may focus on job opportunities or family formation processes. Considering this background, it may not be surprising to observe decreasing commitment over time. In general, however, statistical uncertainty is large so that we do not observe strong evidence for a turnaround of identity dimensions in the Finnish sample. Further research is required to answer this question.

We have found that marital status is partly linked with trends in identity scores. No differences in identity trajectories by marital status were found for the first two waves (2011, 2016), which is in line with previous research (Mannerström et al., 2019). However, married individuals score higher on commitment dimensions in the most recent wave (2020) than singles do. This suggests that marital status may not affect identity dimensions in young adulthood (age 20-30) but it may shape identity dimensions in mid-adulthood, i.e. when individuals are in their 30s. Marriage may be considered as important developmental task in life, and reaching this status may help individuals to make further life plans and commit to these. During our study period, age at first marriage increased steadily to 32.1 (women), and 34.2 years of age (men) in 2019 (Official Statistics Finland, 2019). Therefore, singles who have not been married by their early 30s, may become more confused about their identity and question their own life plans, which may result in lower commitment scores.

Latent profile analyses support the finding of volatile identity dimensions. Whereas probabilities regarding 'early foreclosure' and 'searching moratorium' decrease with age, probabilities of diffusion, achievement and moratorium increase in young adulthood.

Our findings line up with an increasing number of studies on the association between psychological factors and family formation processes. Previous research has shown that personality is linked with childbearing (Jokela et al., 2011; Peters, 2023) and marital behavior (Jokela et al., 2011; Lundberg, 2012). Identity, as another key psychological concept, has not been explored extensively in its impact on demographic outcomes. We addressed this gap,

and aimed to contribute to a better understanding of marital behavior in high-income countries. Furthermore, we have shown that commitment processes decrease in a Finnish sample of young adults over a short period of time before the decrease has been stopped and even minor increases may have been observed. This may be one explanation for postponements in marriages in Finland. However, identity is a comparatively volatile concept and its development is a slow and long-term process (Erikson, 1968). Furthermore, individuals may feel differently each day. Recent research has shown that daily commitment and exploration levels generally predict identity development in adolescence and young adulthood though (Becht et al., 2021). As mentioned, identity may develop progressively, regressively, or remain relatively stable over time in young adulthood. This has also been supported by analyses on a Dutch Adolescence in the transition from secondary to tertiary education (Christiaens et al., 2021), and we have also found diverse trends in our analyses.

Strengths and limitations

Our study reveals some limitations. First, our sample consists of former secondary school students, which is a selective group. Therefore, we can not draw any conclusions for lower-educated population groups. Whether those individuals would show similar or different associations between identity and marriage, remains speculative. Previous research has suggested that education is positively correlated with identity measures (Fadjukoff et al., 2010). Therefore, one may speculate that lower-educated individuals report higher exploration and lower commitment scores but trends over time may be hard to predict. Additional analyses on our sample have revealed that estimates do not differ much across educational groups (secondary vs. post-secondary) (Fig. A45-A58). However, statistical uncertainty is large, which is also true for other stratified analyses, e.g. by parental background.

Furthermore, we cannot explore the timing of marriage due to data restrictions. Civil status has been available each wave but year and month of a potential marriage are unknown. Another conceptional weakness relates to identity itself. Identity combines many different facets (personality, skills, attitudes etc.), and it appears challenging to find a good measure that represents this complicated concept. Self-reported identity (or future life plans), as used in our study, have the disadvantage that we cannot go deeper into the understanding of 'future life plans' for the respondents. Therefore, it remains unclear what participants exactly considered as 'future life plans' and how much value they put on common life events such as marriage, childbearing, or career. However, these are challenges that all identity studies based on self-reports face.

On the other hand, our analyses contain some strengths. We examine the bidirectional association between identity and marriage using both a variable- and a person-oriented approach. To the best of our knowledge, this is the first of its kind. Another great advantage of the FinEdu data is that we can follow individuals over time from early adulthood (age 22-24) throughout young adulthood (until age 32-34). This allows us to observe important changes such as income development. As mentioned above, the concept of identity captures a large number of different facets such as political, educational, occupational, or social identity. We look at personal identity, which can be considered as key element of identity research (e.g. Erikson, 1956, 1968). We furthermore argue that future life plans may represent the broad concept of identity relatively well since it covers all potential life facets by definition.

Nevertheless, more research on the association between identity and family formation processes is needed. The role of identity for relationship outcomes is underexplored and deserves more attention in demographic research. For these purposes, more (longitudinal) data is needed.

Figure 1: Development of identity dimensions over observation time (2011-2020)
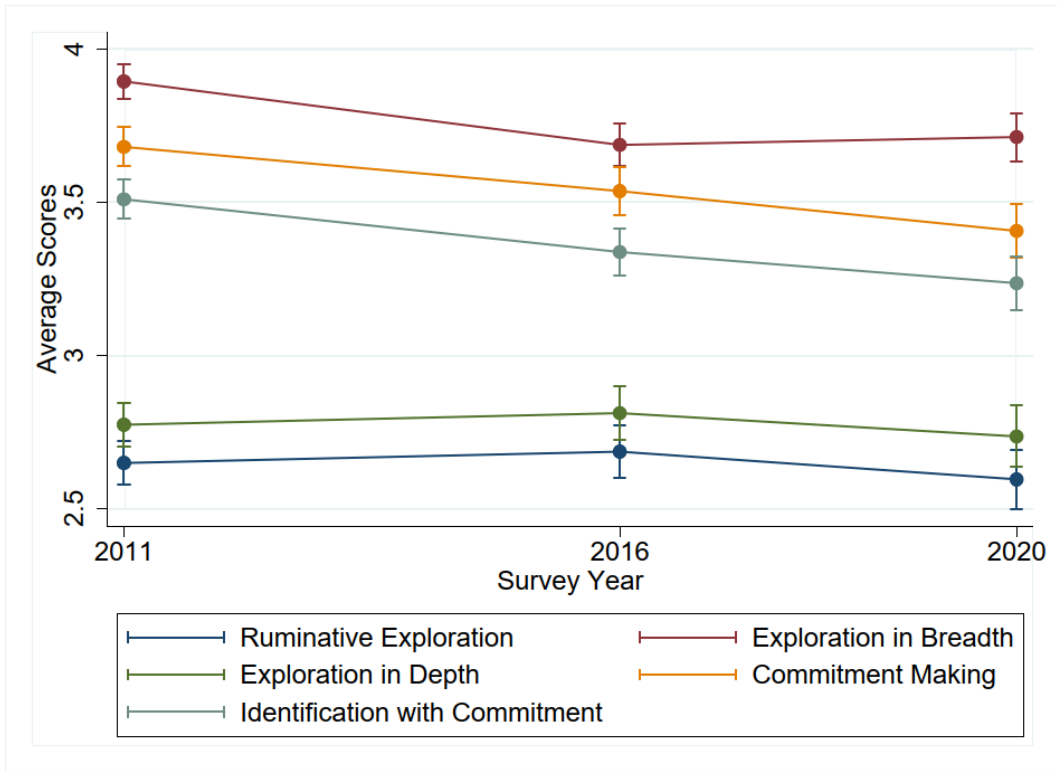
Source: Finnish Educational Transitions (FinEdu) Studies, own calculations

Figure 2: Identity dimension means (5-cluster-solution)
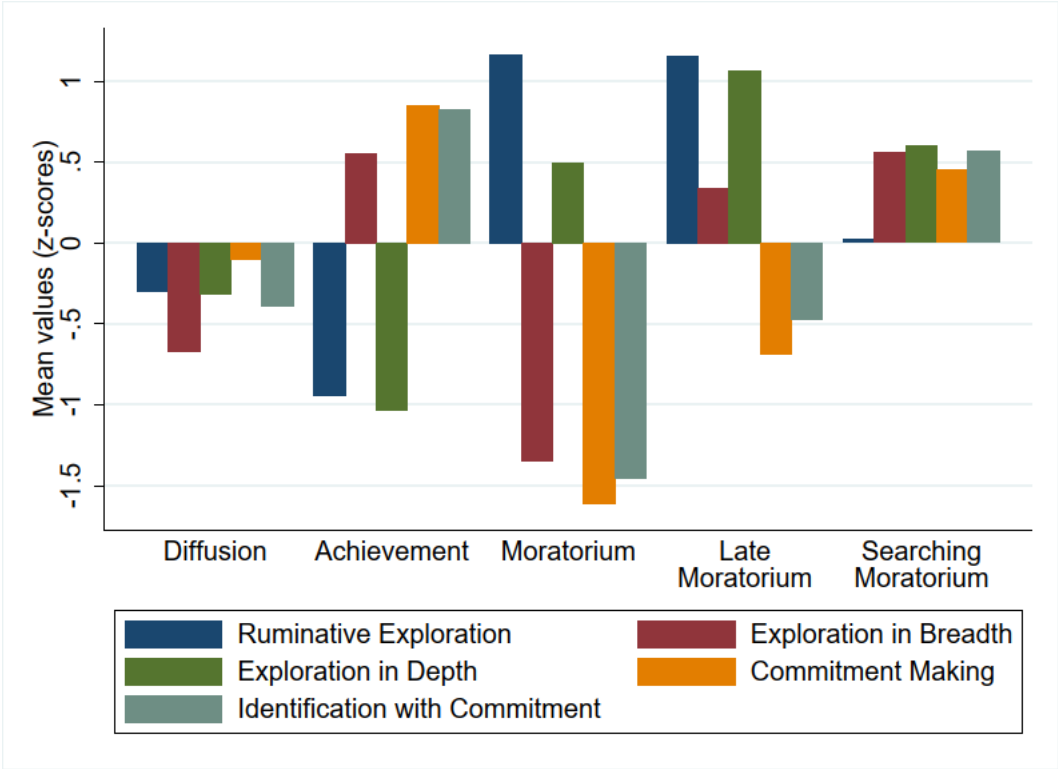
Figure 3: Hazard ratios from piecewise-constant hazard models of identity dimensions on marriage risks over time
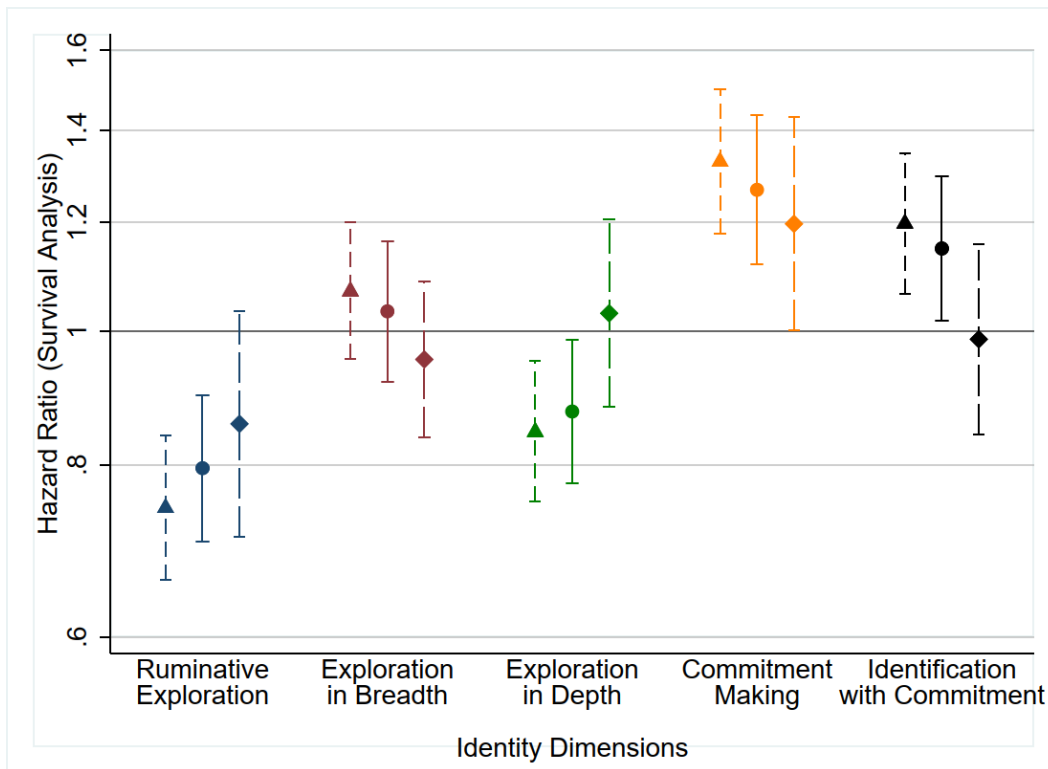
Note: Estimates from different models are shown as follows: dashed lines – identity dimension as only explanatory; solid lines – identity dimension and control variables (gender, cohort, education, income, life situation, parental background, parenthood); long-dashed lines – identity dimension, control variables and other identity dimensions

Figure 4: Hazard ratios from piecewise-constant hazard models of identity clusters on marriage risks over time (ref.: moratorium, 5-cluster-solution)
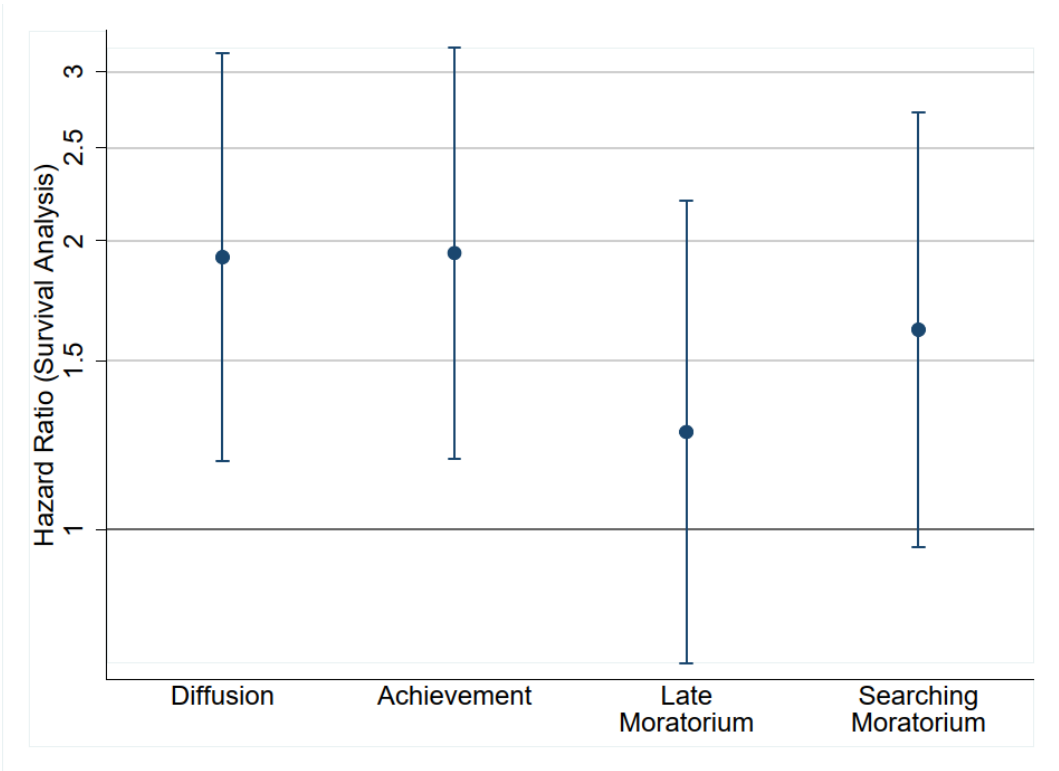
Note: Estimates controlled for gender, cohort, education, income, life situation, parental background, parenthood

Figure 5: Estimates from generalized least squares fixed effects models on commitment making over observation time (2011-2020) for the total sample (upper graph), and stratified by marital status (lower graph)

Note: Estimates controlled for education, income, life situation, parenthood

Figure 6: Estimates from latent profile analyses over age, 5-cluster-solution
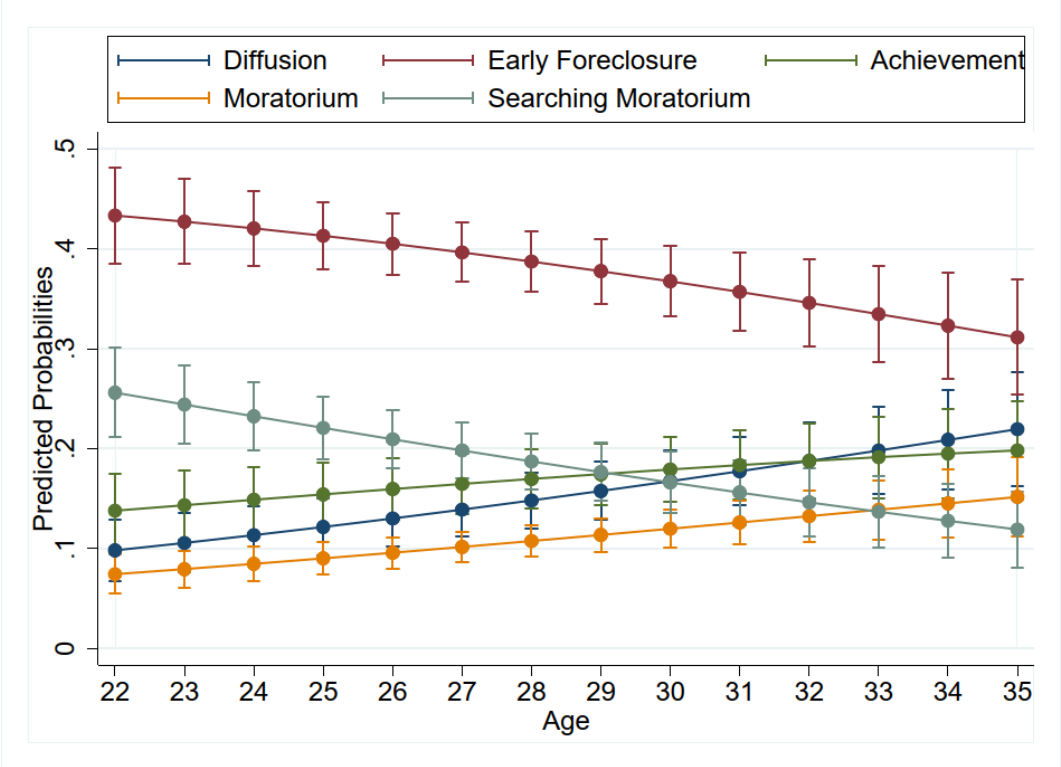
Table 1: Descriptive Statistics of all used variables over observation time (2011-2020)

Variable	2011		2013		2016		2020	
	N	**%**	**N**	**%**	**N**	**%**	**N**	**%**
Sex								
Female	530	61.20	448	62.05	363	61.42	267	59.47
Male	336	38.80	274	37.95	228	38.58	182	40.53
Cohort								
1986	397	45.84	326	45.15	258	43.65	192	42.76
1988	469	54.16	396	54.85	333	56.35	257	57.24
Education								
Secondary	764	88.22	379	52.49	176	29.78	110	24.50
Post-Secondary	83	9.58	282	39.06	397	67.17	331	73.72
Unknown	19	2.19	61	8.45	18	3.05	8	1.78
Life Situation (2011)								
Single	492	56.81	413	57.20	368	62.27	294	65.48
Cohabitation	374	43.19	309	42.80	223	37.73	155	34.52
Parental Background								
Both Parents White Collar	377	43.53	315	43.63	264	44.67	202	44.99
Only Mother White Collar	170	19.63	139	19.25	115	19.46	86	19.15
Only Father White Collar	31	3.58	29	4.02	23	3.89	18	4.01
Both Parents Blue Collar	64	7.39	61	8.45	48	8.12	33	7.35
Missing	224	25.87	178	24.65	141	23.86	110	24.50
Parenthood								
No	828	95.61	634	87.81	480	81.22	127	28.29
Yes	38	4.39	88	12.19	111	18.78	322	71.71
Total	866	100	722	100	591	100	449	100

	Mean	Std. dev.	Min	Max
Income (2011)	1,049.08	626.42	10	5,570
Income (2013)	1,430.71	810.04	2	6,500
Income (2016)	2,781.95	3290.45	50	48,000
Income (2020)	3,272.53	2242.58	50	27,000

Source: Finnish Educational Transitions (FinEdu) Studies, own calculations

Table 2: Descriptive Statistics for event-history analyses on marriage risks

	Person-time	Events	Rate		Person-time	Events	Rate
Rum				*Commit*			
1	1,339	104	0.078	1	286	6	0.021
2	1,785	103	0.058	2	692	22	0.032
3	1,347	52	0.039	3	1,600	79	0.049
4	858	33	0.038	4	2,751	185	0.067
Breadth				*Idcom*			
1	88	1	0.011	1	271	2	0.007
2	540	26	0.048	2	967	40	0.041
3	1,644	92	0.056	3	1,886	111	0.059
4	3,057	173	0.057	4	2,205	139	0.063
Depth							
1	982	73	0.074				
2	1,601	89	0.056				
3	1,635	79	0.048				
4	1,111	51	0.046				
Total	5,329	292	0.055				

Source: Finnish Educational Transitions (FinEdu) Studies, own calculations

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Appendix

Additional tables and figures

Figure A1: Life situation across observation years (2011-2020)
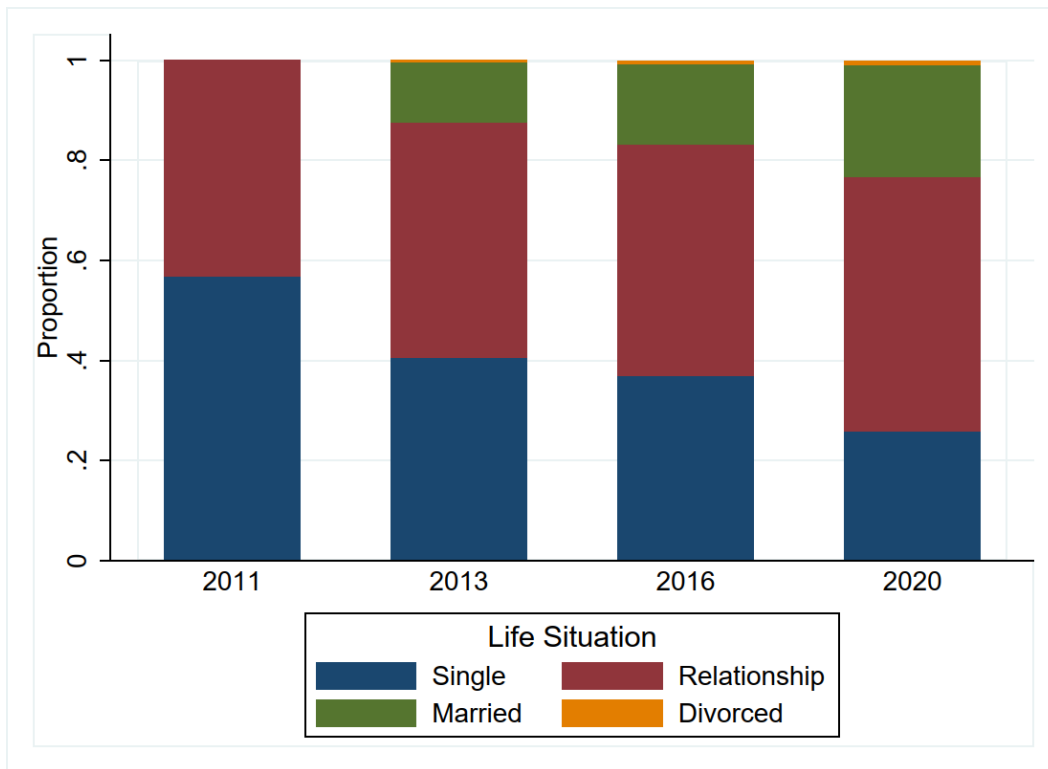
Figure A2: Identity processes across observation years (sample 2)
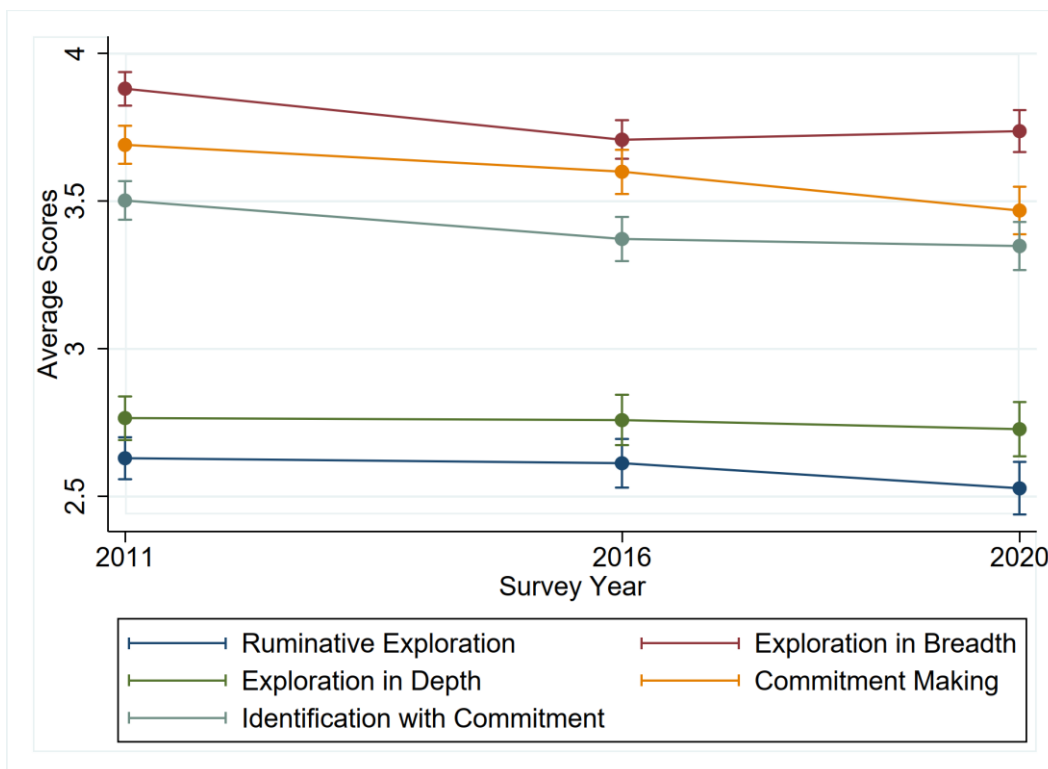
Figure A3: Identity dimension means (2-cluster-solution)
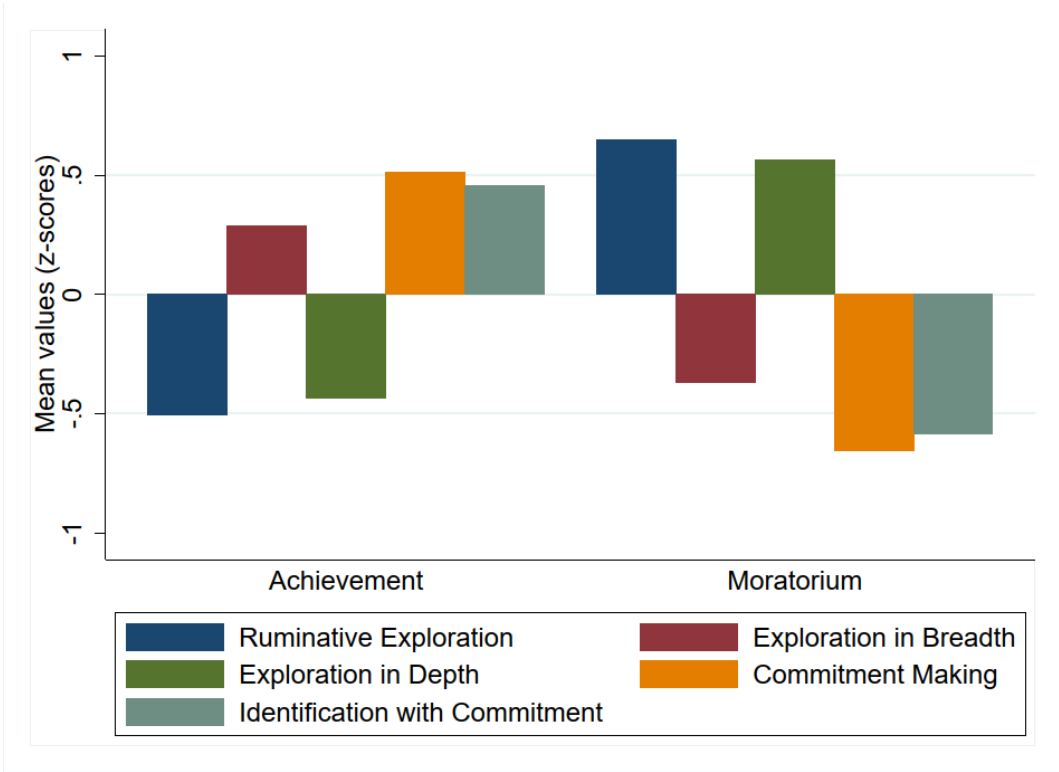
Figure A4: Identity dimension means (3-cluster-solution)
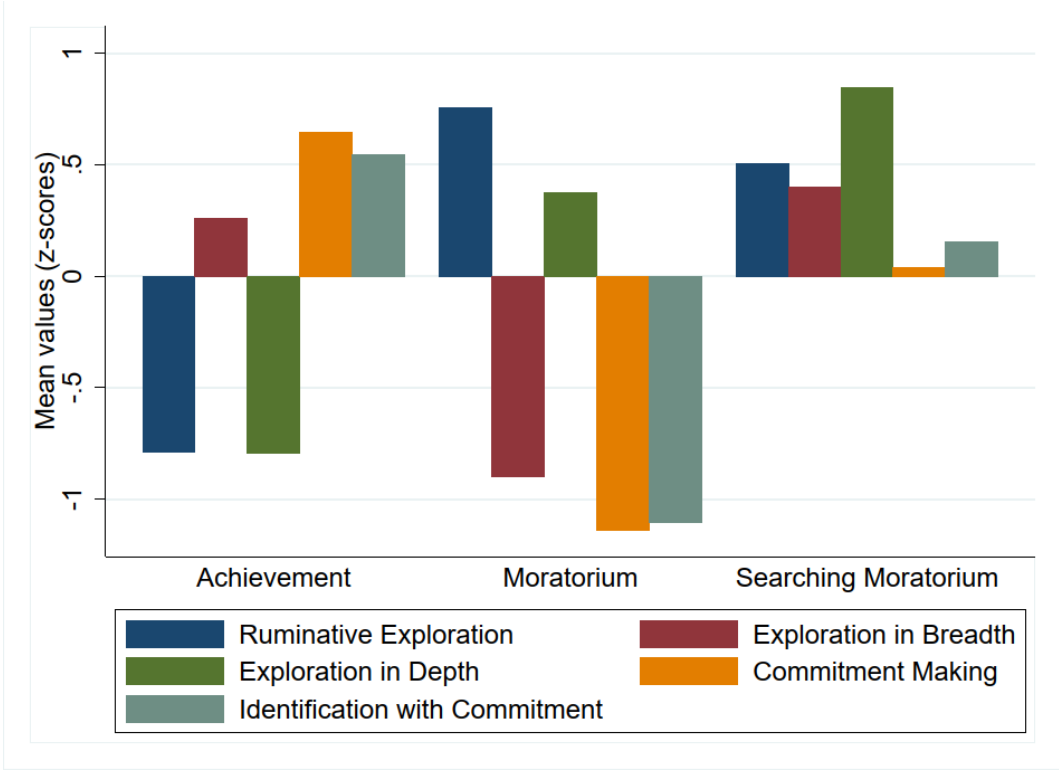
Figure A5: Identity dimension means (4-cluster-solution)
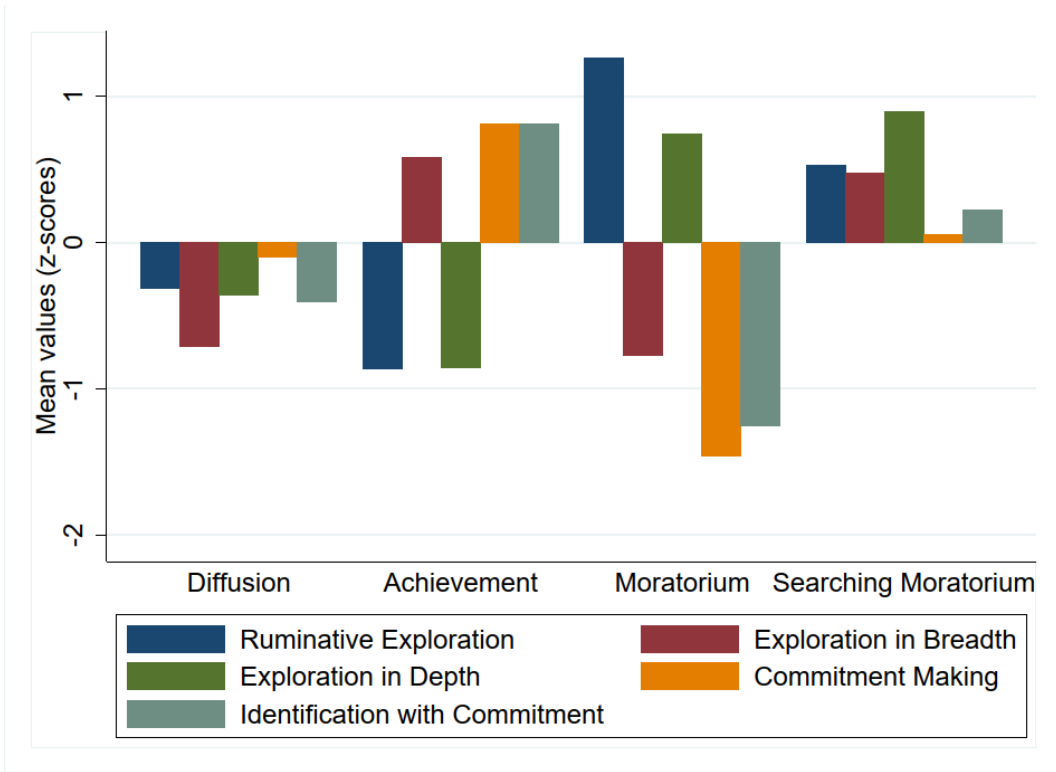
Figure A6: Identity dimension means (6-cluster-solution)
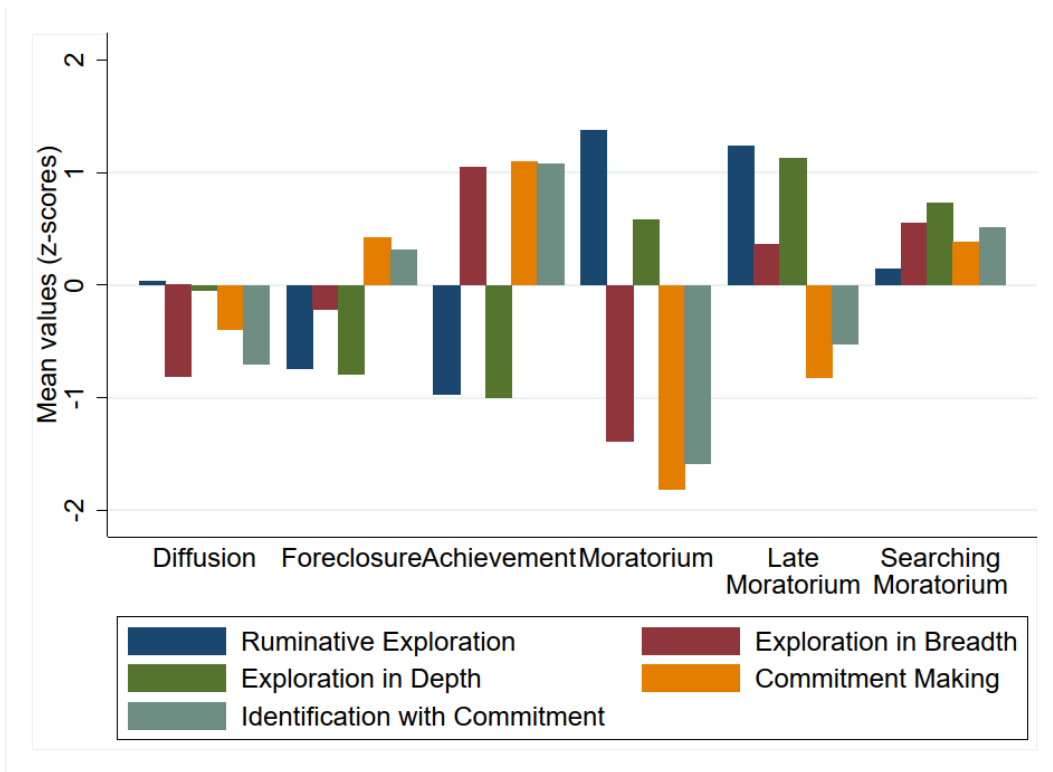
Figure A7: Identity dimension means (7-cluster-solution)
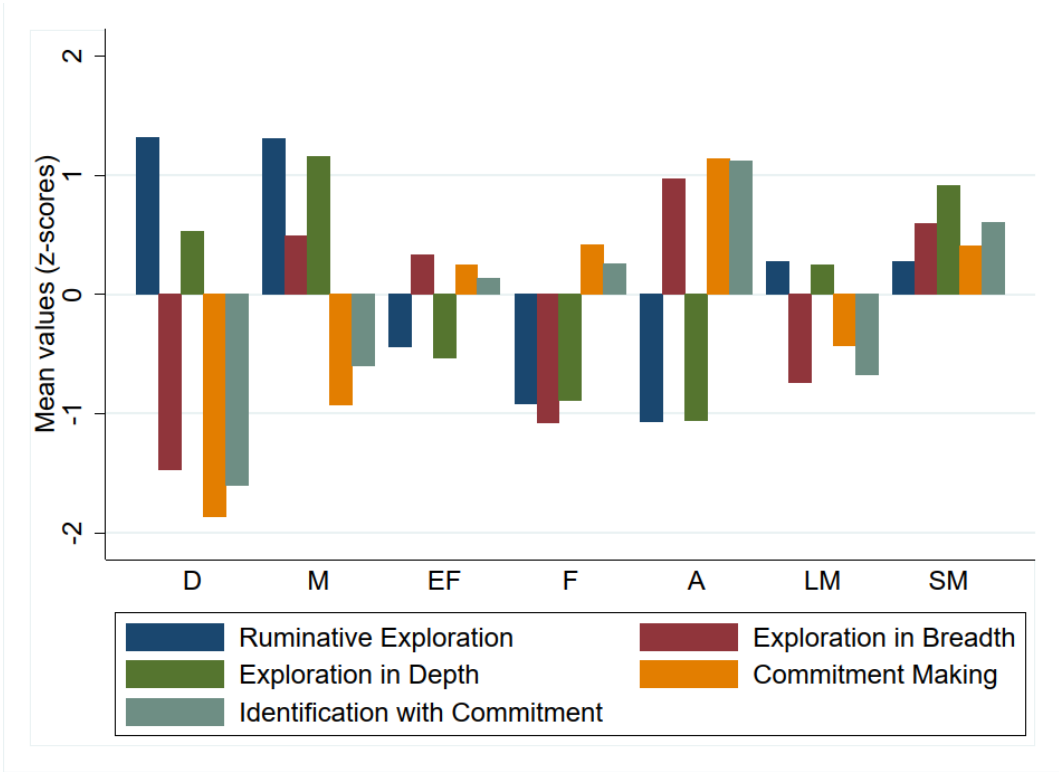
Note: D=Diffusion, M=Moratorium, EF=Early Foreclosure, F=Foreclosure, A=Achievement, LM=Late Moratorium, SM=Searching Moratorium

Figure A8: Identity dimension means (8-cluster-solution)

Figure A9: Identity cluster effects on marriage risks (ref.: moratorium, 2-cluster-solution)
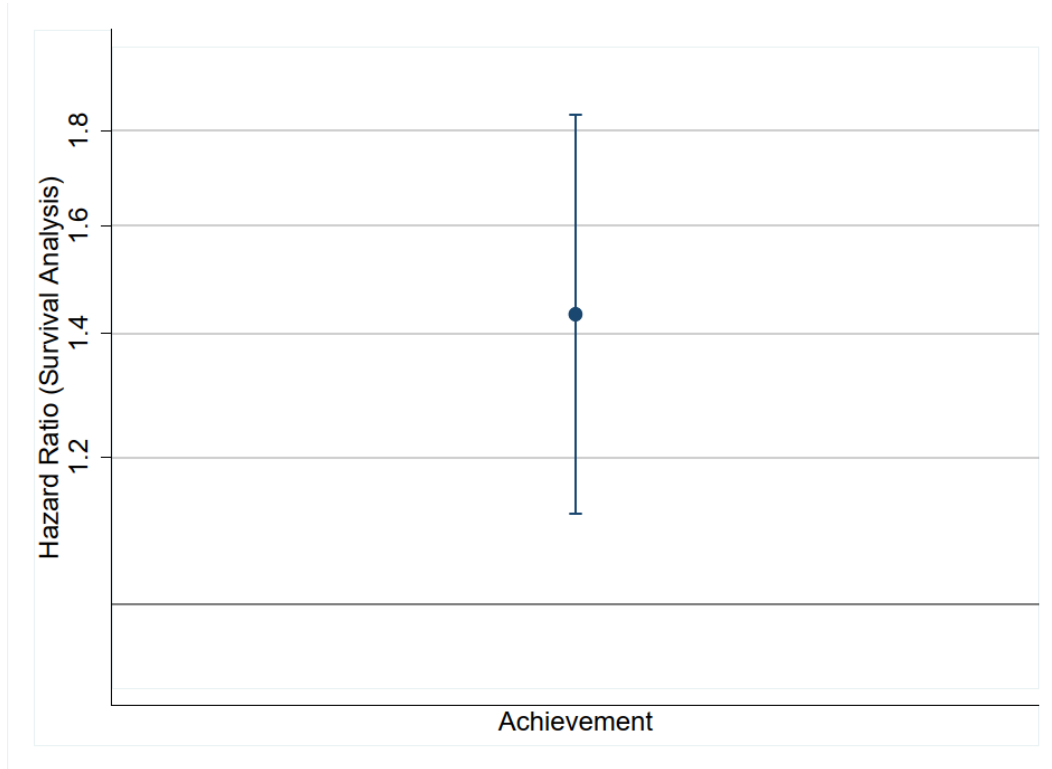
Figure A10: Identity cluster effects on marriage risks (ref.: moratorium, 3-cluster-solution)
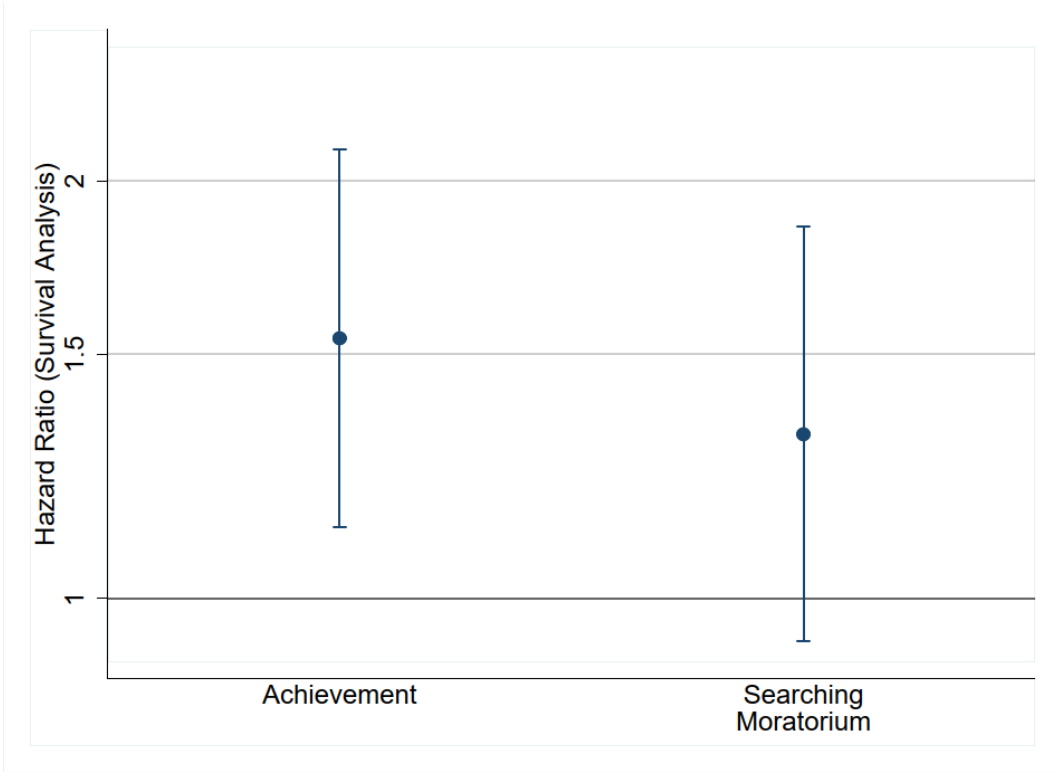
Figure A11: Identity cluster effects on marriage risks (ref.: moratorium, 4-cluster-solution)
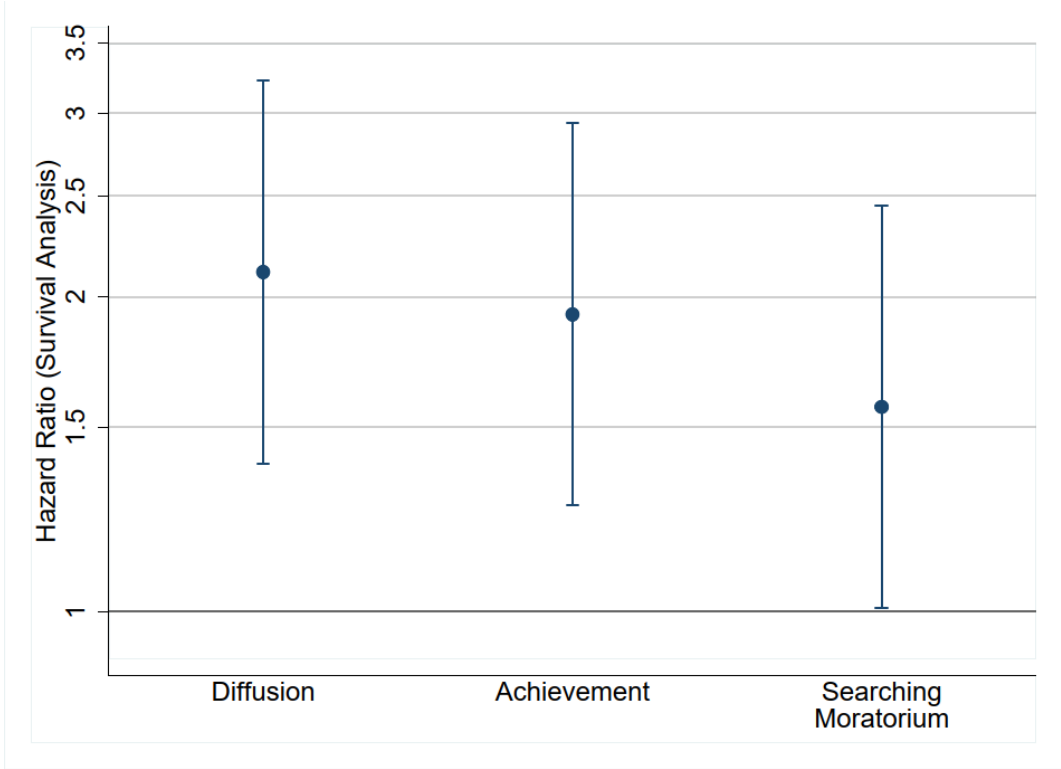
Figure A12: Identity cluster effects on marriage risks (ref.: moratorium, 6-cluster-solution)
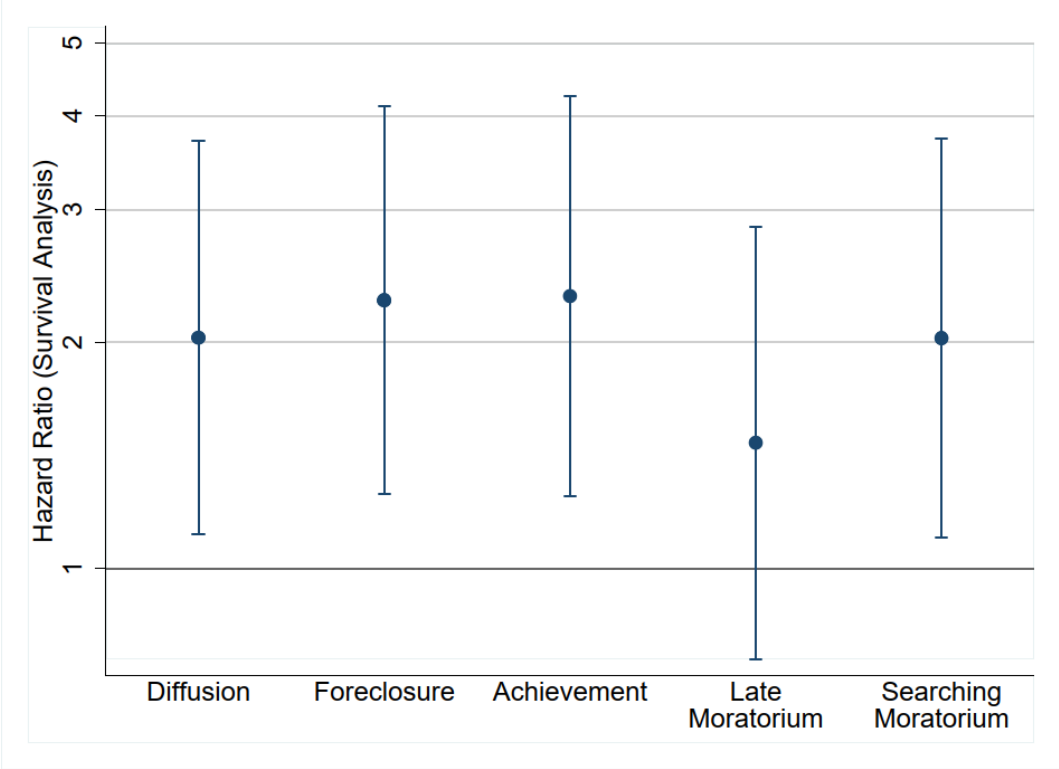
Figure A13: Identity cluster effects on marriage risks (ref.: moratorium, 7-cluster-solution)
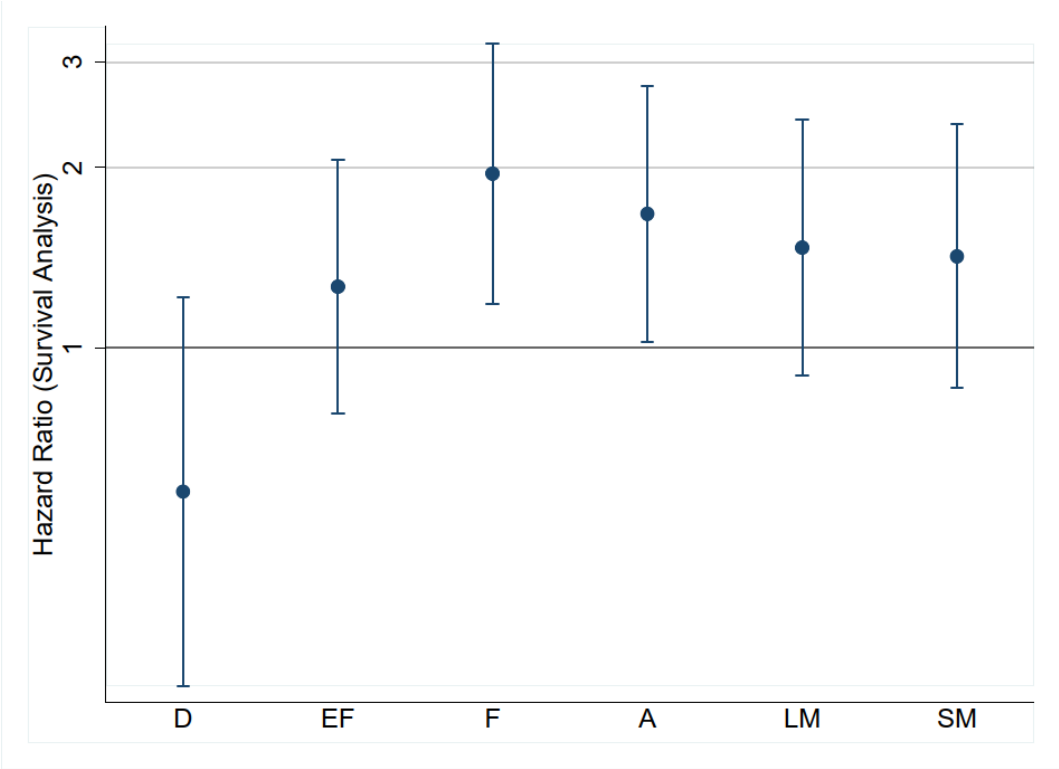
Note: D=Diffusion, EF= Early Foreclosure, F=Foreclosure, A=Achievement, LM=Late Moratorium, SM=Searching Moratorium

Figure A14: Identity cluster effects on marriage risks (ref.: moratorium, 8-cluster-solution)
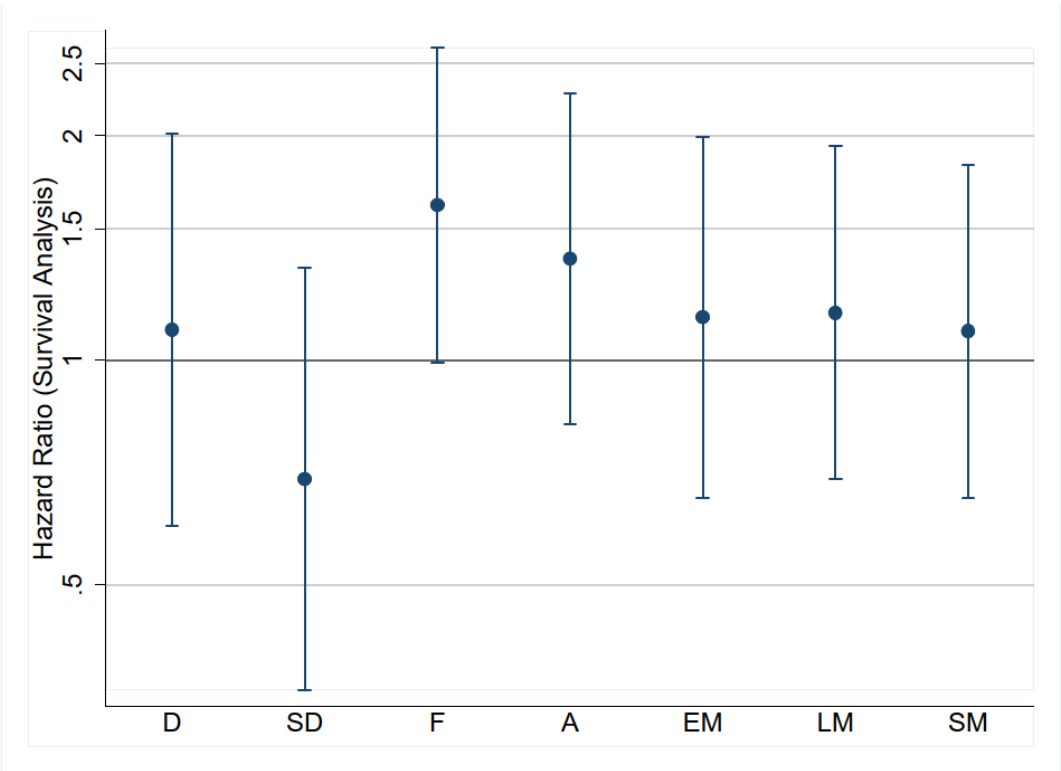
Note: D=Diffusion, SD=Searching Diffusion, F=Foreclosure, A=Achievement, EM=Early Moratorium, LM=Late Moratorium, SM=Searching Moratorium

Figure A15: Estimates from generalized least squares fixed effects models on ruminative exploration over observation time (2011-2020) for the total sample (upper graph), and stratified by marital status (lower graph)
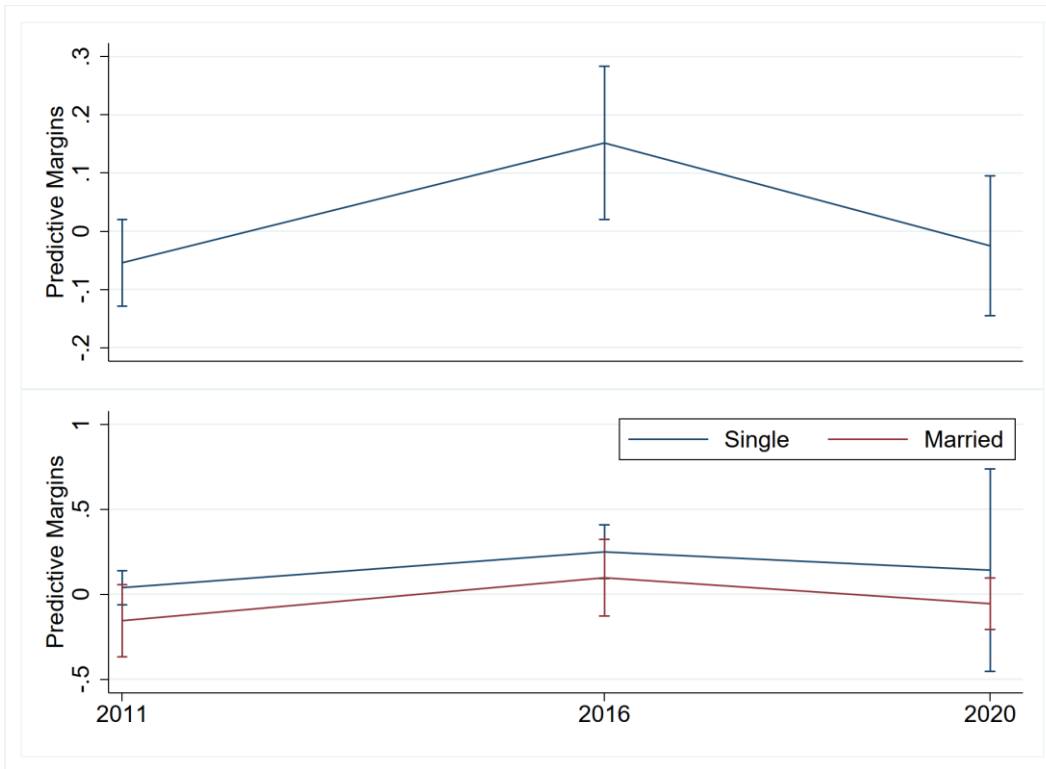
Figure A16: Estimates from generalized least squares fixed effects models on exploration in breadth over observation time (2011-2020) for the total sample (upper graph), and stratified by marital status (lower graph)
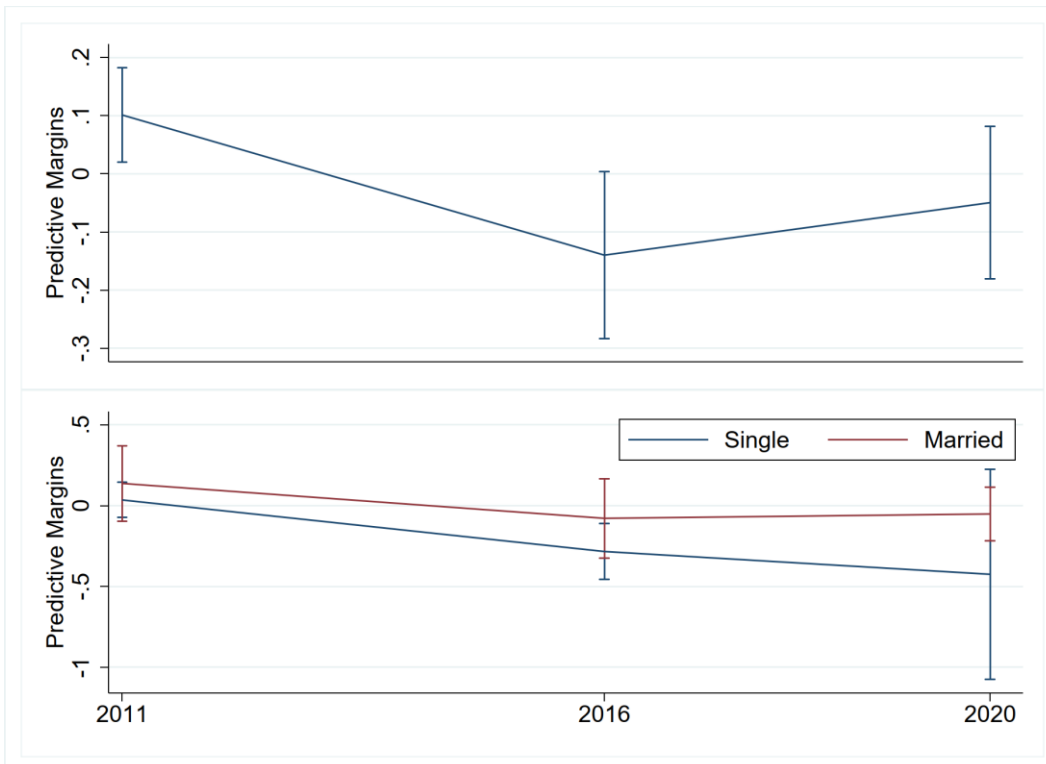
Figure A17: Estimates from generalized least squares fixed effects models on exploration in depth over observation time (2011-2020) for the total sample (upper graph), and stratified by marital status (lower graph)
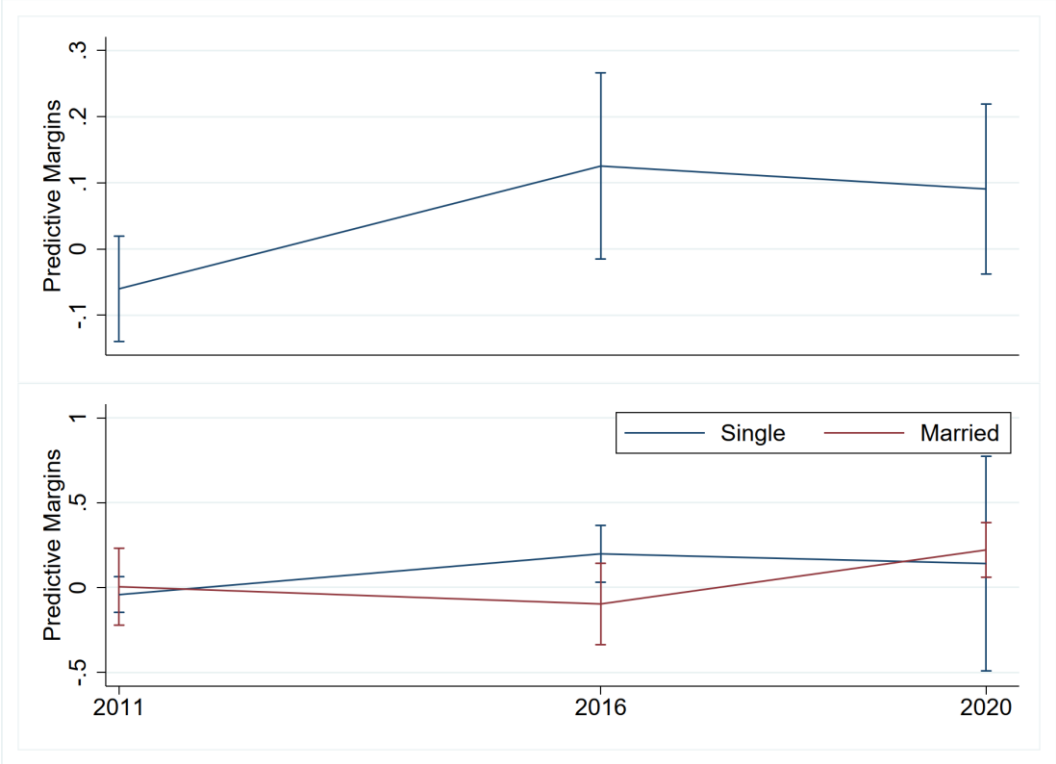
Figure A18: Estimates from generalized least squares fixed effects models on identification with commitment over observation time (2011-2020) for the total sample (upper graph), and stratified by marital status (lower graph)
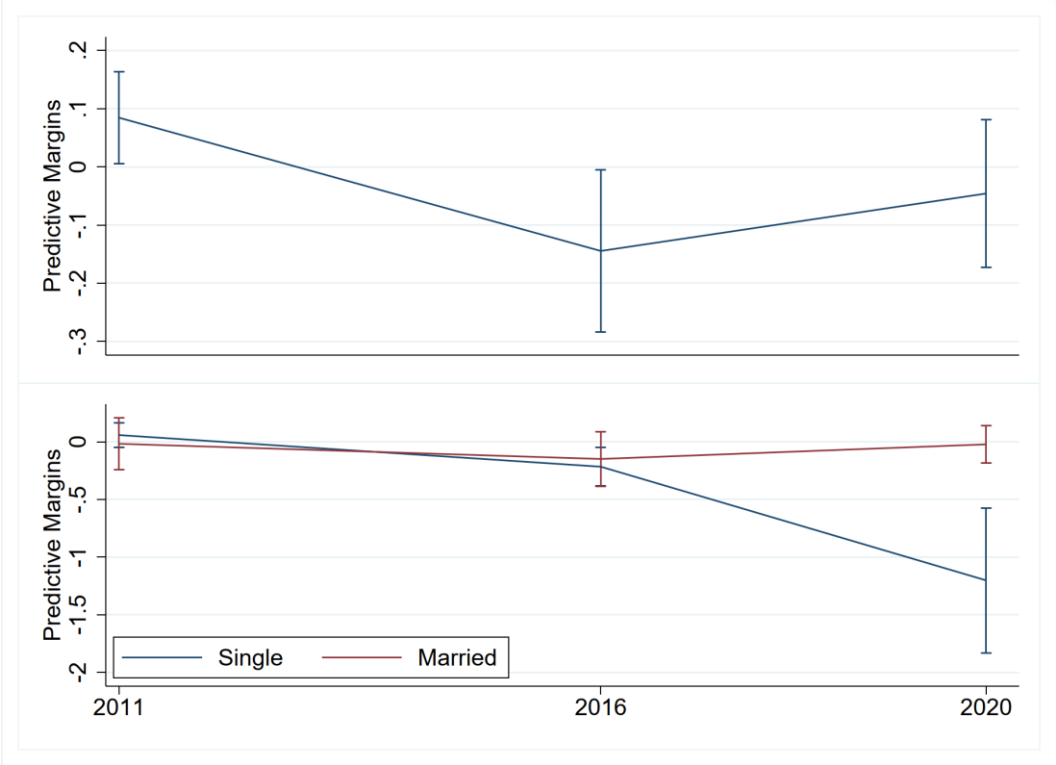
Figure A19: Predicted averages of identity dimensions in five classes
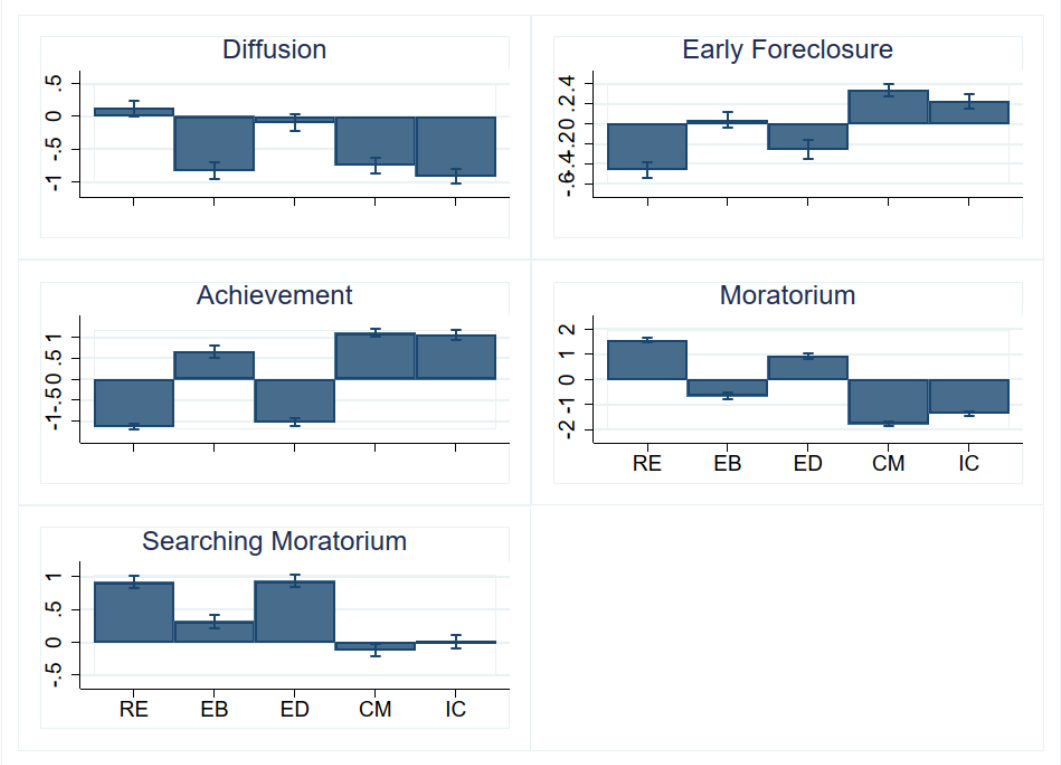
Note: RE=Ruminative Exploration, EB=Exploration in Breadth, ED=Exploration in Depth, CM=Commitment Making, IC=Identification with Commitment

Figure A20: Predicted averages of identity dimensions in three classes
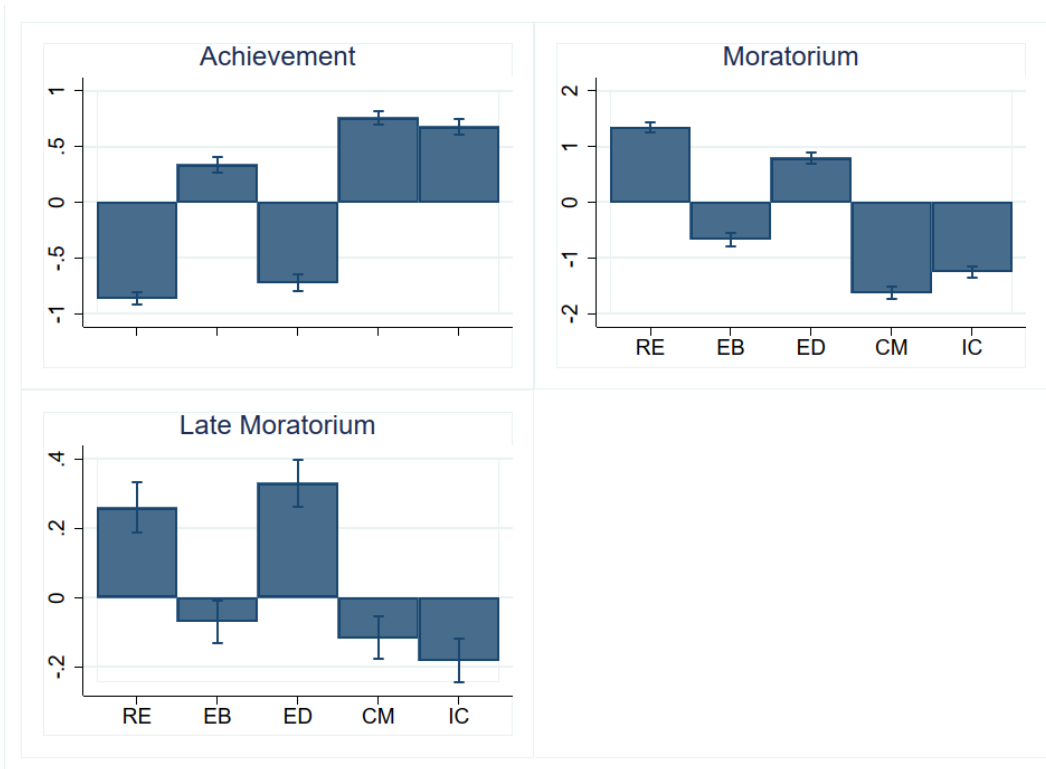
Figure A21: Predicted averages of identity dimensions in four classes
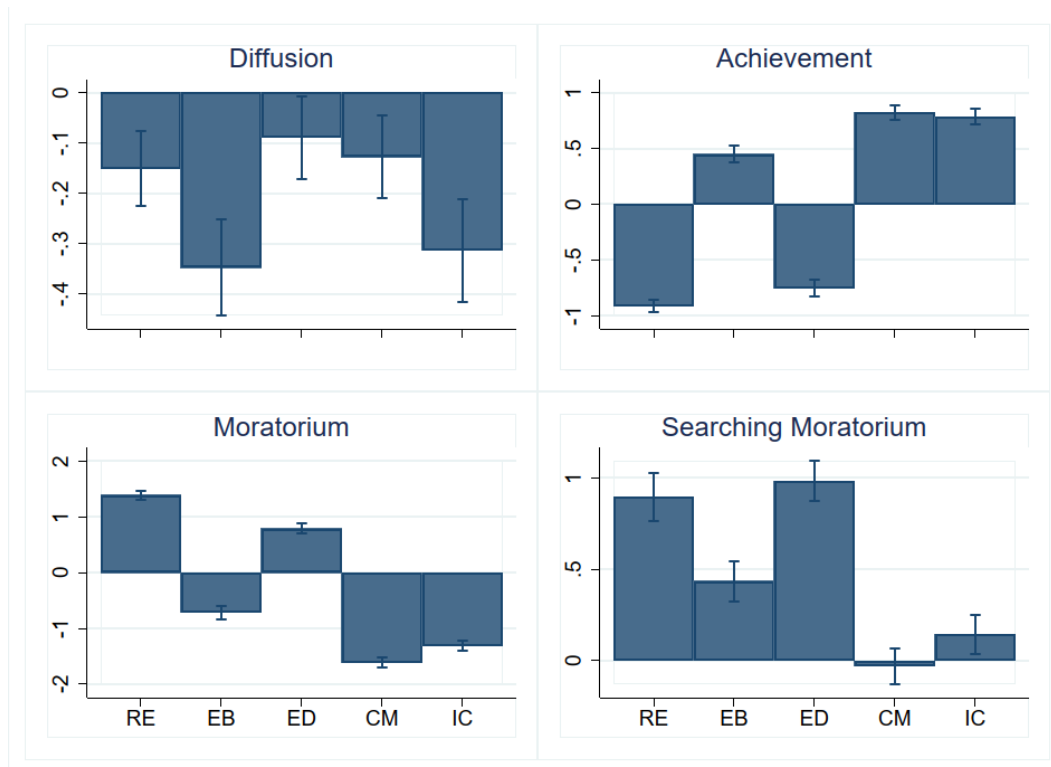
Figure A22: Estimates from latent profile analyses over age, 3-cluster-solution
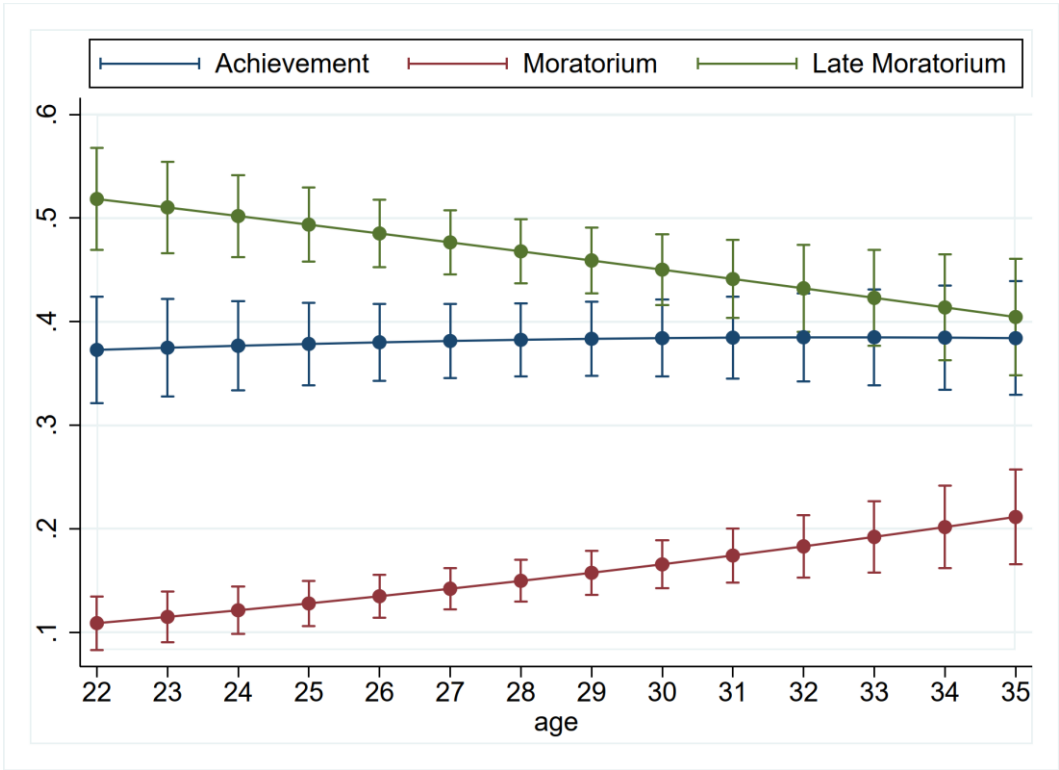
Figure A23: Estimates from latent profile analyses over age, 4-cluster-solution
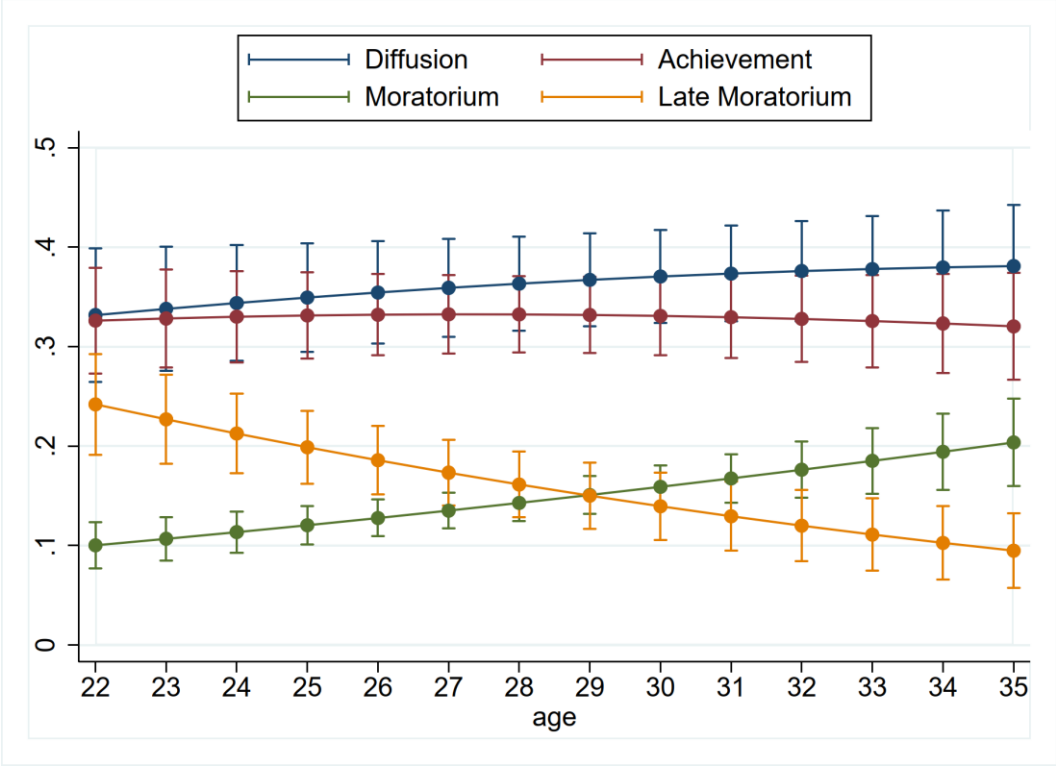
Figure A24: Hazard ratios from piecewise-constant hazard models of identity dimensions on cohabitation risks over time
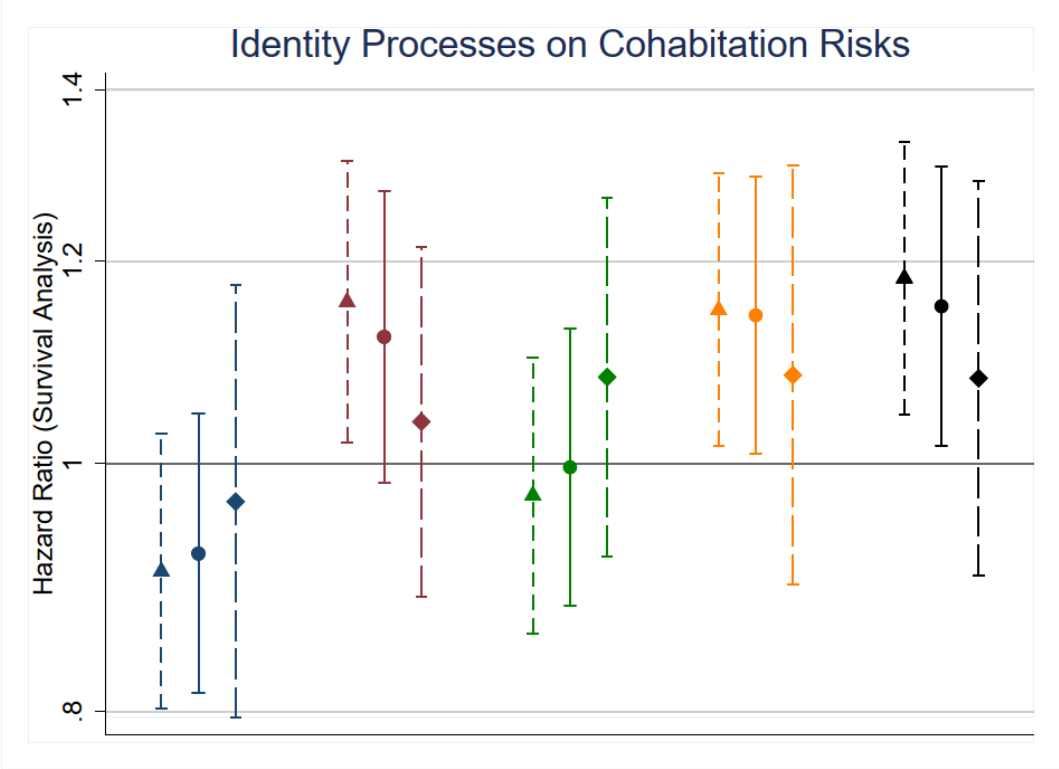
Figure A25: Hazard ratios from piecewise-constant hazard models of identity clusters on cohabitation risks over time
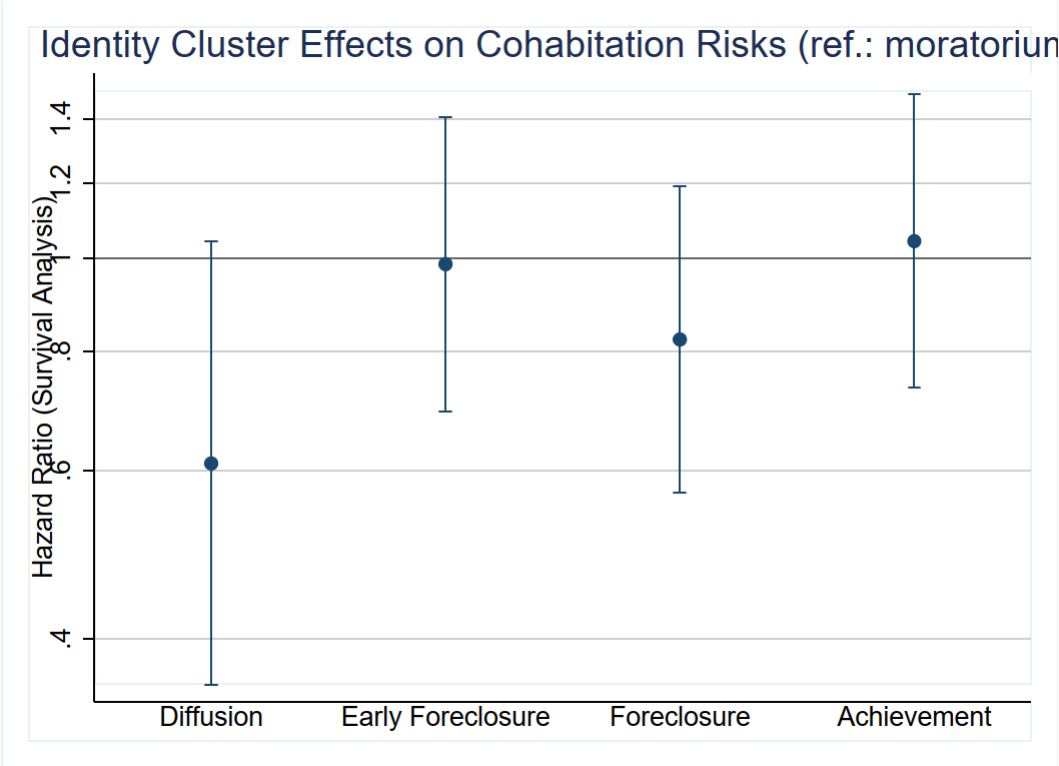
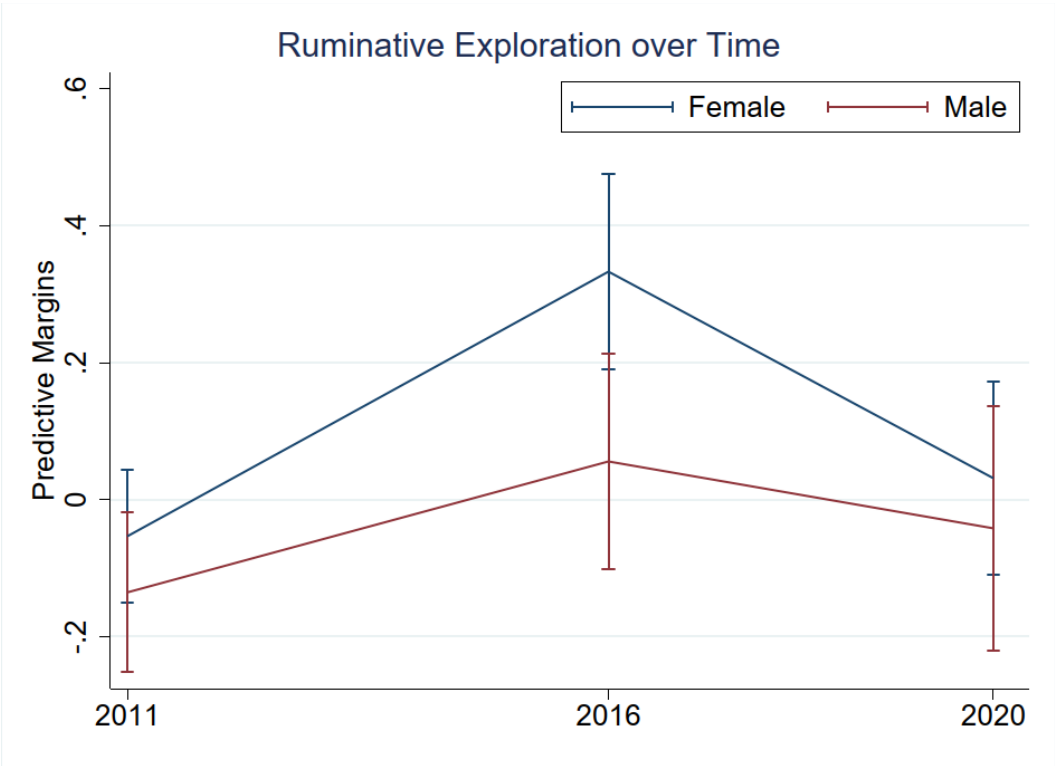*Figure A26: Estimates from generalized least squares random effects models on ruminative exploration over observation time (2011-2020) for the total sample (upper graph), and stratified by marital status (lower graph)*
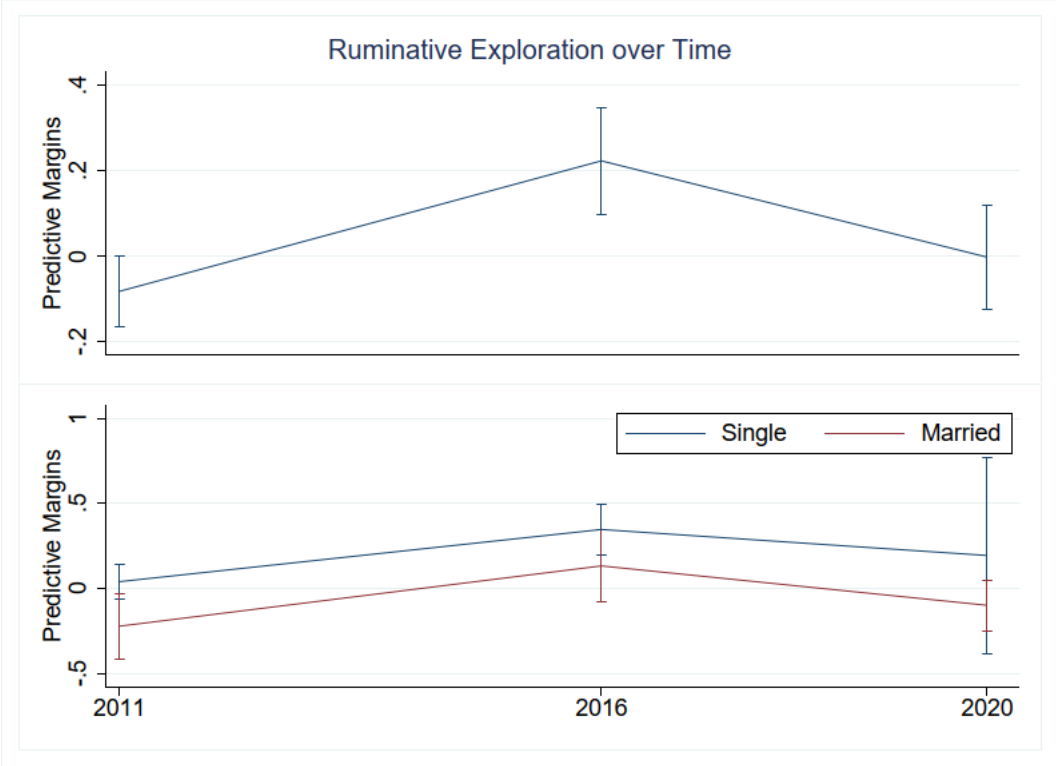
Figure A27: Estimates from generalized least squares random effects models on exploration in breadth over observation time (2011-2020) for the total sample (upper graph), and stratified by marital status (lower graph)
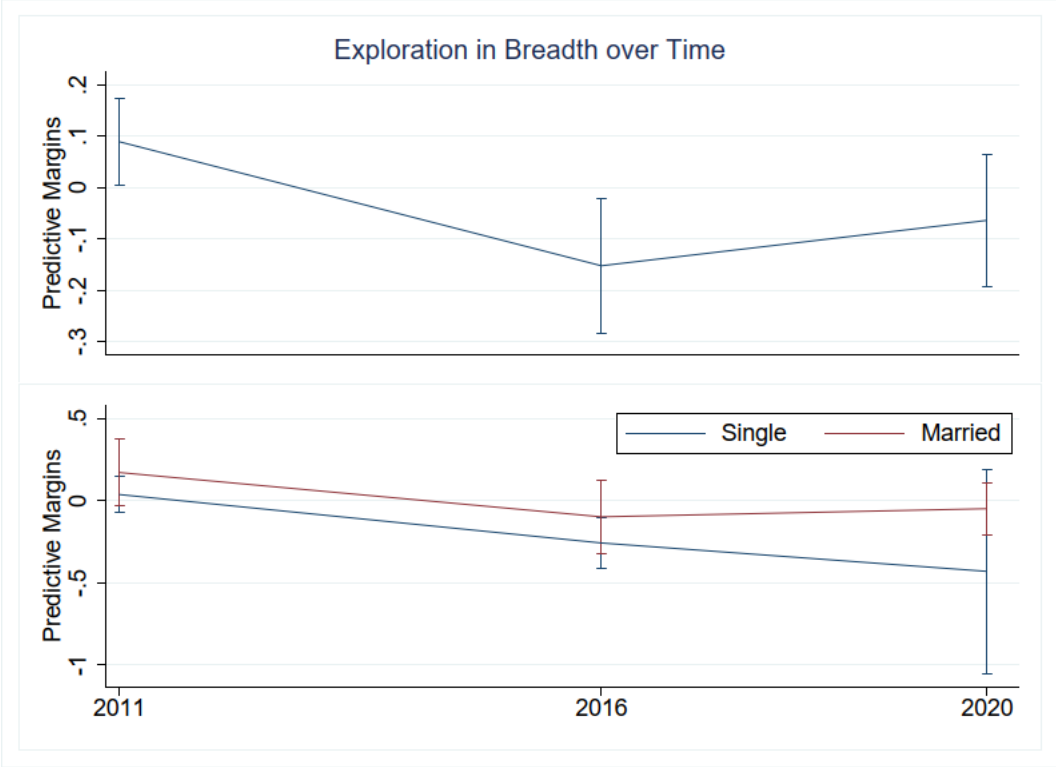
Figure A28: Estimates from generalized least squares random effects models on exploration in depth over observation time (2011-2020) for the total sample (upper graph), and stratified by marital status (lower graph)
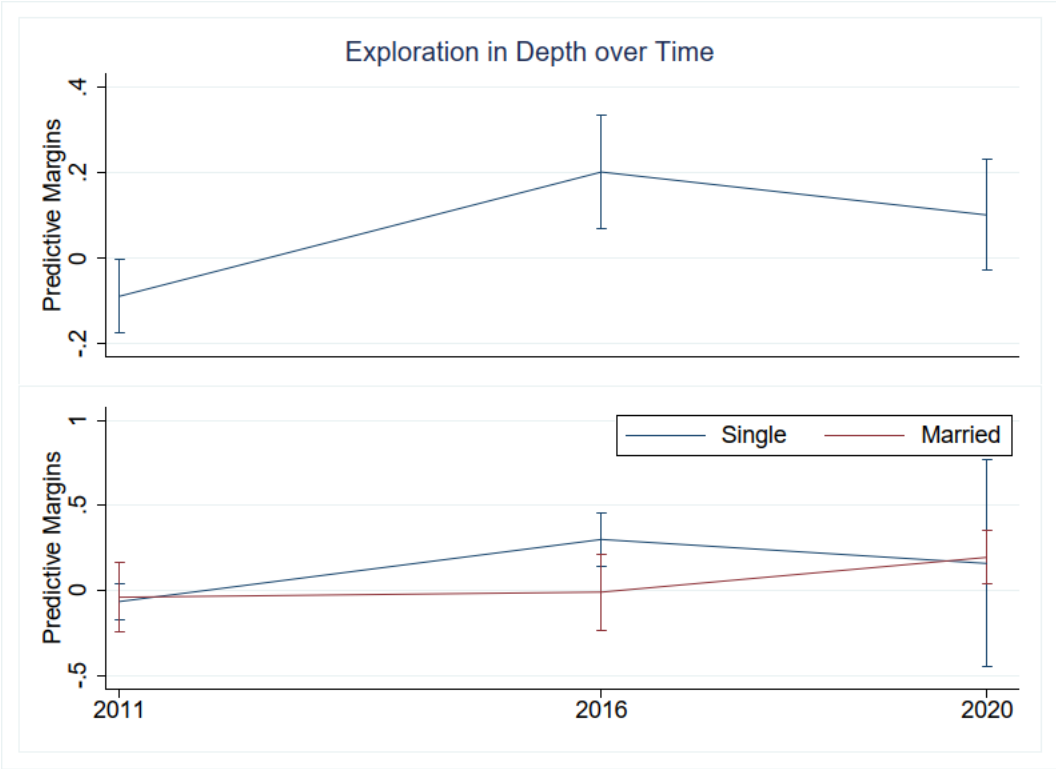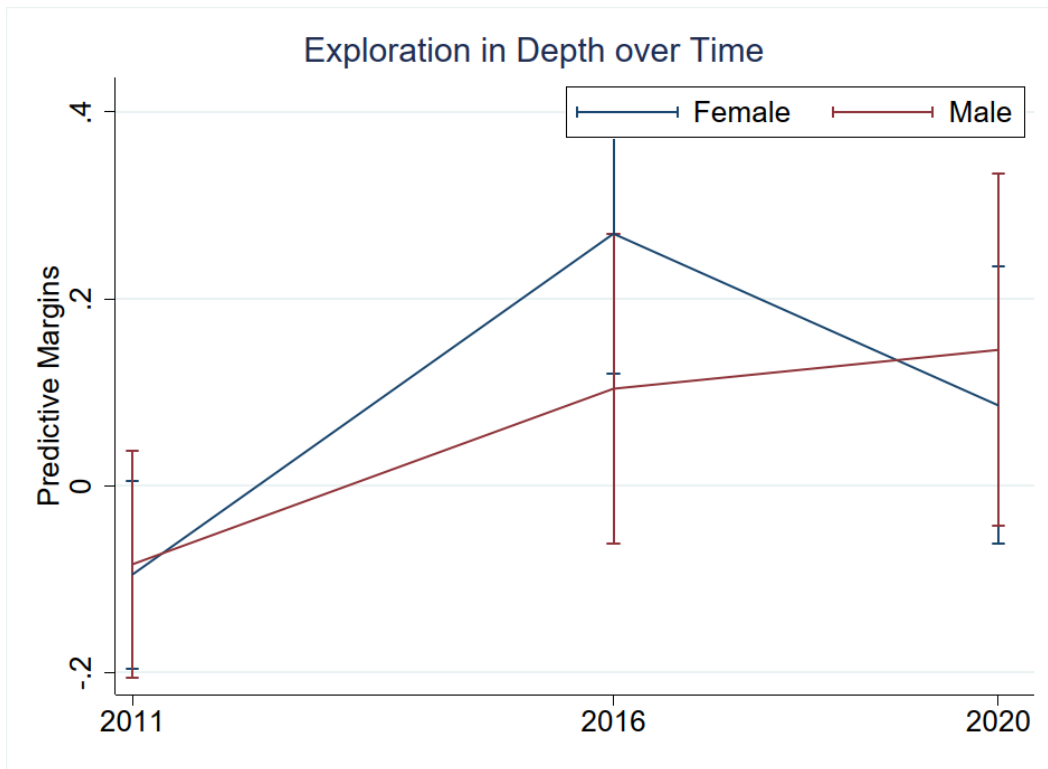

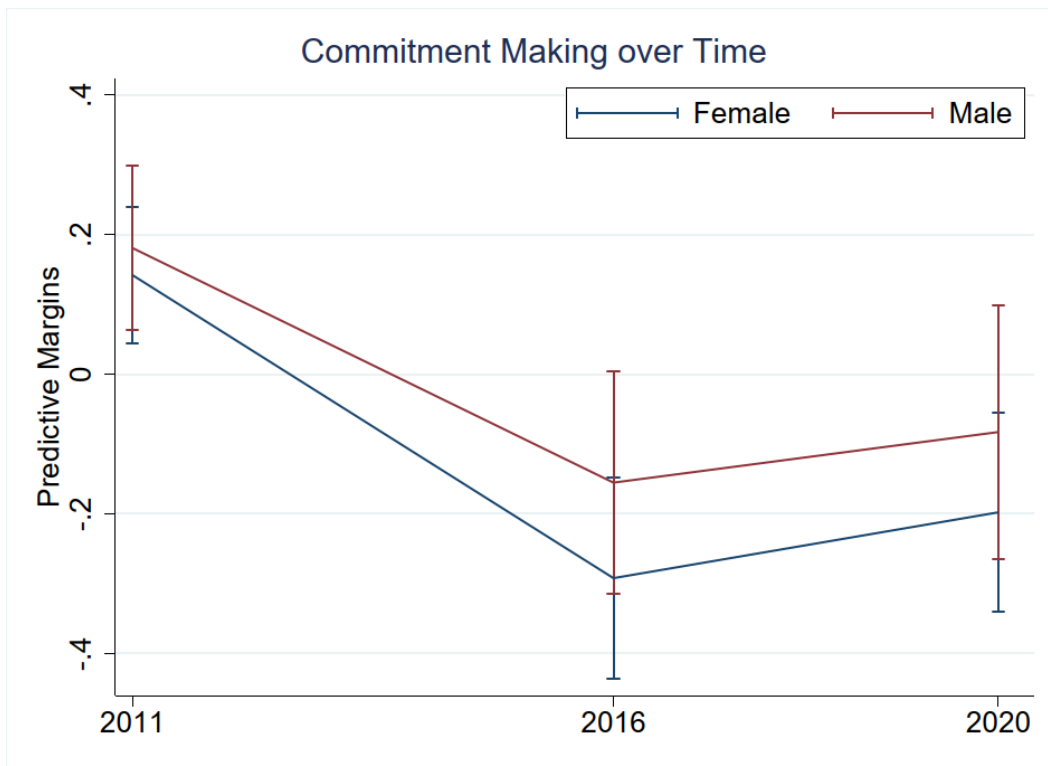*Figure A29: Estimates from generalized least squares random effects models on commitment making over observation time (2011-2020) for the total sample (upper graph), and stratified by marital status (lower graph)*
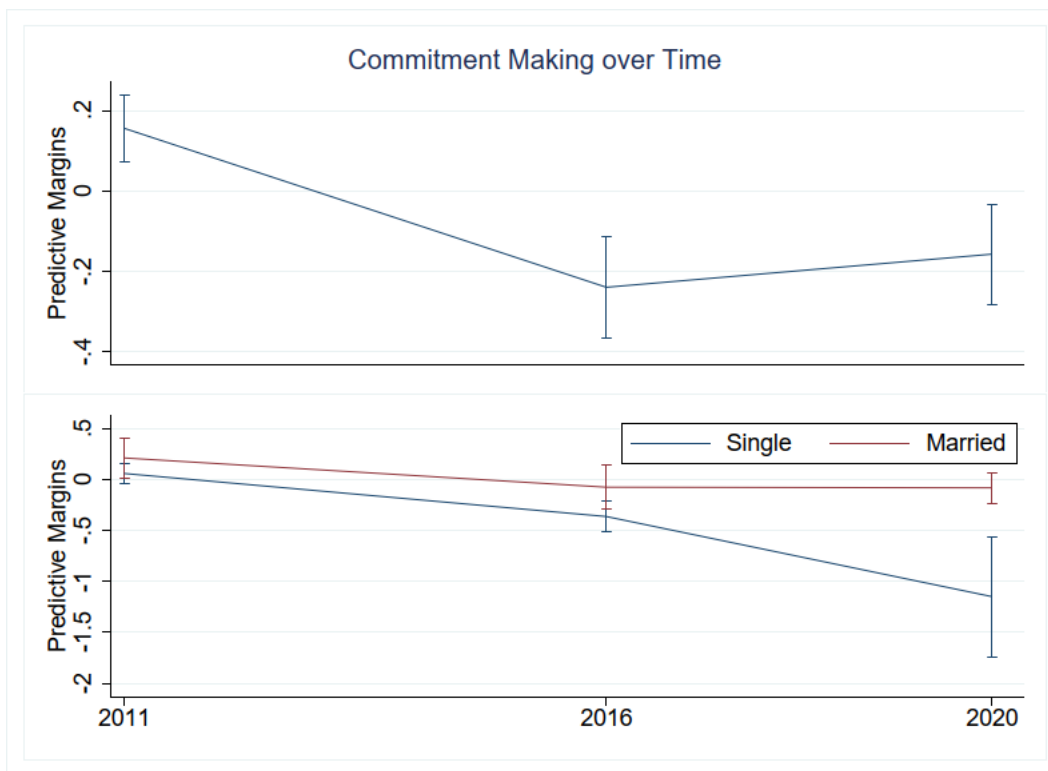
Figure A30: Estimates from generalized least squares random effects models on identification with commitment over observation time (2011-2020) for the total sample (upper graph), and stratified by marital status (lower graph)
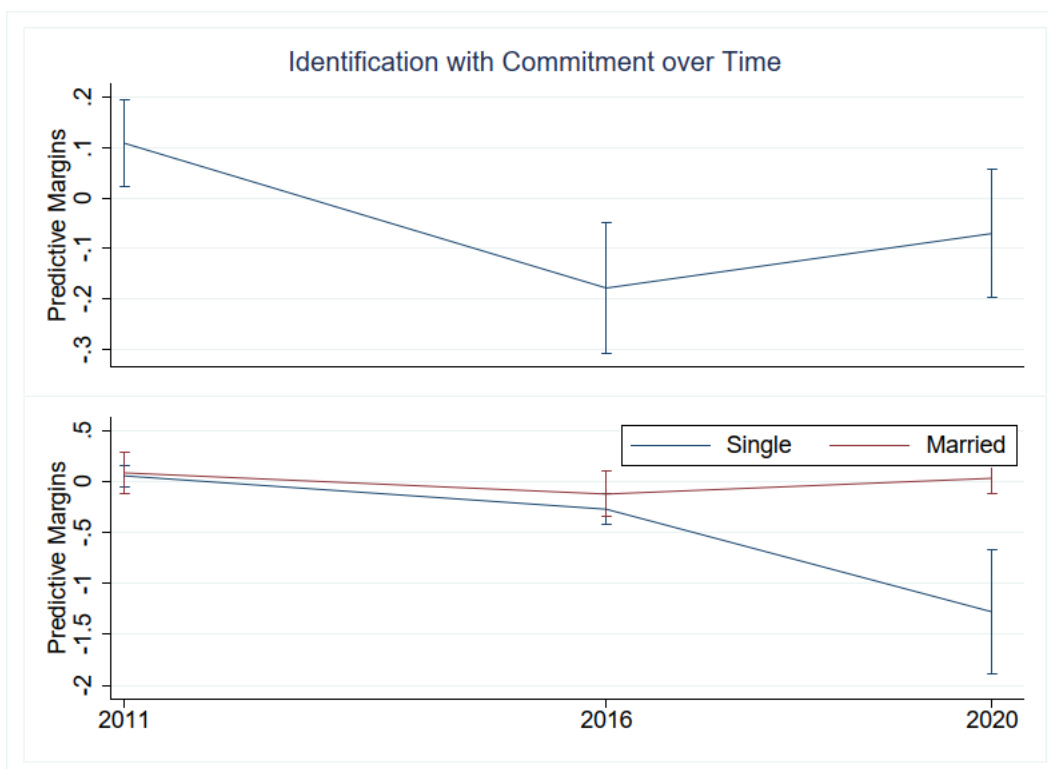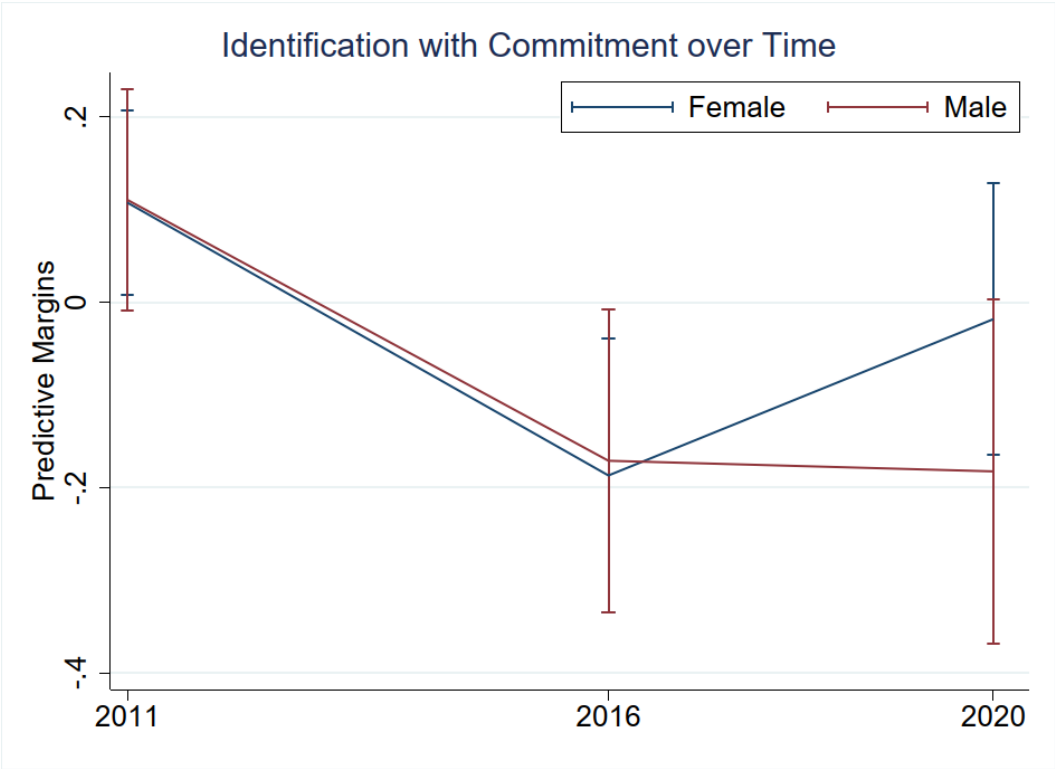
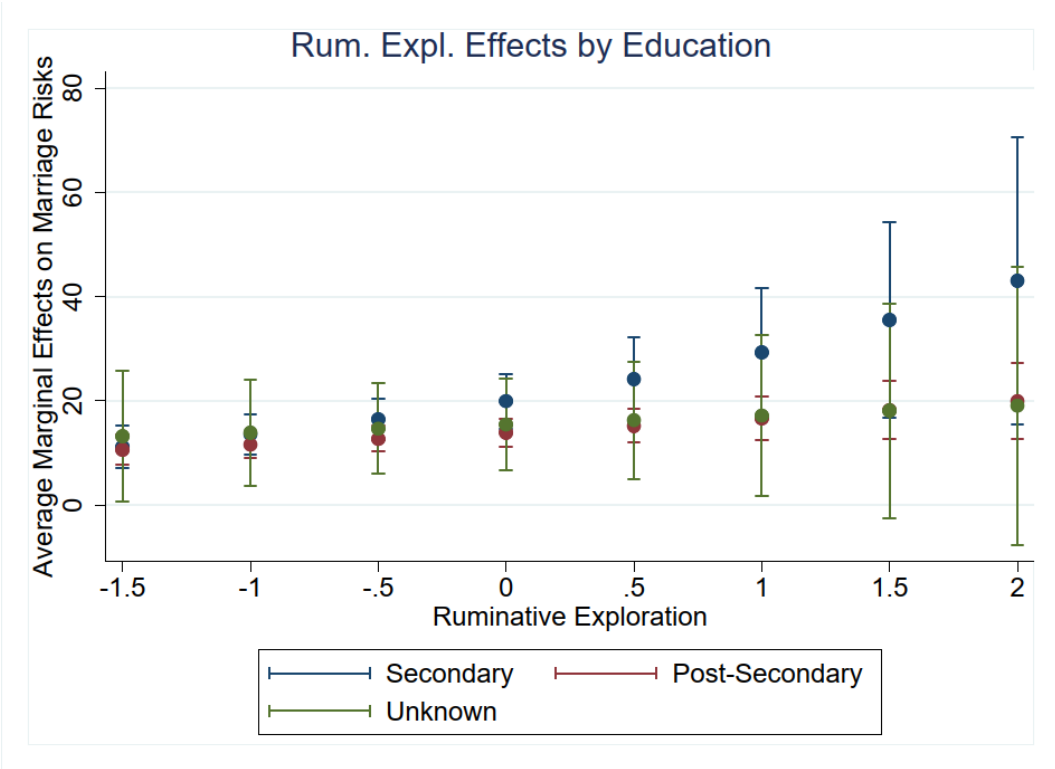*Figure A31: Average marginal effects of ruminative exploration on marriage risks by gender*
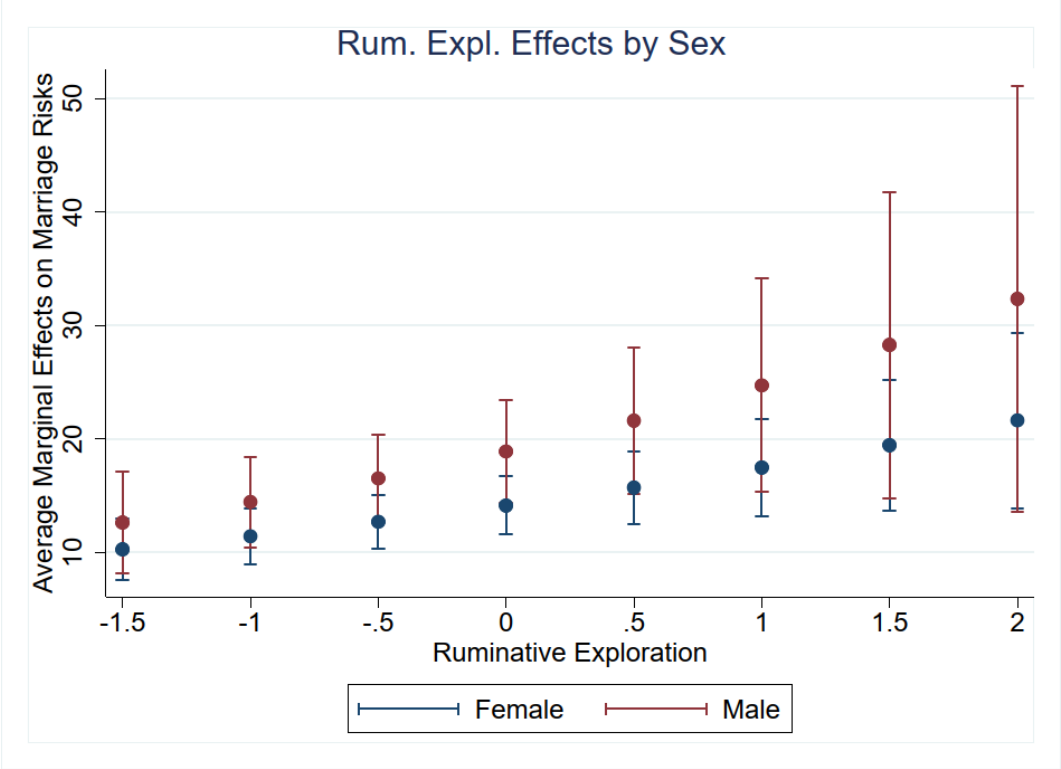
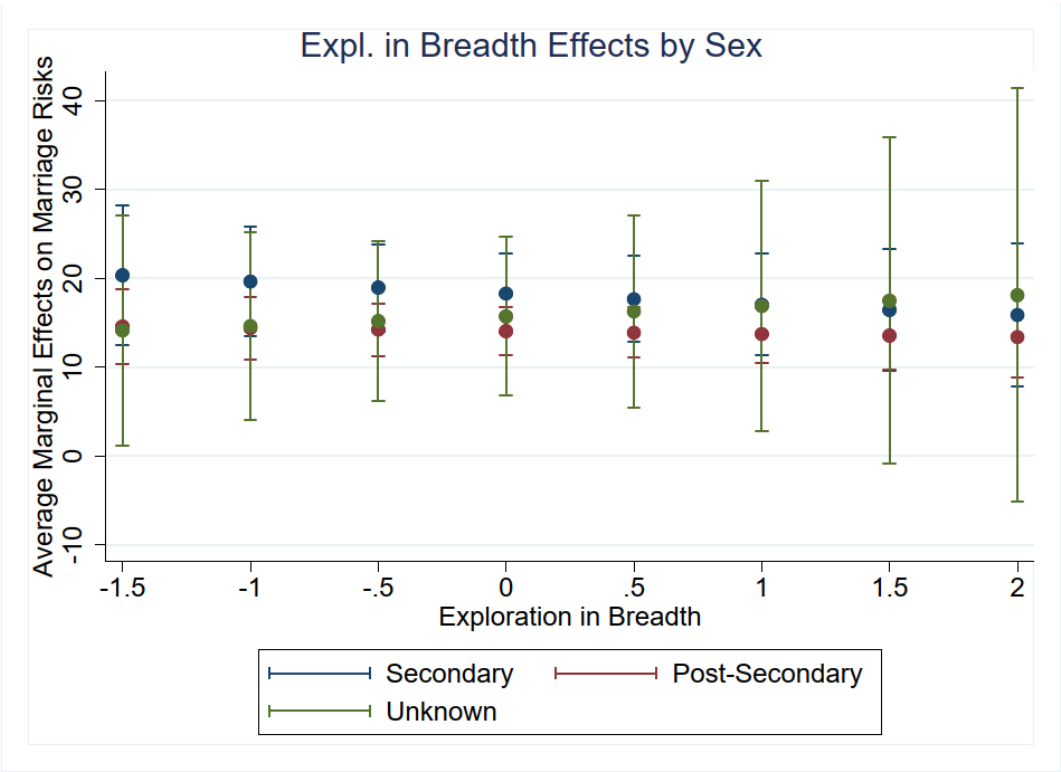*Figure A32: Average marginal effects of exploration in breadth on marriage risks by gender*
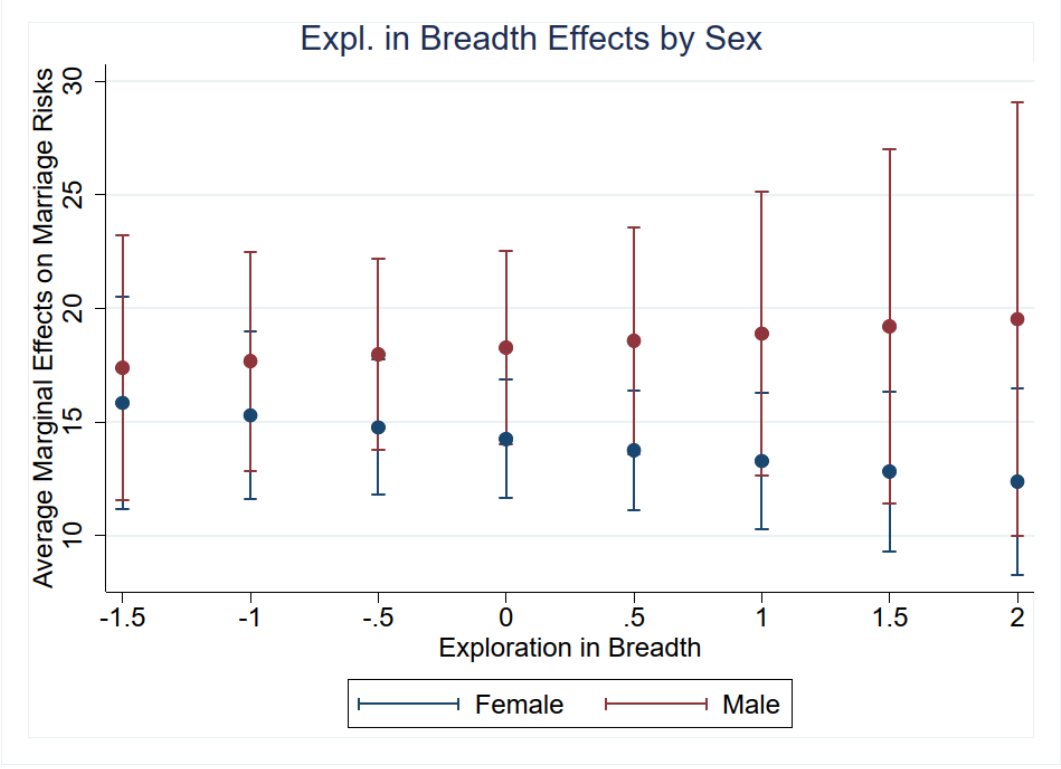
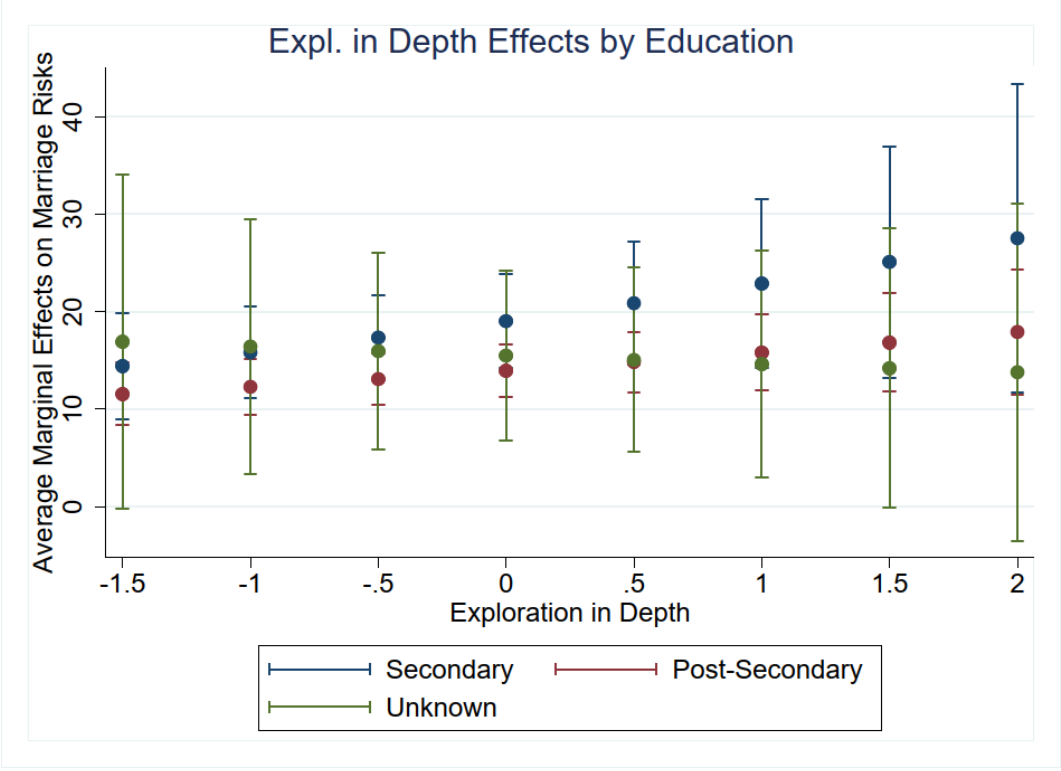*Figure A33: Average marginal effects of exploration in depth on marriage risks by gender*
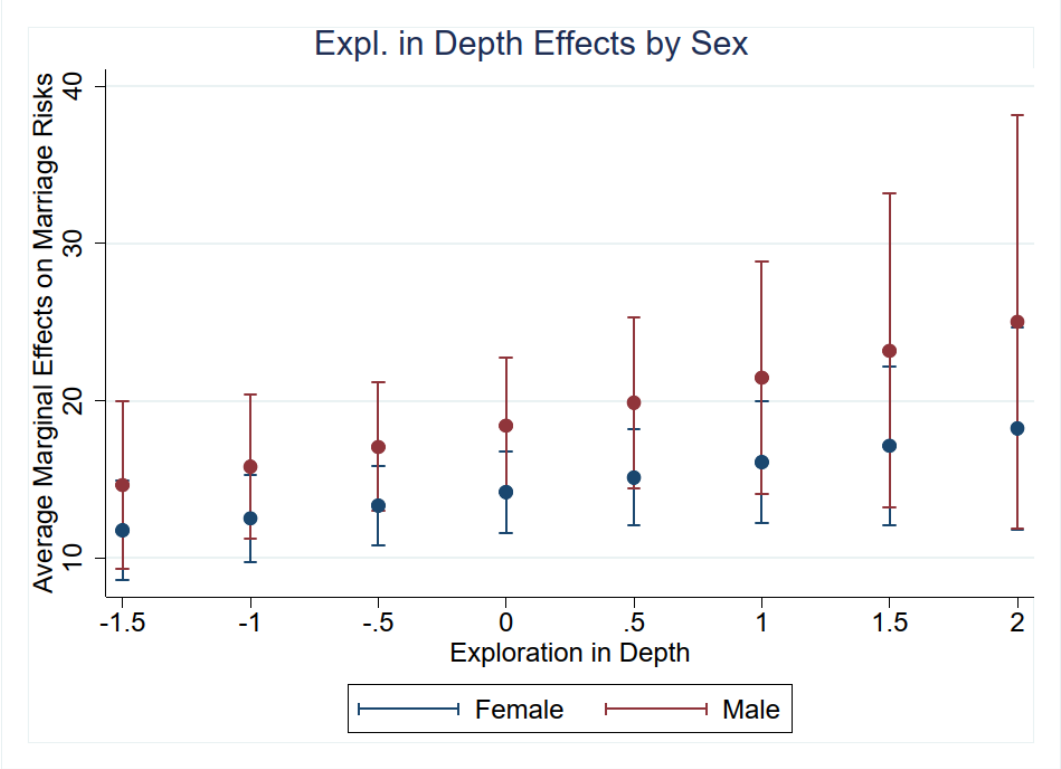
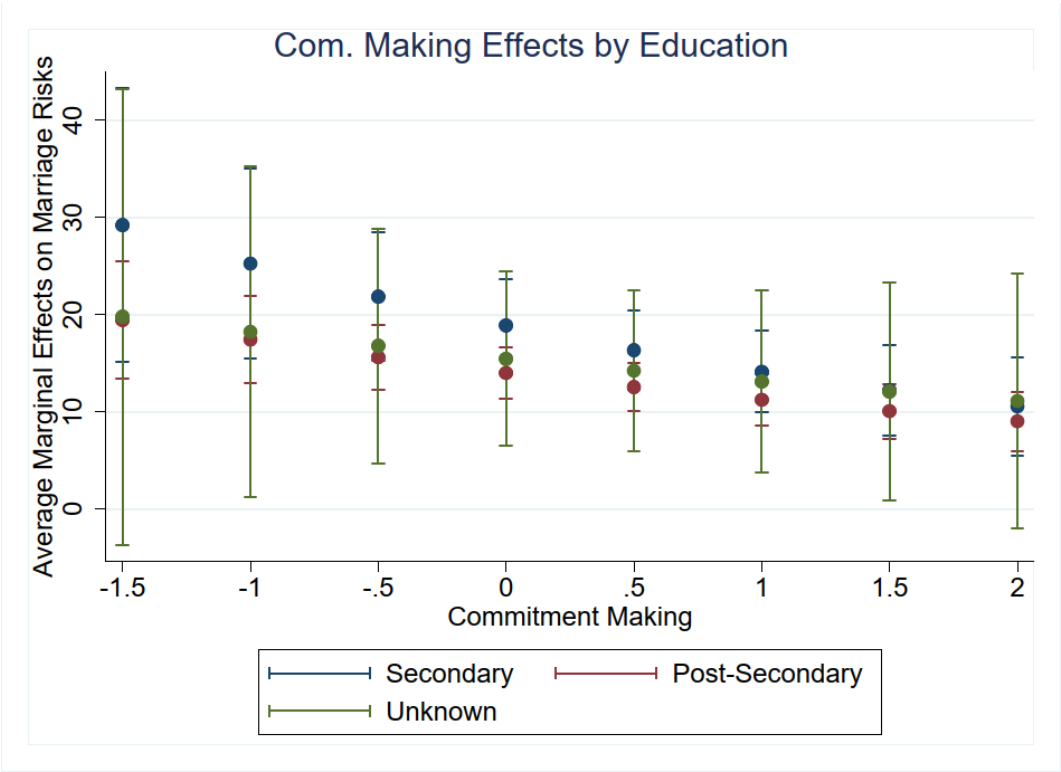*Figure A34: Average marginal effects of commitment making on marriage risks by gender*
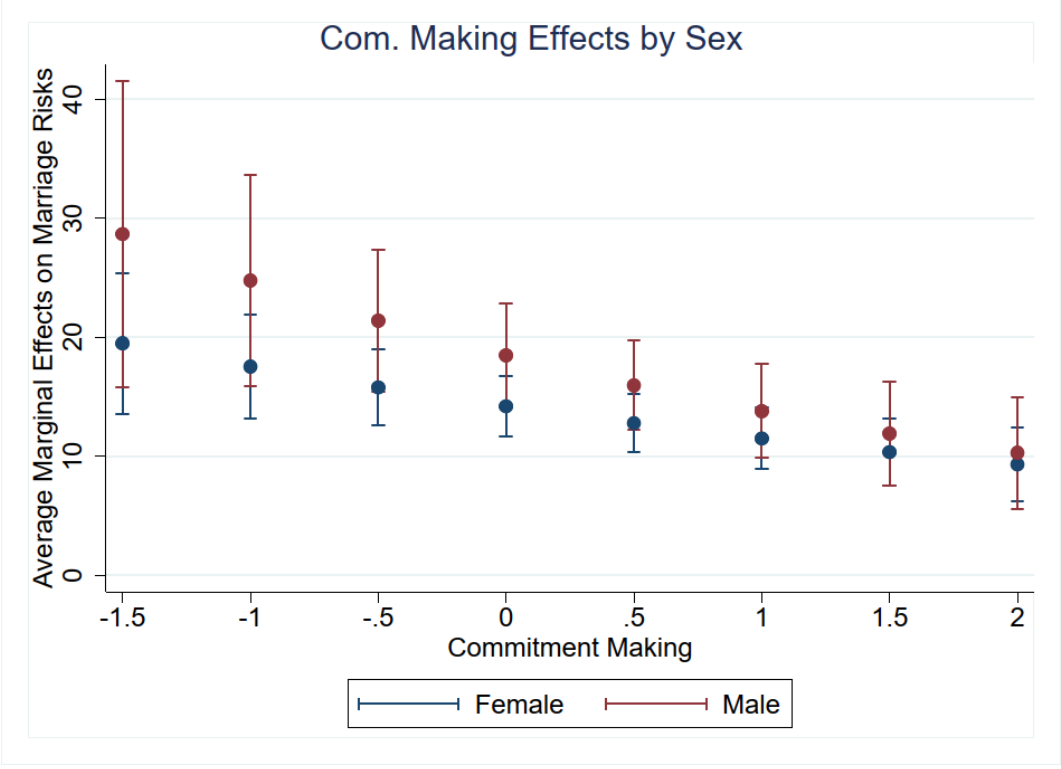
Figure A35: Average marginal effects of identification with commitment on marriage risks by gender
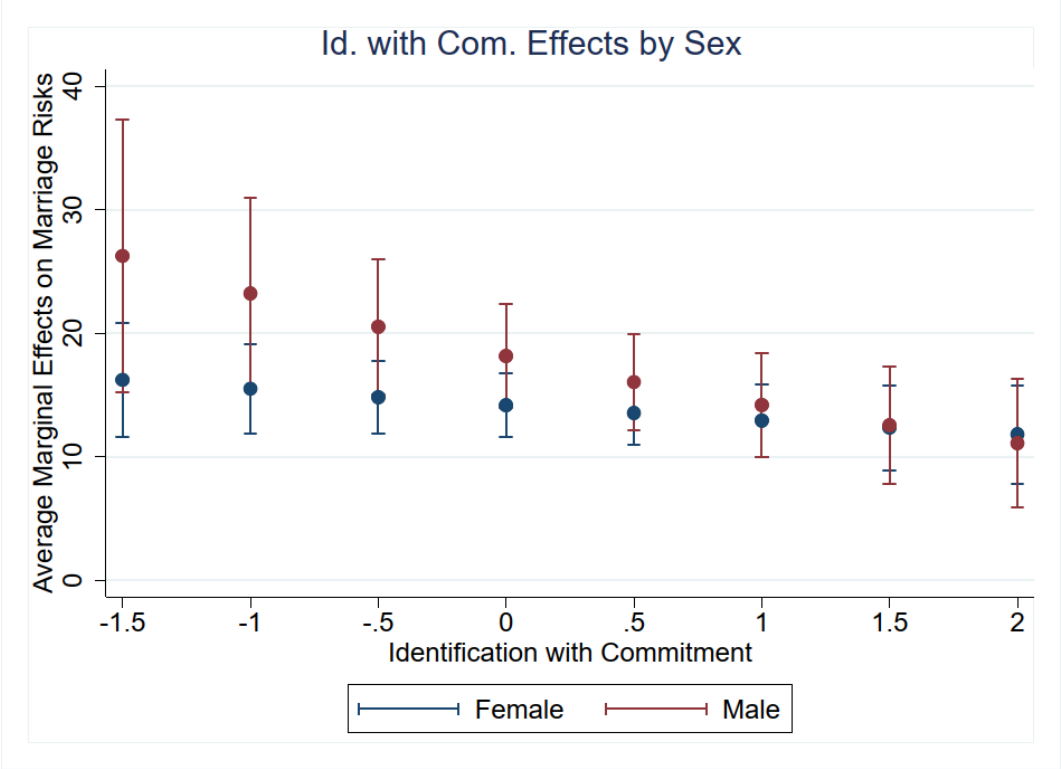
Figure A36: Average marginal effects of identity clusters on marriage risks by gender (2-cluster-solution)
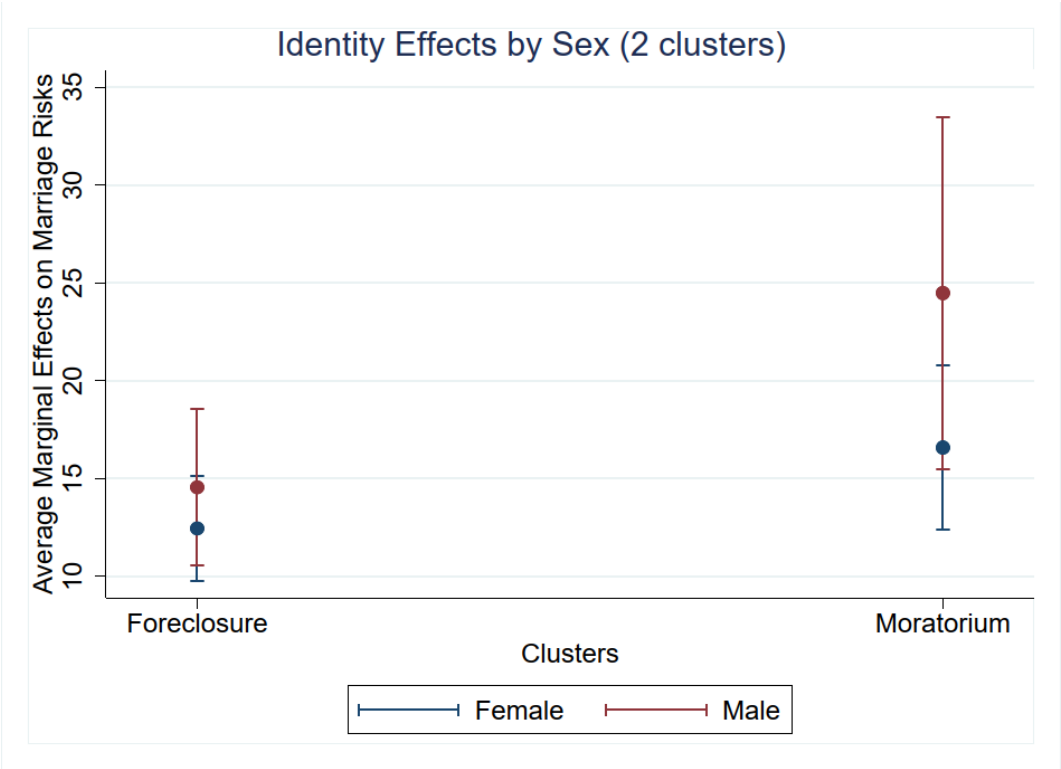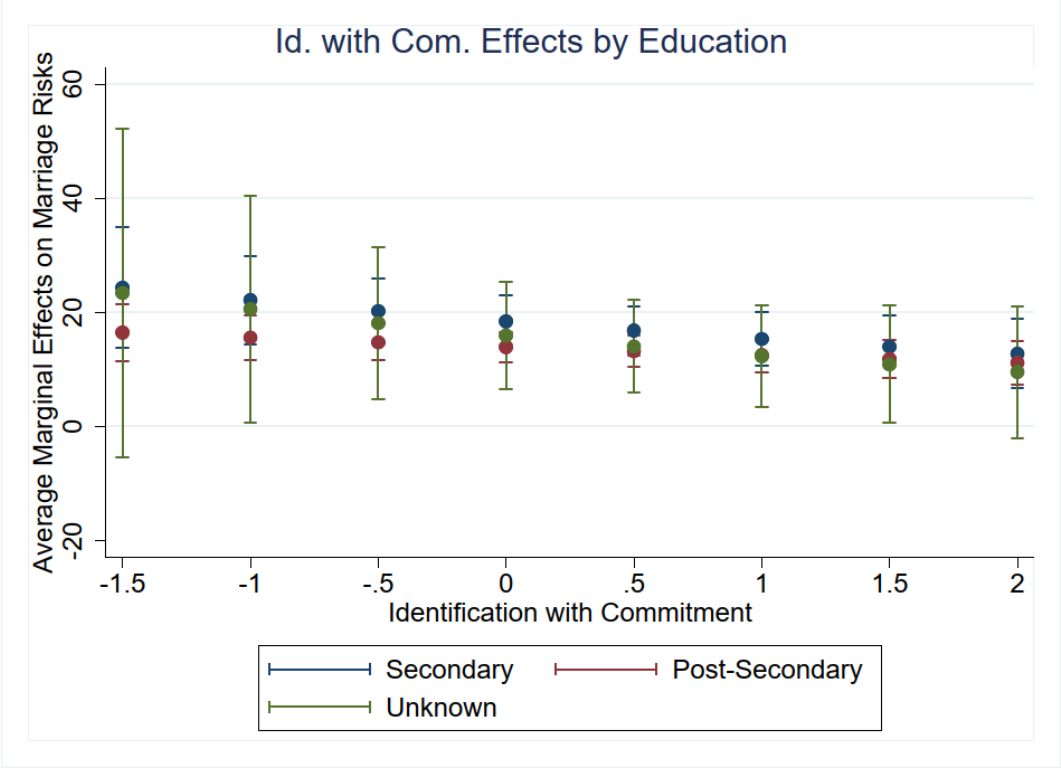
Figure A37: Average marginal effects of identity clusters on marriage risks by gender (3-cluster-solution)
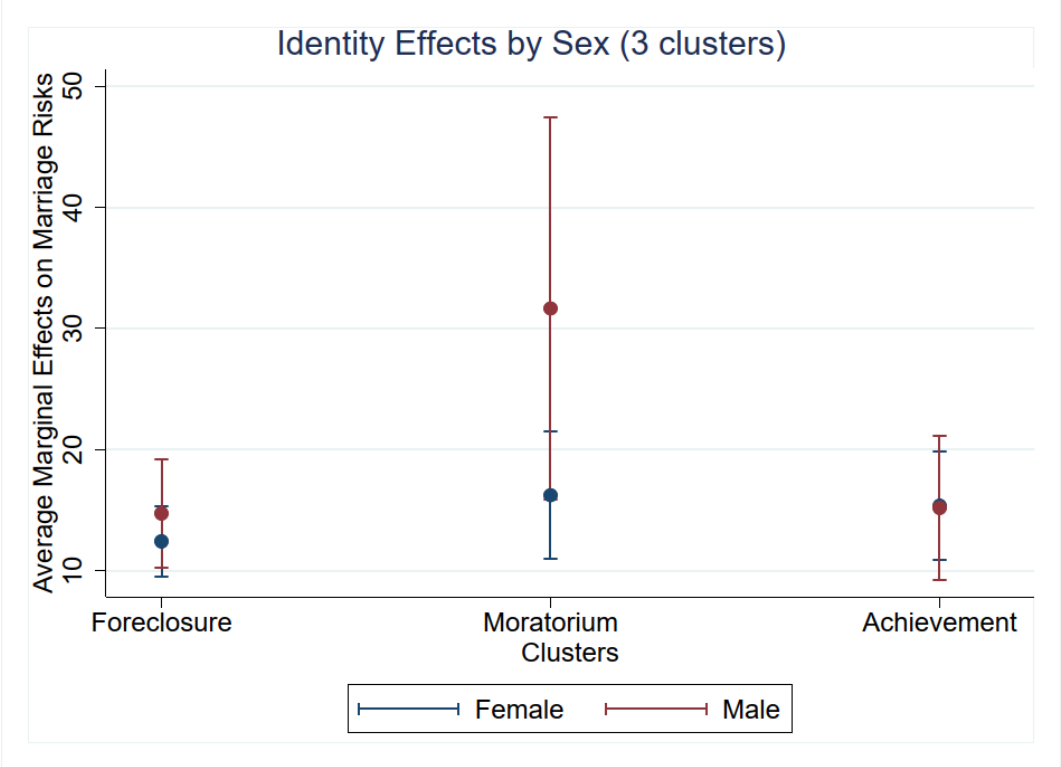
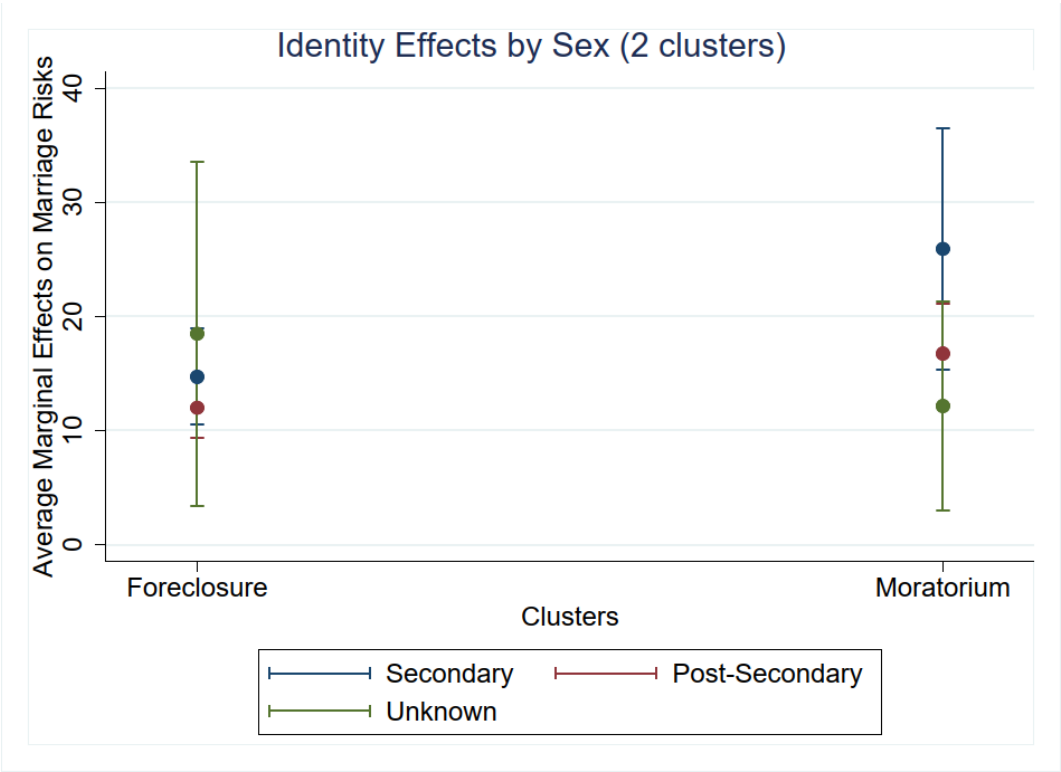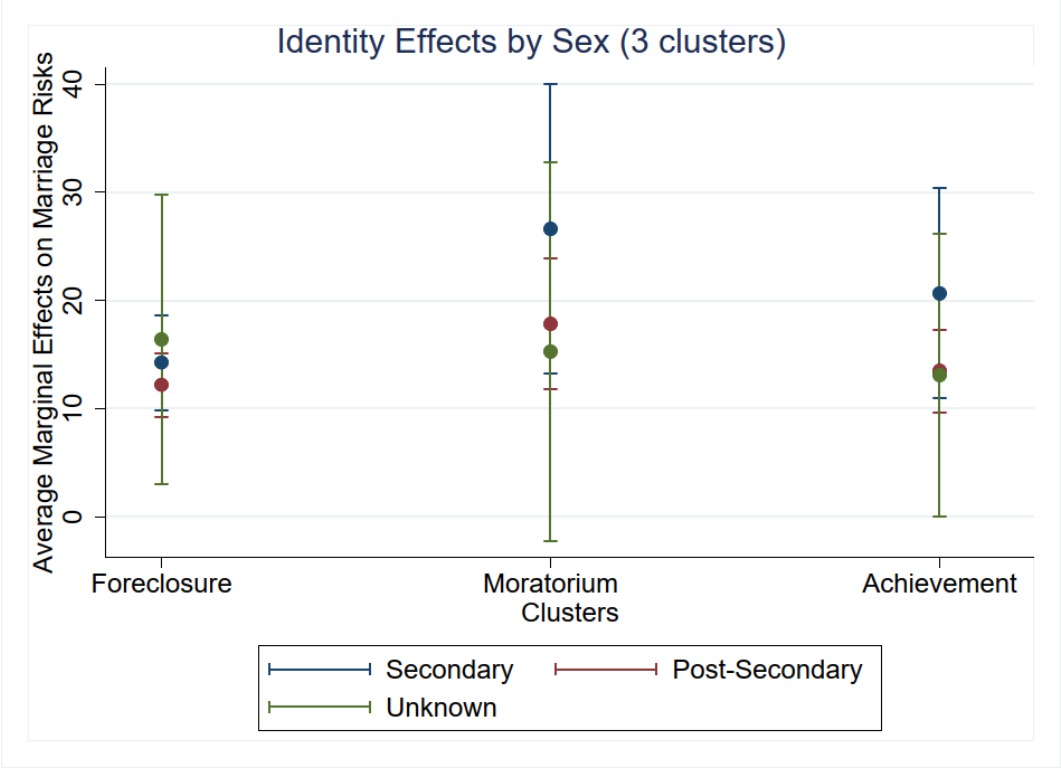

Figure A38: Average marginal effects of identity clusters on marriage risks by gender (4-cluster-solution)
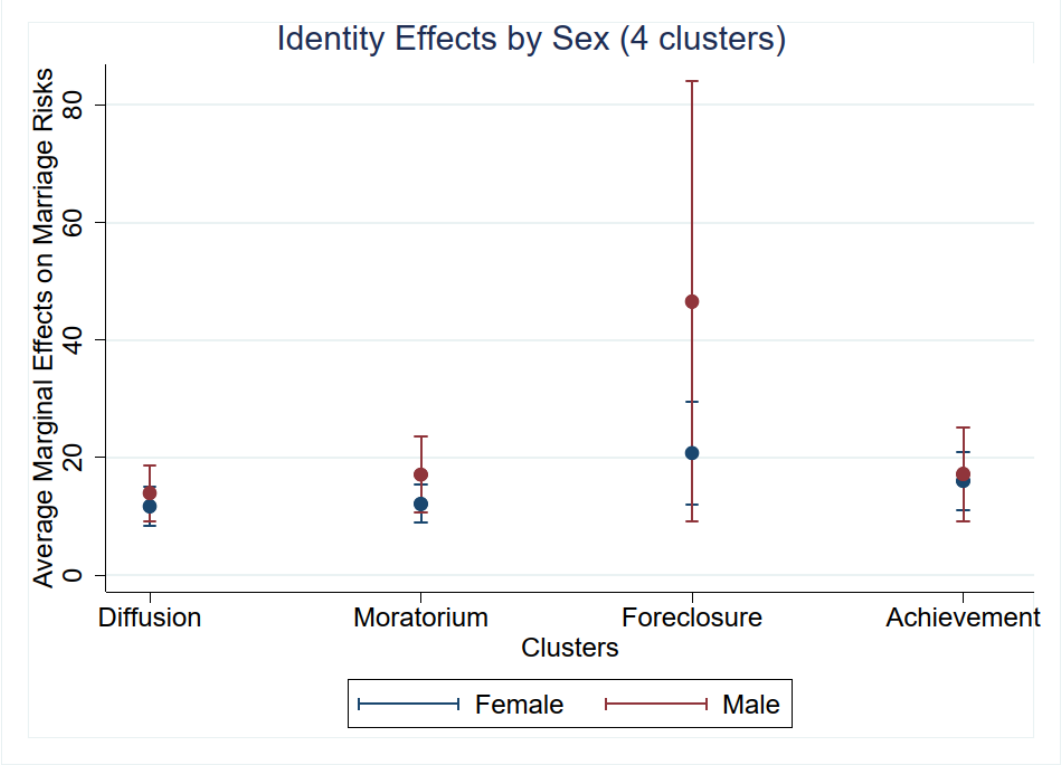
Figure A39: Average marginal effects of identity clusters on marriage risks by gender (5-cluster-solution)
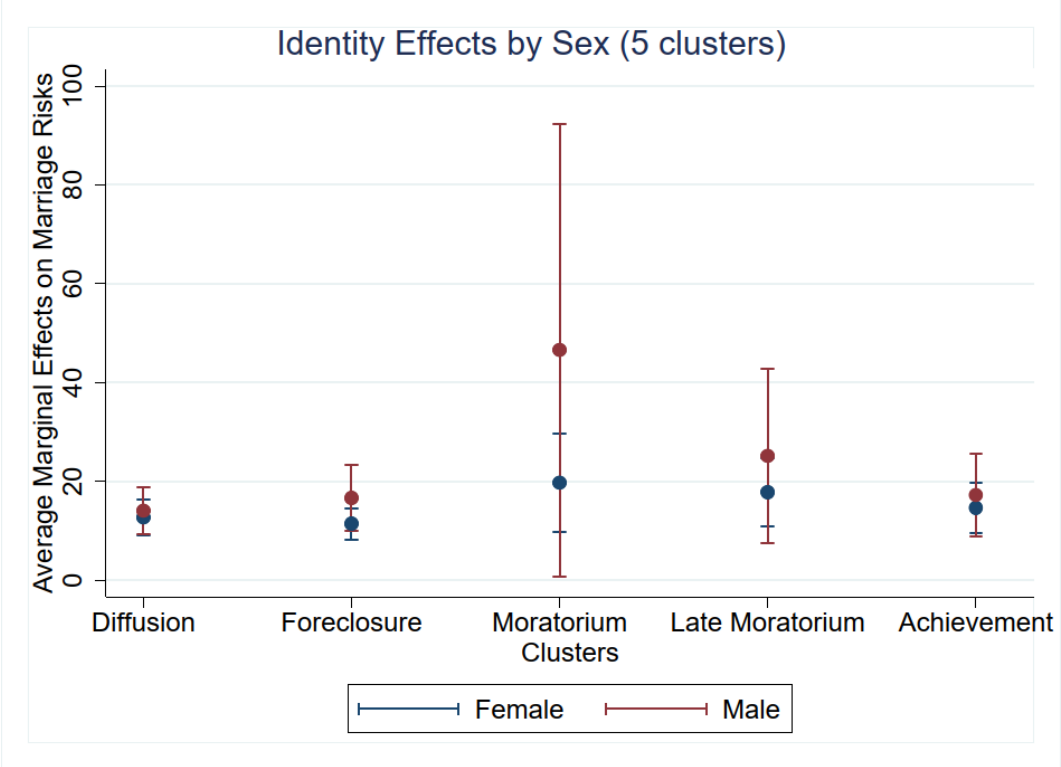
Figure A40: Estimates from generalized least squares fixed effects models on ruminative exploration over observation time (2011-2020) by gender

Figure A41: Estimates from generalized least squares fixed effects models on exploration in breadth over observation time (2011-2020) by gender

Exploration in Breadth over Time
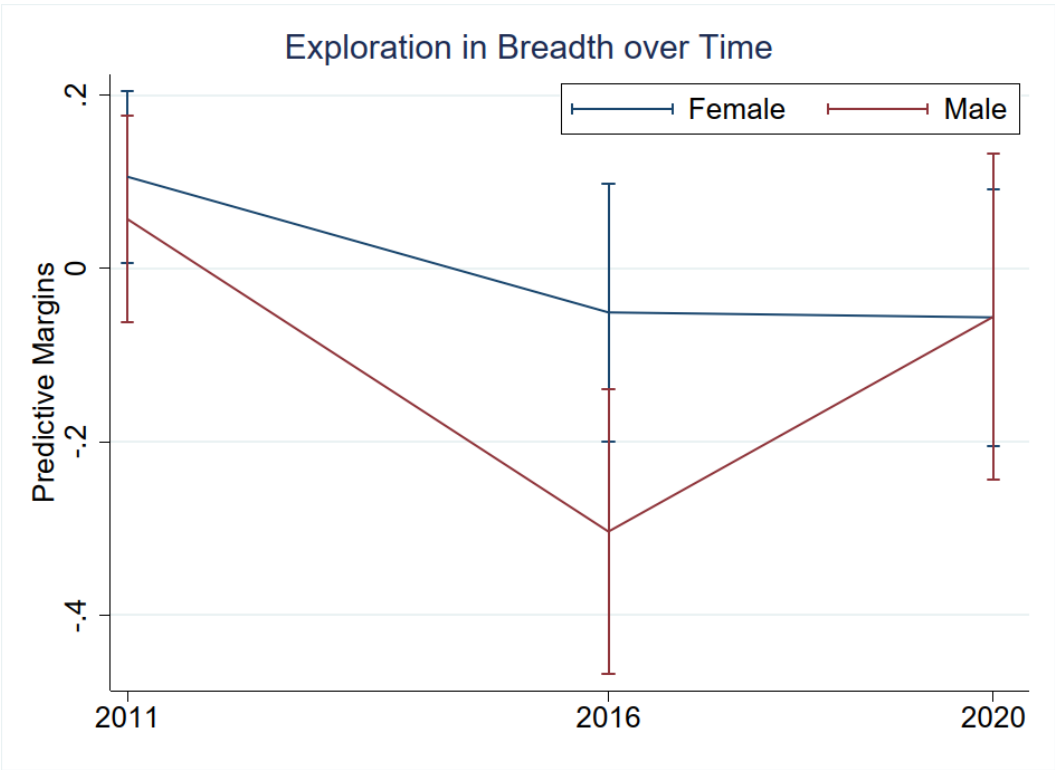
Figure A42: Estimates from generalized least squares fixed effects models on exploration in depth over observation time (2011-2020) by gender

Figure A43: Estimates from generalized least squares fixed effects models on commitment making over observation time (2011-2020) by gender

Figure A44: Estimates from generalized least squares fixed effects models on identification with commitment over observation time (2011-2020) by gender

Figure A45: Average marginal effects of ruminative exploration on marriage risks by education

Figure A46: Average marginal effects of exploration in breadth on marriage risks by education

Figure A47: Average marginal effects of exploration in depth on marriage risks by education

Figure A48: Average marginal effects of commitment making on marriage risks by education

Figure A49: Average marginal effects of identification with commitment on marriage risks by education

Figure A50: Average marginal effects of identity clusters on marriage risks by education (2-cluster-solution)

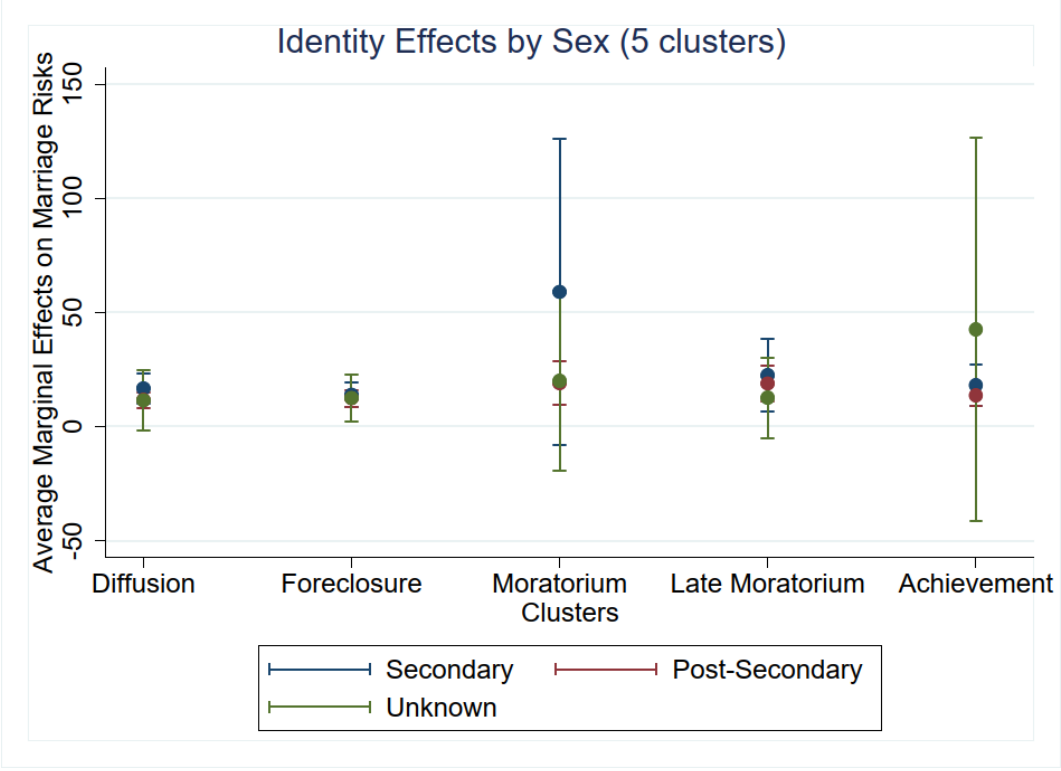*Figure A51: Average marginal effects of identity clusters on marriage risks by education (3-cluster-solution)*

Figure A52: Average marginal effects of identity clusters on marriage risks by education (4-cluster-solution)
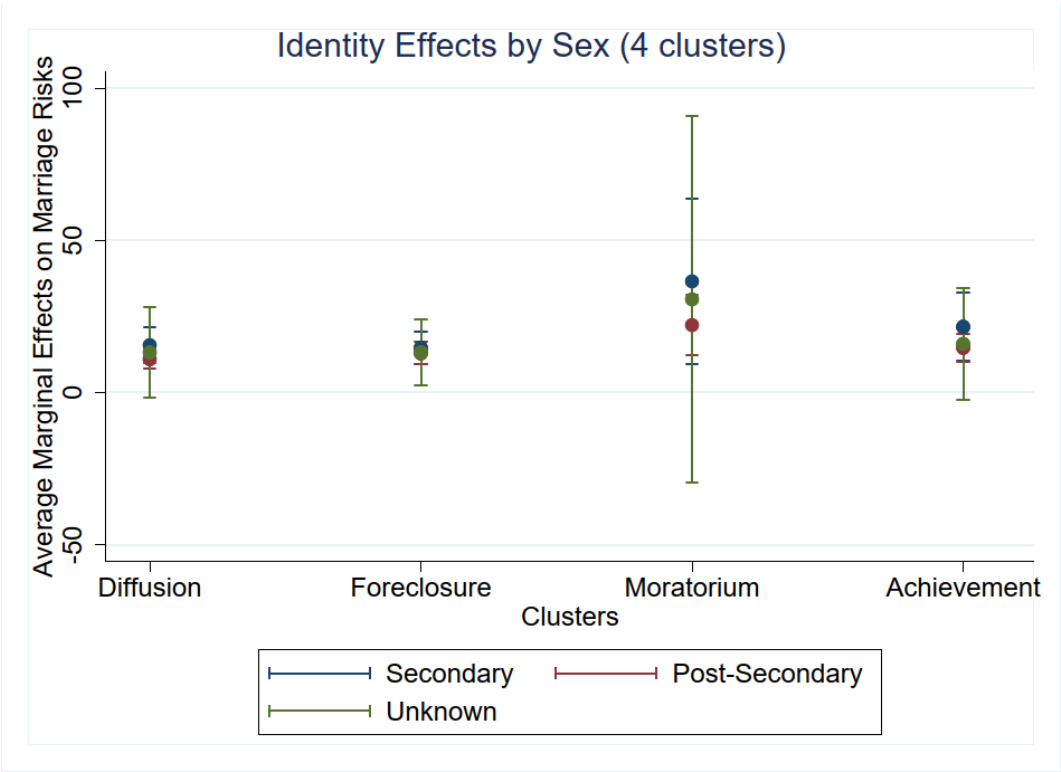
Figure A53: Average marginal effects of identity clusters on marriage risks by education (5-cluster-solution)

Figure A54: Estimates from generalized least squares fixed effects models on ruminative exploration over observation time (2011-2020) by education
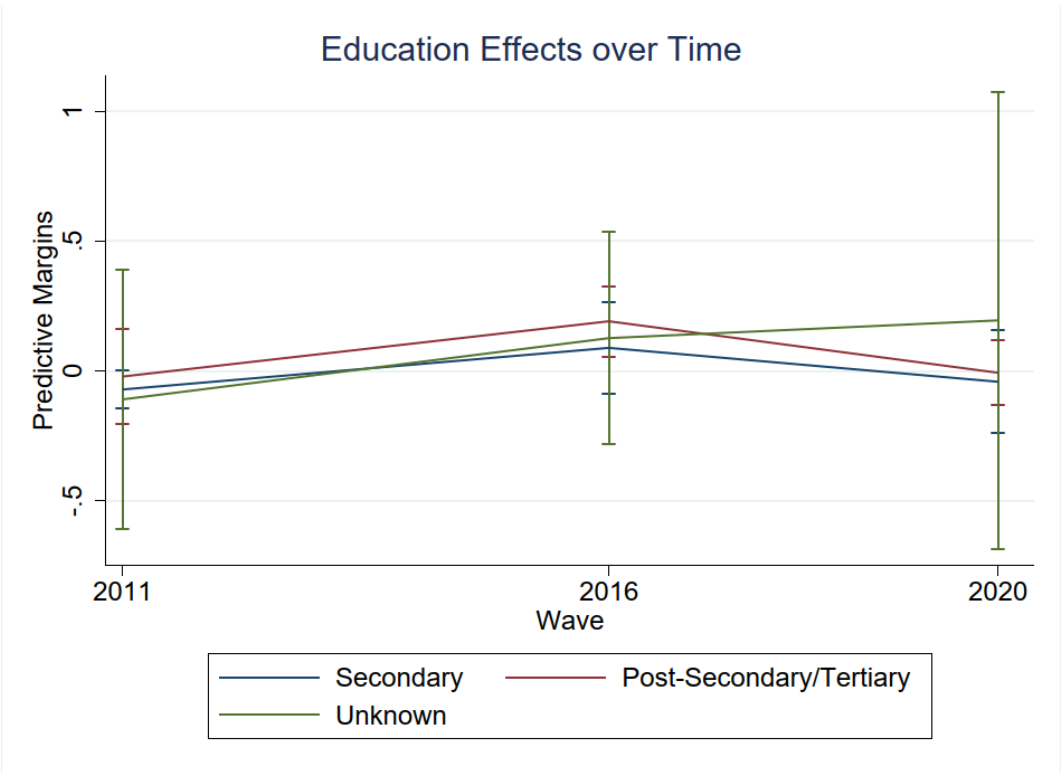

Figure A55: Estimates from generalized least squares fixed effects models on exploration in breadth over observation time (2011-2020) by education
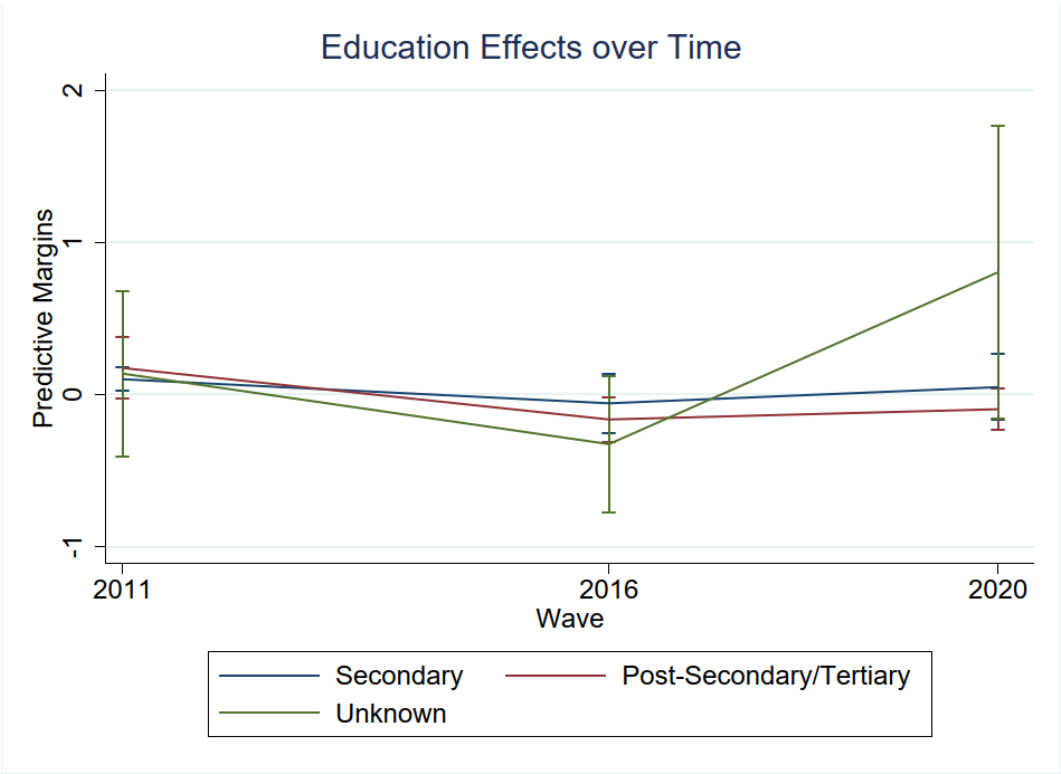
Figure A56: Estimates from generalized least squares fixed effects models on exploration in depth over observation time (2011-2020) by education
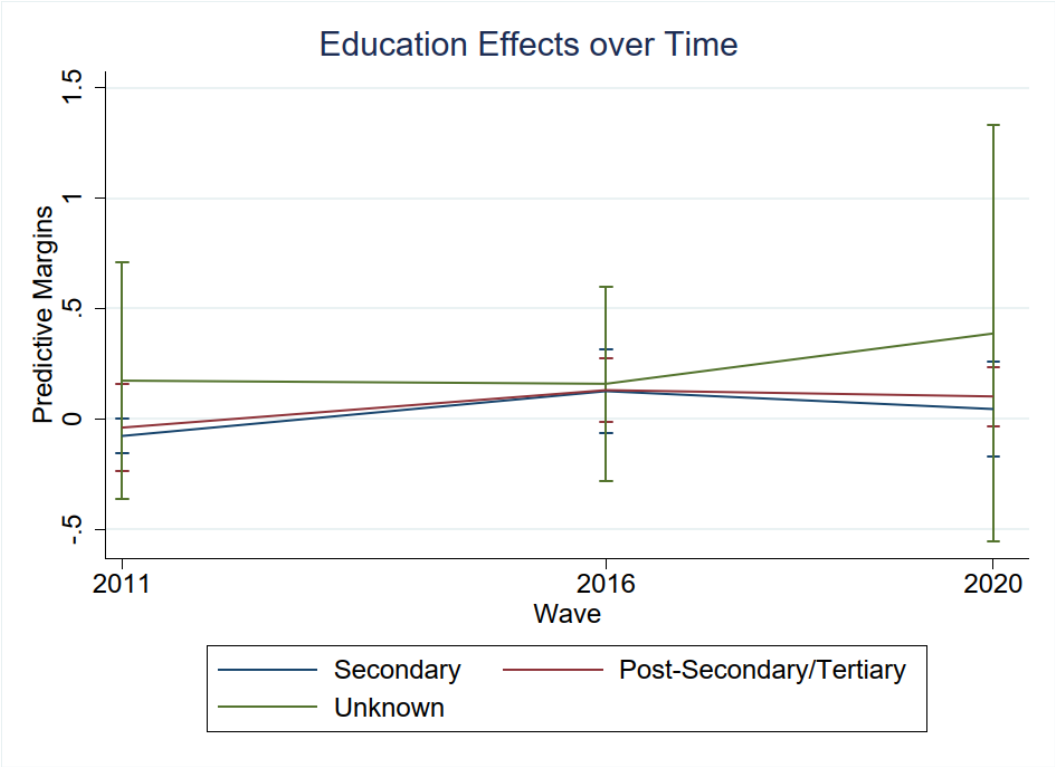

Figure A57: Estimates from generalized least squares fixed effects models on commitment making over observation time (2011-2020) by education
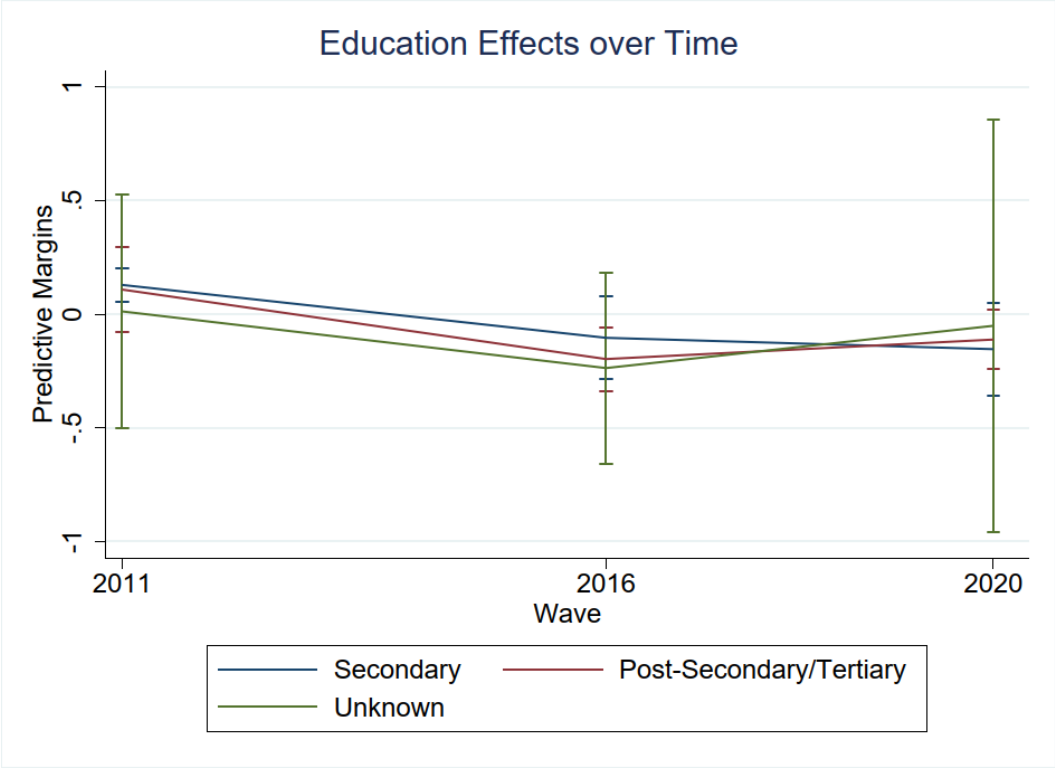
Figure A58: Estimates from generalized least squares fixed effects models on identification with commitment over observation time (2011-2020) by education