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Elderly Users' Perspective on the Use of Technology in Daily Life: A Comparative Study of a sample in the UK and Brazil

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Abstract This paper investigated the perceptions of sample composed by British and Brazilian adults and older people on the use of electronic devices in their daily lives. This is an exploratory, cross-sectional, descriptive study involving 100 adults and elderly subjects, 50 Brazilian and 50 British adults. The data collection included a social-economic questionnaire; an IDLA index – the Lawton & Brody scale (1969), and a self-reported and a structured questionnaire. The results show that exposure time to technology had a positive impact during the most advanced phases of usage, which was supported by reports of fewer difficulties in the use of such devices, a feeling of greater confidence, and a sense of belonging to the modern world. The frequency in the use electronic devices in daily life, the ability to use them, use perception in public as a stressful experience were shown to be the main differences between the British and Brazilian groups. Both are not comfortable in modern society, complain of unsuitable appliances and refer to their lack of contact with these devices in the past.

Keywords Ageing, Technology, Gerontechnology, Older Adults, Instrumental Activity of Daily Life

Resumen En este trabajo se investigó la percepción de la muestra compuesta por adultos británicos y brasileños y personas de edad avanzada en el uso de aparatos electrónicos en su vida diaria. Se trata de un estudio exploratorio, transversal, descriptivo que incluyó 100 adultos y adultos mayores, 50 brasileños y 50 adultos británicos. La recopilación de datos incluyó un cuestionario socio-económico; un índice IDLA - la escala de Lawton y Brody (1969), y un auto-reporte y un cuestionario estructurado. Los resultados muestran que el tiempo de exposición a la tecnología tuvo un impacto positivo durante las fases más avanzadas de uso. La frecuencia en los dispositivos electrónicos de uso en la vida diaria, la capacidad de usarlos, utilice la percepción en público como una experiencia estresante, se mostró a ser las principales diferencias entre los grupos británicos y brasileños. Ambos no se sienten cómodos en la sociedad moderna, se quejan de los aparatos no adecuados y se refieren a su falta de contacto con estos dispositivos en el pasado.

Palabras Clave Envejecimiento, Tecnología, Gerontecnología, adultos mayores, la actividad instrumental de la vida diaria

1. Introduction

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Perception is essentially a unique and individual experience. A specific philosophical and psychological concept, it is permeated by our awareness of what we experience with our senses in our relationships with the environment (Abbagnano, 1998). Perception can be understood as the ability an individual has of his or her power to guide his or her action; using the sensory processing of the information on what has been experienced, the individual can create a lens through which he or she can see and feel the world by means of a filter affecting social-cultural influences (MacDonald, 2011).

The experience of integrating technology into daily life represents a great challenge for adults and older people. The challenge currently being addressed has to do with the ageing of the world's population and the integration of technology into the lives of this population, who have experienced a significant change in the shift from analogue to digital technology; this challenge includes the need to understand the complex functioning of home appliances. Learning to use the large range of digital devices competently is a significant problem for elderly individuals, who try to adapt themselves to the new technological society (Bianchetti, 2008).

The effective use of technology has become essential to making life work in modern society; it is possibly a factor facilitating a range of daily-living tasks, from the most basic to the instrumental, such as cooking, cleaning, paying bills, and seeking information, among other tasks (Mitzner et al., 2010; Baltes et al., 2006; AARP, 1996). In addition to making tasks easier, technology may frequently also be used for assistive purposes by elderly and handicapped people.

The use of new technologies can allow elderly individuals to remain at home longer and in more safety; to communicate with family members and those at a distance, helping to reduce isolation and loneliness; and to handle basic and instrumental activities of daily life even when functional activity is affected by adverse conditions that restrict the engagement with significant tasks and activities for the individual and reduce social participation. The use of technology allows individuals to manage chronic diseases, such as diabetes and hypertension, in their own homes. The efficient use of these devices reduces dependence, improves self-confidence and self-esteem, and facilitates the care provided by family and caregivers (Mitzner et al, 2010). The successful adoption of a new technology is beginning to be viewed as an important predictor of functionality (Czaja et al., 2006).

Studies show that elderly individuals use less technology and have more difficulties handling it than younger people in terms both of the learning of these technologies and the use of them, such as the fear of damaging equipment or embarrassment at using the equipment in public (Santana et al., 2012, Czaja et al., 2006; Sharit, Czaja, Nair, & Lee, 2003; Czaja et al., 2001; Czaja & Sharit, 1999; Rogers, Fisk, Mead, Walker & Cabrera, 1996; Charness, Schumann & Boritz, 1992). Older people are uncomfortable when using technology and they also feel a lack of confidence in their skills of learning how to use these systems efficiently (Bailey & Sheehan, 2009; Czaja et al., 2006; Tacken et al., 2005; Ellis & Allaire, 1999; Czaja & Sharit, 1998).

Given the complexity surrounding the use of technologies by the elderly, it is important to understand how such a phenomenon occurs and to disregard the fallacy that older people do not accept technology or fear using it. Therefore, it is necessary to understand the differences in the elderly by taking into account specificities involving age, gender, body changes resulting from the ageing process, education level, previous contact and experiences with technology, and access to it. Additionally, other factors, such as lack of confidence, attitude and motivation, suspicion about the reliability of the information, changes in cognitive skills (e.g. memory and information processing speed), attention, decision-making, and crystallised intelligence, based on the models of acceptance and recognition of the use of the technology, should also be considered (Bailey & Sheehan, 2009; Mitzner et al., 2010; Czaja et al., 2006; McCreadie & Tinker, 2005; Tinker & Lansley, 2005; Al-Gahtani & King, 1999; Kelley et al., 1999).

Based on the above-cited aspects, individuals may have either more or less favourable attitudes towards the use of electronic appliances. Some societies are more technologically advanced than others in terms of infrastructure, services, access and use of technology and this may have a close relationship with the acceptance of technology and perception about its necessity. Singapore, Finland, Korea, Switzerland, United States, Denmark, Canada, and Norway are the most technologically advanced countries in terms of infrastructure and use of information & communication technology, according to the Networked Readiness Index 2010–

2011 released by the World Economic Forum (WEF), and this factor has a great impact on the use of technologies in health, education, and public policies and services (Igari, 2012).

Overview of the use of technologies by older adults in Brazil and UK

According to the Networked Readiness Index 2014, Brazil ranks 69th out of the countries with a high technological environment; among the Latin-American countries, it is ranked third, behind Chile (35th) and Uruguay (56th) (WEF, 2014). In 2008, the percentage of Internet users older than 50 years was 11.2%, representing 24.8% of the Brazilian population at that time but corresponding to 8% of the total of those who had access to Internet (56 million) (IBGE, 2009). However, in 2011 this figure increased to 16% (CGI Brasil 2012). The most common places where the Internet was accessed were residences and workplaces in the South-Eastern, Southern and West-Central regions of Brazil, whereas LAN (Local Area Network) centres play an important role in digital inclusion in the Northern and North-Eastern regions. Communication activities (e.g. the use of social networks and Skype), searching for information, and the use of the Internet for leisure activities were the most frequent tasks performed by the users (CGI, Brasil, 2012).

Nevertheless, several aspects make the use of technologies in Brazil difficult; these include expensive telephone line tariffs, the absence of this service in certain areas, a lack of interest and ability in using personal computers and cell phones, concerns over security, and the cost-benefit ratio related the investment in equipment and services All these aspects should be considered in the evaluation of the use of Internet and computers (WEF, 2014; Comitê Gestor da Internet no Brasil – CGI.Brasil, 2012). There is no broad study assessing the use of information and communication technologies for the elderly where the focus is on usability and which characterises the different aspects of the use of electronic appliances by this population segment.

The study carried out by Oliveira et al. (2012) using a sample of 135 active elderly individuals (over 65 years old) who knew about the use of electronic appliances (all living in the State of São Paulo, Brazil) showed that 100% of the participants needed help using new technologies (e.g. computers and cell phones), although they also had difficulties in operating other devices, such as microwaves (particularly setting the clock configuration), the remote controls for TV and DVD sets, hi-fi equipment, or devices for monitoring chronic health conditions, such as arterial pressure and glycaemia. The most frequent complaints were those regarding non-understanding of the most advanced functions and the configuration of certain commands; the use of different file transfer software, e-mail or USB; the use of a personal computer, peripherals or software; the placement of CDs into drives; and a lack of reliability in the results from health monitoring devices, or a misunderstanding of the results (Silva, Raymundo & Santana, 2012). The difficulties related to both existing and new technologies.

In the UK, according to 2010 statistics on Internet access released by the Office for National Statistics, 60% of individuals older than 65 years have never used Internet, compared to 22% of people aged between 55–65 years and only 1% of people aged between 16–24 years. In fact, people older than 65 years old represent almost two-thirds (64%) of the individuals who have never used Internet, and they can also be considered the most vulnerable. The prevalence of persistent social exclusion among older people without access to social network devices is almost three times higher than that for digitally included individuals (Age UK, 2011, OFCOM, 2007; ELSA, 2006). Only half of people aged between 60–69 years have access to the Internet at home, but this figure falls to 17% for individuals older than 70 years. People older than 60 years are also less likely to use the Internet than younger adults because it is often said that they do not feel it to be a necessity or do not perceive the benefits resulting from this technology (Koss et al., 2012). According to the Age Concern and Help (2005), one out of six people older than 55 years use social network services, such as Facebook, Skype, Twitter in the UK (OFCOM 2010, Age Concern and Help, 2005). Moreover, the elderly are the fastest growing group of Internet users, with people older than 65 years who have access to Internet spending more hours online than the average of all other age groups (Independent Age, 2012).

Although the UK is ranked 9th in the Networked Readiness Index 2014 and stands out worldwide in terms of infrastructure and use of technology, the country has been going through the process of population ageing for a longer time than Brazil and has demonstrated insignificant use of such technological resources by the elderly compared to Japan, Singapore, Hong-Kong and Denmark, among other countries (Igari, 2012, Age UK, 2011). The incorporation of

technological resources into British citizens' daily lives and the problems resulting from the population ageing (e.g. isolation and loneliness, a lack of continuous contact with family members and friends, social vulnerability, and the need for wider-ranging healthcare and social services) are the reasons behind the public investment in digital inclusion in order to improve both the quality of life and the well-being of older people in the UK.

The use of communication and information technologies has focused on equipment utilisation in order to minimise the difficulties faced by older people (this includes the broadening of remote monitoring and care services); this has been strengthened with digital inclusion programs supported by key policies, such as the Digital Britain White Paper. This policy is expected to boost actions for improving the access infrastructure, developing user skills, motivating users, and reducing the costs of use and access. Therefore, programs like Age UK's IT & Biscuits, the Moose in the Hoose Project, and the Everybody On-line Programme have been developed in England, Scotland, Northern Ireland and Wales since 2002 (Age UK, 2011). Within the context of healthcare and social work, the amplification and implementation of remote healthcare services such as Telecare and Telehealth have been encouraged. In Brazil, in view of the current process of population ageing and the recent improvement in access to technological products, the focus has been put on the usability of these resources by the elderly; in line with this, recent social projects have aimed at minimising these difficulties.

Respecting the background of the inherent differences between these two populations in country development, the technological resources incorporated into people's daily lives, access to technology, healthcare policies for the elderly, and preparation for population ageing, the present comparative study has sought to describe the perception of older Brazilian and British people concerning the use of technology in their daily lives; this mainly focuses on the difficulties in using it, related feelings, solution strategies, and changes in cognitive, social and family skills.

The project was approved by the Oxford University and the Ribeirão Preto Clinics Hospital research ethics committees.

2. Methods

Study Subjects

This is an exploratory, cross-sectional, descriptive study involving 100 adults and elderly subjects, 50 Brazilian and 50 British (the second group included non-British adults who have lived in the UK for more than 10 years). The convenience sample included active, educated subjects older than 50 years old from different social-economic classes who presented preserved functional capacity for IADL and no cognitive impairment. A total of 260 questionnaires were distributed in the UK through programs for the elderly, such as the Age UK, besides directly inviting subjects who lived in Oxford, Kidlington and London to participate. In addition, 50 questionnaires were also given to subjects entering the Digital Inclusion Project for the Elderly and those who lived in cities of the State of São Paulo, Brazil. The Brazilian subjects did not attend ICT learning programs until the data collection phase. Two subjects were excluded because of changes in functional capacity (dependence), resulting in a total of 100 participants. Data collection was conducted between August and December 2012.

Table 1 – Characterisation of the sample in terms of age, gender, marital status, income, education level, occupation, self-reported health, and functional capacity.

Items	British sample	Brazilian sample	General sample

Age (mean)	66.1	67.6	66.9
Gender			
Male	16	14	30
Female	34	36	70
Marital status			
Single	4	8	12
Married	27	21	48
Widow	9	16	25
Separated/divorced	7	3	10
Other conditions/blank	3	2	5
Education level			
Primary level	3	9	12
Secondary level	18	4	22
GCE-A/AS/Vocational	12	14	26
Undergraduate	13	20	33
Post Graduate	3	2	5
Blank	1	1	2
Family income			% accumulated
Up to 12,500	13	27	40
12,501 to 20,000	11	11	60
20,001 to 30,000	8	11	81
30,001 to 40,000	6	0	87
40,001 to 60,000	4	0	91
Over 60,000	4	0	95
No responded	4	1	100
Who lives at home			
Alone	16	16	32
Partner	26	23	49
Other family members	6	9	15
Other caregivers	1	1	2
No responded	1	1	2
Self-reported perceived health (%)			
Excellent/Very good	54	46	50
Good	36	50	43
Fair	8	0	4
Poor	2	2	2
No responded	0	2	1

Occupation			
Full-time job	10	6	16
Partial-time job	18	4	22
Retired	19	31	50
Unemployed	1	0	1
Other	2	8	10
No responded	0	1	1

The procedures for data collection included a social-economic questionnaire; an IDLA index – Lawton & Brody scale (1969), original version validated in Brazil by Santos & Virtuoso Jr. (2008); and a self-reported structured questionnaire with closed and semi-closed questions on the perception of the use of electronic devices. These tools were aimed at characterising the sample in terms of age, gender, education level, occupation, functional capacity for IDLA and t describing the subjects' perception about the use of technology in their daily lives (Fig 1). The data were assessed using the thematic and frequency analysis based on the formation of analysis categories.

QUESTIONNAIRE ABOUT THE PERCEPTION OF ELECTRONIC DEVICE USE

Please mark your choice with an X

1) Do you have difficulties using any electronic equipment?
( ) Yes ( )No

2) If you answered YES, do you think that these difficulties interfere with your daily life?
( ) Yes ( ) No

3) Which of these statements express your feelings? (You can choose more than one)

( ) The difficulties I have using electronics makes me feel dependent on others
( ) The difficulties make me feel embarrassed to use certain devices in public (e.g. cash machines,
computers, mobile phone)
( ) Using electronic devices makes me feel pressured and nervous
( ) The difficulties make me feel incompetent or less able
( ) I think that modern electronic devices are not for me
( ) Others: _____-

4) Have you started using any of these devices in the last 12 months?

( ) Computer ( )E-Readers (Kindle, Kobo) ( ) Tablets (Xoom, Ipad, etc)
( ) Cell Phone/mobile ( ) Others _____

5) Have you noticed any changes in your abilities since you started using the electronic devices? (Emotional state, social abilities and awareness)

( ) Yes ( ) No

6) If you answered NO to question 5, ignore this question.

If you answered YES to Question 5, which of these statements express what you have noticed?

( ) I noticed that I can find items on my mobile phone and/or on the computer menus faster than before

( ) I noticed that I can decide about operations that I need to do faster than before
( ) I noticed that I can use my mobile phone or my computer more quickly than before
( ) I noticed that my capacity to associate ideas has increased
( ) I noticed that my memory has increased
( ) I noticed that I had better memory before I started use the cellular, pagers or others kinds of electronic devices
( ) I noticed that my capacity to understand, read, listen and write has increased
( ) I noticed that I can do more than two operations at the same time
( ) I noticed that I can share my attention between different things at the same time
( ) I noticed that I'm more alert and focused
( ) I feel more satisfied with my ability to learn these devices that I thought I could not learn
( ) I noticed that I'm more confident about myself
( ) I noticed that I am more connected to/ aware of current affairs
( ) I noticed that I fit in more easily in modern society
( ) I noticed that I can speak easier about current events with other people
( ) I noticed that these devices facilitate contact with friends and my relatives
( ) I noticed that my family recognizes my efforts to learn these new technologies

Figure . 1 – Questionnaire about perception about the use of technology in their daily lives developed by authors

3. Results

Content analysis allowed the following categories and subcategories to be formed in terms of the perception of the difficulties in using technologies: 1) difficulty for use, stressing factors, and task-dependence relationships; 2) perception of the change in cognitive and social skills; and 3) influence on self-esteem and self-efficacy.

Perception on the Difficulty of Using Technologies

Of the subjects (n = 100), 60% report that they currently have difficulties in using electronic devices and, of these, 65% think that these difficulties interfere with their daily life (n = 60). The difficulties regarding the primary and secondary functions of electronic devices reported by the subjects are described below:

Table 2 – Difficulties perceived by the subjects regarding the functions of cell phones, remote controls, TV and DVD sets, cameras, microwave ovens, and computers.

Devices	**Difficulties perceived**	
	Primary functions	*Secondary functions*
Mobile/cell phone	To make/receive calls	To manage the function menu for alarm, sound level and messages.
TV remote control	To change channels and control sound level	To use the device together with other devices, such as DVD/Blue-ray; to use the function menu.
Photography camera	To take photos	To view them later.
Microwave oven	To cook	To defrost food and configure the clock settings.
Computer	To turn on, find items and save documents	To use the Internet and attach files to an e-mail, among other tasks.

With regard to the electronic devices themselves, the subjects report that it is difficult for them to use cell phones because of their multifunctional characteristics, the small command buttons, and the lack of contrast between characters and screen background. The excessive number of buttons on the remote control and the use of several other devices connected to the TV set at the same time (e.g. DVD, Blue-Ray or satellite signal receptor, etc,), each one with its respective remote control, also interferes with their use. In addition, in the case of the Brazilian subjects, the fact that the majority of the remote controls are in English makes it more difficult for them to use the devices.

With regard to the difficulties relating specifically to this age group, they point to the fact that they had never used these electronic resources before in their work or daily lives and that their poor memory also interferes with the use of such devices. The long time spent needed to do the task causes them to give up or ask for help, especially in the use of cell phones or bank cash machines.

Difficulty for Use, Stressing Factors, and Task-Dependence Relation

With regard to the perception of the difficulty for use of technology, 46% of the British subjects (n = 50) have difficulties in using electronic devices and 56.5% think that this causes problems in their daily lives (n = 23). Of the Brazilian subjects, 74% report difficulties in using technology and 70.3% recognize that this interferes with their daily activities. In fact, the subjects perceive that using electronic devices in public, such as bank cash machines for payment, is generally a reason of embarrassment.

Table 3 – Feelings resulting from the difficulties in using new technologies

Feelings resulting from the difficulties in using new technologies	**British sample (n = 13) (%)**		**Brazilian sample (n = 27) (%)**		**Total (n = 40) (%)**	
	Yes	No	Yes	No	Yes	No
Dependence on other persons	69.2	30.8	62.9	33.3	65	32.5
Embarrassment about using electronic devices in public	30.7	69.3	62.9	33.3	52.5	45.0
Feeling pressured and nervous	15.4	84.6	25.9	70.4	22.5	75.0
Feeling incompetent and less capable	23.1	76.9	40.7	55.5	35.0	62.5
Realizing that modern electronic devices are not for them	46.1	53.9	11.1	85.2	22.5	75.0
Others (foreign languages used in the remote control, for example)	0.00	0.00	3.7	96.3	2.50	95.00

Note: 100-percent differences refer to blank answers

The task-dependence is felt by various respondents and the difficulty in using electronic devices makes them depend on other persons. This dependence is reported by 69.2% and 62.9% of the British and Brazilian subjects, respectively. However, the Brazilians report that they feel more embarrassed, pressured and nervous when they need to use certain electronic devices in public compared to the British elderly, which also results in feelings of incompetence and inability regarding the use of new technologies. In order to solve such problems, asking someone for help is the strategy mostly used by the Brazilian subjects (59%) compared to the British ones (48%).

Perception of the Change in Cognitive and Social Skills

With regard to the recent use of new technologies, 30% of the British sample report that they have begun to use computers, 30% cell phones, 22% tablets, and 14% e-readers (e.g. Kindle, Kobo). In the Brazilian sample, 48% have begun using computers, 62% cell phones, 6% tablets, and 2% e-readers in the past 12 months.

Of the total number of participants (n = 100), 50% perceived changes in their cognitive and social skills after they began using such devices, whereas 44% perceived no change and 6% did not respond. Among the British elderly (n = 50), 42% observed a change in these skills, 56% perceived no change and 2% did not respond. However, 58% of the Brazilian elderly (n = 50) reported changes in their skills and 32% perceived no change at all, whereas 10% did not respond to this question. With regard to cognitive changes, the data are listed in the table below.

Table 5 – Self-perception of the subjects on the changes in their cognitive skills

Cognitive function	**British sample (n = 21)(%)**		**Brazilian sample (n = 30)(%)**		**Total (n = 51) (%)**	
	Yes	No	Yes	No	Yes	No
Executive function:						
- To perform more than two tasks at the same time	19.1	80.9	26.7	73.3	23.5	76.6
- To use electronic devices faster than before	57.1	42.9	50.0	50.0	52.9	47.1
- To find items in computer or cell phone faster than before	57.1	42.9	63.3	36.7	60.8	39.2
Decision-making:						
- To decide on operations faster than before	28.6	71.4	46.7	53.3	39.2	60.8
Thinking process speed:						
- To perceive an increase in the ability to understand, read and write	23.8	76.2	26.7	73.3	25.5	75.5
Associative capacity:						

- To perceive an increase in the ability to associate ideas	28.6	71.4	40.0	60.0	35.3	64.7
Memory:						
- To perceive that memory has improved	19.0	81.0	23.3	76.7	21.6	78.4
- To perceive that memory improved before they began using electronic devices	14.3	85.7	0.00	100.00	5.9	94.1
Attention:						
- To perceive that they can pay attention to different things at the same time	28.6	71.43	23.3	76.7	25.5	74.5
- To perceive that they are more focused	23.8	76.2	30.0	70.0	27.4	72.6

With regard to the aspects distinguishing these groups of subjects, one can observe that the speed of finding items in cell phones and computers was the cognitive skill mostly reported by both samples, mainly by the British elderly. However, Brazilians report an improvement in the association of ideas and that they feel more alert and focused, allowing them to make better choices after beginning the use of electronic devices, as compared to the British subjects. For both groups, there were no significant cognitive responses in terms of memory and reading and writing skills.

Influence on Self-Esteem and Self-Efficacy

The subjects perceive that using electronic devices competently brings benefits to their lives, making some tasks easier or possible, such as contact with family members who live far away.

Table 6 – Self-perception of the subjects on the changes in their psychosocial skills

Psychosocial aspects	**British sample (n = 21) (%)**		**Brazilian sample (n = 30) (%)**		**Total (n = 51) (%)**	
	Yes	No	Yes	No	Yes	No
Self-esteem and self-confidence:						
-They are more satisfied with their ability to learn using electronic devices	66.7	33.3	53.3	46.7	58,8	41.2
-They are more self-confident	47.6	52.4	40.0	60.0	43.1	56.9

Social and communication skills:						
- They feel they are more aware of current events	33.3	67.7	40.0	60.0	37.2	62.8
- They feel that they fit in better with modern society	42.9	57.1	36.7	63.3	39.2	60.8
- They feel they are better prepared to talk about current events with other persons	38.1	61.9	30.0	70.0	33.3	67.7
-They recognize that new technologies facilitate contact with relatives and friends	81.0	19.0	70.0	30.0	74.5	25.5
Acknowledgement						
- They perceive that family members recognize their effort in learning new technologies	61.9	38.1	40.0	60.0	49.0	50.0

The British subjects (66.7%) are more satisfied with the ability to learn and operate electronic devices compared to Brazilians (53.3%); they also feel more confident and that they fit in better with modern society, reporting that their families recognize their effort in learning new technologies (61.9%). Both groups of subjects recognize the benefits that new technology bring in terms of communicating with their family and friends.

4. DISCUSSION

The differences between these two samples reveal that the British subjects have been dealing with the integration of technological devices, such as cell phones and bank cash machines, in their daily lives for a longer time than the Brazilians. As a result, it is suggested that this continuum in the use of such devices has caused fewer problems for the elderly in the UK in recent years. Therefore, one can point to the difference between developing skills for learning about these technologies earlier in life or adapting the use of them during the ageing period, as suggested in the comparison between British and Brazilian samples. It is also necessary to consider aspects inherent to the functioning of such devices, since they have an influence on the Brazilian subjects who have begun using electronic devices only recently. However, the ergonomic aspects (or lack of them) of such devices contributes to the functional losses resulting from the ageing process, thus influencing their use by both groups of subjects.

Another aspect to be highlighted is that the Brazilian subjects report that they feel embarrassed, pressured, nervous and less competent in using these new technologies; this is likely to be because they have been dealing with such devices for a shorter time, and thus have not developed the skills necessary to use them properly. Therefore, one can observe that there is a correlation between usage time and exposure to these technologies, and that this influences the subject's skills. In fact, knowing how to use such devices properly might reduce feeling of stress.

On the other hand, competency in using these devices may be related to the subject's sense of self-esteem and self-confidence. The British subjects are more confident and satisfied with their ability to learn using these technologies as they had never imagined themselves doing so, and consequently they feel more comfortable in the modern world than the Brazilians. It is possible that this sense of feeling more comfortable with technology is related to the competence to use such devices, control of stressful factors, self-esteem, and positive self-efficacy, including other factors interfering with the use of technologies by older people.

With regard to the changes in cognitive and social skills, the subjects report that the main alteration is in the speed with which they operate the devices. Therefore, it is possible that knowing how to handle the device can have a positive impact on its use, since the time spent

executing a task involving electronic devices is one of the main complaints reported by the subjects.

The non-use of new technologies during the work period was reported by the subjects as being a factor influencing the use of electronic devices. Therefore, it is possible that the Brazilian sample (n = 30) had been influenced by a greater number of retired people, compared to the British sample (n = 19), which might be considered a confounding variable. The use of computers is frequently related to work activity and the lack of previous experience with such equipment may be associated with of the fact that these subjects are retired. The gap existing between working life and retirement contributes to the feeling of technological distance felt by the elderly (Age UK, 2011). However, one should take into account other aspects, such as access to technology resources, previous occupation and equipment involved in the past, in addition to motivation in using them in the present, among others.

The subjects recognize their difficulties in using these devices, and these difficulties are related to personal and occupational characteristics as well as to previous experience. Furthermore, these difficulties are also related to the ubiquity of technological devices (e.g. excessive functions in view of the needs of the subjects, small keyboards, and low contrast between characters and background) and personal characteristics (e.g. memory, attention and lack of previous experience). In fact, such difficulties interferes with daily living activities, making older people depend on others and causing them to feel incompetent, to have low self-esteem, and to feel that they do not belong to the modern world. In Brazil, older people usually ask family members for help them with electronic devices, thought they complaining about the lack of patience on the part of young persons. According to Santana et al. (2012), older people are particularly vulnerable when they ask for help for using bank cash machines, which may be a dangerous task since this exposes them to robbery.

Difficulty becomes a stressful factor when these devices are used in public; this generates feelings of insecurity, lack of confidence in one's own capacity in association with a sense of discomfort, and public exposure. In fact, there is a lack of patience on the part of those who wait for older people finish using the bank cash machines, causing them to feel embarrassed. However, the operation time is very short and any delay makes the system return to the initial screen (especially to mobile and ATM), thus making the user spend more time concluding the task. In addition, older people spend more time reading, understanding and making decisions during these operations, mainly because they are analyzing many variables and may be adapting to new technologies while simultaneously coping with changes in physical, social and cognitive resources (Steggell et al., 2010).

5. CONCLUSIONS

The present study has sought to investigate the perceptions of British and Brazilian adults and older people of the use of electronic devices in their daily lives. It was possible to observe that exposure time to technology has had a positive impact during the most advanced phases of usage, which was supported by reports of fewer difficulties in the use of such devices, greater confidence, and a sense of belonging to the modern world – aspects mainly reported by British subjects.

However, the Brazilian subjects have been experiencing the impact of stressful factors regarding the use of electronic devices. Initially, this observation can be explained by the fact that the sample consisted of subjects who were no longer working (i.e. retired), in addition to being older and less experienced in using cell phones/mobiles or computers than the British subjects. Therefore, it is likely that usage time and exposure to these technologies have some influence on the subject's skills, so that knowing how to use such devices properly might reduce the feeling of stress.

In sum, the usage of electronic devices in daily life, the ability to use them, and fewer stressful factors were shown to be the main differences between the British and Brazilian samples.

Several aspects might also have influenced the use of technologies, such as occupational situation, gender, education level, and age, among others. Further studies could help clarify the use of electronic devices by the elderly and, consequently, provide actions for competent use and better integration with the technological society. Furthermore, both groups of subjects recognized the benefits the new technologies bring in terms of ability to communicate with their relatives and friends. In the future this technology will facilitate the contact between healthcare professionals and caregivers, which can make a difference in the healthcare provided to the elderly.

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