Community Building among Older Adults in a Digital Game Environment

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Abstract: This research study describes the social connections made by a group of older adults participating in a city wide Wii bowling tournament. Our results showed that participant's experienced an increased level of social connectedness with not only those who played with them weekly but others where they lived, their friends and family members outside of the places where they lived. Overall, the participants found that playing Wii bowling in a tournament setting contributed to the expansion of their existing network and deepened relationships in the players' community by extending the level of social connectedness both within the game environment and beyond the boundaries of the game space.

1 INTRODUCTION

Improvements in public health and welfare have resulted in people living longer and healthier lives (Phillipson, 2013), yet certain aspects of ageing can be very difficult especially when one is faced with chronic illness and the loss of life-long friends and partners. There is evidence to show that engagement in social activities can have a positive influence on physical activity, and maintaining cognitive function (Rowe and Kahn, 1997). Brookfield also suggested that learning activities can contribute to community development through the facilitation of peer support within learning groups that share common goals (Brookfield, 2012). Merriam and Kee expanded upon these ideas, arguing that as older adults gain more knowledge and become more socially engaged, both their personal and community wellbeing are enhanced (Merriam and Kee, 2014).

Being part of a social community can create positive feelings of self esteem and self worth and having a purpose in life (Cohen, 2004). Developing social relationships are also thought to relieve stress by providing support in times of need either directly or indirectly (Cohen et al., 2000). Indirectly, social relationships provide resources whether informational, emotional, or tangible which help to reduce the acute or chronic stress brought on by life events. Building social relationships may be also associated with protective health benefits through more direct means by influencing cognitive,

emotional, behavioural, and biological effects that are not explicitly intended to provide help or support (Holt-Lunstad et al., 2010).

New types of relationships within communities are emerging within the diverse contemporary structures of society, resulting in an availability of connections within a broader social milieu than before. There are opportunities for intergenerational exchanges as generations are more likely to overlap and interact (Marshall et al., 1993). Social ties with friends also offer a new source of significant relationships in one's community.

Although the lives of older people are generally viewed within the family context in terms of support and care, non-kin ties are becoming more influential in the lives of older adults (Beck, 2000). This can be partly attributed to the growth of single person households and the growth of numbers of people who live alone (Klinenberg, 2012). It is now more likely that older adults will develop a myriad of social relationships among a variety of connections that some have referred to as personal communities consisting of friends, neighbours, and other acquaintances who give and receive help at different points in life (Phillipson, 2013). In some cases friends are replacing family as sources of support in old age. These relationships of choice can be critical in enhancing mental health (Phillipson et al., 2000) as well as informal support. The development of new forms of relationships across age groups and social groups and outside of kinship groupings has

changed the composition and dynamics of the social life of older people.

As social engagement has been identified as significant component of successful ageing, it is possible that participation in meaningful leisure activities with others can create social environments that foster community building among older adults. Playing digital games has been noted as a leisure activity that has potential to alleviate loneliness and enhance social connectedness among older adults (Whitcomb, 1990; Ijesselsteijn et al., 2007; Gamberini et al., 2009; Allaire et al., 2013; de Schutter and Abeele, 2010, Schell et al., 2015). Digital games can also encourage and scaffold learning among the players (Gee, 2003) and as such could have the potential to support the concept of lifelong learning which has been associated with promoting and preserving community (Merriam, 2014).

This paper discusses the concept of digital gaming as a social activity which can expand the social network of older adults within their community. Previous work has been primarily focussed on younger people and when focussed on older adults often centers on cognitive and physical effects rather then psychosocial effects described in this paper. The study involved personal interviews of 17 older adults who played in a city-wide Wii Bowling tournament drawn from a quantitative study of 73 participants.

Next, we further explore the social and learning aspects of digital games for older adults.

2 SOCIAL ASPECTS OF DIGITAL GAMES

Older adults have become significant consumers of technologies including digital games (ESA, 2011). Games have been associated with a number of positive attributes. For example, developing skills and mastering a game can create a sense of accomplishment (IJsselsteijn et al., 2007). The sense of losing track of time and immersion, called "flow", that people experience when they are totally involved in playing a game has the potential to create feelings of enjoyment and satisfaction (Csikszentmihalyi, 1997).

When games include social interaction, they may also create a venue for enhancing the social lives of older adults and provide a social activity that can be effective in reducing loneliness and social isolation (Cattan et al., 2005). Technology may be useful in supporting and developing social connections (Baecker et al., 2012) and since loneliness is believed to be a deficit in the broader range of social contact (Heylen, 2010), expanding the social network through digital games may provide benefits.

An early pioneer in game research, Whitcomb noted that social interaction was the most important benefit for older adults playing digital games (1990) and the feelings of satisfaction and accomplishment associated with playing a digital game positively affected people's perception of themselves. Whitcomb identified physical and cognitive benefits such as improved hand-eye coordination, manual dexterity, and increased speed with playing the game as possibly enhancing the self perceptions of older adults. More recently, Ijesselsteijn et al (2007) suggested that gaming could enhance the lives of older adults by providing opportunities for relaxation and entertainment, socializing, sharpening the mind, as well as offering a more natural way of interacting.

Gamberini et al. (2009) examined the user experience of older adults along seven key dimensions including social interaction, playability, immersion, challenge/skills, and clear goals using a game prototype called Eldergames intended to improve older people's quality of life. The study involved 107 participants who responded to a questionnaires and a focus group over the 12 weeks of testing. Although the emphasis of this study was on cognitive training, these researchers found the game also promoted interaction creating a positive social experience for the users.

Voida and Greenberg (2012) described playing Wii as a computational meeting place for older people to establish social contacts with peers and to experience intergenerational play. Both peer-to-peer mentoring and learning in informal environments can create the circumstances that enhance computer literacy (Selwyn, 2005) and promote the learning of digital games themselves and in the process reduce the anxiety around technology and increase feelings of self efficacy and self-confidence among older people.

3 DIGITAL GAMES AND LEARNING

As well as encouraging social connections, playing games can provide an environment for learning. Lifelong learning has been associated with improved cognitive function, supporting social interaction in

society (Withnall, 2012) as well as sustaining physical and psychological wellbeing (Sloane-Seale & Kops, 2008). Lifelong learning can also offer new experiences that reduce stress and provide escape from life's problems (Dattilo et al., 2012). Research suggests that collaborating with others can stimulate learning and help build a community of practice (Wenger, 1998; Kaufman et al., 2011), and that problem solving is an activity that provides learning opportunities (Boud and Feletti, 1998). There are many examples of games which feature problem solving as a mechanism for game play as well as presenting an environment for social interaction. Wii bowling is a strategy game that can involve collaborating with others in a social milieu.

4 THE Wii BOWLING TOURNAMENT

Our research focused on a digital game that many have played or are familiar with, Wii Bowling, published by Nintendo in 2006. Wii Bowling is one of a suite of games called Wii Sports which is one of the best selling games of all time (Nintendo Investor Relations Information, 2014). The Wii remote device contains sensors that detect natural body movements that are mirrored within the game play itself. Virtual bowling can allow older adults to participate in activities they may not be able to do because of reduced mobility or strength.

When playing Wii Bowling, the players use a handheld controller to simulate the motions that occur in an actual Bowling game. The format of a Wii Bowling tournament was selected to encourage people to join the project, create a venue traditionally associated with bowling, and provide a motivating team setting that offered an opportunity for cooperative game play. Research has shown cooperative learning offers social benefits such as improving relationships, facilitating learning new skills, and enhancing the ability of working with others but these goals can only be achieved when there is a group goal that is important to those in the group (Slavin, 1988). Competing in the tournament may provide that essential common group goal that leverages these benefits.

During each Bowling session, participants played two full games of Wii Bowling. The Research Assistants recorded the scores and posted them on a tournament website and announced the next game date and time.

5 PARTICIPANTS

The participants who joined in the eight-week tournament were recruited from 14 centers where older adults lived or frequented in the Vancouver Lower Mainland area including independent living centers, senior recreation centers, and assisted living centers. After receiving permission, our study was advertised through posters posted by staff in each location. Our goal was to recruit those over 60 years of age or older. Independent living centres offer apartment living for those over 55 years of age, while assisted living centres offer additional services to residents such as meals, housekeeping, laundry, recreational opportunities, 24-hour response lines, and personal care services. The 17 participants recruited for our qualitative research lived in independent living centers while five others lived in assisted living centers. These 17 participants were a subset of a group of 73 people who took part in a larger quantitative study.

6 RESEARCH DESIGN

The study's qualitative approach was designed to answer our research question "What do the participants perceive as the social benefits of playing the digital game Wii Bowling in a tournament?". This research question was explored through interviews with participants that elicited players' perceptions and opinions of their game playing experience. During these one-on-one interviews, we asked about players' reports of connections and friendships they formed during the tournament, and their interactions and conversations with others about their involvement in the tournament.

7 DATA COLLECTION

Data was collected through recorded interviews with seventeen participants at their center or in their home. Each interview lasted for about 30 minutes and addressed topics designed to elicit perceptions of the game playing experience and the formation of friendships or social connectedness with their team members, their family and friends, and others in their centers due to playing in the Wii Bowling tournament.

8 QUALITATIVE ANALYSIS OF PERSONAL INTERVIEWS

These interviews were recorded, transcribed, and analyzed using qualitative software MaxQDA Version 11 to code statements and identify themes. Data analysis involved preparing and organizing text transcriptions of interviews, and collecting the codes into themes, then illustrating each theme by actual quotes made by the participants (Creswell, 2007). The specific steps taken were writing codes and memos, noting patterns and themes, counting frequency of codes, developing evidence, and making comparisons (Miles et al., 2014).

9 CODING PROCESS

Coding methods are divided into two categories: the first cycle and second cycle of coding. The first cycle includes Elemental Methods that encompasses three types of coding used for this research: structural, descriptive, and process coding (Saldana, 2009). This selection of two or more types can serve the goals of the analysis since coding methods are not discrete but overlap in applicability (Saldana, 2009).

The first cycle of coding provided a method for summarizing segments of the data. Pattern coding grouped these codes into smaller number of categories or themes (Miles et al., 2014) compiled into a table that shows the codes, number of times the codes was applied, and the number of participants who had this code applied to their comments. This table is shown below. To determine predominant themes, we highlighted those statements where 50% of the total number of participants (n= 17), had made comments that received that specific code. This number was considered the cut off for codes that would be reviewed and discussed in detail in the findings.

We also noted those instances where participants had commented on a theme multiple times during the interview process. For example, there were 10 participants whose statements were coded with the same code 50 times. Where themes were generated according to number of people but where there were a similar number of people, the number of times the code came up was used to break the tie. To triangulate the qualitative results, peer review of methodology was requested and completed, as well as a member check of the findings by participants representing each centre.

10 FINDINGS

Of the seventeen participants interviewed after the tournament, three were males and 14 were female. Five participants lived in assisted living accommodation and twelve lived independently. Five participants were between 65 and 74 years old; eight were 75 to 84 years old and four were 85 years old and older. One person was 90 years old. Social connectedness was a major theme in the participant interviews. Table 1 shows these results in terms of each code and the number of people making comments with this code, and how many times this code was applied in the text. Through this analysis, one could consider the level of consensus among these participants and how predominant that theme appears to be.

Table 1: Theme of Social Connectedness.

Code	# of people	# times code applied
Team Experience	17	37
Interaction with Others	16	84
Better Social Connections	13	70
Conversations about game with family and friends	13	49

11 DISCUSSION

The majority of participants interviewed found that playing in the Wii Bowling tournament brought about new or closer friendships with other players, as well initiated interactions with other members in their community beyond the scope of the actual tournament itself. Playing Wii Bowling also led to interactions outside the game environment and expanded social connections for participants beyond the weekly Wii Bowling sessions. These interactions included conversations with fellow players after game sessions, participating in outside activities such as going to dinner, or going to church together, as well as playing other games with people they met in and outside of the tournament.

Our study seems to indicate that playing Wii Bowling was an enjoyable way for older adults to interact, and deepen bonds with those they already knew casually or were acquainted with in the community where they lived.

We also found that playing Wii brought about intergenerational play among friends and relatives which was an unexpected finding as the focus of our study was on the social impact of playing with peers.

This older group of players independently selected to play Wii Bowling with younger family members including their grown children and grandchildren or had conversations with them about their experience in the tournament. Our participants noted that playing with adult children or grandchildren added a welcome dynamic to family relationships which substantiates earlier findings that intergenerational interaction offers the opportunity to extend the diversity of people in one's personal network.

Diversity is a factor that has been identified as strengthening social interconnectedness in one's greater social network (Voida & Greenberg, 2012). Non-family members such as neighbours and friends who become part of the social network of older adults also provides a source of social support especially when relatives are not readily available (McPherson, 2004) so from this point of view, playing digital games with team members and others in their community could provide social benefits that can be important to older adults as families become more distributed and more dependent on non-kin relationships.

The following table shows samples of a type of community contact made during the Wii Bowling tournament and example of the coded text related to this contact.

Table 2: Social Connections Made in Wii Bowling.

Community contact	Sample Interview Code
People outside where I live	Well, a lot of my friends thought it was really funny. You know, "[Oh wait] (?) You're Bowling on"; "Yes, I am. I bowl—I'm doing Wii Bowling." "Oh, [wow] (?)" um, most of my friends are pretty active people. They swim or they go to the gym. They play golf. They play tennis, some of them. So, it was—it was interesting for them to think that I would do this.
Family	Oh, it's kind of fun because my—I took my son down and his wife down Bowling there. And he used to be pretty good and so, you know, I'd just lean on here and pssshhht. Boom. Boom. Getting 200 plus. So he was curving all around the place and there. So, anyhow, he got a little bit frustrated.
Audience members	Because we had people come to watch. Because they showed interest, they thought "what are they up to now."
Other people where I live	Which is something we might not have done, but because we--there's four of us and we brought another member who
	doesn't bowl, but belongs in our little group, we went out together and had a meal together. So in that respect it was fun.
Other players	Getting to know your teammates, right. Then, you know, when you see them, you sort of –well, you feel part of them Right? So it brings the camaraderie between you, you know.

Figure 1 illustrates the social connections referred to by the Wii Bowling tournament participants showing that their involvement had extended these connections beyond the scope of the game sessions themselves and into the wider community.
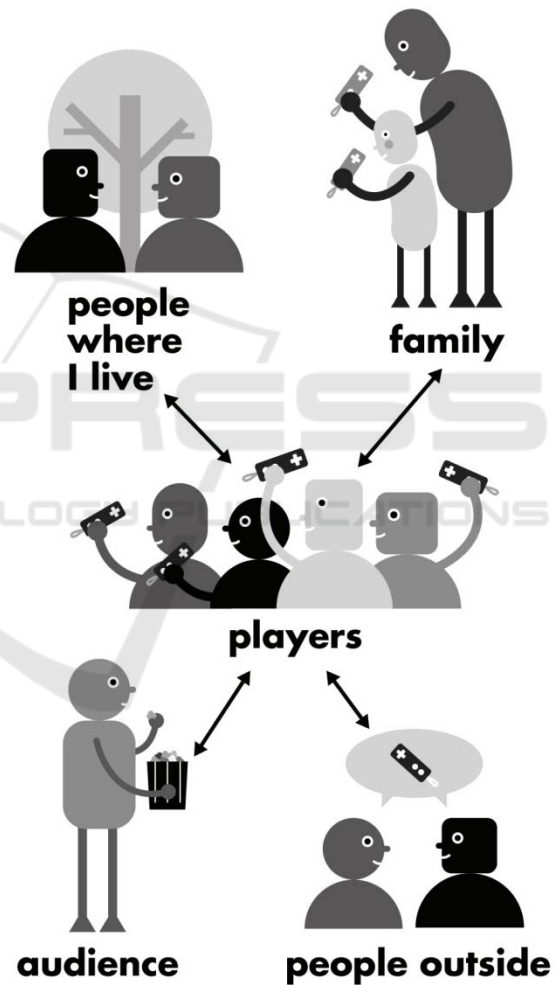

Figure 1: Model of Social Connections.

As Voida and Greenberg (2009) described, the digital game space is a computational meeting place. In the tournament context, playing digital games acts not only as a place to gather and play, but also an activity that fosters connections and builds community beyond the game and so brought more

people into the orbit of this social event through conversations, or as spectators, regardless of whether they actually played or were physically present. Of course, the dynamics of games like Wii Bowling change as people play them. As such the social connections made during the tournament depend on how the game unfolds as well as the people who are playing at that time (De Schutter and Abeele, 2010).

12 CONCLUSIONS

In our research, we saw evidence that those who participated in the Wii bowling tournament perceived playing in the Wii tournament as an opportunity to meet others in a team environment and well as extend their social connections into their community. They also acquired the technical ability to play this game with their peers. In a sense, they formed a community of practice in which players learned the game and improved their ability to play. Through their participation, these players shared an activity and common interest that provided the environment for social learning and deeper understanding of other players (Wenger, 1998) that we saw reflected in interviews with our participants. Squire (2011) refers to video games as shared spaces where people develop expertise, social experiences, and make social connections. This assessment seems to be in line with the experiences of the older adults who played in our Wii Bowling tournament.

We are not claiming that playing Wii Bowling provided more social opportunities than other traditional recreational activities for older adults; however, our results suggest that playing Wii Bowling extended relationships beyond the time and place where the game occurred, even in centres where people already knew their fellow players and audience members. We believe our study added to the literature in terms of participants, goals, and parameters. The majority of our players included older individuals over 75 years of age. This study focussed on a readily available commercial game and social impact rather than unique games and other factors. For example, Gaberini et al's (2009) Eldergames that studied cognitive training and Age Invaders by Khoo et al. (2009) which investigated intergenerational play.

This study provides a deeper understanding of the social effects of playing digital games for older adults and offers information that might lend itself to further investigation of digital games as a mechanism that facilitates community building

especially among the oldest of the old or those who suffer from mobility issues. Other studies could focus on the potential of digital games to provide a situated learning environment for increasing technical skills among older adults that focuses on game players as a community of practice.

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