Wii play with elderly people

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ABSTRACT
In this paper we report from the experiences we made while playing *wii*[3] with elderly people in a residential home. There are many articles [1][4] in newspapers and specialized journals for caregivers reporting success when playing *wii* with elderly. We can report some success, too but we also faced many problems and hindrances when introducing the *wii* to people who were skeptical about the usage of video games. We also faced problems when playing *wii* with the elderly mostly based on physical and / or coordination problems.

During the research we could solve many of the given problems by simple modifications of the setting or the device used, which we present in the discussion section.

Author Keywords
Wii, Video Games, Elderly,

ACM Classification Keywords
H5.3. Information interfaces and presentation (e.g., HCI): Group and organization Interfaces – Collaborative Computing

INTRODUCTION
When talking about video games most of us first think about children sitting home and playing alone. But video games are more and more often used in multiplayer settings both online and distributed and offline in the same place. So video games get a social component and have the ability to bring people together. There have been many success reports in the German newspapers and journals in the near past, reporting from the use of *wii* consoles in retirement homes in the last months. Those groups were mostly organized by Kiener and Deindl, two students from Munich University of Applied Science, who started a *wii* bowling league for elderly [1]. For their project they travel to residential homes all over Germany and organize *wii* bowling events. The points of the participants are summed up to a total for the retirement home, by this way they determine the best home which got a little price. Impressed by the results and on the search for new methods of interacting with multimedia systems for elderly we started our own *wii* project in a residential home in Germany.

There were two main topics which we wanted to investigate by playing *wii* with the elderly.

On the one hand the caregivers were interested in the usage of the *wii* as a therapeutic device encouraging the elderly to be more active.

On the other hand we were interested in new ways of interacting with multimedia systems especially designed for elderly. As the *wii* input system is often described as intentional and easy to use we were interested in seeing elderly using the *wiimote*, the original controller of the *wii* console. The *wiimote* has some buttons which are used for input. Additionally it can be used as a pointing device, and is able to track motions. This combination could be used to combine pointing and gesture input for new social media systems.

METHOD
For the research we decided to do a qualitative study with a limited number of participants. The empirical research was documented by field protocols we wrote down during each session and by interviews we took with the elderly and caregivers involved in the round. In addition there was an evaluation round with the leading caregiver after each session in which we discussed the rounds, with focus on expectations, problems and solutions. Based on the results of this discussion we planned the new round.

SETTING & PARTICIPANTS
For the study we selected a retirement home we already had contacts to, resulting from other projects. The retirement home provided us a large screen television for the *wii* session which was ideal for playing *wii* with some participants. During every session there was at least one professional caregiver present who supported the elderly when needed.

When describing further details of the setting and the participants we have to describe two different types of settings. The introduction round where we first presented the *wii* to the elderly and the 4??? following *wii* rounds we held in the retirement home once a month???.

First Presentation

In order to prepare the *wii* rounds in the retirement home we decided to introduce the *wii* during a regular fitness exercise. We asked the course leader, a woman doing the courses voluntary, for permission to introduce the *wii* in her round. We explained that our aim was to offer a new group not affecting her fitness exercise program. The day before the first round we tried out the *wii* with the responsible caregiver and the leader of the retirement home in order to get familiar with the usage and the gameplay.

During the first introduction we presented the *wii* to 18 elderly, mostly women (only 3 male practitioners). The elderly taking part in this round were all residents of the retirement home and members of the fitness program usually offered in this timeslot and were at least able to do basic coordinated movements, a fact we considered as important.

The round took place in the big dinner room which is also used for the program between the meal times. As game we selected *wii* sports bowling.

Wii Rounds

For the following *wii* rounds we invited 6 participants, 5 interested elderly from the first round and one elderly which was interested, too but could not take part in the first round. Beginning with the 3rd regular round we have an additional participant who moved to the retirement home some days before this round. In these rounds we had about one third male participants. During the rounds we mostly played *wii* sports bowling, with some small breaks where we played *wii* sport boxing during the first two rounds.

Differing to the first round we moved to a smaller room with the group.

EXPECTATIONS

Our expectations for the first round were simple and naïve in the same moment. From different positive articles [1] published in different German newspapers we were convinced of the fact that playing *wii* is very easy and intuitive and no problem for elderly at all. During our test session we got familiar with the handling of the *wii* very quickly and could only hardly imagine which problems we would face the next day. We were convinced by the fact that many elderly had played skittles, which has many parallels to bowling, in their pasts. So we decided to play bowling with the elderly the more so because playing bowling with the elderly was promoted, as most easy from the movements and most fun, by the other projects we mentioned before.

We had the aim to find some 5 – 10 interested elderly in the first round sure of the fact that the volunteer group leader of the fitness round would willingly help us to inspire the elderly.

For the following rounds we expected improvements regarding the coordination and movements of the elderly and an increasing fun factor provided by the game.

OBSERVATIONS & PROBLEMS

During the first session we observed that the attitude towards the *wii* changed from skepticism to curiosity. At the beginning of the session all the elderly were very skeptical about playing with video games. “I know this thing, my grandchildren are playing with it”, one woman said. But when we explained the *wii* and started to play the picture changed. The elderly were engrossed in the match. They supported each other and gave hints to those elderly who had problems using the controller as seen in other studies on group console game playing [2]. We could even observe that some elderly in the round which could see the others trying out the *wii* already started to exercise the movement before it was their turn.

We were confronted with an unexpected situation when about half of the participants had tried out the *wii*. The volunteer group leader started talking to some elderly trying to convince them that playing *wii* is wrong and that elderly should not do this. When she noticed that most of the elderly were happy with playing *wii* and lost their concerns she tried to sabotage the round by starting an alternative program with singing and gymnastics which made it more difficult for us to get the attention of the elderly. Most of the elderly joined the alternative program as long as it was not their turn on the *wii*. It turned out after the round that the volunteer had concerns about her fitness round. Although we talked to her before presenting the *wii* and cleared out that we did plan an additional program not affecting her offer she was convinced by the fact that we tried to substitute her by a video game.

When trying the *wii* out the day before we played the game while standing in the room. We also tried to play sitting on a chair and had no problems with the game. When introducing the *wii* to the round we noticed that most of the elderly felt unsecure when standing and preferred to sit on a chair. Some of the elderly even had no choice because they needed a wheelchair. We observed that for the elderly it was more difficult to play the game when sitting on a chair. Especially the armrests were a barrier and made the movement difficult.

Our expectation that many participants had played skittles before turned out to be wrong. We only had one woman joining the round which played skittles before and just this woman criticized the game because of the unusual movements needed. The other participants could not compare the game to their past experiences and did not complain about the needed movements. During the following rounds the selected participants improved their coordination and movement capabilities. This fact was underlined by the difference in the skills compared to a new participant who joined the group in the third round and faced the similar problems when first using the *wii* as the others did before.

Different than expected the bowling game was difficult to play and needed much attention of the participants. To

throw the virtual bowling ball you have to press a button, do a throw-like movement with your arm and release the button in the right moment. With this simple process we had different problems. First problem was that the controller has many buttons which are not needed during the game but interrupt the normal sequence and open up some menus. When something unexpected happened the elderly were afraid that they destroyed the video game. In this situation it was even very unclear for the elderly that they had to press the button which was displayed on the screen in order to continue. It sometimes took much time to explain them that they could not destroy the game and what effect the buttons have. The other problem was that the right moment when you have to release the button is very short. This requires a high level of attention from the elderly. But here we faced another problem: we noticed that our explanations in combination with the hints from the other elderly and the massive in- game sound created stress for the participants which resulted in less fun and more difficulties when playing the game.

DISCUSSION

During our rounds we often noticed how important it is to explain what intention we had with the *wii* round. For future projects we learned that convincing all the involved persons is very important in order to prevent problems.

In order to solve the problems while playing the game we did several modifications over the time. The first modification was to use chairs without armrests. This was a great improvement giving the elderly enough freedom of movement to play the game. As a second modification we covered the unneeded buttons of the controller so they could not be pressed accidentally any more. We could by this way moderate the confusion and raise the fun provided by playing the game.

To moderate the stress we turned down the volume of the television device and tried to talk to the elderly more calmly. As we noticed that bowling needed a high level of attention from the participants we tried to relax a bit while changing the game to boxing which does not need such a high level of coordination but needs a higher level of physical activity.

As the moment in which the button must be released is quite short and we noticed that most of the elderly released the button too late we started explaining the sequence in a different way. We explained then that the button must be released more early as really needed. By this way we could explain the sequence in a way that the elderly could easily perform.

We noticed that when we did something wrong while trying to show the elderly how to do the movement correctly it was very useful because it showed the elderly that even we cannot perform the movement correctly every time.

CONCLUSION

With our research we can harden the fact that playing video games can be fun for every generation. But in contrast to other studies about video games and elderly like [2]we have evidence that playing video games, such as *wii* bowling is not as easy as often asserted. We could see that it mainly depends on the mental and physical situation of the elderly how long it takes till they can handle the game and have fun instead of throwbacks. The danger of overstraining the elderly is very present and we had to be very careful. When promoting video games for the elderly we have to ask us what benefit the games bring to their lives.

In our study we found that the *wii* actually can help improving the coordination capabilities and encourage people to move their arms. We could track a development in the capabilities of the elderly from round to round.

We found the *wiimote* is not as intentional as an input device as expected before. We had to do some modifications with the controller and had to provide much action space till the elderly were able to use it. We saw that it was not clear that a button must be pressed when it is shown on the screen. On the other hand the pointing functionality was quickly understood and used. For further input devices for elderly we think that the possibility to modify the device (e.g. disabling buttons) is a very important feature.

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