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Social Representations Theory and the STAM: Acceptance of the Internet among Older Adults

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ABSTRACT – This study aimed to understand the social representations and acceptance of the Internet among older adults through the STAM. The participants consisted of 18 older adults divided into three groups based on their level of inclusion (low, medium/high, and low/medium). Before and after the group sessions, an attitude questionnaire was administered online. The questionnaire items underwent descriptive and relational analysis, while the data from the focus group were subjected to content analysis. We observed that the first group displayed a potential rejection of the technology due to concerns about time loss and a lack of perceived usefulness. In contrast, the second and third groups viewed the Internet as a tool that brings families together and requires patience, leading to a greater intention to use it and experimentation. The study identified that the older adults' thoughts, attitudes, and social representations, not only about the Internet but also about aging, significantly influenced their intention to use the Internet and their perception of its usefulness.

KEYWORDS: social representations, Internet, older adults

Teoria das Representações Sociais e Modelo STAM: Aceitação da Internet entre Idosos

RESUMO – A presente pesquisa teve por objetivo compreender as representações sociais e aceitação da internet pelo modelo STAM para idosos. Participaram 18 idosos divididos em 3 grupos, por nível de inclusão (baixo, médio/alto e baixo/médio). Antes e após, o grupo foi aplicado um questionário de atitudes frente à internet. Os itens do questionário foram submetidos a análises descritivas e relacionais, e os dados do grupo focal à análise de conteúdo. Percebeu-se que, no primeiro grupo, houve a possibilidade de rejeição da tecnologia associada à perda de tempo e não percepção de utilidade. Para o segundo e terceiro grupo, a internet surge como algo que aproxima a família e exige paciência, o que favorece a alta intenção de uso e experimentação. Foi possível identificar que o pensamento do idoso sobre a internet, suas atitudes e representações sociais, não apenas sobre a rede, mas também sobre envelhecimento, influenciam na intenção de uso da internet e utilidade percebida.

PALAVRAS-CHAVE: representações sociais, internet, idosos

Demographic aging is a worldwide reality, mainly due to technological advances in health and the effectuation of public policies. Currently, 12.3% of the world population is over 60 years old, which constitutes 901 million people (HelpAge, 2015). As a developing country, Brazil is also not immune to the expansion of the top of the age pyramid, with the tendency for the further expansion of the proportion of the older adult population. According to the IBGE (2015) in 2030 the proportion of older adults will be equivalent to 18.6% of the country's population.

Aging can cause physiological changes, such as reductions in short-term memory capacity, vision, hearing, mobility, speed of information processing and responses (Anjos & Gontijo, 2012). Besides physical issues, there are psychosocial losses with socio-affective deprivation resulting from the loss of family, social, and territorial ties (Araújo, Coutinho, & Santos, 2006). The life cycle can be understood as a continuous progression of development. In this context, to achieve successful aging, it is necessary to maintain a balance between losses and gains through

the preservation of the functional capacity of older adults. (Nery, 2013). Information technologies can trigger benefits for older adults. The use of the Internet can strengthen or expand friendship and family bonds, provide everyday conveniences such as online shopping and bill payments, and give access to health information and news, thereby contributing to a healthier and more socially integrated life (Castro et al., 2022).

With the advancement of technology, accessible services and tools have emerged for older adults, which facilitate aspects such as cost-saving and mobility. These services enable them to carry out banking transactions, make online purchases, access government portals, and reduce social limitations like isolation, thereby enhancing a support network (Barnard, Bradley, Hodgson, & Lloyd, 2013). Accordingly, approximately 28% of older adults reported accessing the Internet in 2017 (CETIC, 2017), however, the digital exclusion of older adults still occurs due to physiological and social difficulties in adapting to the digital context (Krug, Xavier, & d'Orsi, 2018).

It should be emphasized that the development of digital skills enhances the sense of independence and fosters a process of empowerment, shifting from impotence and passivity to active engagement. It also increases self-confidence and decreases feelings of loneliness and levels of depression (Foletto, Fiepke, & Wilhelm, 2018). Therefore, the social participation of older adults on the Internet can contribute to successful aging.

However, the way the older adult understands the Internet influences the way they experience its tools. Considering this relationship, the STAM (Senior Technology Acceptance Model) was developed from the acceptance and adoption of the technology supported by 3 phases: objectification (consists of identifying whether the perceived usefulness and the social context influence the intention to use), and incorporation (in which the technology exploration process occurs through actual use, thus identifying the ease of use or not and confirming its uses), with these two steps, when positive, leading to the final phase: adoption (Renaud & Van Biljon, 2008).

Based on this model, the social representations of older adults regarding technology, the Internet, and its ease of use influence their social practices, that is, their experiences. Social representations are a form of socially produced and shared knowledge, with an individual's understanding being formed through beliefs and knowledge that generate representations about the object and govern the individual's relationship with others and the world (Jodelet, 2001). One of the functions of representations is to make something previously unknown familiar (Moscovici, 1981). In the case of the Internet, this approximation considers previous experiences and the degree of complexity (Eira Frias et al., 2014).

Social representations (SR) also play an essential role in the dynamics of social relations and practices (Abric, 2001). While representations are practical conditions, that is, they influence experiences, practices promote changes in the representations (Rouquette, 1998), and therefore, the representations related to the Internet affect its acceptance and use. The articulation between older adults and aging is something already addressed in studies on social representations and highlights the relationship between social representations and practices (Brito et al., 2021; Castro et al., 2021; Silveira, Camargo, & Giacomozzi, 2021; Castro, Giacomozzi, & Camargo, 2018; Brito et al., 2018). Given this, this study aimed to answer the guiding question: How does the process of adoption and acceptance of the Internet by older adults at different levels of digital inclusion occur and what is the relationship of this process with their social practices?

METHOD

This was an exploratory and descriptive study, carried out using focus groups and questionnaires. The sample was constituted as non-probabilistic and intentional, composed of 3 groups of older adults, with 6 members in each. Of the three groups, one was composed of older adults who had a low level of digital inclusion (according to the criterion of no Internet access in the previous six months), one consisted of older adults who had a medium and high level of digital inclusion (considering the Internet use at least once a week in the previous six months), and one was a mixed group consisting of three older adults who had a low level of digital inclusion and three older adults who had a medium level. The criteria for categorization of low, medium, and high levels of Internet experience were defined based on the CETIC data (2017).

Considering the STAM, a set of guiding questions was developed for use in the focus groups. In the meetings, scenarios were presented through five stories related to aspects of life that influence the use of the Internet by older adults, designed to reduce social desirability (Chen, Rong, Ma, Qu, & Xiong, 2017). These questions aimed to indicate the way of thinking of the participants concerning the Internet, considering the following factors: perceived usefulness, social support, intention to adopt the technology, experiences with the Internet, confirmed usefulness, degree of ease, and acceptance.

To measure attitudes towards the Internet, a questionnaire in the form of a scale was developed. To arrive at the final version of the instruments, an analysis was carried out by judges who were experts in social psychology. Following the

judges' suggestions, the instruments were adapted considering semantic adequacy. In the end, the questionnaire was composed of 10 items in the form of a Likert-type scale, which ranged from the lowest to the highest level of agreement, that is, from 1 to 7. Before and after participating in the group, each participant answered the questionnaire individually to verify possible changes related to their attitudes.

The questionnaire contained the following statements: 1) I intend to use the Internet to communicate with my family; 2) I am afraid to use the Internet because of criminals who can access my information; 3) I dislike the idea of using the Internet, as aging makes learning difficult; 4) I don't like the Internet, because it's for young people; 5) I don't like the idea of using the Internet, because I consider it a waste of time; 6) I feel bad when I think that people can find out about my life on the Internet; 7) I like the idea of using the Internet to make new friends; 8) I like to think that on social networks I can find old friends; 9) I feel good when I think about shopping online, and 10) I think it is very important to use the Internet to keep up to date.

In the descriptive analysis of the qualitative variables, absolute and relative frequencies were used, while in the description of the quantitative variables, measures of central tendency, position, and dispersion were applied. In the description of the questions, mean and standard deviation were used, with the Bootstrap method (Efron & Tibshirani, 1993) used to calculate the confidence intervals of the means.

The data obtained in the focus group were submitted to categorical content analysis (Bardin, 2009) using the Atlas.ti version 6.2 software, which allows the organization of excerpts relevant to the study to identify patterns or repetitions and, especially, to group ideas for forming families of codes (thematic elements) and quantifying the occurrences. Initially, the organization was carried out through free-floating reading, hypotheses, objectives, and indicators for interpretation. Next, the data were categorized according to the assumptions of categorical content analysis (Bardin, 2009).

The study was submitted to the Ethics Committee for Research with Human Subjects of the Federal University of Santa Catarina, under number 1.688.433.

RESULTS

As mentioned above, the 18 older adult participants were divided into 3 groups, with 6 participants in each. The participants with a low level of inclusion had a mean age of 63.66 years (*SD* = 1.49), including 4 women and 2 men. All participants used the Internet about once a week. Regarding the group of older adults with high and medium levels of digital inclusion, the mean age of the participants was 66.83 years (*SD* = 1.07), with 3 women and 3 men. This group of participants used the Internet every day. The mixed group of older adults, composed of participants with medium and low levels of digital inclusion, had a mean age of 66.50 years (*SD* = 1.25), with 4 women and 2 men. The participants with a medium level of digital inclusion reported accessing the Internet every day, while the participants with a low level of digital inclusion reported using it once a week.

Content analysis referring to the group of older adults with a low level of digital inclusion

Data categorization enabled the analysis of 837 speech excerpts linked to 13 codes (thematic elements), from the 3 stages proposed by the STAM (Renaud & Van Biljon, 2008). The Objectification theme encompassed the SR thematic elements and context, which contained representations associated with the Internet and its social context of production and was divided into subthemes that emphasized family support (*f* = 61), specialist support, with young people considered specialists (*f* = 42), and the possibility of self-learning (*f* = 33). The intention to use element showed that these older adults had little interest in using the Internet in their daily lives, understanding it as something for specialists (*f* = 47), a waste of time (*f* = 32), and exclusive to young people and specialists (*f* = 32), however, communication with family members emerged as something that intensified the intention to use (*f* = 29). Therefore, in terms of perceived usefulness, communicating emerged as positive, while gossip and leisure emerged as negative.

In the Incorporation theme, the thematic element facilitating conditions appeared anchored in the mediation for the learning process through their children (*f* = 64) or computer courses (*f* = 22). The element of exploration carried with it the sensation of potential damage (*f* = 44). However, this sensation was mitigated by the possession of the technological object (*f* = 21) and the supervision of experts (*f* = 23), attributes associated with a low level of exploration and intention to use.

The confirmed usefulness through experimentation with the Internet was associated with the usefulness for leisure (*f* = 41) and communication (*f* = 25), through videos, social networks, and messaging applications, with actual use only during the course (*f* = 29) or use supervised at home (*f* = 28). The thematic element ease of learning/use comprehended that aging generates difficulties in learning (*f* = 41), as well as the high degree of difficulty already associated with the Internet (*f* = 38). Finally, the adoption theme had the possibility of adoption (*f* = 29) or rejection (*f* = 22) of the Internet.

The synthesis of the STAM for the group of older adults with low digital inclusion is illustrated in Figure 1. It is possible to verify the 3 phases of the STAM and their stages and to perceive that this confirms the data of the content analysis.

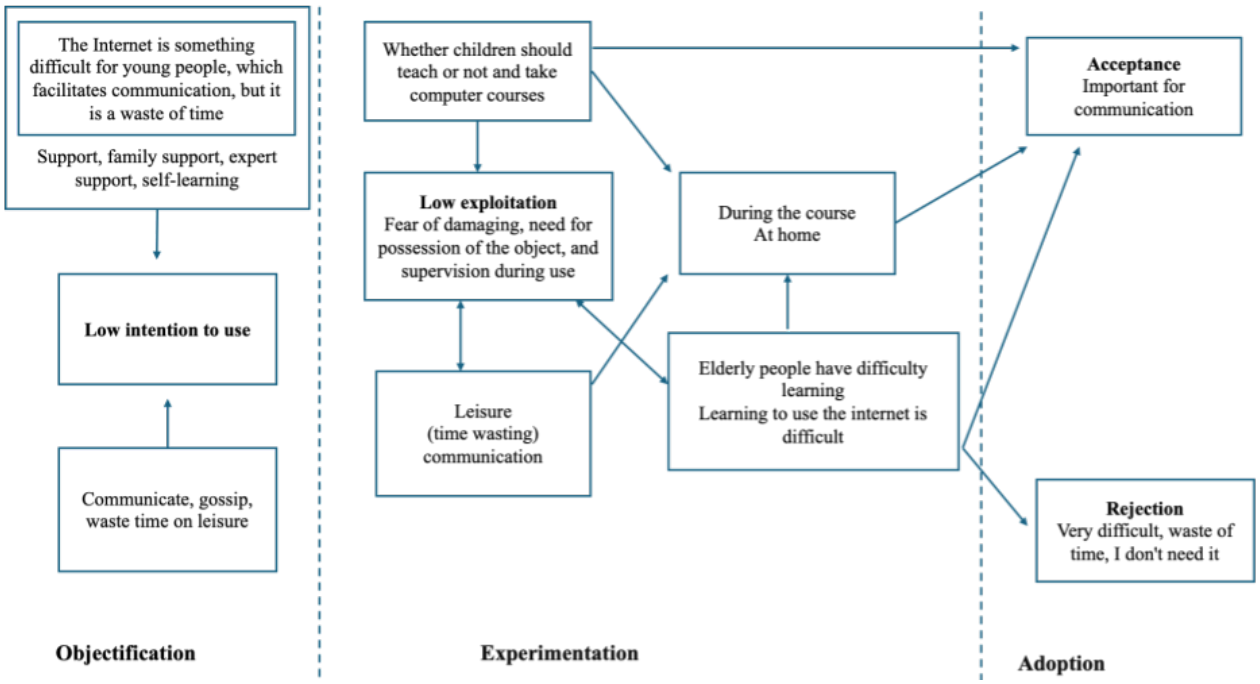

Figure 1. Variation of the STAM for older adults with a low level of digital inclusion

Content analysis referring to the group of older adults with high and medium levels of digital inclusion

The systematization of the data allowed the analysis of 855 speech excerpts, associated with 12 codes (thematic elements), resulting from the three stages suggested in the STAM (Renaud & Van Bilion, 2008). In the Objectification theme, the SR thematic element and context encompassed representations of the social context of Internet production, which in turn highlighted the importance of family (f = 63), intergenerational (f = 38), and peer support (f = 31) for the exploration of the technology. The high intention to use the Internet among these participants proved to be associated with the possibility of expanding bonds (f = 51), communication with family members (f = 38), and as a source of information (f = 30). As in the thematic element perceived usefulness, communication (f = 44) appeared as a positive aspect, along with leisure (f = 22), information (f = 22), and the feasibility of shopping and paying bills online (f = 18).

In the Incorporation theme, the thematic element facilitating conditions was associated with mobile Internet access (f = 39), experience in the work environment (f = 33), and family support (f = 31). The exploration thematic element denoted increased access to the idea that it is possible to reverse mistakes made online (f = 45), together with the exploration of new technologies anchored in previous learning (f = 33). The confirmed usefulness of the Internet addressed the ease of communication (f = 44) and access to information (f = 22), together with the expansion and recovery of the network of bonds (f = 20) and making purchases and payments online (f = 14). Actual use by these participants occurred via the mobile network (f = 32) and use at home (f = 24). While ease of learning/use was linked to previous learning (f = 32) and exercising new roles through the stimulation of learning something new (f = 24).

In the Adoption theme, only acceptance appeared, associated with the importance of the Internet for communication (f = 44), obtaining information (f = 22), and maintaining and consolidating bonds (f = 20). In this way, the acceptance of the Internet was associated with communication, searching for information and a support network, because of the ideas present in the objectivation phase, confirmed in the incorporation phase. This relationship is illustrated in Figure 2.

Content analysis referring to the group of older adults with a mixed level of digital inclusion

The organization of data allowed the analysis of 842 speech excerpts related to 12 codes (thematic elements), from the three steps proposed by the STAM (Renaud & Van Biljon, 2008). In Objectification, the SR thematic element and context covered family support (f = 62) and peer support (f = 46) as relevant to teaching and motivating the use of the Internet. Intention to use was associated with communication with family members (f = 54), contact with former acquaintances (f = 41), and obtaining information that enables new learning (f = 29). In this context, the usefulness attributed to the Internet was associated with communication (f = 59), information (f = 25), and the resumption of friendships (f = 23). Regarding

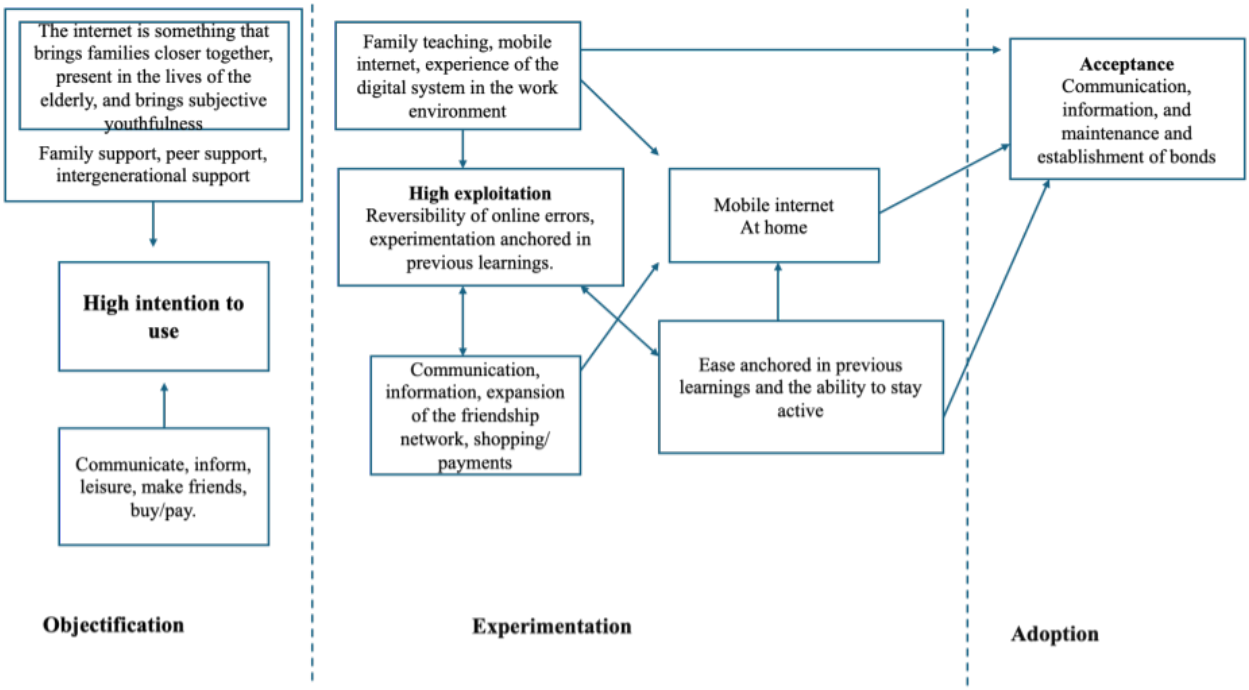

Figure 2. Variation of the STAM for older adults with medium and high levels of digital inclusion

the thematic element facilitating conditions, family support for using the Internet (f = 37) emerged along with participation in a computer course (f = 36) and access via smartphone (f = 30). Exploring the Internet daily was associated with the idea of need (f = 51) and exploration anchored in previous learning (f = 37).

The usefulness element again grouped communication with family members (f = 47), obtaining information (f = 33), and resurrecting bonds with former friends (f = 22). While actual use indicated use in a course (f = 34) and at home (f = 26), the course was the most cited by the older adults with a low level of inclusion (f = 22). Ease of learning was associated with previous learning (f = 29) and the layout of the device used (f = 28), therefore, using the Internet was considered easy due to previous experiences and the layout being like others already known.

Finally, the Adoption theme included only acceptance, which was divided into being important for communication (f = 46), obtaining information (f = 24), and maintaining friendship bonds (f = 23). In this scenario, the representations presented in the objectivation phase were confirmed in the incorporation phase, which contributed to the acceptance. This relationship is shown in Figure 3.

Attitudinal positioning before and after participation in the focus group

The Likert-type scale items ranged from 1 (lowest level of agreement) to 7 (highest level of agreement). Intervals smaller than 4 indicate an unfavorable feeling towards the Internet, while intervals greater than 4 represent that individuals tend to be favorable and intervals of 4 portray that individuals tend to be ambivalent.

The results of the questionnaire applied before the completion of the focus group showed that all the older adults, from all groups, intended to use the Internet to communicate with family members (M = 5.50, SD = 1.20), as well as to encounter old friends (M = 4.89, SD = 1.94). However, unfavorability was expressed regarding the exposure of personal information (M = 3.00, SD = 1.46). Despite this, the favorability regarding the use of the Internet was higher than the unfavorability, since they understood that aging does not hinder learning (M = 5.06, SD = 1.43), that the Internet is not exclusive to young people (M = 5.39, SD = 1.04) and that it is not a waste of time (M = 5.17, SD = 2.04).

After participating in the focus group, the favorability of the older adults with a low level of digital inclusion remained associated with using the Internet to communicate with family members and the perception that the Internet is not an exclusive space for young people, as well as favorability concerning the perception that aging does not hinder learning. While unfavorability was associated with fear of criminal actions and the possibility of access to their personal information by third parties, with the perception of using the Internet as a waste of time, they did not show interest in meeting old friends or forming new bonds and showed no interest in making purchases online.

As a result, after participating in the focus group, this group of older adults with a low level of digital inclusion showed increased favorability concerning the understanding that aging does not impede learning about the Internet. In the other items, there were no significant changes after taking part in the group.

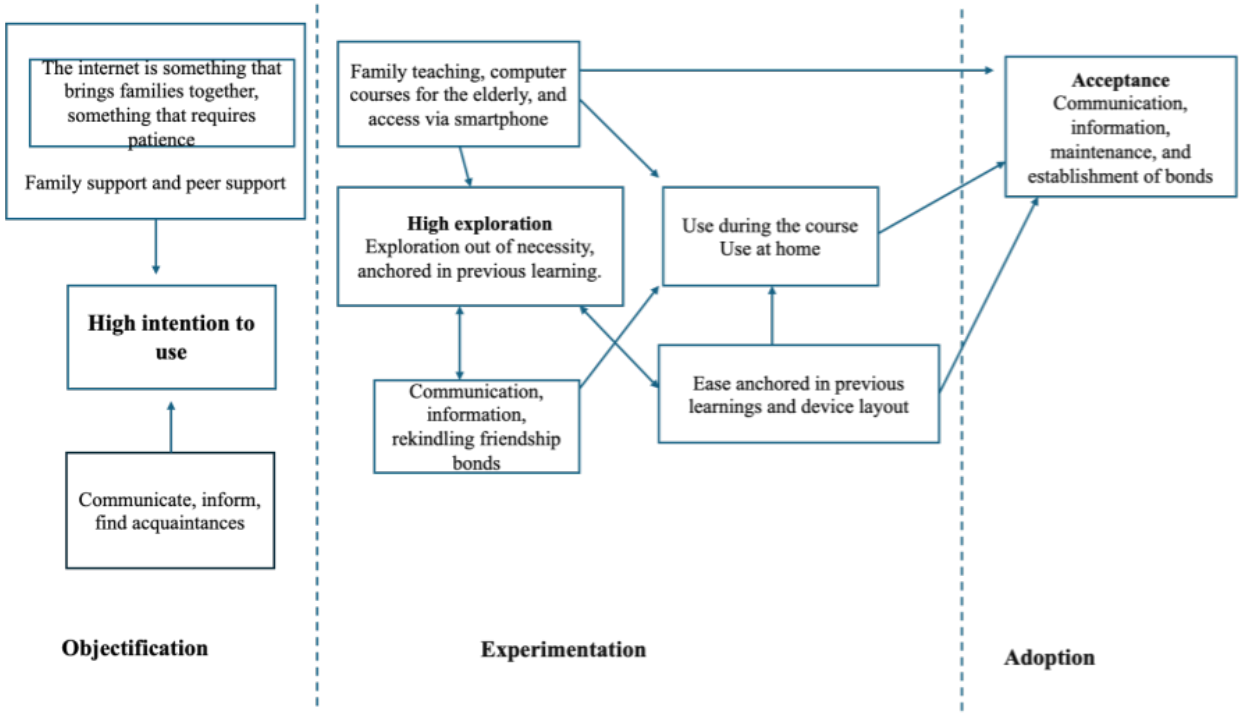

Figure 3. Variation of the STAM for older adults with medium and low levels of digital inclusion

Regarding the mixed group, after participating in the focus group, favorability with the use of the Internet to communicate with family members increased, as did finding old friends and forming new friendships. Favorability was also associated with the notion that aging does not impede learning about the Internet and that it is not something exclusive to young people. Unfavorability remained towards the idea that other people might know about their lives online. Differences were not significant before and after the focus group for the older adult participants with low and medium digital inclusion.

The older adults with high and medium levels of digital inclusion before participating in the focus group tended to favor all the questions. After participating in the group, favorability remained stable, and the idea that the Internet is not a waste of time and makes it possible to find old friends obtained a higher level of agreement. Therefore, the data did not show significant differences before and after participating in the focus group.

Data from the multiple comparison test between the 3 groups of participants are shown in Table 1.

Through the multiple comparison test, after participating in the focus group, the older adults with a low level of digital inclusion showed greater unfavorability with the Internet concerning fear of virtual crimes, access to their personal information, the idea that aging makes learning difficult, and that the Internet is something for young people when compared to the older adults with medium and high levels of digital inclusion. The older adults with medium and high levels of digital inclusion showed greater favorability regarding the possibility of making new friends, reconnecting with old friends, and shopping online when compared to the older adults with low levels of inclusion.

Table 1
Comparison of the level of inclusion before and after the focus group

Questions	Digital inclusion	Focus before				Focus after			
		Mean	S.E.	[1st Q.; 3rd Q.]	*p*-value[1]	Mean	S.E.	[1st Q.; 3rd Q.]	*p*-value[1]
Q1 – I intend to use the Internet to communicate with my family.	Low	5.33	0.33	[5.00; 6.00]		5.67	0.21	[5.00; 6.00]	
	Low and medium	4.83	0.60	[4.00; 6.00]	.092	5.33	0.56	[5.00; 6.00]	.074
	High and medium	6.33	0.33	[6.00; 7.00]		6.50	0.22	[6.00; 7.00]	
Q2 – I'm not afraid to use the Internet due to criminals who can access my information.	Low	2.33	0.42	[2.00; 3.00]		3.17	0.31	[3.00; 4.00]	
	Low and medium	3.17	0.75	[2.00; 4.00]	**.005**	3.67	0.88	[2.00; 5.00]	**.011**
	High and medium	6.00	0.26	[6.00; 6.00]		6.33	0.21	[6.00; 7.00]	

Table 1
Cont.

Questions	Digital inclusion	Focus before				Focus after			
		Mean	S.E.	[1st Q.; 3rd Q.]	*p*-value[1]	Mean	S.E.	[1st Q.; 3rd Q.]	*p*-value[1]
Q3 – I don't dislike the idea of using the Internet, as aging does not hinder learning.	Low	4.17	0.31	[4.00; 5.00]		4.50	0.22	[4.00; 5.00]	
	Low and medium	5.17	0.83	[3.00; 7.00]	.122	5.67	0.67	[5.00; 7.00]	**.024**
	High and medium	5.83	0.31	[5.00; 6.00]		6.33	0.21	[6.00; 7.00]	
Q4 – I like the Internet, because it's not something for young people only.	Low	4.83	0.31	[4.00; 5.00]		4.83	0.31	[4.00; 5.00]	
	Low and medium	5.50	0.56	[4.00; 7.00]	.225	6.00	0.36	[5.00; 7.00]	**.022**
	High and medium	5.83	0.31	[5.00; 6.00]		6.17	0.17	[6.00; 6.00]	
Q5 – I like the idea of using the Internet, as I don't consider it a waste of time.	Low	2.67	0.33	[2.00; 3.00]		2.83	0.31	[2.00; 3.00]	
	Low and medium	6.00	0.52	[5.00; 7.00]	**.002**	6.33	0.33	[6.00; 7.00]	**.001**
	High and medium	6.83	0.17	[7.00; 7.00]		6.83	0.17	[7.00; 7.00]	
Q6I – I don't feel bad when I think that people can find out about my life on the Internet.	Low	1.67	0.33	[1.00; 2.00]		2.17	0.31	[2.00; 3.00]	
	Low and medium	2.83	0.48	[2.00; 4.00]	**.003**	3.17	0.40	[2.00; 4.00]	**.002**
	High and medium	4.50	0.22	[4.00; 5.00]		4.83	0.17	[5.00; 5.00]	
Q7 – I like the idea of using the Internet to make new friends.	Low	2.00	0.26	[2.00; 2.00]		2.50	0.22	[2.00; 3.00]	
	Low and medium	4.83	0.87	[3.00; 7.00]	.007	5.83	0.54	[5.00; 7.00]	.002
	High and medium	5.83	0.31	[5.00; 6.00]		6.50	0.22	[6.00; 7.00]	
Q8 – I like to think that on social networks I can find old friends.	Low	3.00	0.36	[2.00; 4.00]		3.00	0.36	[2.00; 4.00]	
	Low and medium	4.83	0.70	[3.00; 6.00]	.003	5.50	0.62	[5.00; 7.00]	.002
	High and medium	6.83	0.17	[7.00; 7.00]		6.83	0.17	[7.00; 7.00]	
Q9 – I feel good when I think about shopping online.	Low	1.17	0.17	[1.00; 1.00]		1.50	0.22	[1.00; 2.00]	
	Low and medium	3.33	0.92	[1.00; 5.00]	.003	4.00	0.78	[2.00; 6.00]	.001
	High and medium	6.17	0.31	[6.00; 7.00]		6.33	0.21	[6.00; 7.00]	

DISCUSSION

This study aimed to characterize the process of adoption and acceptance of the Internet by older adults with different levels of digital inclusion and relate this process to their social practices and attitudes. The objectification, incorporation, and adoption of the Internet by older adults were investigated. It should be noted that objectification refers to making concrete what until then was abstract, a concept; anchoring is about the process of making a hitherto unknown idea familiar: they are two sides of the same process, therefore, despite being presented separately for didactic reasons, objectification, and anchoring are two connected processes (Marková, 2000). Objectification, according to Renaud and Van Biljon (2008), mainly influences the intention to use the Internet, as it encompasses the individual's context, the perceived usefulness, and the intention to use it.

Data from the focus group with older adults with a low level of digital inclusion in terms of objectification demonstrate family support, support from specialists, young people as specialists, and learning alone as the social context of the representations. The group of older adults with high and medium levels of digital inclusion highlighted family support, peer support, and intergenerational support as the context of the representations. While the older adults in the mixed group mentioned family support and peer support.

Therefore, in all groups, family support emerged as important for teaching, and to arouse interest and facilitate access to the Internet. Accordingly, when a family member uses the Internet, they tend to encourage and teach older adults to use the network, which facilitates communication, develops a greater sense of belonging, reduces social isolation, and increases the feeling of capability regarding the technology (Chang, McAllister, & McCaslin, 2015). In the study by Chang, McAllister, and McCaslin (2015), 36% of older adults reported learning to use technology with family members and that children were more likely to recognize their parents as integral members of the family through digital inclusion. Based on this, family support is highlighted as bringing the family closer and increasing contact, with this influence on the use of technologies, either through advice or support in the act of use, being important for older adults (Peek et al., 2016). Therefore, learning about the Internet by older adults can be considered more a social process than a technical issue (Wu et al., 2015).

The study by Brito et al. (2018) on the SR of care and old age points out that the care received, whether from family, friends, or other people in the social circle, is important for quality aging; mainly regarding helping the individual to achieve a certain level of independence. It is noteworthy, therefore, that the use of the Internet can contribute to independence if it occurs assertively.

However, for older adults with a low level of inclusion, family support may also be insufficient or burdensome for the family. In such cases, while younger family members are considered experts in the subject, they may not have the time to teach them. Therefore, there is a need for specialized professionals. Wu, Damnée, Kerhervé, Ware, and Rigaud (2015) identified that many older adults are fascinated with technologies and that people who master technologies are considered specialists or people with a lot of power. The fact that they mention the support of young people confirms the notion that to use the Internet it is necessary to be young, a specialist, or very intelligent (Barnard et al., 2013; Batista et al., 2015).

However, the option to learn independently arises when the presence of family members becomes anxiety-inducing. This occurs due to the fear of transitioning from the role of one who teaches to that of one who needs to learn, which is associated with the fear of being perceived as outdated and irrelevant. Such concerns can lead to feelings of inferiority and helplessness (Wu, Damnée, Kerhervé, Ware, & Rigaud, 2015). It is necessary to consider that older adults feel an obligation to use technologies to adapt to society, whether to keep in touch with family and friends or to receive information for fear of being excluded (Wu, Damnée, Kerhervé, Ware, & Rigaud, 2015). The older adults with a high level of inclusion cited intergenerational support, with young people being considered experts and therefore mediators of learning, yet this coexistence provoked a kind of subjective joviality (Barnard et al. 2013).

Unlike the previous group, the mixed and high-level groups recognized peer support for technological learning, as they pointed out that an older adult with more experience becomes a reference, a notion that is based on the idea of the Internet as relevant to older adults. According to Naumanen and Tukiainen (2007), the provision of computer workshops by older adults, specifically for their peers, serves as a motivating factor. This finding suggests that aging does not hinder technological learning. It also highlights that individuals in the same life stage exhibit greater patience in understanding difficulties, fostering an environment of symmetry, experience sharing, and involvement.

The intention to use, also associated with objectification, is determined by perceived usefulness, influence, and social context (Van Biljon, Renaud, & Van Dyk, 2013). All participants with a low level of inclusion demonstrated low intention to use due to four aspects: exclusive knowledge of specialists, waste of time, Internet as something for young people, and use for communication with family members, the latter being the only one seen as useful. The mixed groups and those with a high level of inclusion showed a greater intention to use it for three reasons: expansion of friendship bonds, source of information, and communication with family members. The STAM assumes that the greater the perceived usefulness and ease of use of the technology, the greater the intention to use it (Silva, 2014).

Therefore, even if the older adult perceives technology as useful, if its use is complex or considered futile, this ends up pushing them away (Silva, 2014), as can be seen with the older adults with a low level of digital inclusion. The perception that the Internet exclusively belongs to specialists creates a belief among older adults that they cannot learn without the assistance of someone who possesses the knowledge. Moreover, this notion is further reinforced by the association of technology and digital proficiency with the younger generation, who are born into a technological and digital context. Meanwhile, due to the cognitive decline associated with aging, the older adult may be perceived as incapable (Buse, 2010). However, the knowledge of older adults can play a crucial role in shaping their perception of the Internet, allowing them to anchor their representation of it without fear. Symbolization processes enable the development of organizing frameworks that guide social life (Jodelet, 2017). By symbolizing their representation of the Internet and relating it to their reality, older adults can expand their intention to use it.

For the mixed group and the group with a high level of inclusion, the intention to use the Internet to communicate with family and friends emerged as an important factor for using it. In this way, it protects the older adult from social isolation (Chang, McAllister, & McCaslin, 2015). As previously mentioned, the intention to use and the perceived usefulness are based on social aspects, therefore, the family relationship is of great importance for the well-being and satisfaction of the older adult and can be facilitated through the Internet (Chen, Wen, & Xie, 2012).

For the older adults who used it assiduously, contact with friends and searching for information represented important factors for the intention to use it, as they caused a feeling of social integration (Sims, Reed, & Carr, 2017). Older adults who seek contact and bonding through the Internet tend to develop self-esteem and security (Carleto, 2013), those who want to be informed end up expanding their social belonging, while the search for new knowledge develops a sense of security when faced with new things (Ihm & Hsieh, 2015).

For older adults with a low level of digital inclusion, the Internet appeared to be a waste of time and synonymous with inactivity, a factor that reduced the intention to use it. The idea that older adults should not perform some activities has been socially deconstructed, however, in the popular imagination there are still representations that associate aging with a lack of productivity, and, to escape this stereotype, older adults move away from technologies that cause idleness or that they consider to be a waste of time (Goulart et al., 2013).

Perceived usefulness corresponds to another particularity of objectification, for the older adults with a low level of inclusion it was associated with communication, "gossip" and leisure, with communication being the only aspect seen as positive and that increased the intention to use. On the other hand, the older adults with a high level of digital inclusion pointed out only positive uses of the Internet, namely communicating, informing, having fun, and making purchases/payments. Like the others, the mixed group highlighted communication as useful, but also access to information and the revival of old bonds. It was noticed that the usefulness perceived by the participants was associated with high or low intention to use.

Older adults with a low level of inclusion associated the Internet with the use of the telephone, which enables access to information and communication with family members at a low cost. The association of technology with communication and knowledge acquisition is a way to participate in the world and keep up to date, being useful and beneficial functions (CETIC, 2017). With gossip emerging as a decrease in intention to use the Internet, as their social exposure could be used for malicious purposes, it is common for older people not to use the Internet due to mistrust and fear of the violation of their privacy (Chang, McAllister, & McCaslin, 2015).

Because of this, the leisure provided by the Internet was associated with recreation through videos, games, and social networks. The use of the Internet by older adults was distributed between searching for information (25.4%), sending e-mails (21.2%), and leisure through games and videos (13.2%) (Neves & Amaro, 2012). However, only one participant with a low level of inclusion considered leisure positive and that it contributes to the health process, the others associate it with a waste of time. Leisure is essential to reorganize the representations of older adults concerning the Internet. This is particularly important because the media, through the transmission of sounds, images, information, and entertainment, constitutes a cultural system that shapes the production, transmission, and consumption of these elements. This is essential for the production and circulation of representations, which have a significant impact on individuals' ways of being, thinking, knowing, and relating (Fischer, 2001).

For older adults with a high level of inclusion, buying products and paying bills via the Internet was useful mainly because they avoided traveling. Leppel and McCloskey (2011) identified that young people are more likely to agree that shopping online is more convenient and saves time. In this context, older adults who have this positive view of the Internet related to shopping, leisure, or obtaining information, are in the process of maintaining an active life, their autonomy, and their social participation (Carleto, 2013).

Finally, in the mixed group, communication was also associated with reviving old friendships. The relational impact caused by the revival of bonds is of paramount importance for the quality of life of older adults (Eira Frias et al., 2014), however, the participants with a low level of inclusion associated the usefulness only with the informational aspect, which is the value already perceived based on the confirmed usefulness through the actual use of technologies.

Regarding the facilitating conditions, the older adults with a low level of inclusion associated with learning through their children (who teach them or not) and the computer course. On the other hand, the older adults with a high level of inclusion identified mobile Internet access, teaching by the family, and learning in the work environment as facilitators. In the mixed group, teaching by the family, computer courses, and access via smartphone prevailed. Consequently, family support appeared in all groups as a condition that facilitates learning and the development of skills, along with professional support in computer courses and access to technology in the work environment (Eira Frias et al., 2014). According to Chen, Rong, Ma, Qu, and Xiong (2017) the difficulty of manipulation does not limit the use of technology if social support is stronger than adversity because without social support, older adults tend to forget what they learned in computer courses.

Access via smartphone was identified as a facilitator of access due to its accessibility, that is, ease of access offered by the layout, as well as the absence of barriers in use and acquisition (Godinho, 2010). However, in most cases, the older adults had not chosen their smartphones, which undermines the appropriation process, as it does not allow them to test the available layouts to identify those that are easy to use (Renaud & Van Biljon, 2008). Furthermore, older adults with a high level of digital inclusion associated the mobile network with ease of access. This is because mobile devices provide convenient access to the Internet, allowing interaction through touch screens without the need for a keyboard or mouse. The ability to access the Internet anytime and anywhere through mobile devices reduces feelings of loneliness and enhances well-being and autonomy among older adults (Sims, Reed, & Carr, 2017).

Regarding exploration, older adults with a low level of digital inclusion identified the feeling that they could break something, the need to own the object, and supervision by specialists as aspects that influence the low level of exploration and low intention to use. For older adults with a high level of digital inclusion, the perspective of reversibility in case of mistakes made and the exploration of new technologies anchored in previous learning emerged. In the mixed group, exploration anchored in previous learning also stood out, however, entered the perspective of the need to explore.

In this way, older adults with a low level of inclusion during exploration feared damaging something that did not belong to them, which reduced exploration and caused a lower digital inclusion index (Anjos & Gontijo, 2012). Because of this, there was a need to own the technological object or be monitored by specialists. Supervision would be a way to

avoid making mistakes during technological exploration, as someone would be available to help if necessary, however, without continuous supervision, this can end up making the older adult tense and uncomfortable (Batista, Souza, Schwartz, Exner, & Almeida, 2015).

The perception that mistakes can be reversed increases the perception of control and exploration. Confidence in the functionality of the technology is obtained through the ease of recovering, reducing, and explaining the mistakes made, which enables the feeling of control over the technology (Renaud & Van Biljon, 2013). For the older adults in the mixed group, exploration was based on the need to obtain information and communicate, which affects the way the technology is understood and explored (Ma, Chan, & Chen, 2016).

Finally, exploration anchored in previous learning corresponds to the notion that previous experiences affect the adoption and learning of new technologies, while the positive attitude and frequency of use constitute facilitating conditions (Eira Frias et al., 2014). Renaud & Van Biljon (2008) identified that the representation of technology is based on experiences and that older adults who are more familiar with technologies tend to express favorable attitudes. Studies of social representations with older adults about the home and the body present experiences as significant for anchoring practices (Castro et al., 2021; Silveira, Camargo, & Giacomozzi, 2021).

Representations regarding confirmed usefulness involved similar issues among the three groups. Communication through messaging apps and social networks was cited by all participants. In the study by Chang, McAllister, and McCaslin (2015) 61% of the older adults reported using the Internet to communicate with family and friends. Online communication also allows friendship bonds to be expanded and revived, which promotes well-being, quality of life, engagement, and a sense of social belonging (Sims, Reed, & Carr, 2017).

The older adults with greater user experience mentioned the perception of purchases and payments as useful. This use promotes autonomy for older adults, as it facilitates the performance of routine tasks (Ihm & Hsieh, 2015). Leisure was cited as useful, when not used excessively. This arises with videos, social networks, and also communication, being only identified as useful due to exploration and confirmed through real use, which determines the ease of learning and the perceived usefulness, thus affecting the acceptance or not of the technology (Renaud & van Biljon, 2008).

Actual use of the Internet was associated with use on the computer course and supervised use at home for the older adults with a low level of inclusion and those in the mixed group, as they needed support to use the tools and understand the virtual language, which could later be converted to autonomous use (Ma, Chan, & Chen, 2016). Use at home was more associated with online purchases and payments in a convenient way (CETIC, 2017), while the course emerged as a space for specialized assistance for engagement and reduction of anxiety related to the use. However, expert support and family support need to be in unison for long-term Internet adoption (Foletto, Fiepke, & Wilhelm, 2018).

For the older adults with a higher level of inclusion, actual use took place inside and outside the home, supported by the mobile Internet, which facilitated frequent use and awakened the feeling of always being informed and integrated into the social context. It allowed the participants to constantly talk to people and exchange photos, practically replacing printed letters and photo albums (Forletto, Fiepke, & Wilhelm, 2018). The accessibility of use is important from the objectivation phase to facilitate the acceptance and adoption of the technology because if the older adult manages to use it, they perceive the usefulness and increase the level of experimentation, which leads to actual use and ultimately generates technological acceptance (Van Biljon, Renaud, & Van Dyk, 2013).

Ease of learning and use is the last point of the incorporation phase. The older adults with a low level of digital inclusion addressed the idea that aging makes learning difficult and the notion that the Internet itself is already complex to learn, that is, there are internal and external attributions that make learning difficult. The need to assign causes stems from the need to find explanations to predict and control the results of phenomena (Heider, 1944), with external explanations to justify failures possibly being the result of self-protection and the need to maintain self-esteem (Carleto, 2013). Therefore, the feeling of being capable, associated with facilitating conditions, can influence the perceived usefulness and ease of use (Ma, Chan, & Chen, 2016).

The participants with a higher level of inclusion mentioned positive aspects, such as anchoring in previous learning and the accessibility of the layout. In this way, ease is associated with previous knowledge and understandable interfaces that contribute to the actual use and influence the acceptance or rejection of the technology, also contributing to the older adult being interested and feeling able to explore and learn to use the tools (Renaud & Van Biljon, 2008; Van Biljon, Renaud, & Van Dyk, 2013).

The need to remain active was cited as a facilitator of learning/use by the mixed group, related to the notion of the older adult as an active agent in the aging process, which increases social participation and provides independence, self-realization, dignity, autonomy and well-being (WHO, 2005). Therefore, the way older adults interpret their aging process is essential to identify how they relate to new technologies (Peek et al., 2016).

Finally, the adoption of the Internet demonstrated two possibilities for older adults with a low level of inclusion: acceptance or rejection. For the mixed and high-level inclusion groups, acceptance was the only possibility. Rejection is based on the principle of the complexity of the Internet, which decreases the level of exploration, and in turn

leads to rejection (Chen, Rong, Ma, Qu, & Xiong, 2017). Adoption, in turn, is associated with relevance considering communication, access to information, and maintenance/formation of bonds, that is, ideas foreseen in the objectivation phase and confirmed during the incorporation phase. The study by Chen and Chan (2013) also demonstrates that Internet acceptance is directly linked to perceived and confirmed usefulness for communication and access to information, as well as to the support received during the appropriation phase and the resulting ease of use. In this way, the representations elaborated and shared about the Internet affect social practices and are affected by them (Rouquette, 1998).

In terms of how the acceptance and adoption of the Internet relate to the social practices and attitudes of older adults regarding the Internet, it was found that after the focus group, the participants became more favorable to seeking information to stay up to date. This intention is related to the feeling of belonging to current society and, in a more intimate way, to family involvement (Eira Frias et al., 2014). According to Abric (2001), a change in attitude occurs when a counter-attitudinal element is directed towards a central element of the representation, therefore, the increase in favorability regarding the Internet linked to communication, bonds, and information corresponds to possible central elements.

Similarly, older adults with less evidence of fear of cybercrime tend not to be concerned about exposing personal information, which corresponds to a higher index of digital inclusion (Bolza, Vieira, Coronel, & Löbler, 2013). High levels of exploration increase the level of trust in the technology, which in turn is associated with privacy and the degree of openness to virtual interaction, while low trust limits the technological experience and exploration (Barnard et al., 2013).

The anchoring of the social relationship attitudes occurs through social representations (Doise, 2001), therefore, during the focus group, representations about the Internet were elaborated and shared, which caused an increase in favorability, mainly among those who sought to stay informed. The older adults with less favorability to the Internet, after contact with older adults with a higher level of digital inclusion, may have increased their favorability for some aspects as a way of expanding their social belonging in a group to which they did not belong, but want to join (Doise, 2001).

The representation that aging makes it difficult to learn from the Internet tends to be associated with the notion of the Internet as difficult to learn because it is in constant change, while individuals tend to seek stability in known experiences at this stage of life (Weiner, 1985). However, these representations are not unanimous, as they are influenced by different perspectives, even if they have some points in common (Doise, 2001). Thus, the idea that aging does not hinder learning lacks consensus but can serve as a basis for taking a position regarding favorability or otherwise.

Similarly, the notion that the Internet is not exclusive to young people and that it is not a waste of time before and after the focus group remained favorable for older adults with a higher level of inclusion. This social thinking impairs the recognition of older adults as potential users of technologies, as this stereotypical view causes the older adults themselves to behave according to social expectations (Santos, Alegre, & Freire, 2016). Therefore, representations serve as a basis for action, and their contents are not indifferent to the individual and it is not possible to isolate the cognitive and affective aspects of representations and positions taken (Grize, 2001). Accordingly, the increase in favorability of older adults occurred through the sharing of representations of the Internet as something appropriate for younger and older people.

The data also showed that older adults tended to use the Internet to maintain friendships rather than to develop new relationships, due to the understanding that they had little time to live and, therefore, prioritized the maintenance of bonds (Sims, Reed, & Carr, 2017). However, older adults with a higher level of digital inclusion tended to expand their network of contacts, aiming to increase the sense of social belonging through digital belonging (Chang, McAllister, & McCaslin, 2015). According to Tajfel (1974), social identity is constituted through social interactions and includes, according to Vala (1993), social representations and attitudes. In this way, the change in attitudinal positioning after participating in the group may be related to the older adults who shared similar representational cores. Within a system of representations, certain elements can become hidden or salient depending on the context in which they are situated, in other words, due to intersubjectivity, the social representations constructed in the interaction are affected (Jodelet, 2017).

However, those participants who did not learn to use the Internet through the computer course decreased their favorability associated with meeting old friends after participating in the focus group, however, increased their favorability regarding forming new bonds. Thus, the older adults showed interest in expanding their virtual social capital after participating in the group, which required trust in social relationships and engagement to achieve their interpersonal and emotional goals (Chen, Wen, & Xie, 2012).

The favorability and unfavorability of older adults regarding the Internet appear to include the stages of objectification and incorporation of the STAM. During the objectivation phase, the older adult recognizes, based on their social context and perceived usefulness, the intention to adopt the use of technology. Then, in the incorporation phase, they explore the technology, considering their experiences and knowledge. From this, the older adult confirms or rejects the usefulness and ease of use, if positive,

they move on to the stage of actual use, which finally leads to acceptance of the Internet (Renaud & Van Biljon, 2008). Therefore, what the older adult thinks about the Internet, their attitudes and social representations about the Internet, and about aging influence their intention to use it and its perceived usefulness.

The favorable and unfavorable attitudes appear associated with experience and length of use, that is, with social practices on the Internet. However, it is not possible to distinguish whether exploration generates favorability or whether favorability fosters exploration, as attitudes are anchored in social relations (Doise, 2001) and there is a reciprocal relationship between representations and social practices (Rouquette, 1998). Therefore, it is necessary to provide an environment with access to technology, but also to provide spaces for peer and intergenerational discussion, as social support is essential for the acceptance and adoption of technology in the STAM (Renaud & Van Biljon, 2008).

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