Effects of alzheimer's on response times

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There are many advances in science that has allowed us to understand, cope and in some cases treat certain diseases of the brain. However, there is much we still do not know about many of them. Alzheimer’s would be one of these disorders. The text states that Alzheimer’s is defined as a persistent, degenerating disorder that inhibits the brain’s cells or neurons and thus resulting in memory loss, language skills and rapid changes in behavior (Kalat, 2012). This usually occurs in the older aged population, around the age of sixty-five and isn’t considered to be a normal part of the aging process. According to an Alzheimer’s organization website, a person is diagnosed with Alzheimer’s every sixty-seven seconds and that there are currently more than 5 million Americans that have this disease (Help End Alzheimer’s, n. d.).

One of the issues of having this disease deals with enumeration or recollection of numbers by counting. The text states that individuals with Alzheimer’s cannot recall learning certain skills i. e. golfing and are often surprised when they do well (Kalat, 2012). This research in this article is important because it shows how well a person with Alzheimer’s can quickly recall how many numbers are in a certain area just by looking at it. This is a simple experiment in that it will be easy to measure the reaction times and the task of counting isn’t that complex in comparison to golfing. According to the article, individuals that have Alzheimer’s sometimes have difficulty with

visual enumeration. This means that a person with Alzheimer’s has difficulty counting visual numbers or tracking down a number in a specific area, i. e. looking for number 42 in a numerical list of 1-100. This study is unique in that finding the reaction time difference between older adults that have Alzheimer’s and those that don’t would be a quantifiable aspect and gives more proof to the damage that the brain receives from this disease. The researchers in this article are doctors Maylor, Watson and Muller and they studied the subject of visual enumeration in patients with Alzheimer’s in the year 2005. The hypothesis of the study was that the participants’ with Alzheimer’s would have a significant increase in response time in counting numbers, subitizing numbers(readily knowing a number just by looking at the amount of figures in a picture) and finding numbers in comparison to older adults that did not have Alzheimer’s (Maylor, Watson, and Muller, 2005).

The study was conducted using participants from a resident home that specialized in the care of people with dementia. These participants were already diagnosed with dementia by professional health providers (Maylor, Watson, and Muller, 2005). There were a total of 12 participants whom had Alzheimer’s and their average age was 81 years old with 4 men and 8 women in the study. The other participants had an average age of 79 and only 8 participants; with only 3 being men and 5 were women. The researchers also gave the participants a Mini-Mental State Examination or MMSE, and the control group scored higher than the Alzheimer’s participants; 17. 3 was the average for the Alzheimer’s participants and 29. 4 was the average for the control group (Maylor, Watson, and Muller, 2005).

Last, all of the participants were voluntary and did not receive any payments for their participation. The researchers used a laptop to be used as a visual for the participants. The laptop also measured response times (RT) and synched the displays. The participants utilized the spacebar key on the laptop as the response button. They put the screen at eye level with a distance of 60 cm. Then a researcher put in the responses with their own keypad. The stimuli on the screen were red circles displayed on a black background. They randomly generated the stimuli in order to avoid any counting ahead (Maylor, Watson, and Muller, 2005). The experimenter conducted the tests individually in a room that was either at the resident facility or at the home of the control group participant and the room had nothing but the laptop and the two people conducting the experiment. The initial test was the MMSE and then an enumeration task, a block of demonstration on the task, 3 turns of practice trials and last, there were 3 turns of experimental trials (Maylor, Watson, and Muller, 2005). The participants were required to press the spacebar for how many circles they saw.

The results of the study indicated that the Alzheimer’s participants were slower than the control group, 1. 4 seconds to be exact. The data was analyzed by using ANOVA’s to demonstrate the difference in response time and the accuracy of the numbers between the two groups. However, they had the same accuracy in seeing how many items were currently present on the monitor (Maylor, Watson, and Muller, 2005). There were some differences in the results with the numbering portion of the experiment. The participants with Alzheimer’s had a significant reduction in response time in

comparison to the control group in the subitization part. The second part, counting, the Alzheimer's participants were significantly slower than their counterparts as well. The hypothesis was supported by the results of the experiment (Maylor, Watson, and Muller, 2005).

The conclusion of this study shows a definitive, qualitative answer between Alzheimer's and normal older adults' response time. This in turn shows where to start on how to improve those with Alzheimer's response time especially since there isn't any issue with their accuracy (Maylor, Watson, and Muller, 2005). There were several issues with this study. First, instead of using a cross sectional study, the researchers should have utilized a longitudinal study; that way they could see how slower the participants got overtime as their Alzheimer's progressed. The second issue is that they should have acquired individuals that had just become diagnosed with early stages of Alzheimer's; in the study they give no indication on what stage these participants were at. Last, there was an issue with the amount of participants in the study. The average was too generalized and needed a larger group to narrow down the averages (mean) in order to acquire a higher quality of data.

There are some different avenues of approach for future studies on this particular subject. The first approach could be that men and women may suffer from Alzheimer's differently, therefore in the future the men and women should be separated into different groups. This would show if there were any differences between the sexes. The next idea is that according to the text, those that drink coffee are less likely to have Alzheimer's (Kalat, 2012). So for a future research idea, one should have the participants drink

coffee for a while before starting the experiment. This could show if the effects of Alzheimer’s are mitigated when given a stimulant, i. e. caffeine. The last idea would have to be instead of utilizing numbers, use matching words. For example, gauge a participant’s reaction time by having a word on the screen and then the participant has to choose a synonym for that word i. e. happy equals jovial. This would show if a participant with Alzheimer’s can recall a larger vocabulary and in a timely manner.

References

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