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## Digital Skills And The Awareness Of Seniors About Virtual Reality

### **ABSTRACT**

The aim of the presented paper is to define the current situation and attitudes of seniors related to the way they perceive selected current digital technologies, in particular, virtual reality. The digital technologies in question have significantly been widening the gap between the generation of younger people and seniors. It is defined in the first part of the presented paper. Subsequently, after presenting the theoretical basis, by applying the focus group method, the authors try to define how seniors perceive modern technologies, their positives, and negatives, how they feel when using them (threatened, enthusiastic) and what do they see as the biggest pitfalls that prevent them from using the technologies. To specify the topic in more detail, the authors focused on a specific technology – virtual reality (specifically VR headset - HTC Vive Pro, all the members of the focus groups had an opportunity to play three different VR games on it). The results of the research are also important for the development of digital game studies, as they provide closer insight into the behaviour of a specific age category, which is often excluded from the issue.

### **KEY WORDS**

Baby Boomers Generation. Digital Technologies. Focus Group. Generation X. Silent Generation. Virtual Reality.

# 1. Introduction

Year 2021. Different authors define and give this age different names – post-factual age, postmodern, hypermodern, supermodern, information society, etc. However, most of them agree that it is very fast-paced and is characterized by hyperconsumption, hyperindividualism and hyper changes.<sup>1</sup> As Z. Slušná notes, “our everyday – real and virtual – space is full of visual representations that seek our attention and force us to do specific activities or have certain patterns of behaviour: consumption without need – consumerism,”<sup>2</sup> while subsequently specifying that the whole of contemporary society, respectively the space, in which it is, is full of images whose task is to arouse desire, to enchant, to seduce.<sup>3</sup> Among the expressive principles of this hypermodern society she includes, for example, undisguised hedonism from things experienced, aestheticized narcissism, admiration of youth, exclusion of the old and the general dictation of being “in.” It is exactly in this context that we decided to conduct research on how a group of seniors who, we assume, do not fall among the typical representatives of this hyperconsumer majority, perceive modern technological advances (specifically the visually captivating virtual reality).

In the group of seniors, we included the so-called the silent generation, the Baby Boomers Generation, and Generation X. A. Abramson defines the age variance of each generation as follows. The term *Silent generation* refers to people who were born in 1928–45, *Baby Boomers* refers to people born between 1946–64 and *Generation X* refers to people who were born between 1965–80.<sup>4</sup> The people of the *Silent Generation* grew up during the Second World War and the economic crisis, which significantly affected their character. They are characterized by a greater fear of expressing their own opinions and confrontations, which they would always deal with by silence. Hence the origin of the name itself, which was first used in Time magazine. R. Smith notes that its members were also called “*Radio Babies*” or “*Traditionalists*”. They were characterized by lower birth rates (a consequence of the social situation when people did not dare to start families and raise children), thriftiness, respect and loyalty (to authorities and employers – they often spent most of their careers with the same employer; religion, faith, and family ties and commitments were also important for them). At the same time, however, it should be noted that efforts to promote equality and the civil rights movement were also typical of them. Its members thus included many important personalities who changed history, e. g. Martin Luther King Jr.<sup>5</sup> The parents of the Baby Boomers generation were members of the Silent Generation. The baby boom (the growth in birth rate) occurred after the end of World War II. Authors U. Wittig-Berman and N. Beutell recall that the Baby Boomers were formed by assassinations (Martin Luther King, JF Kennedy, RFK), social unrest, astronomical discoveries (the first people on the Moon), civil rights movements, women’s movements, diversions from traditional family, but also illegal drugs and the Cold War. Because of this, they are very individualistic and cynical.<sup>6</sup> According to D. Schawbel, they are the generation of the most active and rich people, who at the same time achieved the

<sup>1</sup> VERHOEVEN, P., VERČIČ, D.: Organising and Communicating in Hypermodern Times. In *Communication Director*, 2017, Vol. 13, No. 4, p. 38-40. [online]. [2020-12-13]. Available at: <<http://www.communicationmonitor.eu/wp-content/uploads/2018/03/Verhoeven-Vercic-2017-Organising-and-Communicating-in-Hypermodern-Times-Hypermodernity-Postmodernity-Strategic-Communication-Public-Relations-PR.pdf>>.

<sup>2</sup> SLUŠNÁ, Z.: Simulakrá v kontexte hyperkonzumu: zvädzanie k zážitku a konzumu ako inovovaná funkcia nových médií a fotografie. In *European Journal of Media, Art & Photography*, 2013, Vol. 1, No. 2, p. 68-75.

<sup>3</sup> See: BRNÍK, A.: *Násilie na televíznych obrazovkách v kontexte jednotného systému označovania*. Trnava: FMK UCM, 2020, p. 90.

<sup>4</sup> ABRAMSON, A.: *Multi-Generational Differences in the Workplace*. [online]. [2020-12-03]. Available at: <<https://www.wsb.com/speakers/alexis-abramson/>>.

<sup>5</sup> SMITH, R.: *The Silent Generation: Characteristics and History*. [online]. [2020-12-04]. Available at: <<https://www.familysearch.org/blog/en/silent-generation-characteristics/>>.

<sup>6</sup> BEUTELL, N., WITTIG-BERMAN, U.: Work-Family Conflict and Work-Family Synergy for Generation X, Baby Boomers and Matures. In *Journal of Managerial Psychology*, 2008, Vol. 23, No. 5, p. 509. [online]. [2020-12-09]. Available at: <[https://www.researchgate.net/profile/Nicholas\\_Beutell/publication/242341096\\_Work-family\\_conflict\\_and\\_work\\_family\\_synergy\\_for\\_Generation\\_X\\_baby\\_boomers\\_and\\_matures\\_Generational\\_differences\\_predictors\\_and\\_satisfaction\\_outcomes/links/0c96052c3156ed8645000000.pdf](https://www.researchgate.net/profile/Nicholas_Beutell/publication/242341096_Work-family_conflict_and_work_family_synergy_for_Generation_X_baby_boomers_and_matures_Generational_differences_predictors_and_satisfaction_outcomes/links/0c96052c3156ed8645000000.pdf)>.

highest available income for food, clothing (etc.) and the possibility of enjoying their retirement age. Although they retire later (due to the economic recession in 2008), they live longer than any generation before them.<sup>7</sup> Members of Generation X were again influenced by historical events such as the end of the Cold War, the fall of the Berlin Wall, the period of Thatcher's reign, etc. The authors U. Wittig-Berman and N. Beutell define the characteristics of the generation as follows. Its members search for emotional security, prefer informality, they strive for a work-life balance and value career opportunities and positive working relationships more. At the same time, they can be characterized by high divorce rates and they function and educate their children in so-called single-parent families.<sup>8</sup> An important part of this generation is expanding digital technology. Its members already work with computers and take advantage of the Internet, which makes them increasingly independent, although the differences in digital skills are most striking across this generation. While the Silent Generation and Baby Boomers have already reached or are reaching retirement age, in Generation X there are still people who work. That is why, for the purposes of our research, we will particularly focus on the first two generations, which we can already consider as seniors, because most of them have reached the age of 65.

Seniors constitute a group of the population that is characterized by several characteristics that define them much more accurately than just an age classification. Their lives are accompanied by an ageing process that manifests itself at the physical, mental and social level of the individual. The process of ageing at different levels is very individual and partially depends on the lifestyle that the individual has led during his or her life. The lifestyle is as well connected to the functional age, which means the intersection of the psychological, physical and social potential of a person.<sup>9</sup> In general, however, as time goes on, the functions of seniors weaken, whether it is the loss of social ties as a consequence of retirement or death of their relatives and friends. In addition, physical functions gradually weaken similarly. Both above-mentioned phenomena result in mental health problems and the ability of a senior to adapt is also reduced.<sup>10</sup> The issue of acquiring skills in the field of new, especially digital technologies, the acquisition and use of which is a challenge for seniors, is also connected with this. It is the ability to adapt and make full use of the benefits and risks of digital technologies that has divided society into two groups – digital natives and digital immigrants. The second group is mainly represented by seniors that face digitization and technical progress, due to which many offline activities are being moved to the online space. Digital immigrants were born at a time when these technologies were about to emerge in the future or were still in an early stage of development. For example, they are not familiar with using tablets or surfing the Internet via mobile phones, it is difficult for them to learn to use these devices or they are afraid of them. Prensky compares the term of digital immigrant to real immigrants. According to M. Prensky, digital immigrants are able to adapt to the new environment – the digital world – at the same pace as if they moved to a new country. For some it goes faster, for others slower. It follows from the above that even if digital immigrants do not have the automatic ability to work with digital media or devices, they are able to learn it.<sup>11</sup>

<sup>7</sup> SCHAWBEL, D.: *53 of the Most Interesting Facts About Baby Boomers*. [online]. [2020-12-07]. Available at: <<https://danschawbel.com/blog/53-of-the-most-interesting-facts-about-baby-boomers/>>.

<sup>8</sup> BEUTELL, N., WITTIG-BERMAN, U.: Work-Family Conflict and Work-Family Synergy for Generation X, Baby Boomers and Matures. In *Journal of Managerial Psychology*, 2008, Vol. 23, No. 5, p. 509-510. [online]. [2020-12-09]. Available at: <[https://www.researchgate.net/profile/Nicholas\\_Beutell/publication/242341096\\_Work-family\\_conflict\\_and\\_workfamily\\_synergy\\_for\\_Generation\\_X\\_baby\\_boomers\\_and\\_matures\\_Generational\\_differences\\_predictors\\_and\\_satisfaction\\_outcomes/links/0c96052c3156ed8645000000.pdf](https://www.researchgate.net/profile/Nicholas_Beutell/publication/242341096_Work-family_conflict_and_workfamily_synergy_for_Generation_X_baby_boomers_and_matures_Generational_differences_predictors_and_satisfaction_outcomes/links/0c96052c3156ed8645000000.pdf)>.

<sup>9</sup> HROZENSKÁ, M. et al.: *Sociálna práca so staršími ľuďmi a jej teoreticko-praktické východiská*. Martin : Osveta, 2008, p. 62.

<sup>10</sup> HANGONI, T., CEHELSKÁ, D., ŠÍP, M.: *Sociálne poradenstvo pre seniorov*. Prešov : Vydavateľstvo Prešovskej univerzity v Prešove, 2014. [online]. [2020-09-12]. Available at: <<http://www.unipo.sk/public/media/13489/Soci%C3%A1lne%20poradenstvo%20pre%20seniorov.pdf>>.

<sup>11</sup> PRENSKY, M.: Do They Really Think Differently? In *On the Horizon*, 2001, Vol. 9, No. 6. No pagination. [online]. [2020-11-12]. Available at: <<https://www.marcprensky.com/writing/Prensky%20-%20Digital%20Natives,%20Digital%20Immigrants%20-%20Part2.pdf>>.

However, many factors related to ageing need to be emphasized when speaking of the education of seniors in the field of acquisition of skills to use digital media. Except for health problems of a physical nature (deteriorating vision or fine motor skills, diseases of the musculoskeletal system, etc.), the impairment of cognitive functions must be taken into account, including perception and processing of information, attention, problem solving, speech and memory.<sup>12</sup> The latter – memory – represents an important influencing factor in the process of learning, but also in everyday life. An older person needs more memorising to remember new information. At the same time, the degree of teachability is also related to the neuroplasticity of the brain – the ability of neurons to change their properties according to external influences.<sup>13</sup> This means that if we, for example, learn to use a tablet, new nerve connections will appear in our brain, while others will remain weakened. Ultimately, seniors can learn to use any technology, but it takes them more time depending on how plastic their brain is. Therefore, it is important that during the acquisition of these digital skills, seniors are approached appropriately. The first important tool is the approach of teachers or lecturers. They should be patient as the seniors are in a new environment of digital technologies, which they do not understand and are not familiar with, so they may ask many questions repeatedly. Seniors can forget more often, so it is important to explain the individual actions repeatedly. It is also very important to let seniors work independently and not solve the problems that have arisen in the digital world for them and, if so, with proper explanation and clarification.<sup>14</sup> In addition to this, the health and psychological limits of seniors must also be taken into account as well as the characteristics of a particular generation, life experiences, on the basis of which their personalities, opinions and attitudes were formed. Many of them have difficulties with fine motor skills or poor vision, which makes working especially with touch-screen technologies more difficult. Any nervous behaviour by the lecturer caused by low patience levels may upset the senior more quickly, as he or she is more vulnerable due to the life challenges they face. It is also effective if seniors learn in the company of a friend or a partner, as they can inspire each other and socialize, which is an extremely important aspect of a senior's life that needs to be supported. The attitude of seniors themselves and their belief in new advances in technology, the Internet, smartphones and computers, also play a major role in the barriers to learning to master digital technologies. Seniors must first overcome the fear they have of technology or a negative attitude towards the effects of these technologies.<sup>15</sup> If they manage to overcome these prejudices or fears, seniors can benefit from the technologies.

Apart from smartphones and the Internet, virtual reality (hereinafter referred to as VR) also has its justification in the lives of seniors. Virtual reality can have positive effects on the social and emotional aspect of senior's lives. Seniors who regularly interact with VR compared to those who only watch television (but the content is the same: travel, relax, popular places), feel better in terms of health, positive emotions predominate over negative emotions and depression and they do not feel so isolated. They manage conflicts better, or avoid them, and feel more relaxed than seniors who only watch television.<sup>16</sup> As an example we can mention a project that was realized at the University of Tokyo, where they help seniors to overcome physical deficiencies with the use of virtual reality. Thanks to 360-degree videos, seniors can visit places they would

<sup>12</sup> HAGOVSÁ, M.: *Hodnotenie efektu tréningu kognitívnych funkcií v kombinácii s pohybovým programom u seniorov s miernym kognitívnym*. [Dissertation Thesis]. Brno : Masarykova univerzita, 2016, p. 17.

<sup>13</sup> HORT, J. et al.: *Paměť a její poruchy*. Prague : Maxdorf, 2007, p. 109.

<sup>14</sup> ŠVECOVÁ, M.: Location-Based Games as a Method of Teaching Seniors in the Field of Digital Technologies. In *Media Literacy and Academic Research*, 2019, Vol. 2, No. 1, p. 70.

<sup>15</sup> ŠVECOVÁ, M., KANUKOVÁ, N.: Location-based Games as a Teaching Method for Seniors in the Field of ICT. In ALBAEK, L., MAJGAARD, G., VALENTE, A. (eds.): *The Proceedings of the 13th International Conference on Game Based Learning ECGBL 2019*. Odense : University of Southern Denmark, 2019, p. 718.

<sup>16</sup> XUEYANG LIN, CH.: *Impact of Virtual Reality (VR) Experience on Older Adults' Well-Being*. [online]. [2020-11-10]. Available at: <[https://agelab.mit.edu/sites/default/files/lin\\_lee\\_lally\\_coughlin\\_2018.pdf](https://agelab.mit.edu/sites/default/files/lin_lee_lally_coughlin_2018.pdf)>.

like to see or have memories associated with them. Experiences in virtual reality support social interaction and the quality of life affects its length, including mental health and the ability to manage anxiety on a daily basis.<sup>17</sup> VR can also have a direct positive effect on health, through various applications used to treat phobias (thanks to a controlled immersive environment), but also, for example, rehabilitation after an injury or surgery. A good example is the Naviga project which works with CyberGlove and the disabled person can practice stretching, grabbing and manipulation with objects.<sup>18</sup> It is also necessary to design VR applications that have a simple user interface, so that they are easier for seniors to use. It is also necessary to present to seniors such applications or games that do not cause a significant feeling of nausea, as is common when using VR. Seniors should be also notified about the possible side effects. When seniors are in contact with VR, they view this experience positively as a good experience when they can see the positive aspects of new technologies. VR has a motivating effect on seniors as part of their daily activities and for the purposes of their mental relaxation. The most important factors in motivating seniors to use VR include: usefulness, simple use and level of experience.<sup>19</sup> On the other side, digital experience is also related to the gamers' intrinsic and extrinsic motivational factors, and immersion (sensory, challenge-based, imaginative), although both significantly depend on individual psychological needs.<sup>20</sup> Although the population of seniors in Slovakia faces many challenges, whether it is health, social or financial problems, we consider contact with new digital technologies to be a suitable way to solve some problems, stay in touch with the younger generation, but also peers, or engage in new leisure activities. With its immersive and, to some extent, entertaining nature, VR can help seniors to overcome the pitfalls of old age, take them away from ordinary problems and from passive television viewers they can become active users of VR. Of course, it is not easy to ensure that every senior owns a VR device, but senior care centres have a better chance of providing VR devices for their clients.

## 2. Objectives and Methodology

The aim of the research is to find out and define how seniors perceive the new digital technology, specifically VR. The partial goals of the research are:

- Find out if and how the perception of modern technology (VR) by a group of seniors changes before and after they get acquainted with the selected VR possibilities and functions.
- Define how seniors perceive digital technologies in general.

In the theoretical part of the study, we used standard scientific methods, primarily analysis, synthesis, induction, deduction, comparison, concretization and generalization. In order to achieve the set goals, in the empirical part of the study we applied the focus group method. T. Trampota and M. Vojtěchovská define this as a situation where several participants are surveyed simultaneously through a structured discussion that is led by a discussion leader. Participants in such a discussion usually sit at a round table and take turns participating in the

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<sup>17</sup> ROGERS, S.: *How Virtual Reality Is Benefiting Seniors*. [online]. [2020-11-10]. Available at: <<https://www.forbes.com/sites/solrogers/2020/02/26/how-virtual-reality-is-benefiting-seniors/>>.

<sup>18</sup> GACHET PAÉZ, D.: *Personalized Health Care System with Virtual Reality Rehabilitation and Appropriate Information for Seniors*. [online]. [2020-11-10]. Available at: <<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3386697/>>.

<sup>19</sup> SYED-ABDUL, S. et al.: *Virtual Reality Among the Elderly: a Usefulness and Acceptance Study from Taiwan*. [online]. [2020-11-10]. Available at: <<https://bmcgeriatr.biomedcentral.com/articles/10.1186/s12877-019-1218-8>>.

<sup>20</sup> MAGO, Z.: *Bringing Reality Closer to Gamers*. In SOLÍK M., RYBANSKÝ, R. (eds): *Megatrends and Media: Reality and Media Bubbles*. Trnava : FMK UCM v Trnave, 2018, p. 91.

discussion and respond to the discussion leader's/researcher's questions.<sup>21</sup> As J. Hendl says, a group discussion (i. e. the focus group method) is a suitable tool for revealing the content of public opinion and collective attitudes.<sup>22</sup> The two previously mentioned authors define the basic characteristics of such a group as follows: 1. it consists of several participants (in our case 13 senior women), 2. people are selected for it on the basis of some identical characteristic (in our case it was age), 3. this method brings qualitative data that often reveals information about which the researcher does not know (more information can be found in the Summary), 4. researcher focuses on a specific topic, based on predetermined questions, their order is also known in advance.<sup>23</sup>

As J. Hendl notes, when preparing group interviews the first problem is to form a group. It arises either spontaneously (in everyday life) or is created artificially (with individual participants being selected on the basis of the predetermined criteria which reflect the research intention).<sup>24</sup> With regard to our main goal, the choice of group members was clear – female pensioners. Our focus group thus consisted of 13 senior women aged from 64 to 78 years, as no men wanted to participate in the experiment. We divided them into 3 smaller groups of four respondents, in one group there were five respondents.

The course of the research corresponded to J. Hendl's schedule of sequences,<sup>25</sup> i. e. in the preparatory phase (before the actual interviews were made), we contacted the focus group participants by phone to confirm their participation, we provided refreshments and name tags, and checked the functionality of the recording devices. As the ladies agreed, the entire conversations were recorded on dictaphones. As part of the organizational phase, we arrived 3 hours before the start and prepared the room and the necessary materials. The welcome phase was easy, as the ladies already knew each other (friendships, 3 of them even took part in Logaset training courses), so they didn't need to get to know each other. We divided them into three groups, each group with its own discussion leader. In the initial phase, each of the discussion leaders explained the basic problem (our interest in seniors' view of current modern technologies), notified participants of the presence of recording devices, asked them for permission to use them (to record interviews) and made notes on the names and positions of the individual members. Then the discussion leaders described the basic rules: each of them asked the participants to talk one by one (so that they could be well understood, i.e. so that the conversations could be well transcribed), explained that all information and observations were beneficial to her, i.e. there are no good or bad or correct or incorrect answers and explained that if they did not agree with each other, it would not harm the research in any way, on the contrary, it would be helpful. Then the discussion leaders followed the set discussion outline.

When creating the structure of the research, we were inspired by the research of the University of Edinburgh.<sup>26</sup> We focused on 4 phases:

1. In the first phase, we focused on easier issues. We were interested in the attitude of seniors towards new technologies, their use in everyday life, their view of what such digital technologies bring to life.

<sup>21</sup> TRAMPOTA, T., VOJTĚCHOVSKÁ, M.: *Metody výzkumu médií*. Prague : Portál, 2010, p. 216.

<sup>22</sup> HENDL, J.: *Kvalitativní výzkum: Základní metody a aplikace*. Prague : Portál, 2005, p. 182.

<sup>23</sup> TRAMPOTA, T., VOJTĚCHOVSKÁ, M.: *Metody výzkumu médií*. Prague : Portál, 2010, p. 216.

<sup>24</sup> HENDL, J.: *Kvalitativní výzkum: Základní metody a aplikace*. Prague : Portál, 2005, p. 182.

<sup>25</sup> Ibidem.

<sup>26</sup> VAPORTZIS, E., CLAUSEN, M. G., GOW, A. J.: *Older Adults Perceptions of Technology and Barriers to Interacting with Tablet Computers: A Focus Group Study*. [online]. [2020-12-01]. Available at: <<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5649151/>>.

**2. Acquaintance with VR:** Then we showed the ladies the switched off VR device. We tried to find out what feelings and connotations the device evokes in them. We directed them with the following questions:

- Do you know this device?
- What is it used for?
- Have you ever used it?
- Try to define its meaning and the benefits it brings.
- Do you see any disadvantages in using it?

**3. Getting to know VR:** In the next phase, we gave the device to the seniors so that could have a look at it. Based on this, we found out how (and if at all) their initial attitude changed. We were detecting a change of opinion with the following questions:

- How do you feel about the device and how did you perceive it before you held it in hand/ got to know it better?
- What do you think this device is used for – would you be able to use it in everyday life?

**4. Trying to use VR:** In the last phase, the seniors tried to use the device. Our goal was to confront their ideas and opinions before and after its use. We were interested to know:

- How do you feel about using this technology?
- What do you think would make it easier for you to get used to it and start using it? (professional training for seniors, help from family or friends)

## 3. Results

### Respondents' Attitudes towards Technologies

Based on the questions in the first phase of our research which are focused on the attitudes of senior women to new technologies, we can say that among the respondents in general a negative attitude prevails. They are aware of the need for technology in their daily lives, they can name the activities that make it easier for them to use technology, they even want to improve their user skills, but on the other hand they agree that many technologies are often a waste of time, they take people's freedom, they create gaps between family members and communication barriers and according to them they even create addiction and therefore they prefer to avoid them despite the advantages of using them.

### Introduction to Virtual Reality

We showed the respondents a VR headset (HTC Vive Pro) with controls that the seniors recognized as a 3D device. One respondent called it "digitization," the others agreed that it was "*some kind of space in which one seems to live real life.*" Two respondents knew this device from their grandchildren, with whom they visit facilities with VR, but only one of them tried it herself, but she described her experience negatively: "*My head was so dizzy that I never want to experience it again.*" One more respondent had a personal experience with VR, who met the device at a tour in the museum and liked the possibility of expanding knowledge in such a form so much. Two participants in the research had the opportunity to try VR, but did not, because they were "*neither impressed by this technology, nor will ever be.*" They say that they have established and ingrained prejudices against this technology. Another respondent claimed that she was disturbed most by the loud sound in the headphones and did not understand how her son could use it all the time.

Some respondents did not know the device at all, others mentioned 3D cinema, but most of them encountered VR on television or in the press. Respondents mutually agreed that the purpose of VR is primarily for playing, but they also knew a simulator for medical students who are educated through VR and the senior women even knew that such a simulator was invented by experts in Slovakia. The senior women had heard about VR that it causes dizziness and radiates dangerous radiation. The participants perceived VR as a modern invention to which they have no relation, which they do not know and do not know what to expect from it. One of the seniors, on the other hand sees VR as a dream come true: *"When I was little, thinking in my bed I was imagining what it would be like if I could watch movies on my wall and I had no idea that television or such a virtual reality would one day be real."*

When asked what can be done with the device, the respondents gave various answers. One participant immediately responded: *"They use it for games (children, grandchildren), shootings, which I hate and you can control the characters there, it's a virtual world where you find yourself and you can direct it as a director."* Another participant added that in addition to games, VR can also be used for education, for viewing flats, caves (2 women tried it themselves on a trip to the High Tatras). One of them says: *"I was in an area where I would never ever go, but I cannot say that I need it in any particular way."* The other seniors did not know what VR could be used for; they tried to connect it with something they already knew, for example with a car driving school simulator.

The reasons why senior women have not used VR yet were mainly that three quarters of them have not yet encountered it and have not had the opportunity to try it. Several of them said that the reason was that they themselves did not want to do so and that they did not need VR in their life. Another reason should be the generational difference and "a different age:" *"Because we were not directed to it at that time and now, I do not have such a need."*; *"I wouldn't even enjoy it,"* added another respondent. The availability of technology also has a role to play. *"It's also about the fact that children have computers and technologies at home. But I have to go somewhere where there are many young people, where they play and where we would probably look funny,"* said one of the respondents. We also asked them what advantages and disadvantages VR had. Those who have already encountered VR have been able to say that it is used to simulate situations where they can try different sports, visit different places from home safely and thus save money. Others see the great advantage of using VR in education, e. g., in medicine (operation simulations). The second part of the respondents could not comment on this question: *"I think it has advantages, but I can't say what advantages."*; *"I have no idea what can be done there (in VR), I don't know."* Respondents consider the creation of addiction to technology to be a disadvantage if no limits are set, especially time limits. This is especially true for children and young people, who grow up with technology and are directed to it from an early age even by their parents, which seniors do not like. Respondents are also convinced of the harmfulness of the radiation that is allegedly emanating from these devices. Another disadvantage was that users of technology, and in particular VR users, no longer perceive the difference between reality and the virtual world. Those who had experience with 5D cinema even said that *"It was terrible. It was a shock, jumps, falls, it was terrible."*

### Getting to Know the Device

After the seniors took the virtual reality device in their hands, their opinions did not change compared to the previous phase. They only commented on the weight of the headset, which seemed greater to them and the controls were difficult for them to operate. The senior women talked about more "hidden" buttons which they are no longer able to see and recognize well, which could cause problems when using it. We tried to find out from senior women whether virtual reality is a new technology and therefore it could be true that they have never encountered it before in their lives. They agreed that VR was a new technology; some argued that it could 20 years old; others said it had been developed in the 1990s, so it is true that they did not encounter



it as young women. However, when we showed them a stereoscope – the predecessor of virtual reality in the form of glasses, in the front part of which the pictures or photographs were inserted, each taken from a different angle, the participants began to remember. The device, which was lent to us by Mgr. Michal Kabát, PhD. from his FMK collection has its origins around 1900, so the respondents were very surprised that it was older than them. They became more interested in VR and wanted to understand how it works, as the device seemed very complicated at first glance, but when they knew its origins, they found it close to them and were able to associate it with something they knew. At this point, the atmosphere among the respondents changed and instead of a negative approach, the group began to show interest in this technology and all participants wanted to try virtual reality. We consider this phase of the research to be very important and successful, because we have managed to change the view of senior women on VR before they tried it and thus enter their first experience with VR without resistance and fear.

### **Trying to Use the Device**

For the research participants, we chose three different VR games, which we gave them to try. With the first of them we picked up on the predecessor of the current VR, which we showed the senior women in the previous phase of the research. We exchanged the photos of people that we had to exchange in a modified spectacle frame for a virtual tour of the images in the gallery in the virtual world via HTC Vive without the possibility of the player interacting with the environment. The participants were amazed from the beginning. They liked the space of the gallery. In addition to the paintings, they were also fascinated by the old furniture and period exhibits which they wanted to touch. They were surprised that they also have virtual arms and legs that they wanted to use to walk and touch objects. *“It’s interesting to watch exhibits in a museum like this, walk there or go to a concert of your favourite artist, for example”*, said one of them. *“And then we marvel at the young!”* added another respondent. After each participant went through this virtual tour of the gallery, we smoothly moved on to the next activity in the virtual space, which was drawing. The seniors could use the controls to draw anything around them in the virtual space. They could rotate around their drawing, move it, and change its colours, shapes, sizes and tools. At first, the participants did not like this activity at all. They said that they could not draw and did not even want to try it; they were ashamed in front of each other. However, when the first one of them tried it, they immediately liked it. They commented on each other’s creations, laughed at the associations that reminded them of their creations and were interested in the features of the game, changing colours, and erasing imperfections. This activity required the involvement of several senses and skills of the individual. The participants complained the most about the manipulation of the controls. With the exception of two ladies, none of the senior women met with a similar object, so they had trouble grasping the device, finding the necessary button and being able to use it correctly in time. What was adding to the stressful situation was the fact that the ladies did not feel comfortable if other participants looked at them and thus felt more pressure to do it better. Some of them said that they would get used to the control over time and that it was just about getting more practice with it. However, most of them agreed that there were many unnecessary buttons on the control which they inadvertently pressed while holding it, which may be related to the impaired fine motor skills of seniors. The third activity in the world of VR, which we chose for them, was viewing mountains with the possibility of playing fetch with a dog, so that the player throws him a stick, which the dog will still bring back. This activity was especially interesting for those senior women, who loved sports, those who love nature and perhaps their current health condition does not allow them to get to places like mountain peaks. The participants enjoyed the view; they were even moved by the beauty and authenticity of the experience. Some were more interested in playing with a dog, but the senior women clearly had difficulties with the device control. In order to throw the stick to the dog, they had to find some, bend down, lift it with one button, stand up, direct their throw, throw the stick and release the button in time so that the stick landed

in the right place, which players did not always manage to do. During this activity they needed a lecturer most often. It was difficult to explain to the seniors if the controls stopped responding to the player's instructions for a while. The participants immediately switched from having fun to feeling stressed from technology that had suddenly stopped listening to them. They didn't understand why it did not work 100%, and if they had to wait a while, they stopped enjoying it and didn't want to play the game anymore. During this activity, the senior women began to perceive VR as a space for new experiences, getting to know new places that they may never go to on their own. The seniors even expressed interest in more frequent contact with the VR, whether in designated facilities or at home with their families and they even suggested an interesting option for companies to rent VR devices to seniors homes for a period of time.

## 4. Conclusion

The interviews that we conducted with the research participants before and after our personal experience with VR technology brought us some interesting ideas for further scientific research. From the introductory words of the senior women, it was clear that they had respect, and even resistance towards technologies which are new to them, which they do not know and which they did not grow up with. They carry a lot of prejudices and learn information about these technologies only from television, newspapers or magazines or by observing their children or grandchildren, but we can state that senior women were little informed in this area. The negative attitude of seniors in this case is therefore understandable. Children use technology for completely different activities than adults and adults use technology for activities other than seniors. At every age, we want a different benefit from things and also from technology and if no one shows it to us or we do not see for ourselves, it is only an incomprehensible object for us, which has no significance in our life. And this is how seniors can understand VR, as long as they do not experience it themselves. In our research, we not only gave seniors the opportunity to experience VR, but we also tried to help them get rid of the above-mentioned prejudices by likening the VR device to what they can know from the past or to something which is close to them. When the participants found out that the origin of virtual reality can be found in glasses with interchangeable photographs from the period around 1900, they immediately began to be more open to VR and, in particular, they began to understand how it works. Virtual reality suddenly ceased to be a waste of time, an activity only for young people that creates addiction or breaks down family relationships and forms a communication barrier. It is therefore important that we always explain to the older generation the principle of how new devices work. When this fact ceases to be a secret to them, they will also understand the significance of the technology itself.

When trying to use VR the participants showed several feelings. It was curiosity, passion, enthusiasm, excitement from a new experience, from exploring new spaces and places or a feeling of self-realization and pride in the result of one's own efforts. All this was accompanied by a feeling of fear, what if something went wrong, what if it stopped working, what if they pressed the wrong button, what if they looked ridiculous in front of others. The senior women had most difficulties with controlling the games. The controls were complicated for them, unsuitable for seniors, they had many buttons placed in inappropriate places, which were either difficult to control or, on the contrary, they pressed some buttons without wanting to and so they did not have the right experience of the game. Several participants complained that they had to constantly use their entire wrists to manipulate with the control, which was difficult for them. If they did not like one game, they tended to evaluate the whole VR negatively, but during the next activity they were able to get involved with interest, which convinced them that they should trust their first impression. *"For example, adrenaline sports that I could never try live could be a great experience in VR,"* admitted one of the participants. However, senior women have shown great

interest in learning about technology, they would like to try other activities in the virtual world, but they realize that they need to be educated first and gain general knowledge in the use of information and communication technologies. However, they also perceive new technologies in connection with the awareness of the transience of their own lives. "We already have less time to live and we have a very bad feeling if something eats up our time, which virtual reality can do if we pay more attention to it. We prefer to spend this time with our grandchildren and family somewhere in nature," said one of the participants at the end.

Several principles need to be followed when seniors learn and acquire digital skills. There is no need to underestimate older people and one needs to explain to them the principles of functioning of a particular technology. It is the ignorance of the technological background that can discourage them from using new technologies. It is important to explain to seniors the positive aspects of a particular device, in our case VR, with an emphasis on the effectiveness of the time used and the amount of experience they can absorb in the virtual space. In the future, however, it is important to develop VR devices that are ergonomic and take into account the specific physiological needs of seniors; otherwise discomfort will discourage them from their further use.

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