ORIGINAL RESEARCH

A Latent Class Analysis of Intergenerational Relationships Among the Elderly Migrants in Nanjing, China

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Objective: This study aimed to identify (1) different types of intergenerational relationships among the elderly migrants, (2) factors influencing each type of relationship, and (3) the types significantly associated with psychological well-being of the elderly migrants.

Methods: Data were collected from 654 elderly migrants in Nanjing, China. Incorporating ten solidarity conflict indicators, the latent class analysis (LCA) was performed to classify intergenerational relationships. Logistic regression were used to analyze influencing factors, and ordinary least squares (OLS) regression was used to analyze the relationship of each type of intergenerational relationship with depression and life satisfaction.

Results: Three types of intergenerational relationships were classified: *tight-knit* (65%), *conflicting* (25%), *distant intimate* (10%). Gender, marital status, education level, annual income, subjective health, number of children and parentage were influencing factors for the three types. The *tight-knit* type predicted a healthy mental status.

Discussion: Three intergenerational relationships exist between elderly migrants and their children in Nanjing, China. A closer relationship predicts a better mental health in the elderly migrants.

Keywords: intergenerational relationship, elderly migrants, latent class analysis

Introduction

A family, as the basic structural and functional unit of a society, provides primary care for the elderly, especially in East Asian countries such as China.[1] The intergenerational relationship can be employed to evaluate the mental health of elderly migrants.[2,3] With this relationship, material or spiritual support can be reciprocated to both the elderly and their children.[4] This intergeneration support has a deep root in China.[5]

Intergenerational relationships are undergoing continuous changes.[6] Population aging has become a serious social issue in China.[7] Meanwhile, rapid urbanization comes with a growing number of elderly migrants.[8] Based on the literature,[9–11] this study defines elderly migrants as people over 60 who have left their former residence without shifting their household registration. In addition, they have lived in their newly moved residence for more than a certain time. Since household registrations are not changed, they can not live in the inflow permanently. Their number had increased from 5.03 million in 2000 to 13.04 million in 2015, with an average annual growth of 6.6%.[12,13] They face many dilemmas due to changing intergenerational relationships. Therefore, it is necessary to understand the intergenerational relationships in the families of Chinese elderly migrants.

Few studies have examined these relationships.[14] The intergenerational relationships among the general elderly have been analyzed from various perspectives, including living arrangements,[15] emotional complexity,[16] intergenerational conflict,[17] reciprocal support,[18] and filial piety.[19] However, most of these studies focused on individual factors affecting intergenerational relationships, neglecting the interactions between multidimensional factors. In addition, the elderly

migrants differ from the general elderly in many aspects. We have little knowledge about the multifaceted intergenerational relationships and their impacts on the mental health of the elderly migrants.

This study aimed to identify (1) different types of intergenerational relationships in the families of Chinese elderly migrants, (2) predictors of each type of relationship, and (3) the types significantly associated with psychological well-being of the elderly migrants.

Types of Intergenerational Relationships

Existing typology studies of Chinese intergenerational relationship have presented as both similar and distinctive typologies.[20–23] According to all of the findings,[24] there are three main types in Chinese elderly: *Tight-Knit, Support but Distant*, and *Detached*. The relationship types have significant urban-rural differences with urban areas dominated by the type of *Tight-Knit*, and rural areas dominated by the type of *Support but Distant*. The elderly migrants are a special group in China. Most of them move from townships to cities without shifting their household registration,[25] they move for retirement or to take care of their next generation. Their intergenerational relationships can be negatively affected by changes in the external environment,[26] resulting in family conflicts. In Eastern Asian countries, filial piety is essential for maintaining "close, interdependent family ties"[27] Parent-child relationships in many Asian countries are based on Confucianism,[28] which emphasizes children's obligation to meet their parents' and material and spiritual needs,[29] rather than independence and autonomy advocated in Western countries.[30] As a matter of fact, the majority of intergenerational relationships continue to be intimate. Thus, we hypothesize that intimate and conflict types of relationships coexist in elderly migrants, with the intimate relationship dominating (H1).

Predictors of Intergenerational Relationships

The Convoy model of social relations[31] holds that social relations are dynamic and evolving. Both personal and situational characteristics affect the quality, function, and structure of social relations.[32] Some characteristics of the population can predict the types of intergenerational relationships, which has been supported by a study of parent-child relationships in six developed countries.[33] This study suggested that parent-child relationship classifications vary across countries of different polities and cultures. More studies have demonstrated the influence of demographic and sociological factors on intergenerational relationships, including age, gender, education and socioeconomic status.[22,28,34] In accordance with socioemotional selectivity theory,[35] as people age, they tend to focus primarily on close family members and emotional components of social interactions. Additionally, gender remains one of the strongest predictors of the flow of intergenerational relationships.[36] In general, women act as primary caregivers in the household and are more likely to be involved in household activities, family contact, and emotional bonding. Thus, we hypothesize that personal characteristics such as age, gender, education, and income will predict different types of relationships (H2).

Intergenerational Relationships and Mental Health

The solidarity-conflict theory suggests that intergenerational relationships are characterized by ambivalent emotions, in which positive and negative feelings coexist.[37] Elderly psychological health is greatly affected by intergenerational relationships. Several studies have shown that a harmonious intergenerational relationship promotes the mental health of the elderly, enhances their happiness and satisfaction.[38] In contrast, conflicting intergenerational relationships will increase the elderly's psychological loneliness.[39] In China, rapid aging and urbanization are transforming intergenerational relationships in families, especially those with elderly migrants. Some elderly migrants may not seek medical services, due to the expensive health care or unfamiliarity with medical institutions in new cities.[40] They are challenged by acclimation to a new living environment,[26] especially for their values and habits,[9] which may result in the development of mental disorders. Thus, we hypothesize that intimate type is associated with better mental health, while conflict type is the opposite (H3).

Theoretical Background

The intergenerational relationship is multidimensional. The intergenerational solidarity model is composed of six dimensions. *Structural solidarity* refers to the number and type of family members as well as the geological distance

between members. *Association solidarity* refers to the frequency and pattern of family members' contact.[41] *Affectual solidarity* indicates the type of emotional relationship between family members, or the degree of intimacy.[37] *Normative solidarity* considers the intensity of commitment to perform family roles, assume family responsibilities, and fulfill family obligations. *Consensual solidarity* represents the degree of agreement on values and attitudes among family members. *Functional solidarity* reflects the interchange of support and resources among family members.[41]

In previous typological research, the intergenerational solidarity theory has been to classify intergenerational relationships among older adults.[21,42] The solidarity-conflict theory has also proposed to explain the conflict component of family intergenerational relationships, making the classification more comprehensive and accurate.[37] The intergeneration relationship may keep stable or oscillate between harmony and conflict.[43] Some new classifications based on solidarity conflicts have emerged.[43–45] Our study is also guided by this theory.

However, the type and number of solidarity indicators have a significant impact on the classification of relationship types.[23,34] Previous research focuses primarily on the affective and functional dimensions of intergenerational relationships.[21] Only a small number of studies have analyzed more than four dimensions of intergenerational relationships.[20,22]

Present Study

Our study extends previous research in the following areas. First, based on the theory of solidarity conflict, we used five dimensions to measure intergenerational relationships among older adults. Second, we evaluated Chinese elderly migrants. We classified intergenerational relationships, found their predictors, and verified their link with mental health.

Methods
Sample

The data in this study were collected from "A study on the mechanism of intergenerational relationship on the mental health of elderly migrants", a Social Science Foundation Project of People's Republic of China. This project was performed from September 2019 to September 2020 in Nanjing, China. Nanjing has a rich history and culture as the capital city of Jiangsu Province. It is the second most populous in Jiangsu Province, with 24% migrant population. The subjects were first randomly selected through recruitment in every 3 communities of 7 districts in Nanjing (Qinhuai, Qixia, Gulou, Xuanwu, Jianye, Yuhuatai, and Jiangning District). Those who met the inclusion criteria were included: (1) aged ≥60 years old; (2) having a household registration (Hukou) retained in hometowns; (3) having lived in Nanjing for ≤10 years. A total of 654 participants were included in this study after screening. Figure 1: *The flow chart of participation* illustrates the flow of the survey. All participants were face-to-face interviewed using a structured questionnaire. All interviewers had experience of medical research and received standardized training prior to the project.

Measures
Intergenerational Relationships

We used 10 indicators to measure structural (living arrangement), associational (daily contact, meeting/chat), affectual (feeling close/alien), normative (filial piety), functional (financial support/life care) factors influencing intergenerational relationships. All solidarity indicators were treated as dichotomous variables in order to reduce the sparsity of the cross-classification table.[46] Consensual solidarity was not examined in this study, due to the lack of questionnaire survey regarding the consistency of family members' perceptions. Living arrangement was measured by whether the elderly migrants live with their children (1=yes, 2=no). Contact was evaluated as frequency (1=strong linkage, 2=weak linkage). Functional solidarity was measured by asking respondents whether having received financial support or life care from their children (1=yes, 2=no), and providing financial support or life care to their children (1=yes, 2=no). Intimacy was measured using three questions:[47] "How close do you feel close to [this child]?"; "How well do you get on well with [this child]"; "Do you think your child is willing to listen when you talk to him or her about your worries or problems?"(0=not at all, 1=somewhat, 2=very). Each question was scored from 0 to 6 on a scale, with a higher score indicating a closer intergenerational relationship (α =0.73). Because the score of intimacy had a positively skewness distribution,[48] 5 was
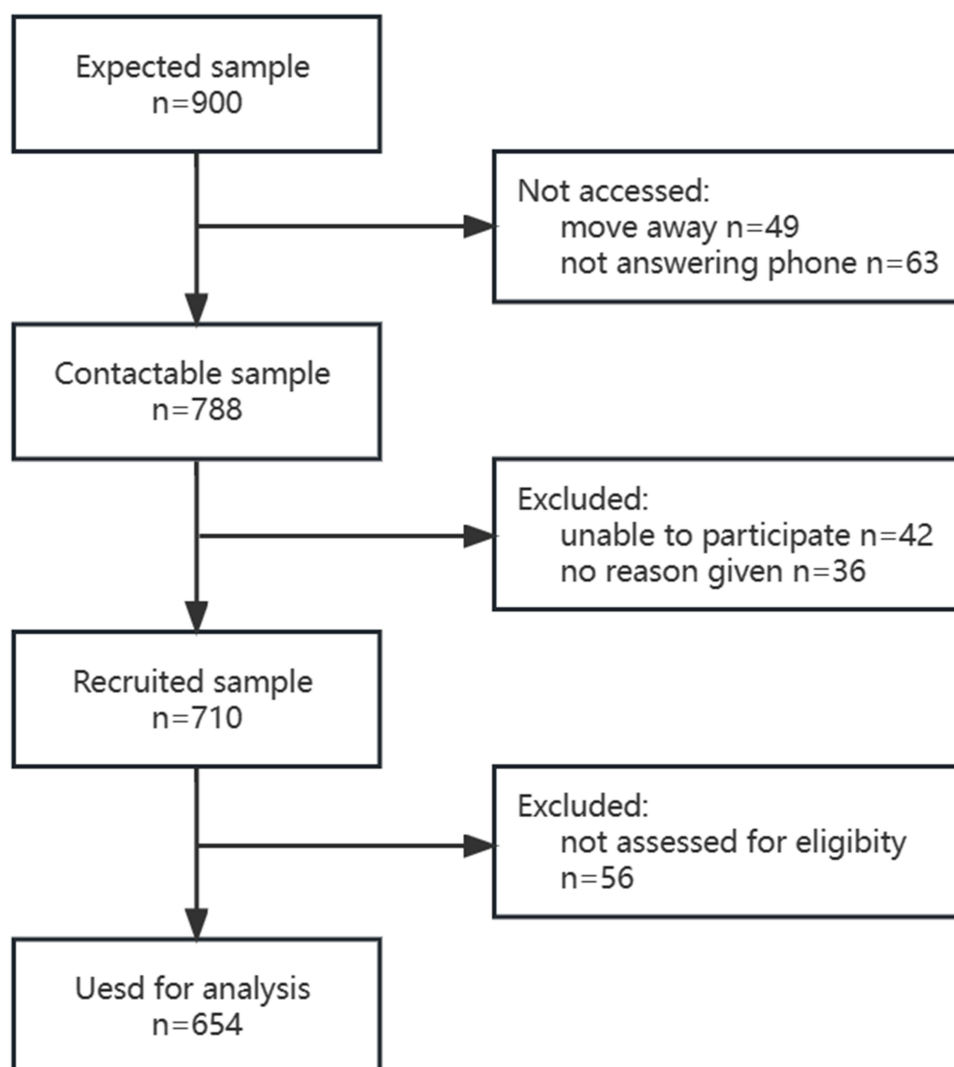
Figure 1 The flow chart of participation.

rated as a threshold to indicate whether the parents felt very close to the child (1=very close, 2=not close). Parent-child conflict was measured by two questions: "In the past 12 months, how often do you feel tension with [this child]?" and "In the past few years, have you ever felt that [this child] was critical of you or your behavior?" (1=never, 2=occasionally, 3=sometimes, 4=often). The reliability of both questions in measuring conflict was confirmed by the Spearman-Brown statistic.[49] The scores from both questions were summed as 2 to 8, with a higher score representing a more serious conflict (ρ=0.679). Conflict was coded as 1=having some conflict (sum score ≥ 2), and 2= having no conflict (sum score = 2). Respondents were also asked to rate their children's filial piety (1=very unfilial, 2=unfilial, 3=ordinary, 4 = filial, 5= very filial). A score of 4 points was used as a threshold to create a dichotomous variable (1=filial, 2=unfilial). The second panel of Table 1 summarizes the distribution of the 10 indicators in the study.

Psychological Status

The psychological status of Chinese elderly migrants was measured by depression and life satisfaction, which represent negative and positive emotions, respectively.[50] The Satisfaction with Life Scale (SWLS) was used to measure life satisfaction.[51] SWLS contains 5 items. Each item is scored from 1 (strongly disagree) to 7 (strongly agree) on the scale, and the total score ranges from 5 to 35. A higher score indicates a higher life satisfaction. The Chinese version has proven reliable in measuring the life satisfaction of elderly. Cronbach's alpha for the present sample was 0.914. The 9-item Patient

Table 1 Study Variables (N=654)

Variable		Mean±SD	N(%)
Sample Characteristics			
Gender	Male		216(33.03)
	Female		438(66.97)
Marital status	Married		553(84.56)
	Widowed		90(13.76)
	Divorced		11(1.68)
Education	Illiterate/semiliterate		167(25.54)
	Primary/junior secondary		345(52.75)
	High school and above		142(21.71)
Annual income	<5000 CNY		249(38.07)
	5000–10,000 CNY		126(19.27)
	10,000–40,000 CNY		199(30.43)
	>40,000 CNY		80(12.23)
Subjective health	Good		183(27.98)
	Average		428(65.44)
	Poor		43(6.57)
Parentage	Father and son		157(24.01)
	Mother and son		289(44.19)
	Father and daughter		61(9.33)
	Mother and daughter		143(21.87)
Age(60–86)		66.05±4.67	
Number of children		1.79±0.97	
Intergenerational Solidarity			%
Geographic proximity(live together)			83.18
Daily contact-meet			73.70
Daily contact-chat			60.09
Parents provided financial support to children			48.93
Children provided financial support to parents			79.20
Parents provided living care to their children			72.63
Children provided living care to parents			48.01
Feeling close			61.16
Having conflict			43.58
Children perceived as very filial			85.17

Health Questionnaire (PHQ-9) was used to measure depressive symptoms of the elderly migrants over the earlier two weeks.[52] PHQ-9 consists of 9 items. Each item is scored from 1 (never) to 4 (almost every day) on the scale, and the total score ranges from 9 to 36. The Chinese version has proven reliable in measuring the depressive symptoms among elderly. A higher score indicate a more serious depressive symptom. Cronbach's alpha for the present sample was 0.810.

Sociodemographic characteristics can affect both intergenerational relations and mental health of older adults.[53,54] In this study, these characteristics included gender, age, marital status, education, annual income, subjective health, parentage and number of children. Age was a continuous variable centred at 60 years old. Gender was a binary variable (male=1, female=2). Marital status was divided into three categories, including married=1, widowed=2, divorced=3. Educational level was categorized into illiterate/semiliterate=1, primary/junior secondary=2, high school and above=3. Annual income was categorized into four levels, with a higher level indicating a higher annual income. Subjective health was divided into good=1, average=2, poor=3. The parent-child relationship existed between father and son=1, father and daughter=2, mother and son=3, mother and daughter=4. The number of children was a numerical variable. The details are presented in Table 1.

Data Analysis

Through the Latent class analysis (LCA), various types of relationship can be generated using different solidarity indicators.[46] Using this tool, we explained the association between the exogenous indicators expressed as potential categorical variables, and maintain the local independence of the exogenous variables. The LCA estimates two types of parameters: conditional probability and latent class probability. The conditional probability is based on the distribution of observations in each potential category, representing the strength of their association. The latent class probability describes the proportion and prevalence of one latent class in a population, according to its distribution.

We first calculated the fitness as one potential class was added into the model, then gradually increased more classes into the model to determine which had the best fitness. Calculation was performed with Bayesian Information Criterion (BIC), Akaike information criterion (AIC), adjusted BIC (ABIC), Entropy (a pseudo R-squared). A smaller value of the first three classes indicated a better fit. Entropy was taken to evaluate the accuracy of classification, with a higher value reflecting a higher accuracy. In addition, Likelihood Ratio Tests (LRT) and Bootstrap-based Likelihood Ratio Tests (BLRT) were adopted to compare the fitness levels of potential class models. A significant p-value indicates that the k-category model outperforms the k-1-category model.[55] LCA was conducted in Mplus 8.3.

A binary logistic regression was performed to predict factors affecting each type of intergenerational relationship derived from the LCA. The association of intergenerational relationships with depression and life satisfaction was tested in STATA Version 15.0 after adjustment for all characteristics. As the variable of life satisfaction and depression were continuous, we employed ordinary least square (OLS) regression for their analysis.

Results

LCA Results

Table 2 shows the fitting levels of the model with different numbers of classes. All five classes achieved nonsignificant L2 in the model, which meant a good fit. The value of AIC BIC aBIC decreased as each potential class was added, indicating the level of model fitting increased with the addition of classes. The fitness of 3 potential classes outperformed that of the 4 potential classes in terms of the significance of LMRT and BLRT. In addition, the Entropy value of three classes was the same as that of four classes, indicating that the model of three classes had the highest classification accuracy. Thus, we selected the three-class models for further analysis.

Table 3 shows the latent class probability and conditional probability for the three-class model. We named these conditional probabilities as (a) *tight-knit* (65%), (b) *conflicting* (25%), (c) *distant intimate* (10%). Hence, Hypothesis 1 was supported. *Tight-knit* had the highest rates of geological proximity (93%), daily contact (99% had daily meeting and 89% had daily chat) and intimacy (73%). Meanwhile, children provided moderate financial support to parents (78%) and parents provided the highest level of life care to children. *Conflicting* had a high rate geographical proximity (74%), the lowest rate of daily contact (daily chat, 9%), the highest rates of conflict (96%), financial support from children and life care from parents (90% financial support and 51% life care). *Distant intimate* had the lowest rates of geographical proximity (50%) and conflict. Meanwhile, it had a low rate of daily meeting (9%) and moderate rates of financial support and life care.

Table 2 Model Fit for the Potential Categories of Intergenerational Relationships

Model	L^2	df	AIC	BIC	aBIC	Entropy	LRT	BLRT
1	1526.12	1011	7812.94	7857.77	7826.02			
2	826.74	1001	7124.04	7218.18	7151.51	0.84	0.00	0.00
3	721.53	990	7041.49	7184.95	7083.35	0.85	0.02	0.00
4	637.67	980	6969.28	7162.05	7025.53	0.85	0.21	0.00
5	585.55	969	6939.16	7181.25	7009.80	0.83	0.16	0.00

Table 3 Conditional Probabilities for Three Types of Models of Intergenerational Relationships in the the Elderly Migrants (N = 654)

Variables	Type I	Type II	Type III
	Tight-Knit	**Conflicting**	**Distant Intimate**
Geographic proximity(live together)	0.93***	0.74***	0.50***
Daily contact-meet	0.99***	0.41***	0.09
Daily contact-chat	0.89***	0.09*	0.11
Parents provided financial support to children	0.40***	0.75***	0.45***
Children provided financial support to parents	0.78***	0.90***	0.64***
Parents provided living care to their children	0.91***	0.40***	0.41***
Children provided living care to parents	0.49***	0.51***	0.35***
Feeling close	0.73***	0.27***	0.67***
Having conflict	0.28***	0.96***	0.19
Children perceived as very filial	0.94***	0.57***	0.97***
Latent class probabilities	0.65	0.25	0.10

Notes: *p < 0.05; **p < 0.01; ***p < 0.001.

Table 4 Logistic Regression Models Results Predicting Intergenerational Relations Class

Effects	Tight-Knit		Conflicting		Distant Intimate	
	β	SE	β	SE	β	SE
Gender-female	1.73**	0.56	−2.65***	0.66	0.35	0.67
Age	0.01	0.02	−0.04	0.03	0.04	0.03
Marital status(ref=married)						
Widowed	−0.30	0.28	0.58*	0.29	−0.52	0.46
Divorced	−0.50	0.68	−0.11	0.81	0.75	0.84
Education(ref=illiterate/semiliterate)						
Primary/Junior Secondary	0.34	0.23	−0.29	0.25	−0.17	0.35
High school and above	1.03***	0.31	−1.26***	0.37	−0.24	0.44
Annual income(ref=<5000 CNY)						
5000–10,000 CNY	−2.03***	0.26	1.98***	0.27	0.68	0.41
10,000–40,000 CNY	−0.75**	0.24	0.40	0.28	0.97**	0.37
>40,000 CNY	−1.15***	0.33	0.76	0.39	1.27**	0.47
Number of children	−0.12	0.10	−0.10	0.11	0.39**	0.13
Subjective health(ref=good)						
Average	−0.11	0.21	0.50*	0.24	−0.53	0.29
Poor	−0.83*	0.38	1.01*	0.43	0.11	0.50
Parentage(ref= father and son)						
Mother and son	−0.97	0.57	1.85**	0.66	−0.54	0.69
Father and daughter	0.35	0.34	−0.50	0.39	0.17	0.47
Mother and daughter	−0.67	0.61	1.69*	0.71	−0.10	0.76

Notes: *p<0.05; **p<0.01; ***p<0.001.

Predictors of Latent Classes

Table 4 shows the results of logistic regressions for the three types of intergenerational relationships. According to the results, female, high education level, low annual income, and good health were more significantly associated with *tight-knit* intergenerational relationships. In contrast, male, widowed, low education level, high annual income, poor health, mother-son and mother-daughter parentage were more prone to *conflicting* relationships. High annual income and having more children were factors associated with *distant intimate* relationships. Therefore, Hypothesis 2 was supported.

Table 5 Regression Analysis of Depression and Life Satisfaction Among Chinese the Elderly Migrants

Effects	Depression		Life Satisfaction	
	β	SE	β	SE
Gender-female	1.25	0.75	−0.45	0.96
Age	0.43	0.03	0.09*	0.04
Marital status(ref=married)				
Widowed	0.63	0.43	−1.31*	0.56
Divorced	2.51*	1.11	−2.62	1.42
Education(ref=illiterate/semiliterate)				
Primary/Junior Secondary	−1.01**	0.36	−0.18	0.46
High school and above	−1.61***	0.48	1.39*	0.61
Annual income(ref=<5000 CNY)				
5000–10,000 CNY	−0.12	0.43	−0.03	0.56
10,000–40,000 CNY	−0.22	0.37	1.40**	0.48
>40,000 CNY	−0.51	0.54	1.54*	0.68
Number of children	−0.37*	0.16	−0.04	0.20
Subjective health(ref=good)				
Average	1.32***	0.33	−1.62***	0.42
Poor	3.27***	0.63	−1.27	0.80
Parentage(ref= father and son)				
Mother and son	−0.78	0.76	0.69	0.98
Father and daughter	0.56	0.56	−0.41	0.71
Mother and daughter	−0.96	0.81	−0.59	1.04
Intergenerational relationships(ref= Tight-knit)				
Conflicting	2.61***	0.37	−5.07***	0.48
Distant intimate	0.31	0.49	−1.38*	0.63

Notes: *p < 0.05; **p < 0.01; ***p < 0.001.

Intergenerational Relationships and Psychological Well-Being

We conducted regression analyses of depression and life satisfaction, using the "tight-knit" class as the reference. As shown in Table 5, the 'conflicting' class was more associated with depressive symptoms and low life satisfaction, compared to the "tight-knit" class. The "distant intimate" class also presented low life satisfaction. In conclusion, the elderly migrants in the "tight-knit" class had high life satisfaction and low depression, while those in the "conflicting" class had high depression and low satisfaction. As such, Hypothesis 3 is fully supported. To further evaluate the differences in mental health between "*conflicting*" and "*distant intimate*" classes, we repeated the analysis using the "*conflicting*" class as the reference. The results showed that the elderly migrants in the "*distant intimate*" class were more likely to report good mental health than those in the "*conflicting*" class (findings available upon request).

Discussion

We identified three types of intergenerational relationships among Chinese elderly migrants. The most common type was *tight-knit* (65%), which is traditional in Chinese families where children live with their parents (93%), have frequent contact (99%) and emotional intimacy (73%) with parents. The elderly migrate mainly for family reunion.[56] Confucianism suggests that adult children should shoulder the responsibility of supporting their parents.[57] Both sides are embedded in a network of mutual support.[58] Seniors who live with their children receive more support from their children, such as daily care and emotional comfort.[34] As their children provide them with financial and emotional support (78%), the parents reciprocate their children with care and concern (91%). The vast majority of the elderly migrants desire to take care of their grandchildren. Our finding reflects that reciprocity and equilibrium drive the continuation of social exchange relationships.[59] This type of intergenerational relationship is beneficial for building a harmonious family atmosphere.

The second type of intergenerational relationship is *conflicting* (25%), indicating that the children live moderately close to their parents (74%), have low rates of emotional communication (26%), daily contact (9%), and a high rate of conflict (96%). It is unique in that both generations maintain a high level of financial support (90%) and life care (51%). Several studies have shown high levels of functional and financial support between two generations, despite the presence or absence of emotional conflicts.[34,39] This illustrates the problems faced by the elderly migrants, whose living habits and ideologies contradict those of their children. Intergenerational conflicts are more likely to occur when older parents decline in mental health.[60] In this condition, the children only fulfill their duty of support, neglecting emotional needs of their parents.[38]

The third type is *distant intimate* (10%). The elderly migrants of this type had a medium level of emotional intimacy (67%), the lowest level of conflict (19%), and a high filial piety from the children (97%), despite the distance separating them. For this type, geographic distance may help family members avoid direct confrontation and conflict.[34] These migrants may not live with their children, but do not lack support from their children. Their children may have a good economy prided on by their parents, which allows them to live independently and maintain a sound mental health.

Intergenerational relationships are shaped by individual characteristics. Several factors were particularly revealing in this study. First, consistent with prior research, mothers were more likely to have *tight-knit* relationships and less likely to have *conflicting* relationships.[22] The effect of education level is similar to those reported in previous studies,[42] the older adults with a higher education level are more likely to have *tight-knit* relationships. Second, in this study, annual income was a influencing factor in all three types of relationships. Older adults with a higher annual income are less prone to *tight-knit* but more to *distant intimate* type, and have a higher number of children as well. This finding is consistent with those in previous studies.[23] Currently in China, the vast majority of elderly migrants move to cities for grandparenting and receive support from their children, thus establishing a reciprocal family relationship. Therefore, income and number of children are not significantly associated with *tight-knit* relationships, but can enhance the bond between parents and children. Finally, the elderly migrants' health status have a profound impact on their intergenerational relationships, suggesting that health can ensure the reciprocity between parents and children.[20] Specifically, the elderly migrants with high subjective health tend to have *tight-knit* relationships. Additionally, future research is needed to explore the effects of parent-child types on intergenerational relationships.

The most "optimal" intergenerational relation type in Chinese elderly migrants is obvious, the elderly migrants of *tight-knit* type reported the best mental health. Another study of elderly Chinese families also found a positive association between higher solidarity and milder psychological distress.[38] In our study, the elderly migrants in *tight-knit* relationships reported a higher level of life satisfaction and a lower level of depression than those in the other types of relationships. In contrast, the elderly migrants in the conflicting type were characterized by high depression and low life satisfaction, and they required more emotional than financial support from their children. The elderly in the *distant intimate* had a better mental health than the *conflicting* type, and had also a higher socio-economic profile. However, the care for them should not be neglected, because we found their much lower life satisfaction compared to that of the *tight-knit* type.

Limitations

This study has some limitations. First, the experimental method and the survey sites constrain the generalizability of the findings. Random sampling causes bias and the sample population is concentrated in one area. Future research should include longitudinal studies that include elderly migrants from multiple regions. Expanded sample size to reduce selection bias. Second, this study did not examine the impact of child characteristics and family structure on intergenerational relationships. Third, the survey sample limited this study to measuring only five of the six dimensions of family solidarity. Future studies shall include measures of consensual solidarity to provide a more complete picture.

Conclusion

We found three types of intergenerational relationships of elderly migrants in Nanjing, China. The *tight-knit* type was associated with a high probability of healthy mental status in this population. Their emotional intimacy with children should be improved to prevent mental health decline. Intergenerational relationships require elderly self-regulation, filial piety in children, and better communication between parents and children. Meanwhile, the community must provide

mental health care for the elderly. Our findings provide suggestions for future research on Chinese elderly migrants and relevant family support policies.

Declaration of Helsinki

This study was conducted in accordance with the Declaration of Helsinki.

Ethics Statement

This study was approved by the Ethic Committee of Nanjing Medical University. All methods used in the study were conducted according to the criteria set by the Ethics Committee of Nangjing Medical University, while each subject reviewed and signed an informed consent prior to participation in the study.

Disclosure

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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