CHILDHOOD ENVIRONMENT AND THE TRANSITION TO ADULTHOOD IN RURAL CHINA

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ABSTRACT

Past studies examining the transition to adulthood within the Chinese context often implicitly or explicitly assume the rural population as a homogeneous group, suggesting that rural individuals tend to enter the workforce and marry at younger ages than their urban peers. This assumption overlooks the distinct challenges faced by rural youth transitioning to adulthood, who often confront higher poverty risks and greater uncertainties compared to urban counterparts, yet empirical research on these unique challenges is limited. Using both a national survey and a unique longitudinal sample of rural youth in one of the poorest regions of China, this study demonstrates that rural youth experience a greater diversity of pathways to adulthood than do urban youth, which contradicts many earlier studies in Western contexts. In addition, this study identifies a variety of childhood environment factors that structure the transition pathways of rural youth. This study highlights the growing rural-urban disparity in China and has important implications for research on social stratification and rural youth development.

***K*eywords** transitions to adulthood · rural · China · gender · poverty

1 Introduction

Rural areas are home to an estimated 600 million youth, accounting for half of the total youth population, and this number is expected to grow over the next 35 years (International Fund for Agricultural Development, 2022). Despite the demographic significance of rural youth, few empirical studies have focused on the particular challenges of transition to adulthood among this population. In this study, we investigate links between childhood environments and the transition

to adulthood for a sample of youth growing up in rural communities in one of China's poorest provinces. The context of transition to adulthood in China has transformed dramatically in recent decades, with the shift from a socialist to a market economy and an ensuing period of dramatic economic growth and sharply rising inequality. Much research has investigated changing dynamics in the transition to adulthood and family formation behaviors in this period, on a national scale and among the urban population (Cai & Feng, 2014; Qian & Qian, 2017; Tian, 2016; J. Yu & Xie, 2015). A common observation in the literature is that the urban population typically follows a trajectory marked by extended periods of education, stable employment, and delayed marriage and childbearing (Van Winkle & Wen, 2023; Wang & Zhao, 2021; Yeung & Hu, 2013). In contrast, the rural population tends to follow a different trajectory characterized by lower levels of education, earlier entry into the workforce, and earlier marriage. Furthermore, the transition pathway of the rural population often adheres to a traditional sequence of schooling, entering the workforce, and marriage, unlike their urban counterparts, among whom the percentage following nontraditional sequences has been increasing (Tian, 2016).

However, few empirical studies have focused on the particular challenges and heterogeneity of the transition to adulthood among rural youth, who experience elevated risks of poverty and more uncertainties, on average, compared to their urban counterparts. From a cross-cohort comparison perspective, it is possible that the urban population has undergone deeper ideational and institutional transformations as a result of rapid urbanization and industrialization, leading to an increase in non-standardized transition to adulthood pathways. However, in a within-cohort comparison, more diversified and complex patterns of transition to adulthood might be expected among rural youth, compared to their urban peers, for a number of reasons.

First, many rural children experience absentee parents, due to patterns of labor migration to metropolitan regions (Liang, 2016; Xiang, 2007). Children of migratory workers may have the possibility of traveling between their natal communities and their parents' places of employment (Chiang et al., 2012). However, due to institutional and economic restrictions, such as the household registration system (*hukou*), which limits rural children's ability to attend school in urban regions, many of those children must remain in rural regions for education and live with single parent or extended family members. Studies of the impact of parental migration on left-behind children compared to other rural children show mixed results, reflecting complicated selection factors, the benefits of remittances, and the harm of lost supervision, guidance, and support (Lu, 2012; Shen et al., 2021; Wen et al., 2015; Xu & Xie, 2015; Zhou et al., 2014) (for a review, see Liang (2016)). Recent studies indicate that the detrimental effects of parental migration on their children's health and education depend on factors such as the emotional well-being and parenting behaviors of the primary caregiver(Lu et al., 2019), the age of the children when the parents migrate (Huang et al., 2018), and the cumulative duration of parental absence (Meng & Yamauchi, 2017).

Second, early dropout, among other factors, may position the most disadvantaged rural youth for a very tenuous attachment to the labor market (Shi et al., 2015; Yi et al., 2012). Many youth may be involved in nonstandard employment or economic sectors with high turnover rates. A concerning development in a number of countries has been the large number of youth who are excluded from economic opportunities—characterized as not being in education,

employment, or training (NEET) (Yeung & Yang, 2020). A significant proportion of young individuals, particularly in Asia, "opt out" of the competitive education system and standard employment with the expectation of having little opportunity to advance in social class. According to a recent study on China, the total NEET rate for people aged 16 to 35 was 8% in 2012 (Yang, 2020). Individuals with lower educational attainment, migrants, and women are more likely than others to experience NEET during young adulthood.

Third, various factors influence rural adolescent family formation behaviors in opposing directions. Rural youth, on the one hand, are more likely than their urban counterparts to marry and have children at a younger age due to normative expectations or family pressures. On the other hand, the rising trend of hypergamy in marriage predisposes socioeconomically disadvantaged male adolescents toward exclusion from the institution of marriage. Rural marriage markets may be further complicated by sex ratio imbalances, which may provide divergent paths for men and women in their relationship and marriage patterns.

In this study, we investigate the variation in timing and sequence of Chinese rural millennial (born between 1987 and 1991) in reaching a series of life milestones. This group, known as the the post 80s/90s generation in China, has been exposed to profound social changes in China, such as rapid economic development, massive parental migration, and widening rural-urban inequalities in many domains. Following norms in the research on the transition to adulthood, we define the essential milestones for reaching adulthood as graduating from school, starting first job, entering into marriage, and becoming a parent (Macmillan & Copher, 2005; Yeung & Hu, 2013). We demonstrate that rural youth in China experience a higher degree of uncertainty and diversity in their transition pathways during early adulthood compared to their urban counterparts. This finding differs from what modernization theory or the second demographic theory predicts and contrasts with empirical findings in the West. The de-standardization of transition paths for rural youth, rather than urban youth, may reflect China's growing rural-urban educational and economic opportunity disparity. While urban youth have benefited from educational expansion and economic prosperity in recent decades, many rural youth remain deprived of basic education and enter adulthood at a younger age. Additionally, we discover that the transition pathways to adulthood for rural girls are more responsive to sibship structure and family economic conditions than those of rural boys. In contrast, rural boys are more influenced by family disruption and parental expectations regarding support in their elderly years.

This article is organized as follows: We begin with a review of the literature on the transition to adulthood, focusing on the differences between rural and urban areas and discussing the limitations of previous studies. Following that, we discuss cultural and rural contexts of China. Next, we provide an overview of our data and the study site before proceeding to the analyses. In the analytic results section, we first employ the entropy index to study the rural-urban differences in the uncertainty and diversity of life course trajectories from adolescence to early adulthood (ages 16-24). We use both a nationally representative survey and a 15-year longitudinal study of rural children in one of the least developed provinces in China. Additionally, we apply latent class analysis to this rural panel data to identify different transition pathways of Chinese rural millennials (born between 1987 and 1991). We then use various

childhood environmental factors in the rural context to predict the membership of these pathways using multinomial regression analysis. Finally, we conclude with a discussion of the implications and limitations of our findings.

2 Transition to Adulthood: the Rural-Urban Divide

Since the 1990s, research on transition to adulthood has documented a de-standardization of the family-life trajectory of young adults (Billari & Liefbroer, 2010; Elzinga & Liefbroer, 2007; Furstenberg, 2013; Juárez et al., 2013; Rindfuss et al., 1987; Settersten & Ray, 2010; Shanahan, 2000). Geographically, the de-standardization in the pathway to adulthood tends to start in developed areas rather than isolated areas. For example, Lesthaeghe and Neidert (2006) found that the components of second demographic transitions such as premarital cohabitation and postponement of marriage and childbearing are more pronounced in metropolitan areas than in the rural areas in the US. The mechanisms explaining the rural-urban differences are that urban residents are less reliant on family ties, and thus less controlled by the role of traditional norms.

Institutionalization theory, on the other hand, maintains that institutional regulation has the power to standardize the pathways to adulthood (for a review, see Shanahan (2000)). For youth in particular, institutional changes facilitated compulsory school attendance, extended their time spent on school, and thus had delaying implications for leaving the parental home and family formation. In countries experiencing rapid educational expansion, the heterogeneity of the life course transitions in early adulthood tended to decline (Fussell & Furstenberg Jr., 2005; Park, 2013). For instance, Park (2013) found that the life courses of Korean urban youth were highly standardized before high school graduation because of the rapid expansion of the education system. Because the institutionalization process in rural areas tends to lag behind that in urban areas, there is reason to expect a more standardized life course transition for urban youth than for rural youth in early adulthood.

Existing research on transition to adulthood in rural areas mainly focuses on describing the trends over periods or birth cohorts and contrasting the differences with urban areas using multiple waves of cross-sectional surveys or censuses (Fussell & Furstenberg Jr., 2005; Pesando et al., 2021; Tian, 2016; Yeung & Hu, 2013). For instance, Pesando et al. (2021) investigate the transition to first sexual intercourse, first union, and first birth across 69 low- and middle-income countries by birth cohorts. They found little variation between rural and urban areas except for South America and Southeast and Central Asia where urban residents had a higher proportion than rural residents in the "delay rapid transition" and "gradual transition" clusters. Along this line, research relying on heterogeneity index often found that urban youth display a higher level of diversification in transition to adulthood than rural youth did (Fussell & Furstenberg Jr., 2005; Tian, 2016).

However, the limitation of using cross-sectional data is it sometimes conflate rural-to-urban migrants with urban residents. While urban residents may follow a standardized path in the school-to-work transition in their young adulthood, the pathways to adulthood of rural-to-urban migrants are expected to vary depending on their reasons for migration. In addition, as Fussell (2005) pointed out, the definition of urban and rural regions also changed with time

because of the rapid urbanization and industrialization processes in developing countries. That is, the de-standardization of transition to adulthood found in urban regions may represent the variation contributed by both rural-to-urban migrants and urban residents.

Even less is known about factors shaping the rural youth transition to adulthood. Compared to urban youth, children from rural areas have limited social and financial resources at both the family and community level (Cherng & Hannum, 2013; Hannum, 2003). Because of scant public support and large family size, rural youth may have greater responsibilities to take care of their parents and other family members. Rural youth's perception and anticipation of family economic difficulties may alter their decisions in regard to school, employment, and family formation (J. Crockett & Bingham, 2000). Furthermore, parents in rural areas are more likely to be influenced by traditional gender norms and thus invest more in boys than girls (Li & Lavely, 2003).

3 Childhood Environments on Transition to Adulthood in Rural Context

3.1 Gender equity and parents old-age support

Previous studies have found that parental attitudes have independent impacts on children's attitudes and behaviors towards premarital sex, cohabitation, marriage, and childbearing (Barber, 2001; Cunningham, 2001; Jennings et al., 2012). Gender attitude is important because traditional gender values emphasize the gendered division of labor. Girls from families who are less supportive of gender equality may complete their education and start a family earlier.

In rural settings, it is also important to consider parents' attitude towards old age support. In a patriarchal society, sons are viewed as permanent members and have the responsibility to continue the family lineage, whereas daughters will eventually marry out and become a member of her husband's family (Cain, 1991; Li & Lavely, 2003; W.-h. Yu et al., 2012). Thus, parents may invest more on sons for better economic returns and old-age supports. According to research conducted in rural northwest China, the majority of parents maintained egalitarian attitudes about girls and boys having equal opportunity, but half of parents still agree sons' are the one to provide old-age support (Hannum et al., 2009; Y. Zhang et al., 2007). We hypothesize that girls who come from families that are less supportive of gender equality and prefer sons for old-age for old-age support are more likely to end up on a disadvantaged pathway.

3.2 Sibship structure and pathways to adulthood

The negative effect of sibship size on educational attainment is well documented (Steelman et al., 2002). One dominated explanation is the resource dilution hypothesis. This hypothesis suggests that the family resources that each child can share were diluted as the number of children increased. Empirical studies in the United States and Western Europe confirmed that the sibship size was inversely associated with children's participation in extracurricular activities, educational performance, parents' time and financial investments on each child (Steelman et al., 2002).

Research in East and South Asian contexts extends the resource dilution hypothesis by emphasizing the gender asymmetry nature of resources transfer within the family (Chu et al., 2007; Kugler & Kumar, 2017; Liu, 2023; W. Yu & Su, 2006). Specifically, the cultural norm of son preference tends to prioritize boys instead of girls. For girls, the presence of a young brother in the family may dilute their resources, especially in rural areas where the family resources are tight. Older sisters with younger siblings may do more chores and caregiving labor. In addition, older sisters may under the pressure to enter the labor market earlier and remit to their family and younger siblings.

Despite the existence of the one-child policy, having siblings is very common in rural China. One reason is that rural families are allowed to have a second child, and the other is that they are not strictly regulated in some rural areas. In the rural context of extreme poverty, the existence of siblings creates an environment for sibling competition. We hypothesize that girls who have younger brothers are more likely to end up on a disadvantaged pathway to adulthood. On the other hand, boys with older sisters are more likely to be in an advantageous pathway to adulthood.

3.3 Family background and socioeconomic status

Social inequality and poverty experienced in early life could predict future life trajectories. Research on social mobility has recognized the ascriptive features from the family of origin such as parent's education and financial resources can affect offspring's status attainment (Blau & Duncan, 1967; Hout, 2018). Parents from the top socioeconomic strata not only invest more money and time on their children, but also adopt a more active parenting style than parents from lower strata (Bianchi et al., 2004; Lareau, 2011; McLanahan, 2004). As a result, children from affluent families are more likely to pursue higher education, and to postpone union formation and childbearing, and to avoid risky behaviors.

In addition to financial resources, family stability is essential for child development. A large body of research has documented the negative impact of family instability on transition to adulthood. Children who experienced family instability are more likely to have early union formation, child bearing, and early labor force participation (Amato & Patterson, 2017; Fomby & Cherlin, 2007; Goldberg, 2013; McLanahan et al., 2013).

In East Asian societies, the adverse effects of parental divorce on children's education are generally less pronounced compared to Western contexts (Park, 2007; Yeung Jean & Park, 2016). Research indicates that academic disadvantages are more commonly observed in children raised by single fathers, rather than those raised by single mothers (Cheung & Park, 2016; Park, 2008; C. Zhang, 2020). This difference is partly attributed to the active involvement of mothers and the supportive role of grandparents, which act as buffers to mitigate the negative impacts of divorce on children's educational outcomes (C. Zhang, 2020). Most studies on family instability in China primarily examine its effects on child well-being and academic performance, with only a few exploring its impact on other outcomes during the transition to adulthood. One exception indicates that children from divorced families typically begin sexual intercourse earlier than those from intact families, yet their ages of first marriage remain similar (C. Zhang, 2022).

In the rural China context, we hypothesize that children from the bottom of the socioeconomic status, and those experiencing family instability, are more likely to be in disadvantageous pathways to adulthood.

4 Data and Methods

4.1 Data

We use two sets of data, the 2014 China Labor-force Dynamic Survey (CLDS) and the Gansu Survey of Children and Families (GSCF) for our empirical analysis. The CLDS, conducted by the Centre for Social Science Surveys at Sun Yat-Sen University, is a nationally representative social survey targeted at the labor force in both urban and rural areas. The 2014 wave included 23,594 respondents aged 15 and older from 404 communities across 29 of the 31 mainland's provinces in China. We restricted our study population to individuals born between 1970 and 1989, affording us a sample size of 8,376. We apply cross-sectional sampling weights throughout our analysis.

The GSCF is a multilevel, longitudinal survey aimed to investigate the education, health, psychosocial development, and adult outcomes of rural children. Gansu, located in northwest China, is mostly an agricultural province with large mountainous and desert areas. Since 1990, Gansu has been one of the least developed provinces in China in terms of GDP per capita. Unsurprisingly, Gansu has one of the highest rates of rural poverty and economic instability in China.

A multi-stage cluster was employed to target a sample of 2,000 rural children in Gansu in the year of 2000, and followed in 2004, 2007, 2009, and 2015. In addition to the targeted children, detailed information about the children's households, parents, communities, and a supplement sample of targeted children's siblings was collected. In this analysis, we used the education, employment, migration, and family formation histories from the 2009 and 2015 children surveys. We also used household surveys from 2000 and 2004 to obtain data on family socioeconomic status, childhood adverse experiences, and community context.

In our analysis, we first apply the entropy index to study the rural-urban difference in the uncertainty and diversity of life course trajectories from adolescence to early adulthood (age 16-24) using both CLDS and GSCF. Following norms in the research on the transition to adulthood, we define the essential milestones for reaching adulthood as graduating from school, starting a first job, entering into marriage, and becoming a parent as dichotomous variables (Macmillan & Copher, 2005; Yeung & Hu, 2013). We use the distribution of different status combinations of these four variables to calculate the age-specific entropy index. Because the CLDS only asked women's childbearing history, we cannot calculate the year when a man first become a father. Therefore, we only use other three statuses to calculate the entropy index for men. Next, we employ the latent class analysis to identify different transition pathways of Chinese rural millennial (born between 1987 and 1991) using the GSCF, a 15-year longitudinal study of rural children in one of the least developed provinces in China. We then use a variety of childhood environment factors in rural contexts to predict the pathways' membership using multinomial regression analyses.

4.2 Measures

Gender attitudes. In the 2000 survey, mothers were asked how much they agree, disagree, or have no opinion on a battery of questions regarding their gender attitudes. Using exploratory factor analysis (EFA), we generated a gender equity index from five questions: 1) if working hard, girls can do as well as boys in school; 2) girls should enjoy the same opportunities of being educated as boys, 3) given equal opportunities women can make achievements as men do; 4) couples should share the housework if they both work full-time; 5) parents should encourage girls to think as independently as boys.

We performed EFA based on a matrix of polychoric correlation. Previous research indicates that this approach works better than using classical Pearson's correlations to recover the factor model when the ordinal variables are measured by fewer than five categories and when distributions of the ordinal variables are asymmetrical (Watkins, 2018). In modeling analysis, we standardized the predicted factor scores to ease interpretation (Cronbach's Alpha: 0.613; McDonald's Omega: 0.676).

We included another question to capture the gender attitude regarding inter-generational support. Mothers were asked how much they agree, disagree, or have no opinion on the statement: parents should rely on sons for care-giving when they get old. We generated a binary variable with one for "argee" and zero for either "disagree" or have "no opinion". In our final sample, 57.5% of mothers agree with this statement.

Sibship structure. In the 2000 household survey, household respondents were asked to report demographic characteristics of all the household members, including the siblings of focus children who were not residing in the household during the interview. Although China adopted a one-child policy in 1982, rural families were allowed to have one additional child if their first one was a girl. In our sample, only 6.5% of focus children have no siblings, 61.5% have one sibling, and 32% have more than one sibling. We generated four continuous variables measuring the number of older brothers, older sisters, younger brothers, and younger sisters, respectively.

Educational aspiration. Children were asked the highest level of schooling they want to complete in 2000. Likewise, mothers were asked the highest grade they wished their children to achieve. We translated the grade to the years of schooling necessary for that grade and generated two continuous variables on the educational aspirations of children and mothers.

Family background and socioeconomic status. We included a set of measurements on family socioeconomic status using parents' educational attainment, household wealth, and mother's reported income insufficiency. Parents' educational attainment was a three-category (below junior high school, junior high school, high school and above) variable with below junior high school as reference. The household wealth is a summation of the total value of the household's house, fixed assets, and durable goods. We created a wealth quintile and contrasted the middle three categories with the poorest and richest quintile. The income insufficiency variable represents whether family income was insufficient in the past year. We coded one for this variable if the family had not sufficient income and zero if the mother reported having barely sufficient or with some surplus.

We included two binary variables indicating whether the father was absent (19.42%) and whether the original family was disrupted (4.2%). Following prior literature, we defined father absence as those who lived at home for less than six months in the past year. Family disruption was coded one if at least one parent had divorced, separated, or died before the year 2000. All family background and socioeconomic variables are reported in 2000 before the transitions occurred.

4.3 Analytic Approach

4.3.1 Heterogeneity of transition to adulthood: the entropy index

We first compute the age-specific entropy index by hukou status at birth and by gender. The entropy index measures the level of heterogeneity of demographic status combination at a specific age. The formula can be expressed as:

$$\sum_{S=1}^{S} p_s log \frac{1}{p_s}$$

Where S denotes the number of status combinations, and p_s represents the proportion of population in status combination s. A higher score suggests that the transition pathway is more de-standardized and individualized. We convert the entropy index into a percentage of the maximum index, which is calculated when the population is equally distributed over all conceivable status combinations (0.903 for men and 1.24 for women). This measure has been used to examine the level of heterogeneity of status distributions by age across time and space and between population subgroups (Billari 2001 Fussel 2005; Park et al. 2010; Tian 2016).

4.3.2 Identification of transition profile

We included four transition markers that were widely used in transition to adulthood literature in our latent class analysis: school attendance, first job, first marriage, and first parenthood. Using the retrospective reports on life history in the 2015 survey, we constructed a person year records for men and women from their age 16 to 24. First job, first marriage, and first parenthood was a non-recurring event, and was coded as zero before the event and one after the event. School attendance was a recurring event with one coded as being in school and zero coded as out of school. To improve the model fit, we chose transition status at age 16, 20, and 24 to build latent class models. We began by fitting a single cluster model and gradually increased the number of clusters up to eight. The selection of the models involves balancing the goodness of fit, parsimony of the model, and interpretability of the resulting classes. Appendix includes tables of goodness-of-fit statistics present the relationship between the Bayesian information criterion (BIC) and the number of clusters for both men and women. Based on these results, we adopted a 4-class model for both men and women because adding one additional class either increased the BIC or did not improve the BIC considerably.

4.3.3 Class membership prediction

In order to investigate the relationship between latent classes and childhood environment factors, we adopted the bias-adjusted three-step approach for the latent class analysis (Bakk et al., 2013; Bolck et al., 2004; Vermunt, 2010). In our study, the three steps involve (1) building a latent class model based on variables of transition markers; (2) assigning each individual to latent classes based on their posterior class membership; (3) examining the association between latent classes and external childhood environment predictors. This approach avoids complex model-building processes than the one-step approach did. It also outperforms traditional approaches in producing unbiased and efficient estimation by properly accounting for classification errors that arise from class membership assignment (Bakk et al., 2013; Bolck et al., 2004; Vermunt, 2010).

5 Results

5.1 Analytic results

5.1.1 Heterogeneity in the Transition to Adulthood: Rural-Urban Differences

Figure 1 presents the results of age-specific entropy index by *hukou* origin and by gender. Men with urban *hukou* at birth have a more standardized life course trajectory on average than men with rural *hukou* from 15 to 21. After the age of 21, the age-specific entropy index overlaps, with rural males displaying a slightly larger degree of variability. In contrast, women with urban *hukou* at birth had lower entropy than those with rural *hukou* throughout adolescence and early adulthood. The age-specific entropy for the rural Gansu sample is broadly comparable with the rural sample in CLDS, with the exception of men aged 16 to 19, who had a lower entropy than the CLDS rural sample but a higher entropy than the CLDS urban sample. These findings are consistent with our hypothesis that the life course trajectory during adolescent and early adulthood years are more structured and organized for urban kids than rural kids.

Figure 2 shows the age-specific entropy index for post-1970 and post-1980 cohorts using the CLDS samples. Except for rural men, we found that the post-1980 group shows a lower level of variability than the post-1970 generation in transition to adulthood pathways. Women with urban hukou have had the greatest decline of these four categories, likely because of marriage postponement and increased education opportunities experienced by urban women in the latest cohort.

5.1.2 Identification of transition profile

Figure 3 depicts the four transition profiles for adolecent boys based on the age-specific conditional probabilities from the four-cluster latent class model. The *keep in school* cluster represents 47% of men sample and is composed of individuals who have an extended school enrollment history. They are most likely to be college graduates. The majority of them remained unmarried until the age of 24. It is consistent with the literature that education has a delaying effect on family formation. The *work first late marriage* cluster includes 33% of men who had early employment history and

a late family formation pattern. The cluster of *Marriage first*, accounting for 8% of the men sample, display similar transition trajectories in education and family formation compared to the work first and late marriage cluster. However, they started their employment late, and by the age of 24, only around 60% had started working. The *early transition* cluster comprises 12% of men. They left school and started work early. By the age of 24, nearly all of them got married and had children.

Figure 4 depicts the four transition profiles for adolescent girls based on a similar latent class model. Three of the four transition profiles are comparable to males, but in differing proportions: *keep in school* (41%), *early transition* (23%), *marriage first* (20%), and *work first late marriage* (16%).

5.1.3 Class membership prediction

Men's class membership prediction. Table 2 presents estimates from a three-step, bias-adjusted multinomial logistic model analyzing the impact of a man's family background and demographic characteristics on his class membership.

Mothers who strongly believe in relying on sons for support in their old age are more likely to have sons in the *early transition* class rather than the *keep in school* class. Specifically, men's likelihood of entering early employment and marriage is 142% higher than remaining in school if his mother holds this belief. This belief is also positively associated with men's likelihood of being in the *work first, late marriage* class; however, this effect is only marginally significant. l Both the children's and the mother's educational aspirations are negatively related to the likelihood of belonging to any class other than the *keep in education* class. An increase in the men's educational aspirations notably decreases the probability of him being in the work first late marriage class. Similarly, a rise in the mother's educational aspirations significantly lowers the men's probability of being in the *marriage first* class. However, factors like the gender equity index and family size do not significantly impact the men's class membership.

Results from table 2 also indicates that fathers' education significantly influences men to keep in school rather than entering the labor market or marriage at early ages. In addition, a man who has experienced a family disruption is more likely to be in the *marriage first* class and the *work first late marriage* class, although the latter is just marginally significant. Additionally, the men's class membership appears unaffected by the mother's education, early academic skil household wealth, and income sufficiency.

Women's class membership prediction. Table 3 presents a parallel model focusing on predictors of class membership for women. The analysis indicates that mothers' support of gender equity correlates with a reduced likelihood of their daughters being in the *work first late marriage* and *early transition* classes.

In contrast to boys, whose class memberships are insensitive to sibship structure, sibship structure significantly affects girls' class memberships. The presence of one additional younger brother significantly increases the likelihood of women falling into the *work first late marriage* and *early transition* classes by 172% and 109%, respectively.

Both women's and their mothers' own educational aspirations play a crucial role in keeping women in school. While mothers with higher educational aspirations exert a protective influence, reducing the likelihood of their daughters

being in any class other than *keep in school*, women's own educational aspirations significantly reduce their probabilities of being in the *early transition* class.

Both fathers' and mothers' educational attainments exhibit a similar protective effect. Having a father with a high school or higher degree and having a mother with a junior high school degree are negatively associated with daughters' probability of being in the *early transition* or *work first late marriage* classes. The effect of a mother having a high school or higher degree is in the same direction, although it is not statistically significant, mainly because only a small number of mothers have attained this level of education.

Contrary to the results observed for men, women are more sensitive to household wealth and income insufficiency when determining their class memberships. Women from families with better wealth conditions are less likely to be in classes other than the 'keep in school' class. Additionally, having insufficient family income in 2000 significantly increased women's probability of being in the *marriage first* class.

6 Discussion and Conclusions

The pathways to adulthood in China have become protracted, more diverse, and less predictable. Both second demographic transition and modernization theories suggest that the more economically developed a region is, the more complex and diverse the transition pathways are. In this study, we argued that rural youths' paths to adulthood are more diversified than previous research suggests.

Focusing on rural youth aged 16 to 24, we found substantial heterogeneity and social stratification within local rural communities. Nearly 47% of boys and 41% of girls in our sample have extended school enrollment history, and thus have postponed employment and family formation. The remaining youth leave school earlier and follow different pathways in employment, marriage, and parenthood. The association between early childhood environment and latent classes shows that rural youths' paths to adulthood are stratified by parents' education and household economic status.

This study contributes to existing research in three ways. Firstly, it reveals that China's post-80s and post-90s generations of rural youth experience more diverse or de-standardized pathways to adulthood compared to their urban counterparts. This finding thus join recent comparative literature to challenges the prevailing assumption that transition pathways will mimic the Western model, becoming diversified first in developed regions and then spreading to developing regions driven by ideational changes. Instead, the de-standardization in the experiences of rural youth likely stems from a scarcity of resources in their families and communities, coupled with elevated economic uncertainties and institutional setting divide the rural and urban population, rather than from ideational changes suggested by the second demographic transition theory. This study highlights the importance of local context in interpreting and understanding the transition to adulthood research. In addition, the de-standardization of transition to adulthood pathways among rural youth may exacerbate rural-urban inequalities in the accumulation of social capital. This issue stems not just from reduced educational opportunities, but also from the challenges rural youth face in forming and maintaining stable social networks.

Secondly, using a 15-year longitudinal dataset from impoverished rural communities in northwestern China, this study is among the first to empirically distinguish unique pathways to adulthood for both rural boys and girls. Previous research often simplifies the transition to adulthood by broadly categorizing populations into rural and urban groups, typically concluding that rural individuals are more inclined to enter the labor market and marriage at an earlier age compared to their urban counterparts. This generalization, however, tends to overlook the heterogeneity within the rural youth population. Our findings show that over 40% of rural boys and girls stay in school longer, postponing marriage and employment. The rest may enter marriage and the workforce earlier, but with variations in timing and sequence. Furthermore, the use of longitudinal data addresses issues commonly found in cross-sectional retrospective surveys, such as the conflation of urban-origin individuals with rural-to-urban migrants and recall bias.

Finally, this study explores key childhood environment factors influencing the transition to adulthood, uncovering notable gender differences. Parental education emerged as a protective factor, reducing the likelihood of both boys and girls entering disadvantageous pathways. However, family structure and economic conditions distinctly affect the pathways of boys and girls. Girls, especially those with younger brothers and from low-income families, are more likely to leave school early, while these factors do not significantly impact boys' transitions. Conversely, family disruptions like divorce have a negative impact on boys in shaping their transition pathways, but this effect is not observed in girls. This study also underscores the continued influence of cultural norms in rural areas, such as old-age support and son preference. On one hand, rural girls from families that strongly support gender equality are more likely to remain in school. On the other hand, rural boys face an enduring expectation to care for aging parents, a responsibility that often extends to their wives as well. The tendency for mothers to prefer sons for old-age support, resulting in earlier marriages for these sons, exemplifies the continuation of these traditional norms.

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Figure 1: Age-specific entropy index by residence and gender, age 16-24

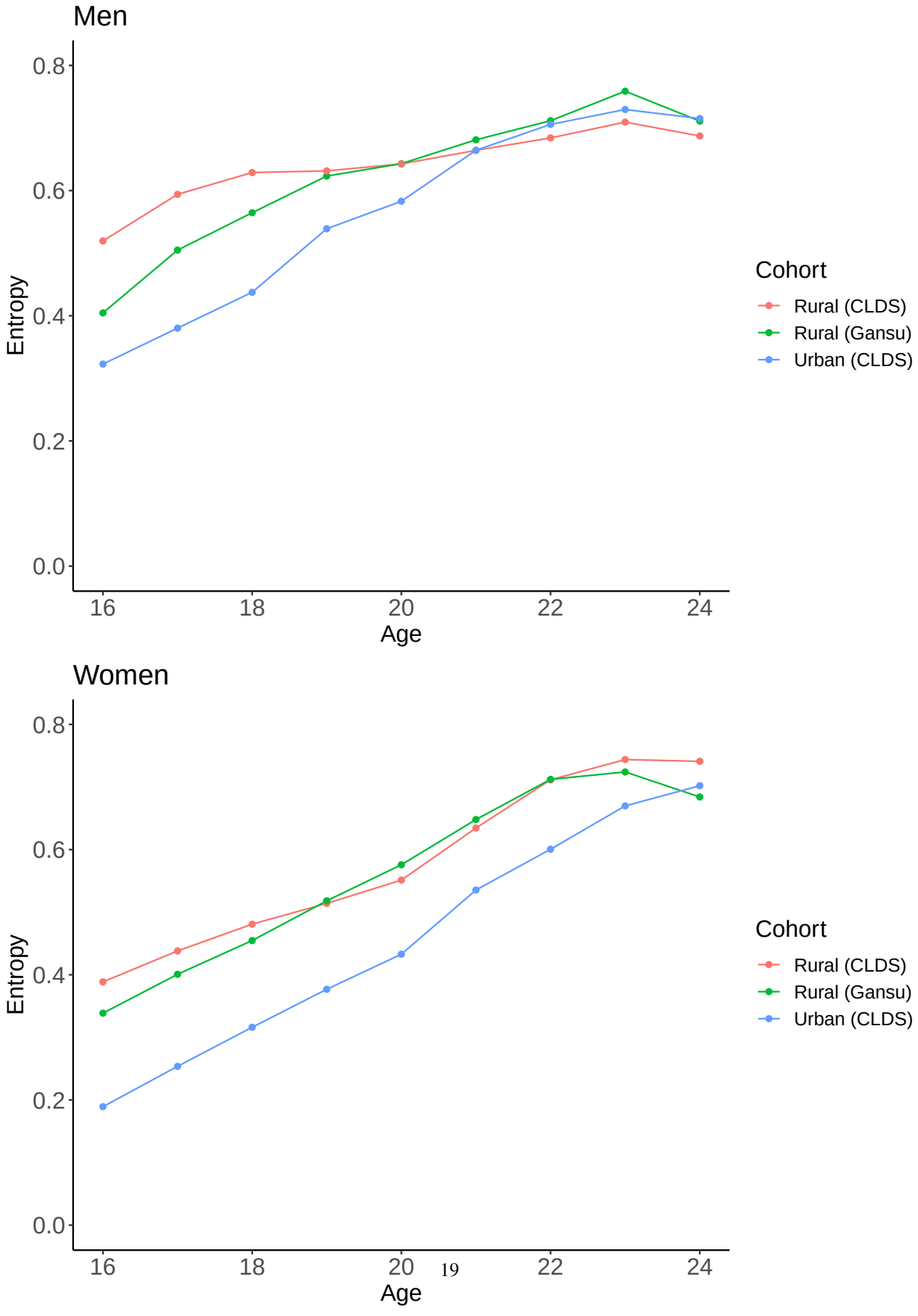

Figure 2: Age-specific entropy index by cohort, residence, and gender, age 16-24

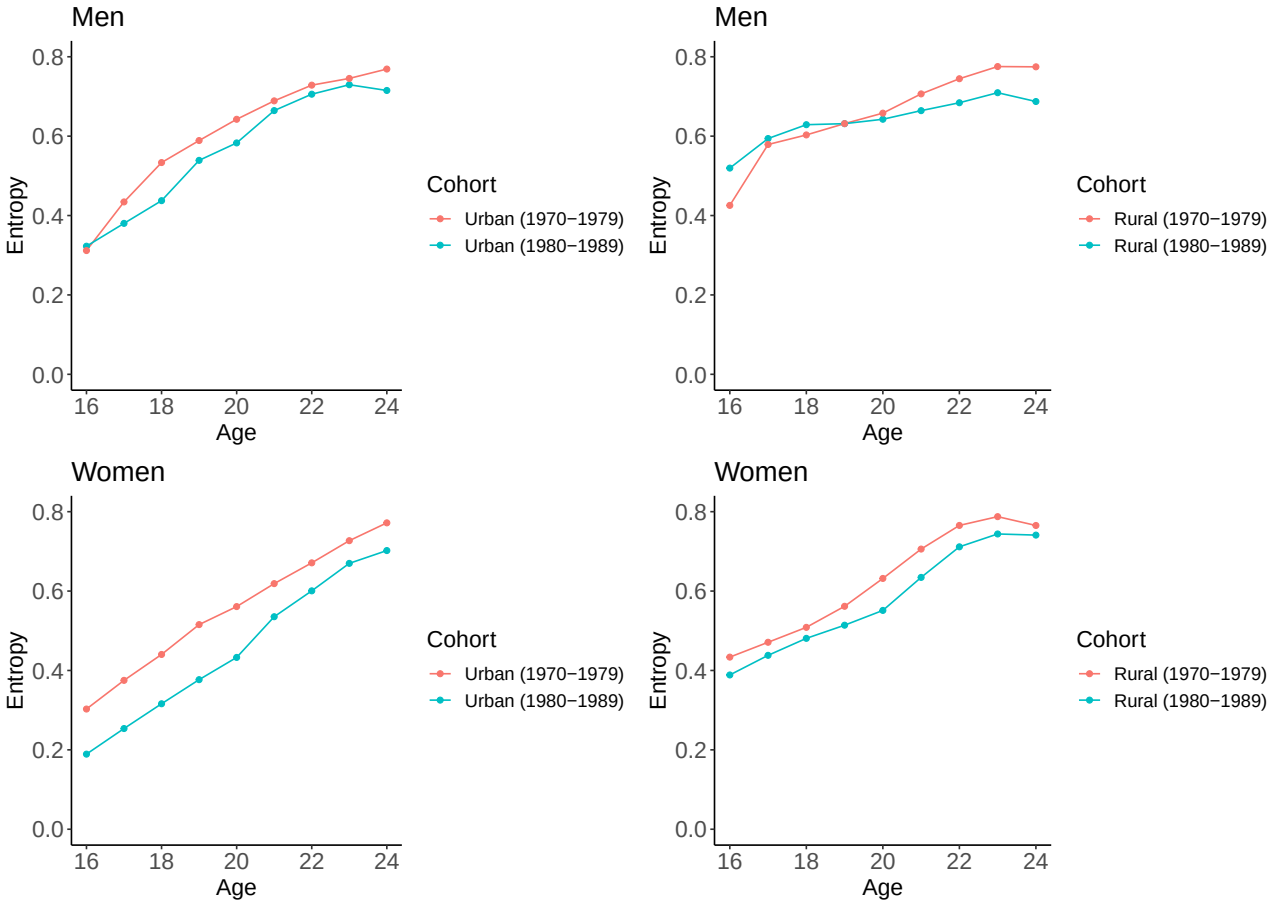

Figure 3: Estimated population prevalence and conditional age-specific probabilities for latent pathways to adulthood, men

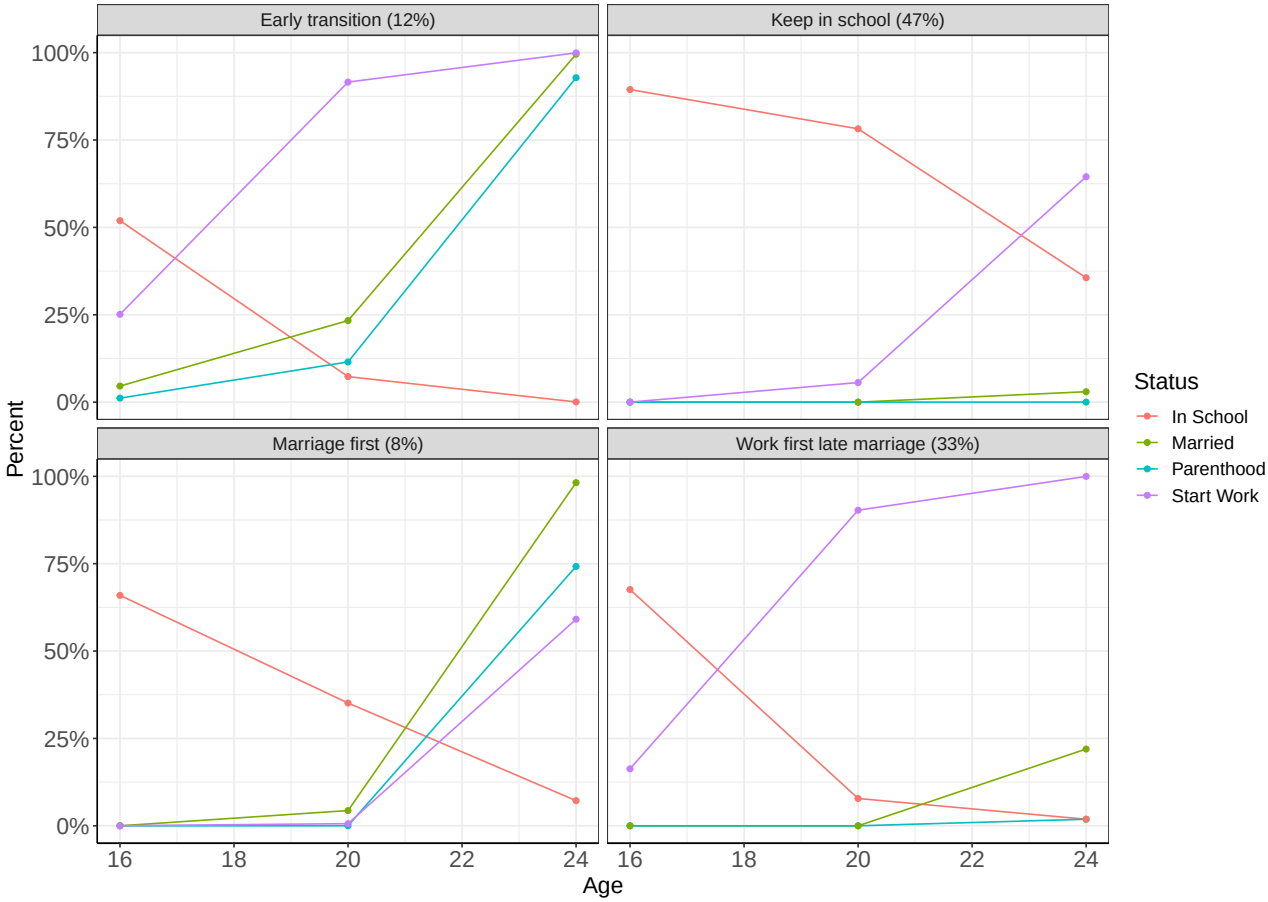

Figure 4: Estimated population prevalence and conditional age-specific probabilities for latent pathways to adulthood, women

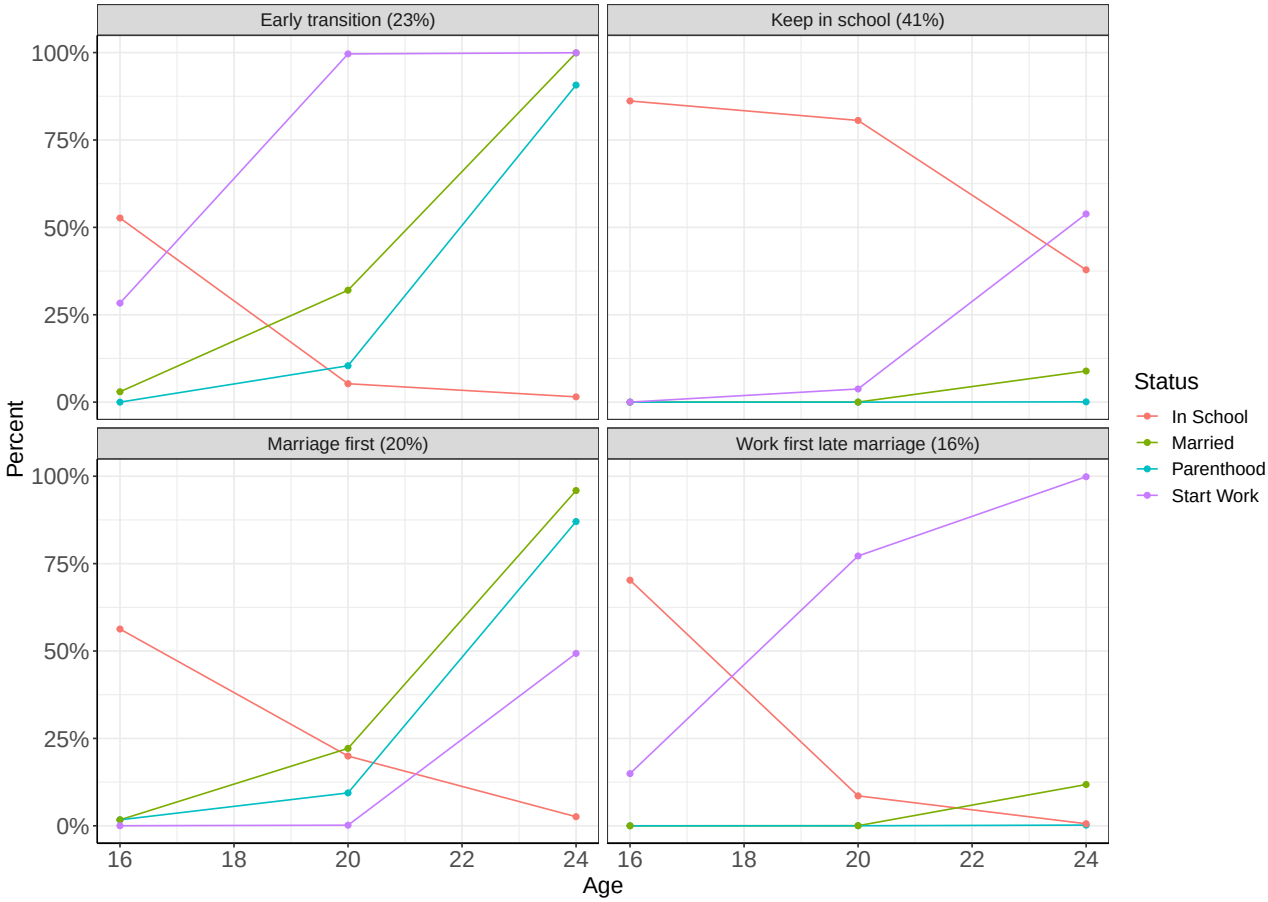

Table 1: Descriptive statistics

	Men (n=734)				Women (n=588)			
Variable	Mean	Std. Dev.	Min	Max	Mean	Std. Dev.	Min	Max
Gender equity index	0.03	0.95	-5.20	0.55	-0.04	1.07	-5.55	0.55
Rely on sons	0.59	0.49	0	1	0.55	0.50	0	1
Number of old brothers	0.23	0.43	0	2	0.50	0.54	0	2
Number of old sisters	0.53	0.76	0	5	0.31	0.59	0	4
Number of young brothers	0.26	0.47	0	3	0.37	0.54	0	2
Number of young sisters	0.20	0.42	0	2	0.29	0.54	0	4
Child's educational aspiration	13.83	2.78	6	16	13.44	3.08	6	16
Mother's educational aspiration	14.73	2.24	6	16	13.93	2.91	6	16
Father's education								
Below junior high	0.46	0.50	0	1	0.49	0.50	0	1
Junior high	0.34	0.47	0	1	0.32	0.47	0	1
High school and above	0.20	0.40	0	1	0.19	0.39	0	1
Mother's education								
Below junior high	0.76	0.43	0	1	0.77	0.42	0	1
Junior high	0.20	0.40	0	1	0.19	0.39	0	1
High school and above	0.04	0.20	0	1	0.04	0.19	0	1
Wealth quintile								
Poorest	0.19	0.39	0	1	0.22	0.41	0	1
Middle	0.59	0.49	0	1	0.61	0.49	0	1
Richest	0.22	0.42	0	1	0.18	0.38	0	1
Insufficient income	0.39	0.49	0	1	0.42	0.49	0	1
Father absence	0.20	0.40	0	1	0.19	0.39	0	1
Family disruption	0.04	0.20	0	1	0.04	0.19	0	1
Early academic skills	18.16	9.80	0	43	17.08	10.06	0	68
Chronic disease	0.02	0.13	0	1	0.03	0.16	0	1

Table 2: Multinomial logit results for the pathways to adulthood among young men (ages 16-24), with 'Kept in School' as the reference

Covariates	Work first late marriage	Marriage first	Early transition
Gender equity index	-0.099	-0.107	-0.060
	(0.104)	(0.123)	(0.128)
Rely on sons	**0.350+**	0.342	**0.885****
	(0.197)	(0.259)	(0.286)
Number of old brothers	0.062	-0.177	-0.006
	(0.261)	(0.354)	(0.327)
Number of old sisters	-0.169	-0.014	0.075
	(0.138)	(0.212)	(0.17)
Number of young brothers	0.042	-0.463	-0.438
	(0.234)	(0.328)	(0.387)
Number of young sisters	-0.074	0.091	**-0.742+**
	(0.27)	(0.358)	(0.406)
Child's educational aspiration	**-0.083***	**-0.086+**	-0.062
	(0.038)	(0.047)	(0.051)
Mother's educational aspiration	-0.080	**-0.154****	-0.059
	(0.049)	(0.058)	(0.062)
Father's education (ref=Below junior high)			
Junior high	**-0.699****	**-0.629***	-0.452
	(0.225)	(0.29)	(0.308)
High school and above	**-0.964*****	**-0.812***	**-0.743***
	(0.262)	(0.354)	(0.367)
Mother's education (ref=Below junior high)			
Junior high	-0.054	-0.103	0.033
	(0.253)	(0.32)	(0.341)
High school and above	-0.094	-1.372	0.353
	(0.462)	(1.098)	(0.564)
Wealth quintile (ref=lowest quintile)			
Middle quintile	-0.146	-0.009	-0.418
	(0.281)	(0.364)	(0.35)
Richest quintile	-0.273	-0.375	-0.681
	(0.322)	(0.422)	(0.436)
Insufficient income	**0.263**	0.067	0.290
	(0.2)	(0.262)	(0.281)
Father absence	-0.177	-0.043	0.069
	(0.253)	(0.308)	(0.308)
Family disruption	**0.993+**	**1.423***	-0.452
	(0.542)	(0.576)	(1.103)
Early academic skill	**-0.021+**	-0.001	-0.008
	(0.011)	(0.014)	(0.014)
Chronic disease	1.514	1.371	1.430
	(1.323)	(1.304)	(1.313)
Intercept	**2.973****	**2.870****	**1.014**
	(0.951)	(1.107)	(1.171)

Note: + p<.1, * p<.05, ** p<.01, ***<.001; Standard error in parentheses

Table 3: Multinomial logit results for the pathways to adulthood among young women (ages 16-24), with 'Kept in School' as the reference

Covariates	Work first late marriage	Marriage first	Early transition
Gender equity index	**-0.319****	-0.169	**-0.284***
	(0.124)	(0.128)	(0.129)
Rely on sons	0.160	0.021	-0.003
	(0.271)	(0.253)	(0.271)
Number of old brothers	0.210	-0.071	0.187
	(0.331)	(0.296)	(0.328)
Number of old sisters	**0.487***	0.078	-0.177
	(0.231)	(0.249)	(0.248)
Number of young brothers	**0.999****	-0.086	**0.735***
	(0.332)	(0.326)	(0.338)
Number of young sisters	-0.027	-0.132	0.084
	(0.307)	(0.228)	(0.26)
Child's educational aspiration	-0.023	0.003	**-0.111****
	(0.045)	(0.047)	(0.043)
Mother's educational aspiration	**-0.123***	**-0.120***	**-0.146****
	(0.049)	(0.051)	(0.051)
Father's education (ref=Below junior high)			
Junior high	0.070	-0.103	-0.510
	(0.294)	(0.284)	(0.314)
High school and above	**-0.780***	-0.474	**-0.940***
	(0.378)	(0.345)	(0.385)
Mother's education (ref=Below junior high)			
Junior high	**-0.755***	-0.386	**-0.778***
	(0.381)	(0.306)	(0.396)
High school and above	-0.489	-1.278	-0.874
	(0.655)	(0.937)	(0.797)
Wealth quintile (ref=lowest quintile)			
Middle quintile	**-1.086****	**-0.913***	**-0.870***
	(0.373)	(0.367)	(0.371)
Richest quintile	**-1.472****	**-1.212****	**-1.307****
	(0.472)	(0.461)	(0.486)
Insufficient income	0.265	**0.560***	0.446
	(0.275)	(0.276)	(0.272)
Father absence	0.439	-0.048	0.046
	(0.331)	(0.351)	(0.353)
Family disruption	0.057	-0.028	0.405
	(0.877)	(0.760)	(0.738)
Early academic skill	**-0.027+**	**-0.022+**	**-0.027+**
	(0.015)	(0.013)	(0.015)
Chronic disease	0.710	0.950	-0.046
	(0.760)	(0.698)	(1.004)
Intercept	**2.316***	**2.494***	**4.1912*****
	(1.044)	(1.015)	(1.005)

Note: + p<.1, * p<.05, ** p<.01, ***<.001; Standard error in parentheses

Table A1: Goodness-of-fit statistics for latent class model selection, men

Men	LL	BIC(L^2)	df
1-Cluster	-3305.27	-3111.09	722
2-Cluster	-2876.29	-3883.27	709
3-Cluster	-2703.53	-4143.01	696
4-Cluster	-2651.39	-4161.51	683
5-Cluster	-2607.71	-4163.08	670
6-Cluster	-2576.63	-4139.46	657
7-Cluster	-2546.48	-4113.97	644
8-Cluster	-2533.39	-4054.38	631

Table A2: Goodness-of-fit statistics for latent class model selection, women

Women	LL	BIC(L^2)	df
1-Cluster	-3097.07	-1821.91	576
2-Cluster	-2592.38	-2748.38	563
3-Cluster	-2476.52	-2897.21	550
4-Cluster	-2387.38	-2992.60	537
5-Cluster	-2350.28	-2983.90	524
6-Cluster	-2320.81	-2959.93	511
7-Cluster	-2292.41	-2933.83	498
8-Cluster	-2263.10	-2909.55	485