Chapter 1  Digital games and older people from a theoretical and conceptual perspective: a critical literature review

Authors
Sergio Sayago, Universitat de Barcelona
Andrea Rosales, Universitat Oberta de Catalunya
Valeria Righi, Ideas for Change
Susan M. Ferreira, Télé-Université du Québec
Graeme W. Coleman, The Paciello Group
Josep Blat, Universitat Pompeu Fabra

Abstract
Prompted by the authors’ reflection of their own Human-Computer Interaction research on games and older people, and analysis of previous and related works, this chapter presents a critical literature review of contemporary research on digital games with older people. This chapter argues that much of the research conducted in this field has been performed in a descriptive fashion, without strong integration of important theories of ageing, such as Socioemotional Selective Theory, Selective Optimization with Compensation Theory, Life-Span Theory of Control, Continuity and Disengagement theories, despite their relevance and potential for developing systematic and cross-disciplinary knowledge. This chapter shows the relationship between these theories and key elements of research on games with older people, such as emotions and motivations. This chapter also shows that older people are often portrayed as either actual or potential players of digital games, which are widely regarded as being a solution to solve or fix most of their problems. This chapter calls for a re-examining of the way in which older people and digital games are constructed by drawing upon the conceptual tools provided by theories of ageing, in an attempt to co-construct games wherein diversity, agency, life experiences, and identity receive further attention.

Keywords
older people; digital games; ageing theories; critical literature review; Human-Computer Interaction

Highlights
• A critical review of research on digital games with older people
• The field of digital games and older people is mostly descriptive

• Important theories of ageing have been overlooked

• Towards a more critical co-construction of digital games and their older players
1.1 Introduction

At first glance, digital games and older adults (who we define as people aged over 65), may appear worlds apart. Whilst it is relatively common to find children and teenagers playing computer and online games, older people are often stereotyped (Hummert, 2011), perhaps because of our own experiences (Carstensen, 2011), as preferring to play traditional games, such as cards and dominoes. Consequently, it is difficult to conceptualize them as players of digital games. However, previous research (e.g., Sayago, Rosales, Righi, Ferreira, Coleman & Blat, 2016; Mosberg Iversen, 2016; Brown & De Schutter, 2016) shows that (i) playing digital games is no longer the domain of younger adults, (ii) players are growing older, and (iii) older adults play digital games for often very different reasons (e.g., intellectual challenges, physical exercise). Moreover, an increasing number of digital games for older people are being designed to compensate for age-related changes in functional abilities, improve and enrich grandchildren–grandparent communication, and encourage social interaction (Sayago et al., 2016).

This chapter argues that much research conducted in Human-Computer Interaction, Cultural Studies, Sociology, and Gerontechnology on digital games with older people has reached a stage in which it is timely and important to examine this body of knowledge from a theoretical and conceptual perspective. Whilst older people are often portrayed as actual or potential players of digital games, they may be either unwilling or unable to use computers (Hakkarainen, 2012; Weaver, Zorn & Richardson, 2010). Why? Additionally, some older people play games to “kill time”, while others do it for learning purposes (de la Hera, Loos, Simons & Blom, 2017). How can we account for this? Digital games (and other technologies) for older people are often designed to cater for seemingly pre-existing needs (Neven, 2010); however, those “hidden” needs that arise out of playing, such as eventually building their own game/s (Sayago et al., 2016), are largely missing from the literature. Why?

These questions were primarily prompted by the lessons we learned while working on a 2-year project (Sayago et al. 2016) that aimed to understand what makes digital games meaningful, playable and appealing to older people, culminating in the player-centered design of typical example games. In this project, we regarded older people as individuals who were potentially interested in and capable of playing games. We also thought of digital games as tools that can (and should) foster active and positive ageing. However, while discussing (digital) games and experiences of play with our participants, we realized that some were not interested at all in playing games. We also realized that a single digital game was unlikely to meet the varied interests (e.g., geography and mathematics) of those who were keen to play games. Thus, we decided to change our assumptions and research goals. We co-designed an online platform of games whereby older people can both create their own games and play those created by others. By doing so, we witnessed how those older people who were initially
unwilling to play games, or who were simply uninterested in digital technologies, changed their attitude. Creating the content of the games - this was part of their playing / ludic experience - and playing them was perceived as something meaningful and emotionally rewarding. For example, they learned about topics in which they were interested, and felt proud realizing that they could share their knowledge by using ‘modern’ technologies. How can we explain all of this?

Prompted by this experience, this chapter examines research on digital games with older people from a theoretical and conceptual perspective; in particular, we focus on two key issues, as we discuss throughout the chapter, the (i) connection with ageing theories and (ii) construction of older people and digital games. This chapter presents a critical literature review (Grant & Booth, 2009). The articles cited in it are, in our opinion, exemplary of the research conducted thus far and related to the issues addressed in the chapter.

Regarding the theoretical perspective, this chapter argues that the ‘why?’ questions raised before – e.g., why are older people often portrayed as actual or potential players of digital games while they are also regarded as unwilling or unable to use computers? - are, or can be, answered by drawing upon some important theories of ageing, which (should) help us to better frame and understand research. Yet, much research on digital games and older people (ours included) has hitherto been performed in a descriptive fashion, without strong integration of theories of ageing, despite their importance and apparent connection, hindering systematic and cross-disciplinary knowledge development.

Regarding the conceptual perspective – that is, the construction of older people and digital games – this chapter argues that older adults are largely seen as individuals who need to play digital games simply to improve their lives. Also, digital games are almost unambiguously regarded as a solution to most of their problems. This construction does not seem to have been examined critically enough, despite a growing desire to consider the view of users as agents of technological change and not as passive entities (Oudshoorn & Pinch, 2003), and to go beyond the dominant paradigm, in HCI and related areas, such as gerontology (Twigg & Martin, 2015), that emphasizes the biomedicalization of older people in digital technology (Vines, Pritchard, Wright & Olivier, 2015), and an utilitarian view of digital games (Mosberg Iversen, 2016).

### 1.2 Theories of ageing, digital games and older people

The *Handbook of Theories of Aging* (Bengston & Settersen, 2016) addresses theories and concepts built on cumulative knowledge in four disciplinary areas: biology, psychology, social sciences, policy and practice. It is beyond the aim of this chapter to discuss how and why all these theories help us explain, predict and inform research on digital games with, and
for, older people. In this chapter, we have selected a number of theories, which are summarized in section 1.2.1, on the grounds that they can be applied to the study of digital games and older people and are also widely cited and used in gerontology (e.g., Schulz, Wahl, Matthews, Dabbs, Beach, & Czaja, 2015). The critical review of research on digital games and older people in section 1.2.2 builds upon and extends previous publications, which have taken stock of research on games with older people (e.g., Sayago et al., 2016; Osmanovic & Pecchiioni, 2016; Brown & De Schutter, 2016; De Schutter, Brown & Vanden Abeele, 2014; Marston, 2013; De Schutter, 2011; Nap, Kort & IJsselsteijn, 2009), by focusing on the theoretical aspect of the field.

### 1.2.1 Some ageing theories and their connection with digital games and older people

**Socioemotional Selective Theory (SST) (Carstensen, 2006)** is, perhaps, one of the best-known theories of ageing. SST is a lifespan theory of motivation. It is grounded fundamentally in the human ability to monitor time so as to adjust time horizons with increasing age and appreciate that time ultimately runs out. According to this theory, when time is perceived as open-ended, goals that become most highly prioritized are most likely to be those that are preparatory, focused on gathering information, on experiencing novelty, and on expanding breadth of knowledge. When time is perceived as constrained, the most salient goals will be those that can be realized in the short-term. Thus, this theory argues that as people age and increasingly perceive time as finite, they attach less importance to goals that expand their horizons and greater importance to goals from which they derive emotional meaning. Whilst this theory provides a conceptual framework to understand aspects related to ageing and playing, such as social and emotional ageing (Charles & Carstensen, 2009), some research on digital games and older people challenge it. For instance, there are active older people who play digital games to keep learning (de la Hera, Loos, Simons & Blom, 2017) - using the terminology of SST, to ‘expand their horizons’. On the other hand, SST helps us account for the emotional meaning some older people derive from playing digital games with their grandchildren (Sayago et al., 2016).

According to Baltes and Baltes (1990), successful, individual development is a process involving three components: selection, optimization and compensation. The Selective Optimization with Compensation Theory (SOC) addresses how older adults maintain functioning despite age-related declines. Selection refers to an increasing restriction of one’s life world to fewer domains of functioning because of an ageing loss. This selection forces them to optimize their resources, i.e. to engage in behaviors to enrich and augment their general reserves and to maximize their chosen life courses. As opposed to optimization, compensation aims at counteracting or avoiding losses. Compensation involves aspects of the mind and technology. The SOC theory aids in explaining the different motivations older people have for playing digital games. In our research (Sayago et al., 2016), for instance, the
ageing loss (Selection) was not physical but social: a perceived lack of social inclusion and keeping up with the times. In terms of Optimization and Compensation, our participants were interested in creating games because doing so enriched and maximized their decision to keep learning and taking part in a research project on digital games, and to avoid feeling (or being) lagging behind.

The Life-Span Theory of Control (Heckhausen, Wrosch & Schulz, 2010) proposes that the key criterion for adaptive development is the extent to which the individual realizes control of his or her environment. However, as individuals’ capacity for primary control decreases in old age, individuals need to have strategies that facilitate disengagement from unattainable goals in favor of pursuing other more attainable ones. As with SST and SOC, this theory proposes a need to allocate diminishing resources resulting from age-related declines in sensory, motor, and cognitive abilities; strategies for compensating for losses; and methods for optimizing adaptive development (Schulz et al., 2015). Previous studies of digital games and older people report on vicarious play (Voida & Greenberg, 2012), especially in intergenerational contexts (de la Hera, Loos, Simons & Blom, 2017). This type of play can be accounted for by this theory: playing a digital game with a child might be an unattainable goal for some older people, due to, for instance, physical impairments. In contrast, a more attainable goal can be to observe, comment and participate in the experience without actually playing.

Socioemotional Selective Theory, Selective Optimization with Compensation Theory and Life-Span Theory of Control each fall under the umbrella of the Continuity Theory of Ageing (Atchley R. C. 1989 cited in Diggs, 2008). As opposed to the Disengagement Theory - cited in Bengston and Settersen (2016), which posits that withdrawal by the individual in social and psychological involvement is a normal and inevitable part of the ageing process over time - the Continuity Theory of Ageing contends that ageing is a dynamic and evolutionary developmental process in which individuals grow, adapt, and change. These changes are consistent with the person’s underlying ideology and past experiences (Diggs, 2008). Both theories can be used to explain different views of the relationship between older people and digital games. In the Introduction, we argued that it is difficult to think of older people as players of digital games (or digital technologies, in general). However, according to the Disengagement Theory, this conceptualization is not so difficult. The Continuity Theory, however, helps us explain why there are older people, such as those who participated in our research (Sayago et al., 2016), interested in exploring digital games (and other technologies): they adapt and change.
Theories of ageing

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<th>Theories of ageing</th>
<th>Some implications for digital games and older people</th>
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<td>Selective Optimization with Compensation Theory</td>
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Table 1.1 Theories of ageing and implications for gaming research

1.2.2 Research on digital games and older people is mostly descriptive

As previous research has shown (e.g., Sayago et al, 2016; Osmanovic & Pecchioni, 2016; Brown & De Schutter, 2016; De Schutter, Brown & Vanden Abeele, 2014; Marston, 2013; De Schutter, 2011; Nap, Kort & IJsselsteijn, 2009), older people’s reasons for playing games are extremely varied, ranging from a desire to take up intellectual challenges and fight perceived negative consequences of becoming housebound to having fun and satisfying a curiosity while keeping up-to-date with new technologies. Some prefer to play solitary games, while others play with their grandchildren. However, the majority of games designed for older people in the literature mainly aim to help them cope with age-related changes in functional abilities, improve and enrich grandchild–grandparent communication, and encourage social interaction (Sayago et al., 2016). How can we account for these diverse motivations and play behaviors? What ideas and principles lead or inform the design of the games aimed at older people? Theories should help us answer this question in a formal way. However, and as stated in De Schutter and Malliet (2014, p. 68), “currently, no investigation has developed a theoretical framework accounting for the variation observed among older people”. Some noteworthy exemptions are Brown & De Schutter (2016) and De Schutter, Brown & Vanden Abeele (2014).

In their study, Brown and De Schutter (2016) highlight “the significance of using a life course perspective to explore how play is shaped and reflected through digital gameplay and preferences as a game player ages” (p. 1). It is worth mentioning that a life course (or life-
span) perspective is not a theory per se (Bengston & Settersen, 2016). Yet, its core elements (e.g., agency, linked lives) cut across most of the aforementioned theories of ageing. In their study, Brown and De Schutter (2016) argue that older adults who enjoy playing solitary games typically played non-digital games in a solitary manner when they were children. Conversely, older adults who were social players as children still considered play to be a largely social experience. This seems to be accounted for the theories of ageing outlined in B1, especially SET and SOC, but they are not mentioned in the study.

De Schutter, Brown and Abeele (2014) propose the domestication framework (Silverstone, 2005) as a theoretical foundation to study the adoption and use of digital games by an older audience. The term domestication refers to the process of transforming something that is part of the wild into something that is ‘house-trained’ (Brown, De Schutter & Vanden Abeele, 2016, p. 3). Considering appropriation, conversion, objectification and incorporation, the study (i) addressed interests in playing, (ii) showed that the content of the games tended to be a reflection of meaningful activities and topics, (iii) argued that playing digital games might not always be considered age-appropriate and that playing games is therefore rarely put on display.

Despite these exceptions, and although the literature review on digital games is not comprehensive, we claim that theories of ageing are seldom either used or mentioned in research on digital games and older adults. Why? Much as theories help us avoid ‘barefoot empiricism’ (i.e., highly descriptive papers with little interpretation as to why the results occurred or why they matter beyond mere description - cited in Bengston and Settersen, 2016, p. 25). Most HCI researchers and designers, and possible other scholars too, are conducting applied research, wherein theory development may not be a top priority. However, this view seems to contradict the hallmark of HCI, “importing and adapting alternative theories from other areas to address new concerns in HCI continues to be a staple of HCI research” (Rogers, 2012, p. 14), and the well-known importance of theory in advancing knowledge in any scientific field (Bengston & Settersen, 2016). Another plausible explanation is that theories of ageing are unrelated to research on digital games with older people. However, as we have shown above, this is not the case.

Why, then, are theories of ageing not explicitly used in research on digital games with older people? In our opinion, the most likely reasons are that the field of digital games and older people is in an early stage of development, and that most of us are either unaware of or have not paid enough attention to theories of ageing in our work thus far.
1.3 From construction to co-construction of older people and digital games

Despite the heterogeneity of ageing, and some studies, such as Mosberg Iversen (2016), which take issue with a highly utilitarian and functionalistic view of digital games for older people in the literature, older adults are often portrayed as either actual or potential players of digital games across research. For example, recent publications “examined the habits, preferences, motivations and outcomes of video gameplay amongst older adults who play games with their family members” (Osmanovic & Pecchioni, 2016), and conducted “an online survey (...) to gather information about older gamers’ demographic characteristics (Zhang & Kaufman, 2015). In previous publications, this view of older people is also portrayed; e.g. the “Inclusion criteria for the participants included the following: must be age 50 or above, (...) engage in digital game play at least two times a month for a minimum of one hour” (Brown, 2012, p. 275), “play patterns and lifestyles of gamers who fall into the loose demographic of “Baby Boomers” (Pearce, 2008), and “Ten Dutch senior gamers participated in the focus groups; one which consisted mainly out of avid gamers (FG1) and one which consisted mainly out of casual gamers (FG2)” (Nap et al., 2009, p. 249).

This, arguably positive, view of older people is in stark contrast with widespread and negative stereotyped views (Hummert, 2011), especially in terms of computers and the Internet (Durick, Breroton, Vetere & Nansen, 2013) where most digital games are played. Why these different (and opposing) views?

It could be argued that the main reason is pragmatic – if we want to design games specifically for older people, they should be either active players of digital games or at least interested in becoming players. Moreover, why should older adults not be interested in playing digital games designed specifically for them, if “play is older than culture” (Huizinga, 1944), and the focus of most of them is “on the potential beneficiality of playing (...) bettering the health, well-being, or competences of ageing adults” (Mosberg Iversen, 2016, p.8-14)?

In our opinion, there is another important and more profound reason, which arises from how digital games and older people are constructed. Digital games are socially constituted entities (Wagner et al., 1999) deeply imbued with (i) the values of today’s society, especially those related to increasing ideologies of youthfulness (Higgs & Gilleard, 2015) and ‘growing older without ageing’ (Katz, 2001), (ii) ideals and policy frameworks, such as active and positive ageing (Parra et al., 2013), and (iii) fairly idealistic views of games, e.g., “games make us better and change the world” (McGonigal, 2011). Within this context, there are reasons to believe that digital games might be worthwhile for older people, who are always in need of help (Rogers and Marsden, 2013). For designers and engineers, games can therefore be a solution to an important problem or issue, and a way of attracting funding - see, for instance,
“support older persons to remain active and healthy”, in the Health, Demographic Change and Wellbeing of the EU Framework Programme for Research and Innovation (H2020).

While digital games might ‘make us better’, and pursuing the ideals of positive / active ageing is something some of (them) us may aspire to achieve, we should not lose sight of the fact that some older people cannot (or simply do want to) engage with the medium, and that digital games might not, after all, improve their quality of life. Hence, it seems timely and important to move from constructing digital games and older people to co-constructing them – that is, in collaboration with older adults - in a way wherein diversity, agency, life experiences and identity, which are elements that come into play in the theories of ageing summarized in section 1.2, in addition to age-related changes in functional abilities, social relationships, and utilitarian / paternalistic views, receive further attention.

1.4 So what? Moving forward

This chapter is an invitation to improve research on digital games with older people by strengthening its theoretical component and thereby making this field less descriptive. How? We have intentionally left out implications for design, since we cannot anticipate the connection with the reader’s particular research. Even so, future research could consider conducting studies that are either informed or driven by current theories of ageing, and discuss them, or by carrying out others which construct and put forward theories (by, for instance, adopting Grounded Theory (Charmaz, 2010) based on fieldwork.

Is this ‘descriptive’ issue a particular or unique feature of the research on digital games conducted with older people or does it happen in research on other digital technologies conducted with the same user group? By drawing upon our own previous HCI research on Computer-Mediated Communication (CMC) with older people (Sayago & Blat, 2010), and to the best of our knowledge, research on CMC tools and older adults is also rather descriptive.

The construction of older people and games and other ICTs, whereby the former are largely seen as players, while the latter (technologies) are almost unambiguously regarded as a solution to most of their problems, is a common thread within HCI research with older people. Two noteworthy examples are the ‘rhetoric of compassion’ (Rogers & Marsden, 2013) and the widespread view of software and hardware technologies as a way to help control economic and social problems due to a worldwide ageing population (Vines et al., 2015). Given this situation, the discussion in which this chapter has engaged could be undervalued for its lack of novelty. However, if the issues raised herein are seen within the context of research on digital games with older people, which is rather descriptive, this chapter has discussed issues that are more the exception than the norm in this field, and
introduced to it a degree of critical analysis and conceptual innovation that can stimulate future research.

As noted by Grant and Booth: “The resulting product of a critical literature review is the starting point for further evaluation, not an endpoint in itself” (2009, p. 94). Thus, if we decide to explore the issues raised in this chapter further - that is, to strengthen the theoretical aspect of our research and aiming for a more critical co-construction of older people and games – how can we move forward, and where will doing so take us?

By talking to older people about their experiences of play and observing them playing digital and analogue games in communities over time, we realized that older adults can be both players and creators of games, and that creating games is part of their experience of play (e.g. seeking and selecting stimulating materials for the games). We also realized that ‘one size does not fit all’ – in other words, a single game is unlikely to appeal to all older people – and that games may not foster positive / active ageing per se. This re-construction (at least, in our work) of older people and digital games, which introduces a shift in current research on digital games with older adults (Sayago et al. 2016), is doable and opens up a number of research opportunities. For instance, games can be seen within the context of the communities where older people belong to and wherein the meaning of technologies is co-constructed (Righi, Sayago & Blat, 2017). Seeing older people as creators of games, and creating games as part of the ludic experience, seems to be an enticing way to understand further their relationship with digital games and their current and future experiences of play.

This chapter has explored the potential of (some) theories of ageing to inform the design of both games and research. We have not considered play theories in this chapter. Yet, an interesting future research area would be to explore the connection between theories of play and ageing, as doing so could provide richer understandings of the relationship between older people and digital games, and to create better games (for all). Thus far, games and research with older people is focused on age-related changes in functional abilities, active ageing, exercise (physical or mental), and intergenerational communication. Elements of the theories of ageing summarized in table 1 such as emotional experiences and meaning, optimization, compensation, control and selection provide us with a set of conceptual tools within which to conceptualize games and research in a different, richer way. Future research and design activities could consider the conceptual framework enabled by theories of ageing as a starting point for generating new knowledge and framing, explaining and conducting research on digital games with (and for) older people.
1.5 Some limitations and opportunities for future research

The unit of analysis of most of the theories mentioned in this chapter is the individual. This is an important limitation, especially as we stress the relevance of communication in older people’s everyday day use of digital technologies (Sayago & Blat, 2010). We have selected a number of theories which can begin to foster an interesting theoretical discussion in research on digital games with older people. Other scholars may have selected alternative theories, depending on whether they work on, for instance, critical gerontology (Cole, Achenbaum, Jakobi & Kastenbaum, 1993) or sociology of ageing, wherein Cumulative Advantage and Disadvantage Theory play an important role (Marshall & Bengston, 2011; George & Ferraro, 2016). Other scholars may disagree with our views and the speculative tone of the discussion. This is inevitable. Nonetheless, we hope this chapter is an invitation to further explore all these theories that we have left behind – and those that will probably be developed in the future – in research on digital games with older people.

1.6 Conclusion

This chapter presented a critical literature review of contemporary research on digital games with older people. This review has focused on two key aspects: theories of ageing, and the construction of digital games and older players. This review was prompted by the authors’ reflection of their own HCI research on games and older people and analysis of previous works in several areas. The key messages of the chapter are as follows.

Firstly, much of the research conducted on digital games and older people has been performed in a descriptive fashion, without strong integration of theories of ageing, despite its relevance and potential for developing systematic and cross-disciplinary knowledge. Possible ways of accounting for this lack of integration of theories of ageing in the research conducted thus far and moving forward have been discussed in the chapter.

Secondly, the construction of older people and digital games needs to be examined in a more critical way. Older people are often portrayed as either actual or potential players of digital games, which are widely thought of as being a solution to solve or fix most of their problems. Positive models of ageing, anti-ageing, and social representations of digital games are suggested factors that provide an explanation for it. Different, and more critical ways of co-constructing older people and games are discussed in the chapter by building and reflecting upon the authors’ own HCI research.

Finally, this chapter discussed similarities and differences between the issues identified throughout the critical literature review and contemporary HCI research, and proposes some (general) opportunities for readers of this book to take this research forward.
1.7 References


