

Aging and New Technologies: Challenges and Perspectives

Cláudia Stamato, Manuela Quaresma, and Cláudia Renata Mont'Alvão

PUC-Rio, Rua Marquês de São Vicente, 225, Gávea -
Rio de Janeiro, RJ - Brazil - 22451-900
stamatoclaudia@gmail.com,
{mquaresma, cmontalvao}@puc-rio.br

Abstract. This article discusses the results of an online questionnaire distributed to 393 participants residing in Brazil. The tool is an important part of the doctoral thesis of Design whose goal is to understand how older people socialize these days, when communication occurs much more virtually than in person. The world advocates that the elderly find it difficult to use technology and have little interest in using it. The relationship with technology can set about their inclusion or exclusion.

Keywords: Socialization, Elderly, Questionnaire, Active Aging, Social Relationship.

1 Introduction

This paper discusses the results from an online questionnaire distributed to 393 respondents living in Brazil. The tool is an important part of the doctoral thesis in progress at PUC-Rio on the relationship of the use of technological devices and socialization of seniors. A comparison between the responses given by seniors (60 or older) and by other age groups will be presented. With the results from this tool, the specific objectives of the thesis are intended to be reached. The objectives are the following:

- To clarify the concept of socialization of seniors;
- To list the technological communication devices that interfere with the human relationships of seniors;
- To understand the social behavior of seniors while using technological communication devices;

An online questionnaire was chosen, because in 2012, at the beginning of the research, it was found, through some theoretical references, and through 12 interviews among seniors, that this segment of the population has been using information and communication technologies. All respondents had a mobile phone or a smartphone and many of them wanted to buy more modern equipment. Among the three age groups (60 to 69, 70 to 79 and 80 to 89), all seniors from the first age group and half of the last age group had an email account [1]. Despite the interest in technology,

seniors have shown signs of difficulties with using such technology, either because of the fast technological developments or because of the natural aging losses or little experience with technological devices and built-in digital and virtual media. The interviews made clear that the older the user, the lower the number of features they know, recognize and use. [1]. [2] advocate that it takes longer for the seniors to execute a digital task than for other age groups. This study aims at learning how senior people use information and communication and how they socialize nowadays.

2 Theoretical References

2.1 Aging and Socializing

The world population is growing old! That is not new in Europe and in the USA, where it has been noticed a change in the population status in the last 150 years. In Brazil, that process occurred in 50 years only [3]. From 2000 to 2050, the 60-year old world population will grow from 605 million to 2 billion, and 80% of that will take place in developing countries. In 2025, Brazil will occupy fifth place with its 33.4 million senior citizens. [4]

The number of people who will not be able to take care of themselves will be four times higher by 2050 [5]. The incapacity to live in an independent and self-governing way brings with itself a drop in the self-esteem and an addition to social exclusion.

[6] saw that social isolation is associated with a higher rate of mortality in the senior population and that its reduction brings higher benefits against mortality than the reduction of loneliness, even though both are critical for a good life quality and well-being. The Active Aging is a project of the WHO – World Health Organization — and its purpose is to reach individuals and population groups through the dissemination of the idea of a good life quality throughout life by means of physical, social and mental well-being. The maintenance of self-governance and independence is related to the relationships inter-generations, and how the generations can and should cooperate with one another [5]. [7], [8], [9], and [10] state that a good quality aging depends on internal conditions such as environment and social relationships. [11] advocate that a key indicator to qualify the health condition of an old person is critical for a healthy and happy aging. “Social stimulation is based on: communication, affective exchange, coexistence, and the feeling of belonging to the groups they associate with” [9].

[12] in a research study about the aging process of 1,700 participants, tried to find out what people do to self-provide a “pleasant aging experience”. As a general result, the study found out: “finding a life project, seeking the meaning of life, conquering freedom, craving happiness, cultivating friendship, living intensely the present, learning to say no, respecting their own will, allaying fears, accepting their age and giving lots of laughter.” All these actions depend on an individual and internal process. However, most of these actions are only taken through social interactions.

“They (men and women) emphasize that, at a later age, they won the freedom to be “themselves.” (...) By prioritizing the pursuit of meaning for their lives, they refused “symbolic death” or “social death,” creating new positive representations of old age.” [12]

2.2 Post-modern Socialization

The Post-Modernity of our world deeply modifies the social life: its dynamism, level of interference in the traditional habits and customs and the impact of the global reach [13]. [14] states that because the rhythm, extent and intensity in which the changes occur are so high, the end result is innovation prevailing over tradition. “The social process involves mutual and continuous interaction between an individual and the society”, as in a two-way road [14]. A reflexivity ratio is established, building and modifying the individual and groups in a consecutive and simultaneous way. Technology is an important connection between the two ends, and its constant and rapid evolution directly contributes to the speed and depth of the modifications on the two sides [13]. Communication technology by means of digital tools, to control the functions and applications for the greatest variety of purposes, is constantly and uninterruptedly amplified in different devices such as smartphones, tablets, notebooks, netbooks, desktops, etc. Wireless connections, Bluetooth, Wi-Fi and Wi-Max networks interconnect everything in a friendly way offering both portability and mobility [15]. Connectivity associated or not with portability has created a new way of interaction between people, that is, a new way to socialize.

[16] says that, despite the harms brought by the Internet such as “generating fragile and fleeting relationships, alienating the youth from family interactions and studies, generating separation of couples etc.,” considerable benefits are also enjoyed by the online population. Among the positive aspects, he mentions the variety of information sources, interaction with one or many users simultaneously from all parts of the world, fast retrieval of information, variety of media, etc. All this changed the way users think, act and interact. The world has become more agile, integrated, relativized, multitasking. This may easily explain the postmodern characteristic of immediacy [16]. There is an actual need to stay connected, especially for those in the labor market. Considering that the Internet was introduced in Brazil in the nineties, we can imagine that those about to retire at that time, are now older than 80 and have had little or no contact with the virtual world, except those who have worked in the IT business. In contrast, all other subsequent generations have been users of computers and the Internet.

3 The Problem

It is believed that the quality of aging is associated with the quality of individual socialization. If socializing ways have been changing according to the technological evolution of communication and information devices, what happens to that portion of seniors who theoretically find it harder to use this technology? Therefore, the subject matter of this doctoral thesis is the relationship between seniors and technological communication devices and the consequences on social relations. From the Problem, the following assumption was made: “The seniors’ difficulty with interacting with technological devices of information and communication may interfere with the potential of their socialization process.”

4 Questionnaire Results

The online questionnaire aims to start checking this assumption. In the future, the questionnaire will be answered by focal groups that include seniors, in order to prove this assumption. Before the questionnaire was sent out, ten tests were conducted with two users of each of the following age groups: 31 to 40, 41 to 50, 51 to 60, 61 to 70 and 71 to 80. Although the instrument accepted participants aged 18 and older, it was considered that testing the older ones was more important, based on the assumption that young people have an easier and more sophisticated interaction with the digital media than other age groups, except for IT experts.

Altogether, there were 393 respondents, but only 274 answered the questionnaire in full. Of these, 57 are distributed over the three groups of seniors aged 60 to 69, 70 to 79 and 80 and older. The overall analysis indicates a sample where 75.06% of respondents have enough experience using the Internet, i.e. at least eleven years to over fifteen years of experience, and a small portion of 5.34% have used the Internet for less than one year.

The seniors presented different sorts of experience. Yet, most of them have much experience. Among those aged 60 to 69 ($n=42$), 42.86% have used the Internet for more than fifteen years, 19.05% have use it for less than one year and 14.29% have used it for eleven to fourteen years. Among those aged 70 to 79 ($n=11$), 36.36% have used the Internet for over fifteen years, 27.27% have used the Internet for less than one year; 18.18% have used it for seven to ten years, and among those aged 80 and older ($n=4$), 50% have used it for less than one year, 25% have used for eleven to fourteen years and 25% have used it for more than fifteen years.

Preference for broadband connection was evident among the highest percentages, including private Wi-Fi, 3G and cable Internet, 76.08%, 57.25% and 53.69%, respectively. Almost 8% use the Edge mobile Internet, which consists in a basic mobile phone, i.e., one that offers a basic internet capability as its side function. It is believed that this audience seeks to keep up with technological developments as far as communication and information via the Internet is concerned. That is not different among the seniors. Among those aged 60 to 69 ($n=42$), 64.39% use private Wi-Fi broadband connection, 45.24% use 3G technology, 21.43% use public Wi-Fi and 11.9% already use the 4G technology, little widespread in Brazil. Among those aged 70 to 79 ($n=11$), 54.55% use private Wi-Fi, 45.45% use 3G technology, 36.36% use cable Internet and 18.8% use 4G technology. Among those aged 80 and older, there is a homogeneous distribution across dial-up Internet and private/public Wi-Fi and 3G technology. This is reaffirmed by the rates of daily use of mobile phones and smartphones, considering the whole sample: 35% against almost 69%, respectively. Nearly 55% of respondents do not use a mobile without internet, compared to only 24% who do not use smartphones. In this mobile context, a wide daily use of landline phones (wired or wireless) is perceived, reaching 58.52%. Among the seniors ($n=57$), 47.37% use mobile phones (without internet) and 43.86% use smartphones on a daily basis. But none of respondents aged 80 or older uses smartphones at any frequency. For the whole sample, digital TVs outnumber the daily use of conventional TVs by 54% against 38.6%. Almost 10% more of the respondents do not use conventional TV

compared to those who do not use digital TV. Among the seniors (n=57), 63.16% use digital TV and 52.63% use conventional TV on a daily basis. A curious fact is that the seniors' rejection to the conventional TV is a bit higher than the digital TV. This means that even this group is open to a technological improvement. The only difference was the ever-beloved radio devices! One of the oldest information and communication technologies still resists in the conventional mode. The daily use of 32% is greater than two-fold compared to the digital version and non-use rates are higher compared to digital radio: 43.26% against 33%. Photo camera and recording features offered by mobile phones and smartphones are preferred to specific devices. The only variation that can be observed is the frequency of use, which is much lower in the older people. The figures show little difference in the daily use of desktop and notebook computers (64.63% and 60.05%, respectively). Among the seniors (n=57), 52.63% use desktop computers, and 49.12% use notebooks on a daily basis. Despite the percentage of acceptance of notebooks and desktops, the percentage of non-use of desktops is higher than that of notebooks (26.32% against 19.3%). This is a second sign of seniors' interest in technology. While only 29% of general respondents (n=393) and 21.05% of senior respondents (n=57) use tablets, e-readers and the like on a daily basis, the general public, including the majority of senior respondents, gradually migrates to the most modern, lighter and, especially, mobile technologies. But the surprise is in 9.67% of all participants and 5.6% of older ones who reported not using landlines.

When asked about the preference for the means of communication, the respondents were clear in their preference for speed and record. Daily use of e-mails by 81.68% compared to almost 76% using voice calls via mobile phones, including smartphones, followed by the social media (62.85%) and instant messaging (60%). Text messaging is daily used by 45.55%. The result among the seniors (n=57) is similar: in first place, voice calls from landline phones and mobile ones on a daily basis by 73.68% and 70.18% respectively, followed by the use of e-mails by 64.91%, and 40.35% using the social media. 31.58% and 29.82% are the rates of instant messaging and text messaging, respectively. A little more than 50% of senior respondents do not use voice calls via the Internet, or and voice and video calls. Some seniors are starting to use these two latter means of communication at a rate of 5.26% and 7.02%, respectively. The figures, both considering the whole sample and the senior sample, are consistent with the ones shown in the preference of using broadband connection, Wi-Fi and 3G. Yet, voice calls are the most frequent communication means of all, over the entire sample. Over 20% of respondents do not use it yet, or have stopped using instant messaging. But the most valuable information comes from the absence of use of voice calls from landlines, which is almost 14%. This figure clearly demonstrates the migration of technologies.

When asked about the social groups in which they most communicate, the sample pointed out Love Partners, Family, Friends, Professional Groups and Acquaintances. Seniors answered in the following order: Family, Love Partners, Friends, Professional

Groups and Acquaintances. This small difference in the order of the first two groups may be explained by the interest in the grandchildren mentioned by some senior respondents. They help their kids raise their grandchildren, such as picking them up at school or looking after them when their parents are working. More than 50% has a love partner; the other half does not, and does not easily find a new love partner, especially senior women, which are the majority of seniors in Brazil. Men live four to seven years less than women do.

Among the activities carried out on a daily basis 80%, Work Activities are followed by Study Activities or Acquisition of New Pieces of Knowledge, with 57.39%. Taking Care of Family Members ranked third, whose daily rate reached 38.14%. Among the seniors (n=57), the order of daily activities mostly carried out is Work Activities (66.67%), Study Activities or Acquisition of New Pieces of Knowledge (49.12%), 45.61% for both Physical and Mental Healthcare Activities and Maintenance Activities (house and car) and 42.11% for Taking Care of Family Members. In the group of people aged 80 or older, the largest number of activities is done on a weekly basis. With the rate of 50% on a daily basis, this especial senior group elected Physical and Mental Healthcare Activities, Outside-Home Personal Care Activities, Maintenance Activities (house and car) and Leisure Activities.

Regarding the whole sample, Leisure Activities had their highest percentage on a weekly basis. This may be related to weekends. 36.43% reported performing Leisure Activities on a daily basis, thus ranking fourth. This came largely from the senior population in the sample (31.58%). The distribution of groups of social relations through activities with higher percentages of daily frequency is shown in the tables below. The first one shows the sample as a whole and the second one shows only the responses from the seniors. The first evidence is in the types of activities mostly performed by both samples. It suggests that the seniors, despite retirement, do not change completely their daily habits. The second evidence is the social groups with which the general respondents and senior participants performed the two first activities. They are exactly the same. It is at least interesting that such a sample of seniors, which includes 66.67% retirees, has Work Activities as the most frequent activity out of eleven different ones. It can be partly explained by 28.07% that are still working, despite retirement. 10.53% are self-employed and 3.51% are businesspersons.

These figures show that the population of seniors remains active in the market. It means they are still alive for finding meaning in life, which is important for them. For one to remain alive, one needs to have a social life. Being alive means being socially engaged in activities that benefit their emotional and physical well-being, establishing healthy relationships of exchange, to be always learning and teaching, feeling useful and being part of one or more groups of people. Being alive socially presupposes respecting and knowing oneself deeply in order to be able to interact with social groups with distinct characteristics without embarrassing oneself or the group. Having a work activity or any other kind of responsibility is key to emotional balance.

Table 1. Activity performed from higher to lower frequency (n= 393) X Social Groups with which he/she conducts activities

Activity performed from higher to lower frequency Sample of 393 respondents	Social Group 1	Social Group 2	Social Group 3
Work	42.71% Professional Group	23.61% Alone	14.37% Friends
Study or Acquisition of New Pieces of Knowledge	35.41% Alone	24.7% Professional Group	16.23% Friends
Taking Care of Family Members	50.12% Family	20.25% Alone	16.3% Love Partners
Leisure	27.91% Friends	25.75% Family	19.38% Love Partners

Table 2. Activity performed from higher to lower frequency (n= 57 Elderly) X Social Groups with which he/she conducts activities

Activity performed from higher to lower frequency Sample of 57 seniors	Social Group 1	Social Group 2	Social Group 3
Work	33.77% Professional Group	31.17% Alone	14.29% Friends
Study or Acquisition of New Pieces of Knowledge	35.79% Alone	27.37% Professional Group	14.74% Friends
Physical and Mental Healthcare Activities	44.16% Professional	36.36% Alone	9.09% Family
Maintenance Activities	47.76% Alone	20.09% Professional and Family	5.97% Lover Partner
Taking Care of Family Members	57.53% Family	15.07% Alone	13.7% Professional

The activities pointed out by the sample as those that most contribute to the acquisition of new social relations have much in common with the most frequent activities. There were no differences between the three activities that most contribute to the acquisition of new social relations and those that most contribute to the maintenance of existing social relations. These three activities are among the four activities mostly performed on a daily basis, as shown in the following table.

Table 3. Comparison between the activities most frequently carried out; those that most contribute to the acquisition of new social relations; and those that most contribute to the maintenance of existing social relations. (n=393)

Ranking in the Sample	Contribution to the acquisition of New Social Relations	Contribution to the Maintenance of Existing Social Relations	Activities most frequently performed
1 st	Work Activities	Leisure Activities	Work Activities
2 nd	Study Activities or Acquisition of New Pieces of Knowledge	Study Activities or Acquisition of New Pieces of Knowledge	Study Activities or Acquisition of New Pieces of Knowledge
3 rd	Leisure Activities	Work Activities	Taking Care of Family Members
4 th	Physical and Sports Activities	Taking Care of Family Members	Leisure Activities

Those activities are critical for maintaining an active social life, whether to acquire new relationships or to maintain the existing ones.

Table 4. Comparison between the activities most frequently carried out; those that most contribute to the acquisition of new social relations; and those that most contribute to the maintenance of existing social relations. (n=57 Seniors)

Seniors' Ranking	Contribution to the acquisition of New Social Relations	Contribution to the Maintenance of Existing Social Relations	Activities most frequently performed
1 st	Study Activities or Acquisition of New Pieces of Knowledge	Study Activities or Acquisition of New Pieces of Knowledge	Work Activities
2 nd	Leisure Activities	Religious Activities	Study or Acquisition of New Pieces of Knowledge
3 rd	Taking Care of Family Members	And Leisure Activities	Physical and Mental Healthcare Activities
4 th	Physical and Sports Activities	Physical and Sports Activities and Physical and Mental Healthcare Activities	Maintenance Activities

Among the seniors, there were variations among their own preferences, as shown in the table above. The elderly sample points to two directions: Activities that promote socialization and those that are more frequent, regardless of social relations and interactions. They do not seem to think of socialization as any kind of interaction between at least two persons including work colleagues. The most frequent activities are working, but they are not listed among the most contributory for social relations.

It is a contradictory reasoning. Besides that, at least four out of five activities were mentioned as contributory for new social relations or for the maintenance the existing ones. Religious Activities were the difference; they were mentioned only for the maintenance of existing social relations. Religious Activities were most mentioned by the seniors aged 80 or older in both categories of contribution to socialization. The sample of this questionnaire presents the following variation of age:

Table 5. Table of sample's age distribution

Question	What is your gender?		All no.(%)
	Female no.(%)	Male no.(%)	
What is your age group?	100%	100%	100%
younger than 18	0%	0.88%	0.36%
18 to 29	20.5%	23.01%	21.53%
30 to 39	24.22%	17.7%	21.53%
40 to 49	14.91%	14.16%	14.6%
50 to 59	19.25%	23.89%	21.17%
60 to 69	16.77%	13.27%	15.33%
70 to 79	3.73%	4.42%	4.01%
older than 80	0.62%	2.65%	1.46%

The low number of senior respondents is in itself a result. Considering that e-mails are one of the most frequent forms of communication among the seniors, the low rate of replies may be due to some degree of distrust about sending out personal data over the Internet. During the tests, some participants were afraid of saying they lived alone, reporting their earnings and their daily activities. They even suggested that we invited their friends to participate in the survey, thus avoiding the embarrassment of informing their friends' e-mails without permission. In the overall sample (n=274), 46.72% are married and 20.07% are committed singles. Among the seniors (n=57) 54.39% are married and 12.28% are divorced with commitment. The sample as a whole presupposes high rates of cohabitation with love partners. 57.66% have at least one child and of these, 26.64% have two children against 42.34% with no children. Among the seniors, only 7.02% do not have children. According to the general sample, Taking Care of Family Members ranked sixth place out of eleven activities in the concept of contribution to the acquisition of new social relations and fourth place in the contribution to the maintenance of existing social relations. Surprisingly, though, among the seniors, this opinion is not supported. That is, to younger people, having children and taking care of them is conducive to their own socialization. The sample (n=274) presented a large majority with at least an undergraduate degree and only 12.06% with high school diplomas and 1.82% with elementary school diplomas. The rates of use of technological devices and the Internet in particular were high. One

can consider the possibility of connecting education level to the use of the Internet and more advanced technological devices. Regarding the employment status of the sample, the vast majority still works and, among the seniors ($n=57$), although 66.67% of them are retired, 28.07% are still working. 54.39% is the percentage of all seniors of this sample who still work (retired or not). Among retirees, 63.16% had applied for retirement ten years before or more; 18.42% had applied three to six years before and 7.89% had retired less than one year before.

5 Conclusions

The sample of the online questionnaire exposed some lines of thought, sometimes in their own words, sometimes through open-ended questions. The great majority works. Working is critical for surviving and for social relations. The objective questions showed the Professional Group working only in their main occupation. However, the open-ended questions made this group emerge as a social relation that is also present for friendly interactions. Among the senior respondents, Professional groups were the most mentioned ones. This may be explained by the interaction through Physical and Sports Activities, Physical and Mental Healthcare Activities, Taking Care of Family Members and Work Activities. The older the user the bigger the need for special healthcare to perform daily activities. Back to the complete sample, when asked directly about how they socialize, "Friends" and "Family" were the two most mentioned words. Acquaintances, children and Love Partners also appeared after the Professional groups. Some interesting points are the statements about socialization with no comments on specific social interaction with parents, grandparents or uncles and aunts, and their detachment from the family group.

A recurrent data is socialization considered something strictly related to leisure. While "Friends" was the most mentioned word to explain how they socialize, the sample also brought back Work Activities with 13.86% followed by a full range of Leisure Activities, such as "Bars" (12.40%), "Parties" (11.67%), "Cinema" (9.12%) and "Traveling" (8.39%). Study Activities or Acquiring New Pieces of Knowledge through "Study/College/Courses/Classes" were in third place, with 10.21%. Physical Activities through "Sports/Hiking/Gym" ranked similar to "Traveling." All these activities require some level of planning, therefore, they should be performed with the social groups that most interest the participant. To perform all the aforementioned activities, the participants, regardless of their age, need to be informed and to communicate their own desire. That is where the technological devices and the means of communication (various media) come on the scene. The great majority of the sample wrote that they use the media to socialize virtually and to make arrangements to meet others in person. In the senior sample, it was noted that the older the participant, the lower the rate of complex technologies that they use. This difference is conspicuous in the group of seniors aged 80 or older. Besides that, most seniors try technological devices and some sorts of media communication, such as voice calls from landlines, mobiles or smartphones, e-mails from notebooks and desktops, social media such as Facebook, instant messaging from computers and text messaging from

mobile phones. They even prefer digital TV instead of the conventional one and use more digital cameras from mobile phones than the camera equipment itself.

This sample noted that elderly people in Brazil are interested in using technology to be in touch with everybody, especially family members that live far and to receive information. Some of them wrote that, without an e-mail, nobody is able to reach you. They already prefer notebooks to desktops and there are more seniors who do not use desktops or landlines anymore than seniors that do not use notebooks or tablets yet. Very few use tablets, but the results pointed to a growing use of new technologies even by the elderly. They discovered and are invading Facebook, where they can make simple contacts and feel part of something bigger and up-to-date. It was observed that the older the participant the less complex the technology level he/she uses. The group aged 80 or older does not seem to use smartphones, notebooks or tablets. They still prefer desktops, mobiles and landlines. They complained about the extremely sensitive touch-screen technology. Religious activities are a very important way to socialize. This activity ranked at the highest contributory level, both to the acquisition of new social relations and to the maintenance of existing social relations.

Besides the interest in the Internet, Brazilian seniors are still afraid and not confident about using this media. This maybe because some of them do not consider virtual relationships as good, serious and reliable as the real ones. This opinion is shared by participants of other ages, but it is not the majority. This group (all ages) says the quality of the relationships is not the same; they are not deep enough. But this kind of social relations has its space in people's lives. Social Media are great for planning social events and quickly inviting everybody and to redeem lost friendships and maintain existing relationships, but not for making new friends. On the other hand, one group said they made good and new friends using the Internet and transformed virtual relationships into real ones. Across all ages, there are complaints about the exaggerations of some users of technological devices. They say that it is very important to make moderate use of any media or technological device, because virtual life or virtual relationships cannot replace the real ones. But if you do not have an e-mail, or at least a mobile phone, you are out, nobody will be able to find you when necessary. Post-modern life requires availability to be in touch.

Some senior respondents do not agree that there is a connection between socialization and technological devices. They defend that technology provides easy and speedy communication, but they do not provide socialization, which can only happen in person; not virtually or at a distance. Despite different opinions, most of them recognized the need for these technological devices and a range media options to be part of one or more groups and foster social relationships for a healthier personal life. It was evident that using a particular technology creates bonds or circles of relationships that can only be maintained if the users remain up to date, otherwise they may be left behind. The elderly, in particular, is discovering the immense social benefits brought by the use of these technological devices. The seniors' profile has changed considerably. Today, most of them are no longer in the residential "quarters." On the contrary, they are seeking new pieces of knowledge and social and romantic relationships through activities that they develop and technologies and media that they use. Along with the other age groups, they have been trying to keep up, to the extent

possible, with the technological developments. Since the seniors are a population segment with rapid and irreversible growth, it is very important to look into their preferences of use in order to understand what encourages them to pursue better socialization options.

References

1. Stamato, Cláudia e Moraes, Anamaria de. Mobile Phone and elderly people: A noisy communication. IEA 2012 Congress/Recife. Work 41, 320–327 (2012), doi:10.3233/WOR-2012-1003-320
2. Pak, R., McLaughlin, A.: Designing Displays for Older Adults. Human Factors and Aging Series. CRC Press/ Taylor and Francis Group, New York (2011)
3. Pattison, M., Stemon, A.: Inclusive Design and Human Factors: Designing Mobile Phones for Older Users. SPECIAL ISSUE: Designing Technology to meet the needs of the Older User - Psychology Journal - The Other Side of Technology 4(3) (2002), <http://www.psychology.org> (access on: March 23, 2011) ISSN 17207525
4. WHO. Care and independence in older age. Ageing and life course (May 30, 2013), <http://www.who.int/ageing/en/> (access on June 23, 2013)
5. WHO – World Health Organization. Active ageing: a policy framework. Tradução Suzana Gontijo – Brasília: Organização Pan –Americana da saúde (2005)
6. Steptoe, A., Shankar, A., Demakakos, P., Wardle, J.: Social isolation, loneliness, and all-cause mortality in older men and women, vol. 110(15). University of California PNAS, Berkeley (2013)
7. Py, L., Pacheco, J.L., Sá, J.L.M., de e Goldman, S. N.: Tempo de Envelhecer: Percursos e dimensões psicossociais. Rio de Janeiro: NAU Editora (2004)
8. Rosenfeld, I.: Viva agora, envelheça depois. Maneiras comprovadas de desacelerar o tempo. Tradução Patrícia de Queiroz Carvalho Zimbres. São Paulo: Editora UNESP/ Editora SENAC (2002)
9. Zimmerman, G.I.: Velhice: Aspectos biopsicossociais. Porto Alegre: Artmed (2000)
10. de Sant'anna, R.M., Camara, P., Braga, C.: Mobilidade na Terceira Idade: como planejar o futuro. Textos Envelhecimento, Rio de Janeiro 6(2) (2003), http://revista.unati.uerj.br/scielo.php?script=sci_arttext&id=S151759282003000200002&lng=pt&nrm=iso (access on June 22, 2013)
11. Eliopoulos, C.: Enfermagem Gerontológica. 5ª edição. Artmed, Porto Alegre (2001)
12. Goldenber, M.: A Bela Velhice. Rio de Janeiro: Editora Record (2013)
13. Giddens, A.: Modernidade e Identidade. Rio de Janeiro, Jorge Zahar (2002)
14. Sell, C.E.: Sociologia Clássica. Itajaí: Editora UNIVALI (2002)
15. Siqueira, E.: Para compreender o mundo digital. Editora Globo: São Paulo (2008)
16. Nicolaci-Da-Costa, A.M. (org). Cabeças Digitais – O cotidiano na era da informação. Rio de Janeiro: Editora PUC-Rio (2006)