Usability Lab Play Testing and Usability Results Analysis Assessing Decision-Making Skills in Gamers vs. Non-Gamers Using Horror Video Games

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Hypothesis

Decision making skills under duress/fear using video games from the horror genre. Gamers vs non gamers.

According to many news articles and research papers, gamers on average are considered better decision makers due to the nature of video games and how they engage sections of the brain that allow them to make better decisions/solve problems. We intend on further investigating this study by subjecting them and non gamers to video games, particularly the horror genre, to see if it still correlates with data. Horror video games are far from the conventional standards of gaming, as they have been made in a way to subject the players to situations of high stress, fear, duress, and anxiety. With these emotions running high, we would like to find out some data conducting tests on four participants, two regular gamers and two people who consider themselves non-gamers.

Who did we play-test with?

- **Abhijit Pual: Male, Age 23. (Non Gamer) – NEU Grad student, Rishi's roommate.**
- **Zareen Thomas: Female, Age 23. (Gamer)– NEU GSND Grad student, classmate and friend.**
- **Kalpan Agarwal: Male 25 (Gamer)– NEU GSND Grad student, Ajith's friend.**
- **Adithya Narayan: Male 23 (Non Gamer)– NEU CS Grad student, Rishi's friend.**

Lit Review Analysis

For our game, we chose Visage (developed by SadSquare Games), an indie horror game. We went with a game that is considered relatively unknown in the mainstream gaming circles. We also had a few prerequisites for the games we chose.

- It had to be a game where the player solves puzzles. This pertains to the ability to complete tasks under feelings of fear and stress.
- No combat mechanics, as combat mechanics override the emotions that usually come with feelings of horror and stress. Also, many people agree that with the ability to fight danger back, it removes any emotions associated with horror. Helplessness is a major factor in contributing to the horror experience.
- It should be unknown, as familiarity with the game removes from the experience. Feelings of unfamiliarity, the unknown, tend to amplify the experience.

Lit Review Analysis

According to our Literature Reviews, *(Anxiety and Decision-Making by Catherine A. Hartley and Elizabeth A. Phelps*) the paper attempts to investigate the role of anxiety and fear in daily decision-making, especially for clinically anxious patients. Anxiety may be experienced in the absence of a direct physical threat, and typically persists over a longer period of time. Fear and anxiety share many common physiological properties, however, they may also be distinguished fear responses are elicited by specific reactions, situations, or environments, and tend to be short-lived, decreasing once a threat has lessened. However, anxiety is commonly conceptualized as a state of sustained fear. Decisions are made in an attempt to avert risks, and these are determined by the amygdala, insular cortex, and prefrontal cortex sections of the brain The amygdala is a key component of the brain systems mediating fear and anxiety and their cognitive effects. The prefrontal cortex is critically involved in the control of fear, and decreased prefrontal engagement is observed in trait and clinical anxiety. This paper proposes that the investigation into this shared architecture of the brain with regard to these feelings can bring out more predictable behaviors in people when subjected to these feelings.

Lit Review Analysis

Horror Game Design – What Instills Fear in the Player?

Tobias Arnell and Nikola Stojanovic

This paper serves to prove that level design is not the most influencing aspect in terms of bringing out feelings of panic, fear, and stress, but the combination of many aspects of game design that should complement each other brings out a horror experience. The buildup of the main creature, the ambient sounds, darkness, and the feelings of vulnerability with the prospect of having to face an unknown entity stalking the player are what brought out the most amount of fear in the participants. Participants would generally avoid areas in the game that would present an obvious danger.

The Safe Room Effect:

Imagine you are playing a game where you are constantly low on supplies and have very few safe/save points. And suddenly you are confronted with a monster/spirit who can kill you and erase everything you have worked for since your last save game. So you run in search of the nearest safe room and when you find it, you feel this tremendous sigh of relief. After experiencing a rush of adrenaline and escaping the danger , the accompanying release of dopamine relieves our tension and relaxes our muscles.The main theory used to describe this cycle of tension and relief is Zillman's (1983) Excitation Transfer Theory. This theory relies on effective horror tools to terrify us and then make the rewards all satisfying.

The Fear Effect:

While the brain area known as the amygdala is commonly associated with processing fear and horror, the hippocampus – an area associated with recalling our memories – is also involved. This indicates that during moments of suspense (aided by eerie music), our imagination fills in the blanks of what we should be afraid of and this can be fuelled by our own personal fears and trauma. Research shows that sound design in horror can be just as influential in invoking fear as watching horror unfold on the screen. This can help us craft deeply personal connections to horror games if we volunteer our imagination and experience while playing.

Scary Game Findings : A Study of Horror Games and their Players

- Actual combat is not as scary as the implied threat of combat
- Cutscenes are generally not sources of fear for most players. (It seems that players find cutscenes to be a relief from the game!)
- Repetition of failure in the same level fails to retain any fear or scared reactions
- Casual players are more easily scared than core players, but tend to enjoy the game more.

The findings were that core players were far less frustrated with the game than casual players and it seems that core players were more scared and had more jump scares and jump reactions when compared to casual players. But at the same time core players were quicker to progress through the levels (which is kind of expected), whereas casual players found the levels to be confusing and had a hard time finding their way through the game.

In-Game Conditions:

- Who completed the task faster (who reached an area faster) in the game overall?
- Who spotted relevant environmental key aspects under fear? (eye data)
- Average Heart rate.

Instruments Used:

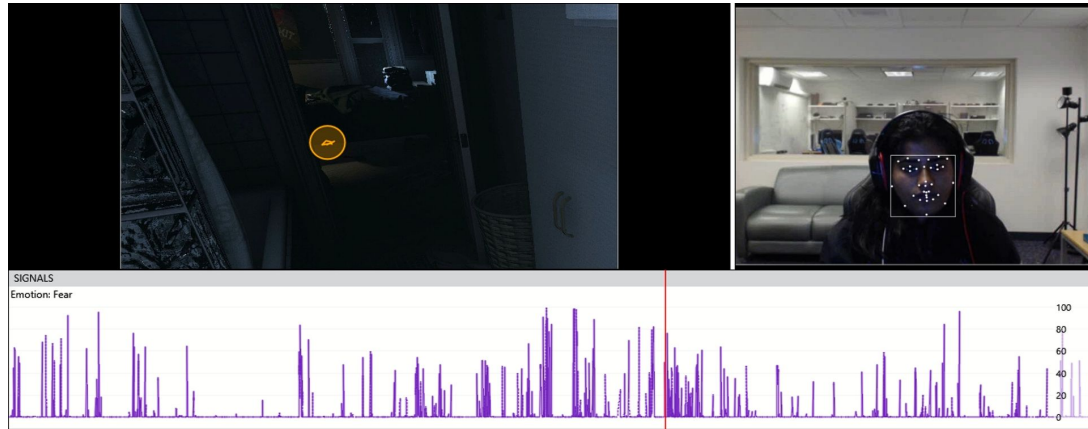- Gaming Desktop

- **Tobii Eye Tracker**

- **E4 Heart Rate Sensor**

Comparison of Results:

Name	Participant 1 (Non Gamer)	Participant 2 (Non Gamer)	Participant 3 (Gamer)	Participant 4 (Gamer)
Who completed the task faster overall? (In minutes)	27 Minutes and 45 Seconds	29 Minutes and 54 Seconds	24 minutes and 30 Seconds	29 Minutes and 33 Seconds
Who experienced most moments of fear?	26 Spikes of Fear	25 Spikes of Fear	3 Spikes of Fear	42 Spikes of Fear
Highest Heart rate	93 BPM	96 BPM	85 BPM	103 BPM

Participant 1's Fear Data
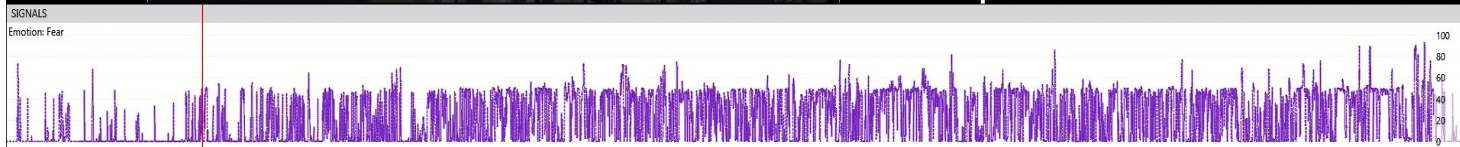
Participant 4's Fear Data and Heart Rate
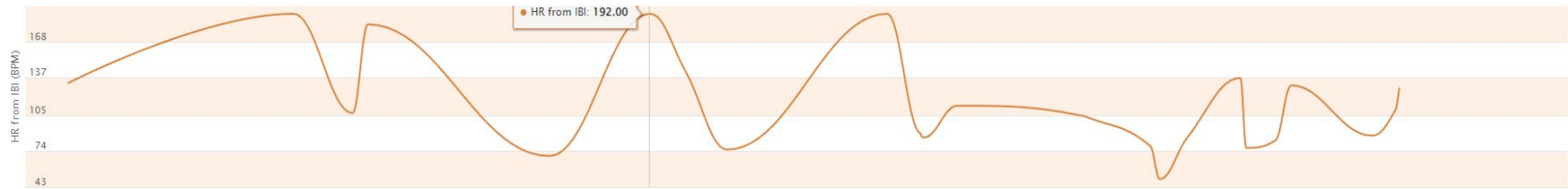
Participant 3's Fear Data and Heart Rate
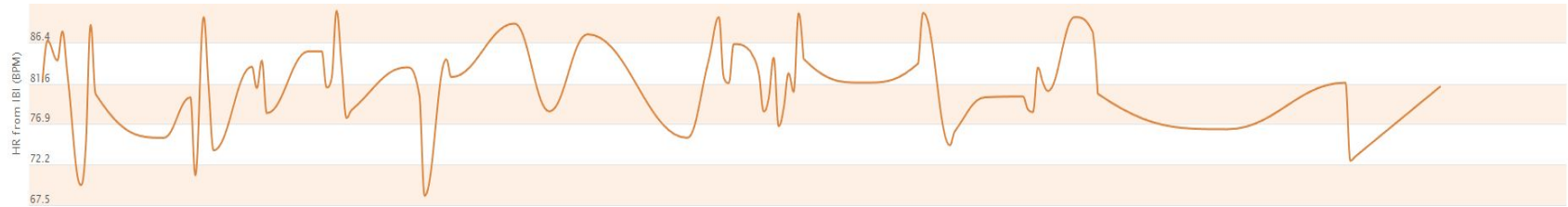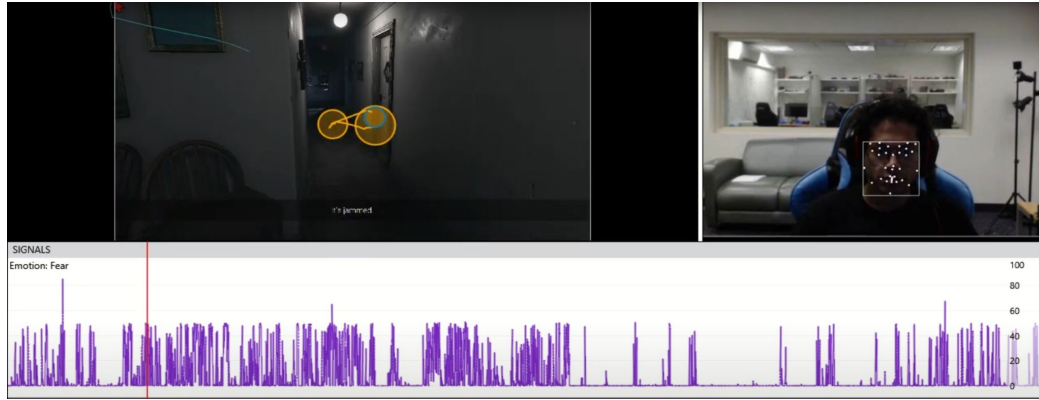
Participant 2's Fear Data and Heart Rate
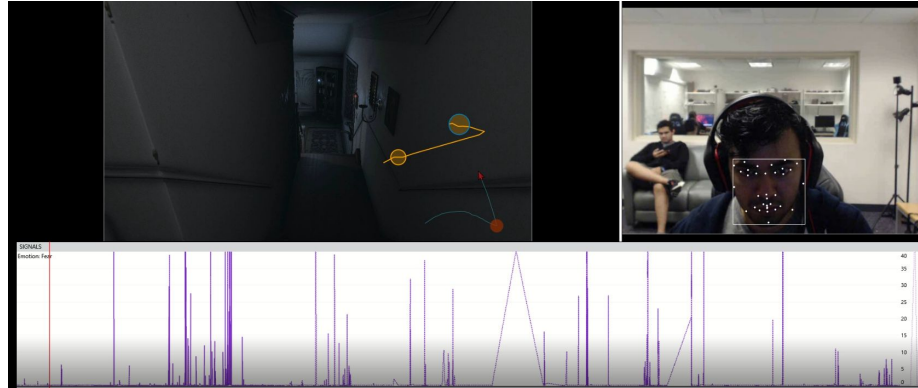
Who Spotted Key Aspects In-Game Quicker under Fear?

ID	Participant 1 (Non gamer)	Participant 2 (Non gamer)	Participant 3 (Gamer)	Participant 4 (Gamer)
Spotted Light Flicker	3 Seconds	4 Seconds	1 Second	1 Second
Found a Note	2 Seconds	3 Seconds	1 Second	1 Second
Spotted the Teddy Bear	6 Seconds	5 Seconds	3 Seconds	3 Seconds
Spotted the TV	2 Seconds	2 Seconds	1 Second	1 Second
Spotted the Ghost in the TV	5 Seconds	4 Seconds	2 Seconds	2 Seconds
Spotted the Lighter	3 Seconds	4 Seconds	1 Second	2 Seconds

Observations

Play-test 1

Participants: Participant 1 (Non Gamer) and Participant 4 (Gamer).
Takeaway:
P4 spotted Key elements quicker whereas P1 was considerably slower. This can be attributed to the fact that P4 is a seasoned gamer. Also P4's experience in horror games also gave her the edge. P1 completed the task faster and experienced lesser fear overall.

Play-test 2
**Participants: Participant 3(Gamer) and Participant 2 (Non-Gamer)**
Takeaway:
P3, a seasoned gamer and veteran of horror video games, experienced what we would consider almost no fear at all, (only a handful of significant fear spikes) and played the game like as if it were any other regular game. On the other hand, P2 experienced significantly more fear and compared to P3, was slower at almost all aspects of the test.

Survey Responses

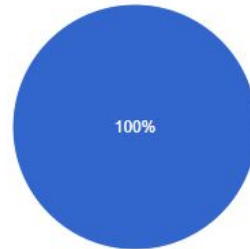Would you consider yourself a gamer or non-gamer?

4 responses
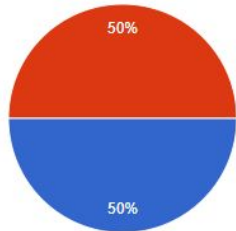
- Gamer
- Non-Gamer

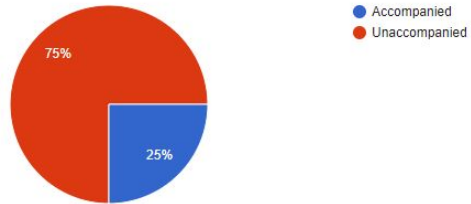Do you enjoy the horror genre in movies/video-games?
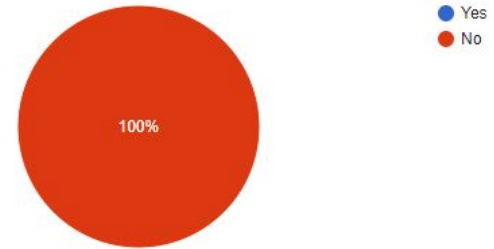
4 responses

- Yes
- No
- Maybe

Survey Responses

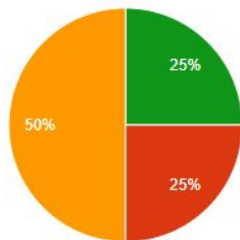How do you prefer to play horror games?

4 responses

- Accompanied
- Unaccompanied

75%

25%

Have you played "Visage" before?

4 responses

- Yes
- No

100%

Survey Responses

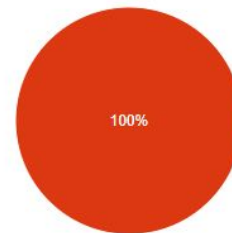## How scary would you consider this game to be?
4 responses

- Not scary at all.
- Sporadically Scary.
- Occasionally Scary.
- Regularly Scary.
- Frightening

If you found the game to be scary, how likely would you want to continue playing?
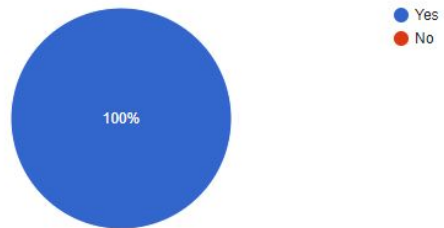4 responses

- Unlikely
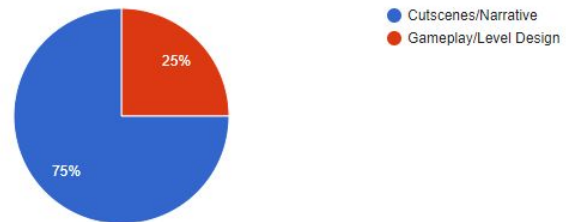- Very likely

Survey Responses

Do you feel the game's fear factor would reduce if there were combat mechanics?

4 responses

- Yes
- No

100%

What was the most frightening aspect of the game?

4 responses

- Cutscenes/Narrative
- Gameplay/Level Design
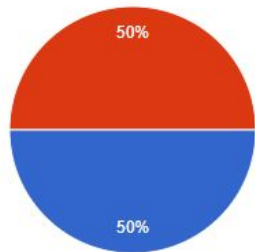
25%

75%

Survey Responses

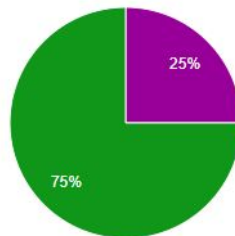Were the mechanics easy to grasp?

4 responses

- Yes
- No

50%

50%

Based on your experience playing "Visage", how would you rate your decision-making skills? (1-poor, 5-very good)
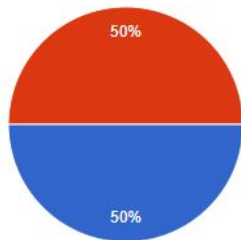
4 responses

- 1
- 2
- 3
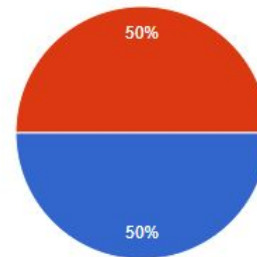- 4
- 5

25%

75%

Survey Responses

Was it easy to spot in-game objects/clues?

4 responses

- Yes
- No

Were the objectives easy to understand/complete?
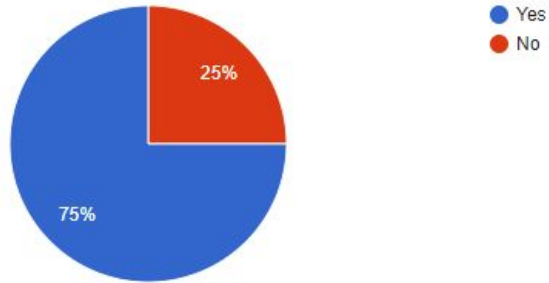
4 responses

- Yes
- No

Survey Responses

Do you think a survival horror game affects your decision-making skills?

4 responses

- Yes
- No

75%

25%

Conclusion

We tested a total of 4 participants, 2 gamers and 2 non gamers and according to the survey results ;

1. 75% of the participants preferred to play the game alone whereas one participant wanted to play the game with company.
2. We got a mixed response on the scare level of the games from the participants ranging from sporadically scary to regularly scary from the survey, but according to the data we collected from the Fear graph, 3 out of 4 participants experienced moments of fear and continuous anxiety, while one did not experience any of these emotions.
3. All participants wanted to continue playing the game even though they (except one) were genuinely scared, this coincides with one of our articles that people seek out horror games for the thrill.
4. One of the participants was a seasoned gamer and a horror game enthusiast and there weren't many scare reactions from him although he wanted to continue playing the game as he liked it.
5. Participants also agreed that if the game had combat mechanics, it's fear factor reduces. This also agrees with one of our Lit Reviews were in the study people agree with this fact.
6. 75% of the participants felt that the cutscenes were scary rather than the levels, this contradicts one of our papers in which it's findings state that people felt that the cutscenes were much less scarier and a relief from the levels.
7. In conclusion gamers and non gamers alike pointed out in the survey that their decision making skills were affected when playing a horror game as opposed to a regular game. According to many research papers (example: Video game players have improved decision-making abilities and enhanced brain activities Timothy Jordan Mukesh Dhamala), the gamers should have made objectively better decisions, but both playtests brought out completely different results. The inclusion of fear and anxiety as an aspect in the game represents a shift in the paradigm and contradicts the general consensus. Fear and anxiety seem to almost level the playing field.