

The Importance of Social Relations for Well-Being Change in Old Age – Do Game Preferences Change As Well?

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ABSTRACT

Gamified systems may help older adults to remain physically, cognitively and socially active, which has positive effects on well-being. However, social aspects of psychological well-being change during life course, i.e., the importance of positive social relationships for well-being increases between young or middle aged persons and seniors. In this paper, we explore whether these changes are reflected in the game preferences of seniors aged 75 and older. We report findings of a semi-structured interview and a preliminary player classification survey (N=18, mean age=84.61). We found indications that there are differences in game preferences and the perception of game elements that are related to the increased importance of social relationships for well-being in older ages.

ACM Classification Keywords

H.5.m. Information Interfaces and Presentation (e.g. HCI): Miscellaneous

Author Keywords

Older adults; gamification; game elements; interviews

INTRODUCTION

Ryff [14] proposes self-acceptance, positive relations with others, autonomy, environmental mastery, purpose in life and personal growth as essential features of psychological well-being. It was shown that the perceived importance of these features differs in old age [12, 14, 15]. One interesting finding is that positive relations with others are found to be significantly more important for well-being of seniors [14, 15]. Since social game elements like competition or collaboration are widely used in the domain of gamification [17], where game elements are used in non-game contexts [1], we aim to investigate in how far the perception of game elements or game preferences changes in older ages.

Investigating these game preferences is an important step towards implementing gamified interventions supporting positive psychological outcomes for seniors, to which we want

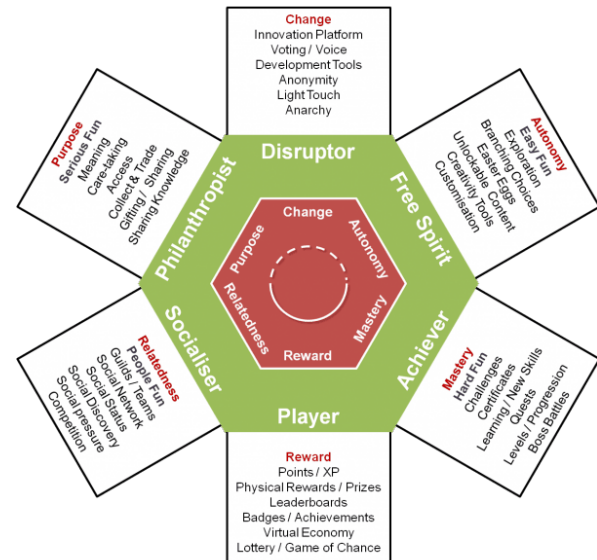


Figure 1. Gamification User Types Hexad by Andrzej Marczewski [8]

to contribute. Even though there are gamified systems targeting seniors (e.g. [10]), most of those systems do not account for age-related changes [5] and are designed for a young audience [17]. However, there seems to be huge potential in designing gamified systems supporting seniors: Besides the fact that playing digital games was shown to be associated with successful aging [9], gamified systems may help older adults to remain physically, cognitively and socially active [2], which has positive effects on health and well-being [7].

In this paper, we report preliminary findings from a study with the goal to find differences in the perception of game preferences between a younger sample and seniors by comparing the player type distribution of these samples. We moreover report findings from semi-structured interviews with seniors, in which we wanted to learn more about their game experiences, what affects them positively when playing and whether there are changes in these aspects throughout the life-span. Our findings suggest that the increased importance of positive social relationships is reflected in seniors' game preferences.

We first provide background information about Marczewski's Gamification User Types Hexad Model [8]. Afterwards, we present related work and provide information about the study design. Finally, we report and discuss results of our user study.

HEXAD MODEL

To assess participant's player type, we used Marczewski's Gamification User Types Hexad Model [8], consisting of six player types that differ in the degree to which they are driven by intrinsic or extrinsic factors (as defined by the Self-Determination Theory [13]). Figure 1 illustrates the model and which underlying motivational factors are relevant for each user type. Below, we explain these user types based on [8, 19] shortly and exemplarily list an incomplete set of relevant game elements based on findings from Tondello et al. [19].

Philanthropists

Philanthropists are socially-minded players, who like to bear responsibility, take care of and share knowledge with others. They are altruistic and strive for goals having deeper meaning. The most important motivational factor is **purpose**.

Game elements: Collecting and Trading, Gifting, Knowledge Sharing, Administrative Roles

Socializers

Like Philanthropists, Socializers are socially-minded. However, they are much more interested in interacting with others, i.e. they like to create relationships and compete or cooperate. The most important motivational factor is **relatedness**.

Game elements: Guilds or Teams, Social Networks, Social Comparison, Social Competition, Social Discovery

Achievers

Achievers are satisfied when perceiving progress towards clearly communicated goals. They also like to prove themselves by completing challenges and diving into complex tasks. The most important motivational factor is **competence**.

Game elements: Challenges, Certificates, Quests, Badges, Progression, Learning, Anonymity

Free Spirits

Free Spirits are satisfied when they are able to express themselves and have the opportunity to act without external control. They seek for new, unconventional ways that can be explored. The most important motivational factor is **autonomy**.

Game elements: Exploratory Tasks, Nonlinear Gameplay, Easter Eggs, Unlockable Content, Learning

Players

Players are more out for their own benefits. They are driven by the will to win and will do their best (independent of the type of the activity) to earn rewards. The most important motivational factor is getting **rewards**.

Game elements: Points, Prizes, Leaderboards, Badges

Disruptors

This player type is driven by compromising or disrupting systems. Disruptors aim to trigger changes (positive or negative) and test the boundaries of a system. The most important motivational factor is triggering **change**.

Game elements: Innovation Platforms, Voting Mechanisms, Development Tools, Creativity Tools

RELATED WORK

Isselsteijn et al. [3] point out several opportunities and benefits of designing digital games suited for seniors and outline that there is a great need for research targeting the motivations of them. This is supported by [2] pointing out chances and considerations when using gamification for elderly people. The authors emphasize the positive impact of gamified systems encouraging physical activity, social relatedness or supporting cognitive functioning on well-being of older adults.

Exploring the exercise motivations of older adults was the goal of Kappen et al. [4]. As a result of their findings, the authors gleaned several design strategies for creating meaningful and playful applications supporting physical activity. They emphasize the need to consider the life stage without exploiting fears, to explore ways to provide meaningful feedback to the users as well as to support socialization around physical activity.

De Schutter [16] reports findings from an online study in which playing motives of elderly players were investigated. Results indicate that a majority of them are solitary players who like to play casual games. Concerning playing motives, results revealed relatively low scores for nearly all motives that were considered. The most popular motive was challenge and the most important predictor for the time players invest in playing games was shown to be social interaction.

These findings underline that social relationships are particularly important in old age. In this paper, we aim to learn more about whether this effect is transferable to the gaming context by investigating senior's attitudes towards social game elements such as competition and collaboration.

Nap et al. [11] found that staying in touch with society and escapism are motivators for seniors to play. There also was a strong indication that participants prefer solitary over multiplayer play, even though they appreciate socialization in general. As potential reasons, the authors mention the increased fear of failure seniors have as well as the unwillingness to be dependent on other players and their availability. The fact that participants value socialization relates well to the increased importance of positive social relationships for well-being in old age [15]. Since participants disliked multiplayer games, it seems like this change is not transferable to the gaming domain at first glance. However, it might also be the case that the fear of failure, which was reported by the authors as a potential reason, only affects competitive games. Potentially, older people are more inclined to collaboration than competition. Analyzing this is part of our investigation.

STUDY

The goal of the study was to explore how gamified systems need to be designed to engage elderly people and to find potential differences between seniors and a younger audience that come from changes of relevant well-being aspects. To do so, we investigate the following research questions:

- **RQ1:** What are underlying factors that motivate older adults to play games?
- **RQ2:** Are game preferences of seniors related to the increased importance of positive social relations?

Procedure and Method

We recruited participants from three nursing homes and participants that are living on their own. To ensure that they do not suffer from severe mental diseases and are able to communicate without problems, we consulted the nursing management (having access to disease-specific diagnosis of all residents), that recommended participants. All participants agreed on taking part in this study voluntarily. The study started with a short questionnaire covering demographical data and gaming frequency (both for analog as well as digital games) with statements to be answered on 5-point Likert scales. A semi-structured interview followed to learn more about their gaming experience, their motivation for playing games and potential age-related changes in these aspects. The semi-structured interviews were directly transcribed and were conducted in face-to-face conversations alone with the participants in separate rooms (in the nursing homes) or in participants' apartments (for those living on their own).

After the interview, we determined the player type of participants using Marczewski's Hexad model [8] to get further insights about motivating factors for this age group and to learn more about suitable game elements. To do so, we used the German Hexad questionnaire of Korbas [6]. We additionally classified a much younger sample using the same questionnaire. This was done to investigate whether there are age-related changes in game preferences. The survey consists of 24 statements that are divided into four blocks consisting of six elements, each representing one player type. We gave the printed statements in four blocks one after another to the participants to not overwhelm them (following the recommendations from Smeddinck et al. [18]).

The study took approximately one hour per participant and was approved by the Ethical Review Board of the Faculty of Mathematics and Computer Science at Saarland University. During the study, drinks and snacks were provided to the participants and breaks could be taken at any time.

Results

In total, 18 German participants took part in the study (10 female, 8 male – 13 living in nursing homes and 5 living on their own) aged 84.61 years on average (Mdn=86, Min=75, Max=93). Participants reported not to be familiar with technology (M=1.5, SD=1.01, Mdn=1). However, they agreed to being interested in accumulating more experience with technology (M=3.83, SD=1.12, Mdn=4). In addition, participants reported playing parlor games multiple times a week (M=3.72, SD=0.80, Mdn=4) but never play video games (M=1.39, SD=0.83, Mdn=1). One notable outlier is **P15**, who reported being experienced with digital technology and is used to playing digital games.

Game Preferences and Reasons to Play (cf. RQ1)

In the interview, participants reported to enjoy playing card games like Rummy or Skip-Bo, followed by the lottery game Bingo and board games like Ludo, Merels or Checkers. They emphasized to enjoy and value the time spent playing: *"After playing games, I have the feeling of accomplishment, that time*

*was not wasted"*¹ (**P3**). Even those that do not play parlor games regularly stated that this is mostly because they do not have people to play with: *"When my children were younger we used to have a whole cupboard full of games and played really a lot. Today I don't have people to play with. [...] I would definitely like to play more games again"* (**P16**).

The questions about reasons for playing revealed a clear picture: The main reason (mentioned by all participants), is maintaining social contacts or socializing with others (*"I often play card games together with my roommate [...]. Most of the times we play to spend time together and talk about our everyday life"* (**P3**)). They also reported seeing games as a starter for conversations and that playing games provides an opportunity to meet new people (*"The Bingo evenings here helped me to get in touch with other seniors living here"* (**P2**)). We furthermore found evidence that elderly people have fun watching others play and use the occasion to get in touch with them (reported by 5 participants): *"Sometimes I just sit there and watch others playing. It is fun to see their reactions and it offers me the opportunity to talk to them"* (**P9**).

Social Aspects in Games (cf. RQ2)

A vast majority of participants (16) reported not to be driven by winning the game in first place but instead enjoy spending time with others: *"It is not about winning at all, it's about spending time together"* (**P3**). While for 6 participants winning does not matter at all, 10 participants stated that they also like to win, but that is not most important: *"The main reason [to play] for me is to avoid being alone and enjoy time with others. However, winning a game is also nice sometimes"* (**P10**). We also found that elderly people prefer collaborating in teams instead of playing on their own: *"We sometimes do teamwork when playing Skip-Bo. [...] Winning as a team makes me much happier than winning on my own"* (**P6**). Since Skip-Bo is a competitive game in which players normally play against each other, this statement underlines the strive for collaboration even more. In addition, the aspect of taking care of others was mentioned by almost all participants (17). They indicated to have a better experience when all players are satisfied: *"It is not too much about winning, it is more about ensuring everybody has a good time"* (**P9**).

15 participants reported that they were more inclined to competition at younger ages: *"When I was young I was a swimmer and very ambitious [...]. Today I don't want to compete against others, those times are over"* (**P5**). In addition, there is less pressure to win a game and a more relaxed atmosphere during play: *"I think what has changed is that we don't take things too seriously when playing"* (**P4**). A majority (14) of participants stated that they value social contacts and communication with others much more than in their younger years: *"You get more relaxed with increasing age and value different things. I cherish social contacts or getting in touch with others much more today"* (**P9**), *"Once you are old and live alone you realize that having people around you is the most valuable thing you can have"* (**P18**).

¹ All statements were translated from German to English

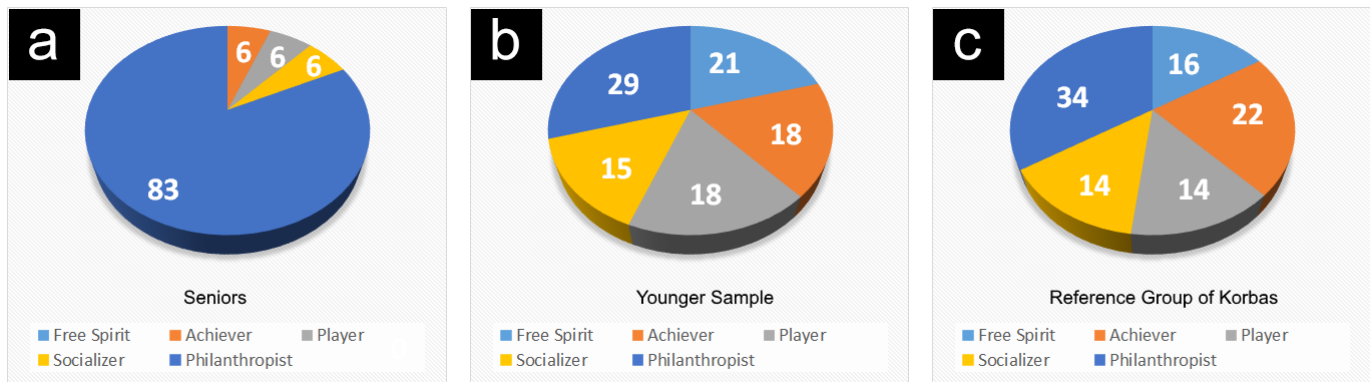


Figure 2. Distribution of primary player type classifications in different populations. a) Player type distribution among elderly people (N=18). b) Player type distribution in the younger age group (N=31). c) Player type distribution reported by Korbas [6] (N=121)

Player Types (cf. RQ1, RQ2)

Considering the player types of seniors, the large majority of them (83.3%) were classified as philanthropists, equally followed by socializer (5.6%), player (5.6%), achiever (5.6%) and no participants being classified as free spirits (see Figure 2a). To investigate age-related changes in game preferences, we compared this distribution to a much younger sample consisting of 31 participants that were recruited from our university (20 male, 11 female) having a mean age of 25.61 years (SD=4.64, Mdn=24). The player type distribution of the younger sample was much more diverse than in the older sample (supporting findings from Korbas [6] and from an online survey using a different player type instrument² both also considering a younger sample, see Figure 2c). 29.41% of the younger sample were classified as philanthropists, followed by free spirits (20.59%), players (17.65%), achievers (17.65%) and socializers (14.71%) (see Figure 2b).

Discussion

Overall, results suggest that when conceptualizing gamified interventions aiming for positive psychological outcomes among seniors, changes in relevant aspects of well-being and the specific needs of this audience should be considered.

We learned that socializing is a core motivator for seniors to play. More specifically, we found that seniors play to communicate and maintain social contacts and not to win the game in first place. In addition, they considered taking care of and collaborating with other players to be very important, as they do not want to make other players feel sad. These findings indicate that the importance of positive relations for well-being, that increases with older age [14, 15], also plays a major role in the gaming context. We therefore suggest using collaborative game elements over competitive ones (which is also reported in an online study with 140,000 gamers³) and integrating communication capabilities to support the need for social exchange when aiming for positive psychological outcomes.

²<https://gamified.uk/UserTypeTest2016/user-type-test-results.php>, last accessed September 15, 2017

³<http://quanticfoundry.com/2016/02/10/gamer-generation/>, last accessed September 15, 2017

We moreover found indications that the importance of games as catalyzer for social relationships increases in older ages and that winning the game is not as important as it is in younger ages. These changes are very transferable to the changes of well-being aspects that were reported. The increased importance of positive relationships relates well to the importance of games to build social relationships, to the aspect of care-taking and to the strive to ensure all players feel well. The changes are also reflected in the distribution of player types in our sample as a vast majority is classified as philanthropists, a socially-minded, altruistic player type that loves to share knowledge and take care of others. Since socializers are motivated by competition, this player type seems to be the most appropriate one regarding the results we have from the interviews. The altruism and care-taking aspect underline the requirement to build positive relations with others even more.

Given that the younger sample we considered showed a much more heterogeneous player type distribution, it would be interesting to investigate reasons for this as we cannot reliably say whether people turn into philanthropists with increasing age, whether the difference is attributable to the generation in which participants were born or whether the instrument we used to determine the player type is not suitable for older populations. Given our current results, we think that the perception of certain game aspects changes during life-span, as a majority of participants explicitly stated that they were more ambitious in games and that the aspect of social relationships in games was reasonably lower when they were younger.

Important to note is that the results are preliminary and should be seen in this light as more studies with larger sample sizes are needed ultimately draw conclusions. Moreover, the fact that a huge majority of participants were recruited from nursing homes might have an impact on their attitude towards social aspects in games, additionally affecting the generalizability. Nevertheless, we argue that the presented investigation provides interesting insights into game preferences of seniors and how changes in well-being aspects might be transferable to the gaming domain that open up questions and directions for discussion and future work such as considering reasons for changes of game preferences in old age.

CONCLUSION

Although there is huge potential in improving well-being of older adults through gamified systems [2], these systems mostly do not account for age-specific changes [5]. To inform the design of such systems, we investigated attitudes towards game aspects and changes of game preferences of seniors. Results suggest that changes in well-being aspects are reflected in the gaming context, i.e. we found that seniors value communication and collaboration much more than winning the game and strive to ensure every player enjoys the game equally. These changes are supported by differences in the player type distribution between seniors and a younger sample, suggesting that game preferences change throughout the lifespan. Thus, we conclude that these specific needs should be considered when creating gamified interventions supporting psychological well-being in old age.

For future work, it would be interesting to investigate reasons for the differences in the player type distribution and to validate our findings with more participants in order to derive guidelines supporting the design of gamified systems encouraging well-being for seniors.

REFERENCES

1. Sebastian Deterding and Dan Dixon. 2011. From Game Design Elements to Gamefulness: Defining "Gamification". *Proceedings of the 15th International Academic MindTrek Conference. ACM, 2011.* (2011), 9–15. DOI: <http://dx.doi.org/10.1145/2181037.2181040>
2. Kathrin Maria Gerling and Maic Masuch. 2011. Exploring the Potential of Gamification Among Frail Elderly Persons. *Proceedings of the CHI 2011 Workshop Gamification: Using Game Design Elements in Non-Game Contexts* (2011), 1–4.
3. Wijnand IJsselsteijn, Henk Herman Nap, Yvonne Kort, and Karolien Poels. 2007. Digital Game Design for Elderly Users. *Proceedings of the 2007 conference on Future Play* (2007), 17–22.
4. Dennis L Kappen, Lennart E Nacke, Kathrin M Gerling, and Lia E Tsotsos. 2016. Design Strategies for Gamified Physical Activity Applications for Older Adults. *Hawaii International Conference on System Sciences* (2016), 1309–1318. DOI: <http://dx.doi.org/10.1109/HICSS.2016.166>
5. Jonna Koivisto and Juho Hamari. 2014. Demographic Differences in Perceived Benefits From Gamification. *Computers In Human Behavior* 35 (2014), 179–188. DOI: <http://dx.doi.org/10.1016/j.chb.2014.03.007>
6. Sebastian Korbas. 2015. Gamification User Types zur Unterstützung der Konzeption in der Softwareentwicklung. *Mensch und Computer 2015 - Workshopband* (2015), 367.
7. Bruce W Lemon, Vern L Bengtson, and James A Peterson. 1972. An Exploration of the Activity Theory of Aging: Activity Types and Life Satisfaction among In-Movers to a Retirement Community. *Journal of Gerontology* 27, 4 (1972), 511–523.
8. Andrzej Marczewski. 2015. *Even Ninja Monkeys Like to Play: Gamification, Game Thinking and Motivational Design*. CreateSpace Independent Publishing Platform.
9. Anne Collins McLaughlin and Maribeth Gandy. 2013. Successful Aging Through Digital Games: Socioemotional Differences Between Older Adult Gamers and Non-Gamers. *Computers In Human Behavior* December 2016 (2013). DOI: <http://dx.doi.org/10.1016/j.chb.2013.01.014>
10. Alberto Mora, Carina González, Joan Arnedo-Moreno, and Alexis Álvarez. 2016. Gamification of cognitive training: a crowdsourcing-inspired approach for older adults. *Proceedings of the XVII International Conference on Human Computer Interaction - Interacción '16 '16* (2016), 1–8. DOI: <http://dx.doi.org/10.1145/2998626.2998663>
11. H.H. Nap, Y.a.W. De Kort, and W.a. IJsselsteijn. 2009. Senior Gamers: Preferences, Motivations and Needs. *Gerontechnology* 8, 4 (2009), 247–262. DOI: <http://dx.doi.org/10.4017/gt.2009.08.04.003.00>
12. Gary Reker, Edward Peacock, and Paul Wong. 1987. Meaning and Purpose in Life and Well-Being: A Life-SPan Perspective. *Journal of Gerontology* (1987), 44–49.
13. Richard M Ryan and Edward L Deci. 2000. Self-Determination Theory and the Facilitation of Intrinsic Motivation, Social Development, and Well-Being. *American Psychologist* 55, 1 (2000), 68–78.
14. Carol Ryff. 1989. Happiness is Everything, or Is It? Explorations on the Meaning of Psychological Well-Being. *Journal of Personality and Social Psychology* (1989), 1069.
15. Carol D Ryff and Corey Lee M Keyes. 1995. The Structure of Psychological Well-Being Revisited. 69, 4 (1995), 719–727.
16. Bob De Schutter. 2010. Never Too Old to Play: The Appeal of Digital Games to an Older Audience. *Games and Culture* (2010), 1–16. DOI: <http://dx.doi.org/10.1177/1555412010364978>
17. Katie Seaborn and Deborah Fels. 2015. Gamification in Theory and Action: A survey. *International Journal of Human-Computer Studies* 74 (2015), 14–31. DOI: <http://dx.doi.org/10.1016/j.ijhcs.2014.09.006>
18. Jan Smeddinck, M Herrlich, and M Krause. 2012. Did They Really Like the Game?—Challenges in Evaluating Exergames with Older Adults. *CHI 2012 Workshop on Game User Research: Exploring Methodologies* (2012).
19. Gustavo F Tondello, Rina R Wehbe, Lisa Diamond, Marc Busch, Andrzej Marczewski, and Lennart E Nacke. 2016. The Gamification User Types Hexad Scale The Gamification User Types Hexad Scale. *The ACM SIGCHI Annual Symposium on Computer-Human Interaction in Play* (2016). DOI: <http://dx.doi.org/10.1145/2967934.2968082>