

Video Game Input Usability Test

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Executive Summary:

Interactive gaming technology's effectiveness is defined by several factors. Among these are the visual settings, the audio capacity, and the storyline. What is most important is how the player can interact with the system. The clarity of the player understanding his or her role is what determines the popularity of a specific program.

To determine this hypothesis, we opted for a simulation based on a controller that could offer a wide array of motions for the player to choose from. We opted for the Sony Play station 3, a seventh generation entertainment system that falls under the same category as the Microsoft Xbox 360 and the Nintendo Wii. For the sample gaming programs we chose Batman: Arkham Asylum and Infamous. Both received great critical acclaim from users and critics and also appealed to a wider audience base in their T for "teen" rating. These programs seemed suitable for our usability test.

Our test was to record and analyze the visible emotional responses that players have during the course of game play. We focused on the differences in body language, facial cues, verbal responses, and the frequency in glancing at the controller during play. During the predetermined course of 20 minutes we wished to see if that was the appropriate amount of time for a player to develop enough patience and muscle memory to successfully play a game.

Our test subjects were a varied group of individuals from the age range of 19 to 25, the target audience for the games. The median age was 22.7 years. We had six males and four females. Of the ten test subjects, the average gaming experience of the cohort was 8.9 years. Three individuals stated they never played games in their lives. Three stated that they never played alone. Four people said that they never engaged in

multiplayer experiences. Eight out of ten people said they never played either of the games.

Our observations included that the Batman game consisted mostly of single button commands while Infamous made use almost entirely of combination attacks. Also the necessity of on screen prompts was apparent, as those that did not have substantial experience were unsure of the game parameters. The visible responses that test subjects gave in footage included inexperienced individuals expressing disbelief, shifting of seating, muscle twitches and frequent glancing at controls. These responses were further heightened as the demo continued. The more experienced individuals expressed consistent attention to the screen and no differences in eye contact with the controller.

Introduction:

Regarding videogames, there are a number of factors that are integrated into their creation. In addition to the visual, audio, and story elements of a videogame, the interactive dynamics of a virtual world are one of the most crucial factors. If a player cannot understand how to interact with the system, then regardless of the other factors the videogame is rated as poor and will not sell well. That being said, for our usability test, we explored how the interactive elements (the control inputs) affected a player's ability to play through a videogame.

For this particular usability test, we chose to utilize Sony Entertainment's Playstation 3 videogame console as our interface distributor. We chose this console because both of the researchers owned one. The Playstation 3 (PS3) was first released November 17, 2006 in North America and has sold 41.6 million units as of September 30,

2010. The console itself utilizes a wireless controller for input functions as well as has access to wireless internet for the purposes of downloading demos, videogames, videos, etc in addition to allowing multiplayer online functionality.

The interfaces tested in this experiment were the videogames Batman Arkham Asylum and inFamous. Both games are for the PS3 and were released in 2009 within 3 months of each other. In addition, these games had free downloadable demos. The availability of a demo was important because by nature they provide a small demonstration of what the full videogame will entail. Also, for a demo to be effective, a player must be able to grasp the game mechanics within the short amount of time available on the demo (on average 20 minutes of game play). The final reason for the selection of these games was they provided a wide variety of controls to choose from to accomplish tasks and these controls made use of all of the available buttons on the PS3 controller on which there are 18 which includes the left and right analog sticks, the ability to press both sticks down, and counting each direction of the directional pad (D-pad) as a separate button. Given all of the available controls for these particular videogames, we evaluated the effectiveness of the game mechanics by how easy it was for our participants to pick up on how to play the videogames.

Another commonality between Batman and Infamous is they are both rated T for teen, which means the intended audience is persons 13 years old and up. In addition to the intended age group, both videogames are intended to be played in a home environment since they are both videogames for a console system, which means it is not a portable system.

For the usability test, we focused on the visible emotional responses that each subject displayed during the course of the test. The test itself consisted of participants playing through a premade videogame demo from the beginning to the end. The videogames would be played on the PS3 system and played with a wireless controller. During the conceptualization period we considered how test subjects would interact with the system and what the probable results could be. We focused on differences in body language, facial cues, verbal reactions and the frequency of looking at the controller while playing the game. We felt that these aspects would reveal how well the participants adapted to the controls of the videogames as well as the amount of patience taken to process the game's structure. When creating a videogame, ideally players should be able to pick up on the game mechanics within a short amount of time. That being said, our usability test looked at how well Batman and inFamous was able to accomplish that goal.

Methods:

For the purposes of this usability test, we established two stations to conduct our tests. Both stations were in a lounge type of environment with couches, chairs, and tables to establish an environment similar to that of a living room where the tasks for this usability test would be conducted in an average setting. In each station there was a large TV approximately 40 inches wide and connected to those TVs were Playstation 3 consoles that had wireless controllers. In addition to the testing equipment, in each room there was a video camera set to the right and a bit behind the participants to document how they accomplish the tasks asked of them. The cameras were adjusted so that the participant's face, hands, and the controller were visible as these were the areas that held the most interest for us. A final factor of the testing environment was a test administrator

was present during the test out of site and silent should there be any equipment issues and to observe the participants.

The test itself involved one task of the participants; they were asked to play through the demo of the videogame set up at the station they were assigned to until they finished it or until they gave up. The conditions for the test were they could not ask for help and the participants were encouraged to complete the demo to the best of their abilities before deciding to quit. In one station (station one) the demo was for the videogame Batman Arkham Asylum. At the other station (station two) participants were asked to play through the demo of the videogame inFamous. These videogames were chosen because they both a) had demos available for downloading onto the Playstation consoles, b) they both provided a variety of control options for the player to make use of, c) both games were rated T for teen, which meant that they were not overtly violent, bloody, gory, or had adult sexual themes, and d) both games contained onscreen prompts to help the participants work their way through the demo.

In total, we had 10 participants for this usability test. As each participant arrived to the testing site, they were assigned to either station one or station two alternatively until there were five participants for each station. After being assigned a station, each participant was asked to sit down and fill out a brief questionnaire regarding his/her demographic data and previous video gaming experiences. After filling out this questionnaire, participants were given a controller and asked to play through the demo at the station. Before each participant sat down, the consoles were set to the beginning of the demo so participants could start playing immediately. After participants completed or gave up on the task, they were provided with another questionnaire regarding their

thoughts on the difficulty of the controls for the videogame they had just played and their general attitude towards gameplay.

The participants in this study were all between the ages of 19 and 25, this age range falling into the target age population for these particular videogames. However, the participants do not represent all of the target population as the videogames are targeted towards those ages 13 and up. The participants themselves were chosen by availability though it was an open invitation to more people.

In our test we had ten subjects, six males and four females with an average age of 22.7. Of these test subjects, between the participants the gaming experience average is 8.9 years. Three individuals never played games in their lives. Three out of ten stated that they never or rarely played by themselves. Four out of ten said that they rarely or never played multiplayer games. Eight out of ten people in the cohort said they never played either of the games.

Figure 1: Hours Played per Week

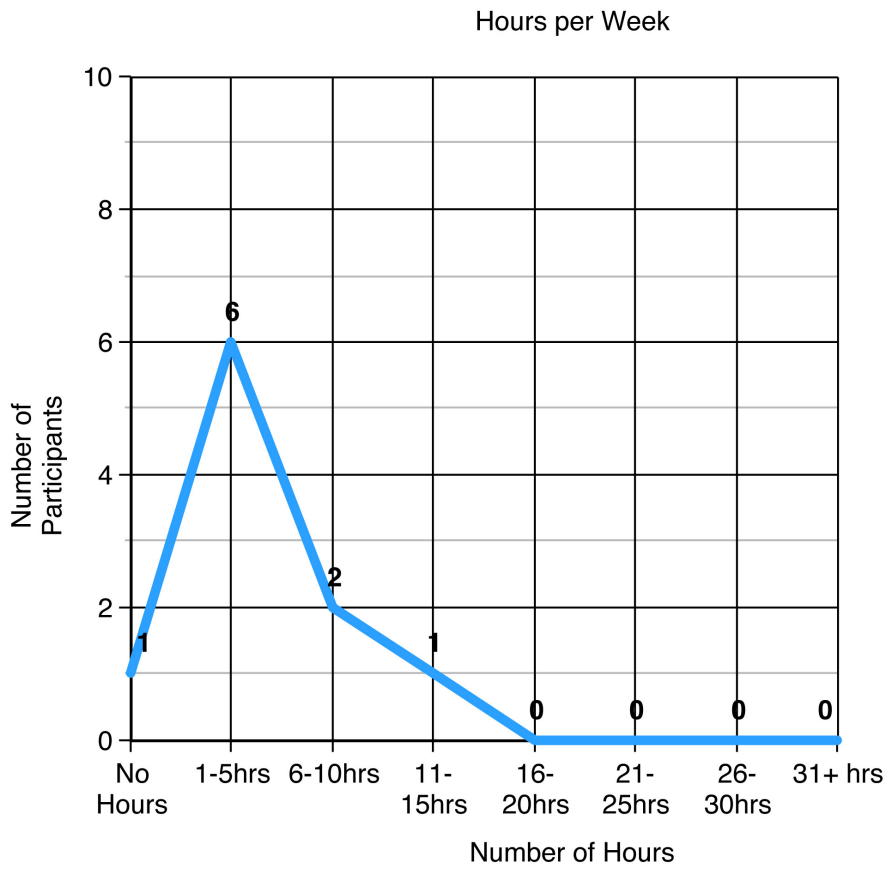


Figure 2: Videogame Consoles Participants were Familiar with.

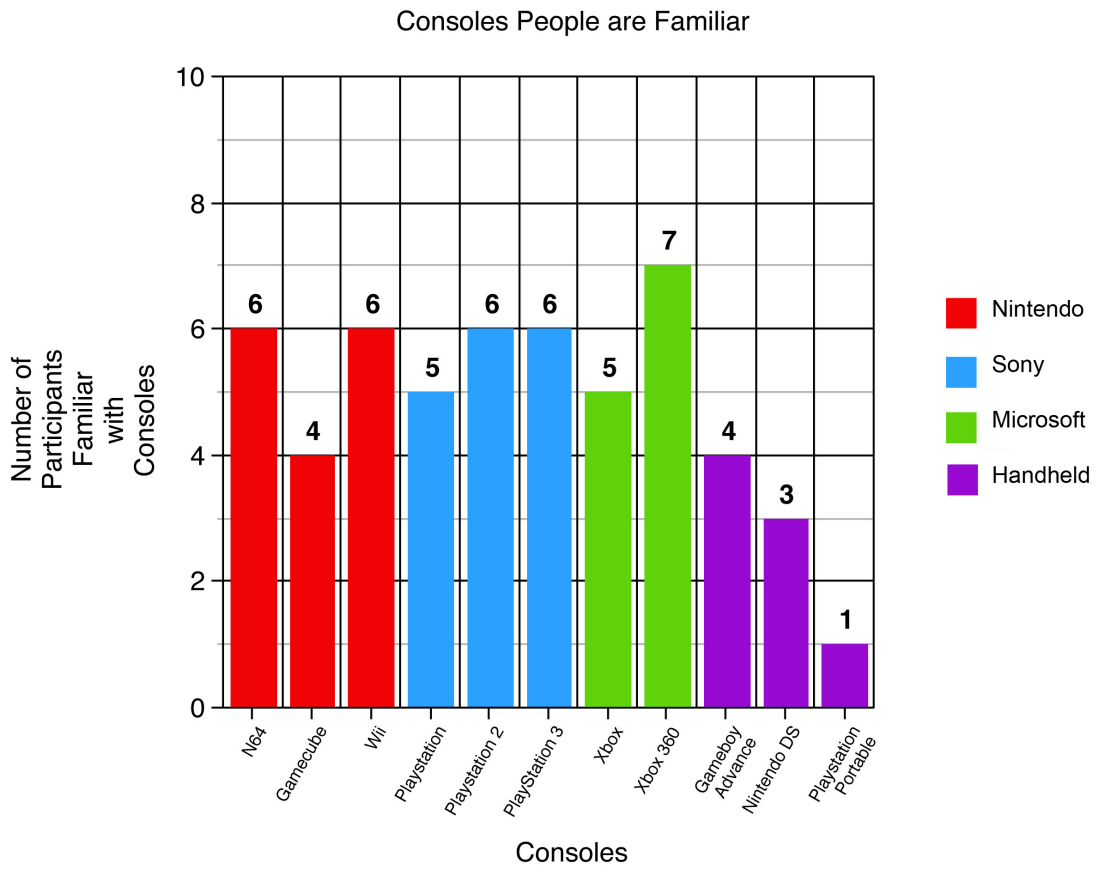
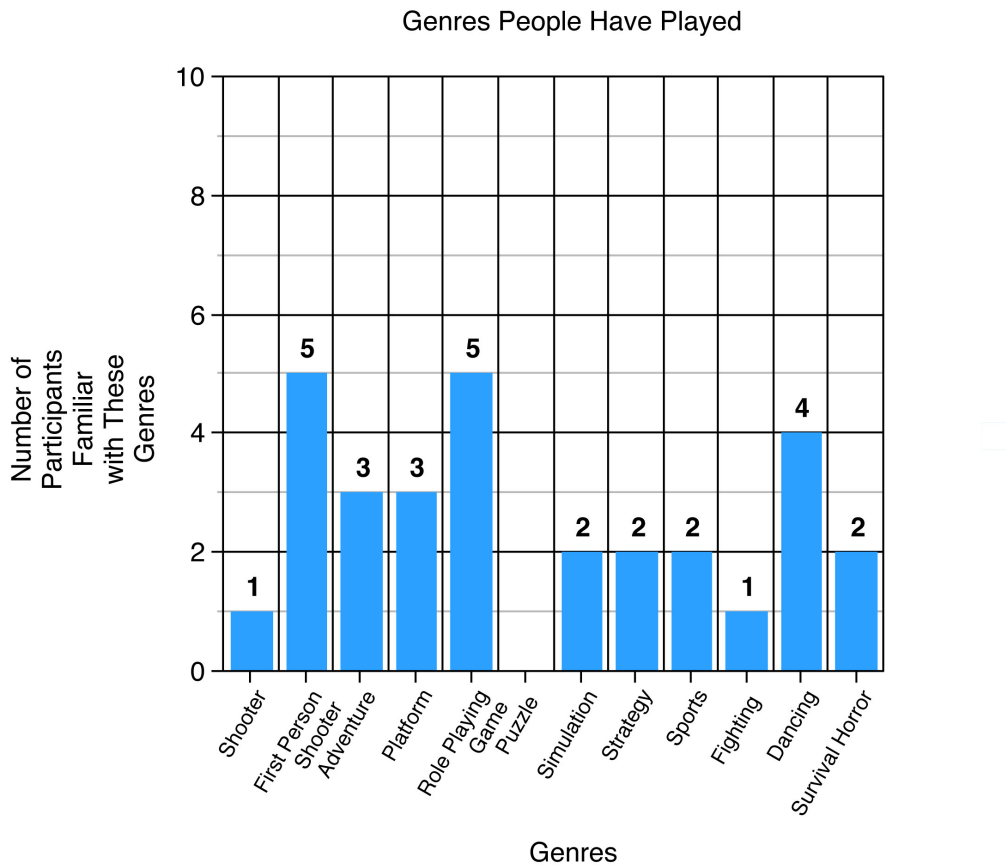


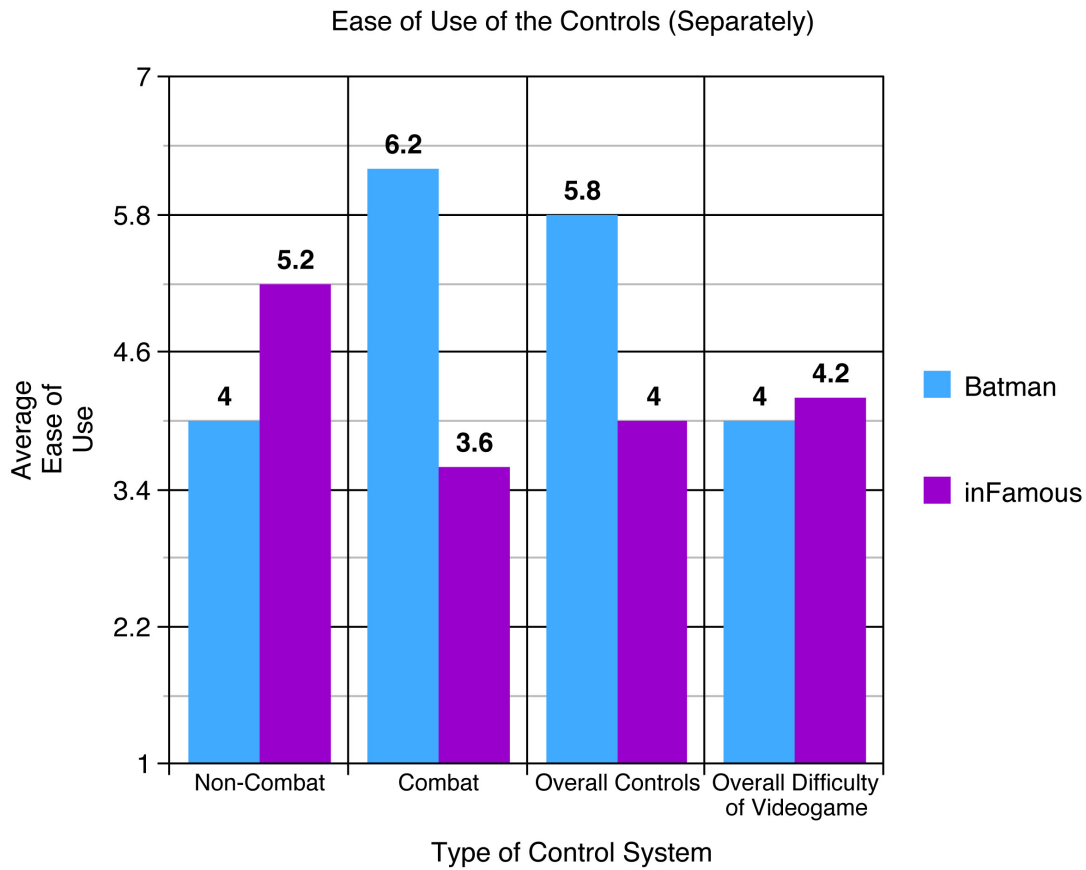
Figure 3: Videogame Genres Participants are Familiar with.



Results:

Based on the survey responses given by the participants, regarding combat mechanics, Batman was considered to have the easier set of controls to use with an average rating of 6.2 out of 7 compared to inFamous’s score of 3.6. For non-combat commands, inFamous was scored as less difficult with a rating of 5.2 versus Batman’s 4. In overall game commands Batman received an average score of 5.8 while inFamous received a 4. When asked to rate the difficulty of playing through the game, both Batman and inFamous received almost the exact same score 4 out of 7 classifying them as moderately difficult (Figure 4).

Figure 4:



Based on the open responses in the post-questionnaire, in general, the participants did not find the commands for either videogame too difficult to understand. However, their responses show that some individuals found it difficult to utilize the commands programmed for the shoulder button. This issue with the shoulder buttons resulted in inFamous users reporting more difficulty figuring out the buttons than the Batman users as combat for inFamous requires the use of shoulder buttons. Another issue brought up in the open responses was the participant's previous experience with videogames. Those who experienced difficulty while playing also stated that the controls were difficult because of their inexperience. Across the board, responses for both games noted that

controls that required more than one button to execute were more difficult to use than controls that were assigned to a single button.

From our recordings, those who had a greater amount of previous experience playing videogames tended not to move or talk during the usability test. Those with less experience tended to express their frustration towards the game with changes in facial expression, sighing, verbal announcements, and glancing back and forth from the controller to the TV.

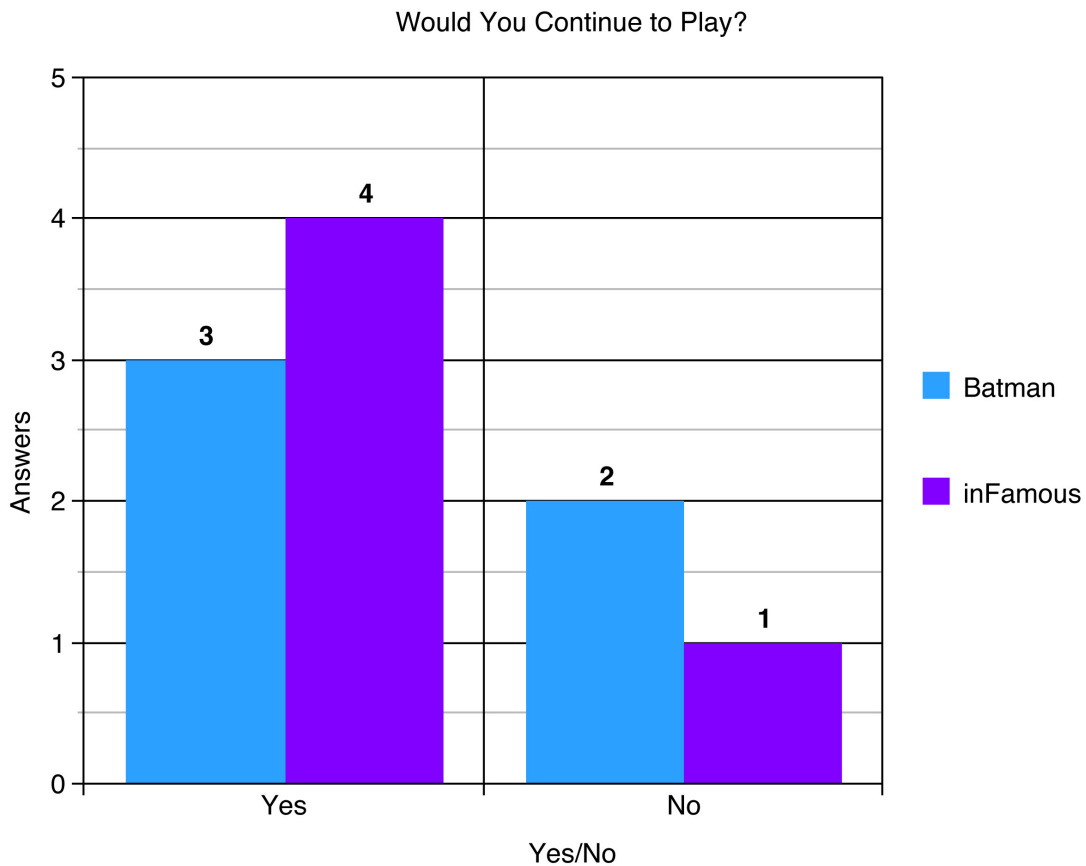
Discussion:

Based on these observations, we conclude that for both Batman and inFamous the button controls were easy to understand. However, the open responses show that the execution of those controls was more difficult. We argue that one factor lies in either the participants' lack of experience with these particular videogames and/or their inexperience with videogames in general. Another trend we teased from our results was only needing to press one button for a command was considered to be easier than a combination of buttons. In addition, from the videos, we gathered that participants were more likely to use the buttons they can immediately see; in this case the directional pad (D-pad), the face buttons, and the left and right analog sticks.

Despite the difficulties experienced in figuring out the controls, people still wanted to keep playing. They were motivated enough to get over the hump of the learning curve in order to keep playing. The more frustrated people got with the game the less they wanted to continue with the game. Difficult controls can be supplemented by other factors in order to sustain interest (Figure 5).

Based on these observations, we recommend when designing a game it is better to have as many of the basic commands as possible on the D-pad, face buttons, and analog sticks. In addition, controls are better received if they only require one button rather than two. Despite these recommendations, however, players are willing to push through challenging control mechanisms in order to play a videogame. Therefore, it is not necessary to only use one-button controls or only the buttons that are immediately visible to a player.

Figure 5:



Test Recommendations:

Should this test be redone, the following are some changes that would be made for better results. The first change is we would set up testing areas in rooms with closed doors. Unfortunately, one station could not be completely isolated. Another change is the post-questionnaire would contain questions regarding the helpfulness of on-screen prompts, which were available on both demos. In addition, some of the questions in the post-questionnaire would be altered for clarification purposes. A final change to add variety to the results would be to add more stations utilizing different consoles, but keeping the genre constant. In addition to this we may try having the participants play both videogames and have them compare the two.

Appendix A:

Video Game Input Usability Test

Age:

Gender: (Please circle one)

Male

Female

How many years have you played video games?

_____ Years

How many hours a week do you play on average? (Please circle one)

1 – 5 hours

6 – 10 hours

11 - 15 hours

16 – 20 hours

21 – 25 hours

26 – 30 hours

31+ hours

Please check off any consoles you are familiar with:

___ Nintendo 64

___ Gamecube

___ Nintendo Wii

___ Playstation

___ Playstation 2

___ Playstation 3

___ Xbox

___ Xbox 360

___ Gameboy Advance

___ Nintendo DS

___ Playstation Portable

Please check which genres you play the most:

___ Shooter: (Example: Space Invaders)

___ First-Person-Shooter (or FPS): (Example: Halo)

___ Adventure: (Example: Tomb Raider)

___ Platform: (Example: Super Mario Bros.)

___ Role-Playing Games (RPGs): (Example: Final Fantasy)

___ Puzzle: (Example: Tetris)

___ Simulations: (Example: The Sims)

___ Strategy/Tactics: (Example: Civilization)

___ Sports: (Example: Madden 07)

___ Fighting: (Example: Mortal Kombat)

___ Dance/Rhythm: (Example: Rock Band)

___ Survival Horror: (Example: Resident Evil)

How often do you play any video game by yourself? (Please circle one)

- Never
- Rarely
- Sometimes
- Often
- Always

How often do you play any video games with other people? (Please circle one)

Never
Rarely
Sometimes
Often
Always

Have you ever played Batman: Arkham Asylum before? (Please circle one)

Yes
No

Have you ever played Infamous before? (Please circle one)

Yes
No

Appendix B:

Video Game Input Usability Test

Please rate the ease of use of the button commands for Batman Arkham Asylum
(Example: Jumping)

Difficult 1 2 3 4 5 6 7 Easy

Where there any button commands that you found difficult to use?

What did you think about the button commands for Batman Arkham Asylum?

Why did you give your previous response?

Please rate the level of difficulty to manage the non-combat action that you performed in
the game.

Difficult 1 2 3 4 5 6 7 Easy

Please rate the non-combat button commands of Batman Arkham Asylum

Difficult 1 2 3 4 5 6 7 Easy

What did you think about the non-combat button commands for Batman Arkham
Asylum?

Why did you give your previous response?

Please rate the combat button commands of Batman Arkham Asylum

Difficult 1 2 3 4 5 6 7 Easy

What did you think about the combat button commands for Batman Arkham Asylum?

Why did you give your previous response?

Please rate the difficulty of playing through the video game?

Difficult 1 2 3 4 5 6 7 Easy

What was your general attitude towards playing Batman Arkham Asylum?

Would you want to continue playing Batman Arkham Asylum? (Please circle one)

Yes

No

Do you have any other thoughts about the experience?

Appendix C:

Video Game Input Usability Test

Please rate the ease of use of the button commands for InFamous (Example: Jumping)

Difficult 1 2 3 4 5 6 7 Easy

Where there any button commands that you found difficult to use?

What did you think about the button commands for InFamous?

Why did you give your previous response?

Please rate the level of difficulty to manage the non-combat action that you performed in the game.

Difficult 1 2 3 4 5 6 7 Easy

Please rate the non-combat button commands of InFamous

Difficult 1 2 3 4 5 6 7 Easy

What did you think about the non-combat button commands for InFamous?

Why did you give your previous response?

Please rate the combat button commands of InFamous

Difficult 1 2 3 4 5 6 7 Easy

What did you think about the combat button commands for InFamous?

Why did you give your previous response?

Please rate the difficulty of playing through the video game?

Difficult 1 2 3 4 5 6 7 Easy

What was your general attitude towards playing InFamous?

Would you want to continue playing InFamous? (Please circle one)

Yes

No

Do you have any other thoughts about the experience?