

Introduction:

Commented [f1]: Good job with your introduction. Just some issue with wording and formatting that should be addressed.

Our brain provides us with different cognitive processes used to help carry out everyday simple or complex tasks.¹ These cognitive processes may include- working memory, problem-solving and attention.¹ Working memory (WM) is the cognitive process that deals with the storing and processing of temporary information often for comprehending text and fluid intelligence.² As an individual age, their working memory deteriorates leading to an increased chance of Alzheimer and Dementia.³ Therefore, many studies have been funded to investigate different methods to improve working memory. One way is to implement non-computer based WM training to your week.² A 2013 report² concluded non-computer WM training had not only improved the elderly's working memory, but the improvements remained even after training ceased.

An alternative method to improve working memory is by participating in computer-based WM training. One advantage for computer-based WM [training](#) over non-computer based [training](#) is that the training task for the computer-based WM can be easily adapted for differing ability levels of the individuals.⁴ Additionally, ~~the same article mentioned how the implementation of WM computer games was remarkably effective for have improved children's in improving their~~ WM.⁴ However, just because computer-based WM training is effective for children does not necessarily mean it is also effective for the elderly. Moreover, the motivation of the elderly to learn and to persist with computer-based WM training needs to be considered when evaluating the effectiveness. [According to a gerontology article](#)⁵ ~~Older~~ people ~~are~~ often faced with computer-based issues such as text size, text font and foreign buttons and these issues often demotivate them to learn and persist with computer-based technologies⁵.

Therefore, the purpose of the report is to examine whether computer-based WM training is effective in improving WM for the elderly with motivation to persist with the WM training as a key factor. The findings will hopefully sway more elderly people to embrace computer-based WM training and thus allow the elderly to benefit from its advantages. ~~So based~~ based on previous scientific

¹ Basak C, Boot WR, Voss MW, et al. Can training in a real-time strategy video game attenuate cognitive decline in older adults? USA Psy Association. 2008;23(4):765-777. doi:10.1037/a0013494.

² Borella E, Barbara C, Zanoni G, et al. Working Memory Training in Old Age: An Examination of Transfer and Maintenance Effects. Clin Neurosci. 2013;28(4):331-347. doi:10.1093/arclin/act020.

³ Klimova B. Computer-Based Cognitive Training in Aging. Front Aging Neurosci. 2016;8:313. doi:10.3389/fnagi.2016.00313.

⁴ Delavarian M, Bokharaeian B, Towhidkah, et al. Computer-based working memory training in children with mild intellectual disability. Early Child Dev and Care. 2014;185:66-74. doi:10.1080/03004430.2014.903941.

⁵ ~~Wandke H, Sengpiel M, Sonksen M. Myth About Older's People Use of Information and Communication Technology. Gerontology. 2012;58(6):564-570. doi:10.1159/000329104.~~

studies, we hypothesised that using the computer-based memory game app would improve the CANTAB Pal memory test score of the elderly. In contrast, the weekly motivational score of the elderly on the computer-based memory app would decrease over the eight weeks.

Methods:

36 Thirty-six adult subjects from the age of 65 to 79 were collected and divided evenly into two groups. The first group was called the standard group, and this group consisted of subjects which used only non-computer based WM weekly training. While the second group was called the test group and they were subjects who used both memory game app and the non-computer-based WM weekly training. During each weekly training session, the test group used their app, on a portable device, for half an hour. All subjects in both groups had a CANTAB PAL memory test score taken at the start of the experiment called PRE, and it was recorded in table one. All subjects of both groups used their respective WM training method(s) for the eight-week experiment. Also weekly, all subjects from the test group had their motivation score recorded in table two. Finally, at the end of the eight weeks referred to as POST, the CANTAB PAL memory test score was taken for all the subjects and then recorded in table one.

The raw data by itself provides minimal information, but graphing the raw data will help show the relationships. For table one and both groups, the mean participant's memory test score for pre and post column was calculated. The calculations allowed us to graph the table with a column graph. This graph was used because the data could be placed into categories- (categorical data) standard and test group. The column graph helped show how the addition of the video game app affected memory scores and therefore, helped answer part of the research question on the effectiveness of computer-based WM training on improving working memory.

In contrast, table two graph was a line graph. The independent variable in the table was a time variable (week). Thus a line graph or more especially a time series graph was best suited. For table two the averages of each different week were calculated. The averages were then used to turn the data into a line graph. The line graph contributed to answering the research question on the effectiveness of computer-based WM training.

Commented [f2]: This sentence was divided into two paragraphs. Please proofread your work before submitting to catch these formatting issue.

Also you have to first spell out in full words what CANTAB Pal stands for and then in brackets you can put the acronym. Once you have done this then you can use the acronym. Just like you did with working memory (WM).

Commented [f3]: This is a good start to your methods. However, you are lacking some detail and explanation. You need to explain what is the CANTAB PAL memory test, the range of scores, and how they are collected. You also need to explain how the motivation scores were collected. You should also back this information up with peer-reviewed article(s)

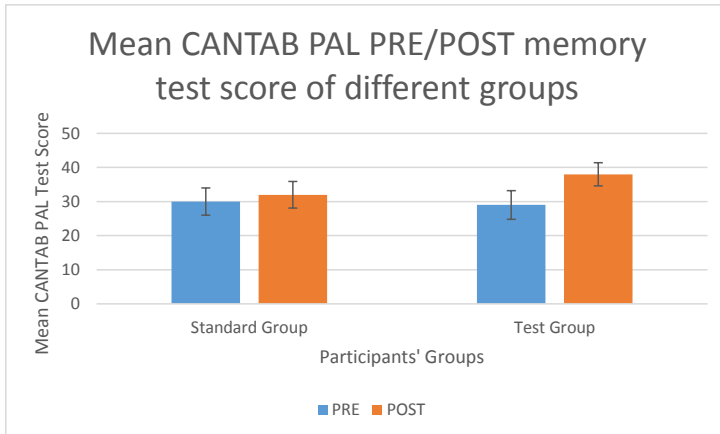
Commented [f4]: Use consistent formatting, these two paragraphs have more space between them then the other paragraphs.

Commented [f5]: This makes it seem like you calculated an average for each person rather than average per group. Please revise to make it clear what you did to calculate averages.

Commented [f6]: Good job recognizing what was the most appropriate graph and providing an explanation for why you graph is useful. However, you didn't mention anything about calculating standard deviations.

Commented [f7]: Good job, except again no mention of standard deviation.

Graph:



Commented [f8]: Good job with the graph. You have included error bars so you must have calculated standard deviation. However, you did mention this in your data analysis description.

Figure 1. Mean CANTAB PAL PRE/POST memory test score for the standard group and test group.

[IN SCIENTIFIC REPORTS YOUR REFERENCE LIST IS AT THE END OF THE DOCUMENT NOT IN FOOT NOTES.](#)

BSC100 Building Blocks for Science Students

Report Part A Marking Guide (append this table to the end of your submission)			
Name: Jin Cherng Chong	Needs Work		Well Done
Introduction 6/ 7			
Evidence of adequate research			X
Coherent background to the study			X
Includes some justification for the project			X
Statement of research question and hypothesis			X
Use of appropriate references			X
Effective paraphrasing	X		
Methods 2.5/ 4			
Explanation of how the data was collected, noting why this was appropriate for the study	X		
Outline of how the data will be analysed and why	X		
Appropriate statistics, graphs and /or tables suggested	x		
Graph 3/ 3			
One appropriate Excel graph included			X
Variation in the data is shown			X
Suitable presentation of graph (Figure label, informative caption, axis labels, scientific units included, legend only if applicable)			x
Referencing 3/ 3			
In-text referencing done correctly in Vancouver style			x
Four to eight references used			x
References used listed in the correct Vancouver style	x		
Overall Presentation 1.5 / 3			
Fluency of writing in a clear and logical manner	x		
Sentence and paragraph structure, grammar and spelling	x		

Clear, neat, consistent format of document, headings, text and references, appropriate word length.	x		
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Marker comment: See comments above

Mark: 16 /20