**Viewing media in stereo 3D produces a stronger emotional response than in equivalent 2D view**

Statement of the problem

The aim of this study is to determine if the use of 3D technologies, such as VR, in various media will result in a greater emotional response. This emotional response can be measure using heart rate, skin temperature and brain activity. The results of this research could be used to shape how media is best viewed. The research could be particularly useful in the gamification of training for jobs.

Hypothesis

My hypothesis for this research is that those who experience media using 3D technologies will experience a greater heart rate, skin temperature and brain activity than those who experience the same media using 2D technologies. I believe that this will be due to the increased immersion that 3D technology offers us. This makes it easier for us to empathise and form a connection with the provided media and thus form a greater emotional connection.

Theoretical background and literature review

The current theory indicates that “emotional experience during film viewing did not differ between 3D and 2D groups” (Ding, et al., 2018), however, the research that concluded this to its results in the form of “self-reported emotional arousal or satisfaction”. Another separate study also come to the same conclusion using the same method of data collection (Ji, et al., 2013). I think that this is a pretty unreliable way to measure this as there are lots of facts that could be considered by each participant that took part in this study that could contaminate the results. For example, social implications could cause a participant to not be completely truthful in how they felt when viewing the media. This method of data collection can also be unreliable in the way that emotional arousal or response can be a very subjective thing, I think that for the conclusion made to be truly sound a more scientific approach should be taken, with concrete measurements such as electrocardiogram (ECG) and electroencephalogram (EEG).

Method and design

The method for answering the research question and testing my hypothesis will be as follows:

1. 2 groups of 10 – 20 participants will be formed.
2. Each participant will have a base ECG and EEG taken. 3 base tests will be taken with a 3-minute interval to find an average base for each participant.
3. The participant will then watch the media designated to them, via random selection, while having their ECG and EEG monitored for changes.
4. After the viewing is completed the participant will be separated from those who have not yet viewed the media to avoid contamination of results.
5. The average overall change in the participants ECG and EEG will be calculated and recorded.
6. Steps 2 – 5 will be repeated for each participant.

The equipment required is as follows:

* ECG monitoring equipment
* EEG monitoring equipment
* An Oculus Rift/Oculus Quest
* A computer and monitor
* Sanitation equipment
* PPE

Participants will be recruited through a volunteer process or if required a monetary incentive will be provided.

There is little to no physical or ethical risk to participants. The only real risk is Covid-19, which we will attempt to mitigate by carrying out cleaning of all equipment after each participant use, as well as wearing PPE.

Data analysis plan

To visualise the data gathered 2 scatter graphs will be used, 1 for the participants that view the media in 3D and the other for those that viewed the media in 2D. along the Y-axis will be the change in ECG and EEG, each defined by different colours, along the X-axis will be the participant number. A sample size of 20 – 40 overall participants will be used to account for any potential anomalies, and participants that have view the media will be separated from those who have not to avoid result contamination.

Conclusion

The results of this study could affect how media is viewed; in research this could also change how some experiments are carried out. For example, if 3D media is found to elicit a greater emotional response then 3D media might be used in experiments where the research goal is to determine with animal elicits a greater reaction.

# References

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