



Towards a Gerontoludic Manifesto

Bob De Schutter¹ & Vero Vanden Abeele²

¹ Miami University

contact: b@bobdeschutter.be

² KU Leuven, e-Media Lab, Belgium

contact: vero.vandenabeele@kuleuven.be

Abstract

Digital games have become an important part of the technoscape, not only for youngsters, but for players of all ages. Older adults are a large, currently still largely untapped market for innovative game research and development. However, the current discourse on games and aging can largely be categorized into two themes. The first theme refers to digital games framed as a way for older adults to improve certain skills. The useful, pragmatic qualities, rather than the fun, hedonic aspects of games are emphasized. The second theme identifies the various age-related constraints that prevent older adults from playing. It focuses on the cognitive and physical limitations of older adults. Underlying both themes is a reductionist perspective on aging as merely a process of decline and debilitation. In this article, we present a “gerontoludic” manifesto. Firstly, games should not be marketed solely as having the purpose of dealing with or mitigating age-related decline and focus on positive aspects of older age (adagio 1: growth over decline). Secondly, age-related adjustments should never interfere with the actual gameplay of the game (adagio 2: playfulness over usefulness). Finally, game researchers and game industry should put more efforts in understanding what differentiates elderly players, rather than seeing them as united in their age-related impairments (adagio 3: heterogeneity over unification). As this manifesto is a first step that needs further abutment by a wider community, we welcome debate and additions from game designers and researchers to further this manifesto and to move beyond agism in games.

Keywords: *aging, gaming, play, gerontoludic, ageism, design*



Towards a Gerontoludic Manifesto

Bob De Schutter & Vero Vanden Abeele

1 Miami University

contact: b@bobdeschutter.be

2 KU Leuven, e-Media Lab, Belgium

contact: vero.vandenabeele@kuleuven.be

Digital games have become an important part of the technoscape, not only for youngsters, but for players of all ages. For example, the PEW Internet & American Life Project found that 23 percent of those 65 years old and over reported playing games in 2008 (Lenhart, Jones, and McGill 2008); the Entertainment Software Association estimated that 27 percent of US gamers were over 50 in 2015 (ESA 2015); and the Interactive Software Federation of Europe lists that 28percent of males and 27 percent of females between the ages of 55 and 64 are avid gamers (Bosmans and Maskell 2012).

These consistent numbers are not just a prelude of the advent of the silver-haired gamer. They testify that the older player of digital games has already arrived. At the time of this writing (i.e., summer 2015), a 50 year old person was a 7-year-old child when the release of Pong breathed life into the video game industry in 1972. There is no reason to assume that people of this age cohort stopped playing digital games when growing older (Skalsky Brown 2014). In contrary, it is safe to say that older adults are a large, attractive, yet currently still largely untapped market for innovative game research and development.

Considering the current discourse on games and ageing, we argue it can largely be categorized into two themes: a) the theme of usefulness, and b) the theme of accessibility (De Schutter in review). The first theme refers to digital games framed as a way for older adults to improve certain skills (e.g., Anguera et al. 2013; Goldstein et al. 1997) and their overall quality of life (e.g., Jung et al. 2009), or to prevent them from being harmed (e.g., Marston and Smith 2012). In essence, the useful, pragmatic qualities, rather than the fun, hedonic aspects of games are emphasized. The hidden message is that it is acceptable for older adults to play digital games in order to achieve a higher goal of maintaining health.

The second theme (i.e., accessibility) identifies the various age-related constraints that prevent older adults from playing, and focuses on the cognitive and physical limitations of older adults. It emphasizes the challenges that older adults experience with the graphic user interface and input devices of games, the learning curve of playing games, or the motivational barriers that prevent older adults from playing games. Next, it identifies solutions to overcome such issues (e.g., Gamberini et al. 2006; Gerling et al. 2012; IJsselsteijn et al. 2007; Ogomori et al. 2011).

While the examples above are academic ones, it should be noted that the game industry has used the same rhetoric of usefulness and accessibility in the few attempts that have been made to target ageing players. Most notably, Nintendo launched *Brain Training: How Old is Your Brain* by marketing its cognitive benefits, and demonstrated in its advertising for the Nintendo Wii and Nintendo DS consoles how they were accessible to older adults and sources for health benefits.

The academic literature does offer some exceptions that do not follow the themes above – for example studies on how older adults actively play digital games, studies on the differences between actively playing older and younger cohorts, a study on gender differences among older players, and a discourse analysis of the field (Brown 2012; De Schutter, Brown, and Vanden Abeele 2014; Levy et al. 2012; Mosberg Iversen 2014). However, these studies are much less prevalent and will often still emphasize the benefits of playing digital games.

Industry exceptions are even rarer than academic ones. We are unaware of any marketing efforts in which older adults are portrayed as people who are playing without health-oriented ulterior motives, and – excluding casual “granny” games that are seemingly designed for parody (Mosberg Iversen 2015) – the majority of games that specifically deal with later life are about age-related losses. For example, *ALZ* (Carter, 2014) is a game that depicts the life of an ageing man whose surroundings become increasingly more distorted as a result of Alzheimer’s disease. Similarly, *Forget-Me-Knot* (Tarvet, 2015) offers a first person experience during which players explore a home through the eyes of an Alzheimer’s patient whose memory is failing to the point where he cannot remember who the people in his family portraits are. As a final example, *Cahors Sunset* (Locomotivah, 2015) has players weigh the potential psycho-emotional benefits and losses of daily activities in an attempt to prolong their character’s life as long as possible. Perhaps the only game about later life that is not focused on losses (and that is not meant as parody) is *The Graveyard*, a very short art game by Belgian developer Tale of Tales (2008) that tells the story of an old woman who reminisces on a bench near a church.

While it is definitely important to consider the usefulness and accessibility of digital games for older adults, it instills a reductionist perspective on ageing as merely a process of decline and debilitation. This focus on decline - which arguably causes a need for cognitive and physical benefits as well as accessible interfaces - is a limiting perspective when designing or studying games (or other media) for an ageing population. Furthermore, as Sara Mosberg Iversen (2014:1) addresses in her Foucauldian discourse analysis, it is can also be a toxic proposition: older adults are seen as a burden on society that needs to be alleviated; therefore researchers/designers transform games into tools to “maintain, correct or tame the ageing citizens.”

The same toxicity is found when studying actively playing older adults; participants of our own qualitative research (e.g., De Schutter, Brown, and Vanden Abeele 2014; De Schutter and Malliet 2014) talked about how it was socially unacceptable for them to play games. For example, one 62-year-old female participant told us how she hid her Nintendo Gameboy when a friend came to visit, and remarked “When I play my Gameboy outside of my home I see people looking at me; they think that I have gone crazy.” Many older players reported that their gameplay was frowned upon by their non-playing peers, and how this limited their appropriation of games.

Van Leeuwen & Westwood (2008) provide an explanation to this finding, as they identify how negative socio-cultural attitudes have undermined the importance of play in later life. Adult

play is often regarded as an inconsequential, shallow deviation from the work ethic. Subsequently, this perspective has shaped euphemisms for adult play (e.g., “pastime”, “hobby”, etc.), it has cultivated the social disapproval of older players by their peers, and it has arguably led to a study of adult playfulness that is framed almost exclusively in the context of age-related decline. Similarly, traditional games that are typically associated with old age (Chess, Bridge, Boules, Golf, etc.) follow the theme of usefulness, as they are considered intellectually or physically stimulating. In conclusion, while market studies show that over one fourth of older adults play video game, the current discourse does not allow older adults to out themselves as game players. We therefore deem it necessary to draft a gerontoludic¹ manifesto for game designers and researchers alike, that remediates the stereotypical views on games and ageing presented above. In doing so, we wish to develop a positive and inclusive discourse for games in later life, relying on the following adages:

#1 Playfulness over usefulness

Many authors have demonstrated how games and personal development are strongly intertwined or, as Crawford (1982:16) put it, “Game-playing is a vital educational function for any creature capable of learning.” Furthermore, learning that takes place in games spans many domains and can take on a wide range of forms, which can lead to meaningful experiences that are defining for who we are as human beings. Murray (1997) sums up this function of play as follows:

In games, we therefore have a chance to enact our most basic relationship to the world. (...) Like the religious ceremonies of passage by which we mark birth, coming of age, marriage and death, games are ritual actions allowing us to symbolically enact the patterns that give meaning to our lives (Murray 1997:143)

Nonetheless, as Van Leeuwen & Westwood (2008) indicated, it is remarkable how play is deemed essential in early life, but neglected and sometimes even looked down upon in later life. This disconnect could be part of the reason why so many designers and researchers seem to be looking to inject games for older adults with an extrinsic kind of usefulness. For example, Fua et al. (2013) specifically introduce their design approach with the following sentences: “With an increase in elder gamers, one important question for game designers and game researchers should be: What purpose should games designed for elders aim to fulfill?”

As Lantz (2014) explained in his talk at the 2014 Game Developers Conference, games are an aesthetic form. A game is “decoupled from actual purpose, experienced for its own sake, so that we can indulge ourselves in it, understand it, reflect on its myriad of different forms, looking for meaning and beauty.” The answer to Fua et al.’s question is therefore simple: games designed for elders do not need a purpose. Games for elders need to be played for their own sake, anything else is merely a side effect.

One interesting example of this proposition is the Red Hat Society, an international organization of women over the age of 50 who use age as a license to play and act “silly”. A qualitative study by Yarnal, Chick and Kerstetter (2008) examined this playgroup, and found a wide range of self-reported positive outcomes, such as the enhancement of positive coping strategies, positive emotions, stronger social bonds, and general personal growth. For the more than one million ladies of the Red Hat Society, the playfulness that comes with the membership

provides them with ample usefulness, even if – as described on their official website (2015) – they gather “for no other purpose than to play”.

Considering the above, we conclude that, to advance the field of games and ageing, a change of heart is needed with regards to how we frame games for older players. While serious games – i.e., games with a purpose besides mere entertainment (Michael and Chen 2005) – might be useful for certain afflictions that are associated with older age, we argue that an exclusive emphasis on the external purpose of “games for older adults” is detrimental to the very nature of play. Our society – including the game industry and game academia – needs to frame play as a valued activity in all stages of human life: successful play is inherently meaningful (Salen and Zimmerman 2003), and therefore useful.

#2. Growth over decline.

The field of games and ageing should emphasize personal growth over decline in later life. Research paradigms on ageing such as the Life-Span Perspective (Baltes 1987) have considered ageing to be a process of both growth and decline. While gains are particularly evident in early life and losses are more noticeable in later life, people of all ages can improve skills and cognitive functioning (Freund and Baltes 2000). For example, older adults devise new strategies in one domain to compensate for losses in another (Baltes and Baltes 1990), and use media selectively to support personal growth (Van der Goot 2009). Moreover, certain older adults have a richness of experiences and an accumulated wisdom (Holliday and Chandler 1986) that is commonly ignored whereas small decreases in low level cognitive and attentional processes are enlarged. The field of games and ageing should adopt a Life-Span Perspective in order to become more considerate of the needs of older adults looking to play games.

Games are supposed to be intellectually cultivating challenges, or to quote Lantz' (2014) elaboration on the intricacies of the aesthetic form of a game, they are defined by thoughts and action formed by a mind that is “making plans and acting on them, observing the world, forming hypotheses, making and updating models, learning, pursuing goals, solving problems, interacting with the world around it.” Correspondingly, a game for older adults needs to embrace this quality and not resort to dumbed-down exercises of futility for the sake of accessibility and fear of cognitive decline. Furthermore, removing all obstacles in function of accessibility also removes opportunity to devise new strategies to overcome age-related decline (McLaughlin et al. 2013).

For these reasons, we argue that growth holds higher importance than decline. Older adults want to be challenged and are well-capable of practicing and persevering through difficult ones. Older adults can fall back on an accumulated experience. De Schutter (2011) demonstrated how challenge was the most important playing motive, and to meet certain side effects of play, it is important to provide them with such challenge. Designers therefore might need to adjust the interface to meet needs that are the result of some decline, but the game's challenge should never be reduced artificially. In fact, as Lamb (2014) indicates, coming to terms with one's decline is arguably a preferred model of successful aging, and potentially an interesting theme for experimental game design aimed at older adults.

#3 Heterogeneity over stereotyping

The previous two adages (i.e., “playfulness over usefulness” and “growth over decline”) might lead a reader to conclude that the manifesto assumes an older gaming audience that is in relative good health, and insensitive towards the realities of age-related decline. This is not the case; the manifesto simply considers age-related decline as an irregular phenomenon. While age-related problems are more prevalent among older than younger populations, they do not occur automatically when someone reaches a certain age. Correspondingly, there are 80 year olds who are in better physiological health than certain 60 year olds, and vice versa.

The field of games and ageing should therefore emphasize individual differences over unification by decline in later life. Considering Butler’s definition of ageism (1969) as discrimination and stereotyping of older people, we argue that it is easy for games that target or depict older adults to fall in the trap of ageism: the simplistic generalization of old age as decline typically leads to exaggerated views or conceptions of later life.

The presumption that players become more alike as they age is a common, but false presumption (Peppard 2013). As with any age group, there is great diversity among older people in physical, intellectual ability and in cultural preferences. Moreover, as people age, they become even less like their peers than younger people. As years pass, people have different life experiences, learn different things, face different challenges and respond differently to life’s events. Moreover, the actual number of years lived affects people differently as well. People age physically, emotionally and spiritually at different rates. Consequently, the longer people live, the more they differ.

Similar to how games typically have a difficult time being inclusive towards race and gender (Dietz 1998), they do not adequately reflect the subgroups within the aging population. As mentioned earlier, games rarely feature non-stereotypical portrayals of aging characters, nor are they marketed directly towards aging players. Correspondingly, it is uncommon for games to consider the functional level of older adults, which often leads to accessibility issues. Arguably, the only manner in which games address diversity among older populations is through language, which is the result of commercial considerations.

Considering motivational and thematic diversity, we refer to our own player classification of actively playing older adults (De Schutter and Malliet 2014). This classification indicates how players who are driven solely by age-related decline to play games are only one of five existing player types. Correspondingly, not every older player is eager to play a game that markets itself entirely on a positive side effect, and practically every existing game genre was present among the participants of the study (including “violent” games).

To conclude our manifesto, games for older adults should diversify and provide the possibility to accommodate the game in a way that is sensitive to the needs of older adults. The academic literature provides ample recommendations to do so (e.g., IJsselstein et al. 2007; Miesenberger et al. 2008) and the industry has developed an appropriate educational website (www.gameaccessibilityguidelines.com). However, in line with the second item of the manifesto, accessibility adjustments should never interfere with the actual gameplay of the game. Moreover, games should not be marketed solely as having the purpose of mitigating age-related decline. Finally, game researchers and game industry should put more efforts in understanding what differentiates older players, rather than seeing them as united in their age-related impairments.

We argue that the current adages are essential to a gerontoludic manifesto, however, we acknowledge that this manifesto is a first step that needs further abutment by a wider community. Therefore, we welcome debate and additions from game designers and researchers to further this manifesto and to move beyond ageism in games.

Notes

1. We coined the term "gerontoludic" as a bridge between two relatively young fields of study, i.e., ludology and gerontechnology. Frasca (1999; 2003) originally coined the term "ludology" (from "ludus", the Latin word for "game") to refer to "a discipline that studies game and play activities". Bouma, Fozard, Bouwhuis and Taipale (2007) describe gerontechnology as "a harmonization of demographic and technological developments, through the direction of technological innovation to the ambitions, purposes, and needs of ageing persons."

References

- Anguera, J. A., J. Boccanfuso, J. L. Rintoul, O. Al-Hashimi, F. Faraji, J. Janowich, E. Kong
2013. Video Game Training Enhances Cognitive Control in Older Adults. *Nature* 501 (7465): 97–101. doi:10.1038/nature12486.
- Baltes, Paul B.
1987. Theoretical Propositions of Life-Span Developmental Psychology: On the Dynamics between Growth and Decline. *Developmental Psychology* 23 (5): 611–26.
- Baltes, Paul B. and Margret M. Baltes
1990. Psychological Perspectives on Successful Aging: The Model of Selective Optimization with Compensation. *Successful Aging: Perspectives from the Behavioral Sciences* 1: 1–34.
- Bosmans, Dirk, and Paul Maskell
2012. Videogames in Europe: 2012 Consumer Study. ISFE & Ipsos MediaCT. <http://www.isfe.eu/industry-facts/statistics>.
- Bouma, Herman, James L. Fozard, Don G. Bouwhuis, and V. T. Taipale
2007. Gerontechnology in Perspective. *Gerontechnology* 6 (4): 190–216.
- Brown, Julie A
2012. Let's Play: Understanding the Role and Meaning of Digital Games in the Lives of Older Adults. In *Proceedings of the International Conference on the Foundations of Digital Games*, 273–75. FDG '12. New York, NY, USA: ACM. doi:10.1145/2282338.2282396.
- Butler, Robert N.
1969. Ageism: Another Form of Bigotry. *Gerontologist* 9: 243–46.
- Carter, Dylan
2014. ALZ (Game). Accessed October 14, 2015. <http://www.newgrounds.com/portal/view/634905>.
- Crawford, Chris

1982. The Art of Computer Game Design. Vancouver: Washington State University.
<http://www.vancouver.wsu.edu/fac/peabody/game-book/Coverpage.html>.
- De Schutter, Bob
- n.d. Gerontoludic Design: An Integrated Framework for the Design of Digital Games for Older Adults. *International Journal of Gaming and Computer-Mediated Simulations*.
2011. Never Too Old to Play: The Appeal of Digital Games to an Older Audience. *Games and Culture: A Journal of Interactive Media* 6 (2): 155–70. doi:10.1177/1555412010364978.
- De Schutter, Bob, Julie A. Brown, and Vero Vanden Abeele
- 2014 The Domestication of Digital Games in the Lives of Older Adults. *New Media & Society*, 1461444814522945. doi:10.1177/1461444814522945.
- De Schutter, Bob, and Steven Malliet
- 2014 The Older Player of Digital Games: A Classification Based on Perceived Need Satisfaction. *Communications* 39 (1): 67–88.
- Dietz, Tracy L.
- 1998 An Examination of Violence and Gender Role Portrayals in Video Games: Implications for Gender Socialization and Aggressive Behavior. *Sex Roles* 38 (5): 425–42.
- ESA
- 2015 2015 Essential Facts about the Computer and Video Game Industry. ESA.
<http://www.theesa.com/wp-content/uploads/2015/04/ESA-Essential-Facts-2015.pdf>.
- Frasca, Gonzalo
- 1999 Ludology Meets Narratology. Similitude and Differences between (video)games and Narrative.
- . 2003. Ludologists Love Stories, Too: Notes from a Debate That Never Took Place. In *Proceedings of the Digital Games Research Conference 2003*. Utrecht.
- Freund, Alexandra M., and Paul B. Baltes
- 2000 The Orchestration of Selection, Optimization and Compensation: An Action–theoretical Conceptualization of a Theory of Developmental Regulation. In *Control of Human Behavior, Mental Processes, and Consciousness: Essays in Honor of the 60th Birthday of August Flammer, W. J. Perrig and A. Grob*, eds. Pp.35–58. Mahwah, NJ: Lawrence Erlbaum Associates Publishers.
- Fua, Karl C., Swati Gupta, David Pautler, and Ilya Farber
- 2013 Designing Serious Games for Elders. In *Proceedings of the Foundations of Digital Games Conference 2013*. Chania, Crete, Greece.
http://www.fdg2013.org/program/papers/paper38_fua_etal.pdf.
- Gamberini, Luciano, Alcaniz Mariano, Giacinto Barresi, Malena Fabgregat, Lisa Prontu, and Francisco Ibanez. 2006. Cognition, Technology and Games for the Elderly: An Introduction to ELDERGAMES Project. *PsychNology Journal* 4 (3): 285–308.
- Gerling, Kathrin M., Frank Paul Schulte, Jan Smeddinck, and Maic Masuch
- 2012 Game Design for Older Adults: Effects of Age-Related Changes on Structural Elements of Digital Games. In *Entertainment Computing-ICEC 2012*, 235–42. .
http://link.springer.com/chapter/10.1007/978-3-642-33542-6_20.

- Goldstein, Jeffrey, Lara Cajko, Mark Oosterbroek, Moniek Michielsen, Oscar van Houten, and Femke Salverda
1997 Videogames and the Elderly. *Social Behavior and Personality* 25 (4): 345–52.
- Holliday, Stephen G., and Michael J. Chandler
1986 Wisdom: Explorations in Adult Competence. *Contributions to Human Development* 17: 100.
- IJsselsteijn, Wijnand, Henk Herman Nap, Yvonne de Kort, and Karolien Poels
2007 Digital Game Design for Elderly Users. In *Proceedings of the 2007 Conference on Future Play*, 17–22. Toronto, Canada: ACM.
- Jung, Younbo, Koay Jing Li, Ng Sihui Janissa, Wong Li Chieh Gladys, and Kwan Min Lee
2009 Games for a Better Life: Effects of Playing Wii Games on the Well-Being of Seniors in a Long-Term Care Facility. In *Proceedings of the Sixth Australasian Conference on Interactive Entertainment*, 5:1–5:6. IE '09. New York, NY, USA: ACM. doi:10.1145/1746050.1746055.
- Lamb, Sarah
2014 Permanent Personhood or Meaningful Decline? Toward a Critical Anthropology of Successful Aging. *Journal of Aging Studies* 29 (1): 41–52. doi:10.1016/j.jaging.2013.12.006.
- Lantz, Frank
2014 Hearts and Minds. GDC Vault. <http://www.gdcvault.com/play/1020788/Hearts-and-Minds>.
- Lenhart, Amanda, Sydney Jones, and Alexandra R. Macgill
2008 Adults and Video Games. Pew Internet & American Life Project.
- Levy, Laura M., Maribeth Gandy, Rob Solomon, Anne Collins McLaughlin, Jason C. Allaire, and Laura A. Whitlock
2012 Fear of Failure: Gender Differences in Older Adult Gamers. In *Proceedings of the International Conference on the Foundations of Digital Games*, 292–93. FDG '12. New York, NY, USA: ACM. doi:10.1145/2282338.2282405.
- Locomotivah
2015 Cahors Sunset Game. <http://store.steampowered.com/app/341700/>.
- Marston, Hannah R., and Stuart T. Smith
2012. Interactive Videogame Technologies to Support Independence in the Elderly: A Narrative Review. *Games for Health: Research, Development, and Clinical Applications* 1 (2): 139–52.
- McLaughlin, Anne C., Michelle R. Bryant, John F. Sprufera, Jason C. Allaire, and Maribeth Gandy
2013. Usability an Important Goal for the Design of Therapeutic Games for Older Adults. In *Engineering Psychology and Cognitive Ergonomics. Applications and Services*, 358–64. Springer. http://link.springer.com/chapter/10.1007/978-3-642-39354-9_39.
- Michael, David R., and Sandra L. Chen
2005. Serious Games: Games That Educate, Train, and Inform. Muska & Lipman/Premier-Trade.
- Miesenberger, Klaus, Roland Ossmann, Dominique Archambault, Gig Searle, and Andreas Holzinger
2008. More than Just a Game: Accessibility in Computer Games. In *HCI and Usability for Education and Work*, 247–60. Springer. http://link.springer.com/chapter/10.1007/978-3-540-89350-9_18.

Mosberg Iversen, Sara

2014. Play and Productivity: The Constitution of Ageing Adults in Research on Digital Games. *Games and Culture*, November, 1555412014557541. doi:10.1177/1555412014557541.
2015. "Not without My Kitties": The Old Woman in Casual Games. In *Proceedings of the Foundations of Digital Games Conference*, 8. Pacific Grove, CA.

Murray, Janet Horowitz

1997. *Hamlet on the Holodeck: The Future of Narrative in Cyberspace*. New York: Free Press.
- Ogomori, Kenta, Mitsuo Nagamachi, Koichi Ishihara, Sayaka Ishihara, and Masahiko Kohchi
2011. Requirements for a Cognitive Training Game for Elderly or Disabled People. In *Biometrics and Kansei Engineering (ICBAKE)*, 2011 International Conference on, 150–54. IEEE.
http://ieeexplore.ieee.org/xpls/abs_all.jsp?arnumber=6031268.

Peppard, Nancy

2013. An Essay on Myths and Stereotypes. <http://www.oregon.gov/dhs/apd-dd-training/EQC%20Training%20Documents/Myths%20and%20Stereotypes%20of%20Aging.pdf>.

Red Hat Society

- 2015 "About Us." Accessed October 14, 2015. <http://redhatsociety.com/about>.

Salen, Katie, and Eric Zimmerman

2003. *Rules of Play: Game Design Fundamentals*. MIT Press.

Skalsky Brown, Julie

2014. Let's Play: Understanding the Role and Significance of Digital Gaming in Old Age. Ph.D. dissertation, Department of Gerontology, University of Kentucky.
http://uknowledge.uky.edu/gerontol_etds/6.

Tarvet, Alexander

2015. Forget-Me-Knot: Showcase Gameplay 11/05/15 YouTube video. Accessed October 14, 2015.
<https://www.youtube.com/watch?v=V-GrreYL-Ng>.

Tale of Tales

2008. The Graveyard Game. Accessed October 14, 2015. <http://www.tale-of-tales.com/TheGraveyard/>.

Van der Goot, Margot

2009. *Television Viewing in the Lives of Older Adults*. Doctoral dissertation, Raboud University Nijmegen.

Van Leeuwen, Lieselotte, and Diane Westwood

2008. Adult Play, Psychology and Design. *Digital Creativity* 19 (3): 153–61.
doi:10.1080/14626260802312665.

Yarnal, Careen Mackay, Garry Chick, and Deborah L. Kerstetter

2008. "I Did Not Have Time to Play Growing Up... So This Is My Play Time. It's the Best Thing I Have Ever Done for Myself": What Is Play to Older Women?. *Leisure Sciences* 30 (3): 235–52.
doi:10.1080/01490400802017456.