

# Exploring the differences in performance between gamers and non-gamers when completing everyday tasks viewed from a third-person perspective

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**Abstract.** Here goes the actual text of your abstract.

## 1 Introduction

The text in this will contain the following:

- What have I done?
- Why did I do it?
- The background to the subject
- What is new in this study
- References to earlier work such as [1], [2] and [3]
- Description of what third-person view is

**Purpose** To investigate if there is a measurable difference in performance between people whom have played games and people whom have not.

**Motivation** There is a constantly ongoing debate, [4], about whether playing video games produce negative side-effects or not. My study investigates one of the possible *positive* performance differences, such as few number of errors and low time consumption.

**Contents** A conclusive investigation of if there is a performance difference of playing video games viewed in third-person or not.

**Resources** The study has been completed using a custom-made rig consisting of a camera, video goggles, carbon fiber booms, 3D-printed parts, batteries and cables. References to earlier work will also be used.

Studies in writing have previously shown that most readers do not have any recognition about whether a book they have read was written in first- or third-person [5].

## 2 Method

Studies prior to this one have been done on the differences between gamers and non-gamers, such as [1] and [?], but none using hardware to simulate the outer-body, third-person view experienced in games (see Figure 1) in real life. Our method of choice was to construct a custom designed rig where subjects saw them selves, in real-time from a third-person perspective. In order to see the differences between gamers and non-gamers the test subjects had to complete the same three tasks, in three different configurations, three times in a row. After the subjects finished their participation, they were prompted to fill in a form regarding the experience and their prior experience with video games. The two groups, consisting of 16 subjects (8 in each group), were then benchmarked against each other to see which performed better. In the following subsections we will thoroughly demonstrate the different steps in our method and the tasks needed to concretize credible results.



**Fig. 1.** A typical third-person view in the game *Grand Theft Auto: IV*.

### 2.1 Task Design

In order for to get the required measurements with high credibility the tasks performed by the test subjects were carefully planed, prepared and executed. To get as wide spread results as possible a few different types of tasks had to be completed by the test subjects:

**Accuracy Task** The test subject rolled a ball in order to try and hit a target placed 10 meters away to successfully complete the task. This test measured

the participants precise accuracy- and ball control through the number of tries required in order to hit the target.

**Balance Task** The test subject walked, in their normal walking speed, on a thin straight line, measured at 10 meters long, placed flat on the ground for as far as he/she can. This test measured the participants balance skills through the distance covered before stepping outside the line.

**Movement Task** The test subject walks forward facing, in their normal walking speed, thorough a pre-planned course around 30 meters long, on flat ground marked with cones as precise as possible. This test measured the participants movement skills through the required time in order to complete the task.

Each task was performed *three times* by each participant, in three different configurations resulting in a total of nine results for each participant. Completing the task three times is done to get an accurate estimate of each of the participants performance. Completing the task in three different configurations is done to minimize the effects of individual differences amongst the test subjects. The different configurations were completed in the following order:

1. Wearing the rig, video goggles *off*.
2. Wearing the rig, video goggles *on*, viewed from *first-person*
3. Wearing the rig, video goggles *on*, viewed from *third-person*

The first configuration served as a baseline for how a participant performs when completing the task “normally”. The second configuration was used to compare against the first configuration in order to understand how much the video goggles and the first-person camera effected the participants performance in completing the tasks. Comparing the third configuration and the second configuration was the main focus of this study which was why the third configuration was the most critical one.

## 2.2 Rig Design

In order to simulate a game like outer-body experience and a third-person perspective, see Figure 1, without leaving the participants nauseated and the rig had to be as rigid as possible. The main parts in the rig were:

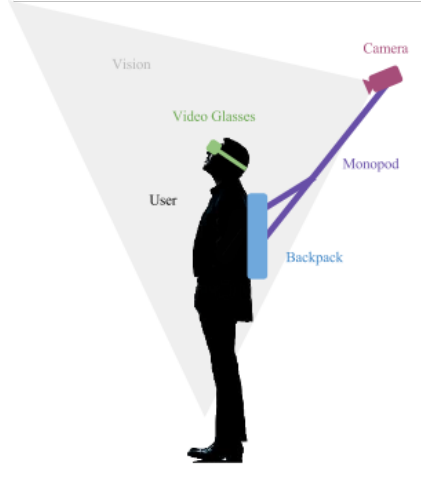
**Back Mount** A solid mounting foundation was constructed out of light weight and stiff materials such as carbon fiber, ABS- and polymorph plastic. As a base for the whole construction a snowboard back protector was used in order to connect the carbon fiber rods to the subjects back. Some 3D-printed parts where used to fasten the third-person camera to the subject.

**Third-Person Video Camera** The video camera used for the third-person view, constantly generating a live video stream, was mounted circa a meter approximately 45 degrees above/behind the participants head and slightly tilted downwards in order to frame the video correctly. Since a large field-of-view, a compact- and lightweight design are the most important requirements

for selecting the video camera a *GoPro Hero 3: Black Edition* was chosen, weighing 163 grams and a field-of-view at 170 degrees. The camera was connected to the participants video goggles using a 3 meter long, 4 pole, cable.

**Video Goggles & First-Person Video Camera** To cover the subjects eyes and view the live video stream a pair of specially designed video goggles were used. These goggles, a pair of *SkyZone SKY-01 V2*, have a field-of-view of approximately 30 degrees and a built in camera with a diagonal field-of-view at 120 degrees. This camera was used for the second step in each task, described in Section 2.1, to simulate first-person perspective.

The final result of what the rig looks like when put together correctly can be found in Figure 2.



**Fig. 2.** A detailed overview of different parts of the rig.

### 2.3 Survey Design

After each test subject finishes his/hers precipitation in the experiment they were prompted to fill in a form regarding the experience and their prior experience with video games. The survey included the following seven questions:

1. Do you consider yourself a *gamer*?
2. What was the hardest parts about the experiment?
3. On an average, how many hours per week do you spend playing video games?
4. How many years have you been playing video games?
5. In total, how many hours have you spent playing a game viewed from a third-person perspective?

6. If any, please name some of these third-person games you have played.
7. Did you find this experiment fun?

Each test subject also fills in details about name, age and sex so the results from the test data can be paired up with the survey. The details were later removed in the results in order to protect the test subjects anonymity.

### 3 Results

This section will cover the results from the tests that were done and;

- The results from the tests
- Diagrams comparing the results
- Results of earlier work
- Compare the performance between the different groups

### 4 Discussion

A general discussion about the study such as:

- What part/conclusion in my study could be biased/not reliable
- What does my results mean?
- Earlier work, how do they compare to my work and what does that mean?
- References to earlier work such as [1]

#### 4.1 Limitations and Drawbacks

Due to the time and budget limit there are several ways to improve upon my study, ways of doing this might include:

- Building a more rigid rig.
- Using a more comprehensive camera mounted on a stabilized gimbal.
- Using more sophisticated video goggles, such as the Oculus Rift.

#### 4.2 Conclusion

As a finish, and a complement to the abstract, the conclusion should contain:

- What to take out from the study
- How this study can be made more in-depth
- Future work

## References

- [1] Schmierbach, M., Boyle, M.P., Xu, Q., McLeod, D.M.: Exploring third-person differences between gamers and nongamers. *Journal of Communication* **61**(2) (2011) 307–327
- [2] Salamin, P., Thalmann, D., Vexo, F.: The benefits of third-person perspective in virtual and augmented reality? In: *Proceedings of the ACM symposium on Virtual reality software and technology*, ACM (2006) 27–30
- [3] Nakamura, R., Lago, L.L., Carneiro, A.B., Cunha, A.J., Ortega, F.J., Bernardes Jr, J.L., Tori, R.: 3pi experiment: immersion in third-person view. In: *Proceedings of the 5th ACM SIGGRAPH Symposium on Video Games*, ACM (2010) 43–48
- [4] Valadez, J.J., Ferguson, C.J.: Just a game after all: Violent video game exposure and time spent playing effects on hostile feelings, depression, and visuospatial cognition. *Computers in Human Behavior* **28**(2) (2012) 608–616
- [5] Hägg, G.: *Nya författarskolan*. Wahlström & Widstrand (2012)

## **A Appendix**

## Third-Person Tests

Thank you for participating in our study about *Exploring the differences in performance between gamers and non-gamers when completing everyday tasks viewed from a third person perspective*. Your information will be kept secret and anonymous once the scientific results are published, we collect them just so we can tell the different test subjects apart.

**Name**

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**Age**

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**Gender**

☐ Male    ☐ Female

### 1. Do you consider yourself a “gamer”?

*“Gamer” as in “Video gamer”*

☐ Yes    ☐ No

### 2. What was the hardest parts about the experiment?

*Circle as many as you like and/or add your own*

The tasks themselves

The third-person view

The first-person view

Unclear instructions

The resolution in the video goggles

Trusting in the rigs design

**Other hard parts?**

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*Survey continues on the back!*

**3. On an average, how many hours per week do you spend playing video games?**

*Circle the number closest to your answer*

0      0,5      1      1,5      2      2,5      3      4      5      7      8      9      10+

**4. □How many years have you been playing video games?**

*Circle the number closest to your answer*

0      0,5      1      1,5      2      2,5      3      4      5      7      8      9      10+

**5. In total, how many hours have you spent playing a game viewed from a third-person perspective?**

*Circle the number closest to your answer*

0      1      3      5      10      15      20      25      30      40      50      60      80+

**6. If any, please name some of these third-person games you have played:**

*As many as you can think of*

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**7. Did you find this experiment fun?**

☐ Yes      ☐ No