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Does the Mere Presence of a Cell Phone Impair Task Performance?

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Abstract

The purpose of our study was to determine if the mere presence of a person's cell phone serves as a distraction that impairs task performance, even if the person does not use it. In order to test this, we had two groups of participants complete several tasks that require attention and accurate memory in order to perform well. The tasks used were a card matching game (sometimes known as Concentration), a sequential memory game (Simon), and the n-back task. One group was instructed to put their cell phone away before they were presented with the tasks and the other group was told to put their cell phones on the table near them while performing the tasks because they would need them later. Both groups had their phones turned completely off during the tasks, however. Participants completed two trials with each task, and their average performance was calculated. We then compared the performance of the two groups to see if the presence of cell phones affected how quickly and accurately the participants were able to complete the tasks.

Introduction

Previous research suggests that the distractions of cell phones can negatively influence cognitive functions while performing tasks that require attention, memory, and perception

Thornton et al. (2014) found support for their hypothesis that the simple presence of a cell phone will be a distraction for participants trying to complete tasks, especially on tasks that are more attention demanding.

Ward et al. (2017) found that the presence of one's cell phone occupies limited capacity cognitive resources, therefore leaving fewer resources available to perform other tasks, which consequently limits cognitive performance.

The purpose of our research was to determine if the mere presence of a person's cell phone serves as a distraction that impairs task performance, even if the person does not use it. In order to test this, we had two groups of participants complete several tasks that require attention and accurate memory in order to perform well. One group was instructed to put their cell phones away before they were presented with the tasks and the other group was told to put their cell phones on the table near them while performing the tasks.

Based on the previous research, we predicted that the group performing the tasks with their cell phones on the table would perform worse than the group whose phones are put away while they performed the tasks.

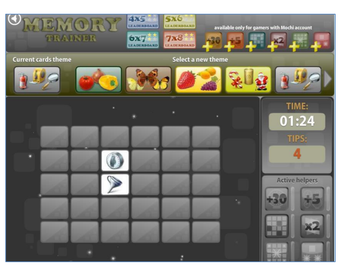
Method

Participants

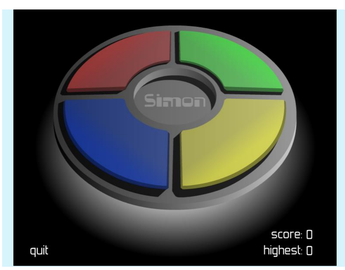
- 26 students from College of Saint Benedict / Saint John's University
- Out of the 26, five participants were male and 21 were female
- Four participants were first year students, 12 were sophomores, one was a junior, and nine were seniors.

Materials and Procedure

- We first randomly assigned participants to either the cell phone or no cell phone group.
- We gave them the consent form to read over and sign and gave them a brief description of the tasks to be completed.
- Each task was completed twice after performing a practice trial; the average of the two completed trials was used for each participant.
- The first task was an online version of card game testing memory and accuracy. It was timed for 90 seconds to match 15 pairs of cards and we recorded how many cards they flipped accurately and their time.
- The second task was a Simon online game in which the participants repeated the pattern they were shown as it got progressively got longer. We recorded their time and how many patterns they successfully completed before they got one wrong.
- The third and final task was a 2-back online task in which participants had to identify when the current image being shown was one that they were shown two images prior. We recorded their percentage correct and their time.
- After the online tasks were completed, participants were given a 14-item questionnaire asking about their cell-phone dependency.
- After this was completed, we debriefed the participants and informed them of the actual purpose of the experiment was and allowed them a chance to ask any questions.

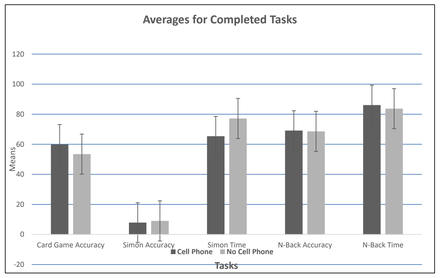


Card-Matching Task



Simon Task

Results



The graph above shows the mean scores and times for the three tasks that we had participants complete. The darker colored bars are for the group with cell phones and the lighter colored bars are for the group without cell phones.

We performed independent samples *t*-tests to compare the two groups on each measure, but we found no significant differences between the groups (all $p > .05$).

Discussion

We predicted that participants with their cell phones out would perform worse in terms of accuracy and time completing the three tasks. Our hypothesis was not supported as we did not find any significant results. This could be due to a small sample size or other possible external variables. Another reason could be due to the time constraint of the experiment.

In future research, it would be better to allow for more testing time, get a larger sample size, and eliminate all confounds to ensure the best results. For example, we could have allotted more time for participants to complete the card game. This would avoid any anxiety or rushed feelings for the participants to finish the task. Fatigue effects also could have been a problem as the participants repeated the tasks numerous times and some may have gotten tired or bored. We could have added another variable and had one of the researchers on their own cell phone and test if that distracted the participants.

References

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Ward, A. F., Duke, K., Gneezy, A., & Bos, M. W. (2017). Brain drain: The mere presence of one's own smartphone reduces available cognitive capacity. *Journal of the Association for Consumer Research, 2*(2), 140-154.