



# The Effect of Education Level on Mobile Phone Use and Successful Aging among the Elderly — Take Xiamen City as an Example

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**Abstract:** This study attempts to understand the behavior of the elderly using new media and the degree of successful aging. Because of the systematic way of thinking, looking at the patterns of successful aging in an older society can help elderly people control the influence of their personal lives. The research used the method of questionnaire survey. 205 valid questionnaires were collected for statistical analysis. The conclusions are as follows: (1) There is a correlation between the use of mobile phones and the degree of successful aging among the elderly; (2) The effect of the duration and frequency of mobile phone use on successful social and spiritual aging varies among elderly people with different educational levels.

**Keywords:** the elderly, mobile phone, successful aging, education level

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## 1. Introduction

Since the General Assembly of the United Nations highlighted the need to consider the elderly people in social development in The 2002 Madrid International Plan of Action on Aging,[1] how to increase the longevity of the elderly and advance their well-being has become a common prospect for the mankind. It's been projected by China Research Center on Aging in 2018 that by 2030, people over 60 years old will account for 25% of China's total population, and by 2050, around 35%.[2] As one of the special economic zones in China, Xiamen is home to 780,144 people by the end of 2018, of which 128,322 people are over 60 years old. This research took samples from Kaiyuan subdistrict in Siming District, Xiamen to examine the elderly's behavior. Of all the ten subdistricts in Siming District, Kaiyuan subdistrict is home to 27,164 people, of which 17,873 people belong to the elderly group, making Kaiyuan subdistrict accommodating a higher percentage of elderly people than any other subdistricts with an above-average number of residents in Siming District. Based on these considerations, this essay will examine the following research questions: 1.1 Is there a correlation between the use of mobile phones and the degree of successful aging among the elderly? 1.2 Does the effect of the duration and frequency of mobile phone use on different aspects of successful aging vary among elderly people with different education levels?

## 2. Literature review

### 2.1 Mobile phone use of the elderly

To the researcher's knowledge, existing empirical research on elderly people's use of mobile phone analyzed the relationship between their mobile phone use and the aging process, emphasizing the impacts caused by differences in their personal information. Previous research on information and communication technology (ICT) use and leisure has neglected older age groups, while research on elderly people and their use of the internet failed to explore the subjective significance of activities as work or leisure.[3] In the survey conducted by Morrell, Mayhorn and Bennett on the world wide web use patterns of middle-aged (ages 40-59), young-old (ages 60-74), and old-old adults (ages 75-92), results showed that middle-aged and older internet users are similar in their use patterns, and the two primary reasons for not using the web are lack of access to a computer and lack of knowledge about the web.[4] Another research showed when elderly people check their emails or browse news on the computer, their biggest concern lies in computer breakdown.[5] Thus, the multifunctional, convenient mobile phone meets both informational and emotional needs of elderly people.

### 2.2 Degree of successful aging

Aging-related topics such as successful aging, healthy aging and active aging have been widely debated in documents released by worldwide organizations which formulated health policies. Among them, successful aging, viewed as the most popular topic, drew researchers' attention to the failing status of elderly people's physical functions. Their life can be observed from a variety of aspects. In Li Xinmin and Gao Minhui's research on the relationship between elderly people's participation of leisure activities and successful aging, successful aging was conceptualized as the process during which

elderly people’s physical health positively impacts their psychological well-being, which increases the possibility for them to adapt to their changed roles in social life, leading to a balanced awareness of self-identity.[6] In this sense, as a subjective consciousness, successful aging can be segmented into the physical, psychological, social and spiritual aspects, all of which indicate the extents of aging that elderly people have reached in the respective aspects. Therefore, this research used degrees of successful aging as indicators of how mobile phone use can affect elderly people in their aging process.

### 2.3 Systems theory

According to the systems theory proposed by Joseph O’Connor and Ian McDermott, a common model can be set up for different systems as their underlying structure via different mathematic methods, and can be applied in different systems. In the context of gerontology studies, the systems theory offers the principle that elderly people’s behavior depends on their positions in the structure of social system.[7] Therefore, in the system of an aging society, it is the social structure that enabled elderly people’s use of mobile phone to affect their degrees of successful aging. From the perspective of communication studies, McLuhan believed that media is the extension of man.[8] In this sense, in the digital times, as it’s ubiquitous for Chinese elderly people to possess a mobile phone and use it frequently, mobile phone can be regarded as part of elderly people’s aging system. As we integrate mobile phone into the aging system, is the use of mobile phone related to the goal of successful aging?

## 3. Methods

Data in this research was collected consecutively for a month. The data collection took place right after the Lunar Chinese New Year in 2019, when respondents had adequate spare time for the survey. This approach requires interviewers to explain the purpose and scope of the survey to respondents, helping them to better understand the meanings of questions in the survey scale. In addition, more responses can be collected than in other types of surveys.[9] However, the quality of the collected data could be impacted if the interviewers were biased or they fabricated questionnaires, which makes it important to ensure that interviewers recruited to this survey are characterized by sincerity, diligence, patience and perseverance.

## 4. Materials analysis

### 4.1 Data and sample

Data employed in this research were collected from elderly people of 60 years old and above living in Xiamen, Fujian Province. A total of 205 valid questionnaires were collected between 11 February and 11 March 2019 (see Table 1).

**Table 1. Distribution of demographic variables of respondents**

Variable	Items	Sum	Valid Percent
Gender	Male	86	42.0%
	Female	119	58.0%
Age	60 ~ 65	74	36.1%
	66 ~ 70	61	29.8%
	71 and above	70	34.1%
Education level	Elementary school and below	63	30.7%
	Junior high school	43	21.0%
	Senior high school	54	26.3%
	College (junior college included) and above	45	22.0%
Marital status	Married	150	73.2%
	Single	55	26.8%
Economic dependence	Economically independent	104	50.7%
	Economically dependent on others	101	49.3%

Note: N=205

### 4.2 Different education levels, elderly people’s mobile phone use and degrees of successful aging

To explore the effects that education levels and mobile phone use duration and frequency may have on successful aging degrees, this research examined the hypothesis of whether an interaction effect exists between duration and education levels of respondents, and between frequency and education levels. A linear regression was conducted on the data and results were

listed in Table 2.

**Table 2. Interaction effects between education levels and duration or frequency of mobile phone use on successful aging**

Variable/Beta value	Social aging		Spiritual aging	
Gender	.051	.000	.000	.000
Age	.194*	.030		-.023
Education level	.067	.615***		.621***
Marital status	.179**	.132*		.126
Economic dependence	.143*	.250***		.257***
Duration	.151	.473**		/
Education level * Duration	.495*	-.549*		/
Frequency	/	/		.334*
Education level * Frequency	/	/		-.484*
Constant	2.849	1.713		1.691
F	21.177***	20.290***		8.850***
R <sup>2</sup>	.429	.419		.239
Adjusted R <sup>2</sup>	.409	.398		.212

Note: the level of significance is marked by “\*”, as in \*p<.05, \*\*p<.01, \*\*\*p<.001 N=205

## 5. Results

According to results of the research, around half of respondents are heavy users spending over 5 hours on mobile phone. In terms of the periods of phone use, results showed the majority of respondents use their phone in the general working time and leisure time. Most respondents chose the periods between 6:01 and 10:00, and no respondents use their mobile phone after 22:01. This indicated the periods that elderly people use mobile phones the most frequently are determined by their routine of early bedtime and early wake-up time, and they are accustomed to using mobile phone in the post-dinner period. Based on results of the periods of elderly people’s mobile phone use and statistical results from the linear regression analysis, conclusions are drawn as below.

(1) A correlation exists between elderly people’s mobile phone use and their successful aging degrees.

(2) The effect of duration of mobile phone use on successful social aging varies among elderly people with different education levels; and the effect of both duration and frequency of mobile phone use on successful spiritual aging varies among elderly people with different educational levels.

As Rice and Katz found in their research, low education level is one of the characteristics of mobile phone non-users, as elderly people with higher education levels can become proficient users of mobile phone through learning in a short period of time.[10] In a word, the mobile phone can have a differentiated effect on the successful aging system of elderly people, depending on the specific conditions of the user. And the mobile phone has a differentiated influence on different aspects of successful aging.

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