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PSY201: Section B — Fall 2016
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Homework Assignment #2
Sensation/Perception & Mental Imagery

Consider a video game that you have either had personal experience playing, or are otherwise very familiar with. You may choose to draw from other experiences beyond games (e.g., film/TV, books, social media, etc.)

1. Describe the characteristics of **automatic processing** given your chosen example.

Automatic processing occurs when you do not need to pay that much attention or deliberately put in effort to control a process. Simply put, automatic processing occurs without us giving it any thought. An example of automatic processing that I have personal experience with is the ability to use an X-Box gamepad without thinking about it. Even with a game that I have not played before, I do not have to think about how to use an X-Box gamepad or where the buttons are located because I am experienced with this controller. Playing games using X-Box controller is an automatic process for because I no longer have to put any extra thought into what I am doing when I am using it.

1b. Identify 1-2 factors likely to promote the use of automatic processing, and why.

Factors that might promote the use of automatic processing include one's experience with doing something and repetitiveness of the task. Like in the X-Box gamepad example above, because I have experience using this gamepad I no longer have to think really hard about what I'm doing, lowering the cognitive load of the task. Likewise, even with a new task, repetition of a task can promote automatic processing be rapidly establishing patterns that can help to establish patterns. A repetitive task can be learned quickly and can lower cognitive load due to not doing anything different, thus making the task become an automatic process.

2. What are the advantages of using fMRI over other **brain imaging techniques**? In your opinion, is there a "best" brain mapping technology that can be used to study user experiences with media?

The advantages of using an fMRI over other brain imaging techniques has to with how much less invasive an fMRI is over other brain imaging techniques. X-rays, CT, and PET scans all require the use of radiation while an fMRI does not. However, one big disadvantage with an fMRI is that it can only capture a clear image if the scanned person stays completely still. This means an fMRI would be useless for VR brain mapping because a user would need to have freedom of movement in order to play. The "best" brain mapping technology might be different on a case-by-case basis, but I believe a CT scan might be the best considering it allows for detailed images inside the body that is quick, painless, and generally non-invasive. It is my hope that this procedure would give results that are more accurate because they do not break the

immersion of the person being scanned as much as the other procedures might.

2b. What are some disadvantages of brain-imaging techniques in general?

A major disadvantage of many brain-imaging techniques is the requirement for radiation, which can increase the risk of cancer or cause kidney problems if the radiation comes in the form of an injection. Brain imaging techniques are also expensive and require the use of large and invasive machinery that can affect the outcome of the results if the person being scanned cannot help but be thinking about the procedure at the time.

3. How are **mental images** like perception? In what ways is it different than perception?

Mental images are a lot like perception but are definitely not perception. A mental image is a representation of something in a person's mind. A mental image might take the form of something that can be perceived, but it does not necessarily have to. For example, I can use perception to look at a dog using my sense of sight. However, without a dog anywhere near me I can create a mental image of a dog in my mind. Perception requires a dog nearby for me to see, hear, etc., while a mental image does not need any stimulus at all.

4. With regard to accuracy of task completion as a way to record behavioral data, define a "**ceiling effect**". Use an example not discussed in class.

A ceiling effect affects the accuracy of test data by creating little variance between the data due to things being too easy. An example of the ceiling effect could be the data you receive from a group of gamers testing to how well your game does with casual gamers. If the level that you use to test is too easy when compared to the rest of the levels of your game, then your results will make it seem like your game is casual gamer friendly when it is not.

4b. Define a "**floor effect**". Use an example not discussed in class.

A floor effect is a lot like a ceiling effect, affecting the accuracy of test data by creating little variance between the data. A floor effect differs from a ceiling effect by making things too hard. Using the same example, a floor effect would be testing how well your game works for casual gamer, but giving the testers a level that is much more difficult than the rest of the levels in the game. The result would be little variance because the level is too difficult to beat and does not accurately represent the difficulty of how the game really is as a whole.

