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Gerontoludic Character Design: Creating Engaging Player Characters for Older Adults

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by

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ABSTRACT

Title of Thesis: Gerontoludic Character Design: Creating Engaging Player Characters for Older Adults

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In this thesis, findings of research in gerontoludic character design, in other words the design of game player characters focused upon the needs, wants, and expectations of older adults, are delivered. To support these findings, there is a review of qualitative and quantitative literature on ageism, including the impact of aging stereotypes and assumptions upon technology driven industries such as the game industry. This exploration of the roots of ageism includes an examination of how ageism affects the frequency and nature of older adult characters, both playable and non-playable, found in video games. Part of the justification of this topic includes consideration of profitability and play habits of older adult players, for the purposes of the research that refers to players aged 50 and older. To better the odds of creating content that will be appealing to this potentially profitable audience, game designers need to understand how to avoid ageist perspectives in the design of game characters and their narrative arcs. To that end, current research in the design of games for older adults, both from gerontological and gerontoludic design perspectives, is paired with viewpoints on the design of video game characters, particularly player characters. This is combined with the results of a survey conducted on the character design preferences of older adults. The reviewed research and analysis of survey results is then used to create a set of gerontoludic character design guidelines that can hopefully lead to the development of more appealing player characters and avoid negative, stereotypical portrayals of older adults.

Key terms: gerontoludic design, character design, ageism, gerontology, older adult

Dedication

To my wife, who is my loving support in all things. I couldn't have done this without you. And to my parents, who always encouraged me to pursue my education.

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Introduction

Gamers over the age of fifty spent more than three billion dollars on video games and other forms of interactive media in 2019, and that spending made up more than a quarter of the total game industry audience (Entertainment Software Association, 2019; Nelson-Kakulla, 2019). Yet there is no game content being created by the mainstream game industry that is purposefully designed with the needs of this audience in mind (Entertainment Software Association, 2019; Nelson-Kakulla, 2019; Shieber, 2019). The game content that has been created for older adults is typically the handiwork of academics endeavoring to apply theories from gerontology and gerontechnology to interactive experiences, with a tendency to focus on games as a form of preventative for physical or cognitive decline, or as therapy in recovery from illness or injury, with few looking at issues of games purely for entertainment (De Schutter, 2011; De Schutter & Vanden Abeele, 2008; Marston, 2019; Marston & Graner Ray, 2016; McLaughlin et al., 2012; Pearce, 2008; Sopanen, 2015). This emphasis on the practical and therapeutic, blended with the reality that the game industry has a workforce where less than 5% of workers are over the age of fifty, points toward ageism as a contributing factor in both the lack of older-adult specific content, and the focus on therapeutic content in those products that do exist (Gough, 2019; Swanner, 2018). To that end, literature on ageism is reviewed, since personal and cultural perspectives on aging have an impact not just upon potential players, but upon the developers creating those games. This has been paired with a review of some of the major literature on gerontology and gerontechnology and a discussion of the current perspectives available on gerontoludic design to see how the focus on rehabilitation and therapy reflects ageist perspectives (De Schutter, 2017).

The expansion of academic research into the creation of interactive experiences focused on pleasure begins with De Schutter and Vanden Abeele's (2015) publication of a gerontoludic manifesto. In recent years, De Schutter (2017) took those ideas further and offered a framework for designing meaningful entertainment for older adults, where the construct for gerontoludic design was introduced. Gerontoludic design is described as the design of games with consideration of the thematic interests, and the physiological, cognitive, and social needs, of older adults taken into account, without those physiological and cognitive needs diminishing the pleasure of play (De Schutter, 2017). This framework addresses broader concerns around mechanics and aesthetic considerations in design, including the enjoyment of cooperative play and cross-generational play, the latter which could help to combat the issue of loneliness that often arises with age (Adams et al., 2011; De Schutter, 2017; Hagestad & Uhlenberg, 2005; Pearce, 2008). Since the body of research on creating entertainment experiences for older adults is relatively small, and the framework that does exist focuses on the gameplay and aesthetic components of the design process and play experience, this thesis has been written to add to this body of research into new areas. To explore the idea of gerontoludic character design, there are a variety of questions this thesis hopes to address. Why do older adults play games? What genres of games do they prefer? What are older adult player preferences in player character age, appearance, and personality? What are older adult player preferences in customization options for their player characters? What types of stories do they wish to explore via their player characters? Are there differences in preference between Baby Boomer and Gen-X older players?

To explore these questions, a review of literature has been completed on a variety of topics. The nature of the relationship between players and the player characters they are asked to portray is discussed and considered in connection to perspectives on the process of creating

characters that are engaging for players (Bryant & Giglio, 2015; Worch, 2011). This review of existing research is paired with the results of a new survey conducted on older adult character design preferences to answer the research questions stated above (see Appendix A). Overall results of survey responses are analyzed for patterns in older adult player character preference. This is followed by a comparison conducted between results from both Baby Boomer and Generation X players who fit the definition of older adult (age 50+), and younger Generation X players that will join the ranks of older adults in the next decade (42 to 49-year-olds). This comparison is conducted to observe potential shifts in character preference from Baby Boomer older adults to the first audience to grow up with video games, Generation X (Brown & Marston, 2018). The answers to these questions, in combination with the review of literature conducted, guide the creation of a set of research-supported character design standards crafted to meet the needs, wants, and expectations of older adults. The standards will address players' relationships with the player character (PC) or avatar they are asked to take on, the mechanics functionality of those characters, their visual design, and narrative aspects such as personality and narrative context (Bryant & Giglio, 2015; Deen et al., 2015; Isbister, 2006; Jansz, 2015; Przybylski et al., 2018; Skolnick, 2014; Suckling & Walton, 2017; Worch, 2011).

Literature Review

Chronology

The topic of designing games for older adults is a relatively recent one, but research on issues of ageism and aging has been going on for decades. Research on aging and ageism, particularly related to changes in the workplace, began in the 80s (Butler, 1989; Schrank & Waring, 1989; White-Riley & Riley, 1989). In the 90s, gerontological research looked at cognitive and physiological changes associated with aging as well as how observations of word choice in language revealed tendencies of ageism (Chaput & Proteau, 1996; Saporta & R.R.B, 1991). In the early 2000s, research continued on the physiological and cognitive changes that come with age, along with the effects that internalized and external ageism had on the social standing of older adults (Charness, 2008; Guan & Wade, 2000; Hagestad & Uhlenberg, 2005; Nelson, 2005). At the same time, in games research, texts began being written not just on tools and techniques, but on the player experience, and how to better design engaging content, including more appealing game characters (Isbister, 2006; Salen & Zimmerman, 2004). Some of the first articles on designing games for older adults and stereotypes of older adult players were written during this period (De Schutter & Vandenabeele, 2008; Pearce, 2008). Simultaneously, research was being published on stereotypes and their impact, in both people and in game characters, as seen in the context of age, race, and gender (Dickerman et al., 2008; Levy, 2009; Liang et al., 2008; Mou, 2009; Williams et al., 2009).

In the early 2010s gerontological research focused on emotion and empathy in and toward older adults, and how to improve empathetic response to reduce bias (Brinker & Radinage, 2014; Fiske, 2012; Henry & Ozier, 2011; Ritcher et al., 2010). There was also some research on leisure activity for older adults that included games as a source of leisure (Adams et

al., 2011; Schultheiss, 2012). Gaming research ran in parallel to this, with De Schutter (2011) writing on the draw of digital games for older adults. Several other articles were written on how to create engaging games for older adults and how older adults respond to virtual worlds (Dogruel et al., 2013; Marston, 2012; Marston, 2013; McLaughlin et al., 2012). The research incorporated from the mid 2010s included information on writing for games, the sense of identity players develop in relationship to their player characters (a tie back to Worch's (2011) construct of puppets and vehicles and the difference in player relationships between character types), research on how older characters and female characters were depicted in games, and older adult gamers (Blair, 2015; Bryant & Giglio, 2015; Deen & Becker, 2015; Jansz, 2015; Kondrat, 2015; Rughiniş et al., 2015; Skolnick, 2014; Sopanen, 2015; Toma, 2015).

In the late 2010s, research in gerontology and gerontechnology focused on maintaining physical and cognitive health while aging and the barrier that ageism poses to aging well, the ageism issues in tech industries, designing user interfaces for older adults in consideration of physiological, cognitive, and sensory and perception changes that happen in age, and the generational effect on relationships with technology (Amarya et al., 2018; Browning & Kendig, 2016; Diamond et al., 2016; Finn & Johnson, 2017; Gough, 2019; Kamber, 2017; Laceulle, 2018; Swanner, 2018; Swift et al., 2017). Research in games continued to examine character depiction related to age, gender, and ethnicity, designing engaging games and game narratives, and player identification with the characters they portray (Dill et al., 2016; Perreault et al., 2018; Przybylski et al., 2018; Suckling & Walton, 2017). In the last few years, more research has been done specifically on aging gamers, including Gen-X gamers, gender differences in player preferences among older gamers, the coining of the term gerontoludic design and its connection to the Mechanics, Dynamics, and Aesthetics framework of design, and a large-scale study on

genre and platform habits among adults over fifty (Brown & Marston, 2018; De Schutter, 2017; Marston & Graner Ray, 2016; Nelson-Kakulla, 2019). There has even been a piece of research done on customization choices adults make, focused on age and gender variation seen when creating a face for a player character (Schwind & Henze, 2018). Vale Costa, Veloso, and Loos (2019) explored the issues of techno-ageism that impacts not just the play experience, but the reality that content created by a generally young tech workforce exacerbates the situation by failing to consider older adult users of technology, reinforcing concerns about the impact of ageism on game design, the collective phenomenon termed game-ageism by the authors.

Finally, in the early 2020s there was an update to the Williams et al. virtual census of representation in the game industry, examining how representation based on a variety of factors, including age, has changed in the past ten years (Harrisson et al., 2020). Ivan and Cutler (2021) continued research into the subject of ageism in technology, with particular attention paid to the impact that the ageism of younger software developers has on the software that they create. What follows is a detailed breakdown of the literature summarized here, thematically versus chronologically, into observations on ageism, age related changes, ageism and character design, gerontoludic design, and game character design, including their mechanic functionality as seen in the actions afforded via the player character or avatar.

Ageism

The biases related to aging have been studied for many years, focusing on the patterns of assumption, discrimination and stereotyping often associated with age (Butler, 1989; Fiske, 2012; Hagestad & Uhlenberg, 2005; Laceulle, 2018; Levy, 2009; Nelson, 2005; Saporta & R.R.B, 1991; White-Riley & Riley, 1989). Butler (1989), who coined the term ageism, offers insight into assumptions about health and wealth associated with ageism and emphasizes the

need for older adults to take charge of their perceptions of self. This is not just to reduce the prevalence of ageism, but because there has been an observed connection between self-perception of aging and the cognitive and physical health of older adults over time (Browing & Kendig, 2016; Butler, 1989; Swift et al., 2017). Such assumptions of aging seem to be at work in the game industry, based upon the lack of content designed for older adult players, likely in no small part because of a larger tension between a workforce dominated by developers in their late twenties and early thirties and the needs of an ever-growing audience in their fifties (Entertainment Software Association, 2019; Gough, 2019; Nelson-Kakulla, 2019; Schultheiss, 2012; Schrank & Waring, 1989; Swanner, 2018; White-Riley & Riley, 1989). Stereotypes about the aging process and older adults in the workforce are likely a strong factor in the lack of older adult employees in the game industry (Gough, 2019; Schrank & Waring, 1989; Swanner, 2018; White-Riley & Riley, 1989). These suppositions are supported by recent research in ageism and technology that found that not only were older adults assumed to be less skilled with technology, but that since the tech industries, including the video game industry, are dominated by younger creators, their ageism leads them to create content that is better suited to younger audiences, creating a barrier for older adults engaging with interactive media (Ivan & Cutler, 2021; Vale Costa et al., 2019).

Other research in ageism looks at the role changes that come with age, theorizing that the pre-Industrial Revolution roles of the aged—as caregivers and historians—have been diminished with families moving away from communal living, leaving older adults often feeling and perceived as being useless in later life (Nelson, 2005; Saporta & R.R.B, 1991; White-Riley & Riley, 1989). Research goes on to point out that this decline into actual or perceived uselessness can be combated, or avoided altogether, by seeking out opportunities to learn and socially engage

(Nelson, 2005; Saporta & R.R.B, 1991; White-Riley & Riley, 1989). In addition to older adults seeking out opportunities for growth and improvement, there is research that supports a reduction in ageism when families have strong, cross-generational ties between family members, in a way, recreating the structures that Nelson (2005) mentions were lost post-Industrial Revolution (Hagestad & Uhlenberg, 2005). Without that cross-generational contact, research has found that young people are more likely to stereotype the old, which has interesting implications considering the game industry is made up predominantly of developers under the age of fifty (Levy, 2009; Gough, 2019; Schrank & Waring, 1989). Recent evidence of this type of bias was in the virally pervasive "OK Boomer" meme that swept social media, perpetuating the assumption that older people are rigid and out of date (Perna, 2019).

Further research on the socio-cultural forces driving ageism reveals some of the challenges in overcoming these biases. Fiske's (2012) discussion of ambivalent prejudices examines the positive and negative qualities that are associated with stereotypes. For example, older adults are typically seen as being warm and approachable, but incompetent (Fiske, 2012). Being perceived this way not only affects the way younger people might view older adults but has the potential to affect the way that older adults view themselves (Fiske, 2012). Patterns of perception in this research have significant implications regarding stereotypes about older adults' use of technology across game platforms—console, computer, and mobile—in the eyes of game creators and older adult players (Fiske, 2012). Biases in perceptions around use of technology could impact both the creation of games on one side and the pursuit of games as a hobby on the other. As mentioned earlier, the research on ageism and technology has implications for hiring and advancement opportunities in the game industry, as it is so dependent upon technological

advancements and employee adaptation (Schrank & Waring, 1989; Swanner, 2018; White-Riley & Riley, 1989).

Fiske's (2012) concept of the ambivalent prejudice can be connected to Laceulle's (2018) idea of the cultural narrative, which discusses the idea that distinct groups of people, such as older adults, may be treated as objects and dehumanized, leading to negative perceptions and oversimplifications that are not just adopted externally to the group, but internalized by members of that group, with a deleterious effect on self-efficacy (Laceulle, 2018; Swift et al., 2017). Though several potential solutions are offered, the only one mentioned that does not have a corresponding negative is taking a public, structured approach to speak out against the stereotyping being done of that group of people (Laceulle, 2018). The hope is that game developers might take a more purposeful tactic to the process of character design when made aware of these ageism issues. Developers can do so by creating characters that defy the common stereotypes associated with a particular group of people, in this case, older adults (Williams et al., 2009).

With this body of research in place, it is likely unsurprising that an examination of the design of game characters, whether evaluating depictions of characters of different genders, ages, or ethnicities, has found widespread use of stereotypical character portrayals (Dickerman et al., 2008; Dill et al., 2016; Kondrat, 2015; Mou, 2009; Perreault et al., 2018; Rughiniş et al., 2015; Toma, 2015; Williams et al., 2009). Most of the research focuses on the hypersexualization of female characters, the association of ethnic minorities with violence, crime, sports, or music, and the hypermasculinization of male characters (Dickerman et al., 2008; Dill et al., 2016; Kondrat, 2015; Mou, 2009; Perreault et al., 2018; Williams et al., 2009). A recent update of the Williams et al. virtual census found that there has been no improvement in the lack of representation of

older adult characters in games, finding older characters as rare as they were a decade before (Harrisson et al., 2020). The authors did not address the playability of older adult characters, only their overall presence, which is still less than 2% overall for both avatars (player characters) and non-player characters (Harrisson et al., 2020; Williams et al., 2009).

Even when the stereotypes associated with female characters, characters of color, and older adult characters are ambivalent, with both positive and negative qualities observable in the characters as portrayed, the reality is that these stereotypical characters are still likely perpetuating inaccurate assumptions about particular groups of people (Laceulle, 2018). For example, games often include narrative arcs that assume older characters are declining, or soon to die (Rughiniş et al., 2015). It will take conscious effort to avoid further perpetuating stereotypes in the creation of game characters, particularly given the homogeneity of the game industry workforce—predominantly white, male, heterosexual, and young, much like the non-customizable characters that they create (Fiske, 2012; Gough, 2019; Laceulle, 2018; Swanner, 2018).

In the past five years, one encouraging trend has been the increase in AAA games offering character customization, allowing players to choose aspects of their characters' physical appearance and mechanics functionality (Petit & Sarkeesian, 2019). Unfortunately, this increase in customization, which in 2019 was at an all-time high of over 60% of AAA game releases announced that year, was accompanied by a drop in the diversity of predesigned, non-customizable characters, now more likely than ever to be young, white, and male (Petit & Sarkeesian, 2019). Tellingly, there is no discussion of games that offer customization related to age. The lack of discussion of age-related customization will be addressed further when discussing the results of the survey conducted for this thesis, which gathered information on the

interest in having game character customization features related to age. This will include a comparison with the findings of Schwind and Henze (2018) in their research on character customization tendencies as influenced by age and gender. Given a simple character customization tool and the directive to create random, revolting, heroic, and villainous characters, with the latter expressly to be created in both male and female versions, Schwind and Henze (2018) found that older adults preferred more realistic characters, with more traditional gendered appearances, though older women tended toward more masculine characters for both genders.

One possible solution for bias around aging could come from games themselves. In reviewing research on the subject, it was found that different populations of students under thirty showed aging attitude changes when given the opportunity to play The Game of Life (Brinker et al., 2014; Henry & Ozier, 2011). This game, designed to explore the benefits and challenges of aging, led to two areas of significant change, as observed in the research results (Brinker et al., 2014; Henry & Ozier, 2011). In both studies mentioned in the research, there was a reduction in participants in regard to the anxiety about aging, as well as an increase in positive attitudes about older adults (Brinker et al., 2014; Henry & Ozier, 2011). This raises two interesting implications. One, of course, is that by creating more engaging older game player characters, players might subconsciously feel less anxious about aging, and more positive about older adults. The second is that the current negative portrayals might subconsciously contribute to greater anxiety about aging, and negativity toward older adults, creating a self-perpetuating situation where the next generation of game developers would not consider creating positive depictions of older adults and the aging process.

Age-related Cognitive & Physiological Changes

Older adults naturally change cognitively and physiologically as they age (Amarya et al., 2018; Chaput & Proteau, 1996; Charness, 2008; Guan & Wade, 2000; Finn & Johnson, 2017). With most developers falling under the age of forty, assumptions and misunderstandings about these aging changes likely have an impact on how older adults are depicted in games (Swanner, 2018). A lack of knowledge about the impact of these changes on different aspects of perception and performance might also lead to designers failing to understand how to design games and game characters that would be appealing to this audience, leading to certain games even being so demanding as to be unplayable (Finn & Johnson, 2017).

Cognitive changes occur in aging, including processing changes that are caused by shifts in blood flow and brain matter density (Amarya et al., 2018). These changes lead to shifts in attention, short term memory and long-term storage, which has an effect on learning (Amarya et al., 2018). Declines begin in this area in the 40s, on average, and become increasingly exacerbated by the time someone reaches their 60s (Amarya et al., 2018). Another impact is on fluid intelligence, which affects how quickly people can problem solve in novel situations (Amarya et al., 2018). All of these changes have definite implications for how to approach game design for older adults. There is a common design guideline, known as the introduction, practice, mastery pattern, that would need to change for an audience that needs more time to understand, adapt to, and retain novel information. Overall, this would lead to a slowdown in pacing, or designers creating gameplay that allows for the use of player-set pacing.

In addition to the age-related changes seen in processing quality and processing speed, Chaput and Proteau (1996) explore the changes with targeting that happen naturally in the aging process (Amarya et al., 2018; Finn & Johnson, 2017). Aiming movements tend to slow with age, with more caution and care taken by older adults when closing in on a manual target, and an

overall process slowdown (Chaput & Proteau, 1996). There is a particular focus on proprioception, the sense of movement and body position, which seems to be diminished when an individual's hand is not visible, causing a larger problem for older adults in terms of targeting accuracy (Chaput & Proteau, 1996). Both of these potentially have implications on older adult players using smartphones and tablets for gaming, as well as game controllers and keyboards, particularly with novel or complex control schemes (Chaput & Proteau, 1996; Finn & Johnson, 2017).

Building on the work of Chaput and Proteau (1996), Guan and Wade (2000) conducted further studies that support the idea that older adults' perceptual-motor adaptability, or that the link between tracking something visually and moving properly in response to changes, diminishes with age. They also agreed that having a tight time limit would lead to poorer performance in older adults on completing particular movements accurately, as the burden of speed would exacerbate the breakdown of normal perceptual-motor function (Chaput & Proteau, 1996; Guan and Wade, 2000). Issues with perceptual-motor function can be tied to issues around targeting accuracy, as well as issues that occur with vision as individuals age (Chaput & Proteau, 1996; Guan & Wade, 2000; Finn & Johnson, 2017). Loss of peripheral version and of central vision could make the hands less visible to players using controllers to play console or personal computer (PC) games, for example, and thus reduce the speed and accuracy with which they would engage with controls (Chaput & Proteau, 1996; Guan & Wade, 2000; Finn & Johnson, 2017).

In this overview of the human factors research into the changes that occur with age, there is a mention of changes in the speed of human adaptation to novel situations and environments, as discussed by earlier research in this literature review in regard to movement and problem-

solving (Amarya et al., 2018; Chaput, & Proteau, 1996; Charness, 2008). The changes noted lead to a recommendation to include older adults in the design of products, as they are more likely to understand the challenges facing them compared to younger adults (Charness, 2008). The recommendation to including older adults in the design process is a reinforcement of the gerontoludic research addressed later in this literature review, where older adults were purposefully consulted to give perspectives on desired game design traits (De Schutter, 2011; Marston, 2013). The discussion of speed versus accuracy in performance is also interesting to consider in relationship to gameplay (Charness, 2008). Games that offer play that is not time intensive, that allow the player to set their own pace, would then reduce frustration related to forced inaccuracies that could lead to failure and loss of progression.

Another important resource is Finn and Johnson's (2017) text on designing interfaces for older adults, a rich source of information on physiological and cognitive aging changes that could have implications for interactive experiences, including games. The loss of peripheral and central vision has dramatic implications for information presented on-screen, with perhaps greater challenges in smarter devices like smart phones. Light perception and contrast sensitivity also have implications for heads-up displays (HUDs). These issues combine to make small/subtle things hard to see, even if players know where elements are typically located. In addition to vision issues, as mentioned in Chaput & Proteau (1996), the ability to point to a target, or trace a narrow target, becomes less accurate with age, and the overall movement when targeting manually tends to slow. Musculoskeletal changes also lead to weakening, lower stamina, and lower stability of movement, all of which could cause frustrating failures in play, not to mention a quicker fatigue point, which would point toward the need for shorter play sessions (Finn & Johnson, 2017).

Another aspect of cognition affected by aging is nonverbal communication. In this research, an evaluation was completed to determine whether or not there were differences in the ability to properly interpret emotion between older adults and younger adults (Ritcher et al., 2010). The research specifically looked at the effect of having audio in videos used to observe emotional states, considered as providing context, versus viewing without context, where the video had no sound (Ritcher et al., 2010). In low-context situations, the younger adults properly interpreted emotion of younger and older adults better than older adults did (Ritcher et al., 2010). In context-rich situations, with audio, older adults still interpreted the emotion of younger adults more poorly than younger adults but did a better job interpreting the emotion of the older adults (Ritcher et al., 2010).

The results of these studies have interesting design implications, as games with characters that are driven by textboxes, not audio voiceover, and game platforms where volume is typically muted, such as smartphones and tablets, might lead to older adult players not understanding emotion as well, leading to a failure to build a sense of connection or attachment to game characters. Vision changes in older adults might also lead to them not being able to see small faces as clearly, speaking to a need for more stylized, exaggerated emotion, and engaging voicework (Finn & Johnson, 2017). The nature of these vision changes also points to the benefit of having the player presented with characters their own age, to increase the odds that they will properly interpret emotion (Ritcher et al., 2010). The lower ability of younger adults to properly interpret the emotion of older adults might have bearing not just on game design, but also on tendencies toward ageism.

Given that more women over the age of fifty play games than men of the same age, and are more likely to play every day, it is worth discussing the differences in age-related decline that

occur between men and women (ESA, 2019; Nelson-Kakulla, 2019; Liang et al., 2008). Though Liang et al.'s (2008) research on aging changes in relationship to gender does not get into specifics of cognitive versus physiological change, the discussion of overall decline is illuminating. The research conducted in this longitudinal study reveals that women above the age of fifty, at a baseline, have a lower level of functional health, and that impairment escalates more quickly over time than it does in men; gender differences were noted to have the highest skew when it came to women of color. There is a brief mention of the impact of socioeconomic status, and the effect that this might have on exacerbating functionality decline in women compared to men. Without further research it would be impossible to know if there is a relationship between this decline issue and gameplay habits, but it is interesting to consider.

Ageism and Character Design

When looking specifically at the body of older adult characters who are found in games, it is useful to divide them into player and non-player characters. Older adult characters that have aged naturally, versus from some genetic condition or curse, are unseen as pre-designed player characters outside of art games—small-scale, indie games—and in those art games, they are characters with narrative arcs that center, in every instance, on isolation, decline, and death (Rughiniş et al., 2015). The term pre-designed character refers to those that are not a result of customization or character selection options. As mentioned earlier, this could be seen as a direct result of stereotypes about age and the aging process that have been absorbed by the developers of these games, whether consciously or unconsciously (Laceulle, 2018; Rughiniş et al., 2015). To date, there is only one game that has had an older adult female character of color as a player character: Talma in *The Spirit of the Wind* (See Figure 1) (Fellow Traveller, 2018). While a compelling game, with an interesting character and powerful links between theme and gameplay,

particularly around the length of day and Talma's speed of movement and crafting, her arc is still about isolation and death in the end (Fellow Traveller, 2018).

When considering non-player characters, there is a bit more variety, but stereotypes persist, however ambivalent (Fiske, 2012). Some characters are pitiable figures dealing with death and decline, but there are also characters, particularly older adult female characters, who are powerful and intimidating, but universally either sacrificed for the hero or depicted as villains (Toma, 2015). One crone-as-sacrifice is Wynne from *Dragon Age: Origins*, a powerful spell caster who aids the player character and also has a terminal condition that will lead to her death (See Figure 2) (Electronic Arts, 2009). Another example is the character Big Mama from *Metal Gear Solid 4*, a powerful, influential character with uncertain allegiances who, despite her authority and experience, dies before the game is done (See Figure 3) (Konami Digital Entertainment, 2008). The example Toma focuses on predominantly is the character of Flemeth from *Dragon Age*, a powerful witch who can transform into a dragon, but is also willing to sacrifice others to prolong her own life (See Figure 4) (Electronic Arts, 2018; 2015).

Two other examples of older female game villains are Dahlia Gillespie of the *Silent Hill* series, a dangerous cult leader who is described and depicted as an old woman at the age of 43, and Dr. Sofia Lamb of *Bioshock 2*, a capriciously temperamental fanatic (Stuart, 2019; 2K Games, 2010). These are all examples of crone-as-sacrifice in the case of Wynne and Big Mama, or crone-as-villain in the case of Flemeth, Dahlia, and Lamb (2K Games, 2010; Electronic Arts, 2018; Stuart, 2019). The roles older adult women tend to be given in games link to ancient cultural forms observable in fairytale and folklore, where older women are often either helpless victims or villains (Blair, 2015; Laceulle, 2018; Nelson, 2005). It is an excellent example of the cultural forces at work that might drive ageism (Fiske, 2012; Laceulle, 2018).

Gerontoludic Design

With an overview of ageism and how related biases potentially drive lack of content designed for older adults, including the stereotypical depictions of older adult game characters, it seems a natural point to transition to a discussion of the research that has been done to better tailor game content to older adult players. In 2008, Pearce completed an analysis of the gaming preferences and habits of older adult gamers, noting in her research that their efforts were the first of their kind in published literature, as prior studies focused on games for health and rehabilitation. One of the interesting observations made by Pearce (2008), as early as 2005, was that of all Baby Boomer gamers, the audience growing the fastest, and playing the most hours per week, were women over the age of forty.

Based upon information available from the Entertainment Software Association (2019) and the AARP's research on gaming habits among older adults, this trend continues today, with older women playing games more frequently than older adult men (Nelson-Kakulla, 2019). These gender differences in no way mean that older adult audiences might not have some play interests in common, or that older adult male players should not be the target of a gerontoludic approach. That being said, it may be worth considering the possibility of research focused specifically on character design for older adult women. Pearce (2008) also found that older adult players preferred to play alone but to feel socially supported in their gaming habits; they were more interested in being entertained than being pressured to strive for high-level mastery of skills. There are some interesting similarities and differences in the research that has been conducted since, focusing on platform, genre, and motivational preferences in older adult gamers.

The same year as Pearce published their work, De Schutter and Vandenabeele (2008) conducted a study wherein they asked players about their motivations to play, in other words, what, in their minds, would give gameplay meaning. Overall, upon conducting a survey and a subsequent discussion with participants, they found that players were looking for more casual game experiences, echoing that lack of concern in being pressured with an intense challenge (De Schutter & Vandenabeele 2008; Pearce, 2008). They also found that older adult players wanted to play games that allowed them to connect to their family, friends, and broader culture, and to play games that offered some purpose or value, tying to their own experience as older adults (De Schutter & Vandenabeele, 2008; Pearce, 2008).

In 2011, De Schutter conducted another study looking at player motivations and found much unchanged. The audience was still predominantly female and preferred playing single-player, casual games on personal computers (De Schutter, 2011). Interestingly, social connection was still considered a key motivation, even for those playing single-player games, particularly by being assisted by or assisting a loved one while playing a single-player game (De Schutter, 2011). Cognitive challenge that derived from puzzle-solving was also mentioned as a strong motivator (De Schutter, 2011). If observed as a consistent motivator, it may have interesting implications for the use of mentally challenging play versus reflex-driven challenge, which may not appeal as much to older adults.

One year later, in a 2012 study, Marston found that older adult gamers were, as in the past, motivated by the social connection potential offered by games, as well as to avoid boredom and to be entertained. The genre preferences, as with De Schutter's earlier work, were identified in part by play habits, and in part by giving older adults the option to propose ideas for game designs, which in this case led to concepts around personal interests such as biking, gardening,

and travel (De Schutter, 2011; Marston, 2012). Motivations for play included achieving goals and the thrill of winning, both in line with prior research (Marston, 2012). In the same year, a study was released looking at the motivational effect of perceived costs and benefits related to game playing (also known as gaming) for older adult players (McLaughlin et al., 2012). The benefits, whether entertainment or rehabilitation, were weighed against "costs" such as time, emotional arousal, and frustration (McLaughlin et al., 2012).

The benefit of the potential social function of games was mentioned as a particularly important one for older adults, while frustration was tied to the usability of interfaces and control schemes, as well as issues of reflex and vision (McLaughlin et al., 2012). Of particular interest was the "cost" associated with stereotypes older adults hold for themselves, which included some discussion of how game designs could adjust in content to avoid triggering those stereotypical negatives in and around comfort with technology or physical ability (McLaughlin et al., 2012). The need for older adult player characters in games was mentioned as an issue, as was the need for gentler learning curves and slower pacing of learning (Laceulle, 2018; Levy, 2009; McLaughlin et al., 2012).

The same year, Schultheiss (2012) conducted a study specifically on older adults concerning the genre preferences, time spent gaming, and money spent while gaming online. In the end, some trends persisted; players of this time were playing online games on personal computers, and they tended to play casual games around two hours per day (Schultheiss, 2012). It was surprising to see that not only were elderly people playing nearly double the number of hours per day compared to younger players, but they were also spending more than three times the money during that period of play, whether in persistent browser or client-based games (Schultheiss, 2012). Findings showing high spending and hours of play for older adults is an

important support for earlier statements regarding the missed opportunity which older adult audiences present in terms of profitability to the industry, particularly in light of the enormous jump in spending that has occurred in this audience in the past four years (Nelson-Kakulla, 2019). These shifts are likely tied to the aging of Gen-X gamers, who have played video games since their childhood, grown up with the evolutions of the industry, and have just begun to enter their fifties over the past five years (Brown & Marston, 2018).

In 2013, there were two significant studies on game design for older adults, one from Dogruel, Joeckel, and Bowman, and another from Marston. The work of Dogruel et al. focused upon the influence of moral frameworks on the decision-making of older adults in virtual worlds, examining how the moral drive behind the decision-making of older adult players impacted their view of particular play experiences. The research found that older players were more likely to act out of the moral standards of their culture when their character existed within a logical context in the virtual world portrayed in the interactive experience (Dogruel et al., 2013). The use of real-world norms was linked to the nature of older adults as digital immigrants, individuals who had not built up a dissociative framework between their moral standing in the game world versus their moral standing in the real world, unlike younger players who have learned two categories of norms (Dogruel et al., 2013).

The digital immigrant, then, seems not to completely enter the cognitive space of play known as the magic circle, where real world rules are separate from the rules of the virtual world, leading older adults to tend to act in-game in a way that was considered, by older adult players, appropriate to the norms of their real-world culture (Dogruel et al., 2013; Salen & Zimmerman, 2004). Further research could be conducted in this area, to see if similar attitudes and behaviors are observed in members of Generation-X who have just begun to fall into the

older adult range in the past four years, and who, it has been noted, live in an intersection between digital immigrants and digital natives (Kamber, 2017).

This was analyzed through use of the Moral Foundations Theory (MFT), which examines ideas around harm, fairness, authority, being part of the "in-group", and purity, with the latter looking at the consistency in normative behavior held to by a group (Dogruel et al., 2013). Overall, older American adults were the least likely to act against morals centered on fairness and harm, the most likely to violate the expectations of the in-group (Dogruel et al., 2013). A tendency toward independence is perhaps not surprising, given the culture views individuality quite positively (Dogruel et al., 2013). Not only does this have implications for what type of thematic content older adult gamers might find appealing, but it also points to the need for further research due to the continual shift in audience demographics around age, as the members of Generation-X entering their forties and fifties now are much more likely to be comfortable with technology at or near the level of a digital native (De Schutter, 2017; Entertainment Software Association, 2019; Kamber, 2017; Nelson-Kakulla, 2019).

Marston's (2013) research focused on the gaming preferences of what she termed second and third age adults. Second age adults were identified older adults still in the workforce, but with little to no parenting responsibilities; third age adults were identified as older adults no longer in the workforce, with no restrictions on their free time, and who were not yet affected by decline issues that limit mobility and functionality (Marston, 2013). Through a combination of observation and survey, participants were invited to offer their thoughts and perspectives on different platforms and genres of games, which resulted in a variety of suggestions (Marston, 2013). Participants mentioned the need for intuitive interfaces and for games to offer some kind

of learning, either intrinsically to the game or extrinsically to the genre or technology being used, to drive some purpose in play (Marston, 2013).

There was also a link made between usability and intuitiveness of interfaces and the ability for older adults and younger players to play together, bridging generational gaps and increasing a sense of connectedness (Marston, 2013). Designing for cross-generational play is interesting as potential benefits link back to Hagestad and Uhlenberg's (2005) observations about the need for cross-generational connectedness. While this certainly has implications for broader design choices, such as offering local or networked multiplayer functionality, customization in those games must be considered as well, to see if a desire to connect between generations leads to older adults choosing younger avatars when available, whether consciously or unconsciously, to avoid being stereotyped.

In 2015, Sopanen conducted a research study on how older adults, inexperienced with video games, experienced the act of playing a game. The study is limited because it focused upon six Finnish women in a nursing home, creating threats to validity, and limits to the applicability to a broader audience may be too great to warrant its inclusion in the final thesis (Sopanen, 2015). It is being included here because the observations on the negative impact that poor play performance had on mood and self-esteem are interesting, and potentially very important when considering gameplay intensity and punishment for failure, which could be utilized in the design standards that are the eventual outcome of this research (Sopanen, 2015).

This change in mood and self-esteem also reaffirms earlier research that mentioned the risk of stereotypes around aging becoming self-fulfilling prophecies, creating a risk where players who fail at a game that is not designed for their needs may come to assume that they cannot play any games, and then choose to avoid the medium all together (Laceulle, 2018; Swift

et al., 2017). The link of performance and mood also connects to the issue of "cost" due to frustration that has been observed earlier in the body of research on this subject and the idea that if "cost" is too high, the player will likely move on to other tasks entirely (McLaughlin et al., 2012; Sopanen, 2015).

To this point, research had focused broadly on play preferences in older adults, until 2016 when a piece of research was released focusing specifically on the genre and platform preferences of women (Marston & Graner Ray, 2016). The idea of a feminist approach to gerontoludic design is a very interesting one and could support research specifically on character design preferences for older adult women since they are the largest audience of older adult gamers (Entertainment Software Association, 2019; Marston & Graner Ray, 2016; Nelson-Kakulla, 2019). In this research, Marston and Graner Ray (2016) found that, as in prior research, older adult women tended to play on a personal computer (De Schutter, 2011; Schultheiss, 2012).

In terms of play preferences, it was discovered that these gamers were interested in role-playing, both for entertainment and for the opportunity to act outside the social role restrictions that they faced in real life; they also found that virtual travel held a strong appeal (Marston & Graner Ray, 2016). Interestingly, in a contrast to some prior research in this subject, Marston and Graner Ray (2016) found that pleasures players derived from the gameplay experience included challenge, along with others such as gratification, achievement, and learning (De Schutter & Vandenabeele 2008; McLaughlin et al., 2012; Pearce, 2008). Further research would be needed to know if the challenge-based pleasure they experienced was driven by cognitive or physiological play, which would link back to De Schutter's (2011) observations (Marston & Graner Ray, 2016).

A recent piece of research in the study of older adults and games as entertainment, versus therapy or rehabilitation, comes from De Schutter in 2017. In this study, De Schutter (2017) expanded Hunicke et al.'s Mechanics, Dynamics, and Aesthetics framework, which proposes a means through which to analyze the differences in experience between a developer crafting systems of mechanics for a player and a player interacting dynamically with systems of mechanics in an aesthetic context. There is a focus on aesthetics and mechanics, with aesthetics linked to means through which to offer desired emotional experiences to older adult players, and mechanics linked to different types of play preferences (De Schutter, 2017).

These play preferences focused on challenge driven by the player's preexisting knowledge, including games about history, and enjoyment of gameplay with musical features or collaborative features, among others (De Schutter 2017). In terms of challenge, the participants were found to enjoy helping others and to appreciate games designed in such a way that the challenge was adaptable to different player ability levels (De Schutter, 2017). These features were linked to the idea of accessibility, creating games and interfaces that allow players with different cognitive and physiological challenges to play (De Schutter, 2017). Suggestions to support accessibility focused on the importance offering tools through which older adult players could tailor the degree of mental or physical challenge they would face in a given experience (De Schutter, 2017). Making a game with the desired level of challenge, whether cognitive or physiological, is vital to making a game accessible, but is just one part of the potential engagement factor of a game (De Schutter, 2017). As this thesis is focused specifically on gerontoludic game character design, and little has been written upon the subject besides observations about the narrative arcs of older adult player characters in art games, a review of

theories on character development will be provided, and then applied to possible approaches for older adult characters (Rughiniş et al., 2015; Toma, 2015).

Game Character Design

Several texts have been written on the subject of writing for games, by industry experts or individuals involved in the academic study of games (Bryant & Giglio, 2015; Isbister, 2006; Skolnick, 2014; Suckling & Walton, 2017). There are commonalities in the approaches proposed for developing game characters, including addressing their backstory and tendencies of personality, their motivations, their context in the larger world of the game from a cultural and mechanics perspective, and tying all of that into aspects of their visual design and functionality mechanically (Bryant & Giglio, 2015; Isbister, 2006; Skolnick, 2014; Suckling & Walton, 2017).

Isbister (2006) also discussed these aspects of character creation but went on to offer additional perspectives driven by insights from social science research. The text addresses personality through the lens of the interpersonal circumplex, which looks at dominance versus submissiveness and friendliness versus hostility (Isbister, 2006). The interpersonal circumplex was then linked with the five-factor model of personality, looking at the openness, conscientiousness, extraversion, agreeableness, and neuroticism, the latter of which focuses on a character’s level of baseline anxiety (Isbister, 2006). Stereotypes were addressed, both in their problematic nature of assumptions made about a person or group of people, but also in the benefit they offered as a shortcut to assess someone, in this case, a character (Isbister, 2006). This discussion includes an examination of biases such as the babyface and attractiveness effects, and the influence they have on the perception of an individual (Isbister, 2006).

Aspects of culture and gender were addressed, not just from the creator's perspective, but from the audience's perspective, looking at how characters will be viewed through particular

cultural contexts, as well as how those characters fit in the cultural context of virtual worlds, with gender and sexuality being addressed in the same fashion, encouraging designers to consider their virtual characters both in the context of the game and the context of the real world (Isbister, 2006). The text also addressed how core facial expressions—joy, sorrow, fear, surprise, anger, disgust, and contempt—could be paired with proxemics—tendencies of interpersonal distance and touch—to communicate information about characters' emotional states and relationships (Isbister, 2006). As mentioned earlier in the review of literature, there is a chance that older adults will struggle to see and interpret the emotional information provided through character animations, particularly if there is no audio component to provide tone context (Ritcher et al., 2010).

Isbister (2006) spent some time speaking specifically to qualities of non-player characters and offered some interesting categories: minions who defer to the player character, rescuees who have a power of their own but will need the player character's help, pets who are positively aligned to the player character as long as they are treated well, sidekicks and allies who accompany the hero, and more powerful or knowledgeable characters like guides and mentors who help the player character on their way. Conflict sources were also addressed, obstacles that are small barriers to progression, enemies, and competitors who are more of a persistent threat, and the most significant barriers to overcome, bosses and archenemies (Isbister, 2006). Isbister (2006) offered encouragement that all these non-player character types should be taken through the same steps of personal and cultural development as player characters to afford richness and context.

In addition to Isbister's tools, Bryant and Giglio (2015) gave some useful thoughts on creating great player characters, as well as the role of the player as a performer. In addition to the

typical discussion of personality, backstory, and cultural context mentioned above, they spent a bit of time talking about the connection between motivation and primal emotions, to build relatability between the player and the character they are being asked to portray (Bryant & Giglio, 2015). The connection between motivation and emotion was bridged into a conversation on the degree of predetermination in the design of the character, in their appearance, and their arc of development, and the importance of having a logical tie between that character's motivations, the conflicts they encounter and how that shaped their choices, the consequences of those choices, and how that could drive character development (Bryant & Giglio, 2015). The degree of predetermination was linked later in the text to the idea of the player as a performer, and the importance of identifying the degree of agency the player would have in making choices that would have an impact, choices with consequences that would shape the development of characters they were asked to play (Bryant & Giglio, 2015).

Matthias Worch (2011) introduced specific constructs for the degree of predetermination in characters, two opposite ends of a scale, called puppets and vehicles. Vehicles are the fully predetermined character, typically found in more linear games, where the player has minimal agency in regard to the way the character will react to conflicts and develop over time (Worch, 2011). Puppets, on the other hand, are characters that the player has a great deal of agency over, making choices about their appearance and functionality in regard to mechanics, as well as decisions in the course of gameplay that could shape future choices, conflicts, and responses to conflict, and thus cause players to experience different patterns of consequence and overall character development (Worch, 2011). With so few older adult vehicle player characters, and games rarely offering customization options that include being an older adult to create more

varied puppets, it is possible older adults are left unable to fully immerse in a game experience due to disconnect with their avatar (Rughiniş et al., 2015; Worch, 2011).

These constructs around the player character and agency are inextricably linked to the nature of the self-identification that players build, or fail to build, with the characters they are asked to portray (Deen et al., 2015; Jansz, 2015; Przybylski et al., 2018). Research in player self-identification with the characters that players are asked to portray finds that taking on a role allows players to express themselves, particularly in less linear worlds where emergent patterns of play are more likely (Deen et al., 2015). For those players who play multiplayer games, there is an added layer of complexity, as self-identification is not just about the relationship between player and character, but also between player-as-character and the players they play with (Jansz, 2015).

Because the relationship between player and the player character is one that affects the player's sense of identity and self and causes the player to evaluate themselves in light of the way the character they are portraying behaves and responds, it is possible issues of ageism could lead to players viewing older adult characters more negatively (Deen et al. 2015; Jansz, 2015; Przybylski et al., 2018). Research also indicates the converse, that playing games with positive or empathetic portrayals of older adults and aging can actually lessen fear of aging and negative views of older adults (Brinker et al., 2014; Henry & Ozier, 2011). In the end, the research of Przybylski et al. (2018) is vital. Their findings state that intrinsic motivation, the true, unpressured willingness to play, is inextricably linked to players feeling like the character they portray reflects some aspects of their best selves and should shape character design choices (Przybylski et al., 2018). It drives home the need to have player characters that older adult

players will feel comfortable embodying, both in the nature of that character and its development, and in the context of the larger world in which the game takes place.

Further research will be necessary to see if that comfort will arise from being offered positively depicted older adult characters, ones that do not embody common negative stereotypes of aging, or from some other character identity altogether. Approaches to visual design and crafting of narrative arcs that are positive and reaffirming are not the only issues to consider in the design of game characters (Rughiniş et al., 2015; Toma, 2015). Unlike other forms of entertainment such as television, film, comic books, and literature, games require players to take an active role in controlling the game through an interface and control scheme (Schell, 2020). When these tools are imbodied through an avatar, also known as a PC, or player character, there are particular considerations to keep in mind for older adults.

Mechanics of Character Design for Older Adults

When considering the mechanics functionality of a player character, there are a few key types of mechanics that should be addressed. Schell (2020) introduced categories of mechanics that have been broadly adopted by the game industry. Of those, there are a few that would be clearly affected by the physiological and cognitive changes that typically occur with age, specifically actions, objects, and skill-based play (Schell, 2020). Actions are the abilities afforded the player through an avatar or interface, either of which the player would access via a control scheme (Schell, 2020). Actions are unique to each game but have tropes that are common in genres, for example the ability to jump in a platforming game.

Games that require players to carry out a variety of actions typically have more complexity in control scheme, leading to more physiological strain in regard to manual dexterity, as well as the cognitive issues in and around memory and learning leading to difficulty in picking

up new skills (Amarya et al., 2018; Chaput, & Proteau, 1996; Charness, 2008; Finn & Johnson, 2017; Schell, 2020). Pacing of learning in games is often controlled through a structure known as the introduction, practice, mastery pattern (IPM), and the research findings discussed throughout this section indicate that the phases of introduction and practice would need to be extended, or the pacing of that learning turned over to the player entirely, to afford the older adult player the extra time they might need to get to the level of mastery with what was a novel skill (Amarya et al., 2018; Chaput, & Proteau, 1996; Charness, 2008; Finn & Johnson, 2017).

Based on the research of Liang et al. (2008), older adult women might need more forgiveness, or the use of player-set pace, to avoid frustration or fatigue when acquiring novel skills. The issue of fatigue and challenges in learning might also indicate creating playable characters with a more streamlined set of actions, to simplify learning and reduce the strain of utilizing a controller or keyboard for a more complex control scheme (Schell, 2020; Finn & Johnson, 2017). These issues of fatigue and learning might be contributing factors in the most played game genres reported for Baby Boomers and members of Generation X (ESA, 2019; Nelson-Kakulla, 2019). In research on gaming preferences of older adults, there is a tendency for older adults to prefer games on mobile platforms, which typically have a simpler control scheme, and in the case of women and Baby Boomers, to prefer games with a slow or player-set pace, such as card, puzzle, and virtual board games (Nelson-Kakulla, 2019).

Generation X is an audience of particular interest, as it currently includes people in their early forties to mid-fifties and is the audience that grew up with the game industry from childhood (ESA, 2019; Brown & Marston, 2018). In the writing from Kamber (2017), there is a discussion of how growing up with arcade games and early consoles helped members of Generation-X adapt to the huge advances that occurred in personal computing, including

graphical user interfaces, allowing them to be perceived as digital natives, even though they are not, being both comfortable and aware of the limits of technology. As these digital Cro-Magnons, as Kamber (2017) puts it, members of Generation-X utilize tech but are critical of it as well, which could have interesting implications for platform of play, and whether there is a tendency to pursue single or multiplayer experiences. Along with research on the visual design and narrative design of game characters for older adults, the mechanics functionality must be designed so that the player is not continually frustrated by their experience. Ideally, with good design choices, engaging play can be supported, and older adult players and younger players alike can have more positive association with the aging process and with older adults (Brinker et al., 2014; Henry & Ozier, 2011).

Methodology

Methodologies used to study the subjects addressed in the literature review includes a variety of surveys, some offered anonymously and garnering a large pool of respondents, others that were conducted in-person with much smaller sample sizes, often leading to analysis of transcripts in the case of in-person research (Deen et al., 2015; De Schutter & Vandenabeele, 2008; Marston & Graner Ray, 2016; McLaughlin et al., 2012; Pearce, 2008; Schultheiss, 2012; Sopanen, 2015). These surveys did not use any sophisticated statistical analysis, instead simply reporting on player preferences (Deen et al., 2015; De Schutter & Vandenabeele, 2008; Marston & Graner Ray, 2016; Pearce, 2008 Schultheiss, 2012; Sopanen, 2015).

De Schutter (2011) conducted an exploratory survey on older gamers and their habits, findings of which went through an analysis of variance (ANOVA). Dogruel et al. (2013) utilized the Moral Foundations Theory (MFT) as a framework through which to contextualize observations of the norms-based behavior of older adult players in virtual worlds. It is worth noting that De Schutter's 2017 publication also included a review of the literature on games and older adults, which reveals the majority of the work in that regard has been done since 2006. Przybylski et al. (2012) took a more complicated tactic in their analysis of identity related to game characters, using frameworks including the Ten-Item Personality Inventory, Intrinsic Motivation Inventory, and the Positive and Negative Affect Schedule-Expanded Form, with analysis using hierarchical linear modeling. Many other articles focused on drawing conclusions from analyses of literature in a field, or evaluation of game products on the market.

The methodological approach of this research, as mentioned above, is a blended or mixed approach, using both qualitative and quantitative methods. The qualitative piece has focused on a review of five main subjects: ageism, with a focus on how stereotypes and discrimination based

on age affect perspectives of both game creators and players, and how those combine to affect the depiction and perception of older adult characters in games; physiological and cognitive changes that come with age; gerontechnology and gerontoludic design, reviewing tendencies in how games for older adults have been designed and studied; game character design theory, with perspectives on both the craft of character design and the player's experience of playing as a particular character; and approaches to designing older adult-friendly player character mechanics as informed by known physiological and cognitive changes.

The sources included in the qualitative approach are a combination of text chapters, peer-reviewed articles, and informational pieces from the game industry that together help to build a portrait of the issues and knowledge around aging, game design, and the current and future audiences of older adult players. The goal of researching these areas is to create a set of design standards that will help game designers to create game characters that will meet the narrative, visual design, and mechanics functionality needs of older adult gamers. Though gerontoludic game design itself is an existing area of study, it is currently in its infancy, and there is no specific gerontological approach to the creation of game characters.

To substantiate a set of standards where none currently exists, quantitative research has been conducted in the form of an IRB-approved survey to allow for the analysis of data collected from said survey on preference scales which have been evaluated by modeling. This data examines the preferences of older adult players in relationship to the characters they are asked to portray and control when they play a particular game. The areas of study that have been focused on in the survey have been drawn, in part, from the qualitative research completed. This research led to the direction of the hypothesis that drives the thesis, that older adult gamers want to play

as richly developed older characters who are still strong, attractive, and vital, but may also be comfortable playing younger characters, particularly in a nostalgia context.

Within that hypothesis there are many questions that can be answered through the survey as structured. Do older adults feel that aging cognitively and/or physiologically creates obstacles in playing certain games successfully? Do they use any type of adaptive tech to overcome those obstacles? Do they want to play games for therapeutic or entertainment purposes, or both? Do they enjoy solitary or social play, and if the latter, do they enjoy competition, cooperation, or both? What qualities do they currently see in older adult characters and narratives featuring those characters, and are there differences they would like to see? The hope is that the answers gathered in the survey can help to support an approach to tailor game characters better suited to the needs, wants, and expectations of the large audience of older adult players. Questions about genre preference may even allow for inference of potential preferred mechanics functionality for player characters.

As part of the examination of these questions, in the demographics portion of the survey it does ask respondents to include their age so that applicability to the target audience is supported. The survey hopes to observe whether or not there are significant differences in the responses from Baby Boomer gamers versus Generation-X gamers, the first generation of gamers to grow up with video games as noted by Brown and Marston (2018). In the review of results, as suspected from research consulted for the literature review, it may also be able to be determined whether or not both younger and older game designers carry biases toward the inclusion and design of older adult game characters, particularly as playable characters in a game. Depending on the results, there could be implications both for marketability of games featuring older adult player characters, as well as for the willingness of game creators to create

such characters. This quantitative piece is important to complement the existing literature reviewed to better support the proposed guidelines offered in the discussion below. It is also a vital piece in persuading members of the game industry to take gerontoludic design more seriously, as the industry has become increasingly shaped by data analysis, and thus by quantitative perspectives, in the past few years (Egliston, 2022).

Results

The survey conducted received a total of 104 complete responses. Of those 104 responses, 71 were from Generation-X and Baby Boomer respondents, and so those will be the results discussed throughout this section of the paper. Though, as mentioned earlier in the paper, the technical definition of older adult begins at age 50, that would mean focusing solely on older members of Generation-X and Baby Boomers. Instead, the decision has been made to include responses from younger members of Generation-X as they will be joining the ranks of older adults over the next eight years, and it is valuable to see where their preferences differ or overlap with the current audience of older adults. As mentioned in Brown and Marston (2018), these younger members of Gen-X have grown up with video games and will likely be quite a different older adult audience as a result of preexisting experience with the medium.

Around 35% of responses received came from those younger Generation-Xers between the ages of 42 to 49 (see Appendix B). Less than 4% of those respondents said that they play games for rehabilitation, the rest playing them for entertainment (47%), relaxation (33%), or socialization (15%). The genre preferences for this audience were for action-adventure (16%), role-playing games (15%), and casual games (15%), which supports the above preferences for play rationale, as well as pointing toward an enjoyment of narrative-driven games. In regard to socialization, it is worth noting that more players reported playing cooperative games than competitive games. The preferred play platforms reported by these respondents were mobile phones (27%), computer (21%), PlayStation (19%), and XBOX (10%).

When asked about their player character preferences, this audience preferred first person characters (16%), with a split between a preference for realistic or stylized characters (13% each). Only 5% preferred a character their own age, and only 2% preferred a younger character.

The most popular option (21%) was for a player character that allowed for customization. In a character their age, players preferred several traits at 13% each: charming, admired, intelligent, and likeable. In a player character that was younger, the most desired traits were attractive, agile, and strong, at 22% each. In customizable player characters, the most desired customization options were hairstyle and body type (10% each), closely followed by eye color and hair color (9% each). When asked about the story types they preferred, the three most popular were mysteries (17%), science fiction (16%), fantasy (16%), and suspense (13%). When asked how older characters were portrayed, specifically, half of respondents said they were stereotyped, with the most common issue being portrayal as a victim (19%). Over 40% of respondents said that stories about older adults typically focused on physical decline. Worth noting, nearly half of these respondents (12) also mentioned that they have barriers to playing games based upon vision, hearing, reflex, and fatigue issues. Adaptations to accommodate these issues included glasses, increased volume and closed captioning use, and either avoiding reflex-driven and fatiguing games, or playing games with difficulty modes.

The youngest of the current audience of older adults, and 38% of the responses among the respondents being considered for this paper, were between the ages of 50 and 57 (see Appendix C). Around 5% of those respondents said that they play games for rehabilitation, the rest playing them predominantly for entertainment (54%) and relaxation (36%), with only 5% playing for socialization. The genre preferences for this audience were for role-playing games (18%), action-adventure (17%), and strategy games (17%), which again points toward an enjoyment of narrative-driven games. In regard to socialization, it is worth noting that social play was much less popular in this audience than in younger Gen-Xers. The preferred platforms in this age range were mobile phones (26%), computer (29%), and the XBOX console (18%).

When asked about their player character preferences, this audience preferred visually realistic characters (15%), followed closely by first person characters (13%), and stylized characters and characters that reflected their gender identity (12% each). The preference for realistic characters reinforces observations from Schwind and Henze (2018). This audience did not have a strong preference for either characters their own age (5%) or younger (4%), which was unexpected. The most popular option overall, very similarly to younger Gen-Xers, was for a player character that allowed for customization (22%). In a character their age, players preferred intelligent and likeable at 18%, and several attributes at 12%: attractive, strong, influential, and charming. In a player character that was younger, the most desired traits were intelligent (38%) and likeable (25%). In customizable player characters, the most desired customization option was hairstyle (10%), closely followed by hair color, eye color, and clothing choices (9% each). When asked about the story types they preferred, the three most popular were science fiction (21%), fantasy (18%), and mysteries (12%). When asked how older characters were portrayed, specifically, 39% said they were stereotyped, with the most common issue being portrayal as a victim (22%) or villain (22%). 40% of respondents said that stories about older adults typically focused on physical decline, with another 36% stating a focus on death and dying. Ten of these respondents confirmed barriers to playing games based upon vision (40%), hearing (10%), reflex (20%), and fatigue (30%). Adaptations to accommodate these issues included glasses, screen magnifiers, increased volume, closed captioning use, and game features to adjust music and sound volume separately from dialogue. In responding on adaptation to reflex issues, respondents avoided these games (50%) or chose games with difficulty modes (50%). In adaption to fatigue, the audience reporting either avoiding those games (33%) or playing them for limited periods of time (67%).

The younger of the Baby Boomer respondents, middle of the current audience of older adults, and 16% of the responses among the respondents being considered for this thesis, were between the ages of 58 to 65-years-old (see Appendix D). This audience's stated motivations for playing games were solely entertainment and relaxation, at 50% each. The genre preferences for this audience were for casual games (35%) and strategy games (22%), a departure from Generation-X players that is not unexpected. The platforms most frequently used by this audience were reported as mobile phones (45%), tablets (20%), and computers (15%), which supports the genres identified, and also maps to the data reported by Nelson-Kakulla (2019) in their examination of older adult players for the AARP.

When asked about their player character preferences, this audience preferred first person characters (26%), and stylized characters and visually realistic characters at 13% each. None of this audience indicated a preference for playing as a younger character. A popular option, though not the most popular, as seen in Gen-Xers, was for a player character that allowed for customization (17%). In a character their age, players preferred intelligent, funny, and likeable at 33% each. In customizable player characters, the most desired customization options were clothing choices and body type (11% each), closely followed by age, hair style, facial features, character height, and gender (9% each). When asked about the story types they preferred, the most popular was mysteries (33%), followed by were science fiction (23%), and fantasy (19%). When asked how older characters were portrayed, specifically, 62% said they were stereotyped, with the most common issue being portrayal as a victim (30%). 44% of respondents said that stories about older adults typically focused on mental decline, followed by physical decline (33%), with another 22% stating a focus on death and dying. Only three of these respondents confirmed barriers to playing games based upon hearing (10%) and reflex (66%). The adaptation

to accommodate the hearing issue was increased volume. In responding on adaptation in regard to the reflex issue, respondents avoided these games (50%) or chose games with difficulty modes (50%), as in older Gen-Xers.

Older Baby Boomer respondents, and 8% of the responses among the respondents being considered for this paper, were between the ages of 66 to 73-years-old (see Appendix E). This audience's stated motivations for playing games were entertainment (71%) and socialization (29%). The genre preferences for this audience were for action, role-playing, strategy, and digitized board games at 18% each. The platforms most frequently used by this audience were reported as computers (30%) and mobile and tablets at 20% each. As with younger Baby Boomers, this maps to the data reported by Nelson-Kakulla (2019) in their examination of older adult players for the AARP. The genres identified are also common on these platforms.

When asked about their player character preferences, this audience preferred non-human characters at 25%, followed by first person characters and stylized characters at 17% each. None of this audience indicated a preference for playing as a younger character or a character their own age. Tied for the most popular option at 25% was the option for a player character that allowed for customization. In customizable player characters, the most desired customization options were hair color (10%) and character skills/abilities (10%). When asked about the story types they preferred, the most popular were fantasy (33%) and science fiction (22%). When asked how older characters were portrayed, specifically, 67% said they were stereotyped, though they did not respond as to the type of stereotyping. 60% of respondents said that stories about older adults typically focused on mental decline, followed by physical decline (40%). Only one of these respondents confirmed barriers to playing games based upon reflex issues (100%). The

adaptation to accommodate the reflex issue was identified as playing games with difficulty modes.

Only one respondent was over the age of 73 (see Appendix F). The single stated motivation for gaming was entertainment (100%). The respondent reported playing only role-playing games, which is a divergence from the genre results seen in Nelson-Kakulla's (2019) research, and likely an outlier. The platform most frequently used by this audience was reported as the XBOX, again an outlier from prior research (Nelson-Kakulla, 2019). When asked about their player character preferences, this respondent preferred characters younger than them at 50%, tied with the other most popular option: a player character that allowed for customization. In customizable player characters, they responded with a desire for the full body of customization options: age, hairstyle, hair color, eye color, eye color, skin color, body type, facial features, clothing choices, character height, character weight, character class, character skills/abilities, character gender, and character sexuality. When asked about the story types they preferred, the most popular were fantasy, science fiction, post-apocalyptic, and nostalgia-inducing (25% each). Though they did not comment on stereotyping as an issue, they did confirm an opinion that stories about older character focused on physical decline. As with the 66 to 73-year-old Baby Boomers, this respondent mentioned reflexes as an issue solved through difficulty modes (100% each).

Discussion

The results of the survey discussed above revealed patterns both expected and unexpected in the audiences evaluated. In regard to the hypothesis driving the thesis, that older adult gamers want to play as richly developed older characters who are still strong, attractive, and vital, but may also be comfortable playing younger characters, particularly in a nostalgia context, the results seem to partially support those suppositions. For example, in terms of genre, many of the respondents preferred narrative-driven game genres, such as action-adventure and role-playing games, which typically have more well-developed characters. The most popular genres of narrative were science fiction, fantasy, mystery, and suspense, which was not expected. Only the oldest respondent gave nostalgia as a root of narrative appeal, which was a surprising deviation from the hypothesis. The responses in character qualities included characters who were attractive, agile, strong, intelligent, likeable, influential, funny, and charming across characters younger and those the same age. This seems a good support for the hypothesis.

In addition to those results, there were other discoveries, both expected and unexpected, that should be addressed. Perhaps the most surprising was the high degree of popularity for character customization. While age-related customization was not in the top three preferences for any of the age ranges addressed in the results above, a total of 35% of Gen-X and Baby Boomer respondents did reply that they would like to be able to customize the age of their character. Overall, the appeal of customization certainly supports a recommendation to provide more robust customization options for older adult players for a variety of physical appearance traits, with some emphasis on hair and eye color, hairstyle, body type, facial features, character height, and gender. Another result that was as expected was that older adult players find older adult characters are often portrayed in a stereotypical way, with most pointing toward the characters

being victims, and with narrative arcs typically focused on either physical decline or death and dying for older adult characters.

As mentioned above, role-playing games and action-adventure games were the most popular genre among the respondents for the survey, with casual games being the third highest in popularity. The popularity of these two genres is a bit surprising, as they tend toward more reflex-driven play, but many games of this genre also offer difficulty options that could offset reflex or fatigue issues. Narrative is integral to action-adventure and roleplay-games, and there are many casual games that make use of it as well. More specifically, respondents favored action role-playing games, which typically offer robust player character customization, followed closely by turn-based role-playing games which typically have predesigned player characters with a party of non-player characters. Action-adventure games also typically have predesigned player-characters. Narrative-driven games would include a player character, and potentially a significant number of non-player characters as well, which supports the need for more purposeful character design to satisfy this audience. That purposeful design should also avoid the creation of predesigned characters that embody stereotypes about aging and older adults. In the case of these two genres, and player preferences for customization options, it reinforces the point made earlier about the need for robust customization options.

It was also surprising to find that most respondents were not interested in games for rehabilitative purposes, a contrast to Nelson-Kakulla's (2019) findings that, as older adults age, they play more to keep their minds sharp, a preventative motivation for play that could be seen as closely related to the idea of playing for rehabilitation. Given the prior research done on older adults and the issues they face with loneliness, it was surprising to find that the social potential of gameplay was not a significant motivation for younger older adult players, instead being a larger

draw for younger Gen-Xers and older Baby Boomers (Adams, Leibbrandt, & Moon, 2011; De Schutter, 2017; Hagestad & Uhlenberg, 2005; Pearce, 2008). This points toward the possibility of older adults having increased desire for cooperative social play in the coming decade, as younger Gen-Xers hit their fifties. There are similarities here to the research of Nelson-Kakulla (2019) who found that 92% of older adult gamers played alone. Preferences for style of player character were a bit surprising, in the near-uniform popularity of both first-person point-of-view, where no character is visible, and realistic characters. The older Baby Boomer appreciation for both non-human and stylized characters was also unexpected, though the latter could be tied to genre and platform preferences.

In terms of differences between members of Generation-X and Baby Boomers, play for relaxation was a larger motivation for Generation-X. Nelson-Kakulla (2019) also found that more than half of older adults played games to reduce stress. Overall, surprisingly, members of Generation-X had social motivations and an appreciation for casual games that gave them more in common with older Baby Boomers than younger Baby Boomers. Generation-X players had a wider variety of genre preferences in place, and played games on a broader selection of platforms, which is not surprising given information from the Entertainment Software Association (2019) and the work of Nelson-Kakulla (2019). As mentioned above, in base player character style, older Baby Boomers differed from other audiences with their appreciation for non-human characters and stylized characters. In terms of qualities of personality, it was surprising to see that Gen-X players did not have a strong preference for characters being their age or younger, which was true of younger Baby-Boomers as well, while the oldest Baby Boomer respondent had a preference for younger characters.

Based upon the results found in this survey, the following guidelines can be given to designers to help them create more appealing characters for older adults:

1. Avoid stereotypical older adult characters, particularly ones that are portrayed as victims.
2. Provide robust customization options for player characters.
3. If aiming for Gen-X or younger Baby Boomer older adults, offer first person point of view (POV) as an option.
4. If first person POV will not be an option, more visually realistic characters are appealing for Gen-X and younger Baby Boomer older adults.
5. If aiming for older Baby Boomers as an audience, more stylized characters, or non-human characters will have a greater appeal.
6. Avoid narrative arcs for player characters and/or older adult NPCs that are focused on death and physical decline.
7. Player characters that are intelligent and likeable are universally appealing.

Limitations of this research include the number of responses in each age bracket, and the fact that the ethnicity skewed white, and the sexuality skewed to the heterosexual. The avenues used to seek out respondents, which included contacting several older adult gamer Discord groups, may have caused a skew in the types of game genres that were shown to be a preference in these results, as using a tool like Discord implies a certain degree of technological comfort that might not exist across all older adult players. Further research might find different results with a larger number of respondents, and a more diverse group of respondents. The latter is vital, as the video game industry audience is quite diverse, and that diversity would ideally be reflected in research on gaming preferences in older adults.

Conclusions

Though research has been published on older adults and video games since the early 2000s, there has never been research that focuses specifically on the preferences of older adult audiences in regard to the design of video game player characters (Brown & Marston, 2018; De Schutter, 2011; De Schutter, 2017; De Schutter & Vandenabeele 2008; Dogruel et al., 2013; Laceulle, 2018; Levy, 2009; Marston, 2012; Marston, 2013; Marston & Graner Ray, 2016; McLaughlin et al., 2012; Pearce, 2008; Schultheiss, 2012; Sopanen, 2015; Swift et al., 2017). One potential root for this lack of older-adult specific character design research is the ageism that exists in the tech industry, including the game industry, where less than five percent of developers are over the age of fifty (Gough, 2019; Swanner, 2018). The research of Ivan and Cutler (2018) found that the ageism of younger software developers, whether conscious or unconscious, leads to the creation of software that is not as approachable and accessible to older adults, which likely drives a lack of older adult-focused content in video games. For example, Harrisson et al. (2020), in an update of Williams et al.'s (2009) virtual census, found that representation of older adult characters in games, and their rarity as player characters, has not improved in the last eleven years. When this scarcity is considered in combination with the way that older adult characters are stereotyped when they are included in games, it makes the necessity of the topic of this thesis clear (Blair, 2015; Deen & Becker, 2015; Harrisson et al., 2020; Kondrat, 2015; Rughiniş et al., 2015; Toma, 2015).

Another factor driving the importance of the topic of gerontoludic character design is the steady increase over the last decade in the profitability of the older adult video game audience (Entertainment Software Association, 2019; Nelson-Kakulla, 2019). In the period of time from 2016 to 2019, older adults went from spending 523 million in a six-month period to 3.5 billion

dollars in a six-month window of time (Nelson-Kakulla, 2019). This increase seems to be driven, at least in part, by members of Generation-X joining the ranks of older adults. These players are the first life-long gamers, growing up with the evolution of the industry (Brown & Marston, 2018). This audience is also typically more comfortable with technology and its changes than older generations of players (Kamber, 2017). These younger older adult gamers play games more frequently than members of the Baby Boomer and Silent Generations and play a broader variety of both genres of games and on a broader selection of video game platforms (Brown & Marston, 2018; Entertainment Software Association, 2019; Nelson-Kakulla, 2019).

Some of the earliest research on older adults and video games preferences points out that research on the topic of older adults and games was typically focused on games as rehabilitation, assuming decline or illness in that audience (Pearce, 2008; McLaughlin et al., 2012; De Schutter, 2017). Likely as a response to this tendency in the research, some studies have purposefully examined the topic of older adults' motivation to play games, which demonstrated an interest in entertainment as well as in social connection (De Schutter & Vandenabeele 2008; De Schutter, 2011; Marston, 2012; McLaughlin et al., 2012). While this examination of motivations is useful in making the argument that the game industry should take older audiences more seriously as a potential source of profits, it did not lead to many concrete takeaways as to how to better design content that would be appropriate for older adults in theme, gameplay, and platform (De Schutter, 2011; De Schutter & Vandenabeele 2008; Marston, 2012; McLaughlin et al., 2012).

The other research that has been done outside a rehabilitative focus has tended to focus on general gameplay preferences, sometimes even making older adults a part of the design process to tease those preferences out (Brown & Marston, 2018; De Schutter, 2017; Marston, 2013; Marston & Graner Ray, 2016; Nelson-Kakulla, 2019; Pearce 2008; Schultheiss, 2012).

This led to some suggestions on making games that are accessible for older adults, focused on physiological and cognitive changes that come with age, and how those would relate to things such as the pacing of a game (De Schutter, 2017). As noted earlier in the thesis, this is vital, but just one aspect of creating engaging entertainment. Unfortunately, despite the growing and profitable audience of older adult players, as Harrisson et al. (2020) found, the number of older adult characters remains miniscule, with playable characters even rarer than non-player characters (Entertainment Software Association, 2019; Nelson-Kakulla, 2019). Knowing that when those characters are found, they still tend to be stereotypical in their depiction of older adults, it became clear the industry needed tools to think more purposefully about the character design preferences of older adults (Harrisson et al., 2020; Rughiniş et al., 2015).

The foundation of the discussion on character design began with an examination of research on how to create relatable, likeable characters, whether player characters or non-player characters. Isbister's (2006) overview of both character types, player and non-player, included an examination of aspects of physical design, personality, and cultural components of design that could be refined to create characters with a believable emotional journey that a player would enjoy embodying or interacting with. Bryant and Giglio (2015) and Worch (2011) gave valuable insight into how to craft consistent predetermined, or vehicle-style, characters that would lead to player investment and deeper emotional connection with both their player characters and with non-player characters. These ideas were also applied to perspectives in the creation of customizable characters, or puppets, to emphasize a sense of consistency and feasibility in characters developed through player agency (Bryant & Giglio, 2015; Worch, 2011).

This body of research in ageism, gerontoludic design, and character design drove the approach taken in the gerontoludic character design survey administered as a part of this thesis.

Though, as mentioned in the discussion, there were results that did not support some of the hypotheses identified in the beginning of this process, findings did allow for the identification of several guidelines that could be used by the game industry to create more appealing and engaging player characters for older adults. Avoiding stereotypical characters may seem straightforward but given internalized and subconscious bias that exists toward aging, it is important to state specifically (Butler, 1989; Hagestad & Uhlenberg, 2005; Ivan & Cutler, 2021; Nelson, 2005; Saporta & R.R.B., 1991; Swanner, 2018; Swift et al., 2017; Vale Costa et al., 2019). Similarly, narratives focused on physical decline and death are viewed as stereotypical and to be avoided. Developers should offer customization options that impact a variety of physical attributes, and make sure the interface does not pose any barrier (Amarya et al., 2018; Finn & Johnson, 2017). The appeal of realism or stylization in visual design seems to be dependent upon the age of the older adult, though the popularity of first-person point of view might allow developers to avoid that concern all together. The popularity of positive traits such as intelligence and likeability, while again likely not surprising, are not consistently seen in older adult characters, and thus worthy of further attention from the industry (Rughiniş et al., 2015; Toma, 2015). Hopefully by following these guidelines, developers will create game characters that are not only appealing to older adults, but also help to reduce ageist perspectives among developers and players alike (Nelson, 2005; Swift et al., 2017).

In the course of conducting the research for this thesis, it has become apparent that there are several areas of further research that could benefit the study of gerontoludic game character design, and hopefully by extension benefit the video game industry and older adult players. Ideally, there will be further research conducted on the character design preferences of older adults, with a larger number of respondents. A larger set of responses from players over the age

of 42 could allow for the observation of differences in preference, if any, between older adults of different genders, ethnic backgrounds, and sexual orientations. Further research might also reveal whether or not self-ageism is a factor in a lack of reporting on the need for adaptive devices to play games, as well as in the older baby boomer preference for younger characters. It would be interesting to see if that self-ageism has more of an impact in multiplayer games than in single-player games, given that in multiplayer games there may be a concern about how other players would respond to older players, or players using an older avatar. On the accessibility side of things, further research is needed on the design of user interfaces to make better navigable menus and systems, overall, that support changes in memory. This could be particularly beneficial in the creation of customization systems that are older-adult friendly, since survey results found a high desire for customizable characters. Accessibility research could also examine creating gameplay with control schemes and pacing that minimize the fatigue and pain that can be obstacles for some older adult players.

Older adults have a right to age with dignity, which includes seeing positive depictions of characters like themselves in media, such as video games. While every player has their own personal preferences for what makes an engaging, compelling player character, tendencies have been identified through the research conducted that can be applied to future game player characters to give them broader appeal. Whether the industry is motivated by designing better player characters, combating ageism, the increasing numbers of older adult players, or the explosion of sales and dollars spent by that audience, change is needed in the design and frequency of older adult characters (Entertainment Software Association, 2019; Nelson-Kakulla, 2019). Hopefully this research and future research in gerontoludic character design will be the beginning of that change.

Figures

Figure 1. Talma rests after a day of work (Fellow Traveller, 2018).

Figure 2. Wynne prepares a spell (Electronic Arts, 2009).

Figure 3. Big Mama is introduced in Metal Gear Solid 4 (Konami Digital Entertainment, 2008).

Figure 4. Flemeth confronts Morrigan (Electronic Arts, 2018).

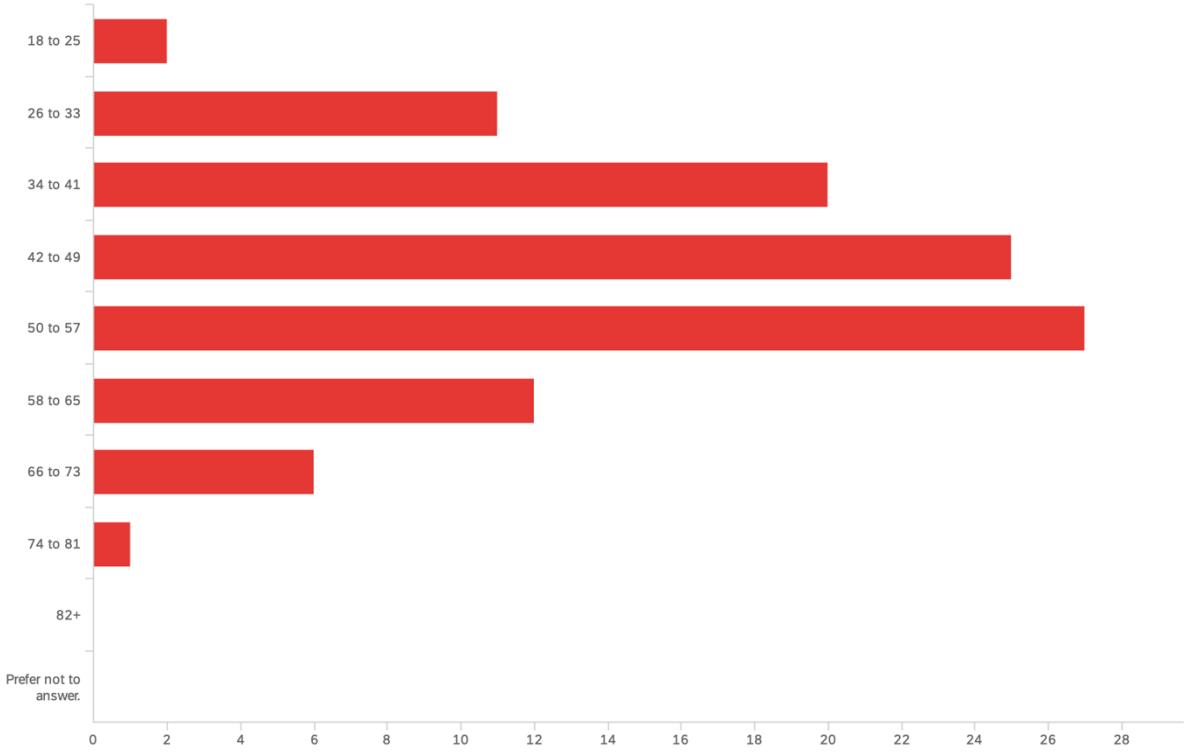

Figure 5. Age of survey respondents. (Totals include responses from 18 to 41-year-olds in addition to the discussed audience of 42 to 74-year-olds.)

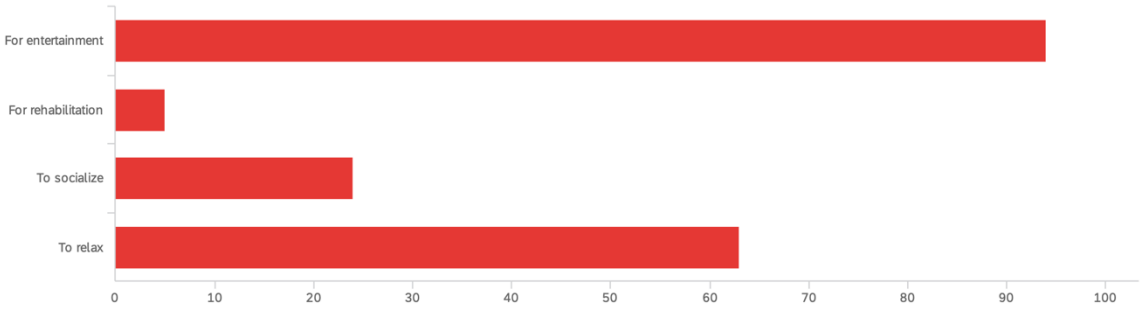

Figure 6. Player motivation. (Totals include responses from 18 to 41-year-olds in addition to the discussed audience of 42 to 74-year-olds.)

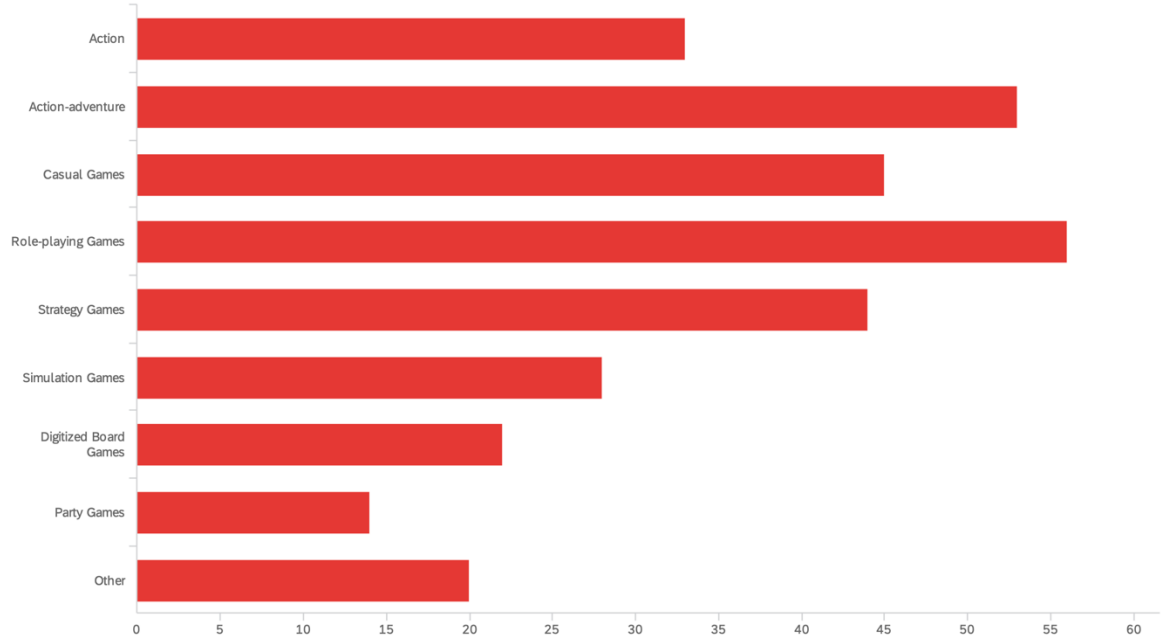

Figure 7. Preferred genres. (Totals include responses from 18 to 41-year-olds in addition to the discussed audience of 42 to 74-year-olds.)

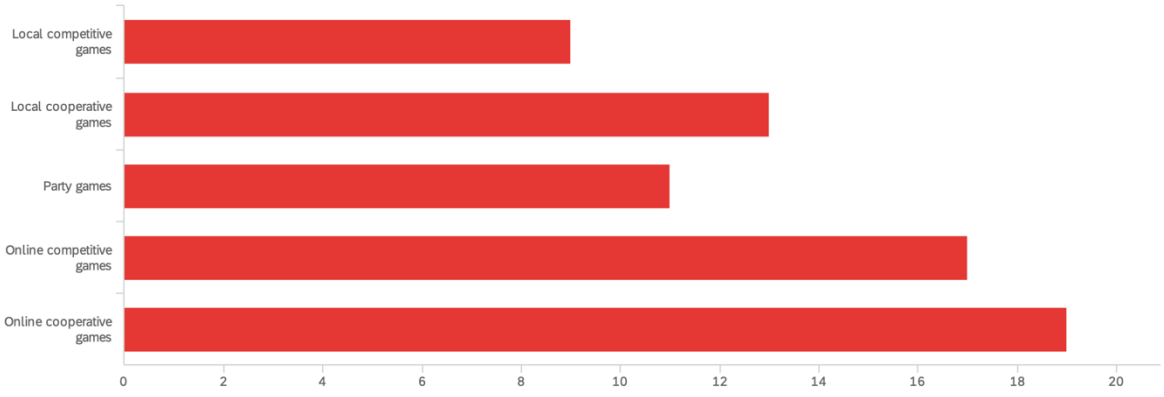

Figure 8. Social play preferences. (Totals include responses from 18 to 41-year-olds in addition to the discussed audience of 42 to 74-year-olds.)

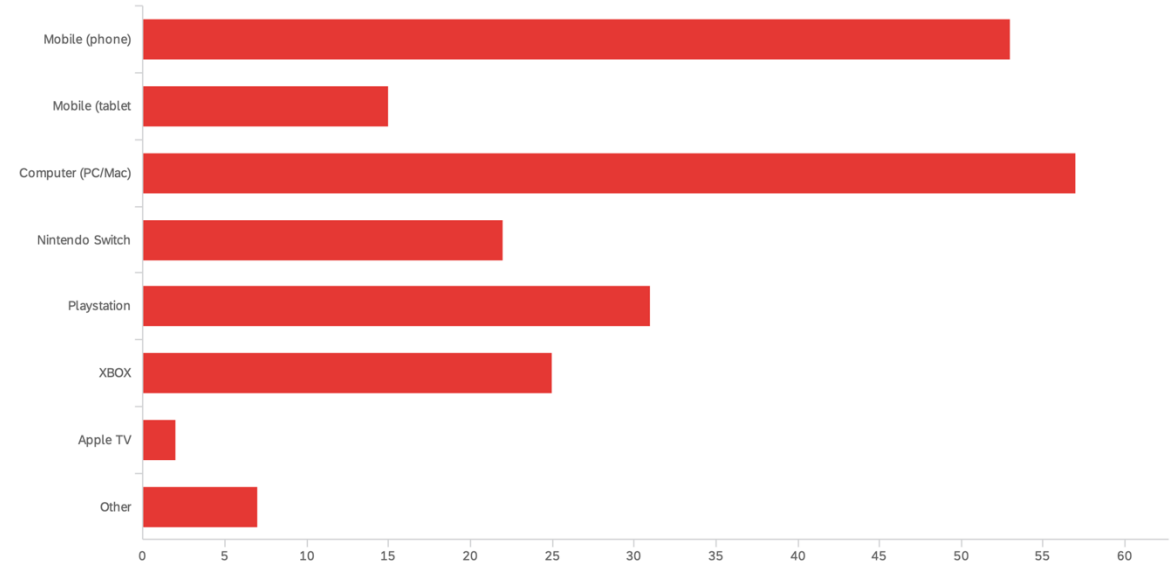

Figure 9. Platform preference. (Totals include responses from 18 to 41-year-olds in addition to the discussed audience of 42 to 74-year-olds.)

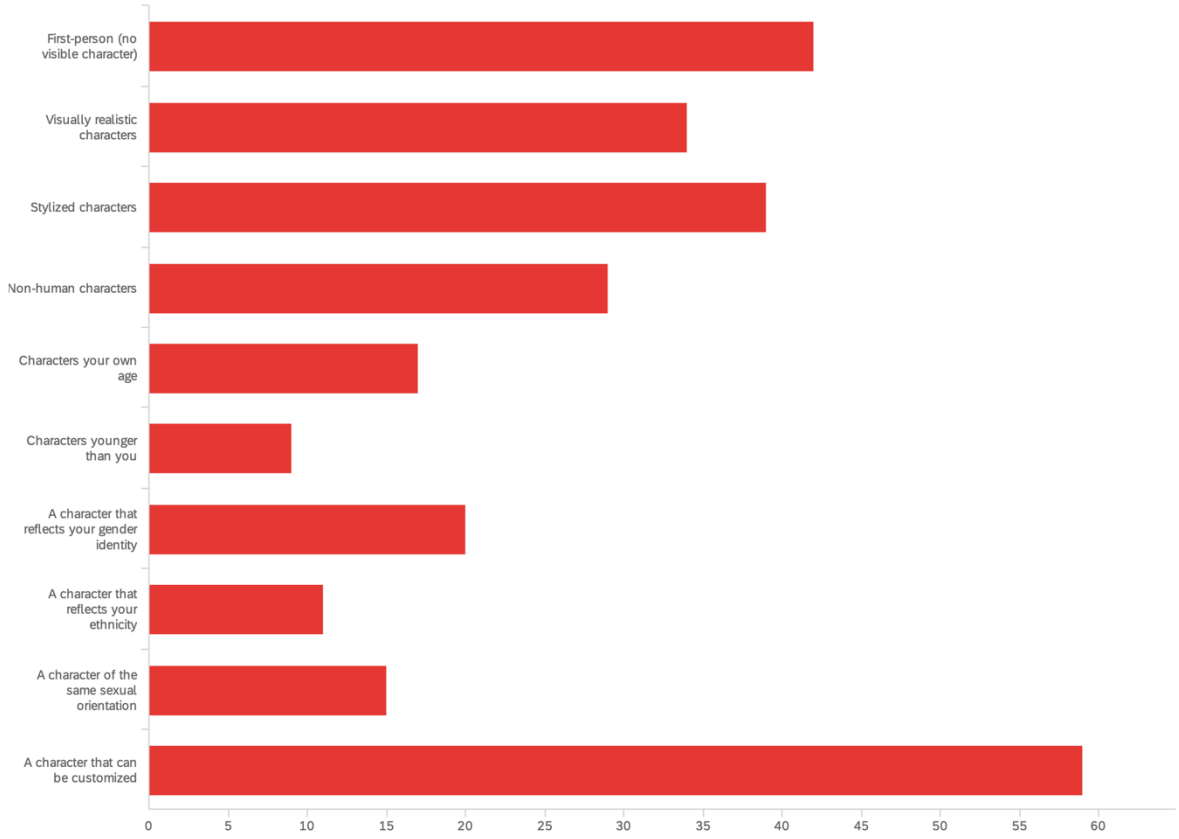

Figure 10. Avatar style preference. (Totals include responses from 18 to 41-year-olds in addition to the discussed audience of 42 to 74-year-olds.)

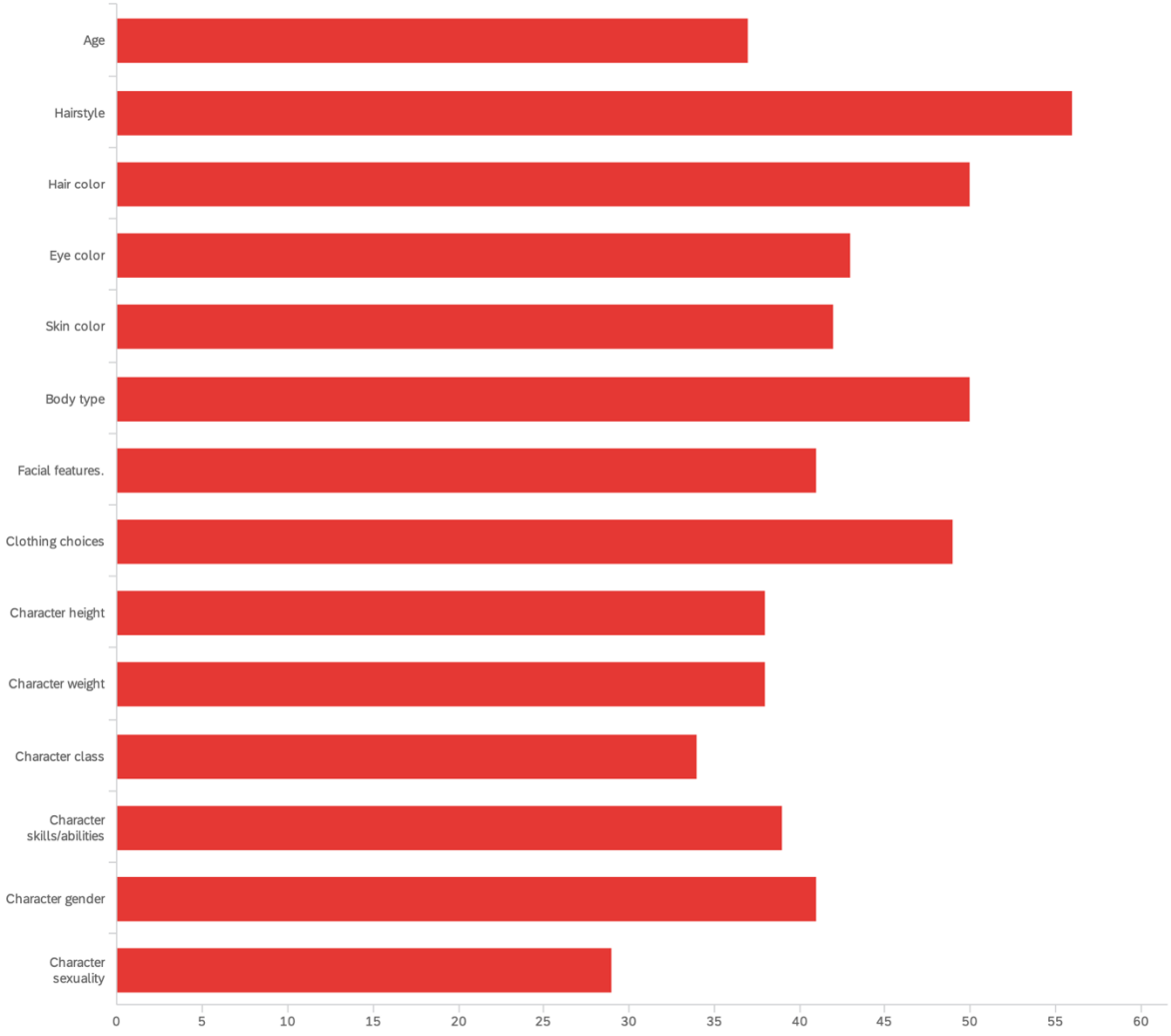

Figure 11. Customization preferences. (Totals include responses from 18 to 41-year-olds in addition to the discussed audience of 42 to 74-year-olds.)

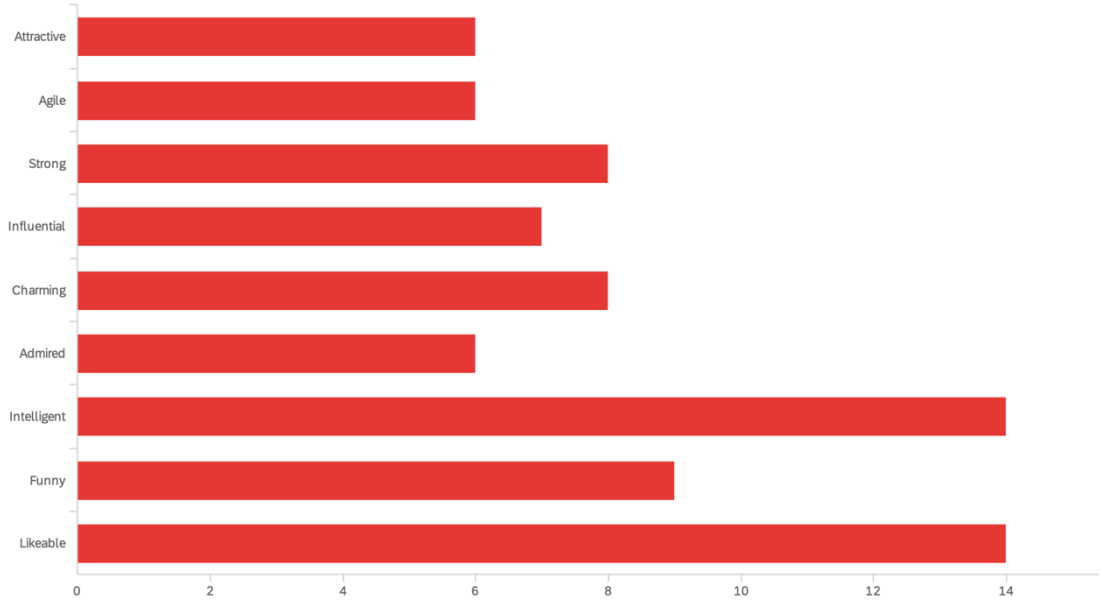

Figure 12. Same-age avatar preference. (Totals include responses from 18 to 41-year-olds in addition to the discussed audience of 42 to 74-year-olds.)

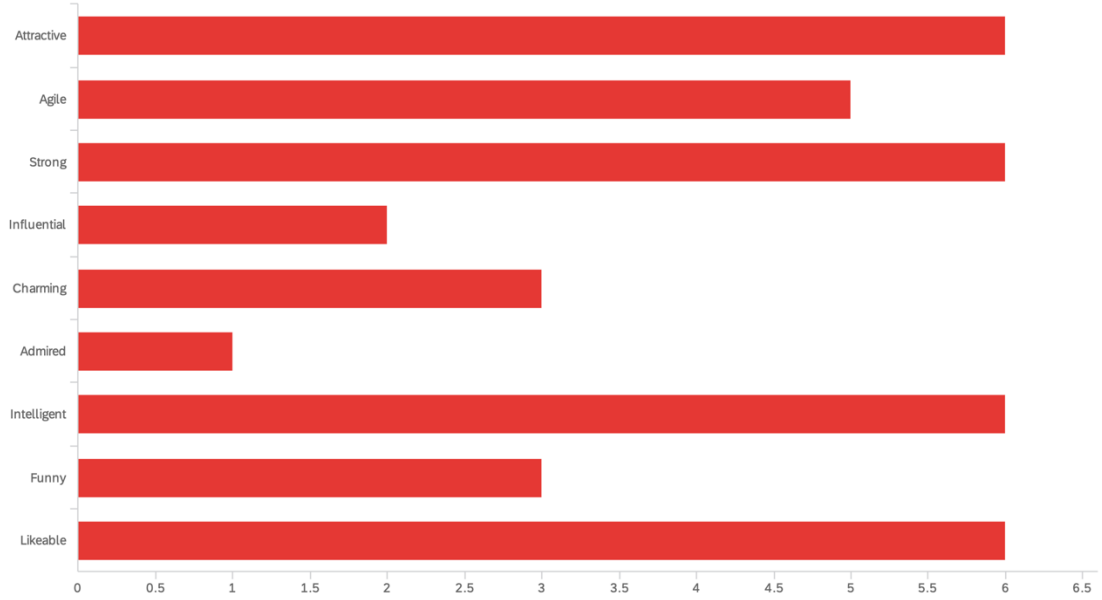

Figure 13. Younger avatar preference. (Totals include responses from 18 to 41-year-olds in addition to the discussed audience of 42 to 74-year-olds.)

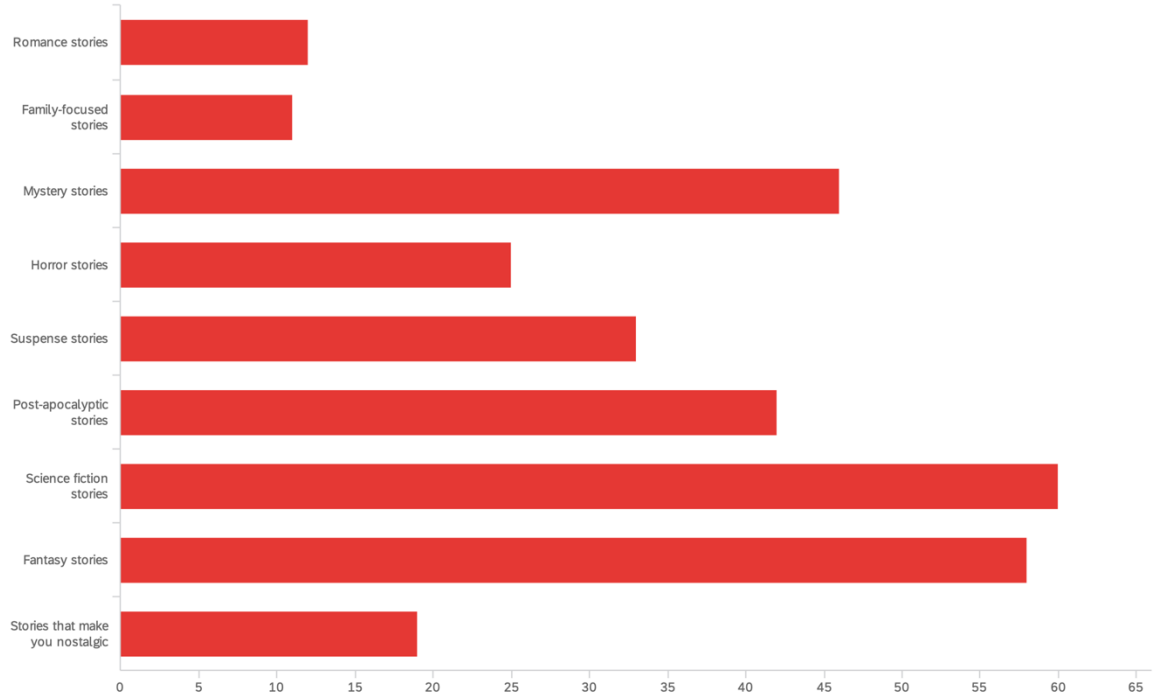

Figure 14. Narrative Genre Preference (Totals include responses from 18 to 41-year-olds in addition to the discussed audience of 42 to 74-year-olds.)

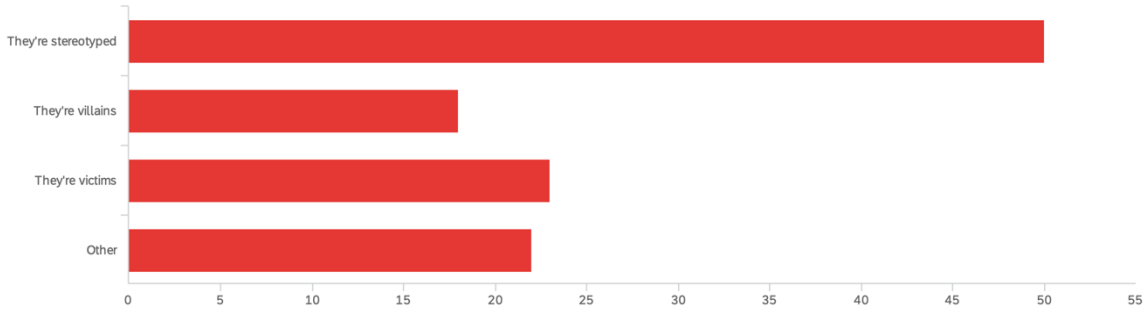

Figure 15. View on older avatar stereotyping (Totals include responses from 18 to 41-year-olds in addition to the discussed audience of 42 to 74-year-olds.)

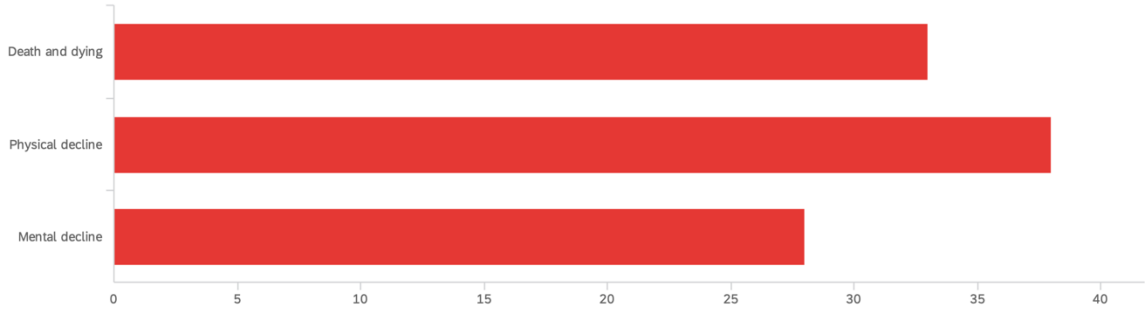

Figure 16. View on older avatar story focus. (Totals include responses from 18 to 41-year-olds in addition to the discussed audience of 42 to 74-year-olds.)

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Appendix A

Short Gerontoludic Character Design Survey

Survey Flow

Q1 How old are you?

- ○ 18 to 25 (1)
- ○ 26 to 33 (2)
- ○ 34 to 41 (3)
- ○ 42 to 49 (4)
- ○ 50 to 57 (5)
- ○ 58 to 65 (6)
- ○ 66 to 73 (7)
- ○ 74 to 81 (8)
- ○ 82+ (9)
- ○ Prefer not to answer. (10)

Q2 Please select your gender identity.

- ○ Cisgender: Female (1)
- ○ Cisgender: Male (2)
- ○ Transgender: Female (3)

- ○ Transgender: Male (4)
- ○ Nonbinary (5)
- ○ Other (6)
- ○ Prefer not to answer. (7)

Q3 Please select your sexual orientation.

- ○ Gay (1)
- ○ Lesbian (2)
- ○ Bisexual (3)
- ○ Pansexual (4)
- ○ Demisexual (5)
- ○ Asexual (6)
- ○ Heterosexual (7)
- ○ Other (8)
- ○ Prefer not to answer. (9)

Q4 What is your ethnic/racial background?

- ☐ American Indian or Alaskan Native (1)
- ☐ African American or Black (2)
- ☐ Asian (3)
- ☐ Hispanic or Latinx (4)
- ☐ Native Hawaiian or Other Pacific Islander (5)
- ☐ White (6)
- ☐ Some Other Race (7)
- ☐ Prefer Not to Answer (8)

End of Block: Anonymous Demographic Information

Start of Block: Gaming Preferences

Q5 Why do you play games?

- ☐ For entertainment (1)
- ☐ For rehabilitation (2)
- ☐ To socialize (3)
- ☐ To relax (4)

Display This Question: If Q5 = For rehabilitation

Q21 What type of rehabilitation?

- [ ] Balance improvement (10)
- [ ] Manual dexterity improvement (15)
- [ ] Memory improvement (16)
- [ ] Memory retention (17)

Display This Question: If Q5 = To socialize

Q22 What types of social games do you play?

- [ ] Local competitive games (1)
- [ ] Local cooperative games (2)
- [ ] Party games (3)
- [ ] Online competitive games (4)
- [ ] Online cooperative games (5)

Q6 What are your preferred gaming platforms?

- [ ] Mobile (phone) (1)

- [ ] Mobile (tablet (2)
- [ ] Computer (PC/Mac) (3)
- [ ] Nintendo Switch (4)
- [ ] PlayStation (5)
- [ ] XBOX (6)
- [ ] Apple TV (7)
- [ ] Other (8)

Q7 What are your preferred game genres?

- [ ] Action (1)
- [ ] Action-adventure (2)
- [ ] Casual Games (3)
- [ ] Role-playing Games (4)
- [ ] Strategy Games (5)
- [ ] Simulation Games (6)
- [ ] Digitized Board Games (7)

- [ ] Party Games (8)
- [ ] Other (9)

Display This Question: If Q7 = Action

Q8 What types of action games do you play?

- [ ] Arcade (1)
- [ ] 3rd/1st Person Shooter (2)
- [ ] Platformer (3)
- [ ] Racing (4)
- [ ] Sports (5)
- [ ] Fighting (6)
- [ ] Battle Royale (7)
- [ ] Survival (8)
- [ ] Rhythm (9)
- [ ] Other (10)

Display This Question: If Q7 = Action-adventure

Q9 What types of action-adventure games do you play?

- ☐ Adventure (1)
- ☐ Survival Horror (2)
- ☐ Stealth (3)
- ☐ Other (4)

Display This Question: If Q7 = Casual Games

Q10 What types of casual games do you play?

- ☐ Puzzle (1)
- ☐ Visual Novel (2)
- ☐ Point-and-click Adventure (3)
- ☐ Hidden Object (4)
- ☐ Match Three (5)
- ☐ Interactive Fiction (6)
- ☐ Idle (7)
- ☐ Trivia/Logic (8)
- ☐ Other (9)

Display This Question: If Q7 = Role-playing Games

Q11 What kind of role-playing games do you play?

- ☐ Action/Real-time (1)
- ☐ Turn-based (2)
- ☐ Tactical (3)
- ☐ Rogue-like/lite (4)
- ☐ Other (5)

Display This Question: If Q7 = Strategy Games

Q12 What kind of strategy games do you play?

- ☐ Real-time (1)
- ☐ Turn-based (2)
- ☐ 4X (3)
- ☐ Artillery (4)
- ☐ Tower Defense (5)
- ☐ MOBA (6)
- ☐ Other (7)

Display This Question: If Q7 = Simulation Games

Q13 What kind of simulation games do you play?

- [ ] Life (1)
- [ ] Sports (2)
- [ ] Racing (3)
- [ ] Ground Vehicle (4)
- [ ] Water Vehicle (5)
- [ ] Aircraft (6)
- [ ] Other (7)

Display This Question: If Q7 = Digitized Board Games

Q14 What kind of digitized board games do you play?

- [ ] Cards (1)
- [ ] Dice (2)
- [ ] Board Games (3)

- [ ] Trivia (4)
- [ ] Memory (5)
- [ ] Other (6)

Display This Question: If Q7 = Party Games

Q15 What type of party games do you play?

- [ ] Icebreaker (1)
- [ ] Parlor (2)
- [ ] Trivia (3)
- [ ] Other (4)

Q16 Do you have barriers to playing games?

- ☐ Vision issues (1)
- ☐ Hearing issues (2)
- ☐ Reflex issues (3)
- ☐ Fatigue issues (4)

Display This Question: If Q16 = Vision issues

Q23 How do you adapt to your vision issue?

- ☐ Corrective lenses (glasses). (1)
- ☐ A screen magnifier (2)
- ☐ A screen reader (3)
- ☐ Games must provide contrast or colorblindness modes (4)

Display This Question: If Q16 = Hearing issues

Q24 How do you adapt to your hearing issues?

- ☐ Increased volume (1)
- ☐ Closed captioning (2)
- ☐ Games must have features to adjust dialogue volume separately from music and sound effects. (3)

Display This Question: If Q16 = Reflex issues

Q25 How do you handle your difficulty with reflex-driven games?

- ☐ Avoid these games (1)
- ☐ Play games with difficulty modes (2)
- ☐ Play games with an adaptive device (3)

Display This Question: If Q16 = Fatigue issues

Q26 How do you handle fatigue caused by reflex-driven games?

- [ ] Avoid these games (1)
- [ ] Play games with difficulty modes (2)
- [ ] Play games with an adaptive device. (3)
- [ ] Play games for brief periods of time (4)

Q17 What kinds of player characters do you prefer?

- [ ] First-person (no visible character) (1)
- [ ] Visually realistic characters (2)
- [ ] Stylized characters (3)
- [ ] Non-human characters (4)
- [ ] Characters your own age (5)

- [ ] Characters younger than you (6)
- [ ] A character that reflects your gender identity (7)
- [ ] A character that reflects your ethnicity (8)
- [ ] A character of the same sexual orientation (9)
- [ ] A character that can be customized (10)

Display This Question: If Q17 = Characters your own age

Q27 What qualities do you want in a player character that reflects your age?

- [ ] Attractive (1)
- [ ] Agile (2)
- [ ] Strong (3)
- [ ] Influential (4)
- [ ] Charming (5)
- [ ] Admired (6)
- [ ] Intelligent (7)
- [ ] Funny (8)
- [ ] Likeable (9)

Display This Question: If Q17 = Characters younger than you

Q28 What qualities do you want in a player character that is younger than you?

- [ ] Attractive (1)
- [ ] Agile (2)
- [ ] Strong (3)
- [ ] Influential (4)
- [ ] Charming (5)
- [ ] Admired (6)
- [ ] Intelligent (7)
- [ ] Funny (8)
- [ ] Likeable (9)

Display This Question: If Q17 = A character that can be customized

Q29 If you would like to customize your player character, what features do you want to change?

- [ ] Age (1)
- [ ] Hairstyle (2)
- [ ] Hair color (3)

- [ ] Eye color (4)
- [ ] Skin color (5)
- [ ] Body type (6)
- [ ] Facial features. (7)
- [ ] Clothing choices (8)
- [ ] Character height (9)
- [ ] Character weight (10)
- [ ] Character class (11)
- [ ] Character skills/abilities (12)
- [ ] Character gender (13)
- [ ] Character sexuality (14)

Q18 How are older characters depicted in games?

- [ ] They're stereotyped (1)
- [ ] They're villains (2)
- [ ] They're victims (3)

- [ ] Other (4)

Q19 What are games about older adults focused on?

- [ ] Death and dying (1)
- [ ] Physical decline (2)
- [ ] Mental decline (4)

Q20 What kind of game stories do you prefer?

- [ ] Romance stories (1)
- [ ] Family-focused stories (2)
- [ ] Mystery stories (3)
- [ ] Horror stories (4)
- [ ] Suspense stories (5)
- [ ] Post-apocalyptic stories (6)
- [ ] Science fiction stories (7)

☐ Fantasy stories (8)

☐ Stories that make you nostalgic (9)

Appendix B

Survey Data 42 to 49-year-olds

42-49

Default Report			
Q5 - Why do you play games?			
#	Answer	%	Count
1	For entertainment	47.06%	24
2	For rehabilitation	3.92%	2
3	To socialize	15.69%	8
4	To relax	33.33%	17
	Total	100%	51
Q21 - What type of rehabilitation?			
#	Answer	%	Count
10	Balance improvement	14.29%	1
15	Manual dexterity improvement	28.57%	2
16	Memory improvement	28.57%	2
17	Memory retention	28.57%	2
	Total	100%	7
Q22 - What types of social games do you play?			
#	Answer	%	Count
1	Local competitive games	15.00%	3
2	Local cooperative games	25.00%	5
3	Party games	15.00%	3
4	Online competitive games	20.00%	4
5	Online cooperative games	25.00%	5
	Total	100%	20
Q6 - What are your preferred gaming platforms?			
#	Answer	%	Count
1	Mobile (phone)	27.59%	16
2	Mobile (tablet	5.17%	3
3	Computer (PC/Mac)	20.69%	12
4	Nintendo Switch	13.79%	8
5	Playstation	18.97%	11
6	XBOX	10.34%	6
7	Apple TV	1.72%	1
8	Other	1.72%	1
	Total	100%	58
Q7 - What are your preferred game genres?			

#	Answer	%	Count
1	Action	10.64%	10
2	Action-adventure	15.96%	15
3	Casual Games	14.89%	14
4	Role-playing Games	14.89%	14
5	Strategy Games	12.77%	12
6	Simulation Games	7.45%	7
7	Digitized Board Games	7.45%	7
8	Party Games	6.38%	6
9	Other	9.57%	9
	Total	100%	94

Q8 - What types of action games do you play?			
#	Answer	%	Count
1	Arcade	13.73%	7
2	3rd/1st Person Shooter	15.69%	8
3	Platformer	11.76%	6
4	Racing	7.84%	4
5	Sports	9.80%	5
6	Fighting	9.80%	5
7	Battle Royale	5.88%	3
8	Survival	9.80%	5
9	Rhythm	9.80%	5
10	Other	5.88%	3
	Total	100%	51

Q9 - What types of action-adventure games do you play?			
#	Answer	%	Count
1	Adventure	51.85%	14
2	Survival Horror	25.93%	7
3	Stealth	18.52%	5
4	Other	3.70%	1
	Total	100%	27

Q10 - What types of casual games do you play?			
#	Answer	%	Count
1	Puzzle	18.97%	11
2	Visual Novel	12.07%	7
3	Point-and-click Adventure	13.79%	8
4	Hidden Object	8.62%	5

5	Match Three	13.79%	8
6	Interactive Fiction	8.62%	5
7	Idle	6.90%	4
8	Trivia/Logic	12.07%	7
9	Other	5.17%	3
	Total	100%	58
Q11 - What kind of role-playing games do you play?			
#	Answer	%	Count
1	Action/Real-time	36.36%	12
2	Turn-based	27.27%	9
3	Tactical	18.18%	6
4	Rogue-like/lite	15.15%	5
5	Other	3.03%	1
	Total	100%	33
Q12 - What kind of strategy games do you play?			
#	Answer	%	Count
1	Real-time	17.86%	5
2	Turn-based	28.57%	8
3	4x	14.29%	4
4	Artillary	3.57%	1
5	Tower Defense	17.86%	5
6	MOBA	7.14%	2
7	Other	10.71%	3
	Total	100%	28
Q13 - What kind of simulation games do you play?			
#	Answer	%	Count
1	Life	33.33%	6
2	Sports	11.11%	2
3	Racing	11.11%	2
4	Ground Vehicle	11.11%	2
5	Water Vehicle	5.56%	1
6	Aircraft	16.67%	3
7	Other	11.11%	2
	Total	100%	18
Q14 - What kind of digitized board games do you play?			
#	Answer	%	Count

1	Cards	21.05%	4
2	Dice	15.79%	3
3	Board Games	31.58%	6
4	Trivia	15.79%	3
5	Memory	10.53%	2
6	Other	5.26%	1
	Total	100%	19
Q15 - What type of party games do you play?			
#	Answer	%	Count
1	Icebreaker	28.57%	4
2	Parlor	28.57%	4
3	Trivia	21.43%	3
4	Other	21.43%	3
	Total	100%	14
Q16 - Do you have barriers to playing games?			
#	Answer	%	Count
1	Vision issues	16.67%	2
2	Hearing issues	16.67%	2
3	Reflex issues	25.00%	3
4	Fatigue issues	41.67%	5
	Total	100%	12
Q23 - How do you adapt to your vision issue?			
#	Answer	%	Count
1	Corrective lenses (glasses).	40.00%	2
2	A screen magnifier	20.00%	1
3	A screen reader	20.00%	1
4	Games must provide contrast or colorblin	20.00%	1
	Total	100%	5
Q24 - How do you adapt to your hearing issues?			
#	Answer	%	Count
1	Increased volume	40.00%	2
2	Closed captioning	40.00%	2
3	Games must have features to adjust dialo	20.00%	1
	Total	100%	5
Q25 - How do you handle your difficulty with reflex-driven games?			

#	Answer	%	Count
1	Avoid these games	40.00%	2
2	Play games with difficulty modes	40.00%	2
3	Play games with an adaptive device	20.00%	1
	Total	100%	5

Q26 - How do you handle fatigue caused by reflex-driven games?			
#	Answer	%	Count
1	Avoid these games	33.33%	3
2	Play games with difficulty modes	22.22%	2
3	Play games with an adaptive device.	11.11%	1
4	Play games for brief periods of time	33.33%	3
	Total	100%	9

Q17 - What kinds of player characters do you prefer?			
#	Answer	%	Count
1	First-person (no visible character)	15.58%	12
2	Visually realistic characters	12.99%	10
3	Stylized characters	12.99%	10
4	Non-human characters	9.09%	7
5	Characters your own age	5.19%	4
6	Characters younger than you	2.60%	2
7	A character that reflects your gender iden	6.49%	5
8	A character that reflects your ethnicity	6.49%	5
9	A character of the same sexual orientatior	7.79%	6
10	A character that can be customized	20.78%	16
	Total	100%	77

Q27 - What qualities do you want in a player character that reflects your age?			
#	Answer	%	Count
1	Attractive	10.00%	3
2	Agile	10.00%	3
3	Strong	10.00%	3
4	Influential	6.67%	2
5	Charming	13.33%	4
6	Admired	13.33%	4
7	Intelligent	13.33%	4
8	Funny	10.00%	3
9	Likeable	13.33%	4

	Total	100%	30
Q28 - What qualities do you want in a player character that is younger than you?			
#	Answer	%	Count
1	Attractive	22.22%	2
2	Agile	22.22%	2
3	Strong	22.22%	2
4	Influential	11.11%	1
5	Charming	0.00%	0
6	Admired	0.00%	0
7	Intelligent	11.11%	1
8	Funny	0.00%	0
9	Likeable	11.11%	1
	Total	100%	9
Q29 - If you would like to customize your player character, what features do you want to change?			
#	Answer	%	Count
1	Age	4.22%	7
2	Hairstyle	9.64%	16
3	Hair color	8.43%	14
4	Eye color	9.04%	15
5	Skin color	8.43%	14
6	Body type	9.64%	16
7	Facial features.	7.23%	12
8	Clothing choices	7.23%	12
9	Character height	6.63%	11
10	Character weight	7.23%	12
11	Character class	4.22%	7
12	Character skills/abilities	6.02%	10
13	Character gender	6.02%	10
14	Character sexuality	6.02%	10
	Total	100%	166
Q18 - How are older characters depicted in games?			
#	Answer	%	Count
1	They're stereotyped	50.00%	16
2	They're villains	15.63%	5
3	They're victims	18.75%	6
4	Other	15.63%	5

	Total	100%	32
Q19 - What are games about older adults focused on?			
#	Answer	%	Count
1	Death and dying	28.13%	9
2	Physical decline	40.63%	13
4	Mental decline	31.25%	10
	Total	100%	32
Q20 - What kind of game stories do you prefer?			
#	Answer	%	Count
1	Romance stories	5.56%	5
2	Family-focused stories	3.33%	3
3	Mystery stories	16.67%	15
4	Horror stories	10.00%	9
5	Suspense stories	13.33%	12
6	Post-apocalyptic stories	11.11%	10
7	Science fiction stories	15.56%	14
8	Fantasy stories	15.56%	14
9	Stories that make you nostalgic	8.89%	8
	Total	100%	90

Appendix C

Survey Data 50 to 57-year-olds

50-57

Default Report			
Q5 - Why do you play games?			
#	Answer	%	Count
1	For entertainment	53.66%	22
2	For rehabilitation	4.88%	2
3	To socialize	4.88%	2
4	To relax	36.59%	15
	Total	100%	41
Q21 - What type of rehabilitation?			
#	Answer	%	Count
10	Balance improvement	0.00%	0
15	Manual dexterity improvement	50.00%	2
16	Memory improvement	25.00%	1
17	Memory retention	25.00%	1
	Total	100%	4
Q22 - What types of social games do you play?			
#	Answer	%	Count
1	Local competitive games	0.00%	0
2	Local cooperative games	0.00%	0
3	Party games	0.00%	0
4	Online competitive games	66.67%	2
5	Online cooperative games	33.33%	1
	Total	100%	3
Q6 - What are your preferred gaming platforms?			
#	Answer	%	Count
1	Mobile (phone)	25.49%	13
2	Mobile (tablet	9.80%	5
3	Computer (PC/Mac)	29.41%	15
4	Nintendo Switch	3.92%	2
5	Playstation	9.80%	5
6	XBOX	17.65%	9

7	Apple TV	1.96%	1
8	Other	1.96%	1
	Total	100%	51
Q7 - What are your preferred game genres?			
#	Answer	%	Count
1	Action	12.68%	9
2	Action-adventure	16.90%	12
3	Casual Games	12.68%	9
4	Role-playing Games	18.31%	13
5	Strategy Games	16.90%	12
6	Simulation Games	9.86%	7
7	Digitized Board Games	5.63%	4
8	Party Games	1.41%	1
9	Other	5.63%	4
	Total	100%	71
Q8 - What types of action games do you play?			
#	Answer	%	Count
1	Arcade	12.50%	4
2	3rd/1st Person Shooter	28.13%	9
3	Platformer	6.25%	2
4	Racing	6.25%	2
5	Sports	3.13%	1
6	Fighting	6.25%	2
7	Battle Royale	3.13%	1
8	Survival	15.63%	5
9	Rhythm	6.25%	2
10	Other	12.50%	4
	Total	100%	32
Q9 - What types of action-adventure games do you play?			
#	Answer	%	Count
1	Adventure	50.00%	11
2	Survival Horror	13.64%	3

3	Stealth	27.27%	6
4	Other	9.09%	2
	Total	100%	22
Q10 - What types of casual games do you play?			
#	Answer	%	Count
1	Puzzle	31.82%	7
2	Visual Novel	4.55%	1
3	Point-and-click Adventure	4.55%	1
4	Hidden Object	9.09%	2
5	Match Three	18.18%	4
6	Interactive Fiction	9.09%	2
7	Idle	4.55%	1
8	Trivia/Logic	13.64%	3
9	Other	4.55%	1
	Total	100%	22
Q11 - What kind of role-playing games do you play?			
#	Answer	%	Count
1	Action/Real-time	34.78%	8
2	Turn-based	39.13%	9
3	Tactical	17.39%	4
4	Rogue-like/lite	8.70%	2
5	Other	0.00%	0
	Total	100%	23
Q12 - What kind of strategy games do you play?			
#	Answer	%	Count
1	Real-time	15.79%	3
2	Turn-based	36.84%	7
3	4x	10.53%	2
4	Artillary	0.00%	0
5	Tower Defense	21.05%	4
6	MOBA	5.26%	1
7	Other	10.53%	2

	Total	100%	19
Q13 - What kind of simulation games do you play?			
#	Answer	%	Count
1	Life	28.57%	4
2	Sports	14.29%	2
3	Racing	7.14%	1
4	Ground Vehicle	14.29%	2
5	Water Vehicle	0.00%	0
6	Aircraft	14.29%	2
7	Other	21.43%	3
	Total	100%	14
Q14 - What kind of digitized board games do you play?			
#	Answer	%	Count
1	Cards	20.00%	2
2	Dice	20.00%	2
3	Board Games	30.00%	3
4	Trivia	10.00%	1
5	Memory	20.00%	2
6	Other	0.00%	0
	Total	100%	10
Q15 - What type of party games do you play?			
#	Answer	%	Count
1	Icebreaker	0.00%	0
2	Parlor	50.00%	1
3	Trivia	50.00%	1
4	Other	0.00%	0
	Total	100%	2
Q16 - Do you have barriers to playing games?			
#	Answer	%	Count
1	Vision issues	40.00%	4
2	Hearing issues	10.00%	1

3	Reflex issues	20.00%	2
4	Fatigue issues	30.00%	3
	Total	100%	10
Q23 - How do you adapt to your vision issue?			
#	Answer	%	Count
1	Corrective lenses (glasses).	80.00%	4
2	A screen magnifier	20.00%	1
3	A screen reader	0.00%	0
4	Games must provide contrast or colorblin	0.00%	0
	Total	100%	5
Q24 - How do you adapt to your hearing issues?			
#	Answer	%	Count
1	Increased volume	33.33%	1
2	Closed captioning	33.33%	1
3	Games must have features to adjust dialo	33.33%	1
	Total	100%	3
Q25 - How do you handle your difficulty with reflex-driven games?			
#	Answer	%	Count
1	Avoid these games	50.00%	1
2	Play games with difficulty modes	50.00%	1
3	Play games with an adaptive device	0.00%	0
	Total	100%	2
Q26 - How do you handle fatigue caused by reflex-driven games?			
#	Answer	%	Count
1	Avoid these games	33.33%	1
2	Play games with difficulty modes	0.00%	0
3	Play games with an adaptive device.	0.00%	0
4	Play games for brief periods of time	66.67%	2
	Total	100%	3
Q17 - What kinds of player characters do you prefer?			

#	Answer	%	Count
1	First-person (no visible character)	13.16%	10
2	Visually realistic characters	14.47%	11
3	Stylized characters	11.84%	9
4	Non-human characters	7.89%	6
5	Characters your own age	5.26%	4
6	Characters younger than you	3.95%	3
7	A character that reflects your gender ident	11.84%	9
8	A character that reflects your ethnicity	3.95%	3
9	A character of the same sexual orientatior	5.26%	4
10	A character that can be customized	22.37%	17
	Total	100%	76

Q27 - What qualities do you want in a player character that reflects your age?

#	Answer	%	Count
1	Attractive	11.76%	2
2	Agile	5.88%	1
3	Strong	11.76%	2
4	Influential	11.76%	2
5	Charming	11.76%	2
6	Admired	5.88%	1
7	Intelligent	17.65%	3
8	Funny	5.88%	1
9	Likeable	17.65%	3
	Total	100%	17

Q28 - What qualities do you want in a player character that is younger than you?

#	Answer	%	Count
1	Attractive	0.00%	0
2	Agile	0.00%	0
3	Strong	12.50%	1
4	Influential	0.00%	0
5	Charming	12.50%	1
6	Admired	0.00%	0
7	Intelligent	37.50%	3

8	Funny	12.50%	1
9	Likeable	25.00%	2
	Total	100%	8
Q29 - If you would like to customize your player character, what features do you want to change?			
#	Answer	%	Count
1	Age	8.18%	13
2	Hairstyle	10.06%	16
3	Hair color	8.81%	14
4	Eye color	6.92%	11
5	Skin color	6.92%	11
6	Body type	7.55%	12
7	Facial features.	6.29%	10
8	Clothing choices	8.81%	14
9	Character height	6.29%	10
10	Character weight	6.29%	10
11	Character class	6.29%	10
12	Character skills/abilities	5.66%	9
13	Character gender	7.55%	12
14	Character sexuality	4.40%	7
	Total	100%	159
Q18 - How are older characters depicted in games?			
#	Answer	%	Count
1	They're stereotyped	39.13%	9
2	They're villains	21.74%	5
3	They're victims	21.74%	5
4	Other	17.39%	4
	Total	100%	23
Q19 - What are games about older adults focused on?			
#	Answer	%	Count
1	Death and dying	36.00%	9
2	Physical decline	40.00%	10
4	Mental decline	24.00%	6

	Total	100%	25
Q20 - What kind of game stories do you prefer?			
#	Answer	%	Count
1	Romance stories	4.94%	4
2	Family-focused stories	3.70%	3
3	Mystery stories	12.35%	10
4	Horror stories	11.11%	9
5	Suspense stories	11.11%	9
6	Post-apocalyptic stories	12.35%	10
7	Science fiction stories	20.99%	17
8	Fantasy stories	17.28%	14
9	Stories that make you nostalgic	6.17%	5
	Total	100%	81

Appendix D

Survey Data 58 to 65-year-olds

58-65

Q5 - Why do you play games?			
#	Answer	%	Count
1	For entertainment	50.00%	10
2	For rehabilitation	0.00%	0
3	To socialize	0.00%	0
4	To relax	50.00%	10
	Total	100%	20
Q21 - What type of rehabilitation?			
#	Answer	%	Count
10	Balance improvement	0.00%	0
15	Manual dexterity improvement	0.00%	0
16	Memory improvement	0.00%	0
17	Memory retention	0.00%	0
	Total		0
Q22 - What types of social games do you play?			
#	Answer	%	Count
1	Local competitive games	0.00%	0
2	Local cooperative games	0.00%	0
3	Party games	0.00%	0
4	Online competitive games	0.00%	0
5	Online cooperative games	0.00%	0
	Total		0
Q6 - What are your preferred gaming platforms?			
#	Answer	%	Count
1	Mobile (phone)	45.00%	9
2	Mobile (tablet	20.00%	4
3	Computer (PC/Mac)	15.00%	3
4	Nintendo Switch	0.00%	0
5	Playstation	10.00%	2
6	XBOX	10.00%	2
7	Apple TV	0.00%	0

8	Other	0.00%	0
	Total	100%	20
Q7 - What are your preferred game genres?			
#	Answer	%	Count
1	Action	0.00%	0
2	Action-adventure	8.70%	2
3	Casual Games	34.78%	8
4	Role-playing Games	8.70%	2
5	Strategy Games	21.74%	5
6	Simulation Games	8.70%	2
7	Digitized Board Games	8.70%	2
8	Party Games	0.00%	0
9	Other	8.70%	2
	Total	100%	23
Q8 - What types of action games do you play?			
#	Answer	%	Count
1	Arcade	0.00%	0
2	3rd/1st Person Shooter	0.00%	0
3	Platformer	0.00%	0
4	Racing	0.00%	0
5	Sports	0.00%	0
6	Fighting	0.00%	0
7	Battle Royale	0.00%	0
8	Survival	0.00%	0
9	Rhythm	0.00%	0
10	Other	0.00%	0
	Total		0
Q9 - What types of action-adventure games do you play?			
#	Answer	%	Count
1	Adventure	66.67%	2
2	Survival Horror	0.00%	0
3	Stealth	33.33%	1

4	Other	0.00%	0
	Total	100%	3
Q10 - What types of casual games do you play?			
#	Answer	%	Count
1	Puzzle	26.32%	5
2	Visual Novel	0.00%	0
3	Point-and-click Adventure	21.05%	4
4	Hidden Object	15.79%	3
5	Match Three	21.05%	4
6	Interactive Fiction	0.00%	0
7	Idle	0.00%	0
8	Trivia/Logic	10.53%	2
9	Other	5.26%	1
	Total	100%	19
Q11 - What kind of role-playing games do you play?			
#	Answer	%	Count
1	Action/Real-time	25.00%	1
2	Turn-based	25.00%	1
3	Tactical	50.00%	2
4	Rogue-like/lite	0.00%	0
5	Other	0.00%	0
	Total	100%	4
Q12 - What kind of strategy games do you play?			
#	Answer	%	Count
1	Real-time	16.67%	1
2	Turn-based	33.33%	2
3	4x	0.00%	0
4	Artillary	0.00%	0
5	Tower Defense	0.00%	0
6	MOBA	0.00%	0
7	Other	50.00%	3
	Total	100%	6

Q13 - What kind of simulation games do you play?			
#	Answer	%	Count
1	Life	100.00%	2
2	Sports	0.00%	0
3	Racing	0.00%	0
4	Ground Vehicle	0.00%	0
5	Water Vehicle	0.00%	0
6	Aircraft	0.00%	0
7	Other	0.00%	0
	Total	100%	2
Q14 - What kind of digitized board games do you play?			
#	Answer	%	Count
1	Cards	33.33%	1
2	Dice	0.00%	0
3	Board Games	66.67%	2
4	Trivia	0.00%	0
5	Memory	0.00%	0
6	Other	0.00%	0
	Total	100%	3
Q15 - What type of party games do you play?			
#	Answer	%	Count
1	Icebreaker	0.00%	0
2	Parlor	0.00%	0
3	Trivia	0.00%	0
4	Other	0.00%	0
	Total		0
Q16 - Do you have barriers to playing games?			
#	Answer	%	Count
1	Vision issues	0.00%	0
2	Hearing issues	33.33%	1
3	Reflex issues	66.67%	2

4	Fatigue issues	0.00%	0
	Total	100%	3
Q23 - How do you adapt to your vision issue?			
#	Answer	%	Count
1	Corrective lenses (glasses).	0.00%	0
2	A screen magnifier	0.00%	0
3	A screen reader	0.00%	0
4	Games must provide contrast or colorblin	0.00%	0
	Total		0
Q24 - How do you adapt to your hearing issues?			
#	Answer	%	Count
1	Increased volume	100.00%	1
2	Closed captioning	0.00%	0
3	Games must have features to adjust dialo	0.00%	0
	Total	100%	1
Q25 - How do you handle your difficulty with reflex-driven games?			
#	Answer	%	Count
1	Avoid these games	50.00%	2
2	Play games with difficulty modes	50.00%	2
3	Play games with an adaptive device	0.00%	0
	Total	100%	4
Q26 - How do you handle fatigue caused by reflex-driven games?			
#	Answer	%	Count
1	Avoid these games	0.00%	0
2	Play games with difficulty modes	0.00%	0
3	Play games with an adaptive device.	0.00%	0
4	Play games for brief periods of time	0.00%	0
	Total		0
Q17 - What kinds of player characters do you prefer?			
#	Answer	%	Count

1	First-person (no visible character)	26.09%	6
2	Visually realistic characters	13.04%	3
3	Stylized characters	8.70%	2
4	Non-human characters	8.70%	2
5	Characters your own age	8.70%	2
6	Characters younger than you	0.00%	0
7	A character that reflects your gender ident	4.35%	1
8	A character that reflects your ethnicity	4.35%	1
9	A character of the same sexual orientation	8.70%	2
10	A character that can be customized	17.39%	4
	Total	100%	23
Q27 - What qualities do you want in a player character that reflects your age?			
#	Answer	%	Count
1	Attractive	0.00%	0
2	Agile	0.00%	0
3	Strong	0.00%	0
4	Influential	0.00%	0
5	Charming	0.00%	0
6	Admired	0.00%	0
7	Intelligent	33.33%	2
8	Funny	33.33%	2
9	Likeable	33.33%	2
	Total	100%	6
Q28 - What qualities do you want in a player character that is younger than you?			
#	Answer	%	Count
1	Attractive	0.00%	0
2	Agile	0.00%	0
3	Strong	0.00%	0
4	Influential	0.00%	0
5	Charming	0.00%	0
6	Admired	0.00%	0
7	Intelligent	0.00%	0
8	Funny	0.00%	0

9	Likeable	0.00%	0
	Total		0
Q29 - If you would like to customize your player character, what features do you want to change?			
#	Answer	%	Count
1	Age	8.82%	3
2	Hairstyle	8.82%	3
3	Hair color	5.88%	2
4	Eye color	5.88%	2
5	Skin color	5.88%	2
6	Body type	11.76%	4
7	Facial features.	8.82%	3
8	Clothing choices	11.76%	4
9	Character height	8.82%	3
10	Character weight	5.88%	2
11	Character class	0.00%	0
12	Character skills/abilities	5.88%	2
13	Character gender	8.82%	3
14	Character sexuality	2.94%	1
	Total	100%	34
Q18 - How are older characters depicted in games?			
#	Answer	%	Count
1	They're stereotyped	61.54%	8
2	They're villains	0.00%	0
3	They're victims	30.77%	4
4	Other	7.69%	1
	Total	100%	13
Q19 - What are games about older adults focused on?			
#	Answer	%	Count
1	Death and dying	22.22%	2
2	Physical decline	33.33%	3
4	Mental decline	44.44%	4
	Total	100%	9

Q20 - What kind of game stories do you prefer?			
#	Answer	%	Count
1	Romance stories	0.00%	0
2	Family-focused stories	4.76%	1
3	Mystery stories	33.33%	7
4	Horror stories	0.00%	0
5	Suspense stories	4.76%	1
6	Post-apocalyptic stories	9.52%	2
7	Science fiction stories	23.81%	5
8	Fantasy stories	19.05%	4
9	Stories that make you nostalgic	4.76%	1
	Total	100%	21

Appendix E

Survey Data 66 to 73-year-olds

66-73

Q5 - Why do you play games?			
#	Answer	%	Count
1	For entertainment	71.43%	5
2	For rehabilitation	0.00%	0
3	To socialize	28.57%	2
4	To relax	0.00%	0
	Total	100%	7
Q21 - What type of rehabilitation?			
#	Answer	%	Count
10	Balance improvement	0.00%	0
15	Manual dexterity improvement	0.00%	0
16	Memory improvement	0.00%	0
17	Memory retention	0.00%	0
	Total		0
Q22 - What types of social games do you play?			
#	Answer	%	Count
1	Local competitive games	0.00%	0
2	Local cooperative games	0.00%	0
3	Party games	0.00%	0
4	Online competitive games	33.33%	1
5	Online cooperative games	66.67%	2
	Total	100%	3
Q6 - What are your preferred gaming platforms?			
#	Answer	%	Count
1	Mobile (phone)	20.00%	2
2	Mobile (tablet	20.00%	2
3	Computer (PC/Mac)	30.00%	3
4	Nintendo Switch	10.00%	1
5	Playstation	0.00%	0
6	XBOX	0.00%	0

7	Apple TV	0.00%	0
8	Other	20.00%	2
	Total	100%	10
Q7 - What are your preferred game genres?			
#	Answer	%	Count
1	Action	18.18%	2
2	Action-adventure	9.09%	1
3	Casual Games	9.09%	1
4	Role-playing Games	18.18%	2
5	Strategy Games	18.18%	2
6	Simulation Games	9.09%	1
7	Digitized Board Games	18.18%	2
8	Party Games	0.00%	0
9	Other	0.00%	0
	Total	100%	11
Q8 - What types of action games do you play?			
#	Answer	%	Count
1	Arcade	0.00%	0
2	3rd/1st Person Shooter	33.33%	1
3	Platformer	0.00%	0
4	Racing	33.33%	1
5	Sports	0.00%	0
6	Fighting	0.00%	0
7	Battle Royale	0.00%	0
8	Survival	0.00%	0
9	Rhythm	0.00%	0
10	Other	33.33%	1
	Total	100%	3
Q9 - What types of action-adventure games do you play?			
#	Answer	%	Count
1	Adventure	100.00%	1

2	Survival Horror	0.00%	0
3	Stealth	0.00%	0
4	Other	0.00%	0
	Total	100%	1
Q10 - What types of casual games do you play?			
#	Answer	%	Count
1	Puzzle	50.00%	1
2	Visual Novel	0.00%	0
3	Point-and-click Adventure	0.00%	0
4	Hidden Object	50.00%	1
5	Match Three	0.00%	0
6	Interactive Fiction	0.00%	0
7	Idle	0.00%	0
8	Trivia/Logic	0.00%	0
9	Other	0.00%	0
	Total	100%	2
Q11 - What kind of role-playing games do you play?			
#	Answer	%	Count
1	Action/Real-time	100.00%	2
2	Turn-based	0.00%	0
3	Tactical	0.00%	0
4	Rogue-like/lite	0.00%	0
5	Other	0.00%	0
	Total	100%	2
Q12 - What kind of strategy games do you play?			
#	Answer	%	Count
1	Real-time	0.00%	0
2	Turn-based	50.00%	1
3	4x	0.00%	0
4	Artillary	0.00%	0
5	Tower Defense	0.00%	0

6	MOBA	50.00%	1
7	Other	0.00%	0
	Total	100%	2
Q13 - What kind of simulation games do you play?			
#	Answer	%	Count
1	Life	0.00%	0
2	Sports	0.00%	0
3	Racing	50.00%	1
4	Ground Vehicle	0.00%	0
5	Water Vehicle	0.00%	0
6	Aircraft	50.00%	1
7	Other	0.00%	0
	Total	100%	2
Q14 - What kind of digitized board games do you play?			
#	Answer	%	Count
1	Cards	14.29%	1
2	Dice	14.29%	1
3	Board Games	28.57%	2
4	Trivia	14.29%	1
5	Memory	14.29%	1
6	Other	14.29%	1
	Total	100%	7
Q15 - What type of party games do you play?			
#	Answer	%	Count
1	Icebreaker	0.00%	0
2	Parlor	0.00%	0
3	Trivia	0.00%	0
4	Other	0.00%	0
	Total		0

Q16 - Do you have barriers to playing games?			
#	Answer	%	Count
1	Vision issues	0.00%	0
2	Hearing issues	0.00%	0
3	Reflex issues	100.00%	1
4	Fatigue issues	0.00%	0
	Total	100%	1
Q23 - How do you adapt to your vision issue?			
#	Answer	%	Count
1	Corrective lenses (glasses).	0.00%	0
2	A screen magnifier	0.00%	0
3	A screen reader	0.00%	0
4	Games must provide contrast or colorblin	0.00%	0
	Total		0
Q24 - How do you adapt to your hearing issues?			
#	Answer	%	Count
1	Increased volume	0.00%	0
2	Closed captioning	0.00%	0
3	Games must have features to adjust dialo	0.00%	0
	Total		0
Q25 - How do you handle your difficulty with reflex-driven games?			
#	Answer	%	Count
1	Avoid these games	0.00%	0
2	Play games with difficulty modes	100.00%	1
3	Play games with an adaptive device	0.00%	0
	Total	100%	1
Q26 - How do you handle fatigue caused by reflex-driven games?			
#	Answer	%	Count

1	Avoid these games	0.00%	0
2	Play games with difficulty modes	0.00%	0
3	Play games with an adaptive device.	0.00%	0
4	Play games for brief periods of time	0.00%	0
	Total		0
Q17 - What kinds of player characters do you prefer?			
#	Answer	%	Count
1	First-person (no visible character)	16.67%	2
2	Visually realistic characters	8.33%	1
3	Stylized characters	16.67%	2
4	Non-human characters	25.00%	3
5	Characters your own age	0.00%	0
6	Characters younger than you	0.00%	0
7	A character that reflects your gender ident	0.00%	0
8	A character that reflects your ethnicity	0.00%	0
9	A character of the same sexual orientatior	8.33%	1
10	A character that can be customized	25.00%	3
	Total	100%	12
Q27 - What qualities do you want in a player character that reflects your age?			
#	Answer	%	Count
1	Attractive	0.00%	0
2	Agile	0.00%	0
3	Strong	0.00%	0
4	Influential	0.00%	0
5	Charming	0.00%	0
6	Admired	0.00%	0
7	Intelligent	0.00%	0
8	Funny	0.00%	0
9	Likeable	0.00%	0
	Total		0
Q28 - What qualities do you want in a player character that is younger than you?			

#	Answer	%	Count
1	Attractive	0.00%	0
2	Agile	0.00%	0
3	Strong	0.00%	0
4	Influential	0.00%	0
5	Charming	0.00%	0
6	Admired	0.00%	0
7	Intelligent	0.00%	0
8	Funny	0.00%	0
9	Likeable	0.00%	0
	Total		0

Q29 - If you would like to customize your player character, what features do you want to change?			
#	Answer	%	Count
1	Age	6.90%	2
2	Hairstyle	6.90%	2
3	Hair color	10.34%	3
4	Eye color	6.90%	2
5	Skin color	6.90%	2
6	Body type	6.90%	2
7	Facial features.	6.90%	2
8	Clothing choices	6.90%	2
9	Character height	6.90%	2
10	Character weight	6.90%	2
11	Character class	6.90%	2
12	Character skills/abilities	10.34%	3
13	Character gender	6.90%	2
14	Character sexuality	3.45%	1
	Total	100%	29

Q18 - How are older characters depicted in games?			
#	Answer	%	Count
1	They're stereotyped	66.67%	4
2	They're villains	0.00%	0

3	They're victims	0.00%	0
4	Other	33.33%	2
	Total	100%	6
Q19 - What are games about older adults focused on?			
#	Answer	%	Count
1	Death and dying	0.00%	0
2	Physical decline	40.00%	2
4	Mental decline	60.00%	3
	Total	100%	5
Q20 - What kind of game stories do you prefer?			
#	Answer	%	Count
1	Romance stories	0.00%	0
2	Family-focused stories	11.11%	1
3	Mystery stories	11.11%	1
4	Horror stories	0.00%	0
5	Suspense stories	11.11%	1
6	Post-apocalyptic stories	11.11%	1
7	Science fiction stories	22.22%	2
8	Fantasy stories	33.33%	3
9	Stories that make you nostalgic	0.00%	0
	Total	100%	9

Appendix F

Survey Data 74 to 81-year-olds

74-81

Q5 - Why do you play games?			
#	Answer	%	Count
1	For entertainment	100.00%	1
2	For rehabilitation	0.00%	0
3	To socialize	0.00%	0
4	To relax	0.00%	0
	Total	100%	1
Q21 - What type of rehabilitation?			
#	Answer	%	Count
10	Balance improvement	0.00%	0
15	Manual dexterity improvement	0.00%	0
16	Memory improvement	0.00%	0
17	Memory retention	0.00%	0
	Total		0
Q22 - What types of social games do you play?			
#	Answer	%	Count
1	Local competitive games	0.00%	0
2	Local cooperative games	0.00%	0
3	Party games	0.00%	0
4	Online competitive games	0.00%	0
5	Online cooperative games	0.00%	0
	Total		0
Q6 - What are your preferred gaming platforms?			
#	Answer	%	Count
1	Mobile (phone)	0.00%	0
2	Mobile (tablet	0.00%	0
3	Computer (PC/Mac)	0.00%	0
4	Nintendo Switch	0.00%	0
5	Playstation	0.00%	0
6	XBOX	100.00%	1
7	Apple TV	0.00%	0

8	Other	0.00%	0
	Total	100%	1
Q7 - What are your preferred game genres?			
#	Answer	%	Count
1	Action	0.00%	0
2	Action-adventure	0.00%	0
3	Casual Games	0.00%	0
4	Role-playing Games	100.00%	1
5	Strategy Games	0.00%	0
6	Simulation Games	0.00%	0
7	Digitized Board Games	0.00%	0
8	Party Games	0.00%	0
9	Other	0.00%	0
	Total	100%	1
Q8 - What types of action games do you play?			
#	Answer	%	Count
1	Arcade	0.00%	0
2	3rd/1st Person Shooter	0.00%	0
3	Platformer	0.00%	0
4	Racing	0.00%	0
5	Sports	0.00%	0
6	Fighting	0.00%	0
7	Battle Royale	0.00%	0
8	Survival	0.00%	0
9	Rhythm	0.00%	0
10	Other	0.00%	0
	Total		0
Q9 - What types of action-adventure games do you play?			
#	Answer	%	Count
1	Adventure	0.00%	0
2	Survival Horror	0.00%	0
3	Stealth	0.00%	0

4	Other	0.00%	0
	Total		0
Q10 - What types of casual games do you play?			
#	Answer	%	Count
1	Puzzle	0.00%	0
2	Visual Novel	0.00%	0
3	Point-and-click Adventure	0.00%	0
4	Hidden Object	0.00%	0
5	Match Three	0.00%	0
6	Interactive Fiction	0.00%	0
7	Idle	0.00%	0
8	Trivia/Logic	0.00%	0
9	Other	0.00%	0
	Total		0
Q11 - What kind of role-playing games do you play?			
#	Answer	%	Count
1	Action/Real-time	0.00%	0
2	Turn-based	0.00%	0
3	Tactical	0.00%	0
4	Rogue-like/lite	100.00%	1
5	Other	0.00%	0
	Total	100%	1
Q12 - What kind of strategy games do you play?			
#	Answer	%	Count
1	Real-time	0.00%	0
2	Turn-based	0.00%	0
3	4x	0.00%	0
4	Artillary	0.00%	0
5	Tower Defense	0.00%	0
6	MOBA	0.00%	0
7	Other	0.00%	0
	Total		0

Q13 - What kind of simulation games do you play?			
#	Answer	%	Count
1	Life	0.00%	0
2	Sports	0.00%	0
3	Racing	0.00%	0
4	Ground Vehicle	0.00%	0
5	Water Vehicle	0.00%	0
6	Aircraft	0.00%	0
7	Other	0.00%	0
	Total		0
Q14 - What kind of digitized board games do you play?			
#	Answer	%	Count
1	Cards	0.00%	0
2	Dice	0.00%	0
3	Board Games	0.00%	0
4	Trivia	0.00%	0
5	Memory	0.00%	0
6	Other	0.00%	0
	Total		0
Q15 - What type of party games do you play?			
#	Answer	%	Count
1	Icebreaker	0.00%	0
2	Parlor	0.00%	0
3	Trivia	0.00%	0
4	Other	0.00%	0
	Total		0
Q16 - Do you have barriers to playing games?			
#	Answer	%	Count
1	Vision issues	0.00%	0
2	Hearing issues	0.00%	0
3	Reflex issues	100.00%	1

4	Fatigue issues	0.00%	0
	Total	100%	1
Q23 - How do you adapt to your vision issue?			
#	Answer	%	Count
1	Corrective lenses (glasses).	0.00%	0
2	A screen magnifier	0.00%	0
3	A screen reader	0.00%	0
4	Games must provide contrast or colorblin	0.00%	0
	Total		0
Q24 - How do you adapt to your hearing issues?			
#	Answer	%	Count
1	Increased volume	0.00%	0
2	Closed captioning	0.00%	0
3	Games must have features to adjust dialo	0.00%	0
	Total		0
Q25 - How do you handle your difficulty with reflex-driven games?			
#	Answer	%	Count
1	Avoid these games	0.00%	0
2	Play games with difficulty modes	100.00%	1
3	Play games with an adaptive device	0.00%	0
	Total	100%	1
Q26 - How do you handle fatigue caused by reflex-driven games?			
#	Answer	%	Count
1	Avoid these games	0.00%	0
2	Play games with difficulty modes	0.00%	0
3	Play games with an adaptive device.	0.00%	0
4	Play games for brief periods of time	0.00%	0
	Total		0
Q17 - What kinds of player characters do you prefer?			
#	Answer	%	Count

1	First-person (no visible character)	0.00%	0
2	Visually realistic characters	0.00%	0
3	Stylized characters	0.00%	0
4	Non-human characters	0.00%	0
5	Characters your own age	0.00%	0
6	Characters younger than you	50.00%	1
7	A character that reflects your gender ident	0.00%	0
8	A character that reflects your ethnicity	0.00%	0
9	A character of the same sexual orientatior	0.00%	0
10	A character that can be customized	50.00%	1
	Total	100%	2
Q27 - What qualities do you want in a player character that reflects your age?			
#	Answer	%	Count
1	Attractive	0.00%	0
2	Agile	0.00%	0
3	Strong	0.00%	0
4	Influential	0.00%	0
5	Charming	0.00%	0
6	Admired	0.00%	0
7	Intelligent	0.00%	0
8	Funny	0.00%	0
9	Likeable	0.00%	0
	Total		0
Q28 - What qualities do you want in a player character that is younger than you?			
#	Answer	%	Count
1	Attractive	11.11%	1
2	Agile	11.11%	1
3	Strong	11.11%	1
4	Influential	11.11%	1
5	Charming	11.11%	1
6	Admired	11.11%	1
7	Intelligent	11.11%	1
8	Funny	11.11%	1

9	Likeable	11.11%	1
	Total	100%	9
Q29 - If you would like to customize your player character, what features do you want to change?			
#	Answer	%	Count
1	Age	7.14%	1
2	Hairstyle	7.14%	1
3	Hair color	7.14%	1
4	Eye color	7.14%	1
5	Skin color	7.14%	1
6	Body type	7.14%	1
7	Facial features.	7.14%	1
8	Clothing choices	7.14%	1
9	Character height	7.14%	1
10	Character weight	7.14%	1
11	Character class	7.14%	1
12	Character skills/abilities	7.14%	1
13	Character gender	7.14%	1
14	Character sexuality	7.14%	1
	Total	100%	14
Q18 - How are older characters depicted in games?			
#	Answer	%	Count
1	They're stereotyped	0.00%	0
2	They're villains	0.00%	0
3	They're victims	0.00%	0
4	Other	100.00%	1
	Total	100%	1
Q19 - What are games about older adults focused on?			
#	Answer	%	Count
1	Death and dying	0.00%	0
2	Physical decline	100.00%	1
4	Mental decline	0.00%	0
	Total	100%	1

Q20 - What kind of game stories do you prefer?			
#	Answer	%	Count
1	Romance stories	0.00%	0
2	Family-focused stories	0.00%	0
3	Mystery stories	0.00%	0
4	Horror stories	0.00%	0
5	Suspense stories	0.00%	0
6	Post-apocalyptic stories	25.00%	1
7	Science fiction stories	25.00%	1
8	Fantasy stories	25.00%	1
9	Stories that make you nostalgic	25.00%	1
	Total	100%	4