

Research article

Self-mastery among Chinese Older Adults in the Greater Chicago Area

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Abstract: Background: Self-mastery is an important psychological resource to cope with stressful situations. However, we have limited understanding of self-mastery among minority aging populations. **Objective:** This study aims to examine the presence and levels of self-mastery among U.S. Chinese older adults. **Methods:** Data were drawn from the PINE study, a population-based survey of U.S. Chinese older adults in the Greater Chicago area. Guided by a community-based participatory research approach, a total of 3,159 Chinese older adults aged 60 and above were surveyed. A Chinese version of the Self-Mastery Scale was used to assess self-mastery. **Results:** Out of the 7-item Chinese Self-Mastery Scale, approximately 42.8% to 87.5% of Chinese older adults experienced some degree of self-mastery in their lives. Older adults with no formal education and the oldest-old aged 85 and over had the lowest level of self-mastery in our study. A higher mastery level was associated with being married, having fewer children, better self-reported health status, better quality of life, and positive health changes. **Conclusion:** Although self-mastery is commonly experienced among the Chinese aging population in the Greater Chicago area, specific subgroups are still vulnerable. Future longitudinal studies are needed to improve the understanding of risk factors and outcomes associated with self-mastery among Chinese older adults.

Keywords: Population studies; older adults; self-mastery; Chinese; aging

1. Introduction

Self-mastery is an important health indicator for well-being and refers to the extent that individuals believe their lives are under their own control, in contrast to being fatalistically pessimistic [1]. As a psychological resource, self-mastery highlights personal characteristics that can help one cope with stressful situations [1]. Self-mastery shares some overlapping constructs with concepts such as locus of control, self-efficacy, sense of control, and helplessness, all of which measure the degree of control in our lives [2,3]. Specifically, self-mastery is a subjective and prospective measurement which involves self as the agent of control and emphasizes the process of stress [4,5]. A higher level of self-mastery has been associated with optimism [6], better

self-regulation [7], adjustment to chronic diseases [8], perceived health [9], and better outcomes of medical treatments [10].

There is inconsistent evidence for how the aging process influences self-mastery among older adults. While some studies observed no age differences in self-mastery levels [11–13], others indicated that older adults possessed lower levels of self-mastery [14,15]. Aging exposes older adults to new and unfamiliar stressors which they lack the experience to cope with, such as grief, declines in body function, chronic diseases, diminished social networks, loneliness, and limited social support [5,16]. However, from the life-span perspective, self-mastery develops throughout the entire life course and is shaped by one's skills, personalities, and previous experiences. With the process of aging, individuals will learn to adapt to new stressors based on their life-course mastery skills [17]. However, we have very limited knowledge on the issue of self-mastery among minority aging populations.

The Chinese community is the oldest and largest Asian American subgroup in the U.S. [18]. Chinese older adults aged 65 and over account for 15.4% of the general Chinese population in the U.S. [18]. More than 80% of Chinese older adults were foreign-born and 30% of them immigrated to the U.S. after the age of 60. Cultural factors, including traditional beliefs, social norms, ethics, and values could potentially influence levels of self-mastery. We are not aware of any study that has examined these issues in Chinese populations.

Chinese traditional culture may have a contradictory influence on self-mastery among Chinese older adults. Fatalism is a cultural belief that used to be widely-accepted in Chinese society [19]. However, influenced by economic reforms in the 1970s, Chinese people started to accept the voluntarism belief that one could change through individual efforts [20]. Children's obligation in providing filial care to older parents in Chinese culture may further indicate more dependent roles for Chinese older adults [21].

2. Methods

2.1. Population and settings

The Population Study of Chinese Elderly in Chicago (PINE) is a population-based epidemiological study of U.S. Chinese older adults aged 60 and over in the greater Chicago area. Briefly, the purpose of the PINE study is to collect community-level data of U.S Chinese older adults to examine the key cultural determinants of health and well-being. The project was initiated by a synergistic community-academic collaboration among Rush Institute for Healthy Aging, Northwestern University, and many community-based social services agencies and organizations throughout the Greater Chicago area [22].

In order to ensure study relevance to the well-being of the Chinese community and to enhance community participation, the PINE study implemented culturally and linguistically appropriate community recruitment strategies strictly guided by a community-based participatory research (CBPR) approach [23]. Over twenty social services agencies, community centers, health advocacy agencies, faith-based organizations, senior apartments and social clubs served as study recruitment sites. Eligible participants were approached during routine social service and outreach efforts serving Chinese Americans families in the Chicago city and suburban areas. Written informed consents were obtained before the interviews. Multilingual interviewers conducted face-to-face home interviews in participants' preferred languages (English or Chinese) or dialects (e.g., Cantonese, Taishanese, Mandarin, Teochew). All the interviewers were trained to have a comprehensive understanding of the

Self-Mastery Scale beforehand so that they could administer and score the scale accurately and consistently. Out of 3,542 eligible participants, 3,159 agreed to participate in the study, yielding a response rate of 91.9%.

In preparation for this PINE study, our research team conducted a door-to-door census based on street blocks that were randomly selected from three major national census tracts in Chicago. In the three major national census tracts, 40% of households include one or more Chinese persons aged 60 and over. According to the available census data drawn from U.S. Census 2010 and our random block census project conducted in the Chicago's Chinese community, the PINE study is representative of the Chinese aging population in the Greater Chicago area with respect to key demographic attributes, including age, sex, income, education, number of children, and country of origin [24]. The study was approved by the Institutional Review Boards of the Rush University Medical Center.

2.2. Measurements

2.2.1. Socio-demographics

Basic demographic information was collected, including age (in years), sex, education level, annual income (in USD), marital status, number of children, and living arrangement. Immigration data relating to participants' years living in the U.S. and years residing in the current community were also collected. Education was assessed by asking participants the years of highest educational level completed, ranging from 0 to 17 years or more. Living arrangement was assessed by asking participants how many people live in their household besides themselves. Self reported annual income reported all sources, including wages, salaries, social security or retirement benefits, help from relatives, rent from property, etc. Annual income was categorized into five groups: 1) \$0–\$4,999 per year 2) \$5,000–\$9,999 per year 3) \$10,000–14,999 per year; 4) \$15,000–\$19,999 per year; and 5) \$20,000 and over.

2.2.2. Overall health status, quality of life and health changes over the last year

Overall health status was measured by “In general, how would you rate your health?” on a four point scale (1 = poor, 2 = fair, 3 = good, 4 = very good). Quality of life was assessed by asking “In general, how would you rate your quality of life?” on a four point scale ranging from (1 = poor, 2 = fair, 3 = good, 4 = very good). Health change in the last year was measured with the question: “Compared to one year ago, how would you rate your health now?” on a five point scale (1 = much worse; 2 = somewhat worse; 3 = about the same; 4 = somewhat better; and 5 = much better than one year ago).

2.2.3. Self-mastery

We used a Chinese adaptation of Pearlin's mastery scale [1] to assess the degree of control perceived by Chinese older adults in their lives. The Self-Mastery Scale consists of seven items, of which the latter two were worded in a positive direction. Participants were asked how strongly do they agree or disagree to each of the following statements: (1) I have little control over the things that happened to me; (2) There is no way I can solve some of the problems I have; (3) There is little I can do to change many of the important things in my life; (4) I often feel helpless in dealing with the problems of life; (5) Sometimes I feel that I am being pushed around in life; (6) What happens to me mostly depends on me; and (7) I can do just about anything I really set my mind to do. Respondents

indicated answers to each question on a 7-point scale ranging from 1 = strongly disagree to 7 = strongly agree. The first five items were negatively worded and reversely scored as 1 = strongly agree to 7 = strongly disagree.

We defined mastery group as participants who endorsed any level of agreement on self-mastery in their responses to all seven items. Otherwise, participants were categorized in the no mastery group—participants who reported lack of self mastery in certain aspects of their lives. Compared with the general Chinese older adults in our study who presented an overall high endorsement of self mastery, participants in no mastery group may be especially vulnerable. Thus, we examined whether there existed any socio-demographic difference between participants who present an overall mastery on all of the items and the participants who report lack of self-mastery at any item. We also created a continuous self-mastery level by summing scores from the seven items, and the aggregate score ranged from 7 to 49, with higher score indicating greater self-mastery level.

The original English version of the Self-Mastery Scale was first translated into Chinese by a bilingual research team. Due to the vast linguistic diversity of our study population, the Chinese version was then back translated by bilingual and bicultural investigators fluent in dialects including Mandarin and Cantonese to confirm the Chinese version conveyed consistent meanings with the original English version. Written scripts in both traditional and simplified Chinese characters were subsequently examined. Led by an experienced bilingual and bicultural geriatrician, the community advisory board (CAB), which, consists of community stakeholders and residents, evaluated the wording of the Chinese version to ensure the content validity. The reliability of the Self-Mastery Scale was estimated at 0.75 in a prior study [1].

2.3. Data analysis

Descriptive univariate statistics were used to summarize the socio-demographic characteristics and self-mastery among the sample population. *Chi*-squared tests were used to assess vicariate socio-demographic differences between the no self-mastery group and any self-mastery group. The psychometric properties of the aforementioned measures were examined to test their adequacy and expanded use to U.S. Chinese older adults. Internal consistency reliability was assessed by determining the coefficient alpha and inter-item correlation coefficients. Means and standard deviations were used to describe the level of self-mastery. The ANOVA *F*-tests and the protected Fisher's Least Significant Difference (LSD) tests were used to examine whether self-mastery level differed significantly by age, gender, income, and education. Pearson Correlation coefficients were used to examine the correlations between self-mastery and socio-demographic and health variables. Statistical analyses were conducted using SAS, Version 9.2 (SAS Institute Inc., Cary, NC).

3. Results

3.1. Scale reliability

In our cohort, the alpha coefficient of reliability for the Chinese Self-Mastery scale was 0.80 (Table 1). The inter-item correlations among the seven items ranged from 0.24 to 0.59, demonstrating that the constructs were not too closely correlated to indicate uni-dimensionality. Item 2 (There is no way I can solve some of problems I have) had a stronger correlation with the other items, and the alpha will decline to 0.75 if this item is removed. All correlations were significant at the 0.001 level. Items 2 (There is really no way I can solve some of the problems I have), 3 (There is little I can do to change many of the important things in my life), and 4 (I only feel hopeless in dealing with problems of life) showed the some of the highest inter-item correlation coefficients, ranging from 0.47 to 0.59.

Table 1. Self-Mastery Scale Item-total Correlations and Correlation Coefficients.

	Alpha if item removed	1	2	3	4	5	6	7
I have little control over the things that happened to me	0.78	1.0						
There is really no way I can solve some of problems I have	0.75	0.46***	1.0					
There is little I can do to change many of the important things in my life	0.77	0.39***	0.59***	1.0				
I often feel helpless in dealing with the problems of life	0.76	0.38***	0.57***	0.47***	1.0			
Sometimes I feel that I am being pushed around in life	0.79	0.26***	0.40***	0.32***	0.42***	1.0		
What happens to me in the future mostly depends on me	0.79	0.24***	0.30***	0.26***	0.30***	0.26***	1.0	
I can do just about anything I really set my mind to do	0.78	0.25***	0.36***	0.28***	0.37***	0.30***	0.47***	1.0

* $P < 0.05$, ** $P < 0.01$, *** $P < 0.001$.

3.2. Sample characteristics

Of the 3,159 participants enrolled in the study, 58.9% were women, 71.3% were married, and 85.1% had an annual income below \$10,000. The mean age of our participants was 72.8 (SD = 8.3). The average years of education completed was 8.7 (SD = 5.1) years.

Approximately one third of the participants ($N = 1,007$) reported any level of agreement on self-mastery in their responses to all seven items of Self-Mastery Scale (Table 2).

Table 2. Characteristics of PINE Study Participants by Presence of Self-Mastery.

	Self-Mastery ($N = 1,007$)	No Self-Mastery ($N = 2,100$)	χ^2	d.f.	P value
Age, N (%)					
60–64	214 (21.3)	463 (22.1)			
65–69	214 (21.3)	424 (20.2)			
70–74	193 (19.2)	410 (19.5)			
75–79	191 (19.0)	354 (16.9)			
80–84	126 (12.5)	255 (12.1)			
85 and over	69 (6.9)	194 (9.2)	7.0	5	0.22
Sex					
Male	465 (46.2)	815 (38.8)			
Female	542 (53.8)	1,285 (61.2)	15.2	1	< 0.001
Education (years), N (%)					
0	39 (3.9)	144 (6.9)			
1–6	366 (36.4)	799 (38.1)			
7–12	361 (35.9)	737 (35.2)			
13–16	204 (20.3)	364 (17.4)			
17+	37 (3.7)	50 (2.4)	18.1	4	0.00
Income (USD), N (%)					
\$0–\$4,999	329 (32.9)	702 (33.7)			
\$5,000–\$9,999	503 (50.4)	1,088 (52.2)			
\$10,000–\$14,999	112 (11.2)	196 (9.4)			
\$15,000–\$ 19,999	27 (2.7)	41 (2.0)			
\$20,000 and more	28 (2.8)	59 (2.8)	4.4	4	0.35
Marital Status, N (%)					

Married	748 (75.0)	1,459 (69.9)			
Separated	14 (1.4)	42 (2.0)			
Divorced	26 (2.6)	47 (2.3)			
Widowed	209 (21.0)	540 (25.9)	10.9	3	0.01
Number of Children, <i>N</i> (%)					
0	32 (3.2)	96 (4.6)			
1	107 (10.6)	232 (11.1)			
2–3	596 (59.2)	1,124 (53.6)			
4 and more	271 (26.9)	645 (30.8)	10.6	3	0.01
Living Arrangement, <i>N</i> (%)					
0	195 (19.4)	467 (22.2)			
1	454 (45.1)	839 (40.0)			
2–3	151 (15.0)	325 (15.5)			
4 or more	206 (20.5)	469 (22.3)	8.2	3	0.04
Years in the U.S., <i>N</i> (%)					
0–10	272 (27.1)	560 (26.8)			
11–20	297 (29.6)	655 (31.3)			
21–30	239 (23.8)	512 (24.5)			
31 and more	195 (19.4)	366 (17.5)	2.2	3	0.53
Years in the Community, <i>N</i> (%)					
0–10	563 (56.0)	1,220 (58.2)			
11–20	220 (21.9)	509 (24.3)			
21–30	140 (13.9)	241 (11.5)			
31 and more	82 (8.2)	125 (6.0)	10.4	3	0.02
Country of Origin, <i>N</i> (%)					
Mainland China	939 (93.3)	1,946 (92.7)			
Others	68 (6.8)	154 (7.3)	0.35	1	0.56
Overall Health Status, <i>N</i> (%)					
Very good	70 (7.0)	69 (3.3)			
Good	471 (46.8)	612 (29.1)			

Fair	380 (37.7)	927 (44.1)			
Poor	86 (8.5)	492 (23.4)	168.9	3	< 0.001
Quality of Life, <i>N</i> (%)					
Very good	103 (10.2)	112 (5.3)			
Good	538 (53.4)	823 (39.2)			
Fair	350 (34.8)	1,085 (51.7)			
Poor	16 (1.6)	79 (3.8)	107.7	1	< 0.001
Health Changes Over the Last Year, <i>N</i> (%)					
Improved	90 (8.9)	184 (8.8)			
Same	587 (58.3)	927 (44.2)			
Worsened	330 (32.8)	988 (47.1)	60.7	2	< 0.001

Those who reported overall self-mastery on all seven items tended to be younger than 75 (61.8%), have completed at least 6 years of education (59.9%), have an annual income of more than \$5,000 (67.1%), be married (75.0%), have at least two children (86.1%), have self-perceived good or very good health status (53.8%), have self-perceived good or very good quality of life (63.6%), and have an improved or same health status as last year (67.2%). Significant differences were observed between participants who reported any self-mastery and no self-mastery with regards to gender ($\chi^2 = 15.2, P < 0.001$), overall health status ($\chi^2 = 168.9, P < 0.001$), quality of life ($\chi^2 = 107.7, P < 0.001$), and health changes over last year ($\chi^2 = 60.7, P < 0.001$).

3.3. Prevalence of self-mastery

We examined the prevalence of self mastery by presenting how much respondents agreed or disagreed with seven described opinions on degrees of control in their lives (Table 3).

Table 3. Presence of Self-Mastery.

Items of Self Mastery Scale	Strongly disagree(%)	Disagree (%)	Somewhat disagree (%)	Neutral(%)	Somewhat Agree (%)	Agree (%)	Strongly Agree (%)
I have little control over the things that happened to me	180 (5.8)	870 (28.1)	275 (8.9)	424 (13.7)	485 (15.6)	599 (19.3)	267 (8.6)
There is really no way I can solve some of problems I have	329 (10.6)	1,265 (40.7)	357 (11.5)	305 (9.8)	366 (11.8)	364 (11.7)	124 (4.0)

There is little I can do to change many of the important things in my life	207 (6.7)	904 (29.0)	352 (11.3)	395 (12.7)	496 (15.9)	584 (18.8)	176 (5.7)
I often feel helpless in dealing with the problems of life	628 (20.1)	1,328 (42.5)	368 (11.8)	191 (6.1)	320 (10.3)	199 (6.4)	88 (2.8)
Sometimes I feel that I am being pushed around in life	1,142 (36.6)	1,376 (44.1)	212 (6.8)	116 (3.7)	167 (5.4)	91 (2.9)	19 (0.6)
What happens to me in the future mostly depends on me	49 (1.6)	224 (7.2)	183 (5.9)	362 (11.7)	509 (16.4)	1,257 (40.4)	524 (16.9)
I can do just about anything I really set my mind to do	34 (1.1)	235 (7.6)	205 (6.6)	375 (12.1)	627 (20.2)	1,213 (39.0)	419 (13.5)

“Sometimes I feel that I am being pushed around in life” was the most commonly disapproved statement (87.5%). With respect to other loss of control situations: 74.4% disagreed with feeling helpless in dealing with the problems of life; 62.8% disagreed with feeling no way to solve some of problems in their lives; 47.0% disagreed that there is nothing they can do to change important thing in their lives; and 42.8% disagreed that they have no control over the things that happened to them. Regarding the two items worded in a positive direction, 73.7% of participants somewhat agreed, agreed, or strongly agreed that what happened to them in the future depends on themselves. 72.7% of participants somewhat agreed, agreed, or strongly agreed that they can do just about anything they set up their mind to do.

3.4. Self-mastery level

Self-mastery level differed by age $F(5, 3058) = 7.61, P < 0.001$, and gender $F(1, 3062) = 21.5, P < 0.01$ (Table 4). Groups aged 80 and older showed significant lower levels of self-mastery while self-mastery levels remained steady across the other younger age groups ($P < 0.05$). The mean aggregate self-mastery scores were around 35 for those younger than 80, dropping to 33.6 among participants aged 80 to 84, and 32.2 among participants 85 and over. Men tended to perceive a higher level of self-mastery ($P < 0.001$). The mean aggregate self-mastery score was 35.3 (SD = 7.5) among men in comparison with 34.0 (SD = 7.7) among women.

In terms of education, self-mastery levels differed significantly across the five education groups, $F(4, 3054) = 22.5, P < 0.001$ (Table 4). Participants with a higher educational level tended to perceive a higher level of self-mastery. Mean aggregate scores of the scale were 31.3 (SD = 8.5) among participants with no education, 33.7 (SD = 7.6) among participants with 1–6 years of completed education,

35.0 (SD = 7.3) among participants with 7–12 years of education, 36.1 (SD = 7.6) among participants with 13–16 years of education and 37.7 (SD = 6.2) among participants with 17 or more years of education. Participants with more than 13 years of education showed significantly higher level of self-mastery compared with other groups of participants with lower education level ($P < 0.05$).

With regards to income, self-mastery level differed significantly across the five income groups, $F(4, 3039) = 6.6$, $P < 0.001$ (Table 4). Self mastery level was higher among participants in the higher annual income groups. The mean of the aggregate score of self-mastery was 34.0 (SD = 8.0) among the participants with an annual income lower than \$4,999 compared with 37.7 (SD = 5.7) among the participants with an annual income higher than \$20,000. Specifically, groups with annual income lower than \$4,999 showed a significantly lower level of self-mastery compared with groups with annual income higher than \$10,000 ($P < 0.05$).

Table 4a. Self Mastery by Age and Sex.

Age	60–64 (<i>N</i> = 673)		65–69 (<i>N</i> = 626)		70–74 (<i>N</i> = 598)		75–79 (<i>N</i> = 536)		80–84 (<i>N</i> = 377)		85+ (<i>N</i> = 254)		<i>F</i>	<i>P</i>
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD		
	34.9	7.2	35.2	7.4	34.9	7.4	34.7	8.0	33.6	7.9	32.2	8.3		
Sex	Men (<i>N</i> = 1,263)						Women (<i>N</i> = 1,801)						<i>F</i>	<i>P</i>
	Mean			SD			Mean			SD				
	35.3			7.5			34.0			7.7				

With respect to Fisher's LSD *post hoc* analyses, the mean of self-mastery in 80–84 group was significantly different from the means in other age groups, $P < 0.05$; the mean of self-mastery in 85+ group was significantly different from the means in all the other age groups, $P < 0.05$.

Table 4b. Self-Mastery by Education and Income.

Education	0 year (<i>N</i> = 177)		1–6 years (<i>N</i> = 1,146)		7–12 years (<i>N</i> = 1,084)		13–16 years (<i>N</i> = 565)		17 and more (<i>N</i> = 87)		<i>F</i>	<i>P</i>
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD		
	31.3	8.5	33.7	7.6	35.0	7.3	36.1	7.6	37.7	6.2		
Income	\$0–\$4,999 (<i>N</i> = 1,020)		\$5,000–\$9,999 (<i>N</i> = 1,565)		\$10,000–\$14,999 (<i>N</i> = 306)		\$15,000–\$19,999 (<i>N</i> = 67)		\$20,000 above (<i>N</i> = 86)		<i>F</i>	<i>P</i>
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD		
	34.0	8.0	34.5	7.6	35.5	7.0	35.9	7.4	37.7	5.7		

With respect to Fisher's LSD *post hoc* analyses, except no difference in self-mastery means between group with 13–16 years of education and group with 17+ years of education, the self-mastery means were different within each pair of educational groups, $P < 0.05$. With respect to Fisher's LSD *post hoc* analyses, the means of self mastery were significantly different within the following pairs of income groups: \$20,000+ group and \$10,000–\$14,000 group; \$20,000+ group and \$5,000–\$9,999 group; \$20,000+ and \$0–\$4,999 group; \$15,000–\$19,999 group and \$0–\$4,999 group; \$10,000–\$14,999 group and \$5,000–\$9,999 group; \$10,000–\$14,999 group and \$0–\$4,999 group, $P < 0.05$.

3.5. Correlations

Self-mastery was significantly correlated with marital status ($r = 0.09$, $P < 0.001$), number of children ($r = -0.06$, $P < 0.01$), overall health status ($r = 0.33$, $P < 0.001$), quality of life ($r = 0.35$, $P < 0.001$), and health changes ($r = 0.17$, $P < 0.001$) (Table 5). In aggregate, being married, having fewer children, better self-reported health status, better quality of life, positive health changes over the past year were associated with a higher self mastery level). Living arrangement, years in the U.S, years in the community, and country of origin were not significantly correlated to self-mastery.

Table 5. Correlations between Self-Mastery and Socio-Demographic Variables

	Marital status	Living arrangement	Number of children	Yrs in U.S.	Yrs in com	Country of origin	Overall Health Status	Quality of life	Health change	Self mastery
Marital Status	1.0									
Living Arrangement	0.24***	1.0								
Number of Children	-0.13***	-0.07***	1.0							
Yrs in U.S.	-0.2***	-0.31***	0.15***	1.0						
Yrs in com	-0.13***	-0.18***	0.10 ***	0.66***	1.0					
Country of Origin	0.05 **	0.05**	0.04*	-0.2***	-0.15***	1.0				
Overall Health Status	-0.05**	0.00	0.00	0.01	-0.05*	0.03	1.0			
Quality of Life	0.03	0.01	-0.04*	0.00	0.02	0.04*	0.32***	1.0		
Health Change	-0.07***	-0.01	0.02	0.04*	-0.03	0.00	0.35***	0.15***	1.0	
Self Mastery	0.09***	0.02	-0.06**	-0.01	-0.01	-0.02	0.33***	0.35***	0.17***	1.0

* $P < 0.05$, ** $P < 0.01$, *** $P < 0.001$

4. Discussion

To our knowledge, this is the first population-based study assessing self-mastery among U.S. Chinese older adults. More than one third of Chinese older adults in our study indicated any level of agreement of self-mastery in their responses to all seven items from the Self-Mastery Scale. Older adults with zero years of education and the oldest-old aged 85+ were two subgroups with relatively lower levels of the self-mastery. A higher self-mastery level was associated with being married, fewer children, better self-reported health status and quality of life, and positive health changes.

Stronger self-mastery beliefs were reported for specific scenarios. For instance, 87.5% of our participants disagreed with being pushed around in life. Moreover, 73.7% believed that what happen to them in the future depends on them. However, more than half of the participants also agreed that they have little control over things in life (57.2%) and that there is little they can do to change important things in life (53%). These contradictory responses among these items reflect the traditional Chinese cultural belief “尽人事，听天命” (one should try their best to do everything possible and leave the rest determined by fate). On one hand, Chinese older adults believe in an individual's efforts to make positive changes in life rather than resign themselves to destiny. On the other hand, it is believed that one should objectively evaluate situations and acknowledge limitations in controlling environmental factors. The high percentage of participants (72.2%) who believe they can do just about anything they set their minds to do implies that Chinese older adults realistically adjust their goals to match their levels of capacity.

This study's mean aggregate Self-Mastery Scale score among U.S. Chinese older adults ranged from 31 to 37.7 on a scale of 7 to 49. However, to our knowledge, no studies on self-mastery levels of older adults used the same seven-item Self-Mastery Scale. Therefore, no statistical comparison can be drawn with other studies. However, one prior study found a moderate level of mastery among older Canadians aged 65 and over based on the National Population Health Survey [25]. Another study in the Netherlands targeting older adults aged 55 and above showed that 44.2% of participants had a relatively high mastery level [26]. With prior studies utilizing different constructs to assess sense of control in later life, there is a lack of consistent measurement to enable the comparisons between different studies and populations. Moreover, ethnic minorities, including Chinese aging populations, are under-represented in studies on self-mastery. Further efforts should be invested to develop a standardized measurement of sense of control and to investigate racial and ethnical differences in self-mastery.

In our study, two Chinese aging subgroups were shown to have lower levels of self-mastery. In contrast with a previous study indicating similar levels of self-mastery between the old-old and young-old [25], we identified that the oldest-old aged 85 and over, followed by older adults with zero years of education, and had the lowest levels of self-mastery. These two subgroups may experience more difficulties in dealing with stressful situations in their lives and require more supports. Our study also identified that older adults with an annual income higher than \$20,000 or educational level of more than 17 years had the highest self-mastery levels among the Chinese aging population.

Additionally, we found that older adults aged 80 and over experienced a significant lower level of self-mastery, whereas self-master levels were quite steady across the younger age groups. The interpretation of our finding provides evidence contributing to current debating of how aging influences self-mastery. Our research may suggest that mastery accumulated over the life course interacts with increased exposure to unfamiliar stressors during the aging process [17, 27]. Personal mastery skills obtained from previous life experiences help older adults cope with unfamiliar stressors until stressors reach a point that tremendously exceeds their coping capacity. The rigid drop

of self-mastery levels among the oldest old may be a result of frailty, disability, loss of a loved one, and other traumatizing life events that accompany aging [28,29]. Future research should investigate factors associated with the relatively low level of self-mastery of participants beyond the age of 80.

Furthermore, our study reveals self-mastery differences by gender, education, and income. Consistent with previous research, women reported lower self-mastery levels than men [13,15]. Chinese traditional women's roles of dependency and obedience might have contributed to these gender differences [30]. The lower self-mastery level among Chinese older women may indicate a higher risk of depression and elder abuse among this population [31]. Better educated or higher income older adults presented a higher self-mastery level. Previous research suggests that self-mastery is influenced by both stressors and past experiences, especially those experiences reflecting self achievement and capacity to deal with intractable hardships [32]. Higher education and higher income reduce the likelihood of experiencing financial strain and language barriers when living in America. More importantly, the process of obtaining a higher level of education or income represents the self-mastery belief that one can successfully attain desired social status by overcoming difficulties. The life course perspective puts forth that self-mastery in the past shapes personalities—increasing optimism for instance—which bridges the past and present, contributing to current self-mastery [32,33].

Lastly, our study suggests that better health status, better quality of life, and positive health changes over the past year are associated with higher levels of self-mastery. However, the interaction among health, self-mastery, and stress processes complicates the interpretation of the identified correlations. Persistent health declines, such as those from chronic conditions, lead to declines in mastery [8,15,34]. Conversely, self-mastery reversely influences health by regulating healthy behaviors [35,36], mediating the effects of economic hardship on health [37], and mediating the negative effects of persistent health declines on well-being [38]. In summary, self-mastery is believed to provide resilience and adaptation under stressful medical events and functional decline [39] and lead to better well-being [1].

Our study has limitations that warrant mention. First, although this study was representative of Chinese older adults in the greater Chicago area, its findings may not be generalizable to other Chinese populations in the U.S. or in Asia. Secondly, the cross-sectional design and correlation analysis cannot establish causality between socio-demographic variables and self-mastery measures. Future longitudinal studies are needed to examine the interactions between self-mastery and other socio-demographic variables so as to enable in-depth interpretations on the correlates found in this study. Thirdly, the Chinese Self-Mastery Scale measures a global set of sense of control, which can be limited in providing an in-depth understanding of the developmental changes of self-mastery, especially regarding how immigration and acculturation experiences influence self-mastery among the immigrant elderly. Future studies applying mixed research strategies and longitudinal designs are needed to better understand the presence of self-mastery among Chinese older adults.

Nonetheless, this study has wide implications for researchers, health professionals, social workers, and policy makers. First, self-mastery is an important psychological resource for mitigating negative impact of psychosocial distress. Our study directs future investigations on protective factors for healthy aging while most of the previous studies only focused on risk factors [40–43]. A life course perspective to detect the development of self-mastery is essential for understanding how self-mastery changes in aging. Special efforts to developing instruments for detecting cultural and immigration stressors among U.S. Chinese elders. Future prevention initiatives and interventions need to be carried out in a culturally-sensitive approach that engages community stakeholders [44,45].

In addition, it is important to raise community awareness about self-mastery's protective effects on stressful situations. Less-educated, lower-income, and adults over 85 years of age are vulnerable subgroups with the lowest mastery levels. It is notable that self-mastery can be learned and is associated with previous experiences. Community organizations and social services providers, health professionals should develop education and training programs to empower older adults by improving their self-mastery [46]. On the policy level, this research highlights the importance of the equal access to educational resources and development opportunities, which could have life-long effects on the self-mastery and well-being of individuals.

5. Conclusion

In summary, this study indicates that although self mastery is commonly experienced among the Chinese aging population in the greater Chicago area, several subgroups are still vulnerable to low levels of self-mastery, especially the feeling that there is little they can do to change important things in life. Our findings call for further investigations of the development of self-mastery while taking into consideration aging processes and immigration experiences. Future longitudinal studies are needed to improve our understanding of risk factors and outcomes associated with self-mastery in global Chinese aging population.

Acknowledgement

This work was supported by National Institute on Aging grant (R01 AG042318, R01 MD006173, R01 AG11101 & RC4 AG039085), Paul B. Beeson Award in Aging (K23 AG030944), The Starr Foundation, American Federation for Aging Research, John A. Hartford Foundation and The Atlantic Philanthropies.

We are grateful to Community Advisory Board members for their continued effort in this project. Particular thanks are extended to Bernie Wong, Vivian Xu, Yicklun Mo with Chinese American Service League (CASL), Dr. David Lee with Illinois College of Optometry, David Wu with Pui Tak Center, Dr. Hong Liu with Midwest Asian Health Association, Dr. Margaret Dolan with John H. Stroger Jr. Hospital, Mary Jane Welch with Rush University Medical Center, Florence Lei with CASL Pine Tree Council, Julia Wong with CASL Senior Housing, Dr. Jing Zhang with Asian Human Services, Marta Pereya with Coalition.

Conflict of Interest

All authors declare no conflicts of interest in this paper.

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