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A Holistic Approach to Family Life Course Change across 1930–1978 Chinese Birth Cohorts

ZACHARY VAN WINKLE  AND FANGQI WEN 

Family formation in China has undergone dramatic changes. Despite increasing academic attention, few studies have taken a holistic approach to study cohort change in Chinese family life courses. In this study, we assess how family life course patterns and diversity changed across 1930–1978 birth cohorts. Moreover, we evaluate to what extent changing norms, economic constraints, and institutional reforms drove cohort differences. Data from the China Family Panel Studies and sequence analysis are applied to identify family life course patterns and to calculate sequence diversity. While we found a shift in family life course patterns across 1930–1978 birth cohorts, there is no evidence that Chinese family lives have become more diverse. On the contrary, our results demonstrate that family life courses have become relatively standardized around relatively early marriage and a single child. We find that factors associated with economic constraints and educational attainment—not ideational change or institutional reforms—account for a considerable portion of cross-cohort variation in the diversity of family life courses. Rather than a second demographic transition, the family demographic behavior of 1930–1978 Chinese birth cohorts is marked by continuity despite change.

Introduction

Family formation in China underwent massive changes in the last century. Cohort fertility in China dropped well below replacement rates for women born as early as the 1970s and there is little evidence for recuperation despite the end of the One-Child Policy (United Nations 2019). While marriage and parenthood continue to be nearly universal events in the lives of Chinese men and women, the average age of marriage and parenthood

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increased (Clark and Yi 2020). In addition, roughly 25 percent of marriages are preceded by cohabitation for individuals born in 1980, while cohabitation was virtually non-existent for cohorts born 30 years earlier (Yu and Xie 2015). Despite the amount of family demographic research on China in recent years (Xu et al. 2020), few studies take a life course perspective to family formation. The current literature provides detailed descriptions of point-in-time events, such as the age of marriage, but there are few studies on family life courses as holistic process outcomes (Wang and Zhao 2021). Process outcomes can be conceptualized as the result of a number of single life course events (Abbott 2005). For example, a family life course is the result of numerous events, such as the age of first birth, the number of children, and whether a marriage ended in divorce. Only a detailed depiction of patterns can bring cohort changes in the timing, duration, and ordering of family demographic events in the lives of Chinese men and women to light.

Much of the family demographic research on China is motivated by the second demographic transition (SDT) theory and whether developments in Chinese family demography are consistent with its predictions (Raymo et al. 2015). In its original formulation, the theory of the SDT is an ideational narrative that emphasizes the link between changes in family demographic behavior and shifts in norms, values, and attitudes in western and northern Europe (Zaidi and Morgan 2017). Early proponents of the SDT theory argue that a cultural shift from materialist to postmaterialist values and technique innovation drove a decoupling and delay of marriage and parenthood, a continuous decline in marriage and fertility, and an increase in alternative living arrangements, such as nonmarital cohabitation and divorce (van de Kaa 1987). Moreover, this process was argued to be universal—all countries would undergo this process as they develop socially and economically—although later revisions allowed for cross-national differences in the pace, trajectory, and end stage of family life course change (Lesthaeghe 2010, 2020). Other theoretical narratives have emphasized globalization, tightening economic constraints, and economic uncertainty as drivers of change in family life courses (Mills and Blossfeld 2013; Vignoli et al. 2020). It was argued that young adults with dim labor market prospects postponed long-term commitments in favor of nontraditional arrangements, for example, cohabitation over marriage.

Both the ideational narrative of the SDT theory and economic narrative of tightening constraints focus on cross-temporal change and neglect the role of institutional arrangements in shaping family demographic behavior. For example, life course sociologists argue that the trend towards more diverse family formation in Europe was the result of a shift in family policy from institutions that incentivized a gender-specific division of labor to institutions that allotted women more freedom in family decisions (Mayer 2009; Van Winkle 2020a). In China, social and family policy

underwent drastic changes across the 20th century, including the implementation and relaxation of the One-Child Policy as well as the successive liberalization of divorce and cohabitation legislation. It provides a unique setting to examine the link between institutions and holistic family life course patterns.

In this paper, we address three questions: First, what family life course patterns exist in China and how have they changed across birth cohorts? Second, how has the diversity of family life courses developed across Chinese birth cohorts? These two descriptive questions are important to provide a rich and holistic description of family life course change in China. Finally, to what extent are changing norms, economic constraints, and institutional arrangements driving cohort differences in the family life courses of Chinese men and women?

We use retrospective and prospective data from five waves of the China Family Panel Studies (CFPS) collected between 2010 and 2018 to construct the family life courses of Chinese men and women born between 1930 and 1978 from aged 16 to 40. We then apply sequence and cluster analysis to identify ideal-typical family life course patterns and investigate how those have changed across birth cohorts. In addition, we calculate the averaged normalized distance of sequences (Van Winkle 2020b) to assess how the diversity of Chinese family life courses changed across birth cohorts. In the final step, we estimate associations between a set of indicators, such as respondent's family attitudes, educational attainment, and exposure to the One-Child Policy, and respondent's family diversity across birth cohorts. We concentrate on the extent that these indicators attenuate birth cohort differences. This allows us to make tentative conclusions on the extent that factors related to our three narratives of ideational change, economic constraints, and institutional arrangements account for family life course change in China.

We contribute both theoretically and empirically to the family demographic literature. Theoretically, we adapt three narratives of family life course change, including the ideational narrative of the SDT theory, to a non-Western setting. In addition to the conventional ideational and economic narratives, we introduce an institutional argument tailored to the Chinese context. Empirically, we not only show what family life course patterns can be found across a broad range of 20th-century Chinese cohorts but demonstrate that conclusions on the degree of change may be overstated when based on single point-in-time events. Compared to previous descriptions of these point-in-time events, findings from our holistic approach generate a comprehensive picture of Chinese family patterns. We find no evidence for increasing diversity in Chinese family life courses across birth cohorts, but rather that family life courses have become increasingly standardized around relatively early marriage and one child. Moreover, we show that institutional arrangements, such as elements of the One-Child

Policy, are not sufficient to account for this change in Chinese family formation. Factors associated with economic constraints and specifically educational attainment—not ideational change or institutional reforms—account for a considerable portion of cross-cohort variation in family life course diversity.

Theoretical background

In the following section, we review three narratives of family life course change—ideational, economic, and institutional—and their use in European and U.S. family demography. Before formulating expectations, we discuss the Chinese context and pay special attention to how—if at all—these three narratives are applicable to China.

Three narratives of family life course change

Three distinct narratives of family life course change emerged following dramatic changes in family demographic behavior in the second half of the last century: an ideational narrative, an economic constraints approach, and an institutional account. Note that while the theories nested within these three narratives as we present them below do not necessarily stand in opposition to one another, but may build and interact with one another. However, we review them according to the dimension that they tend to emphasize as the most important driver of variation in family life courses.

The ideational narrative of family change—the SDT theory—was originally formulated by Lesthaeghe and van de Kaa (1986; see also van de Kaa 1987) to account for family demographic change in northwestern Europe (see Zaidi and Morgan 2017 for a review). In its original form, the SDT theory describes a process where the link between intercourse, marriage, and parenthood dissolved as social attitudes towards marriage weaken, contraceptives became widely available, and divorce legislation was liberalized.

Nearly a decade later, Lesthaeghe (1995) revised the SDT theory. He proposed that change in northwestern European family life courses occurred in three phases: (1) a stop in the declining age of marriage and parenthood, decreasing fertility, and increasing divorce rates (1955–1970); (2) an increase in cohabitation, nonmarital fertility, and remarriage (1970–1985); and (3) a stabilization of divorce rates, a decline in remarriage, and a recuperation of fertility to stable subreplacement levels (1985 onwards).

Lesthaeghe (1995) argued that a Maslowian (see Maslow 1943) shift towards higher order needs and postmaterialist values prioritizing self-actualization were the main drivers of changing family life courses. Economic growth following the Second World War and welfare state expansion greatly improved standards of living and educational expansion attributed

to more liberal values. Rather than attaining material security within the realm of the family, men and especially women were free to peruse their own paths to happiness. In Aries' (1980) terms, the family shifted to being composed of parents with a "king child" to a child being with "king parents." According to Lesthaeghe (2010), the shift to sustained subreplacement fertility, heterogeneity in living arrangements, and the disconnection between marriage and parenthood would be an irreversible and universal trend, although with considerable cross-national variation. This has led many to coin Sweden as a forerunner of the family life course change, while numerous southern and eastern European as well as numerous non-European countries are said to be laggards. In sum, the ideational narrative of the SDT theory links changing norms, especially surrounding the family, with cohort change in family life courses.

The second narrative of family life course change emphasizes structural change in the economy and the labor market over ideational and cultural change. The idea that economic constraints can induce change in family demographic behavior is not new. For example, Easterlin (1976) argued that the delay in parenthood was a response to more competitive labor markets and young adults' difficulty in achieving their parents' standard of living. Oppenheimer (1988) saw the delay in marriage and rise of cohabitation as a response to increased uncertainty in the marriage market. She argued it was more difficult to estimate the future standard of living a possible partner might attain based on their current labor market position.

The economic constraint's narrative was advanced more recently by Mills and Blossfeld (2013) and Vignoli and colleagues (2020), who focused on how objective and subjective economic uncertainty impacts the early work and family lives of young adults. Like Easterlin (1976) and Oppenheimer (1988), they argue that for adults from disadvantaged backgrounds, the transition to adulthood became too precarious to enter long-term commitments, such as marriage and parenthood. Therefore, young adults began to favor cohabiting relationships over marriage. However, young adults from advantaged backgrounds with better labor market prospects and a parental safety net still felt secure enough to enter marriage and parenthood (Furstenberg 2005).

The third narrative builds on the work of comparative life course sociologists and their work on how cross-national variation in institutional arrangements structure work and family lives (Mayer and Müller 1986; Mayer and Schoepflin 1989). Studies in Europe indicated that a shift away from familistic family policy across the last half of the 20th century contributed to higher levels of family life course complexity (Van Winkle 2020a; Zigel and Van Winkle 2020). Hallmark familistic measures, such as family allowances and child tax benefits, incentivized and enabled a traditional male-breadwinner female-homemaker division of labor, independent of economic constraints (Leitner 2003; Gauthier 2007). Therefore, women

remained dependent on men's income and men remained dependent on women's care work, which increased the costs of nonmarital parenthood and divorce. Individualizing policies that emerged early in Nordic countries, such as widespread childcare and eldercare, aimed to reduce gender and intergenerational dependencies throughout women's lives (Lohmann and Zagel 2016). One aim of these policies was to increase fertility rates while maintaining high female labor market participation. However, by maintaining women's earning capacities these policies increased the opportunity costs of marriage and parenthood and made alternative family arrangements more attractive (Becker 1981; Becker and Tomes 1994; Esping-Andersen 1999; Lister 1994). The adoption of individualizing family policies across northwestern Europe is argued to be one driver of recent family life course change beyond the Nordic countries, for example, to France and Germany.

However, a number of scholars criticized the assumption that family life courses will change in all societies as they did in northwestern Europe and the United States. Thornton (2001) described how family demographers, in particular proponents of the SDT theory, equated cross-cultural differences in family formation with cross-temporal differences between more and less developed societies. Family behavior in northwestern Europe was used as the standard for what is considered modern and developed, while trends elsewhere were seen as traditional and less developed. There are numerous cultural and institutional reasons to expect that China has not and will not undergo the same changes in family life courses as in Europe and North America. For example, nonmarital births hardly increased over time in other East Asian countries influenced by Confucianism such as Japan and South Korea, despite a declining marriage rate (Atoh, Kandiah, and Ivanov 2004). In addition, Chinese family policy has components that may both facilitate and impede family life course change. While the slogan "late marriage" and "late parenthood" could increase the complexity and diversity of family patterns, the strict "one child" or "two children" quota might standardize fertility behavior.

The Chinese context

Over the past several decades, family formation in China witnessed both change and continuity. Most notably, marriage remained nearly universal. In 2010, more than 95 percent of individuals married at least once by the age of 30 (Mu and Xie 2014). However, multiple indicators have shown tremendous change in Chinese marriages. The marital fertility rate decreased from 6.5 births per woman in 1950 to underreplacement levels after the 1990s (United Nations 2019). In addition, the marriage rate before the age 25 declined as the age at first marriage for both men and women increased over birth cohorts (Yu and Xie 2015). Although it is still relatively

low by international standards, the divorce rate has risen continuously, especially in recent years (Chen, Rizzi, and Yip 2020; Wang and Zhou 2010). Furthermore, diverse family forms are emerging in China, although these still make up only a small percentage of the population. For example, the number of individuals living in single-parent households, alone, or partnered without children is steadily increasing (Xu and Xia, 2014).

Most of the studies reviewed above focus only on one specific dimension of family formation in China. To date, there is little empirical evidence on cohort trends in holistic life course outcomes (Wang and Zhao 2021). However, research that goes beyond a single point-in-time outcome to assess holistic life courses and their complexity and diversity is needed to comprehensively assess the extent of family life course change in China.

Chinese family traditions are rooted in Confucianism and are characterized by the principle of filial piety (Freedman 1961). Traditionally, Chinese families are organized to maintain patriarchal authority and to secure patrilineal inheritance. Respecting and caring for parents as well as producing children, especially male offspring, to carry on family lineage, are the two essential components in the lives of a married couple. However, such traditional values were challenged in the early and mid-20th century, particularly in the socialist era. For example, more gender equality and individual freedom from parental interference were demanded by younger cohorts (Diamond 1975). In the postsocialist period (1978 and onwards), traditional family values and gender beliefs began to reemerge (Pimentel 2006; Zuo 2003).

Educational expansion took place in China somewhat later than in northwestern Europe, although the average years of schooling in China increased over time through the enforcement of nine-year compulsory education in 1986 and the expansion of higher education in the late 1990s. Moreover, the gender gap in education has narrowed and eventually became negligible in urban areas (Zeng et al. 2014).

In addition, Chinese family and social policy underwent tremendous change across the 20th century. The implementation of the One-Child Policy in 1979 certainly standardized couples' fertility behavior. From 1979 to 2013, urban Han Chinese were technically allowed to have only one child under almost all circumstances. However, regulations were less strict or enforced to a lesser degree for ethnic minorities, nonstate sector workers, and individuals from rural areas. Civil marriage and divorce legislation were standardized across China in 1950 and liberalized extensively in 1980, which granted both men and women more grounds for divorce. However, it was not until 2001 that nonmarital cohabitation was decriminalized, although pre-marital cohabitation was practiced much earlier (Yu and Xie 2015).

An additional important institution that affects family demographic behavior is the household registration (Hukou) system that divides the

Chinese population into rural and urban residents, with the latter benefiting from institutionalized social advantages over the former (Wu and Treiman 2007). After China's economic reform in the late 1970s, tens of millions of people from rural areas migrated to cities seeking nonagricultural employment. However, the rural–urban disparity remains one of the main sources of economic and social inequality in contemporary China (Chan and Zhang 1999; Chan 1994; Wu and Treiman 2007).

While the urban Hukou status confers economic advantages, the high cost of housing is likely associated with delayed marriage and fertility, especially for recent cohorts. Since the launch of urban housing reforms in the late 1980s and particularly since the passage of the State Council's Housing Reform Directive of 1998, market-based housing became widespread and led to high costs for urban couples intending to start a family. Essentially, more time is required for urban residents to accumulate sufficient wealth to begin family formation.

Expectations

The numerous societal changes in China are strongly reminiscent of the three narratives of family life course change reviewed above. In fact, many would suggest that China is in the midst of dramatic change in family life courses. Based on our knowledge of recent trends in Chinese family demographic behavior, we can formulate tentative expectations.

Our first two research questions revolved around patterns of family life courses in China, and how they have evolved across birth cohorts. In line with previous research, we expect to find family life courses that are characterized by early marriage and parenthood. If China is undergoing a family life course change, then we would also expect to also find patterns characterized by delayed or foregone family formation as well as premarital cohabitation, divorce, and remarriage. In this case, we would expect the diversity of family life courses in China to increase across birth cohorts.

Our third research question revolved around the appropriate narrative for change in family life courses across Chinese birth cohorts. Specifically, are changing norms, economic constraints, or institutional shifts driving cohort differences in the family life courses of Chinese men and women. The ideational narrative of the SDT theory suggests that as societies develop economically and socially, individuals will begin to prioritize and value traditional family formation to a lesser degree. In turn, we might expect a polarization between individuals with traditional values engaging in early marriage and parenthood while less traditional family-oriented values delaying or foregoing marriage and parenthood.

The economic constraints narrative of family life course change highlights the divide between the family lives of young adults who attain low levels of education and those who complete university. The expectation is

that as economic uncertainty grows, less educated young adults tend to opt out of traditional family formation, while highly educated adults continue to marry and have children within marriage. This could also apply to the Chinese context after the liberalization of the labor market.

Finally, institutional variation could drive shifts in family behavior. Specifically, the differences in the strictness of the One-Child Policy, for example, by province, ethnicity, or party membership, as well as Hukou status could generate different family patterns and levels of diversity across birth cohorts.

Data and methods

Study sample

To test our hypotheses, we used five waves of CFPS collected between 2010 and 2018 (see Xie and Hu 2014). CFPS is a representative household survey that includes 25 Chinese provinces and a wide range of detailed socioeconomic and demographic information.

We used retrospective and prospective information on respondents' marital histories, cohabitation spells, and the birth dates of children to reconstruct their family life courses. Our family sequences consisted of monthly spells from age 16 to 40 and differentiated between never married (NM), first marriage (1M), second marriage (2M), divorced (D), widowed (W), and cohabitation (C). In addition, we differentiated between being childless (NC), having one, two, or three or more children (1C, 2C, and 3+C, respectively). Finally, we include a state for premarital pregnancy (PMP). This state emerges for men and women who are either single or cohabiting while pregnant with a first child defined as nine months before birth. Note that we only had information on cohabitation spells if they were preceded marriage or if respondents were currently cohabiting. However, these limitations are unlikely to bias our results, because cohabitation that does not lead to marriage is relatively uncommon in China.

Our initial sample for sequence, cluster, and regression analysis includes 20,013 respondents born between 1930 (age 80 in 2010) and 1978 (age 40 in 2018) who were observed in both 2010 and 2012 when our main independent variables were collected.

Dependent variables

Family life course patterns. Our aim was to first identify ideal-typical patterns of early family life courses in China. We, therefore, calculated pairwise sequence distances and subjected them to a clustering algorithm (see Aisenbrey and Fasang 2010). We used optimal matching (OM) to calculate sequence distance, which is defined as the minimum cost needed to

transform one sequence into another. Formally, the OM distance between sequence x and y is the minimum costs of the edits, $C(e)$, to transform sequence x into sequence y :

$$d_{OM}(x, y) = \min \{C(e) : e \in E(x, y)\}, \quad (1)$$

where $E(x, y)$ represents a series of substitution, deletion, and insertion edits (Elzinga 2014). The results displayed below are calculated using insertion and deletion costs of one and constant substitution costs of two, often referred to as OM 1&2 distance.

OM 1&2 is one of the preferred distance measures for sequence analysis applications including elements of family formation (e.g., Raab and Struffolino 2019; Van Winkle 2018; Vidal et al. 2020; Zagel and Van Winkle 2020). One reason is that compared to other dissimilarity measures, OM 1&2 captures differences in duration and timing (Studer and Ritschard 2016). Therefore, key expected changes in family formation, such as variation in the timing of marriage and parenthood, the duration between marriage and a first child, the spacing between subsequent births, should be reflected in the dissimilarities and later in the clusters. However, OM 1&2 is less sensitive to differences in sequencing. On the one hand, insensitivity to sequencing is not problematic, because the ordering of many family events cannot be done in reverse. For example, married individuals are not able to transition into the state of never married and parents are not able to transition into a state of childlessness. On the other hand, an insensitivity to sequencing may obscure the prevalence or relatively rare or short events, such as brief spells of cohabitation or premarital pregnancy. Another preferred measure is based on the inverse of (time-varying) transition rates between sequence states (e.g., Aassve et al. 2007; Aisenbrey and Fasang 2017; Comolli, Bernardi, and Voorpostel 2021; Sheppard and Winkle 2020). However, transition rate-based distances are problematic due to the irreversibility of many transitions, prone to violate assumptions, for example, the triangle inequality, and have been shown to achieve similar results to OM 1&2 (Studer and Ritschard 2016).

We then used the partitioning around medoids clustering algorithm and standard cluster solution criteria, including weighted average silhouette width (ASW), to identify family life course patterns (Studer 2013). While the three cluster solution yielded the highest ASW value (0.48), we opted for the six cluster solution with a lower ASW value (0.42) that represented a local maxima in various cluster solution criteria between 5 and 10 clusters. The three cluster solution only highlighted parity within sequences, while the six cluster solution also underscored timing differences in marriage and childbirth. In an additional analyses subsection of the results, we discussed results of analyses targeted at identifying family life course patterns that are characterized by brief and/or rare events rather than timing and duration difference.

Family life course diversity. In a subsequent step, we assessed the diversity of family formation in China. We used the average of normalized pairwise sequence distances to measure the diversity of family life courses. Distance metrics calculated on family life course sequences have been used in previous studies to draw conclusions on the relative degree of destandardization across countries, cohorts, and subpopulations. In an early application, Zimmerman (2013) estimated distance matrices, averaged the distances of each individual, and then reported the means of those averages for men and women in France, Italy, and Norway. She concluded that cohort means, that is, the degree of destandardization, only increased temporarily for cohorts born in the mid-20th century. Also based on cohort comparisons of mean family sequence distances, it was found that destandardization levels increased most among lower educated men and women across a large set of European countries (Zimmermann and Konietzka 2018) and increases in destandardization levels in Germany are generally limited to mid- and later-phases (Zimmermann 2020). Fasang (2014) found that evidence for a large destandardization, that is, an increase in mean distances in East Germany following reunification, but a slight standardization, that is, a decrease in mean distances in West Germany.

These studies improved our understanding of family life course destandardization and induced developments in the use of sequence distances. However, Elzinga and Studer (2019, 2016) revealed that cohort comparisons based on average distances must be interpreted with caution. Most importantly, the inverse of sequence distance is not sequence similarity, and therefore it cannot be concluded that life courses have become more standardized, that is, more similar, based on mean distance. What can be concluded is that the number of uncommon features has increased across cohorts. In an example using Dutch family sequences, they demonstrate that not only mean distance but also mean similarity has increased across birth cohorts. Therefore, both the number of uncommon features (distance) as well as the number of common features (similarity) has increased across birth cohorts. Their solution is to normalize sequence distances using a reference sequence to generate an indicator that measures change in the number of uncommon features while taking the maximum number of features into account. In their example, they demonstrate that normalized distances, that is, dissimilarities, indeed increased, indicating a destandardization of family formation. Stated otherwise, the increasing number of uncommon or unshared features was more important than the increase in common or shared features across Dutch cohorts. In a recent application using Swedish register data, Van Winkle (2020) reports an initial increase in family life course dissimilarity, that is, a destandardization, between 1942 and 1952 birth cohorts following a decline in dissimilarity for 1962 and 1972 cohorts. This finding not only demonstrated how important normalization is for cohort comparisons of sequence distance-based metrics, but also that

destandardization may be a transitory phase where one dominant family life course is being replaced by another (Huinink 2013).

To assess cohort differences in destandardization levels, we followed Elzinga and Studer (2019, 2016) and calculated normalized distances by normalizing the pairwise sequence distances from Equation (1) so that these represented dissimilarities. This was done by using an empty reference sequence, r , that permits the comparison of scales and transforms distances into dissimilarities:

$$d_r = 100 * \frac{d_{OM}(x, y)}{[d_{OM}(x, y) + d_{OM}(x, r) + d_{OM}(y, r)] / 2}. \quad (2)$$

It was important to normalize distances to allow comparisons across birth cohorts, but especially to have a measure that reflected similarity (Elzinga 2014). The indicator for a respondent's family life course dissimilarity, the average of normalized pairwise sequence distances, \bar{d}_{r_i} , was calculated as the sum of a respondent's normalized distances divided by the respective number of observations:

$$\bar{d}_{r_i} = 100 * \frac{1}{n} \sum_{j=1}^J d_{r_{i,j}}, \quad (3)$$

where $d_{r_{i,j}}$ denoted the normalized distance of the respondent's family sequence, i , to the family sequence of another respondent, j . Thus small values indicated that a respondent's sequence was similar to all the other sequences, while large values indicated a dissimilar sequence. The theoretical range of dissimilarity lies between zero and one. In our sample, it has an empirical minimum of 0.47 and a maximum of 0.99. We multiplied dissimilarities by 100 to avoid near-zero regression coefficients and standard errors. We followed Elzinga and Studer (2019, 2016) and Van Winkle (2020) and calculated dissimilarities separately by birth cohort. Results based on dissimilarities calculated for a pooled sample are highly similar to those presented below.

Independent variables

We focused on three factors thought to be associated with a change in family life courses: attitudes towards the importance of family, parents' and respondents' educational attainment, and aspects of the One-Child Policy and Hukou system. We constructed a family attitudes index based on six questions on the importance (1) an intimate relationship with one's spouse, (2) not being lonely, (3) feeling successful, (4) being missed posthumously, (5) having a happy and harmonious family, and (6) having children to carry on the family lineage. These items were measured on a five-point scale and demonstrated adequate scale reliability ($\alpha = 0.73$). We extracted the first component from the principal components analysis and generated a weighted additive index. Higher values on our family attitudes index

indicated more responses associated with more traditional family values, for example, individuals find relationships with one's spouse and children as well as having a happy and harmonious family important.

Educational attainment was measured as the highest level of education completed by the respondent. Respondents who are illiterate or semiliterate were classified as having no formal schooling. We then classified respondents as having completed primary school, lower secondary, upper secondary, or tertiary education. In addition, we included parent's education as an indicator of social background. This was measured using the dominance principle and had the same categories as the indicator for respondents' education.

We included a number of institutional indicators related to the One-Child Policy and the Hukou registration system. First, we included an indicator for the One-Child Policy at the time the respondent was aged 16, which was either no policy, one child allowed in most cases, or two children allowed in most cases. Alternatively, we also included an indicator for how strictly the One-Child Policy was implemented when the respondent was 16, measured as the infraction fine in years of household income. This indicator varied by year and province and took the value of zero if the One-Child Policy was not yet introduced. In addition, because the fertility of ethnic minorities, non-Communist party members, and rural residents were supervised and restricted to a lower degree during the One-Child Policy period (Gu et al. 2007), we also included ethnicity, party membership, and an urban–rural indicator to supplement our One-Child Policy indicators. Finally, we included a variable for whether the respondent had an urban or rural Hukou at the age of three and whether the Hukou indicator changed between childhood and the time of the interview.

Analytical strategy

Our aim was not only to assess how family life courses changed across birth cohorts in China but also to what extent factors related to family life course change were able to account for birth cohort differences. To that end, we show descriptively how family patterns and diversity have changed across five cohorts: 1930–1939, 1940–1949, 1950–1959, 1960–1969, and 1970–1978. These birth cohorts experienced dramatically different circumstances during their active family formation phase, from a society scared by civil wars and foreign encroachment, the “Great Leap Forward” and “Cultural Revolution” of the mid-20th century, to the economic opening in the late-20th century.

Our analysis strategy proceeded in six steps. First, briefly reviewed how a number of family demographic indicators, such as cohabitation and premarital pregnancy rates, vary across our study cohorts. Second, we visualized our six family life course clusters and described them based on a

number of family demographic indicators. In the third step, we used multinomial logistic regression to estimate the associations between our independent variables and cluster membership as average marginal effects. Fourth, we showed how the prevalence of our family life course clusters changed across birth cohorts, and outlined key cohort changes in the relationship between our independent variables and family life course clusters.

Fifth, we described how family life course dissimilarity changed across family life courses. In the final sixth step, we assessed to what extent our ideational, economic, and institutional factors were able to account for birth cohort differences in sequence diversity. We did this by estimating step-wise models and assessed the degree that our birth cohort coefficients were attenuated. We estimated four stepwise models: (1) a baseline model that included only birth cohort, gender, and province dummies, followed by models that additionally adjusted for (2) our family attitudes indicator, (3) parental and respondents' educational attainment, and (4) the presence of the One-Child Policy, ethnicity, party membership, urban–rural area as well as Hukou status and age 3 and whether it changed. After deleting cases with inconsistent union and fertility records and missing information on our independent variables, our final analysis sample contained 17,090 respondents born between 1930 and 1978.

Results

Family demographic descriptive statistics

The aim of this study is to describe cohort change in family life course patterns and the diversity of family life courses in China. However, we first review a selected number of family demographic point-in-time indicators that are components of our family life course sequences. This allows us to gain an intuition of which family life course clusters may emerge. Table 1 shows summary statistics on outcomes related to union formation, such as whether respondents ever cohabited and the age of first marriage, as well as outcomes related to fertility.

As can be seen in Table 1, cohabitation went from being an exceptionally rare to a relatively common life course event across our study birth cohorts. Only 1 percent of Chinese men and women born between 1930 and 1949 reported ever living in nonmarital cohabitation. However, 17 percent of the 1970s birth cohort lived in a cohabiting relationship, which corresponds with previous findings (see Yu and Xie 2015). The amount of time spent in nonmarital cohabitation varied across cohorts, although our estimates for the 1930s, 1940s, and 1950s cohorts are based on very small sample sizes and should be interpreted with caution. Among the 1970s birth cohorts, periods of cohabitation were relatively brief: roughly 11 months on average. Marriage was a nearly universal life event. Between 95 and

TABLE 1 Descriptive statistics of family demographic indicators by birth cohort

	1930–1939	1940–1949	1950–1959	1960–1969	1970–1978
Ever cohabited	0.01 (0.09)	0.01 (0.11)	0.02 (0.15)	0.06 (0.23)	0.16 (0.36)
Time spent in cohabitation	22.48 (43.97)	29.04 (41.46)	17.88 (30.80)	14.59 (25.84)	10.90 (17.95)
Ever married	0.95 (0.21)	0.96 (0.20)	0.97 (0.16)	0.98 (0.13)	0.97 (0.16)
Age at first marriage	21.44 (4.29)	22.10 (4.58)	23.25 (3.89)	22.52 (3.34)	23.15 (3.52)
Childless	0.02 (0.15)	0.04 (0.19)	0.03 (0.16)	0.02 (0.13)	0.03 (0.18)
Age at first birth	24.79 (5.19)	24.47 (4.85)	24.98 (3.99)	24.00 (3.46)	24.55 (3.75)
Premarital pregnancy	0.16 (0.37)	0.15 (0.36)	0.19 (0.39)	0.22 (0.41)	0.22 (0.41)
Number of children	3.58 (1.68)	2.72 (1.37)	2.01 (0.98)	1.75 (0.83)	1.63 (0.81)
Ever divorced	0.01 (0.09)	0.02 (0.13)	0.02 (0.14)	0.03 (0.18)	0.04 (0.19)
Observations	1,183	3,094	5,114	5,847	4,447

NOTE: Means/proportions and standard errors in parentheses displayed. Data are weighted.

98 percent of cohorts born between 1930 and 1979 were married at least once with an average age of first marriage between 21 and 23. In line with previous research, we found that divorce was still exceedingly rare in our study cohorts with only 4 percent of respondents in the 1970s birth cohort (age 30–39 in the 2010 survey) ever experiencing a divorce (Zeng and Wu 2000).

Entering parenthood was also a nearly universal life course event across 20th-century Chinese birth cohorts. Only between 2 and 4 percent of respondents reported remaining childless. While the average age of first birth remained relatively constant, between 24 and 25 years, the average number of children reported dropped from 3.6 to 1.6 between the 1930s and 1970s birth cohort. Note that respondents could only report up to 10 children, which is one reason why completed fertility for our older cohorts may seem low, although we are not aware of any reliable cohort fertility estimates before the 1950s for comparison. However, our findings for later born cohorts are in line with previous estimates of completed fertility (see Morgan, Guo, and Hayford 2009). Finally, we also calculated the proportion of premarital pregnancies, that is, the proportion of respondents with a conception or birth before marriage. Premarital pregnancy became increasingly common across birth cohorts rising from around 16 percent of first

births for the 1930s birth cohort to 22 percent for the 1970s cohort, which is roughly in line with findings by Qian and Jin (2020) and Yang (2021).

Family life course patterns

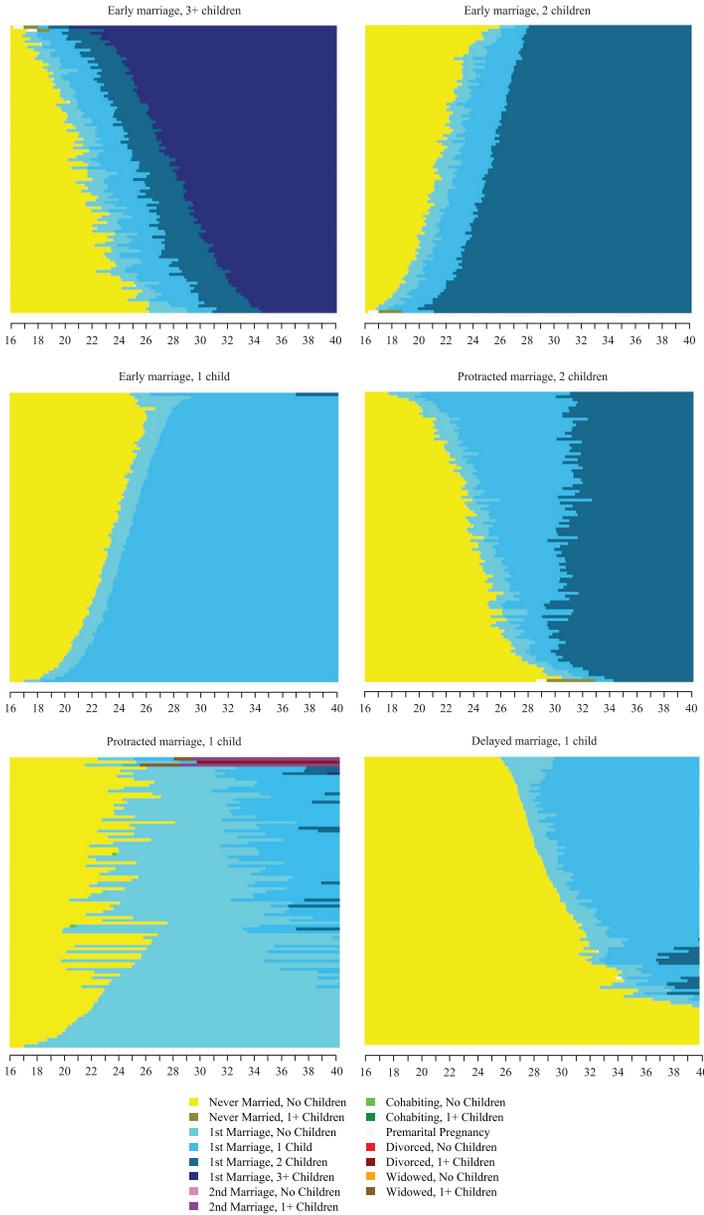
Our family clusters were characterized by the prevalence and timing of marriage as well as the number and spacing of children before age 40. In the following section, we briefly describe the family life course clusters we identified. A visualization of these clusters as relative frequency sequence plots can be found in Figure 1, which displays 100 sequences for each life course pattern. An overview of how the family demographic statistics presented above vary across family life course patterns is displayed in Table 2.

We found three clusters characterized by universal early marriage and universal, rapid entry into parenthood following marriage. Members of the first cluster “*Early Marriage, 3+ Children*” (21 percent) entered marriage and parenthood at an average age of 20.9 and 22.4, respectively, and had an average of 3.6 children. The average age of marriage and first birth was similar for members of the “*Early Marriage, 2 Children*” cluster (17 percent), but it was rare for men and women to have more or less than two children. Another commonality between the early marriage with two or with three or more children clusters was short birth spacing, usually no more than two years. Members of the largest cluster, “*Early Marriage, 1 Child*” (28 percent), entered marriage and parenthood at a slightly older age, on average at 22.4 and 24, respectively, and did not go on to have additional births.

We found two clusters that were also characterized by relatively early marriage, but the transition to parenthood or to a second child was protracted. Members of the “*Protracted Marriage, 2 Children*” cluster (20 percent) entered marriage and had a first birth slightly later than the previous three clusters, at an average age of 23.5 and 25, respectively, but waited to have a second child until after age 30. The average age of marriage was slightly lower for the “*Protracted Marriage, 1 Child*” cluster (4 percent), but men and women in this cluster remained childless within marriage for a considerable amount of time. Roughly 75 percent of the cluster went on to have one child after age 30, but the other 25 percent remained childless. A final cluster, “*Delayed Marriage, 1 Child*” (10 percent), was characterized by a transition to marriage and parenthood around age 30, but rarely proceeded to have an additional child.

Interestingly, we found no family life course pattern characterized by elements of family life course change found in Northern and Western Europe as well as in the United States, such as premarital pregnancy and birth, cohabitation, or divorce. Instead, we found that premarital pregnancy, cohabitation, and divorce were distributed more or less equally across our six family life courses. Cohabitation was nearly nonexistent in the early marriage with three or more children cluster, but it occurred in 5–8 percent of all other life course patterns. The prevalence of divorce was only above

FIGURE 1 Relative frequency sequence plots of family life course clusters



NOTE: Our family life course clusters are displayed in Figure A1 as relative frequency sequence plots (Fasang and Liao, 2014). Relative frequency sequence plots display 100 representative, or medoid, sequences from each cluster. A medoid sequence is the most central or representative sequence with the smallest overall distance to all other sequences within a group. These plots allow us to assess the longitudinal nature of the sequences within each cluster. Relative frequency sequence plots are generated by (1) sorting the sequences, (2) dividing the sorted sample into subgroups, (3) choosing medoid sequences from the subgroups to represent them, and (4) plotting the medoid sequences. Our sequences are sorted using multidimensional scaling and each cluster subsample is divided into 100 medoid sequences. OM distances are calculated as discussed in the paper.

TABLE 2 Summary statistics by family life course cluster

	Total	Early marriage, more than three children					
		Early marriage, two children	Early marriage, one child	Protracted marriage, two children	Protracted marriage, one child	Delayed marriage, one child	
Cluster membership		0.21 (0.41)	0.17 (0.38)	0.28 (0.45)	0.20 (0.40)	0.04 (0.21)	0.10 (0.30)
Dissimilarity	60.83 (8.44)	64.45 (8.39)	62.45 (5.35)	56.45 (6.32)	56.94 (6.43)	73.83 (7.95)	64.39 (9.60)
Family values score	0.11 (1.62)	0.03 (1.61)	0.20 (1.59)	0.21 (1.51)	0.17 (1.59)	-0.05 (1.71)	-0.20 (1.94)
Parental education							
No formal schooling	0.55 (0.50)	0.73 (0.44)	0.57 (0.50)	0.42 (0.49)	0.55 (0.50)	0.60 (0.49)	0.47 (0.50)
Primary	0.28 (0.45)	0.19 (0.39)	0.28 (0.45)	0.36 (0.48)	0.29 (0.45)	0.26 (0.44)	0.29 (0.45)
Lower secondary	0.10 (0.30)	0.05 (0.22)	0.10 (0.30)	0.13 (0.34)	0.11 (0.31)	0.09 (0.29)	0.11 (0.32)
Upper secondary	0.05 (0.22)	0.02 (0.15)	0.04 (0.19)	0.07 (0.25)	0.05 (0.21)	0.03 (0.18)	0.09 (0.29)
Tertiary	0.02 (0.13)	0.00 (0.07)	0.01 (0.11)	0.02 (0.14)	0.01 (0.10)	0.02 (0.14)	0.04 (0.20)
Respondent's education							
No formal schooling	0.31 (0.46)	0.50 (0.50)	0.35 (0.48)	0.17 (0.37)	0.28 (0.45)	0.43 (0.50)	0.21 (0.41)
Primary	0.23 (0.42)	0.23 (0.42)	0.27 (0.44)	0.20 (0.40)	0.26 (0.44)	0.19 (0.39)	0.19 (0.39)
Lower secondary	0.29 (0.45)	0.19 (0.39)	0.28 (0.45)	0.37 (0.48)	0.31 (0.46)	0.20 (0.40)	0.30 (0.46)
Upper secondary	0.12 (0.33)	0.07 (0.26)	0.09 (0.28)	0.17 (0.38)	0.11 (0.31)	0.12 (0.33)	0.17 (0.38)
Tertiary	0.05 (0.22)	0.01 (0.09)	0.01 (0.12)	0.09 (0.29)	0.03 (0.17)	0.06 (0.24)	0.13 (0.34)
One-Child Policy							
None	0.50 (0.50)	0.77 (0.42)	0.47 (0.50)	0.32 (0.47)	0.48 (0.50)	0.68 (0.47)	0.48 (0.50)
1 Child	0.08 (0.27)	0.03 (0.17)	0.06 (0.25)	0.14 (0.35)	0.05 (0.21)	0.07 (0.26)	0.07 (0.25)
1.5 Children	0.39 (0.49)	0.20 (0.40)	0.41 (0.49)	0.51 (0.50)	0.42 (0.49)	0.25 (0.43)	0.42 (0.49)
2 Children	0.03 (0.17)	0.00 (0.06)	0.05 (0.23)	0.02 (0.15)	0.05 (0.22)	0.00 (0.03)	0.03 (0.17)

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TABLE 2 (Continued)

	Total	Early marriage, more than three children	Early marriage, two children	Early marriage, one child	Protracted marriage, two children	Protracted marriage, one child	Delayed marriage, one child
Ethnicity							
Han Chinese	0.91 (0.29)	0.89 (0.31)	0.93 (0.26)	0.95 (0.23)	0.89 (0.32)	0.83 (0.37)	0.91 (0.29)
Ethnic minority	0.09 (0.29)	0.11 (0.31)	0.07 (0.26)	0.05 (0.23)	0.11 (0.32)	0.17 (0.37)	0.09 (0.29)
Party membership							
No party membership	0.91 (0.29)	0.92 (0.27)	0.93 (0.26)	0.91 (0.29)	0.91 (0.29)	0.89 (0.31)	0.88 (0.33)
CCP member	0.09 (0.29)	0.08 (0.27)	0.07 (0.26)	0.09 (0.29)	0.09 (0.29)	0.11 (0.31)	0.12 (0.33)
Urban-rural area							
Rural	0.53 (0.50)	0.67 (0.47)	0.66 (0.47)	0.36 (0.48)	0.60 (0.49)	0.54 (0.50)	0.38 (0.49)
Urban	0.47 (0.50)	0.33 (0.47)	0.34 (0.47)	0.64 (0.48)	0.40 (0.49)	0.46 (0.50)	0.62 (0.49)
Hukou status							
Agricultural	0.87 (0.34)	0.95 (0.22)	0.96 (0.21)	0.76 (0.43)	0.94 (0.25)	0.86 (0.34)	0.70 (0.46)
Non-agricultural	0.13 (0.33)	0.03 (0.18)	0.04 (0.19)	0.24 (0.43)	0.05 (0.22)	0.12 (0.33)	0.30 (0.46)
Other	0.01 (0.10)	0.02 (0.13)	0.01 (0.08)	0.00 (0.06)	0.01 (0.11)	0.01 (0.12)	0.01 (0.09)
Hukou status change							
No change	0.84 (0.37)	0.86 (0.35)	0.87 (0.33)	0.80 (0.40)	0.85 (0.35)	0.80 (0.40)	0.80 (0.40)
Changed to urban	0.15 (0.36)	0.13 (0.34)	0.11 (0.32)	0.19 (0.39)	0.13 (0.34)	0.18 (0.38)	0.19 (0.39)
Other change	0.01 (0.10)	0.01 (0.12)	0.01 (0.12)	0.01 (0.07)	0.01 (0.11)	0.02 (0.13)	0.01 (0.09)
Gender							
Female	0.48 (0.50)	0.52 (0.50)	0.57 (0.49)	0.52 (0.50)	0.44 (0.50)	0.46 (0.50)	0.25 (0.43)
Male	0.52 (0.50)	0.48 (0.50)	0.43 (0.49)	0.48 (0.50)	0.56 (0.50)	0.54 (0.50)	0.75 (0.43)
Birth Cohort							
1930–1939	0.05 (0.22)	0.15 (0.36)	0.01 (0.11)	0.01 (0.09)	0.04 (0.19)	0.14 (0.35)	0.03 (0.17)

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TABLE 2 (Continued)

	Total	Early marriage, more than three children					
		Early marriage, two children	Early marriage, one child	Protracted marriage, two children	Protracted marriage, one child	Delayed marriage, one child	
1940–1949	0.13 (0.34)	0.30 (0.46)	0.09 (0.28)	0.04 (0.20)	0.11 (0.31)	0.21 (0.40)	0.13 (0.33)
1950–1959	0.25 (0.43)	0.26 (0.44)	0.28 (0.45)	0.19 (0.39)	0.26 (0.44)	0.27 (0.45)	0.27 (0.44)
1960–1969	0.32 (0.47)	0.19 (0.40)	0.43 (0.50)	0.42 (0.49)	0.27 (0.44)	0.22 (0.41)	0.27 (0.44)
1970–1978	0.25 (0.43)	0.09 (0.29)	0.18 (0.39)	0.34 (0.48)	0.31 (0.46)	0.16 (0.37)	0.31 (0.46)
Ever cohabited	0.06 (0.23)	0.02 (0.15)	0.05 (0.21)	0.08 (0.27)	0.06 (0.23)	0.06 (0.24)	0.08 (0.27)
Time spent in cohabitation	11.93 (23.10)	5.63 (6.58)	21.47 (39.57)	10.00 (17.40)	12.41 (24.86)	19.51 (28.48)	8.16 (9.40)
Ever married	0.99 (0.10)	1.00 (0.00)	1.00 (0.00)	1.00 (0.00)	1.00 (0.00)	1.00 (0.00)	0.91 (0.29)
Age at first marriage	22.73 (3.74)	20.94 (2.90)	20.76 (2.05)	22.47 (2.14)	23.56 (2.91)	22.06 (3.25)	29.68 (4.60)
Childless	0.02 (0.15)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.02)	0.25 (0.44)	0.12 (0.33)
Age at first birth	24.47 (3.93)	22.46 (2.83)	22.02 (2.09)	24.07 (2.23)	24.99 (2.65)	33.16 (4.72)	30.76 (3.57)
Premarital pregnancy	0.20 (0.40)	0.23 (0.42)	0.25 (0.43)	0.17 (0.38)	0.20 (0.40)	0.00 (0.00)	0.20 (0.40)
Number of children	2.02 (1.12)	3.65 (0.95)	2.03 (0.21)	1.11 (0.34)	2.12 (0.44)	1.23 (1.07)	1.28 (0.86)
Ever divorced	0.02 (0.15)	0.01 (0.07)	0.00 (0.07)	0.03 (0.16)	0.03 (0.17)	0.09 (0.28)	0.06 (0.24)
N	17,090	3,773	3,060	4,474	3,230	742	1,811

NOTE: Means/proportions and standard errors are displayed in parentheses. Data are weighted.

5 percent in the delayed and protracted marriage with one-child clusters. Premarital pregnancy was common—between 20 and 25 percent—in all clusters except the protracted marriage with one child cluster, where the transition to parenthood occurred years after marriage if it occurred at all.

Sorting into family life course clusters

In this section, we move on to address the question of who tends to be a member of which life course pattern, paying special attention to the

ideational, economic, and institutional indicators. An overview of how these indicators vary across cluster can be found in Table 2; however, we will concentrate on the results from a multinomial logistic regression expressed as average marginal effects shown in Table 3. We found few statistically significant and only weak associations with family attitudes. A one standard deviation increase in the score increased the probability of being in the early marriage with three or more or with two children by 0.6 and 0.5 percentage points, respectively. In contrast, the same increase in family attitudes decreased the probability of being in the delayed marriage and one-child cluster by 1.4 percentage points.

While respondent's own education attainment was strongly linked to cluster membership, parental education was only weakly related to life course patterns with two exceptions. If parents had any formal education, the probability of entering marriage early and having three or more children decreased by 4 percentage points with a primary education and by 1 percentage point with a tertiary education. When parents had an upper secondary or tertiary education, then the probability of delayed marriage with one child increased by 4 and 6 percentage points, respectively, compared to no formal education. Respondent's own educational attainment considerably reduced the likelihood of entering marriage early and having two or three or more children but increased the likelihood of having one child following early or delayed marriage. As an example, relative to no formal education a tertiary education reduced the probability of early marriage with three or more children by 13 percentage points and increased the probability of early marriage with one child by over 12 percentage points.

As expected, exposure to the One-Child Policy increased the probability of early marriage with one child by over 11 percentage points and decreased early marriage with three or more children by 5 percentage points. It additionally decreased the probability of protracted marriage with two children by over 7 percentage points. Otherwise, exposure to the policy had little impact on the likelihood of being a member of other clusters. Factors related to the restrictiveness of the One-Child Policy, for example, ethnicity, party membership, and rural–urban divide, were tightly associated with cluster membership. Ethnic minority Chinese men and women were less likely to be in the early marriage with one or two children clusters but were more likely to be in the protracted marriage clusters. CCP party members had a lower probability to be in the early marriage with three or more children and the delayed marriage with one child cluster but surprisingly were more likely to be in the early marriage with two children cluster. Living in an urban area also decreased the probability of early marriage with two or with three or more children, but increased the likelihood of early marriage with one child. These associations were all similar in size compared to the One-Child Policy indicator.

TABLE 3 Multinomial Logistic Regression Results for Cluster Membership

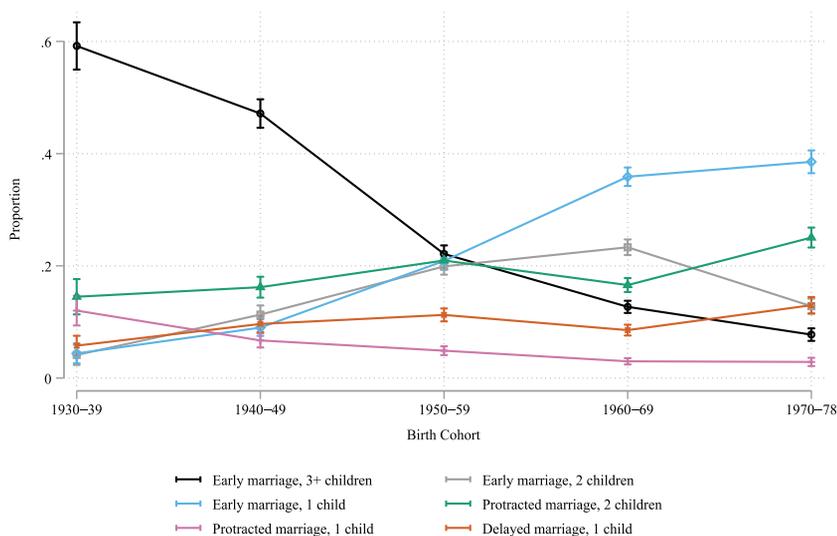
	Early marriage, more than three children	Early marriage, two children	Early marriage, one child	Protracted marriage, two children	Protracted marriage, one child	Delayed marriage, one child
Family values score	0.006** (0.00)	0.005* (0.00)	0.001 (0.00)	0.002 (0.00)	-0.001 (0.00)	-0.014*** (0.00)
Parental education (ref. None)						
Primary	-0.039*** (0.01)	0.011 (0.01)	0.024* (0.01)	-0.003 (0.01)	0.006 (0.01)	0.001 (0.01)
Lower secondary	-0.029+ (0.02)	0.027+ (0.01)	-0.017 (0.01)	0.016 (0.01)	0.010 (0.01)	-0.006 (0.01)
Upper secondary	-0.036+ (0.02)	-0.001 (0.02)	-0.013 (0.02)	0.008 (0.02)	0.001 (0.01)	0.041** (0.02)
Tertiary	-0.099** (0.03)	0.053 (0.04)	-0.037 (0.03)	-0.009 (0.04)	0.026 (0.02)	0.066** (0.02)
Respondent's education (ref. None)						
Primary	-0.034*** (0.01)	-0.002 (0.01)	0.037** (0.01)	0.028** (0.01)	-0.015** (0.01)	-0.014 (0.01)
Lower secondary	-0.037*** (0.01)	-0.019+ (0.01)	0.056*** (0.01)	0.031** (0.01)	-0.017** (0.01)	-0.015+ (0.01)
Upper secondary	-0.035* (0.01)	-0.048*** (0.01)	0.054*** (0.02)	0.033* (0.02)	-0.001 (0.01)	-0.003 (0.01)
Tertiary	-0.131*** (0.02)	-0.097*** (0.02)	0.127*** (0.03)	-0.004 (0.03)	0.028 (0.02)	0.077*** (0.02)
One-Child Policy (ref. None)						
1 Child	-0.054* (0.02)	-0.015 (0.02)	0.116*** (0.02)	-0.073*** (0.02)	0.024 (0.02)	0.002 (0.02)
2-1.5 Children	-0.060*** (0.02)	0.023 (0.01)	0.031+ (0.02)	-0.003 (0.02)	-0.009 (0.01)	0.018 (0.01)
Ethnicity (ref. Han Chinese)						
Ethnic minority	0.022 (0.01)	-0.049*** (0.01)	-0.086*** (0.01)	0.046** (0.02)	0.043*** (0.01)	0.024+ (0.01)

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TABLE 3 (Continued)

	Early marriage, more than three children	Early marriage, two children	Early marriage, one child	Protracted marriage, two children	Protracted marriage, one child	Delayed marriage, one child
Party membership (ref. None)						
CCP member	-0.031*	0.045**	-0.005	0.021	-0.008	-0.022*
	(0.01)	(0.02)	(0.02)	(0.02)	(0.01)	(0.01)
Urban-rural area (ref. Rural)						
Urban	-0.054***	-0.042***	0.097***	-0.007	-0.002	0.008
	(0.01)	(0.01)	(0.01)	(0.01)	(0.00)	(0.01)
Hukou status (ref. Agricultural)						
Non-agricultural	-0.121***	-0.118***	0.190***	-0.119***	0.010	0.160***
	(0.01)	(0.01)	(0.02)	(0.01)	(0.01)	(0.02)
Other	0.019	-0.131***	0.050	0.029	-0.003	0.036
	(0.05)	(0.03)	(0.08)	(0.06)	(0.02)	(0.04)
Change in Hukou status (ref. None)						
Urban Hukou	-0.032**	-0.024*	0.062***	-0.045***	0.005	0.034**
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Other change	-0.022	0.241**	-0.157***	-0.011	0.006	-0.057***
	(0.05)	(0.08)	(0.03)	(0.05)	(0.02)	(0.01)
Birth cohort (ref. 1930–1939)						
1940–1949	-0.135***	0.075***	0.059***	0.002	-0.053**	0.052***
	(0.03)	(0.01)	(0.02)	(0.02)	(0.02)	(0.01)
1950–1959	-0.348***	0.160***	0.168***	0.039+	-0.075***	0.056***
	(0.03)	(0.01)	(0.02)	(0.02)	(0.02)	(0.01)
1960–1969	-0.385***	0.181***	0.275***	0.001	-0.088***	0.016
	(0.03)	(0.02)	(0.02)	(0.02)	(0.02)	(0.01)
1970–1978	-0.427***	0.077***	0.292***	0.092**	-0.090***	0.056**
	(0.03)	(0.02)	(0.02)	(0.03)	(0.02)	(0.02)
Observations	17,060	17,060	17,060	17,060	17,060	17,060

NOTE: Average marginal effects and standard errors are displayed in parentheses. Significance denoted + $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, and *** $p < 0.001$. Province fixed effects omitted.

FIGURE 2 Family life course patterns across birth cohorts

Hukou status was tightly linked with the likelihood of cluster membership. Compared to those with agricultural Hukou registration, urban Hukou status decreased the probability of early marriage with three or more children, with two children and protracted marriage with two children by roughly 12 percentage points. In contrast, it increased the probability of early marriage with one child and delayed marriage with one child by 19 and 16 percentage points, respectively. Similar changes, although smaller in size, were observed when Hukou status changed from agricultural to urban registration.

Family life courses across birth cohorts

After describing our family life course patterns and how they are linked with our independent variables, we now move to describe change across cohorts. Change in the prevalence of our family life course patterns across cohorts is displayed in Figure 2. As can be seen, 60 percent of the 1930s birth cohort was a member of the early marriage with three or more children cluster. After a slight decline to 47 percent for the 1940s cohort, the early marriage with three children cluster quickly went from the dominant pattern to one of the smallest with just under 8 percent by the 1970s cohort.

As early marriage with three or more children declined, early marriage with one child became the largest pattern. For the 1930s cohort, early marriage with one child was one of the smallest clusters with roughly 4 percent. However, it grew to encompass 20 percent of the 1950s cohort and then just under 40 percent of the 1960s and 1970s cohorts. The initial growth of the

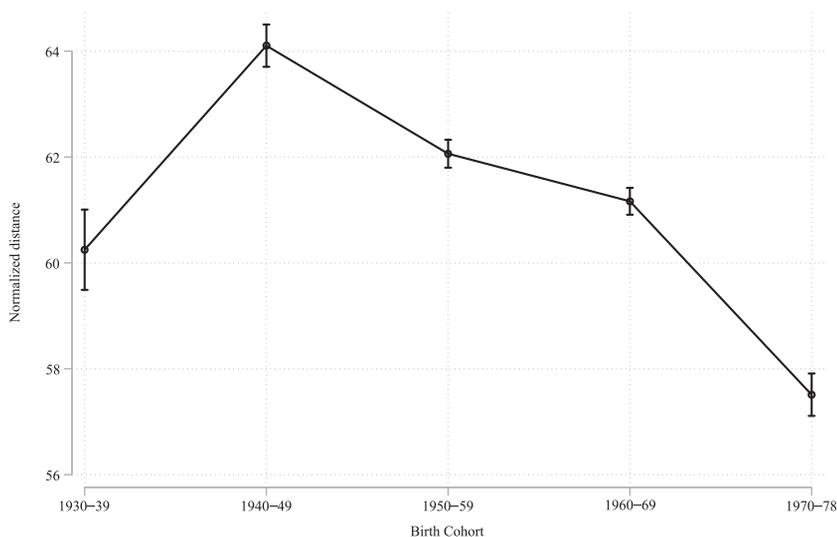
early marriage with one child cluster was matched by the early marriage with two children cluster, which however plateaued in the 1960s cohort with roughly 23 percent and then decreased to approximately 13 percent of the 1970s cohort. Delayed marriage with one child, although always a relatively small cluster, increased slightly across time from over 5 percent of the 1930s cohort to 13 percent of the 1980s cohort. The protracted marriage with two children pattern also increased slightly over time from 14.5 percent of the 1930s cohort to 25 percent of the 1970s cohort.

Altogether Chinese family life course patterns changed from one of early marriage and parenthood with many children to different patterns characterized by slightly delayed marriage followed by a rapid transition to a first child. However, it is an open question whether the associations between our ideational, economic, and institutional indicators and our family life course patterns changed across cohorts. Due to the large number of estimates, we only provide an overview of the largest changes that were observed from cohort-specific multinomial regressions. Associations involving family attitudes were overall relatively stable with two exception. The positive association between family attitudes and the early marriage with three or more children cluster decreased across the cohort but grew more negative for the pattern of delayed marriage with one child.

While cohort changes in the associations between parental education and family life course clusters did not follow a clear pattern, changes in their relationships with respondent's education were more pronounced. The associations between educational attainment and the probability to transition to marry early and have three or more or two children became more negative across birth cohorts, while the positive association with entering marriage early and having one child increased dramatically. These trends point to an increasing polarization in the association between educational attainment and Chinese family life courses.

Our results also showed the emergence and the decline of differences between Han Chinese and ethnic minorities. The positive association between belonging to a minority ethnic group and belonging to the early marriage with three or more children pattern as well as the negative association with early marriage and one child grew stronger across cohorts. Concurrently, the majority–minority ethnic group differences in the probability of early marriage with two children and protracted marriage with one child declined.

Finally, we observed large changes in the association between Hukou status and family life course patterns. While the negative relationship between an urban Hukou registration and early marriage with two or with three or more children declined across cohorts, the positive relationship with early marriage and one tended to increase. In addition, we found an emerging positive association between urban Hukou registration and delayed marriage with one child, but an emerging negative one with

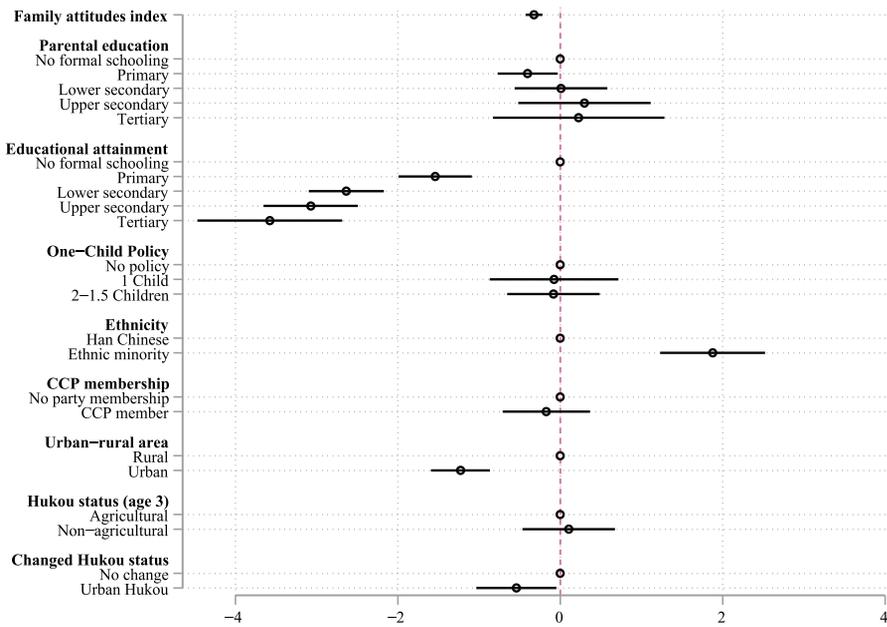
FIGURE 3 Family life course dissimilarity across birth cohorts

protracted marriage with two children. Next to educational attainment, Chinese family life course patterns became more stratified by Hukou status across cohorts.

Family life course diversity across birth cohorts

After gaining a comprehensive overview of cohort change in Chinese family life course patterns, we now turn to focus on the diversity of Chinese family life courses based on sequence dissimilarity. As can be seen in Figure 3, the dissimilarity of Chinese family life courses initially increased between the 1930s and 1940s birth cohorts. However, average family life course dissimilarity decreased considerably in the following cohorts. At first, dissimilarity levels during the 1950s and 1960s cohorts declined to the level of our older birth cohort. However, the 1970s cohort displayed considerably lower levels of dissimilarity even when compared to the 1930s cohort. In sum, we observed a decrease in diversity or a standardization of family life courses across Chinese birth cohorts born between the 1940s and 1970s.

Cohort change in our family life course patterns and their average levels of dissimilarity can help make sense of this unexpected finding. Average dissimilarity was highest in the protracted marriage with one child, the early marriage with two three or more children, and the delayed marriage clusters. This means that, at least for later born cohorts, being married with three or more, and to a lesser extent with two, children were an uncommon feature that increases the dissimilarity of an individual's family life course. In addition, long periods in singlehood and in marriage without children were uncommon features. In contrast, average dissimilarity was lowest in the

FIGURE 4 Regression results for family life course diversity

early marriage with one child and the protracted marriage with one child clusters. These two clusters shared long durations within marriage with one child, which is a feature that lowered the dissimilarity of family life courses. In sum, the increased duration of marriage with one child—due to relatively early marriage and a rapid transition to parenthood—was the key standardizing element of Chinese family life courses, which has not been offset by increases in singlehood or increases in cohabitation and premarital pregnancy.

Accounting for family life course diversity across birth cohorts

In this section, we address the question of whether our ideational, economic, and institutional variables are associated with dissimilarity, and whether those differences can account for the birth cohort differences described above. Figure 4 displays the regression results of dissimilarity on our three sets of indicators, adjusted for gender, province, and birth cohort (see Table 4). As can be seen in Figure 4, more traditional family attitudes were associated with less dissimilar family life courses, which reflects the increased likelihood of entering family life course patterns characterized by early marriage and parenthood rather than long durations of singlehood.

Respondent's educational attainment was strongly associated with less dissimilar family life courses. Moreover, the negative association grew stronger across educational levels. For example, the negative coefficient for

TABLE 4 Regression results for family life course dissimilarity

	1	2	3	4
Family values score		−0.39*** (0.05)	−0.33*** (0.05)	−0.32*** (0.05)
Parental education (ref. None)				
Primary			−0.52** (0.19)	−0.40* (0.19)
Lower secondary			−0.15 (0.29)	0.01 (0.29)
Upper secondary			0.16 (0.42)	0.30 (0.42)
Tertiary			0.04 (0.53)	0.23 (0.54)
Respondent's education (ref. None)				
Primary			−1.77*** (0.23)	−1.54*** (0.23)
Lower secondary			−3.13*** (0.23)	−2.63*** (0.24)
Upper secondary			−3.79*** (0.27)	−3.07*** (0.30)
Tertiary			−4.64*** (0.40)	−3.58*** (0.46)
One-Child Policy (ref. none)				
1 Child				−0.08 (0.40)
2-1.5 Children				−0.08 (0.29)
Ethnicity (ref. Han Chinese)				
Ethnic minority				1.88*** (0.33)
Party membership (ref. none)				
CCP member				−0.17 (0.27)
Urban-rural area (ref. rural)				
Urban				−1.23*** (0.19)
Hukou status (ref. agricultural)				
Non-agricultural				0.10 (0.29)
Other				−0.84 (1.18)
Change in Hukou status (ref. none)				
Urban Hukou				−0.54* (0.25)
Other				1.54 (1.05)

/...

TABLE 4 (Continued)

	1	2	3	4
Gender (ref. Female)				
Male	-0.73**** (0.16)	-0.68**** (0.16)	-0.02 (0.17)	-0.13 (0.17)
Birth cohort (ref. 1940–1949)				
1930–1939	-3.90**** (0.44)	-3.97**** (0.44)	-4.36**** (0.44)	-4.17**** (0.43)
1950–1959	-2.06**** (0.24)	-1.96**** (0.24)	-1.47**** (0.25)	-1.54**** (0.25)
1960–1969	-3.05**** (0.24)	-2.90**** (0.24)	-1.76**** (0.25)	-1.89**** (0.33)
1970–1978	-6.70**** (0.29)	-6.54**** (0.29)	-5.25**** (0.31)	-5.42**** (0.42)
Constant	64.45**** (0.23)	64.36**** (0.23)	65.36**** (0.24)	65.59**** (0.25)
Observations	17,090	17,090	17,090	17,090

NOTE: Unstandardized coefficients and standard errors are displayed in parentheses. Significance denoted $*p < 0.10$, $*p < 0.05$, $**p < 0.01$, and $***p < 0.001$. Province fixed effects omitted. Data are weighted.

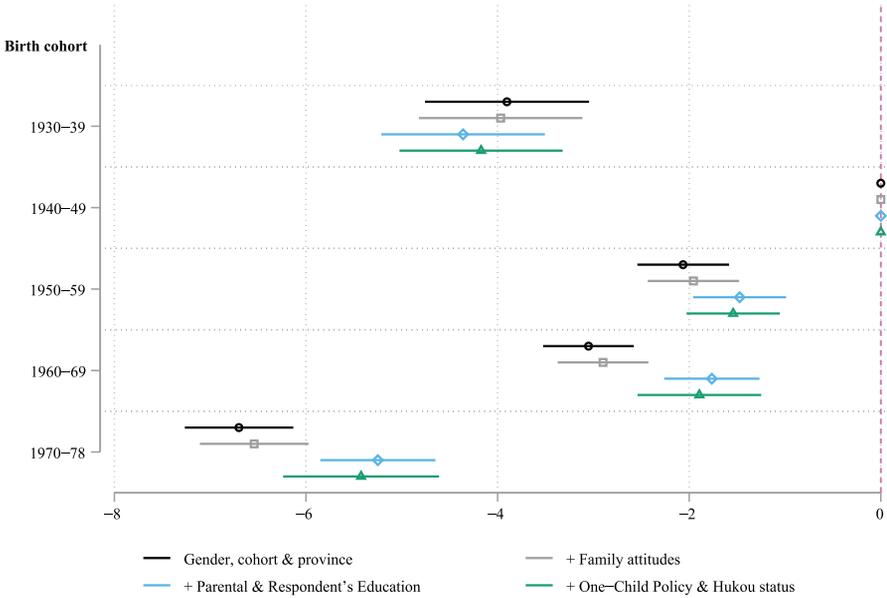
tertiary was twice as large as the negative coefficient for primary education rather than no formal schooling. Similar to family attitudes, this reflects the positive association between educational attainment and early entry into marriage and rapidly transitioning to parenthood without a second birth, rather than spending long durations in singlehood or in marriage without children.

We found no association between exposure to the One-Child Policy or party membership and dissimilarity. However, we observed a positive association between individuals belonging to an ethnic minority group and a negative association for those living in a rural area. This corresponds to ethnic minority Chinese men and women being more likely to have had at least a second child, while urban residents entered marriage early and only had one child. Although we found no relationship between Hukou status at age 3 and dissimilarity, there was a slight negative association for those who changed from an agricultural to a nonagricultural Hukou.

One of the main aims of this study was to assess to what extent the ideational, economic, and institutional narratives of family life course change could account for change in the diversity of family trajectories across birth cohorts in China. We show how the association between birth cohort and family life course diversity attenuates by model specification, that is, after including ideational, economic constraints, and institutional indicators in Figure 5.

We found that birth cohort differences in family life course diversity did not seem to be affected by including our family attitudes indicator in the regression (see Figure 5). However, including parental and respondents'

FIGURE 5 Birth cohort regression results for family life course diversity by specification



education attainment reduced the negative association compared to the baseline model for the 1960–1969 and 1970–1978 cohorts. The difference between the 1960–1969 and 1940–1949 cohorts was reduced by roughly 41 percent (from -3.05 to -1.76) and the difference between the 1970–1978 and 1930–1939 cohort was reduced by 22 percent (from -6.70 to -5.25). We found no evidence that the inclusion of our institutional variables attenuated the birth cohort differences further. This indicates that educational attainment is one of the drivers of the standardization in Chinese family life courses.

Additional analyses

An open question remains as to why we did not find a family life course pattern characterized by emerging family demographic behavior, such as cohabitation, in China. We made two decisions that might have had an impact on our results. First, we chose to include parity for first marriages, because marital fertility decline and delay are key dimensions of family life course change. Second, we calculated distances between sequences using OM 1&2, because this is a common measure used to analyze family life course sequences and is known to highlight differences in duration and timing (Studer and Ritschard, 2016).

We performed three additional analyses with the aim of understanding what choices would lead to clusters characterized by family demographic

behavior as predicted by the SDT theory. We created sequences where there is no additional differentiation between a first marriage with one, two, or three or more children. In addition, we identified a sequence distance measure that has been shown in simulations to be highly sensitive to sequencing and small perturbations, that is, the presence of rare and/or brief spells, known as OM of spells, or OMspell, with an expansion cost of zero (see Studer and Ritschard 2016). We then used (1) OMspell to calculate distances for our original sequences that include parity, (2) our original OM 1&2 distance measure for the new sequences without parity, and (3) OMspell to calculate distances for the sequences without parity. We extracted the optimal number of clusters based on cluster solution quality criteria as described in the data and methods section above.

In the first analysis (OMspell with parity) we extracted four clusters ($ASW = 0.66$): (1) marriage with three or more children, (2) marriage with two children, (3) marriage with one child, and (4) nonmarital conception and birth. Cohabitation, nonmarital pregnancy, and divorce spells occurred within all four clusters. However, the last cluster was characterized by the occurrence of both nonmarital pregnancy as well as non-marital birth, generally preceding marriage. In the second analysis (OM 1&2 without parity), we extracted five clusters ($ASW = 0.34$): (1) Early marriage and parenthood, (2) delayed marriage and parenthood, (3) late marriage and parenthood, (4) protracted marriage and parenthood, and (5) single and nonmarital parenthood. Similar to the first analysis, all clusters contained spells of cohabitation, nonmarital pregnancy, and divorce. However, singlehood and late nonmarital parenthood was concentrated in the last cluster. The clusters from both analyses continued to be characterized to a large extent either by parity or by the timing of marriage and parenthood.

In the third analysis (OMspell without parity) we extracted five clusters ($ASW = 0.88$): (1) Marital conception and birth, (2) nonmarital conception and marital birth, (3) nonmarital conception and birth, (4) premarital cohabitation, and (5) childlessness. While this cluster solution included a cluster characterized solely by the presence of cohabitation, it is also the only solution that gave little to no insight into parity differences or timing differences in the transition to marriage and parenthood. In sum, we were only able to identify a cluster characterized by the presence of cohabitation if we excluded a vital dimension of family life course change—parity and birth spacing—from our sequence alphabet and used a distance measure that is insensitive to another vital dimension of family life course change—the timing of marriage and parenthood.

In addition to investigating how clusters differ by sequence alphabet and distance measure, we calculated cohort-specific dissimilarities. As expected, we found differences but also similarities in these trends. Dissimilarities increase between the 1930s and 1940s cohorts in the first analysis, similar to our results above, but then remain constant across the 1940s and

1960s birth cohorts. In the second analysis, we observed a decline between the 1930s and 1960s birth cohorts. For both sets of analyses, we find a minor increase in dissimilarity between the 1960s and 1970s cohort. However average dissimilarities for the 1970s cohort are either equal or lower than the levels observed for the 1940s and 1950s cohorts. There are no differences in average dissimilarity across the 1930s and 1960s birth cohorts in the third analysis. Again we observed a slight increase in dissimilarity for the 1970s cohort. However, these increases were minor in comparison to our results presented above. The difference between the final two cohorts in the original analysis was 43 percent of a standard deviation, compared to between 12 and 18 percent of a standard deviation for the three additional sets of analyses. Altogether, we did not find systematic evidence for the emergence of a family life course pattern characterized by singlehood, cohabitation, or divorce and no indication for a large destandardization in family life courses driven by singlehood, premarital pregnancy, cohabitation, or divorce.

Discussion

In this paper, we sought to address three questions: (1) What family life course patterns exist in China, and how have they changed across birth cohorts? (2) How has the diversity of family formation developed across Chinese birth cohorts? (3) To what extent are changing norms, economic constraints, and institutional shifts driving cohort differences in the family life courses of Chinese men and women? We used CFPS data to reconstruct the family life courses of Chinese men and women born between 1930 and 1978 and applied sequence analysis to assess change in average cohort dissimilarities. We found that despite changes in family life course patterns across a wide range of 20th-century Chinese birth cohorts, there is no evidence that Chinese early family lives have become more diverse. On the contrary, our results demonstrate that among Chinese born between 1930 and 1978, their family life courses have become relatively standardized around relatively early marriage and one child. Importantly, our results show that compared to dramatic institutional reforms—such as the implementation of the One-Child Policy in 1979—and changes in norms surrounding the family, the educational attainment of respondents and their parents accounts for a considerable portion of cross-cohort differences in diversity.

Our results highlight interesting similarities and differences in cross-cohort changes in family life courses in China compared to European countries. First, despite a similar decline in fertility, a delay in the timing of marriage is much less pronounced. Second, cohabitation as a defining feature of family life courses remains uncommon. Third, there is no indication of a divorce revolution in China at least up to the 1970–1978 cohort. However, many of these trends—increased age of marriage and

parenthood, cohabitation, and high levels of divorce—were first observed in Nordic countries and later in Western Europe. Many of the family demographic changes predicted by the SDT theory have also yet to be observed to a similar degree in Southern and Eastern Europe. Nonetheless, studies have shown larger shifts in family demographic behavior in China among younger cohorts, that is, men and women born in the 1980s, such as higher rates of cohabitation (Yu and Xie 2015) and premarital pregnancy (Qian and Jin 2020; Yang 2021). In addition, although crude divorce and remarriage rates remain low, for example, when compared to the United States or Germany, they increased considerably since the early 2000s (Wang and Zhou 2010). Therefore, there is reason to believe that Chinese family life courses will become more diverse in the future. However, this is an empirical question that will need to be revisited.

Recent evidence on the diversity of family life courses across time and space in Europe even suggests that increasing complexity was and possibly continues to be limited to a select number of countries. In many of these countries, one of the greatest drivers of increasing diversity was not only cohabitation and divorce but also periods of independent living after leaving the parental home and before entering a union. However, comparative research on parental home leaving (e.g., Nauck, Gröpler, and Yi 2017) suggests that, due to cultural differences, leaving the parental household is not necessarily an important step in the transition to adulthood in China.

Despite the lack of evidence for family life course change in China, we assessed whether a change in family lives was driven by ideational change, economic constraints, or institutional shifts. In contrast to the ideational narrative of the SDT theory, we found that attitudes revolving around traditional family formation have become less important, while educational attainment is associated with more standardized family formation (see Van Winkle 2020b for Sweden). Our results on education indicate that if a diversification of family formation is seen in the coming decades, it may follow a model where disadvantaged young adults forego more standard forms of family life.

Our results also suggest that institutions arrangements in China play a role in shaping family life courses, however, in a very different way compared to Europe. Comparative studies assessing the impact of institutional arrangements on family demographic behavior can leverage cross-national variation in family and social policy. Family and social policy in China are largely coordinated at the national level. Therefore, research on the impact of institutions in China must rely either on cross-temporal variation, that is, policy reforms, or variation across provinces in the implementation of policies, for example, One-Child Policy infraction fines. An additional approach that we took was to assess subgroup variation generated by institutional arrangements, such as ethnicity, party membership, and urban–rural residency in the case of Chinese family formation. While informative, it is

important to exercise caution when referring to institutional factors as a driver of subgroup differences. While ethnicity and party membership were pertinent to the implementation of the One-Child Policy, these social groups are also different in terms of culture, their regional destitution, political capital, and more.

For example, we found that the urban–rural gap represents a central divide: a nonagricultural Hukou in childhood was associated with less diverse life courses. Future research should investigate exact underlying mechanisms. Is the observed pattern mainly driven by different lifestyles accepted by rural and urban residents? Or is it largely due to the unequal access to social welfare? On the one hand, as the Hukou system creates obstacles for permanent rural-to-urban migration, it exogenously exposes individuals to either a rural or an urban lifestyle. On the other hand, the institutionalized social advantages and disadvantages designed by the system put urban and rural residents under very different economic constraints. Holding all other factors constant, rural Hukou holders find it more difficult to fulfil the expectation of an “ideal” life course, thus experiencing more complex life events. With more information, we will be able to understand how the Hukou system affects family formation patterns in a more nuanced way.

As shown in this study, the One-Child Policy is not associated with the diversity of life courses in the Chinese population, but it is related to less complex individual family formation. This finding poses an intriguing research question: how do fertility control policies impact individual life courses in contrast to society as a whole? For example, is it possible that certain fertility control policies, such as infraction fines, do not contribute to a significant fertility decline, but impact the timing of individual fertility events? As China gradually relaxes fertility restrictions (i.e., the universal Two-Child Policy since 2013 and the universal Three-Child Policy since 2021), population policies might bring new changes to individual life courses and/or society as a whole. This puzzle should be examined in future research to shed more light on family change from an institutional account.

Our study demonstrates the importance of assessing both single point-in-time and process outcomes when analyzing family life course change. Our findings indicate conclusions on the degree of family demographic change in China but also in other contexts outside Europe and North America, may be overstated when based on single point-in-time events. For example, cohabitation in many European countries tends to be characterized by a long period of commitment and has been described by many scholars as a replacement for marriage; in the United States, cohabitation spells are often short and sequential. In contrast, although the increase in premarital cohabitation among Chinese cohorts born after the early 1970s is remarkable, the duration of cohabitation spells in China remains short and generally ends in marriage. Rather than cohabitation, the family life courses

of Chinese men and women are differentiated first and foremost by the timing of marriage and parenthood.

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Data Availability Statement

This study makes use of the China Family Panel Studies, which is available at <http://www.issp.pku.edu.cn/cfps/en/>.

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