



Age Stereotyping in the Game Context: Introducing the Game-Ageism and Age-Gameism Phenomena

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Abstract. Digital games are frequently described as media that can be crucial in strengthening relationships, enhancing cognitive skills and providing social support. Although considerable empirical research on the use of digital games in youth and stereotypes on gender or ethnicity has been widely covered, there have been few studies on age stereotyping in the game context. In addition, this type of stereotype – game-ageism is likely to negatively affect age identity and intergroup communication amongst players, which could hinder to bridge the gap between different generations. Drawn on a literature review, this position paper introduces the concept of game-ageism as an age stereotype that is still set in our game culture. It also seeks to remedy this problem by suggesting an opposite ideological movement – age-gameism that refers to widening the audience of the game industry to all ages. In general, this paper offers a contribution in the field of media and society by highlighting the need for developing games for all ages, encouraging a positive age identity, enhancing intergroup communication and a heterogeneous game culture.

Keywords: Information and Communication Society ·
Ageism · Intergenerational communication · Digital games ·
Stereotypes · Game-ageism · Age-gameism

1 Introduction

One of the most significant current issues in Information and Communication Sciences is the increasing complexity of global networks and their impact on today's societal crisis. In fact, Information and Communication Technologies (ICT) play an important role in the maintenance and creation of post-industrial [1] network structures. Castells [2] points out that these networks are built according to our individual and societal choices, changing the way individuals communicate and interact. A “new technological divide” [2] can result from unequal access to digital platforms, insufficient ICT skills or a geographic or demographic digital divide [3].

Considering the population ageing, the older target group is likely to become the next generation of consumers in the entertainment sector [4, 5]. However, the research to date is still too much focused on the use of ICT, especially digital entertainment, by children or young people rather than by (older) adults [6–8]. For example, the game’s market tends to overlook some proper effects of the ageing process (e.g. reaction time), consequently leading to gaps in the balance between the players’ skills and the challenges provided [9–14].

This paper, therefore, debates on age stereotyping in the game context by introducing the terms of game-ageism and age-gameism. The findings are drawn from theory-driven perspectives in the domain of Information, Communication and Society [2]; Communication, media and playfulness [15]; Ageing Studies [16]; and Game Studies – e.g. [17–20].

Throughout the paper, the term ‘game-ageism’ will be introduced and used to refer to the stereotype against individuals based on their age, in the context of games. This term stems from the concepts of ‘ageism’ [21] and ‘techno-ageism’ [22], presented in the section: Ageism, techno-ageism and game-ageism.

2 Games as an Ageless Experience

Over the past few years, a large body of literature – e.g. [18, 23] has investigated the game experience and the network relationships that are established in virtual environments. These studies have revealed that an effective game experience should be context-sensitive and centered on the player’s mindset (their feelings, stimuli, motivations, and the depth of the relationship between the player and the ludic artefact).

Game experience is a commonly used notion in game studies and yet it is a difficult concept to define precisely. For Ermi and Mayra [18, p. 37], game experience ‘emerges in a unique interaction process between the game and the player’ and embodies the concepts of immersion, presence, fun, engagement and flow.

Whereas the term of ‘presence’ refers to a sense of being in a mediated space (either spatial, physical, social or of self-presence), players’ immersion, fun, engagement and flow are related with an intense pleasure, lack of awareness of the outside world, a pleasant activity and a sense of novelty. This latter concept of flow is also associated to an optimal experience that results in a balance between the players’ skills and challenges [24]. One question that needs to be asked, however, is whether these experiences are democratic and accessible to a multigenerational context.

In our ageing society, we acquire and loose different skills. Although games might have some benefits to the player such as training and improving specific skills as memory, attention and problem-solving [25–28], physical skills or social skills through the use of exergames [29–32], the game interfaces must be easy-to-use and adaptive to the player [10, 33–36].

One example of these adaptive interfaces can be found in the game *Guitar Hero 3*, in which the challenge is adapted to the player’s performance. As these may have the potential to encourage the sense of mentoring and a peer culture in which experiences are in line with the players’ goals [24], games and players are likely to be reinvented in a “casual revolution” overstated by Juul [20]. Indeed, the strategy of Nintendo for

widening the audience of digital games has been crucial to leap games into a more natural experience and the game remotes have been evolving from buttons to simple gestures. Despite the fact that these interfaces have become mimetic (the player interacts with the system through mimesis. The character on the screen imitates and reproduces the real gestures that come from the player) and socially embeddable (the appropriateness of the interfaces to the user by being natural and ubiquitous within the social context) [20], further developments have to be done in order to straighten the value of inclusive game communities and player-centered environments.

There are a number of similarities between age stereotypes and others (e.g. racial, cultural), which often derive from social emotions. They are mostly activated when detecting differences between oneself in relation to other individuals or groups [37, 38] and if in our primates, these differences were a sign of potential aggression or danger, there is no reason to perpetuate these in today's society. Furthermore, our minds, artefacts and society tend to be enriched by a cultural pluralism. One way to dissipate the reflection of these stereotypes on the game culture is to provide the players with *remappable keys* (providing the option to reconfigure keys) context-aware and personalized environments without affecting the quality of the graphics, the type of the game and the equilibrium between the game challenges and the players' skills. A player versus environment conflict is also likely to be preferred in order to not creating 'unfair' game scenarios and meet the game challenges to the skills of gamers from different generations.

In terms of the older adult player, a positive game experience is very important as his/her brain tends to release *dopamine* (a neurotransmitter that when released, it is thought to give a sense of pleasure and reward) and this chemical is likely to stimulate the *amygdalae* (brain region that takes part of the limbic system and it is suggested that this region is important to the memory and emotions processing as well as in decision-making), which is responsible for the transmission of emotions, social behaviours and social interactions [39]. In addition, games can overcome some physical [30, 31], cognitive [25, 26] and social effects [40] of the ageing process.

Relative to the reported motivations for playing videogames by older adult gamers, these are: spending free time [6, 7], maintaining an active mind and escaping from reality [8]. Gajadhar, Nap, De Kort and Ijsselstein [41] point out that this target group also enjoy teaching and helping other players. These results corroborate the Meaningful Elderly Play (MEP) model proposed by De Schutter and Vero Vanden [40], which suggests the following keys to create a meaningful play environment and attract an older audience to play: fostering connectedness; cultivating oneself; and contributing to society.

Finally, the bases for creating an ageless gameplay experience lie in combining the aforementioned age-related adaptive interfaces and meeting the older adult motivations with the elements that are proposed by Csikszentmihalyi [24] to generate an optimal experience: (a) a challenge; (b) a task; (c) the ability to concentrate on the task; (d) a sense of control over actions and of worry about losing control; (e) a loss of self-consciousness; and (f) transformation of time. These elements can be designed and stimulated by creating a game environment that enables players to exchange their experiences and bring daily moments of their lives, knowledge, feelings, thoughts and desires into games.

Having discussed the potential of a positive game experience to all ages, the following section reports on the concepts of ageism, techno-ageism and game-ageism.

3 Ageism, Techno-Ageism and Game-Ageism

Age identity and stereotypes tend to strongly influence communication and social relationships. Indeed, Tajfel and Turner [42] state that the popularity, likeability or discrimination of a group is dependent on the sense of belonging felt by their members. Furthermore, the individual's identity can be affected by [16, 42]: (a) social mobility (moving from one social group to another); (b) social change (changes in the relationships); (c) social creativity (individuals tend to concentrate on positive distinctiveness) and (d) social competition (competition between groups).

In 2007, Harwood [16] examined the Tajfel and Turner's theory in the context of older adults by suggesting that they can: (a) act as youngsters; (b) emphasize the positive aspects of being an older adult (positive stereotypes), successively comparing themselves to others who are older or impaired; and (c) compete with younger generations.

Regardless of the attitude of individuals towards groups, the sense of membership and shared fellowship shape the age identity, which is determinant to the communication process (e.g. second- versus third- person in speech, authority) and the sense of self.

Meanwhile, it is worth noting that there are slight differences between the concepts of stereotype, prejudice and discrimination. Whereas stereotypes are cognitive schemas, prejudices are affective and discrimination is behavioural [16]. In this paper, one type of stereotype is covered – ageism, which can be applied to different contexts (e.g. both in the use of technology and digital games).

3.1 Ageism

Ageism may be broadly defined as an age-related stereotype [43], prejudice and discrimination against people because of their age [44, 45]. This type of stereotype is mostly applied to older adults and it often relates to the denial or violation of Human Rights in older adults [43]. See [46] for more information about the origins of this notion.

Ageism is a blend of the words “Age” and “-ism”. In specific, age corresponds mainly to biological, psychological and social changes [47, 48] that occur during a certain period of time, in which a person has lived. Regarding the suffix “-ism”, a multitude of meanings may be subsumed – e.g.: a distinctive practice; a system; a political ideology; an artistic movement or the basics for prejudice or discrimination.

A number of studies [49, 50] have attempted to explain the reason this stereotype occurred in society, given that each generation age from the moment they start to live. Martens, Greenberg, Schimel and Landau [49] claim that the stereotype may be due to the fear of mortality and thus, being in contact with older adults reminds us of this Human condition and the limitations of time.

Cuddy, Norton and Fiske [50] found that younger generations had contradictory views relative to older adults. In their study, younger generations have seen older adults as incompetents (low status) but at the same time warm (passive). On the one hand, negative stereotypes related with the ageing process are often associated with an increase in loneliness [51], boredom [52] and disabilities [53]. On the other hand, positive stereotypes are likely to be related with wisdom [54], caring [55] and politeness [56].

Older men seem to benefit from positive stereotypes rather than women and this may owe to the women's longer life expectancy and the negative perceptions of their physical appearance as society tends to value beauty, women fertility and youth [16, 57].

In brief, understanding ageism is very important in order to know its impact on social networks, intergenerational friendships and attitudes towards the ageing process.

3.2 Techno-Ageism

One of the most significant current concerns of the Preparatory Committee for the Second World on Assembly on Ageing [43] and of the International Strategy for Action on Ageing 2002 [58] is the abuse and ageism towards older adults. Indeed, these recent developments in the study of the older adult's discrimination have led to the definition of their rights in different forms of abuse: (a) physical; (b) emotional; (c) financial; and (d) neglect.

Although advances in the Human's Rights related with the freedom of opinion and the use of media (Art.19) have been made [59], there is still insufficient data for such network vulnerabilities that can occur in the Information and Communication Society – e.g. techno-ageism and game-ageism.

Pires [22] was apparently the first to use the term techno-ageism. For Pires [22], techno-ageism refers to a set of stereotypes and prejudices regarding the older adults' capabilities to use Information and Communication Technologies. Furthermore, this concept is also used to describe the digital divide between younger and older generations and their own attitudes towards the Internet.

The term techno-ageism is also associated to the incapability to adapt to new learning contexts – e.g. the proverb “You can't teach an old dog a new trick” and a positive stereotype would be related with a sense of independence and extra cognitive activity. Another form of techno-ageism refers to the design of digital artefacts that are neither accessible nor suitable for older adults, despite the fact that it is, thus, worth to remember that the Web is designed to serve everyone, despite their inabilities, languages and software or hardware used [60].

3.3 Game-Ageism

The use of new media introduces new terms and changes in everyday speech [61]. In fact, having defined what is meant by Ageism and Techno-ageism, the term Game-ageism is proposed in this paper to refer to:

The belief that all members of an age group possess certain game characteristics, skills or attitudes that distinguishes them as inferior or superior to other gamers.

This term also encompasses the following meaning:

Stereotype, prejudice or discrimination against gamers, based on their age and the assumption that being youngster is the gamers' standard.

Game-Ageism is a blend of the words "Game" and "Ageism". Like Techno-Ageism (technologies + ageism), the word game has been added before in order to give its context and although the game concept embodies different definitions, it is intertwined with the concept of playing.

According to Huizinga [19], play is a free and unserious activity, almost situated outside of everyday life and Caillois [62, p. 63] adds that "play is a parallel, independent activity, opposed to the acts and decisions of ordinary life by special characteristics appropriate to play." These mentioned characteristics are: (a) being free and voluntary; (b) independent from every day's life; (c) uncertain; (d) unproductive; (e) reigned by rules; and to (f) create an imaginary world.

In the digital game context, Salen and Zimmerman [63, p. 80] describe games as "a system in which players engage in an artificial conflict, defined by rules, that results in quantifiable outcome." Juul [20] also highlights the characteristics of "rule-based" and "quantifiable outcome."

In this paper, we use, therefore, the term "game" with the meaning of a voluntary activity defined by a set of rules and outcome-oriented goals as overstated by previous studies [19, 20, 62, 63].

Game-ageism may affect intergroup communication, forming exclusive "digital tribes" or "virtual clans" [64], using age criteria. In fact, a survey conducted by Costa [65] has revealed that individuals who tend to be in favor of playing in later age base their opinion on reasons for playing, whereas those who are against are likely to support on game experiences.

The inverse phenomenon of Age-Gameism can also occur. It is proposed in this paper to refer to:

Gaining pleasure from playing games and, thus, overcoming age-related psychological and social constraints.

This term also encompasses the following meanings:

Action of playing games vigorously on a certain age, aimed at bringing a social change;

The willingness to play games and develop gamer skills, regardless age;

Age-related benefits brought through the ritual of playing games;

Be proud of maintaining a 'gamer soul' (be avid in games) throughout the ageing process;

The belief that games are for all ages.

In this particular case, gameism (game+ism) refers to the activity, a state/quality and ideological movement of playing games on a certain age. The term 'age' moved to the beginning of the sentence (expressing the context) instead of the word 'game.' It functions as the opposite of game-ageism.

On the one hand, in recent years, grandchildren have been disseminating videos on Youtube showing grandparents playing games, especially digital games, as if it was a "coolest grandma or grandpa" contest. This trend is an example of a social movement for the use of games and digital games regardless of the players' age. In addition, many online communities addressed to older gamers (e.g. The older gamers, 2old2play,

Greezer Gamers) have been created. On the other hand the analysis of the Dutch short film *Pony Place* shows how grandparents trying to play a digital game are stereotypically represented as digital immigrants [66], which could be labeled as a form of visual ageism [67].

Overall, these initiatives help to reduce the sense of Game-Ageism and some of them even spread the doctrine of Age-Gameism.

4 Discussion

This paper debated on age stereotyping in the game context, introducing the terms of Game-ageism and Age-gameism. In fact, discussing the presence of age identity and intergroup communication in the context of digital games is relevant, considering that game experiences need to be democratic and accessible to a multigenerational context, inviting to a “casual revolution” [20].

Another aspect is that owing to the rise of a global network society, as posited by Castells [2], changes in the complexity of social and family structures are likely to be perceived. The idea of a social divide does not fit with the flexibility and adaptability model of these networks and conflicts between generations are likely to occur because of the lack of an age identity and a set of learning, communication and authority gaps.

The Ageism phenomenon spills over to another context, such as the use of Information and Communication Technologies and Digital Games. That said, the movement of Age-gameism should be encouraged over Game-ageism.

This study pleads for the potential of digital games in reshaping our stereotypes related with the ageing process and stimulating solidarity and collaboration between different generations.

A limitation of this study is that it is theory-driven and there is a general lack of field work in the area. The comparison between different generations about their perceived attitude towards the ageing process before and after gameplay was also not covered in this paper. Further research would be necessary to understand in which way this type of stereotype is covered in different media and formats (e.g. news, animations, movies, visual novels, games) and assess the potential of intergenerational gameplay to demystify this ageing bias – game-ageism and foster age-gameism by comparing the end-users’ perceived attitude towards ageing before and after gameplay, in comparison with other intergenerational mediated activity.

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References

1. Toffler, A.: *The Third Wave*. Bantam Books, New York (1984)
2. Castells, M.: *The Internet Galaxy: Reflections on the Internet, Business, and Society*. Oxford University Press, Oxford (2004)

3. Friemel, T.: The digital divide has grown old: determinants of a digital divide among seniors. *New Media Soc.* **18**, 313–331 (2014). <https://doi.org/10.1177/1461444814538648>
4. Lenhart, A., Jones, S., Macgill, A.: Pew Internet Project Data Memo Adults and video games. Pew Internet & American Life Project, USA (2008). http://www.pewinternet.org/wp-content/uploads/sites/9/media/Files/Reports/2008/PIP_Adult_gaming_memo.pdf. Access 13 Jan 2019
5. Brown, J.A., Marston, H.R.: Gen X and digital games: looking back to look forward. In: Zhou, J., Salvendy, G. (eds.) *ITAP 2018, Part II. LNCS*, vol. 10927, pp. 485–500. Springer, Cham (2018). https://doi.org/10.1007/978-3-319-92037-5_34
6. Costa, L., Veloso, A.: Factors influencing the adoption of video games in late adulthood. *Int. J. Technol. Hum. Interact.* **12**, 35–50 (2016). <https://doi.org/10.4018/ijthi.2016010103>
7. Marston, H.: Design recommendations for digital game design within an ageing society. *Educ. Gerontol.* **39**, 103–118 (2013). <https://doi.org/10.1080/03601277.2012.689936>
8. Pearce, C.: The truth about baby boomer gamers. *Games Cult.* **3**, 142–174 (2008). <https://doi.org/10.1177/1555412008314132>
9. Costa, L., Veloso, A.: Being (Grand) players: review of digital games and their potential to enhance intergenerational interactions. *J. Intergener. Relatsh.* **14**, 43–59 (2016). <https://doi.org/10.1080/15350770.2016.1138273>
10. Loos, E.: Designing meaningful intergenerational digital games. In: *International Conference on Communication, Media, Technology and Design*, pp. 46–51 (2014)
11. Khoo, E., Merritt, T., Cheok, A.: Designing a mixed reality intergenerational entertainment system. In: Dubois, E., Gray, P., Nigay, L. (eds.) *The Engineering of Mixed Reality Systems. Human-Computer Interaction Series*, pp. 121–141. Springer, London (2010). https://doi.org/10.1007/978-1-84882-733-2_7
12. Davis, H., Vetere, F., Gibbs, M., Francis, P.: Come play with me: designing technologies for intergenerational play. *Univ. Access Inf. Soc.* **11**, 17–29 (2011). <https://doi.org/10.1007/s10209-011-0230-3>
13. Khoo, E., Cheok, A., Nguyen, T., Pan, Z.: Age invaders: social and physical intergenerational mixed reality family entertainment. *Virtual Real.* **12**, 3–16 (2008). <https://doi.org/10.1007/s10055-008-0083-0>
14. Mahmud, A., Mubin, O., Shahid, S., Martens, J.: Designing social games for children and older adults: two related case studies. *Entertain. Comput.* **1**, 147–156 (2010). <https://doi.org/10.1016/j.entcom.2010.09.001>
15. Jenkins, H.: *Convergence Culture: Where Old and New Media Collide*. NYU Press, New York (2006)
16. Harwood: *Understanding Communication and Aging: Developing Knowledge and Awareness*. SAGE Publications, University of Arizona, USA (2007)
17. Crawford, C.: *Chris Crawford on Game Design*. New Riders Publishers, Indianapolis (2003)
18. Ermi, L., Mäyrä, F.: Fundamental components of the gameplay experience: analysing immersion. In: *DIGRA 2005 – Proceedings of the 2005 DIGRA International Conference: Changing Views, Worlds in Play*, vol. 3, pp. 15–27 (2005)
19. Huizinga, J.: *Homo Ludens: A Study of the Play-Element in Culture*. Routledge & Kegan Paul Limited, London (1949)
20. Juul, J.: *A Casual Revolution: Reinventing Video Games and Their Players*. The MIT Press, Cambridge (2012)
21. Butler, R.: Ageism: looking back over my shoulder. *Generations* **29**, 84–86 (2005)
22. Pires, A.: *Efeitos dos videojogos nas funções cognitivas da pessoa idosa* [Master's Thesis], Faculdade de Medicina da Universidade do Porto (2011)

23. De Kort, Y., Ijsselstein, W.: People, places, and play: player experience in a socio-spatial context. In: *Computers in Entertainment (CIE) - Theoretical and Practical Computer Applications in Entertainment*. ACM, New York (2008). <https://doi.org/10.1145/1371216.1371221>
24. Csikzentmihalyi, M.: *Flow: The Psychology of Optimal Experience*. Harper Perennial Modern Classics, New York (2008)
25. Gamberini, L., Barresi, G., Majer, A., Scarpetta, F.: A game a day keeps the doctor away: a short review of computer games in mental healthcare. *J. CyberTherapy Rehabil.* **1**, 127–145 (2008)
26. Whitlock, L., McLaughlin, A., Allaire, J.: Individual differences in response to cognitive training: using a multi-modal, attentionally demanding game-based intervention for older adults. *Comput. Hum. Behav.* **28**, 1091–1096 (2012). <https://doi.org/10.1016/j.chb.2012.01.012>
27. Nouchi, R., et al.: Brain training game improves executive functions and processing speed in the elderly: a randomized controlled trial. *PLoS ONE* **7**, e29676 (2012). <https://doi.org/10.1371/journal.pone.0029676>
28. Belchior, P., et al.: Video game training to improve selective visual attention in older adults. *Comput. Hum. Behav.* **29**, 1318–1324 (2013). <https://doi.org/10.1016/j.chb.2013.01.034>
29. Leinonen, M., Koivisto, A., Sirkka, A., Kristian, K.: Designing games for well-being; exergames for elderly people. In: *European Conference on Games Based Learning (ECGBL 2012)*, pp. 635–639. Academic Publishing International Limited, Reading (2012)
30. Brox, E., Luque, L., Evertsen, G., Hernandez, J.: Exergames for elderly: social exergames to persuade seniors to increase physical activity. In: *5th International Conference on Pervasive Computing Technologies for Healthcare, PervasiveHealth 2011*, pp. 635–639. IEEE (2011). <https://doi.org/10.4108/icst.pervasivehealth.2011.246049>
31. Loos, E., Kaufman, D.: Positive impact of exergaming on older adults' mental and social well-being: in search of evidence. In: Zhou, J., Salvendy, G. (eds.) *ITAP 2018, Part II*. LNCS, vol. 10927, pp. 101–112. Springer, Cham (2018). https://doi.org/10.1007/978-3-319-92037-5_9
32. Schell, R., Kaufman, D.: Cognitive benefits of digital games for older adults. In: *Proceedings of the International Conference on Computer Supported Education, CSEDU 2016*, pp. 137–141 (2016). <https://doi.org/10.5220/0005878501370141>
33. Anguera, J., et al.: Video game training enhances cognitive control in older adults. *Nature* **501**, 97–101 (2013). <https://doi.org/10.1038/nature12486>
34. Basak, C., Boot, W., Voss, M., Kramer, A.: Can training in a real-time strategy video game attenuate cognitive decline in older adults? *Psychol. Aging* **23**, 765–777 (2008). <https://doi.org/10.1037/a0013494>
35. Fisk, A., Czaja, S., Rogers, W., Charness, N., Czaja, S., Sharit, J.: *Designing for Older Adults: Principles and Creative Human Factors Approaches*. CRC Press, Boca Raton (2009)
36. Costa, L., Veloso, A.: The Gamer's Soul never dies: review of digital games for an active ageing. In: *2015 10th Iberian Conference on Information Systems and Technologies (CISTI)*, pp. 1–6. IEEE (2015). <https://doi.org/10.1109/cisti.2015.7170614>
37. Damásio, A.: *Looking for Spinoza: Joy, Sorrow and the Feeling Brain*. Houghton Mifflin Harcourt Publishing Company, New York (2003)
38. United Nations: *The Universal Declaration of Human Rights*. United Nations, Paris (1948). <http://www.un.org/en/documents/udhr>. Access 13 Jan 2019
39. Adolphs, R.: Social cognition and the human brain. *Trend Cogn. Sci.* **3**, 469–479 (1999)
40. DeSchutter, B., Vero Vanden, A.: Designing meaningful play within the psycho-social context of older adults. In: *Proceedings of the 3rd International Conference on Fun and Games*, pp. 46–51. ACM, New York (2010). <https://doi.org/10.1145/1823818.1823827>

41. Gajadhar, B., Nap, H., De Kort, Y., Ijsselsteijn, W.: Out of sight, out of mind: co-player effects on seniors' player experience. In: *Proceeding Fun and Games 2010 Proceedings of the 3rd International Conference on Fun and Games*, pp. 74–83. ACM, New York (2010). <https://doi.org/10.1145/1823818.1823826>
42. Tajfel, H., Turner, J., Austin, W., Worchel, S.: An integrative theory of intergroup conflict. In: Hatch, M., Schultz, M. (eds.) *Organizational Identity: A Reader*, pp. 56–65. Oxford University Press, New York (2004)
43. United Nations Economic and Social Council: Abuse of older persons: recognizing and responding to abuse of older persons in a global context. World Assembly on Ageing, New York (2002)
44. Australian Human Rights Commission: Age Discrimination – exposing the hidden barrier for mature age workers. Australian Human Rights Commission, Sydney (2010)
45. Nelson, T.: *Ageism: Stereotyping and Prejudice Against Older Persons*. MIT Press, Cambridge (2004)
46. Butler, R.: Age-ism: another form of bigotry. *Gerontologist* **9**, 243–246 (1969)
47. Going, S., Williams, D., Lohman, T.: Aging and body composition: biological changes and methodological issues. *Exerc. Sport Sci. Rev.* **23**, 411–458 (1995). <https://doi.org/10.1249/00003677-199500230-00016>
48. Perlmutter, M., Hall, E.: *Adult Development and Aging*. Wiley, New York (1992)
49. Martens, A., Greenberg, J., Schimel, J., Landau, M.: Ageism and death: effects of mortality salience and perceived similarity to elders on reactions to elderly people. *Pers. Soc. Psychol. Bull.* **30**, 1524–1536 (2004). <https://doi.org/10.1177/0146167204271185>
50. Cuddy, A., Norton, M., Fiske, S.: This old stereotype: the pervasiveness and persistence of the elderly stereotype. *J. Soc. Issues* **61**, 267–285 (2005). <https://doi.org/10.1111/j.1540-4560.2005.00405.x>
51. Dykstra, P.A.: Older adult loneliness: myths and realities. *Eur. J. Ageing* **6**, 91–100 (2009). <https://doi.org/10.1007/s10433-009-0110-3>
52. Palmore, E.: *Ageism: Negative and Positive*. Springer, New York (1999)
53. Sheets, D.: Aging with disabilities: ageism and more. *Generations* **29**, 37–41 (2005)
54. Staudinger, U.: Older and wiser? Integrating results on the relationship between age and wisdom-related performance. *Int. J. Behav. Dev.* **23**, 641–664 (1999)
55. Hank, K., Buber, I.: Grandparents caring for their grandchildren: findings from the 2004 survey of health, ageing, and retirement in Europe. *J. Fam. Issues* **30**, 53–73 (2014). <https://doi.org/10.1177/0192513X08322627>
56. Harwood, J., McKee, J., Lin, M.: Younger and older adults' schematic representations of intergenerational communication. *Commun. Monogr.* **67**, 20–41 (2000). <https://doi.org/10.1080/03637750009376493>
57. Saucier, M.: Midlife and beyond: issues for aging women. *J. Couns. Dev.* **82**, 420–425 (2011). <https://doi.org/10.1002/j.1556-6678.2004.tb00329.x>
58. Sidorenko, A., Walker, A.: The Madrid International Plan of Action on Ageing: from conception to implementation. *Ageing Soc.* **24**, 147–165 (2004)
59. Kerr, I., Bailey, J.: The implications of digital rights management for privacy and freedom of expression. *J. Inf. Commun. Ethics Soc.* **2**, 85–95 (2004). <https://doi.org/10.1108/14779960480000245>
60. Accessibility - W3C. <http://www.w3.org/standards/webdesign/accessibility>
61. Postman, N.: *Technopoly: The Surrender of Culture to Technology*. Random House Digital, Inc., New York (1992)
62. Caillois, R.: *Man, Play and Games*. University of Illinois Press, Chicago (1992)
63. Salen, K., Zimmerman, E.: *Rules of Play: Game Design Fundamentals*. MIT Press, Cambridge (2003)

64. Wheeler, S.: *Connected Minds, Emerging Cultures: Cybercultures in Online Learning*. Information Age Publishing, Inc., Charlotte (2009)
65. Costa, L.: *Networked video games for older adults* [Master's thesis], Universidade de Aveiro (2013)
66. Loos, E., Kubiński, P., Romero, M.: The representation of older people playing a digital game in the short film 'Pony Place': a semiotic and narratological analysis. *J. Comp. Res. Anthropol. Sociol.* **8**, 43–62 (2017)
67. Loos, E., Ivan, L.: Visual ageism in the media. In: Ayalon, L., Tesch-Römer, C. (eds.) *Contemporary Perspectives on Ageism*. IPA, vol. 19, pp. 163–176. Springer, Cham (2018). https://doi.org/10.1007/978-3-319-73820-8_11