

## Background

Wii™-habilitation, or Wii™ therapy, the use of the Nintendo® Wii™ gaming system in a rehabilitative capacity, has been emerging recently in physical therapy rehabilitation journals and in news articles and press releases from hospital rehabilitation departments and rehabilitation centers across the world (Deutsch, Borbely, Filler, Huhn, & Guarrera-Bowlby, 2008; Tanner, 2008; Coyne, 2008). The majority of these reports relate to the use of the Wii™ Sports (2007) game to assist in enhancing motor skills. Additional reports relate to the use of the Wii™ Big Brain Academy: Wii™ Degree (2007), a puzzle game, for rehabilitation of executive function and memory following traumatic brain injury (E.W. Scripps Co., 2008). Use of Wii™ games in senior centers and nursing homes has also resulted in anecdotal reports of benefits related to health, recreation, and socialization (Wallgren, 2008). However, documented use of Wii™-habilitation for people with aphasia (PWA) is limited.

In light of the increased interest in and development of virtual reality technology applications for aphasia rehabilitation, it is surprising that the potential use of a commercially available system such as the Wii™ has not been more fully explored (Buxbaum, 2008). The incorporation of an Aphasia Wii™ Group at a community based aphasia center indicates there are potential communication and psychosocial benefits to using the Wii™ with PWA. Systematic observation of PWA using the Wii™ Sports (2007) game in a group setting and discussions with participants demonstrates that the program provides various social language opportunities and contributes to enhanced quality of life. This paper will use qualitative methods to discuss these benefits and identify areas for further research regarding the use of Wii™-habilitation for PWA.

## Methods

The Center where this study was conducted provides group programming for members (i.e., people with aphasia) who participate twice a week for three hours each day. Groups are facilitated by speech language pathologists, trained volunteers, or members. Programming runs on a 15 week trimester schedule. The Center implemented two weekly one hour Wii™ groups during the Spring 2008 semester facilitated by a speech language pathologist (Groups A and B). During the following semester, two weekly sessions were offered with trained volunteer facilitators (Groups C and D). All groups began using the Bowling option of the Wii™ Sports (2007) game, although some groups attempted additional sports as the semester progressed.

Participants elected to join the Wii™ group when selecting their programming options prior to the start of the semester. Each group included a maximum of six participants to provide frequent turns to all members. A total of 23 members have participated in the groups to date with two members participating during both semesters. Participants represent a range of aphasia types and severity levels (see Table 1).

Systematic observation of the groups was conducted by the first author to examine use and comfort with the Wii™ remote, which uses motion sensing technology to allow the user to interact and manipulate objects on the screen. By the end of the fourth session, it was apparent that participants required minimal continued support with the remote control and that the gaming opportunity encouraged various communication exchanges among participants. At that time, the first author began systematically to examine the type and frequency of communicative acts in which each participant engaged.

Six or seven sessions of each group were randomly observed by the first author who collected online, written frequency tallies and examples of participants' communication acts. One session of each group was also videotaped. In order to identify comparable data sets, participant attendance during observed sessions was reviewed. Those sessions including participants with consistent group attendance were identified as usable data sets. Of those identified data sets, two from each group were randomly selected for calculation of frequency tallies and qualitative analysis of communication acts.

Members participating in sessions selected for analysis who had inconsistent attendance were excluded from the reported data. Accordingly, data on a total of 19 of the 23 participants were analyzed and are reported. Additional group members with inconsistent attendance and various group visitors or observers were present during some sessions.

### Findings

The average number of total communicative acts (verbal and non-verbal) per person, per session was 35.16 with the majority of comments related to the performance of other participants (see Table 2).

Review of the corpora of observed communication acts indicated that they could be classified into the following eight categories and definitions: (a) camaraderie – offering support, encouragement, and humor to other participants despite competitive nature of activity (e.g., patting each other on the back to console after missing a tough shot), (b) anticipation – predicting one's own or another's performance success or failure (e.g., "You may have it [a strike]..."), (c) celebration – expressing joy in the actual outcome of one's own or another's performance (e.g., group celebratory cheer after a participant conquered a 7-10 split), (d) disappointment – expressing displeasure in the outcome of one's own or another's performance (e.g., "No, I didn't want that one...want to move it."), (e) assistance – requesting or providing information to improve one's own or another's performance (e.g., "No, no, no, turn the [gesture to ball trajectory line on screen]...yeah!" as one participant suggests lining up a shot to another), (f) reaction – providing feedback on one's own or another's actual performance after the fact (e.g., "Nice Spare!"), (g) competition – friendly rivalry between participants (e.g., gesturing a joke fist fight after one participant's foot gets in the way the other participant's swing.), or (h) question/response – direct question or response to posed question or comment by another group member (e.g., Volunteer: "What hand did you used to bowl with?" PWA: "I was a righty.").

Discussions with members regarding their experience following participation in the Wii™ group provides additional support for various psychosocial benefits such as engaging virtually in an activity from their past, sharing newly gained knowledge and skills with others, and promoting intergenerational interaction. If accepted for presentation, reliability data will be presented and additional examples of each type of communicative interaction and reported psychosocial benefits will be included via participant quotations, exchanges, and video samples.

### Discussion

In addition to the more widely recognized potential for physical therapy and its use in senior centers, this preliminary review suggests that the use of Nintendo's® Wii™ Sports (2007) bowling application with people with aphasia provides a variety of communicative and psychosocial opportunities. It encourages group camaraderie and use of communication to

express anticipation, celebration, disappointment, assistance, reaction, and competition. In addition to further refining this qualitative review, the potential for future research considerations related to the use of the Wii™ for aphasia therapy are vast. Examples include comparisons with more traditional aphasia group activities regarding levels and types of communication opportunities, exploration of the use and potential benefits of other Wii™ applications (e.g., Wii™ Big Brain Academy: Wii™ Degree, 2007), and the impact of one's comfort with the controller or game on the amount or type of communication acts.

## References

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Table 1

*Group Demographics*

	Group A	Group B	Group C	Group D
No. Participants	3	4	6	6
Gender				
Male	2	3	5	3
Female	1	1	1	3
Aphasia Type				
Global	1	0	4	0
Broca's	0	1	1	2
Conduction	1	0	0	1
Anomic	1	2	0	3
Unclassifiable	0	1	1	0
Aphasia Severity				
Mild	0	1	0	4
Moderate	3	1	2	1
Severe	0	2	4	1
Apraxia of Speech				
With	1	1	4	1
Without	2	3	2	5
Facilitator	SLP	SLP	Volunteer	Volunteer

Table 2

*Frequency of Individual Communication Acts*

Group	No.	Comment Own	Comment Other's	Initiate Exchange	Respond to Exchange	Other (e.g., laugh, dance)	Total
A1	3	32	54	4	24	0	114
A2	3	54	58	2	5	12	131
B1	4	37	121	2	16	2	178
B2	4	76	104	1	5	7	193
C1	6	28	75	19	5	22	149
C2	6	19	106	27	18	11	181
D1	6	39	80	21	32	5	177
D2	5	33	85	16	37	7	178
Total	37	318	683	92	142	66	1301
Participant Mean		8.59	18.46	2.49	3.84	1.78	35.16