Intergenerational solidarity or intergenerational gap?
How elderly people experience ICT within their family context

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Abstract

Starting from the concept of intergenerational solidarity, this paper examines how relations of 36 elderly people with younger generations of their families influence their appropriations and uses of ICT. A multi-qualitative approach - non-participant observation in ICT classes attended by the participants, followed by focus groups and semi-structured interviews – conducted in Brazil and Portugal reveals that the family contexts influence how older people deal with ICT in distinctive ways. In both countries, the influence happens either by building up social interactions and increasing communication inside and outside the family or by contributing to social and emotional isolation, even when family generations are physically close. Even within families – where supportive ties tend to be stronger than outside - intergenerational solidarity regarding digital access and use cannot be taken for granted.

Keywords: Information and communication technology, family intergenerational solidarity, gerontechnology, Brazil, Portugal.

Introduction

In parallel with population ageing, significant changes have occurred in the context of the so-called post-modern family, characterised by its "structural fragility" (Stacey, 1990). These changes create uncertainty in social relations and affect the role of transitions during the course of life, posing new challenges to individuals, families and their social lives (Lowenstein, 2005). To counteract this reality, the paradigm of intergenerational solidarity is at the forefront of exchanges of support and has become a standard measurement of social cohesion between generations.

Considering this paradigm, this article aims to explore family intergenerational solidarity as experienced by old people in Portugal and Brazil, one in the Global North and the other in the Global South, sharing the same language. In recent decades, both have experienced demographic, economic and social changes. Both countries have increasingly higher percentages of elderly people, but they are at different stages of population ageing. Portugal has been considered an aged country since 1999 (INE, 2002)[1], while in Brazil the sharp process of ageing is more recent[2]. In both countries, the increasing rates of the elderly are associated with the continuing

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[1] INE. (2002). O Envelhecimento em Portugal: Situação Demográfica e Sócio-Económica Recente das Pessoas Idosas. https://censos.ine.pt/xportal/xmain?xpid=CENSOS&xpgid=ine_censos_estudo_det&menuBOUI=13707294&contexto=es&ES TUDOSest_boui=106370&ESTUDOSmodo=2&selTab=tab1

[2] in 2015, Brazil had 14, 3 percent aged 60 or older and 21 percent aged 14 years and younger (IBGE, 2016). In 2016, Portugal had 26,7 percent aged 60 years and older, and 14,2 percent aged 14 years or younger (PORDATA, 2017. População Residente: Total e por Grupo Etário. Fontes de Dados: INE - *Estimativas Anuais Da População Residente*).

reduction of fertility levels and more years of life expectancy: 75,4 years in Brazil (IBGE, 2016) and 80,6 years in Portugal (INE, 2016)[3].

While recent data indicate that the ownership and use of ICT has increased in all layers of Brazilian and Portuguese populations, there is a significant generational gap, especially between young people and the elderly. In Portugal, the rate of internet use is 100 percent among 15-24-years-old and 33 percent among those 65-74-years-old (INE, 2017)[4]. The difference is less pronounced regarding cell phones, respectively 97 and 64 percent (OBERCOM, 2014)[5]. In Brazil, 95 percent of those 16-24-years-old and 22 percent of the oldest people (60+) access the internet, while the figures relating to cell phones reach respectively 89 and 67 percent (CETIC, 2016)[6]. Demographic and social changes led to transformations of families, such as the interactions between generations mediated by digital technologies. In 2012, the *European Year of Active Ageing and Solidarity between Generations* increased awareness of intergenerational relations mediated by technology; furthermore, the use of ICT by the elderly was considered a new opportunity to support active and healthy ageing (European Commission, 2012)[7]. As an output, the report *ICT for seniors and intergenerational learning* (European Commission, 2012)[8] presents 21 projects that address intergenerational relations, active ageing and the use of social media.

Trigged by the interest to know to what extent family intergenerational relations may bring intergenerational solidarity regarding the use of ICT by the elderly family members, this article analyses intergenerational relations reported by 36 old people that decided to attend ICT classes in Brazil and Portugal. Despite the similarities indicated above, the research revealed distinctive technological policies and different ways of experiencing the elderly years, thus making it impossible to generate comparative results. Nevertheless, the richness of the information gathered in both countries shows an emergent area of research, gerontechnology, a multidisciplinary field combining gerontology and technology.

Intergenerational learning and relations mediated by ICT

The research question that guides this article is: how are intergenerational relationships influencing ICT use by old people that express the wish to be digitally included?

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[3] INE, 2016. Inquérito Nacional de Saúde. Instituto Nacional de Estatística. https://www.ine.pt/xurl/pub/263714091.

[4] INE, 2017. Sociedade da Informação e do Conhecimento. Inquérito à Utilização de Tecnologias da Informação e da Comunicação Pelas Famílias 2017. https://www.ine.pt/xportal/xmain?xpid=INE&xpgid=ine_destaques&DESTAQUESdest_boui=250254698&DESTAQUESmodo= 2.

[5] Obercom, 2014. *A Internet Em Portugal - Sociedade em Rede* 2014. https://obercom.pt/wp-content/uploads/2016/06/A-Internet-em-Portugal-Sociedade-em-Rede-2014.pdf

[6] CETIC, 2016. Pesquisa Sobre o Uso das Tecnologias de Informação e Comunicação nos Domicílios Brasileiros: TIC Domicílios 2016. http://cetic.br/pesquisa/domicilios/.

[7] European Commission, 2012. *Active Ageing and Solidarity between Generations: A Statistical Portrait of the European Union 2012*. https://ec.europa.eu/eurostat/documents/3217494/5740649/KS-EP-11-001-EN.PDF/1f0b25f8-3c86-4f40-9376-c737b54c5fcf.

[8] European Commission, 2012. ICT for Seniors' and Intergenerational Learning. http://eacea.ec.europa.eu/llp/results_projects/documents/publi/ict_intergenerational_learning.pdf .

Intergenerational learning through ICT

Intergenerational learning, e.g. tacit and explicit knowledge among generations, benefits society through the sharing of societal and professional resources (Tambaum & Normak, 2018). Although the majority of the studies on intergenerational learning are based on an older person as the main source of knowledge and skills by sharing their experiences about historical facts improving younger people's literacy (Tambaum & Normak, 2018; Walters, 2016; Osoian, 2014), the intergenerational learning guided by younger generations is described by Tambaum and Normak (2018) as an initial source of knowledge, a way of deepening digital literacy and as a resource when problems arise in the use of ICT. It is largely recognised that in the digital context the younger generation gains social status in the family through the expertise in information technology management, facilitating the so called "reverse socialisation" (Buckingham, 2013): in many families children help their parents or grandparents use computers and the internet. However, the idea of a unidirectional transmission of knowledge needs to be deserted in favour of these intergenerational relations.

Examining uses of ICT by elderly people and their perception of technological devices' mediation of intergenerational relations, Carleto (2013) asserts that ICT exert a positive influence on intergenerational relations of the elderly and that the field of technological resources in everyday life tends to favour the sense of self-efficacy of the participants and, consequently, improves their self-esteem. Some studies (Roberto, Fidalgo & Buckingham, 2014; Sánchez, Kaplan & Bradley, 2015) suggest that programs and initiatives should invest in strategies to reconcile the use of ICT mastered by young people with the knowledge and life experiences of the elderly. For example, the construction of digital stories would facilitate exchanges of experiences, skills development, reflection and collaboration between generations. Gaggioli and collaborators (2014) developed the following approach: elderly people shared life experiences they believed would be significant for a younger audience; the most interesting content was shared on a website produced by the younger family members (texts and multimedia objects). Context analysis before and after the intervention suggests that even two or three hours of sessions and group activities had a positive impact on the psychosocial well-being of the elderly and on their perception of quality of life (Gaggioli et al., 2014). The results also indicate that young people's attitudes changed positively in relation to the elderly after participating in these activities, suggesting that such initiatives provide opportunities for intergenerational encounters and communication. This may result in an increase in the quality of life of the elderly, as well as the social and digital inclusion, which can generate benefits in terms of personal and social capital (Petrella, Pereira & Pinto, 2012).

Although there is a belief that intergenerational relationships are beneficial to the well-being of the elderly, some studies have criticised an excessively positive view showing that the evidence base for the effectiveness of intergenerational practice is not strong enough (Hatton-Yeo, 2010). As noted, normative interpretations of intergenerational relations can easily be idealised and the same may happen with ICT, as beneficial interactions between older and younger generations may not occur. Research has also highlighted the fact that even if a younger person has ICT experience and readiness to share skills, it does not always mean that s/he has the knowledge and ability to teach an older person (Tambaum & Normak, 2018). Aiming to identify motivations that drove 135 students to volunteer helping the elderly acquire digital skills, Roberto, Fidalgo & Buckingham (2014)

identified two relevant aspects on intergenerational relations: young people do not consider the elderly as a homogeneous group; and their involvement in assisting older people depends on their closeness to them. While in the case of grandparents and people close to them, the motivation was related to greater affinity due to their role in the family and moral pressures, assisting distant elderly people was classified as having high levels of obligation and social pressure. Roberto and colleagues (2014) concluded that the simple construction of intergenerational activities, particularly in the context of ICT, may not be a promoter of the expected solidarity effect, as the construction of these activities does not guarantee a generational approach. As the authors say, "the motivational anchors from the young people are in social and/or moral pressures that lead them to consider helping; these pressures do not translate solidarity or altruism" (Roberto et al., 2014, p. 13).

With the increasing impact of online communication through social media, emotional interaction is no longer limited or restricted by time (Sinclair & Grieve, 2017; Döveling, 2017), and social media are gaining importance in the everyday lives of the elderly (Erickson, 2011). Identified advantages pointed out by them include the exchange of information, knowledge and events not only with their children and grandchildren but also with broader networks of contacts. A disadvantage identified by the elderly (but not only them) consists of the false notion of "friends", understood as something distant from friendship out of the digital environment (Nef, Ganea, Müri & Mosimann, 2013). This phenomenon can be associated with the so-called "virtual proximity" characterized by the communication mediated by technology and, in the words of Zygmunt Bauman (2003), by the fragility of human ties in contemporary societies.

Intergenerational family solidarity mediated by ICT

As pointed above, intergenerational solidarity is considered an important element of family relations, particularly regarding success in coping with challenges brought about by advanced ageing and the social integration of old age (Silverstein & Bengtson, 2009). As Bengston anticipates:

> Multigenerational family relations will be more important in the 21st century for three reasons: the demographic changes of an aging population, resulting in more years of life shared between generations; the growing importance of grandparents and other relatives in the fulfilment of the functions of the family; the strength and resilience of the solidarity between generations over time (Bengtson, 2001, p. 1).

Taking into account cultural, social and psychological dimensions, Bengtson and colleagues have conceptualized intergenerational family solidarity as a multifaceted and multidimensional construction reflected on six elements of interaction (Bengtson & Roberts, 1991; Bengtson & Schrader, 1982):

-   *Affection:* the type and degree of emotional attachment held towards family members, and the degree of reciprocity of these sentiments (warmth, closeness, understanding, trust, respect, etc.);

- *Association*: the frequency and patterns of interaction, visible in activities in which family members engage with each other, whether a face-to-face contact or through the technology;
- *Consensus*: the degree of agreement on values, attitudes, and beliefs;
- *Resources sharing*: the patterns of intergenerational helping and exchanges of resources such as financial, physical and emotional support;
- *Familism norms*: the expectations of individual obligations to the family members, which are related to broader cultural values;
- *The opportunity structure for interaction*: affected by the number, type, and geographic proximity of family members.

All these elements may influence the use of information and communication technology. Some studies have revealed that elderly people's uses of ICT for communication deepen family relationships, especially between generations (Pereira & Neves, 2011; Beacker, Sellen, Crosskey, Boscart, & Barbosa Neves, 2014; Sinclair & Grieve, 2017; Quinn, 2018). Their results reinforce the perception of digital technology as indispensable for social relations, mainly for communication with relatives. It is considered that social media may provide access to new relationships and may create new possibilities for integrating the elderly in the family, fostering interactions between generations through playful activities. As sociality is one of the most important aspects in life, especially for older people, social benefits may derive from technology and social media engagement. As Quinn (2013) points out, the phenomenon of reconnection and recognition of 'dormant ties' - those operational relations in the past that have lapsed under constraints of time, distance and circumstance – may be activated and supported in unique ways by internet communication technologies" (Quinn, 2013, p. 397).

The flipside of a positive family solidarity is given by the concepts of social and emotional isolation (Carr, 2009). Social isolation refers to a perceived lack of social ties and dissatisfaction with the number or frequency of social interactions, and results in a feeling of marginalisation (Pinquart & Sörensen, 2000). Although loneliness can include a lack of objective social relations, social isolation has been conceptualised as a subjective analysis of the discrepancy between real and desired relationships. Emotional isolation refers to the quality of relationships, representing a feeling of disconnection, lack of intimacy or loss of significant relationships (Weiss, 1973). Emotional loneliness is experienced as one of the most "profound and overwhelming feelings of 'absolute solitude'" (Weiss, 1973, p. 21). Emotional problems associated with old age are often related to the experience of stressful events that are common during that phase of life. Such emotional situations involve sadness, helplessness, loneliness and may reflect the human experience of dealing with social and personal losses that may arise, for example, from the loss of family members.

All these concepts frame our analysis on family intergenerational relations activated by ICT, whose methodology is presented in the next section.

Triangulation of methods: non-participant observation, focus groups and individual interviews

When selecting 36 participants (17 in Portugal and 19 in Brazil), individual characteristics were taken into account with the objective of bringing plurality into the discussion, as the diversity of participants introduced heterogeneity. In fact, the gerontological literature claims that elderly people are the most heterogeneous audience among all the age ranges (Dannefer, 1988; Wolfe & Snyder, 2003; Yang & Lee, 2010), as they have accumulated different life experiences over several decades.

The convenience sample of individuals who participated in this study was based on sociodemographic characteristics and different life courses. In each country, the participants had different geographical origins - people who were born and had lived in rural areas, large urban centres or small towns - and different levels of schooling. Their levels of media literacy and degrees of ICT use were also considered. The field work lasted three months in each country: in Portugal in April, May and June 2016; in Brazil in August, September and October of the same year. The methodological approach was divided into three parts: non-participant observation; focus groups; and semi-structured individual interviews.

The *non-participant observations* were performed in computer courses specifically tailored for older people, in a Portuguese medium size town, and in the capital of a Northern State, in Brazil. We chose to work with elderly from these two institutions because in both cases the courses attracted participants 55-years-old or older who decided by their own volition to attend these classes. The elderlies were invited to contribute in the study based on their sociodemographic characteristics. The number of sessions observed in the two places is very unequal - 20 in Portugal and three in Brazil. The low number of observations in Brazil was due to the scarcity and irregularity of the sessions that occurred in the institution during the period of fieldwork, despite previous agreement. Some sessions only happened due to our insistence. In this phase, information was collected on the dynamics of the students regarding learning computer skills to identify aspects that oriented their behaviours, even subconscious ones (Lakatos & Marconi, 1996). The field notes included a detailed description of the activities developed during the informatics course, and chats with teachers and students on aspects that were of interest to the research. The data from the non-participant observation served to enhance the script of focus groups and interviews, which were the next steps of data collection.

Three sessions of *focus groups* were conducted in each country with an approximate duration of 90 minutes and comprising four to eight individuals. The number of participants was large enough to allow a variety of viewpoints and opinions and not so large as to impede mediation or a discussion centred on topics of interest to the research. Each session was based on individual experiences in the use of computers, tablets, mobiles and the internet. This method helped the elderly participants explore and clarify their opinions about ICT use. They reported and commented on their experiences, thereby revealing attitudes, opinions, knowledge and beliefs that included references to their family contexts.

In the third and last part of data collection, 36 in-depth *individual interviews* were conducted. These interviews explored the context in which ICT have or have not been incorporated into their everyday lives and the reasons for it. The interviews also provided the opportunity to perceive family contexts and intergenerational relationships from their points of view. The individuals who took part in the focus groups and in the individual interviewees

were selected and invited to participate with the help of both institutions based on sociodemographic characteristics with the objective of bringing diversity to the sample.

Table 1: Data collection in Portugal and Brazil

	Portugal	**Brazil**
Non-participant observation	20 sessions	3 sessions
Focus groups	3 sessions - 17 participants	3 sessions - 19 participants
Individual interviews	17	19

The focus groups and the individual interviews were recorded and transcribed. The average duration was 60 minutes (generating 117 pages of focus groups transcriptions and 318 pages of individual interviews transcriptions). The information gathered from the six focus groups and individual interviews, as well as the notes taken during non-participant observation were analysed and interpreted. The data coded through MAXQDA software generated 5,092 codes, which were organised into the following categories: socio-demographic data; devices and practices (cell phone, computer, tablet, social networks, internet, uses of ICT); considerations (quality of life, intergenerational relations, individual perceptions of ICT, pensions, old age); and related theories and theoretical models. Considering the objectives of the article, our attention is centred, on socio-demographics data, practices, devices and intergenerational relations. The identity of the participants is not revealed, in order to protect their anonymity and privacy.

Analysis and discussion

For a better contextualization of the participants, Tables 2, 3 and 4 introduce some sociodemographic characteristics. Regarding gender, the number of female participants more than doubles that of male participants. The large majority were between 60 and 69-years-old; the Portuguese sample presents a greater balance between age ranges and includes two participants over 80-years-old. The number of married participants is equivalent to those that were unmarried/divorced or widowed. Most participants lived with other persons and one out of three lived alone; only Brazilian participants lived with two or more people. Basic schooling was predominant in both countries, while tertiary education is the less reported. Finally, although the large majority of these participants was already retired, in Brazil most participants were looking for a job.

Table 2: Sociodemographic characteristics of Portuguese and Brazilian participants

	Portugal	Brazil	Total
Women	13	13	26
Men	4	6	10
60-69 years old	8	13	21
70-79 years old	7	4	11
80 or more years old	2	0	2
Married	9	8	17
Widowed	5	3	8
Single/divorced	3	8	11
Live alone	7	5	12
Live with other person	10	9	19
Live with two or more people	0	5	5
Basic Education (complete/incomplete)	7	9	16
Secondary Education	6	6	12
Tertiary Education	4	4	8
Retired	17	12	29
Not retired	0	7	7
Working or looking for a job	0	15	15
Total number of participants	17	19	36

Table 3: Life story and family of Brazilian participants (N=19)

Name	Age	Educational level*	Birthplace		Occupation	Retired	Have children	Number of children	Live with			
			Rural area	Urban area					Alone	Children/Young (until 21 years)	Exclusively with adult	Exclusively with elderly
Ana	73	IPE		X	Rural worker	X	X	5		X		
Beatriz	64	PE	X		Civil servant		X	2	X			
Carla	69	HE	X		Rural producer	X	X	3	X			
Cristina	65	HE	X		Teacher		X	1				X
Divina	65	HS	X		Entrepreneur		X	5		X		
Daniela	63	PE		X	Rural worker	X	X	2		X		
Fabricia	61	IPE		X	Rural worker		X	5		X		
Gabriel	67	IPE		X	Police	X	X	5	X			
Vera	70	HS	X		Masseuse	X	X	3				X
Ilda	68	IPE		X	Housemaid	X	X	7		X		
Jonas	75	HE		X	Teacher	X	X	3				X
Luiza	64	HS	X		Nursing technician		X	2	X			
Marta	71	IPE	X		Entrepreneur	X	X	5			X	
Neide	64	PE		X	Housemaid		X	6		X		
Osvaldo	64	HS		X	Gardener		X	5	X			
Paula	65	HS	X		Entrepreneur	X	X	3				X
Renato	70	PE	X		Entrepreneur	X	X	3				X
Salvador	69	HS		X	Bank worker	X	X	3				X
Tomás	69	HE	X		Bank worker	X	X	3		X		
Total			10	9			19	71	5	7	1	6

*Educational level: IPE – incomplete primary education; PE - primary education; HS – High school; HE – Higher education

Table 4: Life story of Portuguese participants (N=17)

Name	Age	Educational level	Birthplace		Occupation	Retired	Have children	Number of children	Live with			
			Rural area	Urban area					Alone	Children/Young	Exclusively with adult	Exclusively with elderly
Adelaide	63	PE	X		Secretary	X	X	2				X
Berenice	74	HS	X		Civil servant	X		0				X
Camila	72	PE	X		Civil servant	X	X	1	X			
Danilo	63	HS	X		Civil servant	X	X	2			X	
Fátima	72	PE		X	Entrepreneur	X	X	2				X
Fausto	64	HE	X		Teacher	X	X	2				X
João	75	PE	X		Technician	X	X	1	X			
Lúcia	84	PE	X		Civil servant	X	X	1	X			
Lucas	81	HS	X		Civil servant	X	X	4			X	
Mafalda	62	HS	X		Teacher	X	X	1				X
Natália	73	HE	X		Teacher	X	X	3	X			
Olinda	63	HE	X		Civil servant	X	X	2				X
Patrícia	75	PE		X	Hairdresser	X		0	X			
Rita	64	HE		X	Accountant	X	X	1				X
Celia	60	HS	X		Technician	X	X	2	X			
Sara	79	HS	X		Civil servant	X		0	X			
Terezinha	64	PE	X		Entrepreneur	X	X	2			X	
Total			14	3		17	14	26	7	0	3	7

Educational level: IPE – incomplete primary education; PE - primary education; HS – High school; HE – Higher education

Regarding family composition, Brazilian participants have larger families: all have between one and seven children (most have three or more); seven live with grandchildren and young people under the age of 21; six live with a partner and five live alone. In Portugal, three participants do not have children, seven have two children and five have just one child. None live with people below the age of 21; seven live either alone or with a partner; three live with adult family members. Although relationships with adult children and grandchildren are among the most important sources of emotional support and assistance for the elderly (Johnson, 2005),

only seven households, all Brazilian, included children or teenagers. These numbers are important because living in the same household with young people can be a predictor of whether older people use ICT and benefit from this interaction on a daily basis (Korupp & Szydlik, 2005; Sánchez, Kaplan & Bradley, 2015).

The analysis considers two axes: 1) technological support provided by family and its impact on social integration of old people; 2) the ways in which technological benefits do not occur.

Family and digital support in old age

Although most participants live alone or with partners, they report receiving support from younger family members, especially their children and grandchildren, profiting from intergenerational association (Bengston and colleagues, 1982, 1991) and the learning process (Tambaum & Normak, 2018). This situation is more reported among Brazilians, where the support received from computer classes is less frequent.

When intergenerational relationships were positive as regards using ICT, elderly people did not feel that they were being "left behind". Instead, they continued to accompany the technological evolution and felt like being part of society. This motivation for using ICT is also related to a sense of norms they have to follow as part of their family solidarity.

> - Look, today it seems that children were already born knowing everything and if we don't know about these things, we stay behind so we must keep up in order to talk with these children. (Neide, Brazilian, 64 years - focus group).

> - One of these days, children will be born with the smartphones glued to their hands. We need to follow the trends. (Olinda, Portuguese, 63 years - focus group).

A key aspect stressed by participants is the need for support from younger people in other spheres of their lives besides the digital context. Therefore, intergenerational solidarity is not seen as a relationship based on technology; instead it is founded on emotional and social support extending to the use of ICT. High levels of parent and child/grandchild affect for one another were associated with high levels of affectual solidarity (Bengston & Roberts, 1991; Bengston & Schrader, 1982).

This association is exemplified by three elderly women who receive support from their family and rely on their aid even if they have a secondary or higher education and are economically independent: Luísa, who lives alone, receives full support from a grandson for her various needs; Ilda, who lives with her daughter and grandchildren, to whom she delegates her protection and surveillance; and Lúcia, who lives alone but close to her daughter, who helped her to rediscover old friends through social networks.

For Luísa and Lúcia, the "reconnection of dormant ties" (Quinn, 2013) using internet communication technologies is well identified in their use of social media.

> - My grandson realised that I was very interested in technology, in learning new things. He said, "you need a smartphone". I bought the smartphone and he taught me how to use it. Today, I know how the e-mail works and I am overjoyed with myself because I have my e-mail, Facebook, WhatsApp and, today, I would not survive without these facilities. He teaches me everything, but it is not only with the internet, he helps me in everything that I need. He is my right arm. (Luiza, Brazilian, 64 years - individual interview).

> - I have friends and a goddaughter in Angola and I exchange messages with them. I have other friends that I hadn't seen for a long time and now I can speak with them through the technologies. My daughter helped me with that and now I can speak with them too. She too has already talked with them (Lúcia, Portuguese, 84 years - focus group).

The case of Ilda illustrates the experience of accepting her daughter's surveillance and mediation as an expression of intergenerational concerns and norms related to her current life stage, which she compares to the young children's protectionism and lack of autonomy:

> - I have a daughter that keeps an eye on my cell phone. If she feels that everything is ok, it's ok, if she feels that it's not, it's not. We watch over the children when they are young, but when we get to this age, they are the ones who watch over us. (Ilda, Brazilian, 68 years - individual interview).

Interactions between grandparents and their children or grandchildren that encourage using ICT provide opportunities for dialogue and, consequently, make the elderly feel more active and less socially isolated. This communication can result in increased self-esteem, as seen above - "I am overjoyed with myself" - or in the strengthening of trust - "If she feels that everything is ok, it's ok". Moreover, the use of ICT can improve personal and social capital, as in the case of Lucia, who got in touch with people that she had had no contact with for several years. This support provided by family members can balance physical absence, provide independence and autonomy and broaden communication inside and outside the family, independently if they live alone or with other family members. These kinds of relations through digital technology have the potential to influence the relationships of family members as it is expected that parents and children/grandchildren with strong commitment to familial norms are emotionally close and interact often, exhibiting greater affection for one another and more extensive association and consensual solidarity (Bengtson & Roberts, 1991; Bengtson & Schrader, 1982).

The use of the internet may enable families who live geographically far away to communicate more easily, with more opportunities to develop association and to express affection. This aspect was the second advantage that our participants pointed out regarding the use of information and communication technologies. Their most prevalent motivation was the facilitation of communication with family and friends.

> *- And with whom do you speak?*
> - With family, my children, friends. My daughter is in Rio [Rio de Janeiro is more than 2000 km far from his home] and sometimes I want to speak with her, and I use Skype. Isn't it fantastic? (Renato, Brazilian, 70 years - individual interview).

> *- Why do you have computer classes?*
> - To speak with my granddaughters and with my daughter who live far away from me. Last week, I also spoke with a colleague in America. (Camila, Portuguese, 72 years - individual interview).

> - Yes, I use WhatsApp all day long. I speak with my family because they all live far away. My daughter is always sending me messages. This communication is constant, it's a fundamental part of my life, it has become fundamental. (Carla, Brazilian, 69 years - focus group).

Among the interviewees, the proliferation of internet use has also transformed their notions of place and distance. Smartphones are important tools for everyday life, allowing for a permanent connection called "perpetual contact" by Katz and Aakhus (2002). However, participants do not spend their whole days on their smartphones. According to their statements, the period of use of the device tends to be short but repeated throughout the day. This type of ICT behaviour "proved to be very useful in showing, for example, as 'micro-routines' of the use of smartphones have been incorporated in the day-to-day patterns" (Ormen & Thorhauge, 2015, p. 343).

Some participants indicated changes in their habits when making direct contact with new people due to the ease of making virtual contact. Technology thus results in virtual proximity and physical distance. The internet does not require physical movement, thus facilitating the maintenance of social networks across generations that include family members, friends and other people (van Deursen, 2010; Blit-Cohen & Litwin, 2004).

Communication is pointed out as important not only when family members live far away, but also between the people who live nearby. Fabrícia, who lives relatively close to her children, said that now she has less need to visit them in their place since they began staying in continuous contact through WhatsApp. At another point in the interview, she adds she does not have a lot of free time to visit her children because she is not retired yet.

> - I suspect that this phone here is getting in the way and preventing me from seeing my children more often because I speak with them every day using WhatsApp, every hour if I want to. Instead of going there, I just write in the cell phone.
> *- Before, did you go more often, to visit them?*
> - Before I had the desire to go there and now I don't, I don't know why, it's decreasing.
> *- Do you think this is positive or negative?*

> - It's positive because before I didn't have news about them and I was worried and now I speak with them every day and there is no problem. (Fabrícia, Brazilian, 61 years - individual interview).

That Fabrícia evaluated her behaviour as positive leads to the difficulties regarding measuring virtual proximity (Bauman, 2003) and shows how old people can feel ambivalent about the implications of technology. It is worth noting that the use of the internet in search of virtual proximity has been associated with both a reduction and an increase of social capital. For some authors, internet use decreases the time people spend experiencing face-to-face interactions, causing a decrease in the individual's social capital (Nie, 2001). Fabrícia's talk captures a theme from the sociability literature, the concern that mediated communication provides a lower quality than the face-to-face communication it might be displacing. While these situations clearly contributed to improve social interactions and positive dimensions of a more active life, the following section moves to constraints that were also reported, showing a flip-side of intergenerational family relations that may include ambivalence and lack of solidarity.

Constraints in family relations

Evidence suggests that the quality and quantity of social relations within the family are decreasing due to a reduction in intergenerational relationships, increasing social mobility, postponement of marriage, families with dual careers, residences occupied by a single person and disabilities related to age (Holt-Lunstad et al., 2010). Despite the development of ICT that foster social connections, some old people are becoming less socially active and consequently more socially isolated (Holt-Lunstad et al., 2010).

The acquisition of technological know-how related to the internet use reported by Fabrícia, who lives with her 21-year-old grandson, exemplifies a situation shared by other participants, framed by difficulties in learning, a lack of patience shown by younger people and the unilateral transmission of information from the youngest to the oldest.

> - Sometimes, I don't know what to do and he [grandson] gets very upset with me. I ask him to help me, but sometimes he teaches me, but I just don't learn. (Fabrícia, Brazilian, 61 years - focus group).

Other aspects to consider are the fact that "physical, perceptual and cognitive changes coincident with aging may present some explanation for this lower engagement" (Birkland et al., 2016, p. 1) and the fact that the elderly are using new technologies in a distinct way and for different purposes compared to younger adults. As most are outside the labour market, they use digital technologies to communicate with friends and family, and as a form of entertainment and leisure.

Some participants, even living in households with grandchildren, report they do not receive significant assistance or benefit from younger family members, neither in relation to technological access nor in other spheres of their

lives. Daniela explained that although she lives near to her daughter, they do not have a close relationship. This disconnection is a barrier to association solidarity when the frequency of intergenerational exchanges of assistance and resource are related to emotional engagement:

> - In my daughter's house there is a computer, but I never put a finger on the keyboard, only here, in computer classes. My grandchildren know how to use a computer and my sons do too, but nobody ever offered to help me. (Daniela, Brazilian, 63 years - focus group).

As pointed out above, the intergenerational relationships mediated by technology are motivated not only by affinity and shared values on the role of the elderly in the family, but also by social pressures felt by younger people (Roberto, Fidalgo & Buckingham, 2014). Bengtson and Roberts (1991, p. 860) have noted that "in contemporary society adult children face normative expectations that they will visit aging parents and will help one another through the exchange of resources when either are dependent upon the other. But intergenerational consensus may become increasingly unlikely over time, given differences in experiences that accrue over the lives of parents and children".

For some participants, the expectation of receiving voluntary support from family members in the use of ICT (familism norm) does not occur. Younger generations may in some cases help because they feel morally obligated and not because they want to use digital technology to establish quality relationships with their parents and grandparents. They may help but without the proximity and exchange proposed by the concept of intergenerational solidarity (Roberto et al., 2014). Several participants stated that young people "have no patience" to teach them. Although this research did not include interviews with family members, we need to consider the possibility that some children or grandchildren may not have an "appropriate pedagogic knowledge" (Tambaum & Normak, 2018, p. 244) to teach old people.

Another aspect to consider is the fact that intergenerational conflict in later life is more common in relationships in which older parents are frail and in declining health, possibly because they may become dependent on the adult children to whom they were formerly providers (Silverstein, Gans, Lowenstein, Giarrusso, & Bengtson, 2010). This generational gap related to the lack of patience regarding slower processes of learning is visible in the case of Paula, Lúcia and Danilo.

> - My son tells me that my phone is overloaded. He comes there, toc, toc, clean everything, but he doesn't teach me, he doesn't have the patience to teach me. Everything he learned when he was little come from me. I taught him, and I taught him a thousand times. (Paula, Brazilian, 65 years - individual interview).

> - She [the daughter] says: "you aren't dumb, you need to remember!", "Oh Cristina, but I can't remember things as before…". Sometimes, it's a little lack of patience, she is very busy. (Lúcia, Portuguese, 84 years - individual interview).

- My son knows, but he loses his patience [laughs]. Then he asks what the password is, but I don't remember. (Danilo, Portuguese, 63 years - focus group).

Although many participants pointed out situations where technologies were considered fundamental to social interactions, others consider their use as harmful to society and to their own lives, in line with the perspective of social and emotional isolation (Carr, 2009). Some participants reported that ICT could be generators of anguish and loneliness. Even when surrounded by relatives, some feel alone because technology does not contribute to dialogue with younger generations. This isolation is not constant - none said that they always feel isolated in their family nucleus - but experienced through periods of solitude. The more prevalent disadvantage reported by Brazilians and Portuguese participants was the excessive use of digital technologies by their relatives. The consequence of this behaviour is the perception of "invisibility" expressed by elderly people. The discomfort, isolation and damage to communication between relatives are expressed in similar ways:

- At home, when each one is with the cell phone in the hand, I'm invisible. They are talking with people they've never seen before, but they don't speak to me. (Neide, Brazilian, 64 years - individual interview).

- Nobody, there's nobody around, only the machine; this is the worst part of the technology. Then I feel excluded, I seem to be a person dropped in a corner. What do people have in their mind? When I'm at home, so are my daughter, my son, my 14-year-old grandson… each one on the cell phone and I am invisible. (Ilda, Brazilian, 68 years - individual interview).

In relation to an intensive use of ICT, almost all participants directed their comments to children and young people, thus suggesting they do not consider ICT addiction a problem that they themselves could face.

- Yes, I spend many hours without the phone, I don't have problems with that. (Fausto, Portuguese, 64 years - focus group).

- The technology can bring good things and bad things. Today, families have no communication, they communicate only by WhatsApp, there is no face-to-face communication. (Adelaide, Portuguese, 63 years - focus group).

- We need to have time to do other things, other tasks, because the more we know the internet and visit the internet the more yearning we have to discover more things and to look for more news. Where is this getting us to? It has no end. (Thomas, Brazilian, 69 years - focus group).

Conclusions

Although the findings from this qualitative research cannot be generalized, they contribute to the understanding of significant dimensions of the intergenerational solidarity regarding ICT use.

The testimonies of elderly people from Portugal and Brazil indicate the complexity and ambiguity of concepts such as intergenerational solidarity. Most participants supported the assertion that intergenerational family relationships mediated by digital technologies have a positive influence on the elderly. As some participants expressed, ICT use encourages social contact inside and outside the family, has positively impacts on their mental health and improves their digital literacy. Nevertheless, support for the use of ICT is essentially marked by unilateral transmission from youngest to oldest and is not guaranteed to result in the effects associated with the concept of intergenerational solidarity. As previous research has shown, that transmission may be attributed to some youngsters feeling moral pressure to help the elderly and doing so without the expected generational rapprochement and exchange of knowledge. The use of digital technologies to communicate with family members can also result in virtual proximity with regular but shallow contact and physical withdrawal. As the analysis also showed, the presence of technologies in families does not come free of possible negative consequences for the elderly. Continuous ICT use by younger people in households may make the elderly feel ignored and emotionally excluded.

Favouring intergenerational relations has been an argument for the use of ICT by the elderly. This use theoretically facilitates everyday communication, bringing the elderly closer to their family and friends. However, activating the process reveals to be more complex. Elderly people are aware that ICT can either bring the family together or pull apart different generations. It can expand existing prejudices through the propagation of images related to the valorisation of youth and rejection of the old, translating into forms of ageism.

Looking at the six elements that characterize intergenerational family solidarity (affection, association, consensus, resource sharing, the strength of familism norms, and the opportunity structure for interaction) we conclude that the relationship among different generations can be both tender and unfriendly, with tension between the desire for autonomy and the need for interdependence. Considering the results, family intergenerational relations can be one of the most ambivalent of social relationships during a life course.

In addition, the collected evidence underlines an important outcome: positive intergenerational relationships are not based solely on technology. Instead, they encompass various spheres of elderly people's lives as a primary source of instrumental, emotional and social support extending to the use of ICT.

To answer our research question, we assert that intergenerational family relationships have the potential to influence both positively and negatively ICT use and appropriation by elderly people. Generating an "intergenerational solidarity" or an "intergenerational gap" depends on the social contexts where the elderly are inserted and on the types of relations they have with younger family generations, influencing how they deal with ICT. The unilateral transmission of digital skills from the youngest to the oldest does not, by itself, guarantee the expected positive impacts.

This study has limitations. The findings cannot be generalized and are not representative of the Portuguese and Brazilian elderly population. The research design and method of recruitment of participants in senior universities

among those who attended ICT classes resulted mainly in elderly females, relatively young and active. This option left out a more diverse sociodemographic sample and, therefore, closer than what is found regarding the digital reality of elderly people in Portugal and Brazil.

A final word concerns the implications for policies of intergenerational solidarity, whose efficacy should not be taken for granted, as it is pointed out in many incentives. To contribute to an ageing process with high quality of life, initiatives should encourage the elderly to develop activities which promote social participation in accordance to their needs, desires and capabilities involving family, but also educators and mental health professionals. Future research about negative consequences from the use of ICT should be developed to better understand the complexity of intergenerational and family relations mediated by ICT, since those relations are not free of constraints.

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