

## Gender Differences in Contributory Behaviors Among the Oldest-Old Chinese in Shanghai

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### **Abstract**

This study examined gender differences in factors related to contributory behavior among the oldest-old aged 80+ in Shanghai, China. The study population included a randomly selected sample of 349 community dwelling respondents who lived in five districts. Male and female respondents contributed equally to others in informal networks, but in different ways. Objective health status and social ties are related to contributory behavior for both males and females. However, financial status and vision impairment had a different impact on males and females. Healthy aging and strong social networks are two key components for contributory behaviors.

**Keywords:** Oldest-old - Gender - Contributory behavior - China

### **Introduction**

Population aging is a global phenomenon resulting from increasing longevity and declining fertility. These shifting demographics are particularly relevant to China where, at present, 11% of its 1.3 billion people are age 60 and older with a predicted rise to 28% by 2040 (United Nations [2003](#)). Among China's aging population, those who are 80 years of age or older comprise a distinct group with unique challenges. These "oldest-old" are predicted to exceed 100 million by 2050 (Zeng et al. [2003](#)). This growth is generating concerns because the oldest-old are more likely to be dependent upon care and services. On the other hand, there are some among the oldest-old who remain actively engaged as contributing members of the family and the community. These contributory behaviors are linked to social integration which is also linked to aspects of positive aging. There is emerging evidence that giving social support has protective health benefits for the giver (Brown et al. [2003](#); Liang et al. [2001](#)). Quite recently, altruism had been found to be associated with lower morbidity in an ethnically diverse sample of older adults (Brown et al. [2005](#)). Contributory behaviors are not unusual for a Chinese elder. In the traditional Chinese culture there are longstanding roles and expectations that involve contributing instrumental and affective support to family and friends. Giving advice, comforting, and helping others in need are some of the ways that an elder contributes (Mjelde-Mossey et al. [2005](#)). In the pure Chinese tradition of xiao, or filial piety, elders are expected to play a meaningful role in the family and community and thus ensure harmony with nature, others, and even themselves (Chow [1999](#)). In one study, these traditional relationships and contributory behaviors were found to be associated with lower levels of depression in Chinese elders (Mjelde-Mossey et al. [2006](#)).

### **Gender and Contributory Behaviors**

Gender has an influence on the form and function of the contributory behaviors of Chinese elders. Even though these expectations and behaviors are changing as China becomes more open to external influences, for the oldest-old Chinese, these traditions are still very much a part of their daily lives (Mjelde-Mossey and Walz [2006](#)). In the traditional Chinese family, men are expected to provide financial support and women are expected to perform household tasks (Chan et al. [2002](#)). Older women are responsible for teaching younger generations and for passing on and maintaining social rituals and social networks (Chang [1999](#)). Older men traditionally occupied a position of honor within the family and their advice and wisdom were respected and adhered to (Chow [1996](#)). Even in more contemporary Chinese, gender has been found to influence their contributory behavior. In one study of aging Chinese volunteers in Hong Kong, participants were asked to give their expectations for volunteering. Women were more likely to cite meeting the needs of others and men were more likely to cite utilizing their skills (Mjelde-Mossey and Chi [2004](#)).

## **Social Integration and Contributory Behaviors**

Social integration has been defined as the extent to which one is connected to, and participates in, the social community (Brissette et al. [2000](#)). Person-to-person contact and interaction is a powerful predictor of well-being and there is a large body of gerontological research on the effects that social integration has upon physical and mental health (Lubben and Girona [2003](#)). It is this connection that makes the contributory behaviors of the oldest-old of such vital importance. In their landmark study on robust aging, Garfein and Herzog ([1995](#)) found that being in the oldest-old age group did not eliminate the possibility of being robust. It was not age, per se, that was associated with robust aging. One factor that did associate with robust aging was the amount of social contact. In the MacArthur longitudinal studies of aging, supportive social relationships were identified as one of the most important predictors of successful aging (Rowe and Kahn [1997](#)). For Chinese elders, social connections with others have been found to contribute to their sense of empowerment and inner strength (Mok [2001](#)). There have been studies on the effects of social connections upon psychological well-being in older Chinese women. In a study of cognitive impairment in the oldest-old in China, women were found to be at higher risk, with smaller social networks and fewer opportunities to participate in leisure activities partially accounting for the differential (Zhang [2006](#)). In another study of older Chinese women in Hong Kong, positive family support and friendship were associated with psychological well-being (Siu and Phillips [2002](#)).

Supportive social relationships in the form of mutual aid are an important concept related to elders' contributory behavior and those receiving a greater amount of assistance from others are more likely to contribute to others (Bian et al. [1998](#); Antonucci [1990](#)). This reciprocity was found to hold true in one study of Chinese elders in which a higher level of social support correlated positively with contributory behaviors (Chou and Chi [2002](#)).

## **Other Factors Associated with Contributory Behaviors**

Besides gender and social integration, other factors have been identified that may influence contributory behaviors. For instance, studies with older adults suggest that activities either remain at an even level or decrease with age (Herzog et al. [1989](#); Krause et al. [1992](#); Logan and Spitze [1996](#)). Previous literature also indicates that individuals with more socioeconomic resources (e.g., income and level of education) are more likely to be involved in providing support to others (Chou and Chi [2002](#); Hogan et al. [1993](#); Krause et al. [1990](#)). Health has been found to be a fairly consistent predictor of contributory behaviors in studies which report the healthier an older adult is, the more likely to provide assistance to family members (Cooney and Uhlenberg [1992](#); Soldo and Agree [1988](#)).

This study reports the contributory behaviors of a group of Chinese elders in Shanghai who are age 80 and older. The behaviors cluster around two main themes. One is doing something for others and the other is giving something to others. In addition, gender differences in the behaviors are examined.

## **Methods**

### ***Data Collection and Sample***

As a part of the collaboration with colleagues at the Gerontology Institute, University of Massachusetts Boston, the Shanghai Research Center on Aging conducted in-person household interviews with the oldest-old aged 80 and older in Shanghai in 2000 (see detailed sample description in Wu et al. [2005](#)). The study population described here included a random sample of community dwelling oldest-old who lived in five districts in Shanghai. These five districts included Xu Hui, Huang Pu, Yang Pu, Zha Bei, and Nan Shi. Two neighborhoods were selected from each of these five districts. Eligible respondents were randomly selected from housing registration forms in each neighborhood. The sample in these five districts represents a wide range of the oldest-old in terms of socioeconomic status. All 350 subjects except for one participated in the in-person household interviews. The response rate was 99.7%. Such a high response rate is quite common in officially sponsored projects in China (Ikels [1991](#); Zeng et al. [2003](#)). The survey instrument included socio-demographic variables, health status, social participation, and measures of contributory behavior.

## Measures

### *Dependent Variables*

The term *contributory behavior* captures a broad range of activities performed for other individuals. The term broadens the measures of productive aging to include activities that go beyond labor force participation and formal volunteering (Wu et al. 2005). Contributory behavior was measured by asking respondents whether they provided any of a set of contributory acts in the previous month to anyone in their informal network (in this study, “anyone” refers to family members, friends, neighbors, casual acquaintances, and group members). Contributory behavior was defined by the following ten acts: giving gifts or money, providing companionship, giving comfort, visiting the sick, cooking meals, shopping, giving advice, repairing things, caring for someone ill, and providing household work. The respondents were asked whether they provided any of these contributions to anyone. The Cronbach’s alpha for these ten acts is 0.64. Factor analyses were performed on all ten types of acts. Two factors were identified in the study. The first six types of acts were related to “doing something for others” (Cronbach’s Alpha = 0.63). The first factor “doing something for others” was the sum of these six acts which included providing household work, cooking meals, repairing things, shopping, providing companionship, and caring for someone ill. The score ranges from 0–6. The other four types of acts related to “giving something to others” and composed the second factor (Cronbach’s Alpha = 0.46), which included giving gifts or money, visiting the sick, giving comfort, giving advice. The score ranges from 0–4.

### *Independent Variables*

*Socio-demographics* This category included age, educational level, marital status, religious affiliation, and financial status. *Age* was measured as actual year of age. *Educational level* was measured as attaining high school or above as 1, 0 = otherwise. Marital status was measured as 1 = married, and 0 = otherwise. The respondents rated their *financial status* as not enough, enough, more than enough. More than enough was assigned 1, 0 = otherwise. *Having religious affiliation* was coded as 1, 0 = otherwise.

*Social Support* Social support included sources of income, family contact, contact with friends, number of siblings, and assistance from others. Pension and income from family support were two main sources of income. Having a pension was coded 1, and 0 = otherwise. The same coding strategy was applied to the variable *income from family*. *High contact with family* was coded 1 if the respondent had at least weekly face-to-face contact, telephone calls, or mail contact with family members, 0 = otherwise. The same coding algorithm was applied to the variable *high contact with friends or neighbors*. *Number of siblings* was the actual number of siblings alive at the time of the interview.

Assistance from others was measured by the assistance respondents received from their informal network. The range of acts of assistance is equivalent to that for contributory acts. The *number of assistances received* was the sum of these ten acts.

*Health Status* This category includes the following variables: self-rated health status, number of robustness indicators, the presence of some vision impairments, and the presence of hearing impairment. Self-rated health as excellent or good was coded as 1, and 0 = otherwise. A *robustness scale* was created from four indicators of robustness used by Suzman et al. (1992): lifting 10 lb, walking .25 mi, bending or kneeling, and walking up ten steps. The total robustness score was the sum of the behaviors performed, ranged from 0 to 4, and yielded a Cronbach’s alpha of 0.80. This scale measures an individual’s strength and represents functional status. The presence of some *vision impairments* was coded as 1, and 0 = otherwise. The same coding strategy was applied to the variable *hearing impairment*.

### *Data Analysis*

Separate analyses of variable distributions were performed for males and females in the sample and separate models were constructed. *T* test and chi-square tests were used for descriptive analysis to compare the differences between males and females with respect to their characteristics, and three factors: contributory behaviors, and two subset factors (“doing something for others” and “giving something to others”). Six regression models were run to examine the factors related to contributory behaviors and two subtypes of

contributory behaviors towards anyone in the informal network in both samples. Due to low percentage of cases, the variables income from family was excluded in the multivariate analysis. SAS 9.1 was used to construct variables and conduct data analysis.

## Results

### Sample Characteristics

Table 1 compares gender differences in contributory behaviors, socio-demographics, social support, health status, and social participation among the oldest-old.

**Table 1** Sample characteristics of the oldest old by gender in Shanghai, China

	Male (n = 134)	Female(n = 215)	p values
	Mean(SD)/percentage	Mean(SD)/percentage	
Contributory behaviors			
Overall contributory behaviors (ten acts)	1.99 (1.30)	1.95 (1.12)	Ns
Doing something for others (six acts)	1.43(1.58)	1.21 (1.31)	Ns
Giving something to others (four acts)	0.55(0.8)	0.74 (0.98)	Ns
Socio-demographics			
Age	83.5(2.26)	83.74 (2.19)	Ns
Married	67.16	20.93	<0.01
Education (high school or above)	55.23	25.59	<0.01
Financial status (more than enough)	47.01	35.35	0.05
Religious affiliation	17.16	39.53	<0.01
Health status			
Self-rated health as excellent/very good	54.48	62.79	Ns
Number of robustness indicators	3.43 (1.07)	2.86 (1.41)	<0.01
Hearing interference	29.85	35.35	Ns
Vision interference	35.07	41.40	Ns
Social support			
Pension	96.27	60.47	<0.01
Family support	3.73	36.28	<0.01
High contact with family	72.39	67.44	Ns
High contact with friends	47.01	55.81	Ns
No. of siblings	0.98 (1.31)	1.29 (1.53)	Ns
No. of assistance from others	3.89 (2.19)	4.37 (2.29)	Ns

p values are generated by  $X^2$  tests for categorical variables and by *t* test for continuous variables.

### Contributory Behaviors

There was no significant difference in contributory behaviors towards anyone in their informal network between male and female respondents. The number of contributory acts to anyone in their informal network was 1.99 and 1.95, respectively, for the male and female respondents. The number of acts for the factor “doing something for others” was 1.43 and 1.21 respectively. Females provided more contributory acts in relation to “giving something to others” (0.74) than their male counterparts (0.55), but the difference was not significant. However, there are some gender differences in the types of acts the respondents provided. In comparison to male respondents, a significantly higher number of females cooked meals for other people; the percentage was 43 and

25%, respectively (the data are not shown in the tables). On the other hand, a higher proportion of males fixed things or went shopping for others than their female counterparts. The percentage for fixing things was 11 vs 3%, and shopping was 31 vs 14%.

### *Socio-demographics*

Twenty-one percent of females were married, 46% lower than their male counterparts. Compared to males, females had lower levels of education. In addition, fewer of them rated their financial status as “more than enough;” the percentage was 35 and 47%, respectively. There was a wide difference with respect to religious affiliation between males and females. Almost 40% of the female respondents had a religious affiliation, but only 17% of male respondents reported a religious affiliation.

### *Health Status*

The male respondents reported a higher robustness score than their female counterparts. Among four indicators for robustness (that included lifting 10 lb, walking .25 mi, bending or kneeling, and walking up ten steps), the mean score for the males and females were 3.34 and 2.86, respectively. In addition, although females reported a higher percentage of hearing and vision impairments in their daily activities than their male respondents, the differences were not significant. Further, no significant gender difference was found in self-rated health status.

### *Social Support*

Almost all male respondents (96%) reported having pensions, 36% higher than their female counterparts. On the other hand, more females received income support from their family than their male respondents; the percentage was 36 and 4%, respectively. In terms of social contact, in comparison to the male respondents, females had less frequent contact with their family, but higher contact with their friends; however, the differences were not significant. Both males and females received similar number of assistances from others in their informal network.

## **Multiple Regression Analysis**

### *Contributory Behaviors to Anyone in the Informal Network*

Table 2 shows the results of the regression analysis on contributory behaviors to anyone in the informal network. Some common factors were found in both samples. Individuals who had a higher robustness score and received a higher number of assistances from others were more likely to provide contributory behaviors to others. The results also suggested many gender differences. Among males, having vision impairment was a negative factor related to contributory behaviors. Among females, individuals who were younger, married, and who reported having a higher contact with their friends were more likely to make contributions to other people. On the other hand, for female respondents, reporting financial status as ‘more than enough’ was a negative factor associated with contributory behaviors.

**Table 2 Multiple regression analysis on all contributions for anyone**

	Male				Female			
	B	β	SE		b	β	SE	
Age	-0.111	-0.127	0.078		-0.112	-0.140	0.051	*
Married	0.530	0.127	0.337		0.854	0.189	0.275	**
Education high school or above	0.260	0.066	0.326		-0.027	-0.006	0.267	
Financial status more than enough	-0.261	-0.066	0.340		-0.586	-0.152	0.243	*
Religious affiliation	-0.583	-0.112	0.435		-0.175	-0.046	0.237	
Self-rated health as excellent/very good	0.197	0.042	0.401		0.575	0.114	0.315	
Number of robustness indicators	0.504	0.272	0.167	**	0.412	0.316	0.086	***
Hearing interference	0.205	0.048	0.384		0.192	0.050	0.241	

	Male				Female			
	B	β	SE		b	β	SE	
Vision interference	-0.827	-0.201	0.356	*	-0.139	-0.037	0.236	
Pension	0.102	0.010	0.868		0.456	0.121	0.241	
High contact with family	0.562	0.128	0.379		0.182	0.046	0.263	
High contact with friends	0.077	0.019	0.340		0.529	0.143	0.228	*
No. of siblings	-0.041	-0.027	0.119		-0.062	-0.052	0.073	
No. of assistance from others	0.222	0.247	0.078	**	0.226	0.281	0.053	***
R-square	0.307				0.346			
Adjusted R-square	0.225				0.299			

\*Significant at 0.05 level

\*\*Significant at 0.01 level

\*\*\*Significant at 0.001 level

### Doing Something for Anyone in the Informal Network

Table 3 shows the results of the regression analysis on “doing something for anyone” in their informal network. Some common factors were found in both samples. Individuals who were married with a higher robustness score were more likely to do things for others, such as providing housework, cooking meals, fixing things, going shopping, providing companionship, and taking care of someone.

**Table 3 Multiple regression analysis on doing something for anyone**

	Male				Female			
	B	β	SE		b	β	SE	
Age	-0.104	-0.149	0.061		-0.063	-0.110	0.037	
Married	0.710	0.212	0.263	**	0.854	0.266	0.200	***
Education (high school or above)	0.196	0.062	0.255		-0.097	-0.032	0.194	
Financial status (more than enough)	-0.196	-0.062	0.266		-0.404	-0.147	0.177	*
Religious affiliation	-0.293	-0.070	0.340		0.004	0.001	0.172	
Self-rated health as excellent/very good	-0.210	-0.056	0.313		0.334	0.093	0.230	
Number of robustness indicators	0.393	0.265	0.131	**	0.267	0.287	0.063	***
Hearing interference	0.406	0.118	0.300		0.106	0.039	0.176	
Vision interference	-0.890	-0.269	0.278	**	-0.190	-0.071	0.172	
Pension	0.001	0.000	0.678		0.018	0.007	0.175	
High Contact with Family	0.317	0.090	0.296		0.436	0.156	0.191	*
High contact with friends	0.015	0.005	0.265		0.192	0.073	0.166	
No. of siblings	-0.046	-0.038	0.093		-0.029	-0.033	0.053	
No. of assistance from others	0.197	0.274	0.061	**	0.076	0.132	0.039	
R-square	0.340				0.318			
Adjusted R-square	0.260				0.269			

\*Significant at 0.05 level

\*\*Significant at 0.01 level

\*\*\*Significant at 0.001 level

Some gender differences were found in the factor on “doing something for others.” For male respondents, having vision impairment was negatively associated with “doing something for others.” On the other hand, receiving a higher number of types of assistance from others was positively related to individuals’ contributory behavior. Among females, high contact with family members was positively associated with “doing something for others,” while females who reported their financial status was “more than enough” were less likely to do things for others.

### Giving Something to Others in the Informal Network

Gender differences in factors related to “giving something to others” as a part of contributory behaviors are demonstrated in Table 4. Among male respondents, self-rated health status was the only significant factor in the model. Individuals who reported their health status as excellent or very good were more likely to “give something to others” such as giving advice, giving gifts or money, visiting the sick, or giving comfort. Among female respondents, those with pension coverage, and who reported higher contact with friends, a higher robustness score, and receiving more assistance from others, were more likely to engage in “giving something to others.”

**Table 4 Multiple regression analysis on giving something to anyone**

	Male			Female			
	B	β	SE	B	β	SE	
Age	-0.007	-0.020	0.035	-0.049	-0.116	0.029	
Married	-0.180	-0.106	0.151	-0.003	-0.001	0.158	
Education (high school or above)	0.064	0.040	0.146	0.070	0.031	0.153	
Financial status (more than enough)	-0.065	-0.041	0.153	-0.182	-0.088	0.140	
Religious affiliation	-0.290	-0.137	0.195	-0.179	-0.089	0.136	
Self-rated health as excellent/very good	0.407	0.215	0.180	*0.241	0.090	0.181	
Number of robustness indicators	0.111	0.148	0.075	0.145	0.209	0.050	**
Hearing interference	-0.201	-0.115	0.172	0.087	0.042	0.139	
Vision interference	0.062	0.037	0.160	0.051	0.025	0.136	
Pension	0.101	0.024	0.389	0.438	0.218	0.139	**
High Contact with family	0.246	0.138	0.170	-0.254	-0.121	0.151	
High contact with friends	0.062	0.039	0.152	0.337	0.171	0.131	*
No. of siblings	0.005	0.008	0.053	-0.034	-0.053	0.042	
No. of assistance from others	0.024	0.067	0.035	0.150	0.350	0.031	***
R-square	0.150			0.240			
Adjusted R-square	0.050			0.185			

\*Significant at 0.05 level

\*\*Significant at 0.01 level

\*\*\*Significant at 0.001 level

### Discussion

Our study found that oldest-old men and women contributed equally to other people in their informal network, but in different ways, particularly in the factor on “doing something for others.” Women were more likely to cook meals for other people, while men were more likely to fix things and go shopping. These different acts were very gender related. These findings are somewhat echoed in the traditional Chinese cultural norms that women are expected to engage more in domestic chores and men are expected to be involved in outside activities.

Several common factors are found between males and females regarding contributory behaviors. Robustness score and assistance from others are related to contributory behavior for both males and females. In addition, marital status is related to “doing something for anyone” for both genders. Our study illustrates that healthy aging and contributory behaviors are strongly related. Prevention of chronic diseases and a healthy lifestyle not only promote better health, but also seem to facilitate an increased level of contributory behaviors. In the meantime, stronger social ties should be encouraged to ensure increased opportunity for contributory behaviors among the oldest-old.

Some differences also emerged in the study. A decreased level of contributory behaviors is more likely to be related to vision impairment for males than it is for females. It is possible that the tasks (e.g., shopping and fixing things) men were more involved in require better vision than those acts women performed. Studies are needed to provide further explanation on this topic. For women, frequent contact with family members and friends facilitate increased opportunities for them to do things for and give things to other people. As expected, older women are “kin keepers” and are responsible for maintaining social networks. Again, having a strong social network would inevitably promote individuals’ increased levels of contributory behaviors. This is the case for women in particular.

It is interesting to find that female respondents who reported their financial status as “more than enough” were less likely “do something for others,” while having pension would facilitate female respondents to “give something to others.” It may be largely due to women’s socioeconomic characteristics. A large percentage of older women do not have pensions and reported dependence on their family members’ financial support. It may be that the sense of financial insecurity encourages them to do more things for other people to reciprocate for financial support. In contrast, female respondents with more socioeconomic resources (i.e., pension) are more likely to be involved in “giving something to others,” which is consistent with previous findings (Chou and Chi [2002](#); Hogan et al. [1993](#); Krause et al. [1990](#)). Given the fact that some factors may have different impacts on various types of contributory behavior among older respondents, it is important to examine gender differences in overall contributory behaviors as well as the subtypes.

Some limitations need to be acknowledged. The data were collected in only one city in China; given the size and heterogeneity of the country, generalization of the findings should proceed with caution. In addition, given the nature of the data as cross-sectional, we were only able to investigate the factors associated with contributory behavior of the oldest-old. Moreover, we are aware that the findings may apply only to a particular cohort. For example, an individual’s living standard, pension and health care coverage, living arrangements, religious affiliation, group membership, as well as cultural values, have been changing for the younger generations in China. Hence, contributory behavior and related factors presented in the study may be different in subsequent cohorts. Large-scale and longitudinal cohort studies are needed to provide further understanding of individuals’ levels of contributory behavior within different cohorts.

In conclusion, findings from this study suggest that healthy aging and a strong social network are two key components for contributory behaviors for both males and females. Programs and services are needed to establish or expand elders’ participation in activities outside of their families. As the population of the oldest-old increases rapidly in China, the oldest-old group itself is a great resource to help each other. Social policy and services need to make use of all available information and establish programs to create a climate conducive to improve elders’ overall well-being.

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## Appendix. Items of Contributory Behavior:

1. In the past month or so, have you helped anyone do household tasks such as cleaning or laundry?
2. In the past month or so, have you helped anyone by preparing meals or snacks, either at home, or outside your home?
3. In the past month or so, have you repaired things for anyone such as fixing things around the house or mending things?
4. In the past month or so, did you give anyone financial or medical advice?
5. In the past month or so, have you shopped for someone or helped with errands?
6. In the past month or so, did you provide companionship to anyone?
7. In the past month or so, have you given anyone gifts or any amount of money?
8. In the past month or so, have you visited someone who is ill in their own house or hospital?
9. In the past month or so, have you provided comfort to someone during bereavement or times of stress?
10. In the past month or so, have you taken care of someone who is ill?

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