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Publication Date

2023

DOI

10.1177/2057150x231180022

Chinese Journal of Sociology

Changing times and subjective well-being in urban China 2003–2013: An age-period-cohort approach

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Abstract

This paper analyzes the intersection of individual lives and historical context by examining how cohort membership, historical conditions, and individual maturation influence subjective well-being in urban China. We use cross-classified multilevel models and repeated measures of happiness from seven waves of the Chinese General Social Survey (CGSS 2003–2013, N = 43,308). The results indicate that individuals born between 1956 and 1961 experienced setbacks at various pivotal moments throughout their life, including education, employment, economic stability, and social connections, and this cohort reports a lower overall sense of happiness when compared to other cohorts. The effect of aging on happiness comprises a U-shaped pattern; the middle-aged are the least happy. We observe an upward trend in happiness from 2003 to 2013. These results are confirmed by using subjective socioeconomic status (SES) as an alternative measure of well-being from CGSS 2003 and CGSS 2005 (N = 11,992). This paper contributes to studies of market transition by identifying the birth cohort as an important mechanism of inequality. It also augments the life-course paradigm by highlighting the significance of timing when individual lives intersect with historical context.

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Keywords

China, quantitative methods, social change, mobility, inequality

Introduction

China has experienced dramatic large-scale social transformations in the past seven decades. Following a series of wars in the first half of the twentieth century, the Chinese population encountered famine, and the Cultural Revolution (CR). Since the economic reform in the late 1970s, the average annual GDP growth remained close to 10%, household consumption increased more than fivefold (China National Bureau of Statistics, 2007), and life expectancy rose from 60 years in 1970 to 75.6 years in 2013 (World Health Organization, 2016). China's Human Development Index in 2007 was 45% higher than that in 1980 (United Nations Development Program, 2009). Hundreds of millions escaped poverty while tens of millions joined the middle class. However, uneven economic development and globalization resulted in inequalities across regions and individuals (United Nations Development Program, 2009; Wang, 2008), evidenced by the fast-growing Gini inequality index, which rose from 0.28 in 1984 to around 0.53 in 2010–2012 (Chen et al., 2010; Gustafsson et al., 2008; Khan and Riskin, 2001; World Bank, 2001, 2007; Xie and Zhou, 2014).[1]

Research is voluminous on the losers and winners of the newly emergent capitalism in China (Bian and Logan, 1996; Nee and Matthews, 1996; Walder, 1995; Wang, 2008; Wu and Xie, 2005; Xie and Hannum, 1996; Zhou, 2000), but fewer studies demonstrate how Chinese people perceive their lives (Easterlin et al., 2012). Subjective well-being research promises to bridge this gap. Subjective well-being research addresses various aspects of individuals' lives (Blanchflower and Oswald, 2004; Blore et al., 2011; Diener et al., 2013; Krueger and Schkade, 2008). Current research has reached a general consensus on the measurement, validity, and reliability of the two correlated dimensions of subjective well-being: cognitive and affective evaluations. The cognitive evaluation is conceptualized as life satisfaction in general or in terms of specific aspects of life such as in inter-personal, material (such as subjective socioeconomic status [SES]), and nonmaterial life domains (Shu and Zhu, 2009), while the hedonic or affective dimension captures emotional experiences such as sense of happiness and enjoyment.[2] So far, the trends in subjective well-being in China over time, how they vary by cohorts, and how much of these trends can be attributed to age effects are little known.

This paper bridges this gap by differentiating age-period-cohort effects on subjective well-being in China. Analyzing trends of subjective well-being offers insights into levels of satisfaction with the current social system—an important indicator of societal stability or future change (Whyte, 2010). These trends also provide information on individual and aggregate happiness that is helpful for evaluating policy outcomes and social progress (Layard, 2005, 2010). Differentiating age, period, and cohort effects helps us to understand how individuals' lives are affected by their historical context throughout their respective life courses.

We aim to accomplish three goals. First, we study the subjective well-being of people who came of age during different historical times of rapid social changes to offer insights

into the processes by which these social transformations influence individual orientations and behaviors. Analyzing the cohort effect is important, as the circumstances under which people come of age likely have enduring effects. For example, in China, older cohorts are more entrenched in the existing social structure, more likely to be employees of the state, and less responsive to market opportunities, while younger cohorts who entered the labor market after the late 1980s are more willing to join the market sector in pursuit of greater monetary rewards (Wu, 2009; Zhou and Moen, 2001). Members of the birth cohort born in 1947–1966 who came of age during the Cultural Revolution fare the worst in both objective and subjective well-being (Shu and Ye, 2023).

Second, we aim to advance previous research in subjective well-being by distinguishing between age and cohort effects. Previous studies investigating the influence of age on subjective well-being are inconclusive (for a review, see Yang, 2008), and most of them adopted single cross-sectional samples without capturing historical variations or cohort differences. However, recent studies using repeated cross-sectional (Blanchflower and Oswald, 2008; Clark, 2007), longitudinal (Cheng et al., 2015; Schwandt, 2016), and cross-country data (Cheng et al., 2015; Graham and Pozuelo, 2017) found a consistent convex relationship between age and subjective well-being, with subjective well-being measures reaching a minimum at ages 40–62. Nonetheless, these studies rarely consider the impact of historical context across the life course. A national study of subjective well-being in China based on a 2006 sample also found a negative age effect for those aged 40–49, but it is unclear whether this is indicative of a convex age effect or a negative cohort effect for those born in 1957–1966 (Shu and Zhu, 2009). Our work seeks to clarify the relative influences of these two factors.

Last, we analyze the size and nature of historical change in subjective evaluations of life in China. We explore the impacts of two social changes in China—a sizeable increase in GDP and a rapid rise in inequality—on its citizens' subjective well-being. Rising incomes feed the hungry, lift nations out of poverty, and improve population health, thus contributing to national happiness (Graham, 2005; Inglehart and Klingemann, 2000; Layard, 2005; Leigh and Wolfers, 2006; Veenhoven, 1991), although among rich nations the extent to which rising incomes are associated with higher levels of happiness may depend on whether income growth is equally distributed among citizens (Stevenson and Wolfers, 2008a). Two series of repeated national surveys from China paint different pictures of this change. Using data from a series of national surveys, Easterlin et al. (2012) find an upward trend in life satisfaction since 2005 and attribute this increase to improving labor market conditions after the declined employment in the state section resulting from downsizing of state-owned enterprises recovered from increased employment in the private sector in urban China. Similarly, the 2005, 2007, and 2008 waves of the Pew Global Attitudes Survey note an increase in the percentage of respondents that were satisfied with the current economic situation (53%–83%) and their household economic circumstances (51%–58%). However, a 2004 Gallup study on life satisfaction in China indicated a slight decline in life satisfaction during the period from 1997 to 2004, during which time the percentage of individuals that expressed satisfaction with their life dropped from 72% to 63% (Burkholder, 2005), although a later 2008 Gallup survey shows that Chinese people are very optimistic about their future,

giving higher ratings for their expected happiness in the coming five years than in some Western European countries. This declining life satisfaction during a time of optimism might reflect Chinese people's growing aspirations for upward social mobility and impatience with the current pace of economic development, consistent with the Easterlin paradox (Easterlin, 1974).

This paper assesses happiness as the main measure of subjective well-being. Our sample, taken from seven waves of the national-level Chinese General Social Survey (CGSS 2003, 2005, 2006, 2008, 2010, 2012, and 2013), comprises more than 43,000 urban residents. We use this to analyze cohort, age, and period effects on Chinese urban citizens' sense of happiness. To confirm the findings and further understand whether perceptions of material conditions influence happiness (Zhao, 2012), we analyze cohort, age, and period effects on three measures of subjective SES only available in the 2003 and 2005 waves of CGSS: individuals' perceptions of their SES relative to their peers, family living standards, and social mobility. To analyze historical changes such as the market transition process or diffusion of egalitarian gender attitudes, researchers have used spatial variations to substitute for change over time by "reading history sideways" (Thornton, 2001) and converting "spatial heterogeneity into homogeneous development" (Shu, 2004; Xie and Hannum, 1996). As far as we know, our paper is one of the first attempts to directly unravel period effects by taking advantage of the longest available span of repeated national surveys and pooling them to create time series data. We employ cross-classified multilevel age-period-cohort models to differentiate period effects from age and cohort effects (Yang, 2006).

The intersection of historical context and individual lives

The life course perspective highlights the unique ways in which maturation, experiences, cohort membership, and historical or "period" conditions influence individual life chances and perceptions of life. Age, cohort, and period effects are differentiated to reflect historical transformations in context. In particular, the life-course paradigm emphasizes the interplay of human lives and historical context (Elder, 1994, 1998). Changes in the social structure over time produce changes in opportunity structures, bestowing emergent opportunities to some while denying existing prospects to others. Individuals of different birth cohorts who come to the junctures of schooling, labor market entry, marriage, and parenthood in various historical periods must adapt to distinct educational, career, and family pathways. Perceptions of well-being thus vary over the life course, across birth cohorts and historical periods.

Perceptions of well-being may vary across cohorts due to differential life patterns. For example, children of the American Great Depression who experienced deprivation at an early age either fell into despair or strived with heightened effort (Elder, 1974); American baby boomers are less happy than other birth cohorts, perhaps due to their earlier experiences of competition for schooling and desirable jobs (Yang, 2008). In response to changed opportunity structures in the US, African Americans and women who came of age in the wake of the civil rights and feminism movements aspired to occupations of higher status and income than did earlier cohorts (Shu and Marini, 1998, 2008).

Changes in perception of well-being can also be attributed to the "period" effect, in which change over historical time is relatively uniform across cohorts. For instance, the happiness levels of American women declined from 1974 to 1995, perhaps due to historical changes such as women's increasing labor force participation and rising divorce rates that are indicative of the strain associated with work–family balance (Stevenson and Wolfers, 2009; Yang, 2008). In Japan, the population's life satisfaction also rose with rising incomes from the 1950s until the early 1990s, when income started to stagnate (Easterlin and Angelescu, 2011; Stevenson and Wolfers, 2008a). However, in the US, the happiness index has experienced a mild decline since 1972 despite continued economic growth (Blanchflower and Oswald, 2004; Easterlin, 1995; Stevenson and Wolfers, 2008a). Some attribute this decline to the unequal distribution of the fruits of economic growth, whereby the top two quintiles of household income distribution experienced an increase in happiness while the bottom three quintiles suffered a decline (Stevenson and Wolfers, 2008a, 2008b).

Finally, subjective well-being changes over the life course because individuals of all periods and cohorts may face similar physiological, ontological, or psychological changes as they age. Aging, or aging in combination with life-course changes, may contribute to a depressed subjective evaluation of one's level of well-being in midlife. Midlife transitions in work, marriage, family, and health can trigger negative feelings. Events such as a stalled career, children leaving home, chronic illness, or the death of a parent can provoke a sense of setback and even depression, typically starting from their early forties and extending into their fifties (Shek, 1996). Research shows that people over 55 years old are more likely to have developed endurance, acceptance, or resignation toward their abilities and life, work, and family situations (Moen and Wethington, 1999).

Birth cohorts, changing times, and the life course in China

Seven cohorts: Coming of age in changing times

Contemporary Chinese history can be delineated into seven episodes defined by major political and social events. Historical changes have the greatest impact on adolescents, who are the most impressionable as they are formulating basic outlooks toward life and society and exploring the roles of worker, spouse, and parent. Therefore, we analyze the intersection of important historical periods and the lives of adolescents in China.

Adjusting from previous analysis, we define seven cohorts based on their time as adolescents and formulate hypotheses on this basis below. Zhou and Moen (2001) defined three historical cohorts for the Chinese population on the basis of the timing of their workforce entry: the pre-CR, the CR, and the post-CR cohorts. Bian et al. (2001) also used the CR as a historical marker in delineating four cohorts of youth for Chinese Communist Party of China (CPC) members: pre-1949, pre-CR (1949–1965), the CR cohort (1967–1978), and the post-1979 cohort. To enable detailed analyses of the intersection of individual life courses with historical context and to limit the age difference
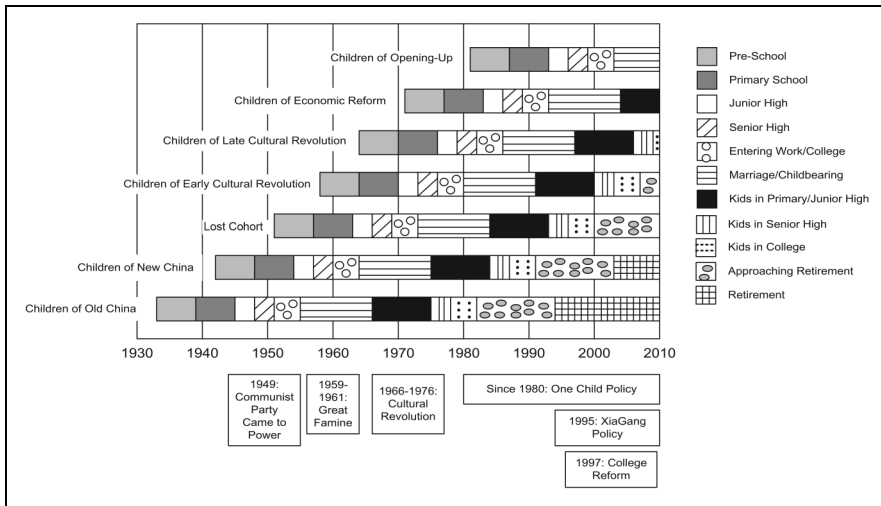
Figure 1. Intersection of life stages with historical events in China: Seven cohorts in 1930–2010. Note: 1. Life Stages: Pre-school (0–6 years old); primary school (7–12 years old); junior high (13–15 years old); senior high (16–18 years old); entering work/university (19–22 years old); marriage/childbearing (23–33 years old); kids in primary/junior high (34–42 years old); kids in senior high (43–45 years old); kids in college (46–49 years old); approaching retirement (50–59 years old); retirement (60+ years old). 2. Median birth year for cohorts: 1933 (Children of Old China); 1942 (Children of New China); 1951 (Lost Cohort);1958 (Children of the Early CR); 1964 (Children of the Late CR); 1971 (Children of Economic Reforms); 1981 (Children of Opening-Up).

within a cohort to less than a decade, we further divide the three post-1949 cohorts into seven cohorts: "Children of Old China" (age 10 in pre-1949), "Children of New China" (age 10 in 1949–1956), "Lost Cohort" (age 10 in 1957–1965), "Children of the Early CR" (age 10 in 1966–1971), "Children of the Late CR" (age 10 in 1972–1976), "Children of Economic Reforms" (age 10 in 1977–1986), and "Children of Opening-Up" (age 10 in 1987 and later). Figure 1 illustrates the life stages of the seven cohorts and their intersection with important historical transformations.

Children of Old China (born in pre-1939) were over 10 years old when the CPC came into power in 1949. The cohort experienced social tension including the Chinese People's War of Resistance against Japanese Aggression and the Chinese People's War of Liberation during their adolescent and young adult years. Most members of this cohort endured extraordinary material hardship and social disruptions in childhood. The majority also migrated from rural China and entered into industrial employment thanks to the rapid industrialization and urbanization in the 1950s.

Children of New China (born in 1939–1946) benefited from abundant educational and employment opportunities made possible by the rapid expansion of the educational system and industrialization in the 1950s. When the CR started in 1966, most

members of this cohort had already completed their education and transitioned into the labor market, marriage, and even parenthood.

The three cohorts whose lives were severely disrupted by the CR are the Children of Miserable Generation,[3] Children of the Early CR, and Children of the Late CR. During the CR, schools were shut down to urge youth to join the "red guards" and 18 million youths (the "sent-down generation") were organized to migrate to rural China to work and live alongside poor peasants (Bernstein, 1978; Deng and Treiman, 1997; Xie et al., 2007; Zhou and Hou, 1999). Findings from the 1990 China Census, a 1988 national survey, and a 1995 Shanghai survey all suggest that members of the cohorts whose educations were cut short during the CR suffered substantially in their later educational attainment (Meng and Gregory, 2002). The CR also affected young people's life courses by delaying their marriage and childbearing (Zhou and Hou, 1999) and reducing educational assortative mating in urban China (Song, 2009).

The education of the Lost Cohort (born in 1947–1955) was disrupted in 1966 when the CR abolished institutions of higher learning and paralyzed schools at every level. Some older members of this cohort, aged 11–19 when the CR occurred, had completed fairly systematic education up to high school, but many members' education was truncated. Later, with their previous education, some were able to pass the restored (since 1977) college entrance exam and receive a college education; most had more than one child and were unaffected by the one-child policy that was enacted in the 1980s. The majority of their children entered college in the early 1990s without tuition or with very low tuition. When the enterprise reform and the *xiagang* (mass layoffs from state employment) policy hit in 1995, many of them were approaching retirement and had children in the labor force to support them. Their children belong to the Children of Opening-Up— the youngest cohort of our study who benefited from the new market opportunities of the 1990s (Li, 1999).

Born in 1956–1961, the Children of the Early CR encountered challenges at all life stages and suffered the most intensive cumulative disadvantages. They encountered the Great Famine (1959–1961) in infancy and early childhood and consequently endured poor health. Their education ended at ages 5–10 when the CR occurred in 1966 and political guidance replaced teaching. Insufficient education made it difficult for many members to pass the restored college entrance exams after the CR came to an end in 1976 (Meng and Gregory, 2002). When this "sent-down generation" returned from rural China, few desirable jobs were available due to the nation's poor economic performance. Thus, they were trapped in a life-long state of low SES, unable to benefit from the new opportunities created by the economic reforms. Additionally, they bore the brunt of the one-child policy in their twenties and had to pay for more expensive tuition for their children to enter college in the late 1990s as the state stopped providing heavily subsidized university education while facing unemployment (due to the aforementioned *xiagang* policy) in their forties and fifties when the new private-enterprise system replaced state-run factories (Hung and Chiu, 2003).[4] Consequently, they suffer from limited prospects in late life and little pension support. The financial and physical assistance provided by their only children is limited compared to older cohorts with larger families (Hung and Chiu, 2003). They are thus more likely to hold negative feelings or emotions resulting from their poor timing in relation to many of the major events of the late twentieth century in China.

The Children of the Late CR were born in 1961–1966. The majority of this cohort received an entirely ideological education up until ages of 11–16, after which college entrance exams were restored and schools reoriented to teach more standard curricula. Most members of this cohort started their first jobs with state-owned enterprises, many of which went bankrupt in the 1990s. With little education or skills to compete with the better-educated younger workers, many members of this cohort were either trapped in low-paying factory jobs without any prospects or survived on state subsidies. Their fertility behaviors were also limited by the one-child policy in the late 1980s and early 1990s, yet since the one-child policy was already an accepted practice by this time, its impact was relatively less depriving to them than the Children of the Early CR cohort. [5]

The two youngest cohorts—the Children of Economic Reforms and the Children of Opening-Up—came of age in the wake of economic reforms when China was gradually revamped as a market-based economy. The Children of Economic Reforms, born in 1967–1976, spent their formative years in the early days of the economic reform. They experienced limited access to food and clothing in early childhood. The vast majority of them received a rigorous nine-year compulsory education but endured intense competition for higher-education opportunities. They encountered the restructuring of employment practices yet honed their labor-market skills early. Born after 1977, the Children of Opening-Up came of age with an abundance of material comfort, thanks to the success of the economic reform. Members of this cohort generally received a systematic 12-year education; a substantial proportion also entered college thanks to the rapid expansion of institutions of higher learning. As a generation primarily composed of only child, they received undivided material and non-material devotion from their families.

Although the CR had a huge impact on Chinese national well-being as a whole, its influence was most crucial for those who were in critical stages of their life course, preparing for adult, work, and family roles. The unfortunate timing of their births inflicted a series of setbacks at critical life stages, forming cumulative disadvantages for these cohorts. Thus, we formulate the following "born at the wrong time" hypothesis: *The three cohorts coming of age during the CR will have lower levels of subjective SES and feelings of happiness*.

Additionally, we hypothesize that *the negative cohort effect for the three CR cohorts is partly accounted for by their relatively poor educational attainment, relatively high unemployment, low economic well-being, and disillusionment (indicated by the degree of consensus with public opinion and level of social connection)*. Education measures an individual's objective capabilities and means and is positively associated with subjective well-being in general and more strongly with evaluative well-being. However, at the high end of the happiness distribution, education is negatively associated with well-being, perhaps because the highly educated often have unrealistic ambitions and education can brings about awareness of the limitations in people's life opportunities (Graham, 2011). CR cohorts suffered from missed educational opportunities in childhood, adolescence, and young adulthood, and thus are more likely to have lower subjective well-being (Meng and Gregory, 2002). Their higher unemployment rate is another contributing factor. With little education and their majority assignment to manual jobs in state-owned enterprises, members of the CR cohorts entered the

market reform period in middle age without any competitive edge, rendering them the most vulnerable during the state-owned enterprise reforms. Some were forced into unemployment with a small amount of severance pay while others were laid off when their factories went bankrupt (Hung and Chiu, 2003), and those with state jobs and low skills were poorly positioned for market competition and the new opportunities that it brought. Finally, disappointment with the current sociopolitical system and disconnection from society accounts for the lower evaluations of life satisfaction and happiness of the CR cohorts. Members of these cohorts may hold negative feelings or emotions over poor treatment throughout their life course: limited educational access and opportunity, low-salaried state employment, the one-child policy, layoffs in midlife, the imposition of market rates for college tuition for their children, and the loss of state-provided services and welfare. Members of these cohorts may believe that they "upheld their end of the bargain" in their youth by working in rural China and enduring low salaries, but in the course of the reforms, the state reneged on earned entitlements such as job security, benefits, pension, health insurance, and publicly funded education for their children (Tang and Parish, 2000).

Life-course changes: Midlife challenges

Empirical evidence is sparse on the effect of aging on subjective well-being, largely due to the inability of conventional methods to unravel the age-period-cohort effects. Most of this evidence comes from studies of Western countries. The US General Social Survey (1974–2004) and Eurobarometer surveys (1978–1998) show that happiness is U-shaped across age groups and reaches a low point for those in their forties and fifties (Blanchflower and Oswald, 2008). Fourteen waves of panel data from Britain (1991–2004) show that regardless of birth year, levels of subjective well-being reach their lowest point between the ages of 35 and 45 (Clark, 2007). A study using a German longitudinal survey from 1991 to 2004 found a similar U-shaped happiness pattern with a low point at around the age of 50 and suggested that unmet expectations in midlife were the reason behind it (Schwandt, 2016). Although some have argued that a reduced sense of well-being in midlife is more prevalent in the affluent West, where both the desires and resources for self-fulfillment are abundant (Kruger, 1994), a more recent study on 46 countries, including countries in Asia and Africa, indicated that this curve was consistent across social contexts and groups (Graham and Pozuelo, 2017).

Research also shows a depressed sense of well-being at midlife in the East Asian context. A survey of 1500 Chinese in Hong Kong found evidence of dissatisfaction with work and personal accomplishment around the midlife (Shek, 1996). A study of midlife life perceptions in Japanese and Hindu cultures also found evidence of difficult transitions among the middle-aged (Menon, 2001). Confucian doctrines, such as "At thirty, we firmly establish ourselves; at forty, we no longer have doubts; and at fifty, we know our destiny" (*Sanshi er li, sishi er buhuo, wushi er zhitianming*), have established cultural expectations for age-appropriate behaviors and status in the Chinese tradition. Failing to achieve these cultural ideals could increase stress and beliefs in other

prevailing cultural stereotypes such as "When a person reaches the midlife years, everything is sad/worrying" (*Ren dao zhongnian wanshiai/you*) (Shek, 1996). We thus formulate the following "midlife crisis" hypothesis: *There will be a U-shaped relationship between age and level of subjective SES and feelings of happiness, i.e. subjective well-being declines with age in the early life course before reaching a minimum at middle age and rebounding in older age.*

Change over time: Economic growth coupled with rising inequality

The Chinese economy has maintained a growth rate above 7% since 1991, with an annual growth of over 10% between 2003 and 2008 (China Statistical Bureau, 1992, 2001, 2009). Economic development is believed to be positively associated with subjective well-being, at least before the GDP level has reached a satisfaction point (Clark et al., 2008; Frey and Stutzer, 2002; Layard, 2005; Veenhoven, 1991). According to several multinational studies, rising income contributes to national happiness until basic human needs are met, and little income effect on happiness is observed afterward (Graham, 2005; Inglehart and Klingemann, 2000; Layard, 2005; Leigh and Wolfers, 2006; Veenhoven, 1991). Layard (2005:17) argues that the cut point is an income of US$15,000 per capita. At less than US$8000 per capita in 2015 (China National Bureau of Statistics, 2016),[6] the average income of the Chinese population is far from reaching a saturation point in terms of raising happiness. Moreover, rising income may still lift subjective well-being if the population's expectations for economic growth are satisfied or exceeded. The memories of poverty, famine, and social tension in the childhoods and youths of the Chinese shape fairly low life expectations and a higher appreciation of present circumstances. Thus they generally embrace improved life chances and are optimistic about their own lot in the market economy (Whyte, 2010).

Although the surveys on which this study is based were conducted in the wake of an alarming increase in income inequality that may reduce the sense of well-being, this period has also witnessed several changes that may prompt prevailing optimism for the future. First, improving labor market conditions partially account for the upward trend in subjective well-being since 2005 (Easterlin et al., 2012). The enterprise restructuring program initiated by the government in 1994 led to large-scale layoffs from state-owned enterprises and a loss of extensive state-provided worker benefits. However, by 2004, this rising unemployment rate halted as the downsizing diminished, and employment increased in other urban sectors. Second, since 2003, several initiatives to further socioeconomic development have been implemented, such as extending the minimum livelihood assistance (*dibao*) program, the eliminating of tuition fees for Grades 1 to 9, the allowing of more freedom, and embracing diverse cultural expressions and experiences. These policies may have appeased some segments of the population. Third, the successful launch of a Chinese manned spacecraft in 2003 and 2005, the Beijing Olympics in 2008, and China's becoming the world's second-largest economy in 2011 may have fueled optimism toward the national economy and overall outlook.

Meanwhile, however, multiple crises occurred and resulted in increased complaints. Nonetheless, most complaints focused on relatively narrow complaints and expressed an intent to work within the system to address grievances (Cai, 2010; Chen, 2012). Consequently, the absence of major disruptive events coupled with continued positive economic development during the period under study may not affect the population's subjective well-being.

Economic growth gives people the feeling that opportunities exist and that it is within their power to improve their lives (Whyte, 2010). Chinese people compare their relative economic prosperity to memories of economic difficulties in their childhood and youth and arrive at a favorable assessment of their present situation (Shu and Zhu, 2009; Whyte, 2010). Both spatial and temporal analyses of data from the CGSS have verified a rising sense of life satisfaction in line with economic growth (Wu and Li, 2017; Zhou and Xie, 2016). Greater happiness is still possible given that the saturation point of US $15,000 per capita has yet to be reached, and income growth has outpaced people's expectations (Layard, 2005). We thus formulate the "rising tide lifts all boats" hypothesis: *Both sense of subjective SES and feelings of happiness increased over time during the period studied in 2003–2013.*

Data, measures, and methods

We use data from the urban portion of the CGSS waves in 2003 (N = 5894), 2005 (N = 6098), 2006 (N = 6013), 2008 (N = 3982), 2010 (N = 7222), 2012 (N = 7077), and 2013 (N = 7022), including only adults (ages 18 and over). The use of disproportionally urban samples is consistent with one of the most comprehensive studies on life satisfaction in China by Easterlin et al. (2012: 9775). In this study of multiple national surveys on subjective well-being, Easterlin et al. acknowledge that "the surveys conducted to date have tended to be disproportionally urban". We are not excluding migrants of rural origin. Seven percent of the respondents in the 2003 sample have rural *hukou* (household registration) status, as indicated in Appendix Table A1. The proportion of rural migrants increases to 9%, 17%, 26%, 24%, 27%, and 31% respectively in the urban samples in the 2005, 2006, 2008, 2010, 2012, and 2013 surveys (Appendix Table A1), reflecting increasing rural–urban migration. By excluding rural samples, our conclusions cannot be generalized to the whole nation as there are marked rural–urban differences in both the level of subjective well-being and the mechanisms leading to these divergent levels. These differences have been comprehensively addressed in Hang (2014 and 2015), Whyte (2010), and Whyte and Im (2014).

All surveys are multistage stratified samples with five strata: 1) the urban areas of the three municipalities directly under the central government: Beijing, Shanghai, and Tianjin; 2) the urban areas of Chongqing[7] and 26 provincial capital cities; and 3) cities below provincial capitals in the eastern regions of China; 4) cities below provincial capitals in the central regions of China; 5) cities below provincial capitals in the western regions of China. One hundred and twenty-five primary sampling units (PSUs) were selected for the national sample, while four secondary sampling units (SSUs) were selected in each PSU. Two third-level sampling units (TSUs) were selected in each

selected SSU and ten households were selected in each selected TSU. One adult (aged 18–69 for CGSS 2003) was randomly selected from each sampled household to serve as the survey respondent. The 2003–2006 households were selected based on household registration, while the 2008–2013 surveys selected households based on street mapping, reducing the underrepresentation of rural migrants without urban registration. The CGSS is the first annual/biannual national social survey project that covers all the territory of Chinese mainland except Tibet (Bian and Li, 2012).

Dependent variable

The dependent variable is the feeling of happiness. Respondents were asked, "Generally speaking, how do you personally feel about your life?" (very unhappy; unhappy; so-so; happy; very happy). Happiness is coded as a dichotomous variable (1 = happy and very happy; 0 = very unhappy, unhappy, so-so).[8] A description of the means and standard deviations of all variables is in Appendix Table A1.

Independent variables

We estimate the effects of birth cohort, survey year, and age. We use a series of dummy variables with 1 indicating membership of the cohorts Children of Old China, Children of New China, Miserable Cohort, Children of the Early CR, Children of the Late CR, Children of Economic Reforms, and Children of Opening-Up. We use a series of dichotomous variables with 1 indicating the respondent was surveyed in 2003, 2005, 2006, 2008, 2010, 2012, and 2013, respectively. Age and age squared model the U-shaped age effect.

We use three dichotomous variables to measure educational attainment: primary school and below, secondary school, and college education. *Unemployment* is a dichotomous variable with 1 indicating that the respondent was unemployed at the time of the survey. *Family Income* measures the family's annual income in the previous year (in CNY10,000 increments).[9] We use the log transformation to correct the skewed distribution of these variables. *Homeownership* is a dichotomous variable (1 = respondent is a homeowner).

Three dichotomous variables measure the respondents' marital status: single, divorced/widowed, and married. Family Size measures the number of residents in a household. Own Income measures the respondent's annual income in the previous year. We classify geographical region into six groups: 1) coastal provinces; the "mega municipalities" of 2) Beijing; 3) Shanghai; 4) Tianjin; 5) Chongqing; and 6) the remaining provinces. Other control variables include gender (1 = female), *hukou* status (1 = rural), ethnic minority status (1 = non-Han ethnic group), and CPC membership (1 = party member).

Multilevel random-effect age-period-cohort cross-classified models

Individuals are nested within cells created by the cross-classification of two types of social contexts: birth cohorts and survey years. Table 1A displays this data structure: 43,308 respondents are nested within cells created by the cross-classification of seven

Table 1A. Cross-classfied data structure in CGSS 2003, 2005, 2006, 2008, 2010, 2012, and 2013.

Birth cohort	Survey year							Total
	2003	2005	2006	2008	2010	2012	2013	
Children of Old China (Pre-1939)	409	699	230	149	567	521	446	3021
Children of New China (1939–1946)	702	554	545	303	590	590	554	3838
Lost Cohort (1947–1955)	1138	978	987	575	1101	1057	1025	6861
Children of Early Cultural Revolution (1956–1961)	747	609	712	408	778	675	721	4650
Children of Late Cultural Revolution (1962–1966)	943	878	749	446	866	807	713	5402
Children of Economic Reforms (1967–1976)	1309	1367	1387	1024	1594	1503	1471	9655
Children of Opening-Up (1977–)	646	1013	1403	1077	1726	1924	2092	9881
Total	5894	6098	6013	3982	7222	7077	7022	43,308

birth cohorts and seven survey years, and Table 1B shows the means and ranges of age by cohorts and surveys in this data structure.

We formulate a multilevel cross-classified model to differentiate the effects of age, period, and cohort (APC models). Because age, period, and cohort have a linear relation (period = age + cohort), it is impossible to estimate a linear model with all three variables present. Even when the cohort is represented by a range of birth years, it remains highly correlated with age. A cross-classified APC model allows us to simultaneously analyze the effects of age, period, and cohort on subjective well-being and improves the estimation of individual effects (Yang, 2006; Yang et al., 2008). To ascertain which variables account for the period and cohort dynamics by reducing the size of the random effects, we adjust changes in the variance and random cohort and period effects after estimating a series of models with the individual- and macro-level variables. These estimates are not undermined by the concerns over APC models as birth cohorts are defined in meaningful ways, survey years are used to capture historical dynamics, and we do not attempt to find "solutions" to the period and cohort effects (Luo, 2013; Luo and Hodges, 2016).

This cross-classified APC model has two components: "within-cell" and "between-cell". The "within-cell" or individual model can be expressed as the following equation:

$$\eta_{ijk} = \ln \frac{\phi_{ijk}}{1 - \varphi ijk} = \pi_{0jk} + \pi_{1jk} Age_{ijk} + \pi_{2jk} Age_{ijk}^2 + \sum \pi_{pjk} controls_{ijk} \tag{1}$$

where $\eta_{ijk} = \ln \frac{\varphi_{ijk}}{1 - \varphi_{ijk}}$ is the log of odds of being in the category of interest on one of the three measures of subjective SES, or of being in the category of happiness for individual i in birth cohort j and survey year k. π_{0jk} is the intercept, and π_{1jk}, π_{2jk} and π_{pjk} are regression coefficients for individual-level predictors for individual i in birth cohort j and survey year k including age, age squared, and control variables.

Table 1B. Mean and range of age in coss-classfied data sructure, CGSS 2003, 2005, 2006, 2008, 2010, 2012, and 2013.

Birth cohort	Survey year							
	2003	2005	2006	2008	2010	2012	2013	Total
Children of Old China (Pre-1939)								
Average age	67.1	72.2	68.1	75.1	77.4	78.9	79.7	74.9
Range of age	65–77	67–94	68–95	70–98	72–96	74–96	75–98	65–98
Children of New China (1939–1946)								
Average age	60.4	62.4	63.5	65.0	67.2	69.3	70.4	65.3
Range of age	57–64	59–66	60–67	62–69	64–71	66–73	67–74	57–74
Lost Cohort (1947–1955)								
Average age	51.5	53.6	54.8	57.0	58.8	60.6	61.5	56.8
Range of age	48–56	50–58	51–59	53–61	55–63	57–65	58–66	48–66
Children of Early CR (1956–1961)								
Average age	44.7	46.6	47.6	49.8	51.7	53.8	54.7	49.7
Range of age	42–47	45–49	46–50	48–52	49–54	51–56	52–57	42–57
Children of Late CR (1962–1966)								
Average age	39.1	41.1	42.0	44.2	46.1	48.1	49.1	44.2
Range of age	37–42	39–44	40–45	42–47	44–48	46–50	47–51	37–51
Children of Economic Reforms (1967–1976)								
Average age	32.0	33.8	34.8	36.6	38.7	40.6	41.3	37.0
Range of age	27–36	29–38	30–39	32–41	34–43	36–45	37–46	27–46
Children of Opening-Up (1977–)								
Average age	22.3	23.6	23.2	24.9	26.3	27.4	28.1	25.7
Range of age	18–26	18–28	18–29	18–31	17–33	17–35	17–36	17–36
Total / average age	43.4	44.7	40.9	42.1	46.4	47.3	47.2	44.9

The micro component of individual attitudes varies by cohort and historical period. We thus specify the "between-cell" model as a random effects model.[10] The intercept π_{0jk} in Equation (1) is expressed as:

$$\pi_{0jk} = \theta_0 + \sigma_0 + \lambda_0 \tag{2.1}$$

where θ_0 is the model intercept, the expected value of π_{0jk} when all explanatory variables are set to zero, σ_0 and λ_0 are residuals or random effects of cohort and survey year, respectively.

All other regression coefficients in Equation (1) are expressed as:

$$\pi_{pjk} = \theta_p \tag{2.2}$$

where θ_p is the model intercept, the expected value of π_{1jk} when all explanatory variables are set to zero. The coefficients are estimated by a method of penalized quasi-likelihood using HLM 7.0 (Raudenbush and Bryk, 2002; Raudenbush et al., 2011).

Results

Our analytical strategy contains four steps. We first graph cohort and period variations in happiness and formulate a series of multilevel cross-classified APC models to estimate the effects of age, historical period, and birth cohort on happiness. We next use data from CGSS 2003, 2005, 2006, 2008, 2010, 2012, and 2013 to illustrate age-period-cohort-based patterns in happiness with control variables. All results are weighted at the individual level. Finally, we conducted analysis with subjective SES (CGSS 2003 and 2005) as a measure of subjective well-being to confirm previous results on happiness and deepen our understanding of subjective well-being.

Cohort/age and period variations

Figure 2 shows the proportion of respondents that reporting feeling very happy or happy by cohort/age and survey years. The three middle birth cohorts—the Lost Cohort, the Children of the Early CR, and the Children of the Late CR—reported lower levels of happiness across all survey years. The overall proportion of the sample that reported feeling very happy or happy increased over time: it increased consistently from 2003 to 2012 and levels off after 2013. This finding suggests that happiness increased over six of the seven-time points (2003, 2005, 2006, 2008, 2010, 2012, and 2013) among a substantial proportion of the sample.

Age-period-cohort effects on happiness: Seven national surveys

We use seven repeated national surveys to estimate the effects of age, period, cohort, demographic background, political capital, educational attainment, and economic well-being on the likelihood of feeling happy or very happy in 2003, 2005, 2006, 2008, 2010, 2012, and 2013. These results are in Table 2.

Age. In Models 1–4, age has an odds ratio smaller than 1 for the main effect and larger than 1 for the quadratic form of age, indicating the odds of a positive evaluation of SES decline with age, but the pace of this decline "decays" over time. Since both age and quadratic age are statistically significant, they indicate a U-shaped age effect with a sense of happiness declining over time, reaching the minimum at age 54, and rebounding thereafter. This is consistent with our hypothesis that there is a convex association between age and happiness.
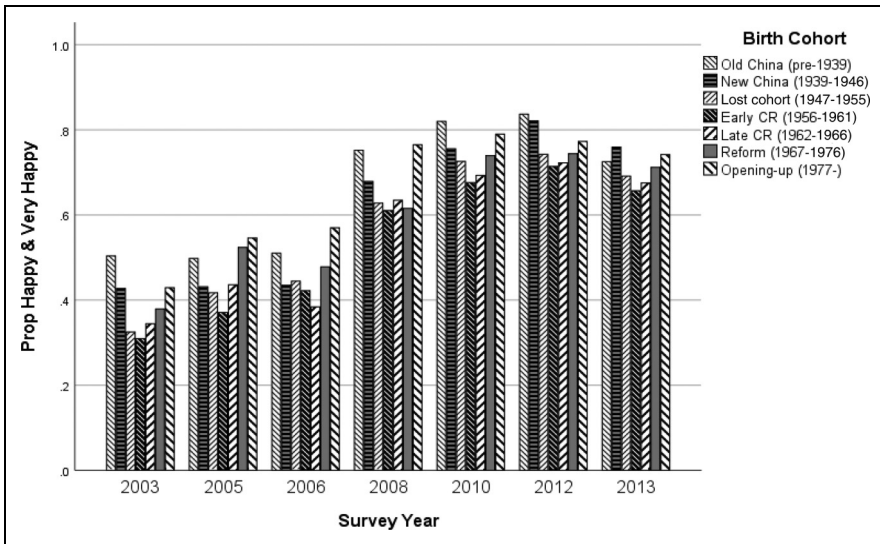
Figure 2. Proportion of respondents reporting "very happy" and "happy", variations by survey year and birth cohort (N = 43,308 from CGSS 2003, 2005, 2006, 2008, 2010, 2012, and 2013).

Cohort. When education, employment, and economic well-being are not controlled (Model 1), Children of the Early CR, Children of the Late CR, and Children of Economic Reform are less likely to feel happy or very happy. This is consistent with our hypothesis that those coming of age during the CR are the least happy. However, no evidence indicates that the Lost Cohort are less happy. They largely perceive their lives similarly to the two older cohorts who came of age prior to the CR and the two younger cohorts who did so after the CR. None of the four models estimated shows a negative cohort effect for the Lost Cohort. This finding is somewhat surprising but indicates that the Lost Cohort largely escaped negative effects of the CR in terms of their long-term life chances. After controlling for the mediating variables of education, employment, and economic well-being, the cohort differences are reduced somewhat. This is consistent with our hypotheses that education, employment, and economic well-being are partially responsible for the cohort differences.

Period. The results also demonstrate a robust period effect. The odds ratios rose slightly from 2003 to 2006, more than doubled in 2008, continued to grow in 2010 and 2012, and slightly declined in 2013, albeit while remaining higher than in 2008. These results are consistent with our hypothesis that the sense of happiness rose during the period from 2003 to 2013. This indicates a positive association between happiness and income or improved economic conditions, consistent with earlier findings that rising GDP contributes to higher levels of happiness until the income level reaches a saturation point (Graham, 2005; Layard, 2005; Leigh and Wolfers, 2006; Inglehart and Klingemann, 2000; Veenhoven, 1991).

Table 2. CCREM estimates of odds ratio of feeling "happy" or "very happy", CGSS 2003, 2005, 2006, 2008, 2010, 2012 and 2013 CGSS (n = 43,308).

	Model 1		Model 2		Model 3		Model 4	
Intercept	0.77		0.53	**	0.59	*	0.33	*
Age	0.89	***	0.88	***	0.89	***	0.90	***
(Age-squared) / 100	1.12	***	1.00	***	1.10	***	1.09	***
Demographic backgournd								
Gender (Female = 1)	1.19	***	1.21	***	1.23	***	1.25	***
Marital status								
Single [a]	–		–		–		–	
Married	1.99	***	2.05	***	2.02	***	1.97	***
Divorced/separated	0.82	**	0.87	*	0.87		0.79	*
Hukou status (Rural = 1)	0.81	***	0.94		0.93	*	1.00	
Ethnic minority (Non-Han = 1)	1.11		1.12	*	1.12	*	1.04	
Family size (Number of people in the household)	1.00		1.01		1.01		0.98	
Political capital (CPC member = 1)	1.86	***	1.59	***	1.55	***	1.47	***
Educational attainment								
Primary school or below [a]							–	
Secondary school			1.37	***	1.37	***	1.25	***
College			2.16	***	2.10	***	1.75	***
Employment status (Unemployed = 1)					0.70	***	0.73	***
Economic well-being								
Own income in the previous year							1.12	***
Family income in the previous year							1.04	***
Home ownership (Owner = 1)							1.60	***
Geographical location								
Coastal	1.16	**	1.13	**	1.12	**	1.16	**
Shanghai	1.05		0.95		0.93		0.90	
Beijing	1.22	***	1.11	*	1.09		1.06	
Chongqing	1.33	*	1.38	**	1.38	**	1.39	**
Tianjin	1.12	*	1.04		1.03		1.02	
Random effects								
Birth cohort								
Children of Old China (Pre-1939)	0.90	***	0.92	***	0.93	***	0.95	***
Children of New China (1939–1946)	1.35	***	1.33	***	1.31	***	1.32	***
Lost Cohort (1947–1955)	1.36	***	1.35	***	1.25	***	1.22	***
Children of Early CR (1956–1961)	0.68	***	0.80	***	0.79	***	0.78	***
Children of Late CR (1962–1966)	0.83	***	0.84	***	0.83	***	0.81	***
Children of Economic Reform (1967–1976)	0.87	***	0.88	***	0.90	***	0.90	***
Children of Opening-Up (1977–)	1.10	***	1.09	***	1.10	***	1.05	***
Survey year								
2003	0.38	***	0.40	***	0.38	***	0.39	***
2005	0.56	***	0.58	***	0.56	***	0.56	***
2006	0.58	***	0.59	***	0.60	***	0.59	***

(continued)

Table 2. Continued

	Model 1		Model 2		Model 3		Model 4	
2008	1.25	***	1.26	***	1.32	***	1.30	***
2010	2.00	***	1.95	***	1.86	***	1.95	***
2012	2.10	***	2.00	***	1.95	***	2.00	***
2013	1.70	***	1.60	***	1.50	***	1.49	***
BIC index	26,308.69		26,135.01		26,064.82		25,833.11	
Variance components								
Cohort	0.05	***	0.01	***	0.01	*	0.01	***
Period	0.42	***	0.38	***	0.36	***	0.16	***

Note: * $p < .05$; ** $p < .01$; *** $p < .001$ (two-tailed).
[a]Reference category.
Errors and confidence intervals are all available upon request.

Validating analysis on subjective SES

To confirm the findings on happiness and further understand variations in happiness, we use subjective evaluations of SES drawn from CGSS 2003 and 2005, as identical measures are unavailable in other waves. Subjective SES is highly correlated with sense of happiness and is a reliable predictor of subjective well-being (Zhao, 2012). *SES Peer* measures how the respondent evaluates their SES compared with their same-age peers (relatively higher; about the same; relatively lower). *SES Cross-Time Change* measures how the respondent compares their current SES with that of three years ago (increased; similar; decreased). *Family Living Standard* taps into subjective class identification based on family living standards. Respondents were asked to evaluate their families' living standards compared to other families in the local area (upper class; upper-middle class; middle class; lower-middle class; lower class).

We also examine whether social contact matters for one's perceptions of well-being in the supplementary analysis. Respondent's degree of social engagement in one's own community is measured by two measures available only in CGSS 2003 and 2005. *Consensus with Public Opinion* measures how often one's perspectives and opinions on important issues are consistent with the understanding of the general public. *Contact with Friends and Family* measures how intimately one interacts with relatives and friends. These two variables range from 1 to 5, with higher values indicating more frequent or more intimate interactions. Similar models and procedures are repeated using waves 2003 and 2005 with subjective SES as the dependent variable.

Does subjective SES vary by age-period-cohort? Figure 3 shows the proportion of respondents reporting positive subjective SES by survey year and birth cohort. The top panel shows the proportion of respondents who rank their SES as the same as or higher than their peers, by cohort and survey year. The U-shaped trend may reflect cohort differences in both survey years, and the three middle cohorts (Lost Cohort, Children of the Early CR, and Children of the Late CR) experienced lower subjective SES; this may be the result of aging, as those aged 37–58 are the least likely to rank
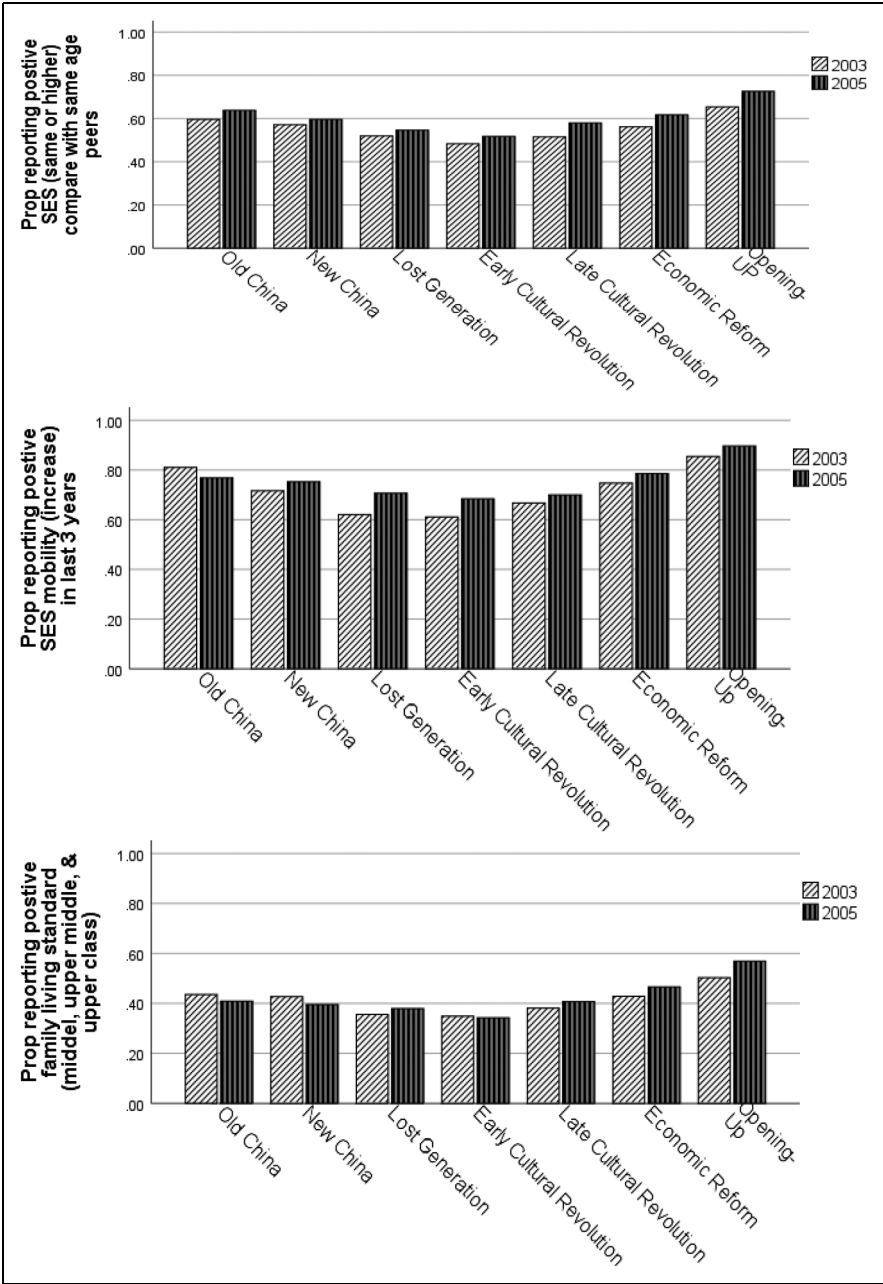
Figure 3. Proportion of respondents reporting positive subjective SES by cohort and suvey year (CGSS 2003 and 2005).

their own SES status positively relative to their peers. All cohorts evaluated their relative SES in 2005 more positively than in 2003.

The second panel demonstrates cohort/age and period variations in the proportions of people who report upward socioeconomic mobility in the preceding three years. There is a clear pattern of cohort or age differences in subjective SES. The two middle cohorts, Children of the Early/Late CR, are the least likely to register a rise in their economic well-being over time. Those who encountered the CR during adolescence have suffered a lasting negative impact; this can also be interpreted as an aging effect, as those aged 37–49 encounter midlife challenges and experience less upward mobility. Additionally, the youngest cohort documents the highest rate of upward SES mobility, twice as high as those for the Children of the Early CR. This optimism among the youngest could reflect a life-course change (i.e. the high degree of upward mobility at an early stage of employment) or the youngest cohort's rising acceptance of the current stratification pattern. Five out of seven cohorts indicate a rise in their SES over time; only the two oldest cohorts report decline or stagnation over time, perhaps due to the negative impact of life-course dynamics at an older age, such as retirement, erosion of pensions, and increasing healthcare costs.

The last panel presents cohort/age and period variations in evaluations of family living standards. Again, fewer members of the three cohorts affected by the CR ranked themselves as middle class; this pattern may also reflect an age effect, whereby the middle-aged rank their family living standards lower than others. The two youngest cohorts have the highest over-time increase in and proportion of self-identification as middle class, indicating that the youngest generation who reaped the benefits of economic reforms in 2003 continued to enjoy growing subjective family living standards in 2005. Three of the seven cohorts demonstrate a positive change over time in subjective family living standards: the two youngest cohorts and the Lost Cohort. The oldest two cohorts experienced a decline in family living standards, while the two cohorts who came of age during the CR experienced little change.

We estimate six cross-classified models for each of the three measures of subjective evaluation of SES: SES relative to peers (having equivalent or higher SES relative to one's peers), change in SES (having an increase in one's SES compared with three years ago), and family living standards (ranking one's family as middle class or higher). Model B adds measures of educational attainment. Model C includes one measure of unemployment. Model D includes three additional predictors of economic well-being: own income, family income, and home ownership. Table 3 shows the odds ratios of all independent variables on having a positive subjective evaluation of SES status.[11]

Age. Models A through D demonstrate a consistent U-shaped age effect on all three measures of subjective SES. In all of the models, age measures have odds ratios smaller than 1 for the main effect and larger than 1 for the quadratic form of age, indicating the odds of a positive evaluation of SES decline with age, but the pace of this decline "decays" over time.[12] This is consistent with our hypothesis that the age effect is convex, reaching the minimum at ages 56, 53, and 53 for the three response variables SES relative to peers, change in SES, and family living standard, respectively.

Table 3. Effects of economic well-being and social connections on odds-ratio of having a positive subjective evaluation of life, CGSS 2003 and 2005 (N = 11,992).

	SES relative to peers (same or higher)				Change in SES (increased)				Family living standard (middle class and higher)			
	A	B	C	D	A	B	C	D	A	B	C	D
Intercept	1.06 ***	0.53 ***	0.56 ***	0.23 ***	2.72 ***	2.28 ***	2.54 ***	1.50 ***	0.46 ***	0.25 ***	0.25 ***	0.22 ***
Age	0.90 **	0.91 **	0.91 **	0.90 **	0.85 **	0.86 ***	0.87 ***	0.86 ***	0.9 ***	0.91 ***	0.91 ***	0.89 ***
(Age-squared)/100	1.10 *	1.10 *	1.09 *	1.11 *	1.15	1.14 **	1.13 **	1.13 **	1.09 ***	1.09 ***	1.09 **	1.10 ***
Demographic background												
Gender (female = 1)	1.18 **	1.23 ***	1.27 ***	1.47 ***	1.14 ***	1.16 **	1.21 ***	1.33 ***	1.23 ***	1.27 ***	1.30 ***	1.43 ***
Marital status (ref.: single)												
Married	1.44 ***	1.57 ***	1.60 ***	1.52 ***	1.00	1.03	1.04 *	1.01 *	1.46 ***	1.60 ***	1.64 ***	1.63 ***
Divorced/widowed	0.79	0.88	0.90	0.92	0.63	0.65	0.65	0.66 *	0.88	0.99	1.01	1.09
Hukou status (rural = 1)	0.89	1.18	1.14	1.35 **	1.23 *	1.37	1.30 **	1.42 ***	0.76 **	1.00	0.97	1.13
Ethnic minority (non-Han = 1)	0.87	0.86	0.87	0.96	0.90	0.88	0.90	0.96	0.91	0.87	0.88	0.97
Family size (number of people in the household)	0.95 **	0.98 **	0.98	0.97	0.99	1.00	1.01	1.00	1.00	1.03	1.03	1.01
Political capital (CPC member = 1)	2.15 ***	1.61 ***	1.58 ***	1.46 ***	1.74 ***	1.49 ***	1.44 ***	1.36 ***	1.95 ***	1.47 ***	1.45 ***	1.38 ***
Educational attainment												
Primary school or below [a]		–	–	–		–	–	–		–	–	–
Secondary school		1.88 ***	1.82 ***	1.32 ***		1.07	1.01	0.80		1.64 ***	1.60 **	1.24 **
College		1.90 ***	3.61 ***	1.81 ***		1.89 ***	1.68 ***	1.02		3.38 ***	3.21 ***	1.87 ***
Employment (unemployed = 1)			0.45 ***	0.66 ***			0.37 ***	0.48 ***			0.57 ***	0.75 *
Economic well-being												
Ln own income in the previous year				1.81 ***				1.38 ***				1.25 ***
Ln family income in the previous year				1.03 ***				1.01 **				1.05 ***
Home ownership (owner = 1)				1.56 ***				1.23 **				1.68 ***
Geographical location (Non-coastal and non large metropolitan = 1)												
Coastal	1.48 ***	1.44 ***	1.43 ***	0.98 ***	1.53 ***	1.50 ***	1.49 ***	1.14 ***	1.41 ***	1.37 ***	1.38 ***	0.91

(continued)

Table 3. Continued

	SES relative to peers (same or higher)				Change in SES (increased)				Family living standard (middle class and higher)			
	A	B	C	D	A	B	C	D	A	B	C	D
Shanghai	1.04	0.93	0.88	0.40 ***	1.1 ***	1.07	0.97	0.55 *	0.96	0.83 *	0.80 **	0.32 ***
Beijing	1.17	1.00	0.98	0.51 ***	1.49 ***	1.43 ***	1.35 *	0.87	0.84 *	0.72 ***	0.70 ***	0.34 ***
Chongqing	1.23	1.21	1.16	2.17 *	1.62 *	1.60	1.52	1.80	1.43	1.39	1.34	2.20 **
Tianjin	1.24 **	1.18 *	1.18 *	1.08	1.28 **	1.25 *	1.23	1.11	1.04	0.96	0.95	0.85 *
Random effects												
Birth cohort												
Children of Old China (Pre-1939)	1.07 ***	1.02 ***	1.00 ***	0.99 ***	0.99 ***	0.99 ***	1.00 ***	1.00 ***	1.00 ***	1.00 ***	1.00 ***	1.00 ***
Children of New China (1939–1946)	1.05 ***	1.08 ***	1.06 ***	1.04 ***	1.05 ***	1.05 ***	1.01 ***	1.01 ***	1.05 ***	1.08 ***	1.07 ***	1.07 ***
Lost Cohort (1947–1955)	1.03 ***	1.07 ***	1.06 ***	1.04 ***	1.02 ***	1.03 ***	1.00 ***	1.00 ***	1.05 ***	1.10 ***	1.09 ***	1.09 ***
Children of Early CR (1956–1961)	0.84 ***	0.90 ***	0.93 ***	0.97 ***	0.93 ***	0.93 ***	0.94 ***	0.96 ***	0.81 ***	0.87 ***	0.89 ***	0.88 ***
Children of Late CR (1962–1966)	0.96 ***	0.92 ***	0.94 ***	0.97 ***	0.97 ***	0.97 ***	0.99 ***	1.00 ***	0.97 ***	0.94 ***	0.95 ***	0.98 ***
Children of Economic Reform (1967–1976)	0.95 ***	0.92 ***	0.94 ***	0.96 ***	1.00 ***	0.99 ***	1.00 ***	1.00 ***	0.95 ***	0.93 ***	0.94 ***	0.96 ***
Children of Opening-Up (1977–)	1.07 ***	1.10 ***	1.07 ***	1.04 ***	1.04 ***	1.04 ***	1.03 ***	1.03 ***	1.06 ***	1.07 ***	1.07 ***	1.09 ***
Survey year												
2003	0.92 ***	0.91 ***	0.88 ***	0.96 ***	0.93 ***	0.92 ***	0.85 ***	0.92 ***	0.99 ***	0.99 ***	0.95 ***	0.96 ***
2005	1.08 ***	1.09 ***	1.10 ***	1.05 ***	1.06 ***	1.07 ***	1.12 ***	0.99 ***	1.01 ***	1.01 ***	1.04 ***	1.02 ***
BIC index	11,791.9	11,571.4	11,472.2	11,184.6	9810.356	9772.69	9503.74	9495.18	11,995.9	11,765.5	11,731.2	11,382.8
Variance component												
Cohort	0.005 *	0.010 ***	0.007 *	0.003	0.004	0.004	0.000	0.000	0.005 *	0.010 **	0.008 ***	0.009 ***
Survey year	0.006 ***	0.009 ***	0.017 ***	0.001 *	0.006 ***	0.006 ***	0.005 ***	0.005 *	0.000	0.001	0.003 **	0.000

Note: The random cohort and period effects in Models A, B, C, D are illustrated in Figure 4.
* $p < .05$; ** $p < .01$; *** $p < .001$ (2-tailed).
Errors and confidence intervals are all available upon request.

Cohort. Consistent with our hypothesis that those who came of age during the CR have the lowest subjective well-being, we found a consistent negative cohort effect for Children of the Early CR in all but one of the 18 models and for all three measures of subjective SES. However, no evidence indicates that members of the Lost Cohort who went through the CR have a lower assessment of their SES. They perceive their lives as largely similar to the two older cohorts who came of age prior to the CR and the two younger cohorts who did so after the CR. Except for two models without age components, none of the eighteen models estimated shows a negative cohort effect for the Lost Cohort. This finding, although somewhat surprising, is consistent with the cohort's experiences of avoiding the main impact of different policy changes that could limit their life chances.

When we include additional controls in models B, C, and D, the odds ratios for the Children of the Early/Late CR either become 1 or approach 1, indicating that educational achievement, employment status, and economic well-being are partially responsible for the cohort effect on subjective SES. This is consistent with our hypotheses that those born within the decade preceding the CR have the lowest perception of their socio-economic well-being because they have poorer education, are more likely to be unemployed, and have fewer economic resources.

Period. All models of subjective evaluation of SES show an increase over time in the right panel in Figure 4. For individuals who rank themselves as having the same or higher SES compared to their peers, for people who report upward mobility in their SES in the last three years, and for people who identify their family as having a middle-class living standard, the odds increased in 2005.
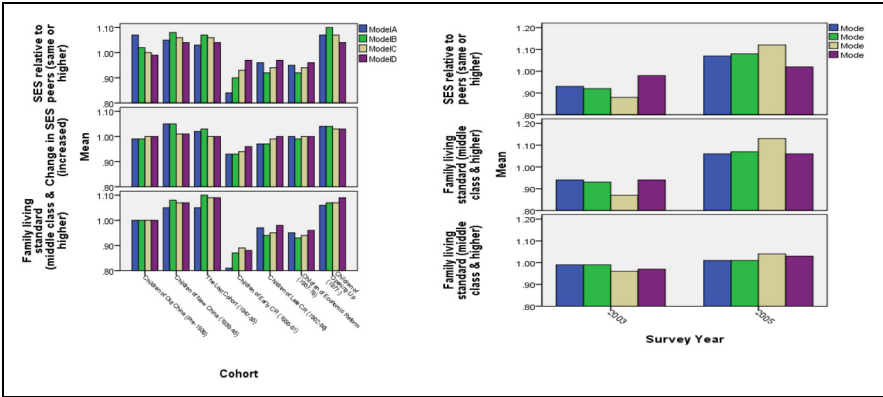

Figure 4. Cohort and period effects on three measures of subjective sense of well-being by Models (CGSS 2003 and CGSS 2005).
Note: Net effects of birth cohorts and survey years are estimated as random effects after controlling for the variables in Table 3.

Discussion

This study has analyzed the sense of happiness among seven Chinese cohorts (N = 43,308) with seven waves of a nationally representative survey (CGSS) from 2003 to 2013 and measured subjective SES with two waves of the same survey (2003 and 2005). Focusing on the intersection of individual lives and historical context with a life-course perspective, we tested three hypotheses pertaining to historical period, cohort, and age effects on subjective well-being using repeated population series data from CGSS and cross-classified age-period-cohort models (Yang, 2006).

We found distinct effects of birth cohort, period, and life-course changes on subjective well-being. Cohorts whose lives were disrupted by the CR were less likely to feel happy and reported lower subjective SES. Consistent with prior studies, some of these variations were explained by cohort differences in educational attainment, economic well-being, and social connections (Xie et al., 2007; Zhou, 2004). Results showed a U-shaped association between age and happiness, with happiness decreasing faster at younger ages. This is consistent with patterns in European countries and the United States (Blanchflower and Oswald, 2004; Clark, 2007), yet inconsistent with the positive aging effect in the US found in a recent study (Yang, 2008). Subjective well-being increased from 2003 to 2013, indicating a rising approval of economic gains and increased opportunities in the new economy (Whyte, 2010).

The negative cohort effect shown by the CR cohorts demonstrates the profound influence of experiences in one's formative years on perceptions of life even three decades later. This negative cohort effect on subjective SES was smaller yet present, after controlling for education, unemployment, gender, ethnicity, CPC membership, *hukou* status, and social connections. This negative cohort effect is also present on sense of happiness after controlling for the same variables plus subjective SES. Additionally, the consistent negative impact of the CR on the Children of the Early CR and, to a lesser degree, the Children of the Late CR, illustrate the importance of timing when significant historical events intersect with individuals' lives. The Children of the Early CR suffered disruption from their vulnerable life stage of the early teenage years to early adulthood, thus their encounter was the most devastating. In comparison, the Children of the Late CR avoided the brunt of the damage as the CR ended early enough for some to catch up in terms of schooling. Somewhat surprisingly, although a small number of Lost Cohort were less likely to be happy, the entire cohort showed little overall sign of the negative impact of experiences in the CR. They had similar subjective SES as the two oldest and two youngest cohorts; they were as happy as the two youngest cohorts who enjoyed market prospects and expanded educational opportunities. One possible explanation is that when the CR occurred, members of Lost Cohort had already completed the bulk of their schooling, which provided them with coping skills and the ability to compensate with heightened striving afterward (Xie et al., 2007; Zhou and Hou, 1999).

The two cohorts born in 1956–1966 came of age during the CR and were the least positive about their subjective SES. Undoubtedly, the state policies and social changes of the time have huge impact (Broaded, 1991; Esherick et al. 2006; Hung and Chiu, 2003: Zhou and Hou, 1999). They went through state policy shifts at each critical

transition in their life course: schooling, work, marriage, parenthood, and retirement. The Children of the CR constitute the segment of the urban Chinese population less satisfied with the current social order than other cohorts (Lee, 2007). The lower subjective well-being found among the Children of the Early CR is consistent with Easterlin et al.'s (2012) finding of a dip in life satisfaction from 1990 to the early 2000s. They attributed this decline to urban unemployment caused by the overhauling of the state-owned enterprises and the loss of state-sponsored welfare and benefits, yet we believe the negative impact of the massive layoffs in state-owned enterprises in the 1990s manifested in two ways: it lowered the overall sense of well-being in the 1990s (Easterlin et al., 2012) and left an entire cohort of people, most of whom were the Children of the Early CR, disgruntled and unhappy for years.

Our findings show that the middle-aged (those in their forties and fifties) suffered from a negative age effect, consistent with research from European countries and the US using pooled a series of cross-sectional national data (Blanchflower and Oswald, 2004; Clark, 2007). Our research provides evidence for a U-shaped age pattern of subjective well-being in a non-Western context.

Urban residents' sense of happiness in China increased over the period from 2003 to 2013. Memories of poverty and famine experienced in younger years lower the expectations of Chinese people and increase their appreciation for the present circumstances, while sustained and rapid income growth and declining unemployment contribute to higher subjective well-being during the period. These findings are expected given that Chinese people generally embrace the improved life chances in the market economy and are optimistic about their own lot in a positive economic environment (Whyte, 2010). With greater exposure to capitalist consumerism, heightened expectations for further growth, and rising awareness of inequalities, it remains to be seen whether a further increase in the national GDP will continue to bring positive evaluations of life (Easterlin, 1995; Stevenson and Wolfers, 2008a).

Our research makes several important contributions. First, it contributes to studies of market transition by identifying the birth cohort as an important mechanism of inequality (Davis-Friedman, 1985; Xie et al., 2007; Zhou, 2004). Existing studies of market transitions have shown that institutional affiliations (e.g. work units, occupations, industries, and sectors) and individual endowments (e.g. cadres and CPC members, education, and gender) decide the winners and losers. Our analysis indicates that the Children of the Early CR suffered from the unfortunate timing of societal transformations that limited their opportunities in education, employment, marriage and family, and job benefits. Members of this cohort arrived at reduced sense of happiness and subjective SES. Second, our research augments the life-course paradigm by highlighting the significance of timing when individual lives intersect with historical context. This interaction of birth timing and historical events is particularly salient in societies experiencing rapid transformations. Among the three cohorts who came of age during the CR, the Children of the Early CR suffered the greatest disadvantage because they encountered social upheavals during the most vulnerable moments in their lives. The life-course perspective endows us with a unique angle to analyze history through its marks on cohort-related patterns.

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Notes

1. The Chinese Household Income Project (CHIP) surveys show an increase in China's Gini coefficient to 0.483 in 2007 from 0.460 in 2002 (Li et al., 2013: 54). The Gini coefficient grew from 0.483 in 2005, to 0.53–0.545 in 2010, to 0.611 in 2011, to 0.532–0.539 in 2012 (Xie and Zhou, 2014: 6929).
2. We use happiness as a main measure of subjective well-being in this paper, but review the literature on happiness, life satisfaction, and subjective SES to contextualize our research questions.
3. The "Children of Lost Cohort" reflects the blow of the CR on this group of young people when, on the brink of entry into senior high schools and colleges, they were sent either to villages or factories to work.
4. More than 60 million jobs in the state and collective sectors were cut during the urban enterprise restructuring in 1995–2002, replaced by only 17 million jobs created in the new sectors of foreign investment, joint ventures, and self-employment (Gustafsson and Sai, 2013).
5. The younger cohorts may not share this cohort's sense of loss regarding the one-child policy as the social norm became more aligned with fertility expectation for the younger cohorts, that is, younger generations became less interested in having more children. China was already on the way to rapid fertility decline when the family planning policy was implemented, as economic development and rising education would have reduced fertility regardless of government policy (Whyte et al., 2015). This assertion is buttressed by counterfactual examples that

other Confucian-culture Asian countries and regions have also experienced a sharp fertility decline without a state family-planning policy (Whyte et al., 2015).

6. By 2013, some of the most economically developed cities in China, such as Beijing, Shanghai, Tianjin and regional cities in Jiangsu (Wuxi and Suzhou) and Guangdong (Shenzhen, Guangzhou, Zhuhai, and Foshan), had arrived at GDP per capita levels close to US$15,000 (China National Bureau of Statistics, 2014).

7. Chongqing was considered a province-level city in the CGSS sampling.

8. The decision to dichotomize this dependent variable is based on three factors: the differentiation between those who are happy and those in the other three categories (so-so, unhappy, and very unhappy) is the most salient; it generates conservative estimates, and thus more robust results, compared to the liberal estimates from a five-category variable; and it simplifies our data presentations and interpretations. Other measures of subjective well-being such as general life satisfaction or satisfaction of life domains such as personal life sphere (health, education, job, etc.), interpersonal life sphere (marriage, friendship, family, etc.), material life sphere (income, housing, etc.), nonmaterial life sphere (spiritual life or leisure), and public life sphere (the environment, public safety, political system, welfare system, etc.) are not available in CGSS, thus these data cannot allow for an investigation into these dimensions of subjective well-being.

9. Family income includes wages, bonuses, allowances, income from profit sharing, dividends, net income from business earnings, interests from bank deposits, contributions from relatives and friends, etc.

10. Although some people may argue that it might be appropriate to estimate cohorts and periods as fixed effects given the small number of cohorts and survey years, we have decided to use random-effects models because random-effects models are preferred "regardless of whether the numbers of birth cohorts and time periods are moderate" (Yang and Land, 2008: 321).

11. An odds ratio for a given independent variable represents the factor by which the odds change for a one-unit change in the independent variable. An odds ratio of greater than 1 means the independent variable increases the probability of event. If an odds ratio equals 1, the independent variable has no effect. If an odds ratio is less than 1, then the independent variable decreases the odds.

12. The simple age term represents the pace of decline while the second quadratic term indicates the "attrition" rate in the pace of this decline over time.

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Appendix Table A1. Means and standard deviations for key variables.

	2003		2005		2006		2008		2010		2012		2013	
	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
Dependent variables														
Sense of happiness														
Generally speaking, how do you personally feel about your life?														
Very happy and happy	0.37	0.48	0.47	0.50	0.47	0.50	0.67	0.47	0.74	0.44	0.76	0.43	0.71	0.45
So-so, happy and very unhappy	0.63	0.48	0.53	0.50	0.53	0.50	0.33	0.47	0.26	0.44	0.24	0.43	0.29	0.45
Subjective evaluation of socioeconomic status														
Subjective evaluation of own socioeconomic status with respect to same-age peers														
Relatively higher	0.04	0.20	0.05	0.22										
About the same	0.51	0.50	0.56	0.50										
Relative lower	0.45	0.50	0.39	0.49										
Subjective evaluation of change in socioeconomic status in the past three years														
Increased	0.28	0.45	0.32	0.47										
About the same	0.42	0.49	0.44	0.50										
Declined	0.30	0.46	0.24	0.43										
Subjective evaluation of family living standard														
Upper and upper middle class	0.05	0.21	0.07	0.25										
Middle class	0.36	0.48	0.37	0.48										
Lower and lower middle class	0.60	0.49	0.57	0.50										
Independent variables														
Demographic variables														
Birth cohort														
Children of Old China (Pre-1939)	0.07	0.25	0.11	0.32	0.04	0.19	0.04	0.19	0.08	0.27	0.07	0.26	0.06	0.24
Children of New China (1939–1946)	0.12	0.32	0.09	0.29	0.09	0.29	0.08	0.27	0.08	0.27	0.08	0.28	0.08	0.27
Lost Cohort (1947–1955)	0.19	0.39	0.16	0.37	0.16	0.37	0.14	0.35	0.15	0.36	0.15	0.36	0.15	

Appendix Table A1. Continued

	2003		2005		2006		2008		2010		2012		2013	
	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
Children of Early CR (1956–1961)	0.13	0.33	0.10	0.30	0.12	0.32	0.10	0.30	0.11	0.31	0.10	0.29	0.10	0.30
Children of Late CR (1962–1966)	0.16	0.37	0.14	0.35	0.12	0.33	0.11	0.32	0.12	0.32	0.11	0.32	0.10	0.30
Children of Economic Reform (1967–1976)	0.22	0.42	0.22	0.42	0.23	0.42	0.26	0.44	0.22	0.41	0.21	0.41	0.21	0.41
Children of Opening-Up (1977-)	0.11	0.31	0.17	0.37	0.23	0.42	0.27	0.44	0.24	0.43	0.27	0.44	0.30	0.46
Age	43.38	13.11	44.68	15.45	41.64	13.94	42.14	14.55	46.44	16.02	47.33	16.52	47.20	16.58
Gender (female = 1)	0.52	0.50	0.53	0.50	0.55	0.50	0.53	0.50	0.53	0.50	0.50	0.50	0.50	0.50
Educational attainment														
Primary school or below	0.18	0.39	0.21	0.41	0.18	0.38	0.19	0.39	0.22	0.42	0.22	0.41	0.22	0.41
Secondary school	0.62	0.49	0.62	0.49	0.63	0.48	0.59	0.49	0.54	0.50	0.53	0.50	0.54	0.50
College and some college	0.20	0.40	0.17	0.37	0.19	0.40	0.22	0.41	0.24	0.43	0.25	0.43	0.25	0.43
Marital status														
Single	0.11	0.31	0.12	0.33	0.17	0.37	0.14	0.35	0.12	0.33	0.12	0.33	0.13	0.34
Married	0.84	0.36	0.81	0.40	0.77	0.42	0.80	0.40	0.78	0.42	0.77	0.42	0.76	0.43
Divorced/widowed	0.05	0.22	0.07	0.26	0.06	0.24	0.06	0.24	0.10	0.30	0.11	0.31	0.10	0.30
Employment status (unemployed = 1)	0.14	0.35	0.14	0.34	0.09	0.28	0.06	0.25	0.43	0.50	0.42	0.49	0.42	0.49
Hukou registration (rural hukou = 1)	0.07	0.26	0.09	0.28	0.17	0.60	0.26	0.40	0.24	0.43	0.27	0.44	0.31	0.46
Ethnic minority (non-Han = 1)	0.05	0.23	0.05	0.22	0.05	0.22	0.19	0.24	0.07	0.26	0.06	0.24	0.05	0.23
Family size (number of people in the household)	3.43	1.42	3.47	1.65	2.31	0.93	2.02	1.30	3.45	1.30	3.52	1.31		
Political capital														
CPC member (member = 1)	0.19	0.39	0.14	0.34	0.10	0.30	0.14	0.34	0.17	0.37	0.16	0.36	0.13	0.34
Own income in the previous year (10,000 RMB)	0.98	1.27	1.20	1.52	1.23	1.85	1.68	3.54	1.60	2.59	1.32	2.11	1.63	2.22
Family income in the previous year (10,000 RMB)	2.45	4.46	2.78	4.57	2.87	3.53	3.88	6.50	2.00	2.20	2.09	1.95	2.35	2.03

Appendix Table A1. Continued

	2003		2005		2006		2008		2010		2012		2013	
	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
Home ownership (owner = 1)	0.78	0.41	0.76	0.43	0.73	0.45	0.73	0.44	0.44	0.50	0.45	0.50	0.47	0.50
Social connections														
Consensus with the general public's perspectives and opinions	3.42	0.79	3.32	0.70										
Contact with friends and relatives	3.45	0.84	3.60	0.75										
Geographical location														
Coastal provinces	0.23	0.42	0.23	0.42	0.23	0.42	0.25	0.43	0.27	0.44	0.25	0.43	0.23	0.42
Shanghai	0.07	0.25	0.07	0.25	0.07	0.25	0.07	0.24	0.07	0.26	0.08	0.27	0.08	0.27
Beijing	0.07	0.25	0.07	0.25	0.07	0.25	0.03	0.17	0.07	0.26	0.08	0.27	0.08	0.28
Tianjin	0.07	0.25	0.07	0.25	0.07	0.25	0.03	0.17	0.05	0.23	0.05	0.23	0.06	0.24
Chongqing	0.01	0.08	0.01	0.08	0.01	0.08	0.02	0.15	0.01	0.11	0.01	0.12	0.01	0.12
N	5894		6098		6013		3982		7222		7077		7022	