Non-familial coresidence and life satisfaction: Evidence from China

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Abstract:

The emergence of the non-familial coresidential partnerships from the developing world has generated profound subjective wellbeing implications. This paper provides insights that non-familial coresidential living arrangements have generated lower life satisfaction. We find that the interactions between marriage and non-familial coresidential living arrangements have significant impacts on subjective wellbeing, and such effects differ by migration and occupation types. Findings of this study suggest the importance of conceptualizing the social dependant nature of non-familial coresidence and marriage as is subjectively experienced by residents with different demographic characteristics.

Keywords: wellbeing; living arrangement; marital status; living-apart-together; non-familial coresidence; urban China

1 Introduction

The emergence of non-familial coresidential living arrangement is a result of individualization, socio-demographic changes and internal and cross-national migration (Jamieson & Simpson 2013; Klinenberg, 2012;). Non-familial coresidence (NFC) refers to the living arrangement that residents are not living with family members. This includes one-person household and the pattern that a person lives in a shared flat or dormitory without family members. In metropolitan cities where living cost is high, sharing living spaces without the presence of family members is quite common (Tong, Zhang, MacLachlan, & Li, 2018; Jun, Ha, & Jeong, 2013), especially for migrants without homeownership.

China provides an appealing case for studying the NFC living arrangement and its relationship with life satisfaction. On the one hand, rapid socio-economic transformations varolize the value of the individual privacy in life, which contributes to the rise of non-familial coresidential living arrangement (Yang & Chen, 2017). On the other hand, China is an East Asian country with the long tradition of Confucianism and residents are educated to favor for family values and family coresidence (Park & Choi, 2015). In the pre-reform urban China, the mixture of collective social structures, the multi-generational family co-residences and the Confucius legacy limited the non-familial co-residential living style. Decades of rapid urbanization and the one-child policy implementation have dramatically changed the urban household structure and modes of residences (Peng & Hu, 2015).

The living arrangement of NFC may bring about significant consequences on individual life satisfaction. Previous literature on life satisfaction and living arrangement has largely focused on the evidence from Western countries (Jamieson & Simpson 2013; Klinenberg, 2012). Yet in reality, the characteristics of non-familial

coresidential living arrangement are not identifical across time and space. Individuals' life satisfaction may respond to NFC differently depending on their marital status, housing conditions and etc. There is clear evidence of associations between marriage and subjective wellbeing (Liu & Umberson, 2008; Sassler, 2010). For example, married people are likely to have better wellbeing and health conditions (Liu & Umberson, 2008; Tai et al., 2014). This group of married people who are not living together belongs to the category of living-apart-together (LAT). LAT refers to the status of being involved in an intimate relationship without living together. To the best of our knowledge, existing literature rarely examines the phenomenon of married LAT phenomenon and its implication for wellbeing in China.

This paper examines how the emerging patterns of NFC, marriage and their interactions are in relation to life satisfaction using a large-scale individual survey in Beijing, China. Our analysis contributes to the previous literature in several ways. First, it adds to the existing work by recognizing the marriage-dependent nature of non-familial coresidence living arrangements. The existing literature on living-apart-together predominantly focuses on its relationship dimension, regardless the fact that the term can simultaneously refer to relationship statuses and a living arrangement pattern. In our theoretical framework we reconceptualize the living-apart-together situation as both living arrangment and relationship statuses. Empirically, we explicitly explore the relationship between marriage, non-familial coresidence living arrangements and life satisfaction, an emergent and crucial issue in transitional socialist countries and fast-urbanized developing countries like China. Despite the heated public discussions (National Health and Family Planning Commision of China, 2015), there has been limited direct evidence on the interactive role of marriage and non-familial coresidence to play in influencing life satisfaction. Second, we consider

the moderating roles of demographic characteristics such as housing types and residential experiences in influencing the interaction effects of marriage and non-familial coresidence living arrangements. Specifically, we compare the interaction effects of living arrangement and marriage on the satisfaction perceptions of residents who stayed in different types of housing and who stayed in the neighborhoods for different time periods, to capture the possible effects of residential experience and housing preference (Jansen, 2013). Our intention is to go beyond the simplified positive or negative effects of living arrangement on life satisfaction and to clarify the importance of conceptualizing the contextualized dependent nature of dwellers.

The paper is organized as follows. The next section discusses the theoretical framework. Section 3 introduces data and methods. Section 4 presents the results. The paper ends with conclusion and discussions in Section 5.

2 Theoretical framework

We develop a conceptual model that emphasizes the intersection of non-familial coresidential living arrangement and the marrried status on life satisfaction that is mediated by contextually dependent nature including hukou status, housing conditions and residential experiences.[1] We pay particular attention to LAT partnership/living arrangement types, which is considered a notable form of non-familial coresidence (see Figure 1). The underlying mechanism of the conceptual framework is elaborated below.

Considering that both marital status and living arrangement are related to life satisfaction, LAT as the interaction of marital status and living arrangement has important wellbeing implications (Duncan et al., 2013), but existing liteature rarely

[1] Hukou refers to household registration system that is divided to urban and rural.

considers life satisfaction of LAT individuals. Due to the massive scale of internal migration in China, we expect that the number of married couples LAT in China would be larger and their motivations of LAT would be different compared to what in western countries, but existing literature rarely examines the phenomenon of married LAT phenomenon and its implication for wellbeing in China. Considering that LAT has significant wellbeing implications (Duncan et al., 2013) and the number of married LAT in China is too large to ignore, it is vital to examine how life satisfaction is related both to marital status and living arrangement.

Marriage plays an important role on life satisfaction. On the one hand, in contemporary societies marriage has become a symbol of prestige and personal achievement (Cherlin, 2014). The positive association between marriage and life satisfaction are found to be positive because of enhanced social support, social protection and financial security gained from a married relationship (Kim & McKenry, 2002). On the other hand, marriage may not improve life satisfaction in the long run because of demanding familial responsibilities involved, which may impair autonomy and personal growth (Musick & Bumpass, 2012; Marks & Lambert, 1998).

A significant amount of literature on marriage, living arrangement and life satisfaction focuses on either elderly or young adults. For elderly, widowhood, solo living and low income are believed to be associated with lower life satisfaction in the US (Fengler, Danigelis, & Little, 1983), Hong Kong (Chou & Chi, 2000) and Malaysia (Kooshiar et al., 2012). Studies on the intersection of marriage and living arrangement on young adults suggest that unmarried solo living can be seen as a middle class lifestyle and is associated with better life satisfaction (Galambos and Krahn, 2008; Klinenberg, 2012). Ho (2015) found that in Korea, unmarried solo dwellers had higher life satisfaction than unmarried family coresidents did. Literature

focuses on LAT couples has emerged, but its association with life satisfaction is under-addressed.

High divorce rate, low mortality rate and changes in labour market in western countries help to make LAT relationship more common (Levin, 2004). It was reported that people LAT account for about 10 per cent of the adult population in some west European countries, US, and Australia (Liefbroer et al*.,* 2015; Reimondos, Evans, & Gray*,* 2011; Strohm et al*.,* 2009). Married LAT is rarely considered in the literature in the West because the size of this group is too small to be statistically meaningful. For example, in a UK national survey in 2011, only 3 per cent of the LAT couples were married (Duncan et al., 2012, p. 444–445).

In western litetaure, LAT can be a way of self-protection from emotional pain and to pursue autonomy (Duncan et al., 2013; Levin, 2004). LAT relationships may occur after divorce or widowhood (Gierveld, 2004). Married couples LAT because they might live in an institution such as a prison or care home (Duncan et al*.,* 2013) or they might be estranged from their legal partners, or temporarily living apart due to visa constraints (Coulter & Hu, 2015). In addition, married couples previously living together may later choose to live in separate homes to avoid tensions in the relationship (Levin, 2004).

While in China, LAT may render a different story. According to a nationwide survey conducted in 2011, 27.5% of married migrants lived without their partners (China Family Culture Research Committee, 2012, p. 7). The primary reasons of not living together include that one of the partners has to take care of children or elders in hometowns (45.5%), being unable to find a suitable job in the city (19.4%) and being unable to find suitable accommodation in the city (16.5%) (ibid., p. 73). In this case, LAT is not motivated by self-protection or tension avoidamce. Rather, migrant

couples give up the opportunity of living together for the common objectives of improving the financial status of the family and protecting the wellbeing of their family members.

Previous research pays scant attention to the variations in the relationship outcome according to different patterns of LAT relationships (Tai, Baxter, Hewitt, 2014). Most literature on LAT in the west focuses on unmarried and previously married individuals (Coulter & Hu, 2015; Duncan et al., 2013; Tai et al., 2014). In western societies cohabitation is so prevelant that itself became a social institution (Levin, 2004). In that context, it is worthwhile to explore why people in a nonmarital relationship do not live together. By contrast, China's nonmarital cohabitation rate is very low (Yu & Xie, 2015) and unmarried LAT is accepted as the norm.[2] Since unmarried couples living separately is a common living arrangement in China (Yu & Xie, 2015), we focus on married LAT, which is one form of NFC, in hope to understand how the interaction between the unique living arrangement and intimate relationship will generate new knowledge on life satisfaction.

Regarding living arrangement and psychological wellbeing, the past decades have seen an increasing interest in individual subjective wellbeing and how it is influenced by not just individual socioeconomic characteristics but also contextualized housing and residential experiences (Soons & Kalmijn, 2009; Kim & McKenry, 2002).

As demonstrated in the theoretical framework, we presume hukou status has impacts on the life satisfaction. Hukou reflects the residents' residential status. Social benefits, including health insurance, pensions, education, and unemployment

[2] In the United States, the proportion of women aged 18-44 who ever cohabited in 2010 was 6o percent (Manning, 2013). The prevalence of cohabitation can also be found in European countries (Dominguez-Folgueras & Castro-Martin, 2013). While in China, only 8.1 per cent of men and 6.2 per cent of women reported to have cohabitation experience (Yu & Xie, 2015).

compensation were tied to people's hukou, and for a long time these benefits in cities were exclusively given to urban citizens; migrant workers with rural hukou did not have the entitlement to these benefits (Liu, 2019). Knight and Gunatilaka (2010) found that happiness of rural-urban migrants was actually lower than both those staying in rural areas and urban hukou holders. They argue that migrants' false expectations about migration experience result in their lower level of happiness. In addition, rural migrants travelled with spouse have higher life satisfaction compared to migrants who travelled alone (Nielsen, Smyth, & Liu, 2011). The reasons accounting for LAT may be different for residents with Beijing hukou and non-Beijing hukou, and their psychological wellbeing may be varied.

We expect that couples with Beijing hukou live apart for three reasons. First, one of the couples outflows elsewhere for better job opportunities, taking care of grandchildren overseas or among others. Second, a couple may separate because of estranged relationship, as demonstrated in the UK research (Coulter & Hu, 2015). Third, one of the couples may live in institutions such as elderly home or prison, just as shown in the West (Duncan et al*.,* 2013). By contrast, residents LAT without Beijing hukou belong to inflow migration. Most of them are labour migrants in hope for better job opportunities in Beijing. We presume life satisfaction is varied by living arrangement, partnership status and hukou status and is mediated by housing conditions and residential experiences, which is testified in the empirical section.

3 Methodology

3.1 Data

This study uses a large-scale individual survey administered by the Institute of

Geographical Sciences and Natural Resources Research, Chinese Academy of Sciences in 2013 metropolitan Beijing (Figure 2). Beijing has the highest proportion of NFC in China (National Bureau of Statistics, 2011), making it a suitable city to explore the relationship between this particular living arrangement and life satisfaction. The 2013 individual survey adopted a stratified proportional-to-population size sampling design, with about 7000 questionnaires circulated to metropolitan Beijing areas. The sampling design isfeatured by its representativeness of demographic characteristics of the population of Beijing based on the 2010 population census data (Ma et al., 2017). Further details of the sampling design and implementation are documented in Zhang et al. (2015). The aim of the survey was to evaluate residents' satisfaction and perceptions about residents' living experiences in Beijing. After excluding missing information and data cleaning, 5,733 observations were used in the empirical analysis. The sample size is relatively substantial in comparison to previous studies in the literature, and is surveyed by following a representative sampling process.

The key measures include five categories of variables: life satisfaction, non-familial coresidence, marriage, housing inequalities, individuals' socioeconomic characteristics and neighborhood characteristics. The mainstream literature has used the term "life satisfaction" as a reflection of "a person's cognitive and affective evaluations of his or her life" (Diener, Lucas, & Oishi, 2002, p. 63). Life satisfaction is derived by using respondents' subjective lived experiences statement concerning "how satisfied or dissatisfied are you with your current life" in the survey. This statement is measured by using a five-point scale ranging from "very dissatisfied" (1) to "very satisfied" (5). When interpreting the results, it is important to keep in mind that people's perception about life satisfaction may include cognitive evaluations of

how good their lives are, or affective expectation and experience towards happiness (Diener et al., 1999).

Living arrangement is a key independent variable in our research. The survey asked respondents to report their family size in terms of family members living in the current residence. The question represents as 'How many family members are you currently living with?' According to the answers of respondents, they were grouped into two primary categories: family residence and non-familial coresidence. To measure marriage, the survey asked respondents to report their martial status. We expect to show the significant variation in the interaction effect of marriage and non-familial coresidential living arrangement on life satisfaction. Table 1 reports the descriptive statistics of the proportion of different categories of satisfaction based on family coresidence and martial status. In the following section, we present the modelling results regarding the relationship between NFC, marriage and life satisfaction after controlling for individual socioeconomic characteristics and neighbourhood characteristics. It is expected that married non-familial coresidents living in various entitled homeownership and housing type categories may generate heterogeneous effects on life satisfaction. We obtain information about homeownership, housing types from the survey. The survey asked respondents to report whether they hold the homeownership because previous research reported that homeownership status is associated with greater happiness in China (Wu et al., 2019; Zhang et al, 2018). To simplify the analysis, we boardly categorize the housing types into two dimensions: commodity housing and social housing. The social housing households include those who live in resettlement housing, danwei housing or affordable housing projects, whereas commodity housing social group refers to the

residents live in the commodity housing projects with privately-serviced communities (Wang, 2004).

We control for individual socioeconomic characteristics and neighborhood characteristics in the empirical assessment. First, we consider hukou as an important social indicator for controlling for differences in individuals' living arrangement behavior. Second, people's wealth conditions and people's perceptions about comparable income situations would be correlated with their life satisfactions. While we have no access to information on respondents' personal bank deposits and other wealth conditions, the survey did report the monthly income using categorized variables. Income is found to be positively related to life satisfaction (Cummins, 2000), while lower economic status is likely to be related to poor life satisfaction (Choi & Nam, 2012). People's perceptions about comparable income situations are reported in the survey based on the question of "how well you are satisfied for your income levels in comparison to people you are familiar with".

Third, we obtain the information about the family composition, educational attainment, occupation, age, gender and residential mobility from the survey. To be specific, we control for the family composition which is a dichotomised variable (1=having children aged under 6; 0=no children aged under 6). Educational attainment is also a dichotomised variable: "1" equals to college level and above and "0" equals to below college level. We expect that occupation types would be a moderator and affect the interaction effects of marriage and NFC on life satisfaction. Recent studies have suggested that life satisfaction of employees in state-owned enterprises was higher than those in private-owned enterprises (Zhang & Guo, 2011). Data information about age and gender are included in the analysis as additional controls. We control for the lengths of residential experiences. The survey asked

respondents to indicate their recent residential mobility conditions based on the statement: “whether you have experienced residential relocations over the past five years”. This variable enables us to investigatewhether a respondent is a long-term resident in the current residential neighborhood (non-movers, thereafter) or a resident who has recently moved into the current residential neighborhood (movers, thereafter). It should be noted that the length of time living in a neighborhood is not the same thing as the length of time being a certain type of dwellers. Due to data limitations, we cannot explicitly test for this in our empirical analysis. In terms of neighborhood characteristics, we consider neighborhood demographic characteristics include the population density (*Population density*) obtained from the recent population census in Beijing. We follow the recent studies (e.g. Ma et al*.,* 2017) to control for the distances from each respondent’s residential location to the nearest public park (*Access to parks*), hospital (*Access to hospitals*) and expressways (*Access to expressways*). To control for potential influences of city structures, we measurethe distance from each respondent’s residential location to the central business district (*Access to CBD*) using the geographical information system.

The upper panel of Table 2 shows key observable individual socioeconomic characteristics for the sample respondents. The neighborhood characteristics are reported at the bottom panel of Table 2 and will be used to control for the potential influences of neighborhood demographics and local public goods accessibility characteristics in moderating the effects on life satisfaction.

3.2 Modeling approach

We employ a multilevel logistic regression modelusing codes in Stata software to look at the relationship between living arrangement, marriage and life

satisfactionsince our data followed a hierarchical structure (i.e. neigborhoods nested in different districts). Our analysis consists of three stages. First, we examine the average effect of living arrangement on life satisfaction. Our model specifications have controlled for individual socioeconomic characteristics and neighborhood characteristics. Second, we explore the interaction effects of living arrangement and marriage on life satisfaction. Third, we consider the contextualized dependent nature of housing conditions on moderating the interaction effects of living arrangement and marriage on life satisfaction.

As robustness checks, we test the sensitivity of the key results to changes in the set of controls across model specifications. We also present the sensitivity analyses by splitting the whole sample based on migration and occupation dimensions. Further, we use alternative propensity score matching models to test for the sensitivity of the results to changes in analytical approaches. Finally, we expect that the influences of residential experiences, if have not been controlled for, would lead to the biased estimates of the relationship between NFC and life satisfaction. To address this potential concern, we compare the results for the mover and stayer sub-samples. Of course, there are other potential confounding factors that may be related to the outcome of interest such as workers with different ethnic backgrounds. Meantime, we conjecture that units for confounding factors vary across individual sociodemographic characteristics. Given the data limitations, we are unable to control for all confounding factors. We acknowledge this issue.

4 Results

4.1 Main results

Table 3 reports the results ofbaseline model specifications. Column (1) presents

the results by controlling for individuals' socioeconomics characteristics andneighborhood characteristics. While the first column uses the multilevel ordered logit model, column (2) reports the estimates based on the propensity score matching methods to test for the sensitivity of the results to changes in estimation methods. We investigate the sensitivity of the results by splitting the whole sample by different migration and occupation dimensions (columns 3-6).

Three important patterns have been emerged from Table 3. First, our results suggest that non-familial coresidential living arrangement is associated with lower life satisfaction levels. Second, there is clear evidence on the positive association between married non-familial coresidence and life satisfaction. The results are robust to the exclusion of divoiced residents. However, by splitting the whole sample into migrants and local residents (columns 3-4), our results suggest that married non-Beijing hukou holders who live in the NFC living arrangement are more significantly associated with higher life satisfaction, whereas their married counterparts with Beijing hukou is associated with negative life satisfaction.

Third, estimates from the last two columns show that the interaction effects of marriage and non-familial coresidents on life satisfaction are negative for state sector workers, whereas such effects are positive for private sector workers. Indeed, it is likely that heavy working pressures in private sectors were normalized in megacities. These mechnisms were considered to hinder psychological responses of private sector workers by lowering family coresidence expectations and enjoying the freedom of living alone more influential in perceived assessments of life satisfaction. In addition to occupational types, are there any other socioeconomic characteristics that may contribute to the observed patterns of marriage, living arrangement and life satisfaction? Of course, yes. Our key point is to demonstrate that using the

population-level relationship may overestimate or underestimate the effects of marriage and non-familial coresidential living arrangementon life satisfaction.

By looking at the remaining rows of Table 3, there is evidence that other factors are also significantly associated with life satisfaction. The results show that residents with relatively higher income and comparable income satisfaction levels are associated with higher levels of life satisfaction, but this effect becomes less significant when controlling for neighborhood characteristics. We also find that educational attainment levels contribute significantly to one's life satisfaction. However, residents with different socioeconomic characteristics may realize their constraints and adjust theirlife expectations so as tomitigate the adverse life satisfaction implications. Finally, we find that population density and park accessibility have played significant roles in influencing life satisfaction of residents.

4.2 Effect heterogeneity

In the previous section, our results suggest that non-familial co-residence living arrangement does affect satisfaction outcomes. Yet in reality, people's demographics and residential experiences would generate profound influence on life satisfaction. When facing the non-familial coresidence living arrangement, individuals in a long-term lived neighborhood can respond differently as compared to those who are new movers into the current neighborhood. People can also respond differently along demographics and housing margins. We conducted additional analysis to systematically examine the extent to which the influences of non-familial coresidence living arrangements on satisfaction are heterogenous according to residential and demographic groups (table 4). Empirical results from these adjusted samples show comparative patterns in magnitude; however, the estimated effects are not all statistically significant.

We have reached several important findings. First, we find that the negative impacts of non-familial coresidential living arrangement and marriage on life satisfaction are more pronounced for homeowners, whereas such impacts are positive for non-homeowners (columns 1-2 of Table 4). One potential explanation is that, non-homeowners are not eligible for settlement in the host city and their subjective wellbeing may not be very sensitive to non-familial coresidential living arrangement even after they get married. However, for married homeowners, financial obligations such as heavy mortgage may become a huge financial burden, especially in times of financial crisis, which may cause feelings of anxiety and lead to the dissatisfaction with life (Parker, Watson, & Webb, 2011).

Second, our results suggest the negative association between non-familial coresidential living arrangement and life satisfaction for residents living in social housing projects, though such effects are insignificant when interacting with marriage. This is consistent with findings from recent studies suggesting that social housing residents tend to feel depression and report a lower level of subjective wellbeing when they live-apart-together (Lim & Ng, 2010). This finding implies the importance of considering people's perceived living experiences when making social housing allocations.

Turning to the consideration of residential experiences, long-term and short-term residents (stayers and movers) are separately examined to look atthe robustness of our main results. Column (5) uses the subsample of movers who have experienced residential relocations over the past five years whereas column (6) uses the subsample of stayers who have long stayed in the current neighborhoods. The rationale behind this is that, movers' residential choices can be a reflection of the living arrangments they have recently chosen. Their reflections are likely to fit with their life satisfaction

if they had been able to self-select into their places. We find that long-term stayers being in the non-familial coresidential living arrangement tend to have lowerlife satisfaction. However, such effects are insignificant for married families. As an extensional consideration, our results show the significant differences of influences of marriage and NFC on life satisfaction between women and men (columns 7 and 8). In China, married women who live without family members are free from childcare and subsequent housework and quarreles with family members, contributing to their higher levels of life satisfaction (Shen, 2019). By contrast, married men in non-familial coresidential living arrangement have to do all the housework which is conventionally done by wives, which is associated with their lower levels of life satisfaction.

5 Conclusion and discussion

Previous studies have explored the association between residential environment and life satisfaction. Direct evidence on the relationship between marriage, living arrangement and life satisfaction is limited in the context of a transitional socialist country and a large developing country. The rapid social and economic changes in China calls for attention to diverse ways in which people live outside the conventional family, understanding non-familial coresidence, including living-apart-together, is vital for scholars and policy-makers who work on families and individual wellbeing.

We have demonstrated clear evidence on the positive association between married non-familial coresidence and life satisfaction. There are several possible explainations. First, research shows that living with partners leads to more rigid social control, which is detrimental to personal independence (Kopp et al., 2010). LAT people arguably have greater autonomy, contributing to their higher life satisfaction.

Second, most married people in NFC living arrangement in our survey are migrant workers. Living-apart-together, which was once seen as unconventional may be accepted as a new norm among married migrants, and it therefore does not affect individuals in negative ways. In a nationwide survey, 42.9% of the married migrant respondents disagreed the claim that "a couple needs close contact in order to sustain a relationship" (Feng & Li, 2016, p. 59), implying that they perceived LAT as acceptable.

Our results also suggest that married non-Beijing hukou holders who live in the NFC living arrangment are significantly associated with better life satisfaction, whereas their married counterparts with Beijing hukou are associated with lower life satisfaction. One credible explanation is that, residential patterns of married individuals who are living apart from each other can be a byproduct of migration. Married migrants who made the choice of NFC are likely to be driven by seeking better job opportunities in cities. Additional monetary gains from good job opportunities are likely to compensate for the sacrifice from family coresidence living arrangements and contribute to their higher life satisfaction levels. Even though the migrant couples live in different places, they share the common objectives, which gives them a sense of purpose in life and strhenthens their family bond.

By contrast, married locals who live alone are likely to be driven by their estranged relationship with their partners, or due to the fact that their partners are in institutions such as prision and elderly home (Duncan et al., 2013), which contribute to their relatively low level of life satisfaction. In addition to this, compared to married non-familial coresidents without local hukou, their counterparts with local hukou may face more pressure from local relatives and friends to comply with the normative nuclear family mode, which may contribute to their lower life satisfaction.

Our results enrich the theoretical debates by suggesting that marriage is significantly interacted with non-familial coresidential living arrangement in influencing individuals' life satisfaction in the post-reform urban China. This contrasts with the traditional practices of family coresidence models in the pre-reform Chinese urban society. Decades of housing reforms, one-child control policy and domestic migration have led to the emergence of nuclear family models, exposing urban residents and migrant workers to unprecedented levels of residential living arrangement. We provide the evidence on the ways in which the relationship between marriage, living arrangement and life satisfaction varies by homeownership and housing types. Interactions with occupational types and migration dimensions have further helped to pin down the underlying mechnisms at work.

The finding that subjective wellbeing of people with LAT living arrangement is varied by hukou sheds light on policy-making. Policy makers need to provide stratified approaches to different groups of people. For LAT residents with local hukou, regular mental health assessment and counselling service need to be provided in order to improve their wellbeing. For LAT residents without local hukou, the government may consider to provide them more accessible and affordable housing since poorer housing conditions are associated with perceived stress (Li & Liu, 2018). Overall, policymakers are encouraged to provide housing with better community-based services such as community canteen. Our findings underscore the importance of considering not just the population-level effects of non-familial coresidential living arrangement, but also how such effects are dependent upon housing conditions and other social dimensions.

Decades of housing reforms have brought unprecedented housing inequalities for Chinese households. In the pre-reform era, most urban residents enjoyed high

similarity of housing conditions and received the traditions of co-residence living arrangements. In the post-reform era, the rise of migration and socio-spatial differentiation of housing inequalities provide the incentives for residential mobility and contributes to the emergence of the non-familial coresidential living arrangement in cities for decades to come. The fundamental implication of our study is that the non-familial coresidential living arrangement effect appears not to be simply the family size effect on life satisfaction, or residents' perceptionon lived experiences in different ways. We expect that the nonlinearity relationship between marriage, living arrangement and life satisfaction would be more obvious at the longer time scale. If the interpretations of our measured coorelational relationships are plausibly correct, significant life satisfaction differences could be observed by encouraging housing policies that foster the building of long-term rental apartments (*changzu gong yu*)for dwellers.

This research has several limitations. First, we are not able to know whether married people who live-apart-together is by choice or by force because that the questionnaire did not provide the motivations for NFC. We acknowledge this limitation. Second, we did not make distinctions between different types of co-residence. It is unclear if they live with friends, co-coworkers or family members other than their partners. In addition, it is unclear whether the reasons for LAT are attributable to voluntary or involuntary commitment. One interesting topic worth investigation is to look at those living with individuals who are not part of their family for affordability reasons. We conjecture that some people may be self-motivated to live without family members based on their residential preferences, whereas others may have limited choices.

Our assessment is applicable to other cities that have witnessed the rise of non-familial coresidential living arrangement in other developing countries such as Vietnam with similar experience of social and economic transformations. A natural next step of the research is to identify what makes dwellers' current residential choices better to the alternative and what kinds of marriage related factors are important to dwellers' life satisfaction in the longer term. But our survey cannot provide the information regarding whether non-familial coresidential living arrangement is a temporary or long-lasting phenomenon in individuals' life course. This deserves further longitudinal research.

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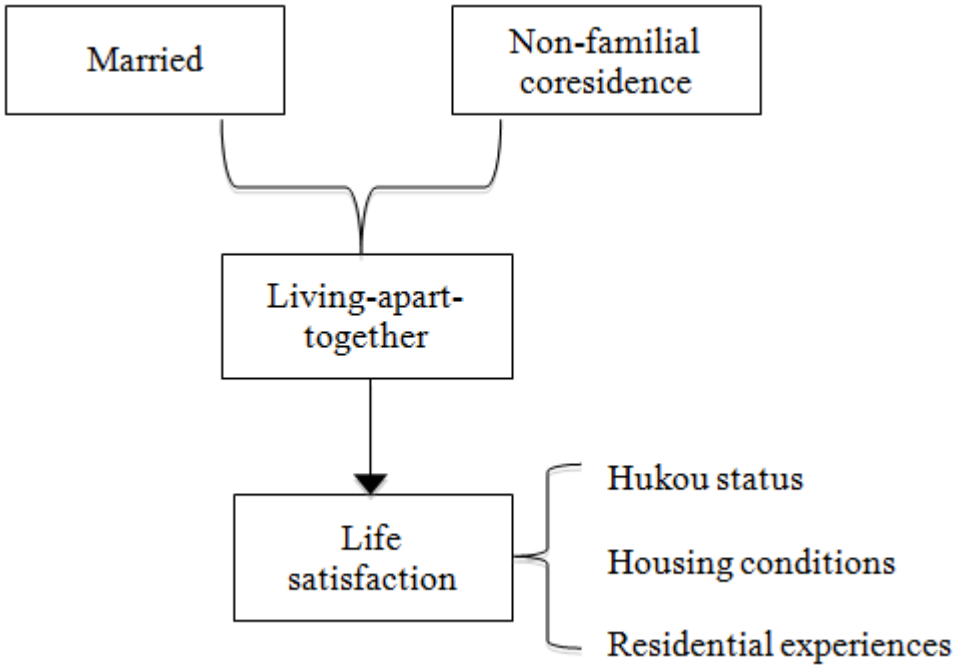

Figure 1. Conceptual Framework

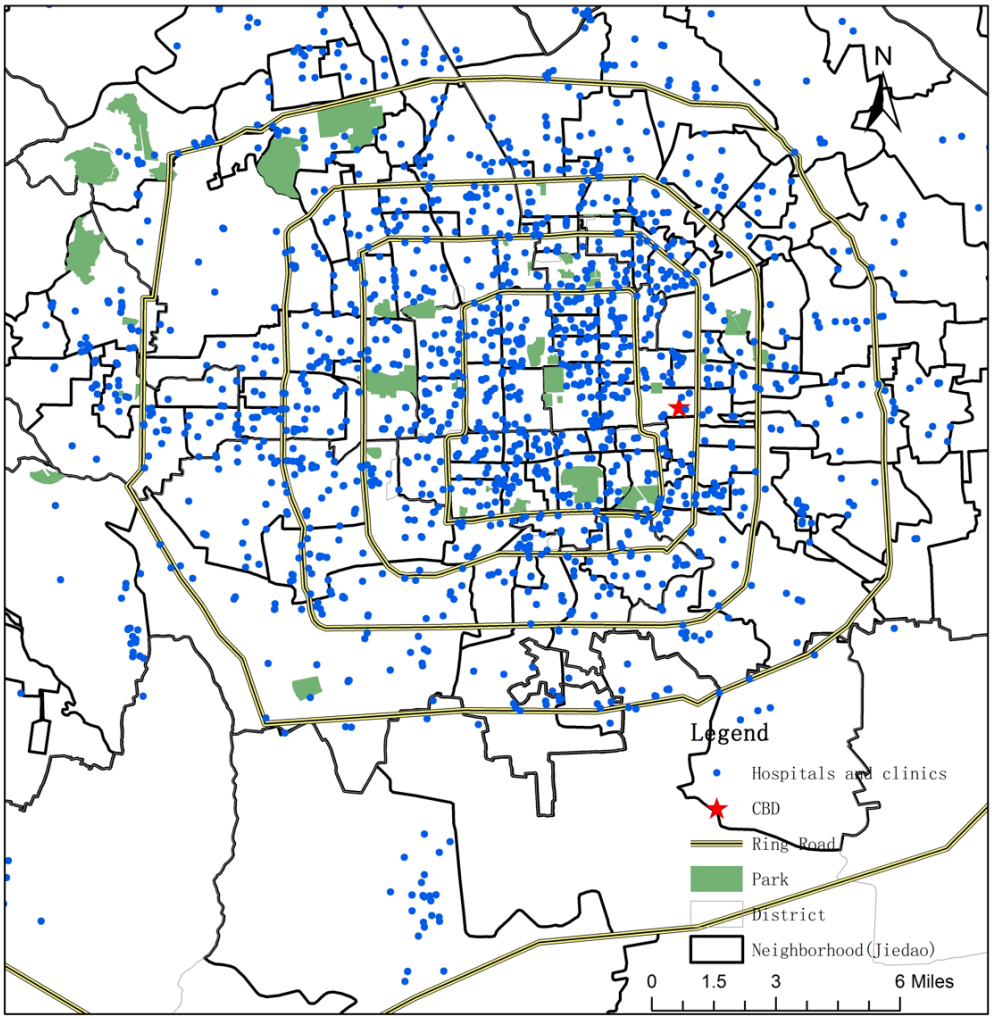

Figure 2. The spatial distribution of neighborhoods in Beijing metropolitan areas

Table 1. Satisfaction by marriage and non-familial coresidential arrangement

	Very dissatisfied	dissatisfied	neutral	Satisfied	Very satisfied
Non-familial co-residence	29.17%	20.85%	18.88%	13.53%	12.29%
Family co-residence	70.83%	79.15%	81.12%	86.47%	87.71%
Married group	55.17%	56.73%	55.55%	63.98%	55.39%
Non-married group	44.83%	43.27%	44.45%	36.02%	44.61%

Table 2. Descriptive statistics ofvariables in the survey

		Full sample	Non-familial coresidents sub-sample	LAT sub-sample
Variable	Definition	Mean /percentage	Mean/percentage	Mean/percentage
Panel 1: Life satisfaction				
Life satisfaction	How well you are satisfied with your life conditions: 1=very dissatisfied and dissatisfied; 2=neutral; 3=satisfied and very satisfied	2.57	2.47	2.54
Panel 2: Non-familial coresidence living arrangement				
Non-familial coresidence	Binary variable: 1=non-familial coresidence; 0= co-residence	0.16	1.00	1.00
Panel 3: Household demographics				
Homeownership	Binary variable: 1=homeownership; 0=non-homeownership	0.51	0.09	0.10
Income1	3000-4999=1	0.20	0.35	0.38
Income2	5000-9999=1	0.35	0.32	0.32
Income3	10,000-15,000=1	0.21	0.10	0.10
Income4	>15,000=1	0.16	0.07	0.07
Comparable income perception	In comparison to people that you are familiar with, how well you are satisfied with your income conditions: 1=very dissatisfied and dissatisfied; 2=neutral; 3=satisfied and very satisfied	2.23	2.15	2.14
Gender	Binary variable: 1=male; 0=female	0.51	0.63	0.69
Age	Binary variable: 1=age larger than 40; 0= age lower than 40	0.26	0.06	0.31
Education	Binary variable: 1=education attainment at the college level and above; 0= education attainment below the college level	0.63	0.65	0.38

Employment	Binary variable: 1=full-time; 0=otherwise	0.86	0.95	0.89
Child6	A binary indicator: 1=The presence of kids (under age 6); 0=No	0.45	0.00	0.00
Residential mobility	1=the respondent has experienced residential relocation over the past 5 years (movers); 0=no (stayers)	0.27	0.41	0.22
Hukou	Binary variable: 1=the respondent has the Beijing Hukouregistration status; 0=otherwise	0.65	0.32	0.25
Marital status (Marriage)	Binary variable: 1=Married; 0=otherwise	0.60	0.15	1.00

Table 3. Baseline results: Interaction effects of marriage and living arrangement on life satisfaction

	(1) mlologit	(2) PSM	(3) Beijing	(4) Non-Beijing	(5) Public	(6) Private
Non-familial coresidence	-0.609***	-0.540***	-0.250	-0.696**	-0.683**	-0.626***
	(0.160)	(0.167)	(0.518)	(0.293)	(0.333)	(0.208)
Marriage	-0.233	-0.215*	-0.214	-0.167	-0.128	-0.109
	(0.143)	(0.110)	(0.145)	(0.320)	(0.302)	(0.169)
Non-familial coresidence*Marriage	0.521**	0.477**	-1.174*	0.991**	-0.217	0.612***
	(0.216)	(0.201)	(0.660)	(0.442)	(0.488)	(0.170)
Homeownership	0.185	0.216**	0.299	-0.046	-0.089	0.411*
	(0.154)	(0.089)	(0.240)	(0.216)	(0.215)	(0.211)
Hukou	0.328***	0.219***			0.837***	0.130
	(0.110)	(0.084)			(0.202)	(0.186)
Child6	-0.142	-0.069	-0.265**	0.039	-0.307	-0.152
	(0.105)	(0.122)	(0.109)	(0.253)	(0.191)	(0.132)
income1	0.085	0.201	0.303	0.000	0.382	0.003
	(0.258)	(0.254)	(0.472)	(0.369)	(0.629)	(0.373)
income2	0.280	0.351	0.559	0.128	0.730	0.167
	(0.267)	(0.238)	(0.534)	(0.448)	(0.564)	(0.286)
income3	0.452	0.586**	0.657	0.569	1.124*	0.249
	(0.326)	(0.278)	(0.634)	(0.445)	(0.621)	(0.396)
income4	0.220	0.352	0.482	0.115	0.787	-0.085
	(0.292)	(0.271)	(0.607)	(0.499)	(0.520)	(0.411)
Comparable income perception	1.363***	1.226***	1.374***	1.409***	1.561***	1.269***
	(0.122)	(0.115)	(0.114)	(0.189)	(0.184)	(0.138)
Gender	0.032	-0.021	0.213**	-0.221	-0.106	0.105
	(0.115)	(0.107)	(0.095)	(0.222)	(0.148)	(0.212)
Age	-0.149	0.045	-0.105	-0.239	0.054	-0.310
	(0.149)	(0.159)	(0.148)	(0.224)	(0.192)	(0.276)
Education	0.208***	0.259**	0.363**	0.180	0.183	0.423**
	(0.075)	(0.117)	(0.156)	(0.124)	(0.544)	(0.169)
Employment	-0.145	-0.225	-0.164	-0.148	0.450	-0.205
	(0.282)	(0.266)	(0.452)	(0.250)	(1.010)	(0.487)
Population density	-0.000***	-0.000***	0.000	-0.001***	-0.001***	-0.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Access to parks	0.048*	0.054**	0.111**	0.013	0.101	0.044
	(0.026)	(0.025)	(0.049)	(0.038)	(0.073)	(0.039)
Access to CBD	0.021	0.021	0.017	0.028	0.014	0.024
	(0.016)	(0.016)	(0.028)	(0.022)	(0.021)	(0.017)
Access to hospitals	-0.038	-0.008	-0.203	-0.013	-0.370	0.077
	(0.111)	(0.111)	(0.124)	(0.140)	(0.353)	(0.204)
Access to expressways	-0.013	-0.034	-0.006	-0.034	0.046	-0.039
	(0.039)	(0.032)	(0.052)	(0.036)	(0.046)	(0.042)
cut1						
constant	-2.018***	-1.915***	-1.820*	-2.337***	0.020	-2.455**
	(0.621)	(0.667)	(1.076)	(0.543)	(1.621)	(1.016)
cut2						
constant	0.134	0.158	0.384	-0.121	2.009	-0.158
	(0.410)	(0.451)	(0.835)	(0.552)	(1.625)	(0.707)
cut3						
constant	3.131***	2.887***	3.302***	3.061***	5.003***	2.927***
	(0.409)	(0.442)	(0.876)	(0.564)	(1.869)	(0.687)
cut4						
constant	7.118***	6.670***	7.666***	6.442***	9.280***	6.739***

	(0.457)	(0.504)	(0.956)	(0.637)	(2.060)	(0.725)
N	1342	1304	809	533	507	761

Notes: $^{*}p< 0.10$, $^{**}p< 0.05$, $^{***}p< 0.01$.Columns (1) and (3)-(6) used the multi-level ordered logit models, and column (2) used the k-nearest propensity score matching model.

Table 4. Additional results: Effect heterogeneity

	(1) Homeownership	(2) Non-homeownership	(3) Commodity housing	(4) Social housing	(5) Mover	(6) Stayer	(7) Male	(8) Female
Non-familial coresidence*Marriage	-2.700**	0.923***	0.820	0.586	0.802	0.311	-0.181	2.410***
	(1.057)	(0.327)	(1.001)	(0.366)	(0.736)	(0.337)	(0.304)	(0.800)
Non-familial coresidence	0.003	-0.688***	-0.131	-0.906***	-0.470	-0.668**	-0.663***	-0.510
	(0.275)	(0.208)	(0.229)	(0.295)	(0.428)	(0.266)	(0.176)	(0.341)
Marriage	0.114	-0.328**	-0.263	-0.351**	-0.150	-0.249	0.090	-0.562***
	(0.271)	(0.148)	(0.402)	(0.153)	(0.376)	(0.160)	(0.238)	(0.166)
N	692	650	624	694	412	914	660	682

Notes: $^{*}p< 0.10$, $^{**}p< 0.05$, $^{***}p< 0.01$. Columns (1) and (2) compare the results based on homeowneship status, whereas columns (3)-(8) consider the effect heterogeneity based on housing types, residential experiences and gender dimensions respectively.