

Relocation and Social Support Among Older Adults in Rural China

Zheng Wu,¹ Margaret J. Penning,¹ Weihong Zeng,² Shuzhuo Li,² and Neena L. Chappell³

¹Department of Sociology, University of Victoria, British Columbia, Canada.

²Center for Aging and Health Studies, Xi'an Jiaotong University, Shaanxi, China.

³Department of Sociology and Centre on Aging, University of Victoria, British Columbia, Canada.

Objectives. China's economic reforms have led to millions of citizens being relocated to support infrastructure development, reduce poverty, and address ecological, disaster-related and other concerns. This study expands on previous research on the implications of relocation in China by examining the impact of rural elders' relocation on the perceived availability of emotional, instrumental, and financial support.

Methods. Data were drawn from the Ankang Study of Aging and Health conducted with a representative sample of 1,062 rural residents aged 60 and over living in Ankang, China. Two-stage probit and least squares regression models assessed the impact of relocation on familial and nonfamilial emotional, instrumental, and financial support.

Results. Relocation was negatively associated with the number of social support resources that older adults perceived as being available. Although this was the case with regard to both familial and nonfamilial support, it was particularly evident with regard to family support and, within families, with regard to instrumental rather than financial or emotional support.

Discussion. Relocation has negative implications for the number of social support resources perceived to be available by older adults in rural China. China will need to come to terms with how to provide for the instrumental support needs of an aging society.

Key Words: Aging—China—Relocation—Rural—Social support.

IN China, economic development reforms have led to massive internal relocation and resettlement. To a large extent, this reflects the movement of people from rural to urban areas in pursuit of employment opportunities. Since many of those who move are working-aged adult children, the assumption tends to be that older adults are stationary—"left behind" in their rural communities and without the social support and care they may require in later life (e.g., Luo, 2012a, 2012b; Zhang, 2009). However, the rural to urban movement of adult children is not the only form of relocation that is taking place. Recent relocation policies are also seeing millions of people moved to reduce poverty, address ecological and disaster-related concerns, and make way for major infrastructure construction projects. Many of those being relocated are older adults, moving for the first time in their lives away from their rural ancestral homes and villages and into newly constructed towns and villages, generally located in the same regions.

Given the emphasis on rural to urban moves of working-aged adult children, to date, little is known about the implications of their own relocation for older adults, including their access to social support and care. Not only is research regarding the effects of such resettlement limited, but this is particularly evident when it comes to its social rather than economic impacts (Rogers & Wang, 2006). Most research

focuses only on one type of resettlement, typically that due to infrastructure development as a result of dam construction, and also, tends to focus primarily on employment and economic outcomes (e.g., Chen, 2006; Jim, Yang, & Wang, 2010; Wilmsen, Webber & Duan, 2011a; Wilmsen, Webber & Yuefang, 2011b). In addition, there is no research that we are aware of that addresses the social implications of relocation for older adults living in the rural areas most affected by many of the contemporary relocation programs in China. However, these are important outcomes in the Chinese context where, for centuries, older individuals, particularly those living in rural areas, have relied almost exclusively on family members for support.

Given the magnitude of the relocation that is taking place in rural China, together with the continuing importance of informal resources, understanding how relocation is likely to influence access to support and care is an issue of considerable significance. Recent theoretical and empirical accounts suggest a number of competing perspectives. For example, some consider relocation to be linked to declining filial piety and familial support regardless of its form (Ikels, 2006). Others suggest that despite relocation, the traditional family support system has managed to survive and function albeit in modified form (Luo & Zhan, 2012). As a result, relocation may undermine some (e.g.,

instrumental) but not all forms (e.g., financial, emotional) of familial support. Finally, still others contend that because the relocation policies being implemented in China attempt to keep families intact by moving them as a unit, one might expect to find little impact on family support but a negative impact on support from friends or others in the informal social network (Chen & Shi, 2006). To assess the relative merits of these competing views, using representative data from a rural region in Central China, we examined associations between relocation and three key dimensions of social support (instrumental, emotional, financial) perceived to be available from others (family members, friends) in the informal network.

BACKGROUND

Relocation is a key feature of China's economic reform agenda. Although pursued in numerous other countries as well (Cernea, 2006, 2007), its magnitude and impact in China are unprecedented. No other country in the world is said to match the extent of displacement associated with infrastructure development in China: "Over 45 million people have been resettled since 1949 (WCD, 2000). The expansion of cities is the greatest cause of displacement; even so, 12 million people have been displaced by 85,000 reservoirs since 1949 (an average of 240,000 per year)" (Webber & McDonald, 2004, p.673). However, dams are not the only project underway; nor is this the only reason for relocation. Increasingly, relocation also stems from governmental attempts to address poverty reduction, ecological, disaster-related, and other concerns (Rogers & Wang, 2006; Xue, Wang & Xue, 2013).

According to the World Bank, resettlement programs in China work well and consequently, have been proposed as a model for other developing countries (Bartolome, Wet, de Mander, & Nagraj, 2000; Rogers & Wang, 2006). However, negative implications have also been reported (Gransow, 2007). To date, much of the research has addressed the implications of involuntary resettlements associated with the Three Gorges Dam and related infrastructure development projects, with particular attention directed towards their implications for the employability, economic well-being, and health of those affected (Gransow, 2007; Hwang, Xi, Cao, Feng & Qiao, 2007; Kedia, 2009; Webber & McDonald, 2004). Considerably less research has addressed the implications of environmental or other reasons for resettlement. However, here too, available evidence points to negative consequences, particularly with regard to employability and economic hardship (Warner et al., 2013).

The potential risks of relocation and resettlement may not be limited to economic and related concerns but may also include risks to social networks and the social support and other resources they provide (Rogers & Wang, 2006; Shi, Su, & Yuan, 2006). Cernea's (1997) well-known "Risk and Reconstruction Model" identifies social disarticulation (i.e.,

destruction of people's established networks of social relationships) as one of eight major impoverishment risks associated with involuntary resettlement. At the individual level, relocation has long been considered a stressor that generates emotional distress as a result of the social and other costs it entails (Xi et al., 2013). Hwang et al. (2007) found that the anticipation of forced migration leads to depression both directly and indirectly, by weakening the social and psychological resources (i.e., social support and mastery) that typically protect mental well-being. Subsequent longitudinal (Hwang et al., 2010) and quasi-experimental (Xi et al., 2013) studies provide further support for the claim that enforced relocation elevates depression not only directly, but also indirectly by weakening the psychosocial resources that safeguard migrants' mental well-being.

These and other risks (e.g., landlessness, joblessness, marginalization, loss of access to community property resources, increased morbidity) do not appear to be restricted to nor necessarily equivalent in impact among different sectors of the population (Cernea, 1997). Rural residents and older adults appear to be among the most vulnerable. In China, the majority of the dam and transportation infrastructure projects responsible for involuntary relocation are located in rural areas (Chen, 2006) and the problems associated with rural residents' resettlement have been noted to be much greater than those faced by urban residents (Tan & Hugo, 2011), given their substantially poorer standards of living and greater financial needs (Cai, Giles, O'Keefe & Wang, 2012). Rural residents also tend to be targeted for poverty reduction, ecological restoration, and other forms of relocation (Warner et al., 2013; Xue et al., 2013). The proportion of older adults is considerably higher in rural than urban areas of China (Cai et al., 2012) and consequently, within these areas, many of those being relocated are older adults, moving for the first time in their lives away from their rural ancestral homes and villages (e.g., Hwang et al., 2007).

The Present Study

The preceding review points to the potential implications of China's relocation and resettlement programs and policies for access not only to employment and other economic resources, but to social resources as well. These implications may be particularly problematic for those living in rural areas and, in this context, among older adults specifically. Yet, little is known about the implications of older adult relocation for their access to social support resources in later life.

To address this deficit, this study drew on a regionally representative sample of older adults living in the predominantly rural (90%) and poor Ankang prefecture (an administrative division between the provincial- and county-level) of China (Ankang Statistics Bureau, 2014). Nine of Ankang's 10 counties/districts are state-designated

as poor or extremely poor. Ankang has a long history of government-organized and state-run relocation programs. It is a natural disaster-prone (e.g., floods, landslides) area and consequently, disaster prevention and management have long been important concerns of local governments. Since 1998, over 100,000 rural households have been relocated (Government of Ankang, 2010). From 2011 to 2020, approximately one-third of the total population (or 880,000 people) of Ankang is scheduled to be relocated (Government of Shaanxi Province, 2010) in order to address disaster reduction, poverty reduction, and ecological/environmental concerns. It is estimated that about one-third of all relocated residents are aged 65 or older (Ankang Statistics Bureau, 2014).

With the exception of project/infrastructure-induced relocation (about 10% of those relocated), recent government-sponsored relocations are regarded by Chinese governments as voluntary. In China, recent policies require governments at all levels to work closely with relocation participants and provide adequate support and subsidy, and encourage participants to choose if, when, where, and how they are to be relocated. No intimidation or any form of coercion is permitted. Instead, preferential policies and incentives (e.g., residential/commercial loans) are often provided for participants who are willing to be relocated in urban areas, leading some to suggest a continuum of voluntarism while others propose distinctions such as “induced voluntarism” and “compulsory voluntarism” (Xue et al., 2013). More recently, some researchers (Xue et al., 2013) have argued that “current conceptualization of resettlement as either voluntary or involuntary is too rigid” (p. 1161) since the boundary between them is often blurred.

Theoretically, we assessed three competing perspectives regarding the implications of older adult relocation on older adults’ access to social support. The first, founded on modernization theory in social gerontology, suggests that the other social and economic changes (including migration and relocation) associated with moves toward a market economy may be eroding filial piety (Ikels, 2006) and jeopardizing the family’s willingness and ability to serve as a resource to its older members (Chen & Silverstein, 2000). This is particularly the case in rural settings where traditional values are strongest and older adults are the most likely to be dependent on their children, especially their sons and their sons’ families, for financial security and other forms of support (Chen & Silverstein, 2000; Guo et al., 2013; Zimmer & Kwong, 2003). In some rural areas, over two-thirds of the older adult population has been reported to depend almost entirely on their children for financial support (Cong & Silverstein, 2011). This reflects their lack of economic and other resources (particularly when they lose the only economic resource and home—the land—that they have ever had—Hwang et al., 2007), declining opportunities for coresidence with children (Zimmer & Kwong, 2003), and the limited availability of government-supported or other

community-based programs within such areas (Zimmer & Kwong, 2003). To the extent that older adults are less likely to have children to rely on and, at the same time, are having to move off of the land where they have earned their livelihoods and also, away from the other social resources (friends, community resources) from whom support might otherwise be obtained, the implications would seem to be negative.

However, in contrast with the view that relocation and other features of modernization are likely to weaken the traditional kinship and family networks that are the foundations of filial piety in Chinese society, others contend that values of filial piety have not declined but instead, its practice has been transformed (Luo & Zhan, 2012; Zhan, Feng & Luo, 2008). For example, Luo’s (2012a) research on rural–urban economic migrants in China, suggests that in order to cope with the tensions caused by changes in generational care chains associated with such moves, the traditional family support system continued to operate through a new informal intergenerational contract: “The dependent children and the elderly were left in the countryside by the migrating mothers. The able grandparents took care of the grandchildren while the young migrating couples reciprocated by giving their parents financial support, other material help and promises of better support in the future” (p. 99). In their view, families are creating new care arrangements which are “not a simple replica of the old fashioned preindustrial welfare nexus” but rather “can be seen as a model of interaction between tradition and modernity” (p.99). Consequently, although relocation may jeopardize some (e.g., instrumental) forms of social support, this is not necessarily true of other forms (e.g., financial, emotional). Instead, the latter may increase and be used to offset reductions in some of the less available resources.

Still others have argued that the implications of relocation for family life, including support, will be minimal, not because of modernized versions of filial piety but rather, because Chinese policies tend to target entire families, rather than individuals, for relocation (Chen & Shi, 2006). These scholars contend that because the entire family tends to be moved together, relocation will not have a major influence on family structure or relationships. Instead, it is primary social relationships other than those in the family that are more likely to be destroyed.

To examine the implications of older adult relocation for access to social support in the context of these competing perspectives, our analyses addressed four research questions: (a) To what extent is relocation associated with a reduction in the social support resources perceived to be available by older adults? (b) Does the impact of relocation on the availability of social support resources differ depending on the type of support resources (emotional, instrumental, and financial) involved? (c) To what extent is relocation differentially associated with a reduction in familial and non-familial supports? (d) Finally, does the

type of relocation (poverty-reduction, ecological restoration, disaster-relief, infrastructure/other) matter?

METHOD

Data

The study was based on primary cross-sectional survey data collected to study the consequences of government-organized relocation (voluntary, involuntary) for people aged 60 and older in Ankang, China. The Ankang Study of Aging and Health (ASAH) was approved by the Research Review Board at the Institute of Population and Development Studies, Xi'an Jiaotong University. Ethics approval was also obtained from the Ankang Government, which provided in-kind support to the process of data collection.

The study was carried out by the Institute of Population and Development Studies, Xi'an Jiaotong University. Data were collected in 2011 and 2013 using a multistage stratified sampling design. The target population included persons aged 60 and older residing in private households in rural villages located in all but one of the rural counties (Langao—excluded for feasibility reasons) in Ankang prefecture, Shaanxi, China. Given its objectives (a comparison of those affected and those not affected by government-sponsored relocation programs), the study was designed to include an equal representation of relocated and non-relocated individuals in the sample. Therefore, each county was divided into three strata: (a) villages with no relocated individuals, (b) villages consisting of all relocated individuals, and (c) villages with both relocated and non-relocated individuals. A random sample of villages was selected from each stratum. Finally, from the selected villages, households with at least one person aged 60 or older were randomly selected using household registration information from the local statistical bureau and verified by village officials. Where more than one person in this age group lived in the selected household, one was randomly selected to participate. Data were then collected through face-to-face interviews conducted in respondents' households.

In total, the ASAH collected data on 613 elderly people in 25 villages (from November–December, 2011) and on 507 elderly people in 36 villages (from March–April, 2013). The survey had an overall response rate of 94%. We pooled the data from the two cross-sectional data collection efforts for a total study sample of 1,120 respondents. After removing cases with missing values on the dependent variables, the final study sample included 1,062 respondents, of whom 478 had and 584 had not been relocated. Missing values on the other explanatory variables were minimal (generally less than 0.5%) and were imputed using the multiple imputation procedure implemented in SAS 9.3. In all regression models, a dummy variable was added as a covariate to control for survey cycle and potential period effects.

Measures

Our outcome variable was social support. Social support is a broad and complex concept that has been defined and measured in any different ways (Cohen, Gottlieb, & Underwood, 2000; Gottlieb & Bergen, 2010). However, it is perhaps most frequently used to refer to the functional resources accessible through one's informal social network (i.e., family members, friends, neighbors—see Cohen et al., 2000). Most often, these include tangible or instrumental forms of assistance (e.g., help with everyday activities such as housekeeping, transportation, and financial assistance) as well as emotional support (e.g., information leading persons to believe that they are loved, cared for, esteemed and valued—see Cobb, 1976). Here we used a functional definition of social support that emphasized “the social resources that persons perceive to be available...in the context of...informal helping relationships” (Cohen et al., 2000, p.4). Our measures are comparable to widely-used single- and multiple-item measures asking people whether they have people they can turn to if they need various forms of support as well as those asking individuals to list the people in their lives who provide various forms of support. Specifically, we relied on responses to questions asking respondents how many people they could turn to for emotional support, instrumental support, and financial support. For example, for emotional support, respondents were asked, “when you feel unhappy, how many family members are available to listen to you?” In this context, family members included spouse, parents, children, grandchildren, and son/daughters-in-law. The question was also repeated to assess emotional support available from three other sources: other relatives, friends, and other people. A similar format was used to assess instrumental and financial support. For instrumental support, respondents were asked: “if you need some instrumental help (e.g., help with personal care and/or household chores), how many family members (also other relatives, friends, and other people) are available to help you?” Finally, for financial support, they were asked “if you need to borrow a large sum of money, how many family members (also other relatives, friends, and other people) are available to lend to you?” Responses to each question were summed to obtain total number of people available to provide support within each of the three domains. In addition, in order to compare family and nonfamily support within each domain, the number of family versus other sources (other relatives, friends, and other people) was also determined.

Our primary independent variable was relocation, coded as a dummy variable indicating whether the respondent reported having ever been relocated through a government-organized relocation project. For those who had relocated, length of residence in the relocated area was measured in years. Because length of residence was not observed for non-relocated individuals, the variable was centered with non-relocated respondents coded at the mean (zero).

Dummy variable indicators also were developed to assess each of poverty reduction relocation, ecological restoration, disaster-related, and infrastructure/other reasons for relocation.

Throughout the analyses, we controlled for demographic, socioeconomic, health, and living arrangement factors previously shown to influence perceptions of social support among Chinese older adults (Cong & Silverstein, 2011; Guo et al., 2009; Zimmer & Kwong, 2003). The demographic variables included age, gender, marital status, and number of children. Age was measured in years. Respondents' gender and marital status were coded as dummy variables. Finally, the number of children referred to the number of living children, including adopted children. The socioeconomic variables included education and family income. Education was measured based on years of formal schooling completed whereas net family income was a derived variable (in 10,000s yuan) calculated as the sum of all of the various sources of income (including agricultural income, remittances, pensions, etc.) and expenses (housing, food, etc.) reported by the respondent (and/or a proxy where necessary). Health status was operationalized using three indicators: self-rated health (coded as better than average, about average, or below average), the number of chronic illnesses reported (coded using the actual number reported) and the ability to perform basic (ADLs) and instrumental activities of daily living (IADLs). The latter was assessed using the sum of the responses (1 = can perform, 2 = perform with some difficulty, 3 = cannot perform) to questions concerning 15 activities (e.g., bathing, eating, using toilet, cooking, and managing one's finances). Finally, the study also included dummy variables to indicate whether the respondents reported currently living with children and/or with grandchildren.

Statistical Methods

Our statistical method involved two-stage probit and least squares regression models for each dependent variable. Our empirical analysis began by investigating the issue of endogeneity of mass relocation. It is well known that relocation is selective. Even in the context of China's government-organized relocation program, not everyone will agree to relocate. If the decision to relocate is correlated with social support, then the effect of relocation on social support may be biased (Greene, 2012). For instance, if individuals who agree to relocate are more sociable and these attributes are also associated with increased (perceived) informal support, then the potential negative effect of relocation may be underestimated. Similarly, if people who choose to relocate tend to be more solitary and develop a limited circle of relationships, then the potential negative effect of relocation can be overstated. To correct for the potential selection bias, we estimated two simultaneous equations models in which one endogenous variable is continuous (social support) and the other is dichotomous (relocation) using a two-stage

probit least squares procedure discussed in Maddala (1983, pp. 242–247). Although not necessarily required, choosing a somewhat different set of covariates for the selection equation helps identify the effect of the “treatment” variable (relocation) in the outcome equation (Amemiya, 1985; Greene, 2012). We present the stage-2 regression estimates from the outcome models with corrected standard errors in Tables 2–5. The results of the selection models are available from the authors. All regression models were estimated using STATA/SE 13.1.

RESULTS

Table 1 presents descriptive statistics for all variables used in the analyses among those who relocated and those who did not. At the bivariate level, the average number of supports available did not differ significantly: those who had relocated reported having an average of 5.35 (for emotional support) to 6.11 (for instrumental support) persons available compared to an average of 5.53 (for financial support) to 6.77 (for instrumental support) persons among those who had not relocated. Among those respondents (45.0%) who were classified as having relocated, the most common reason given was poverty reduction (34.2%), followed by disaster-related relocation (30.4%), ecological restoration (18.8%), and other reasons (16.6%) such as construction (e.g., building dams, railways, and roads). At the time of the survey, respondents' average length of residence in the relocated area was just under four years.

Relocated and non-relocated older adults differed with regard to some but not all of the control variables. No significant differences between the two groups were evident with regard to age, gender, marital status, number of children, chronic illness, or ADL/IADL levels. Conversely, those who had relocated had significantly higher average levels of education, but lower incomes, than non-relocated older adults. They also had somewhat better self-rated health, despite no evidence of difference in chronic conditions or ADL/IADL impairments. Finally, there also were differences in living arrangements with those who had relocated being significantly more likely to be living with children and/or grandchildren than those who had not relocated.

To assess the impact of relocation on social support net of these control variables, Table 2 presents the results of two-stage probit and least squares regression models with sample selection taken into account for each of the three emotional, instrumental, and financial support measures. With regard to emotional support, the results show that relocation did in fact have a negative association with the number of persons that older individuals perceived as being available to them. Similar findings were evident with regard to both instrumental and financial support: those who had relocated reported having fewer sources of support.

The impact of the control variables was generally consistent across the three forms of support. Those reporting having more children also reported having more sources

Table 1. Descriptive Statistics of Variables Used in the Regression Analysis: Older Persons (Age 60+) in Ankang, China, 2011, 2013

Variables	Definition	Relocated		Not relocated		<i>p</i> Value
		<i>M</i> or %	<i>SD</i>	<i>M</i> or %	<i>SD</i>	
Perceived social support						
Emotional	Number of persons one can turn to for emotional support. Range: 0–117.	5.35	5.99	6.23	8.46	.098
Instrumental	Number of persons one can turn to for instrumental support. Range: 0–117.	6.11	8.32	6.77	9.27	.337
Financial	Number of persons one can borrow a significant amount of money if needed. Range: 0–104.	5.52	6.94	5.53	7.64	.769
Reason for relocation						
Poverty reduction	Dummy indicator (1 = yes, 0 = otherwise)	34.2%	—	—	—	—
Ecological restoration	Dummy indicator (1 = yes, 0 = otherwise)	18.8%	—	—	—	—
Disaster-related	Dummy indicator (1 = yes, 0 = otherwise)	30.4%	—	—	—	—
Other	Dummy indicator (1 = yes, 0 = otherwise)	16.6%	—	—	—	—
Years since relocation	Years of residence in the relocated area. Range: 0–32.	3.97	6.00	—	—	—
Demographic variables						
Age	Age in years. Range: 60–96.	68.68	7.40	69.19	6.94	.478
Gender	Dummy indicator (1 = male, 0 = female)	52.2%	—	54.0%	—	.617
Marital status	Dummy indicator (1 = married, 0 = otherwise)	53.6%	—	53.3%	—	.621
Children	Number of children. Range: 0–9.	2.24	1.31	2.18	1.45	.328
Socioeconomic variables						
Education	Years of formal education. Range: 0–13.	2.88	2.43	2.49	2.25	.023
Family income	Annual family income in 10,000s yuan. Range: –1.74 (loss)–25.7.	1.04	1.74	1.38	1.94	.002
Health						
Self-reported health						.001
Better than average	Dummy indicator (1 = yes, 0 = otherwise)	14.7%	—	21.4%	—	
About average	Dummy indicator (1 = yes, 0 = otherwise)	61.9%	—	49.7%	—	
Below average	Reference group	23.4%	—	28.9%	—	
Chronic illness	Number of chronic illnesses. Range: 0–8.	1.27	1.27	1.20	1.17	.314
ADLs/IADLs	Activities of daily living. Range: 15–45.	19.03	5.70	18.84	5.89	.470
Living arrangement						
Live with children	Dummy indicator (1 = Living with the second generation, 0 = otherwise)	71.1%	—	57.0%	—	.000
Live with grandchildren	Dummy indicator (1 = Living with the third generation, 0 = otherwise)	53.7%	—	38.5%	—	.000
<i>N</i>		478		584		

Note. ADL = activities of daily living; IADL = instrumental activities of daily living. Weighted means or percentages, unweighted *N*. Source: The Ankang Study of Aging and Health.

of support available to them, regardless of the type of support involved. The same was true of those reporting average rather than below average self-rated health. No difference was evident between those reporting average and above average health (analyses not reported). Few other factors were significantly related: there was some indication that those who lived with children reported having a somewhat greater number of sources of instrumental support, and that those who lived with grandchildren had a somewhat greater number of instrumental and financial support resources. No other factors emerged as significantly related.

Tables 3 and 4 report the results of analyses conducted to determine whether relocation was associated with either or both familial and nonfamilial supports respectively. Here, the results were generally similar: those who had relocated reported having fewer sources of support available, whether these were family or nonfamily members. The coefficients were somewhat stronger in magnitude for familial than nonfamilial supports. They also tended to be strongest for instrumental support followed by financial and then emotional support. In terms of family support, those who had

more children and who lived with grandchildren reported having more sources of emotional and instrumental support available to them. Somewhat greater access to instrumental support from family members was also reported by those with average rather than below average perceived health. Finally, financial support was positively associated with number of children and self-rated health. Other than relocation, somewhat fewer factors emerged as significant in relation to nonfamily support. Once again, those who reported more children also reported having somewhat more nonfamily sources of emotional, instrumental, as well as financial support whereas those who lived with children also reported somewhat more nonfamily sources of instrumental support. Finally, those with average rather than below average self-rated health also reported a somewhat greater number of sources of instrumental and financial support.

Finally, Table 5 reports the results of two-stage probit and least squares regression models (control variables not reported) assessing the impact of each type of relocation (considered relative to non-relocation) on support. Here, the results revealed that poverty-reduction, ecological, and

Table 2. Two-Stage Probit and Least Squares Regressions of Social Support With Correction for Selection Into Relocation: Older Persons (Age 60+) in Ankang, China, 2011, 2013

Variables	Emotional support		Instrumental support		Financial support	
	b	SE	b	SE	b	SE
Relocated (1 = yes)	-7.259***	2.276	-9.884***	2.992	-7.807***	2.440
Years since relocation	0.012	0.089	0.050	0.117	0.027	0.095
Demographic variables						
Age	-0.025	0.055	-0.057	0.072	-0.003	0.059
Gender (1 = male)	0.785	0.753	0.888	0.990	0.138	0.807
Marital status (1 = married)	-0.558	0.797	-0.820	1.047	-1.166	0.854
Children	0.991****	0.276	1.422****	0.362	1.089****	0.295
Socioeconomic variables						
Education	0.150	0.197	0.293	0.258	0.244	0.211
Family income	-0.288	0.235	-0.486	0.309	-0.301	0.251
Health						
Self-reported health						
Better than average	1.601	1.168	1.838	1.536	1.861	1.252
About average	2.493**	1.096	3.707**	1.440	3.573***	1.174
Below average (reference)						
Chronic illness	0.262	0.319	0.397	0.419	0.213	0.342
Living arrangement						
Live with children (1 = yes)	1.289	1.077	2.437*	1.416	1.783	1.154
Live with grandchildren (1 = yes)	1.394	1.041	2.371*	1.368	2.175*	1.116
Intercept	0.748	4.137	0.255	5.439	-2.150	4.434
R ²	0.072		0.077		0.074	
N	1,062		1,062		1,062	

Notes. Stage 1 equation includes age, children, education, activities of daily living/instrumental activities of daily living (ADL/IADLs), survey cycle dummy as covariates. Source: The Ankang Study of Aging and Health.

* $p < .10$ (two-tailed test). ** $p < .05$. *** $p < .01$. **** $p < .001$.

Table 3. Two-Stage Probit and Least Squares Regressions of Family Support With Correction for Selection Into Relocation: Older Persons (Age 60+) in Ankang, China, 2011, 2013

Variables	Emotional support		Instrumental support		Financial support	
	b	SE	b	SE	b	SE
Relocated (1 = yes)	-4.995*	2.927	-6.228***	2.384	-5.701**	2.335
Years since relocation	0.073	0.115	-0.025	0.093	0.013	0.091
Demographic variables						
Age	1.164	0.968	0.245	0.789	0.115	0.772
Gender (1 = male)	-0.065	0.070	-0.049	0.057	-0.018	0.056
Marital status (1 = married)	-1.265	1.022	-0.754	0.834	-0.661	0.816
Children	1.242****	0.354	1.313****	0.288	1.302****	0.282
Socioeconomic variables						
Education	0.204	0.254	0.182	0.206	0.138	0.202
Family income	0.116	0.300	-0.351	0.245	-0.326	0.240
Health						
Self-reported health						
Better than average	0.553	1.493	0.586	1.220	1.674	1.194
About average	-0.130	1.410	2.282**	1.148	2.134*	1.124
Below average (reference)						
Chronic illness	0.555	0.412	0.505	0.335	0.189	0.328
Living arrangement						
Live with children (1 = yes)	0.264	1.387	0.938	1.129	1.730	1.106
Live with grandchildren (1 = yes)	2.285*	1.347	1.910*	1.094	1.356	1.072
Intercept	3.467	5.315	1.368	4.331	-0.814	4.241
R ²	0.032		0.050		0.047	
N	1,062		1,062		1,062	

Notes. Stage 1 equation includes age, children, education, activities of daily living/instrumental activities of daily living (ADL/IADLs), survey cycle dummy as covariates. Source: The Ankang Study of Aging and Health.

* $p < .10$ (two-tailed test). ** $p < .05$. *** $p < .01$. **** $p < .001$.

disaster-related relocation all were associated with a reduced level of support perceived as being available from others when compared to the reference category (non-relocated

individuals). Overall, the difference in the number of supports reported appeared to be greatest when comparing those who had relocated for reasons of poverty-reduction to

Table 4. Two-Stage Probit and Least Squares Regressions of Non-Family Support With Correction for Selection Into Relocation: Older Persons (Age 60+) in Ankang, China, 2011, 2013

Variables	Emotional support		Instrumental support		Financial support	
	b	SE	b	SE	b	SE
Relocated (1 = yes)	-2.865***	1.060	-4.960***	1.563	-2.428***	0.884
Years since relocation	-0.027	0.041	0.008	0.061	-0.021	0.034
Demographic variables						
Age	0.484	0.351	0.493	0.517	0.105	0.292
Gender (1 = male)	-0.024	0.025	-0.050	0.038	-0.021	0.021
Marital status (1 = married)	-0.267	0.371	-0.299	0.547	-0.457	0.309
Children	0.273**	0.128	0.472**	0.189	0.246**	0.107
Socioeconomic variables						
Education	0.061	0.092	0.122	0.135	0.089	0.076
Family income	-0.135	0.109	-0.262	0.161	-0.088	0.091
Health						
Self-reported health						
Better than average	0.191	0.543	0.351	0.802	0.443	0.452
About average	0.633	0.510	1.396*	0.753	1.051**	0.425
Below average (reference)						
Chronic illness	0.117	0.149	0.208	0.219	0.043	0.124
Living arrangement						
Live with children (1 = yes)	0.568	0.502	1.360*	0.740	0.513	0.418
Live with grandchildren (1 = yes)	0.590	0.486	1.072	0.715	0.586	0.405
Intercept	1.354	1.926	1.311	2.841	0.692	1.605
R ²	0.027		0.040		0.027	
N	1,062		1,062		1,062	

Notes. Stage 1 equation includes age, children, education, activities of daily living/instrumental activities of daily living (ADL/IADLs), survey cycle dummy as covariates. Source: The Ankang Study of Aging and Health.

*p < .10 (two-tailed test). **p < .05. ***p < .01. ****p < .001.

Table 5. Two-Stage Probit and Least Squares Regressions of Social Support With Correction for Selection Into Relocation by Reason for Relocation: Older Persons (Age 60+) in Ankang, China, 2011, 2013

Reason for relocation	Emotional support		Instrumental support		Financial support	
	b	SE	b	SE	b	SE
Poverty reduction (1 = yes)	-7.441**	2.306	-7.793**	2.326	-5.526**	1.877
Intercept	4.001	4.615	5.019	4.662	1.337	3.743
R ²	0.076		0.067		0.064	
N	744		744		744	
Ecological restoration (1 = yes)	-4.694**	1.629	-6.076*	2.488	-4.152*	1.788
Intercept	-3.987	5.102	-7.344	7.806	-8.933	5.612
R ²	0.067		0.075		0.069	
N	676		676		676	
Disaster related (1 = yes)	-6.465**	2.206	-6.317**	2.249	-4.671**	1.751
Intercept	-5.373	6.057	-2.515	6.171	-4.994	4.801
R ²	0.077		0.063		0.067	
N	730		730		730	

Notes. Reference group is non-relocated. Stage 1 equation includes age, children, education, activities of daily living/instrumental activities of daily living (ADL/IADLs), survey cycle dummy as covariates. Stage 2 equation includes all other covariates shown in Table 2. Source: The Ankang Study of Aging and Health.

*p < .05 (two-tailed test). **p < .01. ***p < .001.

those who had not. In addition, poverty-reduction relocation appeared to have a somewhat stronger negative association with the perceived availability of emotional and instrumental support than it did with perceived sources of financial support. Relocation for purposes of ecological restoration also had a strong negative association with access to instrumental support with somewhat less, albeit still significant, negative association with perceived access to emotional and financial resources. Finally, disaster-related relocation had a stronger negative relationship with perceived emotional

and instrumental support than it did with perceived financial support.

DISCUSSION

This study examined associations between the relocation of older rural-dwelling Chinese adults and the availability of emotional, instrumental, and financial support resources. Overall, our findings provide further evidence to support concerns regarding the potentially adverse implications of China's relocation initiatives for the well-being of older

adults residing in rural areas such as Ankang. They not only reinforce notions regarding the vulnerability and risks faced by older rural residents when they relocate but also, suggest that these implications include access to informal resources (family and nonfamily) for the provision of social support (emotional, instrumental, and financial). The most significant of these appears to be family provision of instrumental support: those relocated through a government-sponsored relocation program perceived themselves as having fewer sources of support available if and when needed than did those who had not been relocated. Interestingly, this was the case despite their being more likely than those who had not relocated to live with a child and/or grandchild. It is not clear exactly why this was the case. Perhaps relocation increases the likelihood of coresidence with a particular family member which results in non-household family members and others being perceived as or withdrawing as potential sources of support. Conversely, it may be that it is those older adults who were already living with children and/or grandchildren who are more likely to agree to relocation, which subsequently reduces their access (real and/or perceived) to other familial and nonfamilial sources of support. These and other potential explanations need to be further examined.

Our interest was in assessing the empirical support available for three contrasting views regarding whether or not their own relocation was associated with reduced familial and nonfamilial supports of various types. Consistent with the modernization thesis that relocation is likely to weaken the foundations upon which elder support in China is based (e.g., filial piety), our results revealed a negative association between older adults' relocation and the number of social support resources that they perceived as being available to them. This was particularly the case with regard to family support and, within families, with regard to instrumental rather than financial or emotional support. This would be expected since instrumental support typically requires proximity whereas this is less true of financial and emotional support. As noted, one might also expect these implications to differ somewhat depending on the type of relocation involved and, in fact, this was the case. Although the results revealed that poverty-reduction, ecological, and disaster-related relocation all were associated with reduced support perceived as being available from others when compared to non-relocated older adults, the strongest negative associations were evident in relation to relocation carried out for purposes of poverty-reduction. This likely attests to the particular vulnerability of rural elderly adults within this subpopulation and suggests that this vulnerability includes limited access to emotional, instrumental, as well as financial support resources.

To what extent are these findings consistent with the emergence of a modified intergenerational contract as suggested by researchers such as [Luo and Zhan \(2012\)](#)? Findings indicating somewhat weaker negative associations

between relocation and the availability of financial supports (and to a lesser degree, emotional support as well) than instrumental support, might be considered supportive of this view. Whereas instrumental support typically requires proximity, this is less true of financial and emotional support. Thus, as implied, the relocation of older parents in rural areas may undermine access to day-to-day instrumental support but be less problematic when it comes to financial or other support resources. However, the impact of older adults' relocation on financial and emotional support, albeit weaker, was nevertheless also significant and negative in direction. This would argue against assumptions that increases in financial resources (through remittances, etc.) might somehow be offsetting or compensating for reductions in instrumental support, as suggested by the modified intergenerational contract argument ([Luo & Zhan, 2012](#)).

Evidence that negative associations between relocation and social support were somewhat stronger in relation to familial than nonfamilial supports suggests that older adult relocation may be more problematic for the former. This would also appear to counter claims that the relocation policies that are currently in place in China manage to keep families intact by moving them as a unit and consequently, that relocation should have less impact on familial than nonfamilial support. In contrast, such findings would appear more consistent with claims that older adult relocation jeopardizes the family's ability to serve as a resource to its older members, particularly in rural settings where older adults are the most likely to be dependent on their children for financial and other forms of support ([Chen & Silverstein, 2000](#)).

Nevertheless, our findings also point to the significance of nonfamilial sources of support. To the extent that nonfamilial resources were unimportant, we should not have observed an association between relocation and access to them. However, this was not the case, with relocation having a particularly strong negative association with perceived instrumental supports. A post hoc comparison of the number of familial versus nonfamilial sources of emotional, instrumental, and financial supports revealed an average of 1.33 (financial) to 2.14 (instrumental) sources of non-familial support compared to 4.71 (financial) to 4.98 (emotional) sources of familial support.

Several limitations should be noted when interpreting our results. The most significant is the fact that we relied on retrospective cross-sectional data and, therefore, could not directly assess the impact of relocation on changes in the availability of persons to provide support. Nor could we account for the implications of changes in income, living arrangements, or other factors that might influence the impact of relocation on the availability of support. In future, research is needed that focuses on pre- and post-relocation changes in social support and related factors among those who have relocated and compares these changes to those evident during the same period among those who have not.

In addition, the joint moves of older parents and their adult children were not explicitly addressed. This is in contrast to previous studies which have generally ignored older parents' relocation. Yet, as noted, it may be that older parents' access to social support resources is influenced by the joint migration/relocation patterns of their adult children and themselves. In addition, our analyses addressed the number of sources of support perceived to be available rather than the quality or strength of the ties involved or the extent of support actually received. Yet, it is possible that parents, for example, may perceive (receive) more or better quality support from a single child than parents who perceive (receive) support from multiple sources. In addition, the number of sources of support available is likely related to family and/or overall network size. Finally, the generalizability of our findings to those living in other rural regions of China, as well as those subject to similar circumstances (e.g., development-induced relocation) in other countries, is unclear.

These and other limitations call for further research to be conducted. However, despite these research needs, our findings suggest that it is important to go beyond studies focusing on the implications of relocation for economic outcomes and to also consider their implications for access to social resources. Overall, our findings would seem to call into question assumptions that families (and other potential support resources as well) necessarily can or will adapt to relocation and other policies designed to facilitate economic growth. Instead, there is a need to acknowledge that financial support of older family members is unlikely to be sufficient and instead, China will need to come to terms with how to ensure support for instrumental needs that are part and parcel of an aging society.

FUNDING

The ASHA study was supported by a number of institutions, including the National Social Science Foundation of China (14BSH103), Shaanxi Academy of Social Sciences Foundation (13G045), the "985" Project of Xian Jiaotong University, the Fundamental Research Funds for the Central Universities Project (SK2014007), and the Gordon and Betty Moore Foundation (3453).

ACKNOWLEDGMENTS

Z. Wu and M. J. Penning planned the study and co-wrote the paper. Z. Wu performed all statistical analyses. W. Zeng and S. Li helped plan the study, collect the data, and revise the manuscript. N. L. Chappell provided feedback and helped to revise the paper. We thank the reviewers and journal editors for their constructive comments on earlier versions of the paper. Previous versions of this paper were presented at the Health Systems in Asia: Equity, Governance, and Social Impact Conference, sponsored by Social Science and Medicine, Singapore, December 13, 2013 and the International Sociological Association World Congress of Sociology, Yokohama, Japan, July 17, 2014.

CORRESPONDENCE

Correspondence should be addressed to Zheng Wu, PhD, Department of Sociology, University of Victoria, Victoria, British Columbia V8W 3P5, Canada. E-mail: zhengwu@uvic.ca.

REFERENCES

- Amemiya, T. (1985). *Advanced econometrics*. Cambridge, MA: Harvard University Press.
- Ankang Statistics Bureau. (2014). Ankang Statistics. Retrieved from <http://tjj.ankang.gov.cn>.
- Bartolome, L.J., Wet, C., de Mander, H., & Nagraj, V.K. (2000). Displacement, resettlement, rehabilitation, reparation and development. WCD Thematic Review I.3, prepared as input into the World Commission on Dams, Cape Town. Retrieved August 12, 2014, from <http://siteresources.worldbank.org/INTINVRES/Resources/DisplaceResettleRehabilitationReparationDevFinal13main.pdf>.
- Cai, F., Giles, J., O'Keefe, P., & Wang, D. (2012). The elderly and old age support in rural China: Challenges and prospects. The International Bank for Reconstruction and Development/The World Bank. Retrieved August 12, 2014, from <https://openknowledge.worldbank.org/bitstream/handle/10986/2249/675220PUB0EPI006782B09780821386859.pdf?sequence=1>.
- Cernea, M. M. (1997). The risks and reconstruction model for resettling displaced populations. *World Development*, 25, 1569–1587. doi:10.1016/S0305-750X(97)00054-5
- Cernea, M. M. (2006). Development-induced and conflict-induced IDPs: bridging the research divide. *Forced Migration Review, Special Issue* (December): 25–27. <http://www.fmreview.org/FMRpdfs/BrookingsSpecial/15.pdf>
- Cernea, M. M. (2007). IRR: An operational risks reduction model for population resettlement. *Hydro Nepal: Journal of Water, Energy and Environment*, 1, 35–39. doi:10.3126/hn.v1i0.883
- Chen, S. (2006). A study of poverty risks based on involuntary migration of Chinese village dwellers. *Chinese Sociology and Anthropology*, 38, 19–39. doi:10.1177/0164027500221003
- Chen, A., & Shi, G. (2006). A social integration study of involuntary migration. *Chinese Sociology and Anthropology*, 38, 5–18.
- Chen, X., & Silverstein, M. (2000). Intergenerational social support and the psychological well-being of older parents in China. *Research on Aging*, 22, 43–65. doi:10.1177/0164027500221003
- Cobb, S. (1976). Social support as a moderator of life stress. *Psychosomatic Medicine*, 38, 300–314. doi:10.1097/00006842-197609000-00003
- Cohen, S., Gottlieb, B., & Underwood, L. (2000). Social relationships and health. In S. Cohen, L. Underwood, & B. Gottlieb (Eds.), *Social support measurement and intervention* (pp. 3–28). New York, NY: Oxford University Press. doi:10.1037/0003-066X.59.8.676
- Cong, Z., & Silverstein, M. (2011). Intergenerational exchange between parents and migrant and nonmigrant sons in rural China. *Journal of Marriage and Family*, 73, 93–104. doi:10.1111/j.1741-3737.2010.00791.x
- Gottlieb, B. H., & Bergen, A. E. (2010). Social support concepts and measures. *Journal of Psychosomatic Research*, 69, 511–520. doi:10.1016/j.jpsychores.2009.10.001
- Government of Ankang (2010). *Ten-year relocation and settlement plan in Ankang*. Ankang, China: The Government of Ankang Region.
- Government of Shaanxi Province (2010). *Ten-year relocation and settlement plan in Southern Shaanxi*. Xi'an, China: The Government of Shaanxi Province.
- Gransow, B. (2007). Social transformation in China and the development of social assessment. *International Review of Sociology*, 17, 539–558. doi:10.1080/03906700701574521
- Greene, W. H. (2012). *Econometric analysis. Seventh Edition*. Upper Saddle River, NJ: Prentice-Hall. doi:10.1080/10543406.2012.701589
- Guo, M., Chi, I., & Silverstein, M. (2009). Intergenerational support of Chinese rural elders with migrant children: Do sons' or daughters' migrations make a difference? *Journal of Gerontological Social Work*, 52, 534–554. doi:10.1080/01634370902983245
- Guo, M., Chi, I., & Silverstein, M. (2013). Sources of older parents' ambivalent feelings toward their adult children: The case of rural China. *Journals of Gerontology, Series B: Psychological Sciences and Social Sciences*, 68, 420–430. doi:10.1093/geronb/bgt022

- Hwang, S.-S., Cao, Y., & Xi, J. (2010). Project-induced migration and depression: A panel analysis. *Social Science and Medicine*, *70*, 1765–1772. doi:10.1016/j.socscimed.2010.02.005
- Hwang, S.-S., Xi, J., Cao, Y., Feng, X., & Qiao, X. (2007). Anticipation of migration and psychological stress and the Three Gorges Dam project, China. *Social Science and Medicine*, *65*, 1012–1024. doi:10.1016/j.socscimed.2007.05.003
- Ikels, C. (2006). Economic reform and intergenerational relationships in China. *Oxford Development Studies*, *34*, 387–400. doi:10.1080/13600810601045619
- Jim, C.Y., Yang, F.Y., & Wang, L. (2010). Social-ecological impacts of concurrent reservoir inundation and reforestation in the Three Gorges Region of China. *Annals of the Association of American Geographers*, *100*, 243–268. doi:10.1080/00045600903550295
- Kedia, S. (2009). Health consequences of dam construction and involuntary resettlement. In A. Oliver-Smith (Ed.), *Development and dispossession: The crisis of forced displacement and resettlement* (pp. 97–118). Santa Fe, NM: School for Advanced Research Press.
- Luo, G. (2012a). China's family support system: Impact of rural–urban female labor migration. In S. Chen & J. L. Powell (Eds.), *Aging in China: Implications to social policy of a changing economic state, International Perspectives on Aging* (Vol. 2, pp. 99–126). New York, NY: Springer. doi:10.1007/978-1-4419-8351-0_7
- Luo, G. (2012b). Social policy, family support, and rural elder care. In S. Chen & J. L. Powell (Eds.), *Aging in China: Implications to social policy of a changing economic state, International Perspectives on Aging* (Vol. 2, pp. 83–98). New York, NY: Springer. doi:10.1007/978-1-4419-8351-0_6
- Luo, B., & Zhan, H. (2012). Filial piety and functional support: Understanding intergenerational solidarity among families with migrated children in rural China. *Aging International*, *37*, 69–92. doi:10.1007/s12126-011-9132-1
- Maddala, G. S. (1983). *Limited-dependent and qualitative variables in economics*. New York, NY: Cambridge University Press.
- Rogers, S., & Wang, M. (2006). Environmental resettlement and social dis/re-articulation in Inner Mongolia, China. *Population and Environment*, *28*, 41–68. doi:10.1007/s11111-007-0033-x
- Shi, G., Su, Q., & Yuan, S. (2006). Risk and avoidance of risk among migrants of the Xiaolangdi Dam Project. *Chinese Sociology and Anthropology*, *38*, 40–70.
- Tan, Y., & Hugo, G. (2011). Chapter 91. Demographic impacts of the Three Gorges Dam. In S. D. Brunn (Ed.), *Engineering Earth: The Impacts of Megaengineering Projects*, (pp. 1583–1598). Dordrecht, Netherlands: Springer Science+Business Media B.V. doi:10.1007/978-90-481-9920-4_91
- Warner, K., Afifi, T., Kalin, W., Leckie, S., Ferris, B., Martin, S. F., & Wrathall, D. (2013). *Changing climate, moving people: Framing migration, displacement and planned relocation. Policy Brief No. 8*. Bonn, Germany: United Nations University Institute for Environment and Human Security (UNU-EHS). Retrieved August 12, 2014, from <http://www.ehs.unu.edu/file/get/11213.pdf>.
- Webber, M., & McDonald, B. (2004). Involuntary resettlement, production and income: Evidence from Xiaolangdi, PRC. *World Development*, *32*, 673–690. doi:10.1016/j.worlddev.2003.10.010
- Wilmsen, B., Webber, M., & Duan, Y. (2011a). Involuntary rural resettlement: Resources, strategies and outcomes at the Three Gorges Dam. *Journal of Environment and Development*, *20*, 1–26. doi:10.1177/1070496511426478
- Wilmsen, B., Webber, M., & Yuefang, D. (2011b). Development for whom? Rural to urban resettlement at the Three Gorges Dam, China. *Asian Studies Review*, *35*, 21–42. doi:10.1080/10357823.2011.552707
- World Commission on Dams (WCD). (2000). *Dams and development: A new framework for decision making. Report of the World Commission on Dams*. London: Earthscan Publications Ltd. Retrieved November 25, 2013, from http://www.internationalrivers.org/files/attached-files/world_commission_on_dams_final_report.pdf.
- Xi, J., Hwang, S.-S., Feng, X., Qiao, X., & Cao, Y. (2007). Perceived costs and benefits of the Three Gorges project. *Sociological Perspectives*, *50*, 323–337. doi:10.1525/sop.2007.50.2.323
- Xi, J., Hwang, S.-S., & Drentea, P. (2013). Experiencing a forced relocation at different life stages: The effect of China's Three Gorges project-induced relocation on depression. *Society and Mental Health*, *3*, 59–76. doi:10.1177/2156869312458291
- Xue, L., Wang, M. Y., & Xue, T. (2013). 'Voluntary' poverty alleviation resettlement in China. *Development and Change*, *44*, 1559–1580. doi:10.1111/dech.12054
- Zhan, H. J., Feng, X., & Luo, B. (2008). Placing elder parents in institutions in urban China: A reinterpretation of filial piety. *Research on Aging*, *30*, 543–571. doi:10.1177/0164027508319471
- Zhang, H. (2009). The new realities of aging in contemporary China: Coping with the decline in family care. In J. Sokolovsky (Ed.), *The Cultural Context of Aging: Worldwide Perspectives*, (3rd ed., pp. 196–215). Westport, CT: Greenwood.
- Zimmer, Z., & Kwong, J. (2003). Family size and support of older adults in urban and rural China: Current effects and future implications. *Demography*, *40*, 23–44. doi:10.1353/dem.2003.0010