Teach Me to Dance: Exploring Player Experience and Performance in Full Body Dance Games

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ABSTRACT

We present a between-subjects user study designed to compare a dance instruction video to a rhythm game interface. The goal of our study is to answer the question: can these games be an effective learning tool for the activity they simulate? We use a body controlled dance game prototype which visually emulates current commercial games. Our research explores the player's perceptions of their own capabilities, their capacity to deal with a high influx of information, and their preferences regarding body-controlled video games. Our results indicate that the game-inspired interface elements alone were not a substitute for footage of a real human dancer, but participants overall preferred to have access to both forms of media. We also discuss the dance rhythm game as abstracted entertainment, exercise motivation, and realistic dance instruction.

Categories and Subject Descriptors

K.8.0 [**Computing Milieux**]: Personal Computing–Games; H.5.2 [**Computing Methodologies**]: Methodologies and Techniques–Interaction Techniques

Keywords

exergaming, body interfaces, visual information display

General Terms

Experimentation, Human Factors

1. INTRODUCTION

The increasing variety of video game genres has produced many unique physical controllers resembling real objects such as fishing rods, musical instruments, tennis rackets, and guns. These alternate controllers are mimetic interfaces, or "physical interfaces that mimic the action in the games" [18]. Sometimes the mimetic interface is the human body; camera systems such as the Sony Eyetoy and the Microsoft Kinect allow for the player's limbs to act as input without the player holding or wearing an external device.

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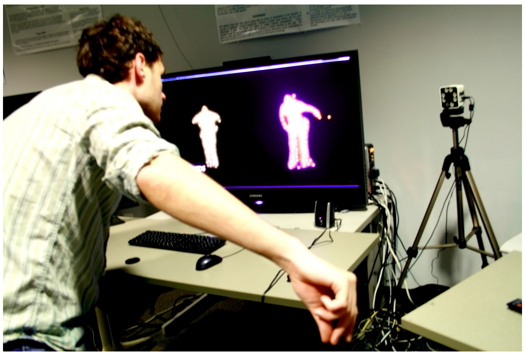

Figure 1: Our dance choreography game with Game Only visuals. The orange silhouette (left) shows the player what to do and the purple silhouette (right) shows the player's position.

A few of these controllers are becoming directly related to real world equivalents. Popular music games are now selling guitar controllers with strings and drum kits with cymbals. Piano teaching tools such as Synthesia use game-like icons which map to keys on an actual digital keyboard [19]. With body-controlled interfaces, any activity that involves the human body can become a game, such as yoga and sports training. In this paper, we use the dance game genre to investigate two questions: will body-controlled dance games be able to teach dance? And will users want them to?

We designed a study which compared three different dance game visualizations: Video Only, Game Only, and Both. We speculated that three elements in particular would influence our results and formed the following hypotheses.

Self-Representation. To self-conscious players, an ideal animated avatar is more encouraging than a reflection the player's body. We hypothesize that those with dance experience will enjoy seeing their own silhouette more and those who exercise and/or dance less will be self conscious and prefer to see an instructor doing it skillfully.

Preview. Many rhythm games feature a timeline of upcoming moves [7]. These games often use twitch gameplay which tests hand eye coordination. In contrast, teaching choreography involves repetition until a routine can be performed from memory. We predict that frequent gamers and those with memory troubles will prefer modes where they can see the next moves easily.

Learning Curve. In the past, most dance games were restricted to a few button inputs. But the human body is much more complex, with many combinations of body parts and positions that have to be communicated. Conveying detailed movements is additionally hampered by the translation of 2D screen to the 3D body space. We hypothesize that most users will prefer seeing a human instructor because it will be more familiar.

We used self-reported questionnaires to record data on user preference, and two different methods of judging performance: algorithm-based and human-assessed. The rest of the paper describes our system, experiment, and results.

2. RELATED WORK

2.1 Dance as a Written Grammar

Like music, written notation was developed as a means for preserving choreography, in practice as early as the 15th century [13]. Two modern examples which are often the focus of research are shown in Figure 2. Reading notation has been shown to help children understand dance better [29]. In 1988, Herbison summarized the history of notation and video as recording devices and how computers could help in the future [14]. Projects such as LabanDance convert notation into 3D computer animation, a difficult challenge given the complexities of both formats [31]. Game interfaces, like notation, seek to display instruction in 2D space. Our work in dance game interfaces is one of the first to examine how different types of visual interfaces affect players.

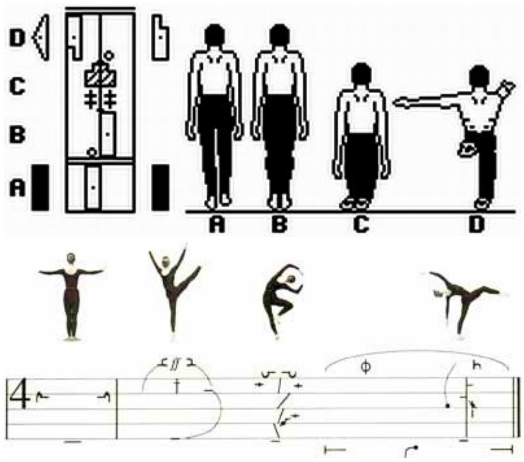

Figure 2: Top: Laban notation [12]. Bottom: Banesh Movement notation [16]. Shown with representative figures as an example, but these are normally absent from the notation.

2.2 Dance and Computers

Digital dance research has been around as long as 1993, when a team of engineers studied usability software for choreographers [4]. Dance instructors have also experimented with remote learning programs such as WebDANCE [20]. But most dance research has focused on blending technology and performance. Examples include observing two dancers remotely collaborating in a virtual world [32], real-time recognition for virtual collaboration [27], and using a 3D user interface to paint dance artistically in a virtual environment [28]. Qian et al. have also used multiple systems of motion capture simultaneously to track dancers [23]. In dance instruction, Eaves et al. studied the effects of real-time virtual reality feedback on ballet moves [11]. We focused on hip hop based moves that are more similar to those found in cardio workouts. Some studies have used wearable force feedback devices or motion capture suits, which differs from our work where the users do not wear anything [5, 10, 21].

2.3 Dance in Games

Mimetic controllers have existed in console gaming since the original NES was bundled with the Zapper light gun. Unencumbered interfaces in console gaming have been around almost as long, with the release of the Sega Activator in 1994. Since then, a variety of alternate controllers have been released, mainly for music, dance and singing scenarios [2].

One of these, *Dance Dance Revolution* (or DDR), was influential both in terms of popularity and its own cultural significance [15, 26]. For some, DDR became an outlet for creative freestyling [1]. Its four arrow floor mat, operated with the player's feet, was the staple dance game input device until the Nintendo Wii became popular. Recent titles such as *We Cheer* and *Just Dance* use Wiimotes held by hand. The systems cannot accurately score their entire body's movement but these games are commercial successes nevertheless. Our research is one of the first looks at unencumbered dance game interfaces, where no external controller needs to be pressed, held or worn. This type of interface is used by the recently released Microsoft Kinect.

3. SYSTEM

We developed a dance game prototype which teaches a routine using different visualizations. With the average person's abilities in mind, we modeled the dance instruction on a cardio fitness class rather than a professional dance class. The choreography we used is from the *So You Think You Can Dance: Get Fit* workout DVD [22]. In this video, the dance instructor teaches a routine with simple, cardio-oriented moves that are both easy to understand and easy for our algorithm to recognize.

Our system uses an Optrima Optricam depth camera and the SoftKinetic human pose library to detect the player's 3D volume as they dance. This data was streamed into our game, which was coded in C# using Microsoft XNA. The SDK provides us with 15 samples (frames) per second, each sample containing 150 centroids representing the foreground object (the player). We built a simple heuristic based scoring mechanism which used training data of each move to determine its accuracy. To make the heuristics more robust between different users, the user stands still during the first frame with their arms at their sides and their natural width and height is used as a scaling factor.

Our prototype provides feedback, computes real-time scores, and records performance data. The dance has been divided into ten *moves* which are four beats long, then further divided into poses that are evaluated by camera samples captured within a window of time. Similar to gesture recognition algorithms, user motions are observed by a sensor and related to predefined positions. However, the goal of recognition is to determine the user's intent, while in this case we

Visual Element	Video	Game	Both	In Training (%)
Move Name	Yes	Yes	Yes	Yes
Score	Yes	Yes	Yes	No
Instructor Video	Yes	No	Yes	Yes
Instructor Silhouette	No	Yes	Yes	Yes
Player Silhouette	No	Yes	Yes	Yes
Next Move Timeline	Yes	Yes	Yes	No

Table 1: Visual Elements

only need to evaluate the accuracy of a single motion since we already know what move the user is trying to perform. Therefore, the scoring asserts that the move is correct past a certain confidence value, then evaluates the timing.

3.1 Visual Elements

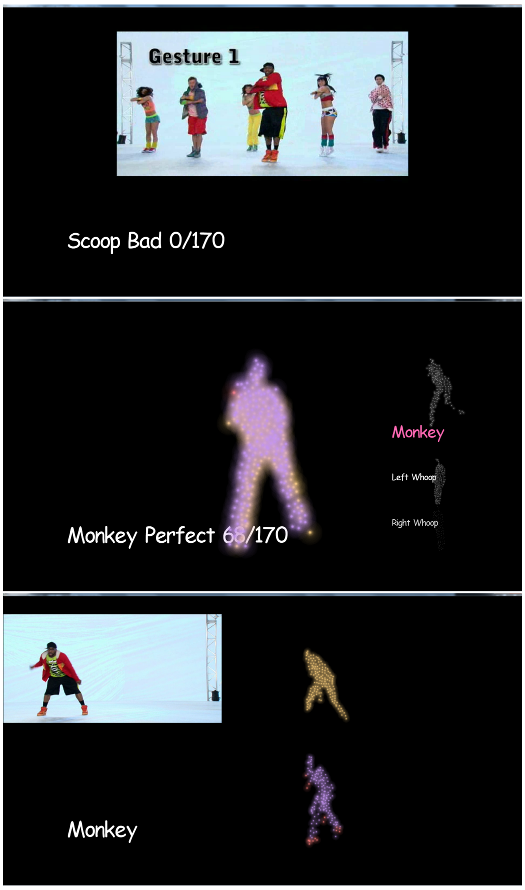

Figure 3: Screenshots of the three display modes. *top*: Video Only (Full Routine), *middle*: Game Only (Full Routine), *bottom*: Both (Training)

We created three different visualization modes for the prototype: Video Only, Game Only, and Both. Video Only was designed to mimic the scenario in which a person buys a cardio fitness video to practice alone at home. The Game Only, as previously described, was designed to emulate a full body dance rhythm game. Finally, Both combined all the elements into one display. Each mode uses a different set of visual elements (see Table 1) but the audio of the source material was used in every mode. These elements give different feedback and were implemented based on their use in commercial games.

1. **Move Name.** One of the main challenges for users was telling the moves apart, so we assigned each move its own unique name to aid in recollection: Scoop, Walk, Pocket, Monkey, Left Whoop, Right Whoop, Airplane, Pop, Snaps, and Jump.
2. **Score.** When performing the Full Routine, each move would be scored in real time as either PERFECT, GOOD, OK, or MISS. At the end of the song, a percentage score (Earned/Total Possible) was displayed. The score was not present during the Training, so the player could focus on learning.
3. **Instructor Video.** We also used video clips of the human instructor. There were eleven clips in total: ten for training and one for the full routine. It was only present in the Video and Both conditions.
4. **Instructor Silhouette.** When deciding on an instruction method for the game interface, we reviewed many past dance games and brought in our knowledge based on past studies [7]. However, after piloting GUIs which used paths and icons, our attempts lacked the polish needed to properly convey the moves. In the end, we chose to use a human avatar. Without a team of artists our implementation choices were limited, so we decided to use the centroid particles from the depth camera. By doing this, the player could directly map themselves to the instructor's form. The instructor data was pre-recorded footage from a team member with two years experience in hip hop dancing. It was positioned to the side or above the player during training and overlaid on the player silhouette during the full routine. See Figures 1 and 3.
5. **Player Silhouette.** The user's body was also displayed using centroids. Red particles indicated points at which the player data differed from the instructor. The player silhouette is the only indication of what the player actually looks like performing.
6. **Next Move Timeline.** In most rhythm games, the players are not expected to memorize the routine beforehand; instead upcoming moves are indicated by a preview method, usually in a timeline of scrolling icons similar to musical notation. While this method is not necessarily the best for full body interfaces [7], we chose to use scrolling move icons because of their use in the game *Dance Central*. The sliding animated buttons get brighter and larger as they move up into the current move spot. The player can see the name of the current move and the next two upcoming moves. Small recordings of a person performing each move are shown next to the move name.

4. EXPERIMENT

We conducted a user study to compare performance and experience between our three visualization modes: Video Only, Game Only, and Both. In terms of our hypotheses, we predicted that participants with little experience in dance or exercise would prefer not to see themselves on-screen, that gamers or those with low memory would like the Next Move Timeline, and that all participants would find the Instructor Video easiest to follow.

4.1 Subjects

30 participants were recruited through flyers, email lists, and at gym classes at the University of Central Florida. 19 were male and 11 were female. Their ages ranged from 18 to 32 (mean 22.9). Eighteen were computer science/computer engineering students.

Users were also divided up by dancing, gaming, fitness, and memory experience. Since we only had three participants with extensive dance training, we sorted participants into only two groups: no experience and at least a year of dance classes. For game experience, we considered the user to be a novice if they played games rarely or not at all, and an expert if they played weekly or more. Another factor we examined was the physical fitness of the participants. We used the short form of the International Physical Activity Questionnaire (IPAQ) to categorize our users based on their self-reported physical activity [8]. The majority of our users rated themselves very highly. Four users were in category 1 (least activity), fourteen were in category 2, and eleven were in category 3 (most activity).

Num	Q2	Q3	Question
1	*	*	I feel like I really understood the moves in this dance routine.
2	*	*	I feel like I did a good job performing the dance routine.
3	*		I feel like my performance was accurately detected during the experiment.
4	*		The game was difficult because I am not used to using my entire body in a video game.
5	*		I enjoyed the experiment.
6	*		If I could have picked the music, I would have enjoyed learning the dance more.
7	*		If I could have picked the routine, I would have enjoyed learning the dance more.
8	*		A real human instructor is much better than a digital system like this.
9	*		I could easily tell what I was doing wrong and how I needed to improve.
10	*		I was so engaged in the task that I didn't realize how much I was moving my body.
11	*		If I had a better memory my performance would have improved.
12	*		Did you find yourself focusing more on getting the moves correct or the timing correct?
13	*	*	If you were asked to do this in a week, with no expectation that you would have practiced it, do you think you could perform this dance routine?
14	*	*	Why/Why not?
15	*		What could have made the routine easier to learn?
16	*		Which dance move was hardest? Why?
17	*		Which dance move was easiest? Why?
18	*	*	What part of the screen did you focus on the most during the experiment?
19		*	Which interface did you like the best and why?
20		*	Which interface did you like the least and why?
21		*	Any additional comments about your experience?

Table 2: Content of Questionnaires 2 and 3. The * indicates where the question appeared.

In addition, our previous work revealed that many participants have low self-efficacy due to assumed memory problems [6]. We used the Prospective and Retrospective Memory Questionnaire (PRMQ) [25] to classify users by their self-reported memory capabilities. We considered only the overall memory capability since prospective and retrospective differences did not clearly relate. The absolute range of these scores was from 32 to 67. Users with a score below the mean (50.2) were considered 'low memory' and users with the mean or higher were considered 'high memory'.

4.2 Design and Task

We designed a between-subjects experiment where each user was presented with one of three visualization modes: Video Only, Game Only, and Both. We collected three kinds of data: the user's performance, as measured by our sensor-based scoring system; scores from a panel of judges post-experiment; and questionnaires filled out by the users.

Our experimental task was broken up into several phases. We wanted to test the user's perceptions and performance based on different conditions, but also their overall preference, so the different visual options were only revealed halfway through the study. We formulated the task into *structured* and *unstructured* sections. We first ensure each person is trained an equal amount of time, then given an opportunity to keep practicing to assess their motivation to continue. The experiment took an hour on average.

1. **Preparation.** At the beginning of the task, the user was led into an enclosed space where only the moderator and he or she was present, then told that the researchers were investigating software that teaches dance choreography and given a consent form to read.

2. **Questionnaire 1.** The participants recorded their demographic information as well as their self-reported IPAQ and PRMQ scores.

3. **Training.** The participants then began the task. This was the structured part of the experiment. Participants learned ten dance moves through a series of training segments. Each move was repeated several times and then repeated in small sequences. Each participant did the same sequence of training to ensure they would have the same preparation regardless of starting mode.

4. **Full Routine and Test.** After training, the participants were asked to do the Full Routine to music three times. Then, they were asked to perform under Test mode, where the participant must do the routine completely on their own, with a blank screen and different music of similar beats per minute. This was purposely challenging; we intended to analyze their confidence and to see if the moves could be translatable in a completely different environment (for example, taking a hip hop class then going out to a club).

5. **Questionnaire 2.** Questionnaire 2 involved their preferences and perceptions. They did not know that there were other visualization modes (See Table 2).

6. **Final Routine.** Next, they were told that two other display modes existed. They were asked to perform using each of the other two modes once (randomly ordered). Then, the moderator stated they would need to do the Test condition one last time, but they could

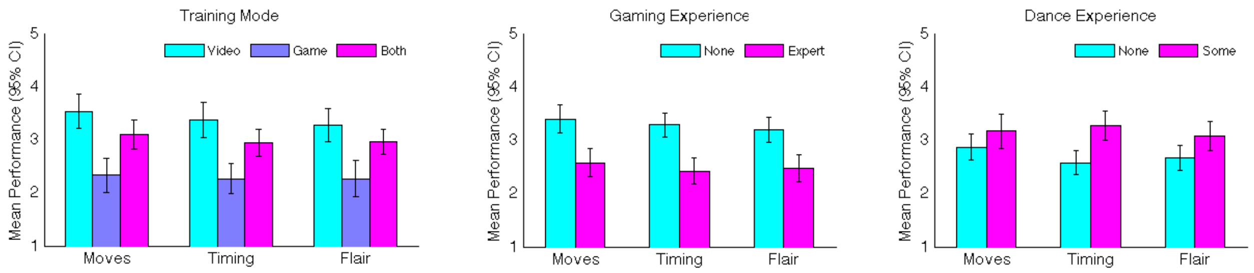

Figure 4: Post-experiment review in three categories: moves, timing, and flair. We had three human judges grade all of the videos anonymously on a scale from 1 to 5, with 1 being the worst and 5 being the best.

practice as much as they wanted using the training segments and the full routine on any visualization mode. We wanted to encourage the participants to practice more if they desired.

7. **Questionnaire 3.** Finally, they filled out a shorter questionnaire repeating some questions and asking their preference between modes. When complete, they were thanked and compensated for their time.

5. RESULTS

For our analysis, we divided users by initial mode, dance experience, game experience, IPAQ scores and PRMQ scores. These categories were then compared to several different performance metrics using between-subjects ANOVA. We also used non-parametric testing on our questionnaire data to look for significance.

5.1 Performance

We judged performance in three different ways. First, we took the mean of the initial three full routine attempts on Practice mode. These were performed before the players knew that any other visualization modes existed, giving an unbiased impression of their efforts. Second, we looked at the time the participants took to practice when given free reign during their unstructured section. Finally, we gathered a panel of judges to give an expert opinion of their performance post-experiment.

5.1.1 Scoring and Timing Data

We did not find any significance among participants related to their mean scores or their time spent in independent practice. For scoring, having no significance might imply issues with our implementation, or simply that visuals had no impact on actual performance. We calculated the total time spent between when they began unstructured practicing and when they finally began the final test. Participants prepared in a variety of ways: repeating on several different modes, practicing the training videos again, and sometimes standing still and remembering in their own head. For the most part, dancers and those with high memory scored better, and those with no dance experience took longer to practice. But since these results are not significant we can only make suggestions about what this might indicate.

5.1.2 Post-Experiment Review

In the last part of the experiment, the participants performed the dance one final time with no visuals and different music. This is a very difficult challenge, especially for novices with a short exposure to a dance. We wanted a human perspective in three categories: Moves (how accurately they remembered the moves), Timing (sense of rhythm), and Flair (how graceful and smooth their movements appeared). Our first judge had twelve years experience as a cultural dancer and three years as a ballet teacher. Our second judge had seven years experience focusing in ballet and tap. Our last judge had no dance experience but was an expert rhythm gamer who participated in *Guitar Hero* tournaments. We held individual judge sessions so no judge was aware of the others' scores.

The judges were first shown all routine and training videos. The participants were randomly sorted for each judge and the data was in centroid format so the participants were not identifiable. Scores were between 1 to 5 in the three categories (1 being worst and 5 being best). For each participant, we took the mean of the three judges for Moves, Timing, and Flair and compared against our participant demographics (See Figure 4). All three judges scored the contestants similarly despite their different backgrounds.

Those starting with Video Only had a higher score in Moves and Timing over Game Only. (Moves: $F_{2,27} = 3.859, p < 0.05$, Timing: $F_{2,27} = 3.66, p < 0.05$) While this division does not indicate what mode they preferred the most or practiced the most on, it does indicate that having trained on Video Only made participants more likely to remember moves and have good timing.

Non-gamers scored significantly higher in moves, timing, and flair. (Moves: $F_{1,28} = 5.044, p < 0.05$, Timing: $F_{1,28} = 6.803, p < 0.05$, Flair: $F_{1,28} = 4.554, p < 0.05$) There are too many other variables between gamers and non-gamers to make a concrete conclusion from this finding, but this may illuminate the difference between learning choreography and playing rhythm games, as discussed in our Introduction. Most of our expert gamers were familiar with dance games such as *Dance Dance Revolution* and *Pump it Up* but this experience did not transfer to their performance.

Dancers scored higher than non-dancers, but not significantly higher. (Timing: $F_{1,28} = 3.565, p = 0.057$) The timing results were almost significant between dancers and non-dancers. This could be expected since rhythm is an important part of dancing. Having professional dancers or participants with much more experience might have made a larger difference between these two groups.

5.2 Self-Reported Questionnaire

Our participants filled out two questionnaires (see Table 2). Questions 1 to 11 were graded using a 7-point Likert scale (1 for Strongly Disagree and 7 for Strongly Agree).

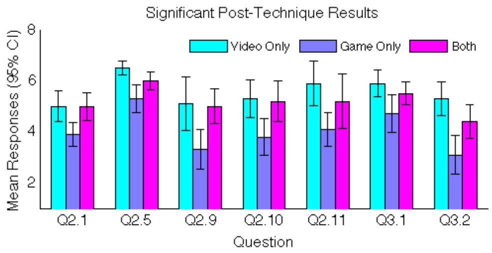

Figure 5: Significant results on the questionnaire.

We found the most significance by comparing the between-subjects condition of starting mode. The results are displayed in Figure 5. Our data suggests that Game Only mode was much less preferable to the other two modes.

- Game Only was significantly harder to understand than Video Only and Both.($\chi^2_2 = 6.858, p < 0.05$)
- Video Only was significantly more enjoyable than Game Only.($\chi^2_2 = 9.372, p < 0.05$)
- It was harder to tell what was wrong in Game Only over Video Only and Both.($\chi^2_2 = 6.640, p < 0.05$)
- Video Only was almost significantly more engaged than Game Only.($\chi^2_2 = 5.861, p = 0.053$)
- Video Only felt that their memory factored into performance more than Game Only.($\chi^2_2 = 7.290, p < 0.05$)
- Those who started on Game Only felt like they understood it better at the end of the experiment, changing the significance($\chi^2_2 = 9.1, p = 0.092$) The mean for Game Only participants rose from 3.9 to 4.7.
- Those who started on Game Only thought they performed better at the end of the experiment.($\chi^2_2 = 9.459, p < 0.05$) Those which started on Game Only rated their performing ability higher after seeing the other modes. (from 4.2 to 5.3).

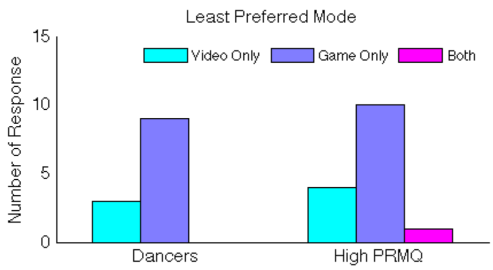

Figure 6: Least preferred display method.

6. DISCUSSION

For the other questions, we had found significant difference when we asked which interface they liked the least (See Figure 6). Dancers ($\chi^2_2 = 10.5, p < 0.05$) and those that scored high on the PRMQ ($\chi^2_2 = 8.4, p < 0.05$) significantly chose Game Only as their least favorite interface. This correlates with our other data. We believe that these two groups in particular had little interest in Game Only because they did not need the help of the timeline as much as non-dancers and those with a lower memory score. We found no significance between non-gamers and gamers, and no significance between IPAQ results. As outlined in our introduction, there were three main concepts which we wanted to investigate. Our results revealed interesting perceptions in these areas.

Self-representation should be minimal in order to keep the player motivated when they exhibit self-conscious tendencies. As reported in [33], users of exercise games often have low self-efficacy and tend to easily find reasons to be frustrated. This reinforces other reports that dancing often makes people feel embarrassed [3]. Most people felt better about their performance when they could not see themselves performing, even with no significant difference in their scores. However, while this increases the user's enjoyment, it does not help them learn. Users are likely to continue to have a negative opinion of their abilities if they take their skills out in public and receive poor feedback.

This implementation of preview visualization was helpful to some users, but not as desirable as the instructional video. We did not find significance in those with low memory or expert game experience. We were able to conclude that those with high memory dislike the Game Only mode significantly more than those with low memory, possibly because they found the additionaly elements unnecessary. Four out of the five participants that chose Game Only for best interface were in the low memory group, perhaps prefering it because of the preview method.

New interfaces have a learning curve which affected preferences. The majority of users preferred Both, then Video Only, then Game Only to a lesser degree. We theorized that those who had learned on modes including the game elements would be more confident in using them. Instead, many participants switched to a different mode when given the chance (6 from Video Only, 9 from Game Only, and 5 from Both). In reality, being thrust into a situation that is unfamiliar can lead to negative repercussions.

6.1 Dance on the Microsoft Kinect

When we ran our experiment, the Kinect had not yet been released. However, we were aware of its potential and that several companies were making body-controlled dance games. As best we could with our resources, we tried to emulate the visual display of *Dance Central*. We chose this title because there was more information about it prior to release, and the company Harmonix was already a successful producer of mimetic music games. After the Kinect launch, we were able to analyze the different interfaces chosen by three dance games for the system.

In January 2011, Game Developer Magazine published a post-mortem of *Dance Central* [9]. The dev team states their goal from the beginning was to teach real dance moves beyond fun gameplay. We faced many of the same challenges as their team did, such as building a training mode and creating a playback system for testing. Their experiences reveal many of the problems inherent in this genre. The small screen space dedicated to the player's form and the training mode which focuses on audio cue repetition imply their usability testing had similar results.

Konami, creators of DDR, released *Dance Masters* around the same time. Geared towards gamers, the moves are conveyed with icons and silhouettes. The player is projected

Figure 7: Three visual interfaces for dance on the Kinect. From top to bottom: Dance Central, Dance Masters, Dance Paradise.

into the virtual world as large as the dancers. This game has been given lower reviews because of its lack of a training mode and high difficulty [30]. A third title, *Dance Paradise*, resembles casual party games with its bright colors and stylized avatars. It does not include any player representation, only pre-recorded animations, which some found disappointing [24]. But of the three titles, this is the only one that allows simultaneous multiplayer.

These games contain the same visual elements as our prototype, but implemented differently depending on their target audience. Aiming for a specific player type should influence visual display decisions as necessary.

7. FUTURE WORK

While we were able to explore perceptions in dance games, there were some clear areas for improvement. First, our game lacks the professional quality of a commercial title. As noted in [17], fun and polish are important factors that many educational games lack. With the hardware we had available, we created a prototype that displays all the necessarily information, but with little finesse. It is very possible this added to the negative results regarding the Game Only visuals. The particle effects we implemented, while attractive, did not give a very strong sense of depth which made certain moves hard to see. In our write-in questionnaire data, many participants claimed that the human video is superior because of the nuances to his performance that are lost in the recreated digital version. This may be a problem even with the more detailed 3D avatars, and that may be worth exploring in the future.

We would also like to do a similar study which takes place over a longer period of time. With only an hour per participant, we could only detect short term results on simpler moves. Having the same users experience the system over several sessions would allow us to chart their progress. We also intend to bring in a cardio dance instructor to provide a better control condition for the next experiment.

8. CONCLUSIONS

Overall, our data implies that Game Only mode was not an adequate method of teaching dance. Even with the added benefits of real time feedback and self-representation, many users enjoyed using an instructional video only. Yet most users chose the Both mode as the best interface, therefore there is still merit in the additional dance game visual elements. We also found that memory ability, dance experience, and game experience were factors in both performance and preference.

The visual interfaces of a dance rhythm game are not yet a replacement for choreography instruction. Players need to feel sufficiently encouraged, and their own reflection should be minimized. Previewing upcoming moves is helpful, but not as helpful as a human trainer. In addition, the perception of performance was influenced by visual feedback even if the actual performance was no different. The goals of a dance training system are somewhat different from those of a casual full body rhythm game, and developers of dance games should try and make flexible products that cater to either preference, as casual players might eventually wish to grow into serious students.

9. ACKNOWLEDGMENTS

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APPENDIX

A. GAMES CITED

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2. *Dance Dance Revolution.* Konami (Arcade), 1999.
3. *Dance Masters.* Konami (Xbox 360), 2010.
4. *Dance Paradise.* THQ (Xbox 360), 2010.
5. *Just Dance.* UBI Soft (Wii), 2009.
6. *We Cheer.* Namco Bandai (Wii), 2008.