Caffeine: does it improve our reading skills?

This study tests whether caffeine affects the global pattern processing, and more specifically, if caffeine could enhance text reading skills.

Cierra Bump

A recent article from the Journal of Psychopharmacology begs the question of whether caffeine improves text reading and global perception. Global perception is how someone overall perceives an object or situation and focusing on the totality rather than the parts. Therefore, it is arguably a very important human skill, along with reading, alertness, spatial attention, and executive functions. These skills were put to the test in these two studies and were the primary focus of the article. Through the experiments, it was found that a small amount (200 mg) of caffeine would improve a person's global processing, though it had little effect on alertness, spatial attention, or executive functions. This research could provide help for those with mental disorders that make it difficult for them to read in a timely manner. Though it is not the ideal drug to use, it could aid those with mild symptoms to slightly improve their text reading and global perception skills.

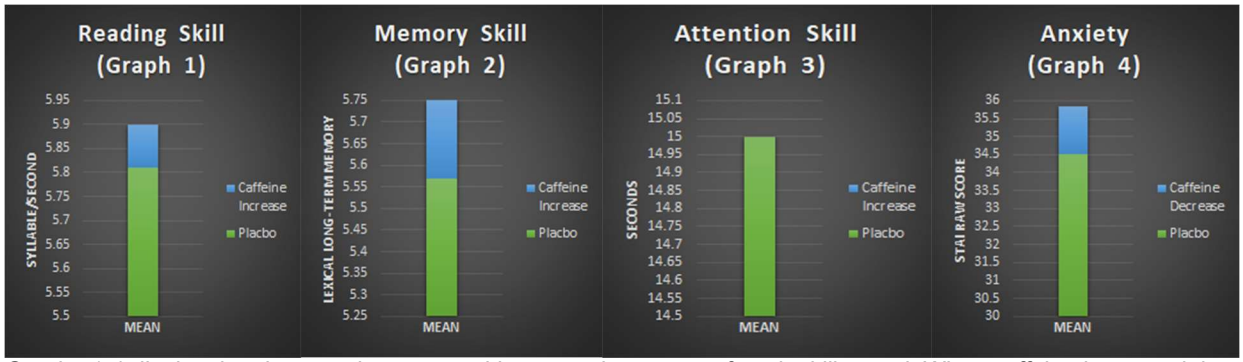
Even though reading and global perception are such important skills for everyone to have, there are unfortunately many disorders that prevent or make it very difficult for a person to perform at what would be considered a normal level. Dyslexia, attention deficit hyperactivity disorder (ADHD), or falling on the autism spectrum are a few among many examples of such disorders. However, if these people happened to have more mild symptoms, caffeine could prove itself as a candidate drug to help people with these disorders in intervention training. More on this, the article mentions several other studies also involving caffeine's effect on the body. These studies investigated how caffeine improved physical exercise performance, as well as being able to counter both the physical and cognitive effects of sleep loss. Knowing how caffeine affects the body in a physical sense helps pave the way for research on how the drug affects the body in the neurological sense.

Regarding the actual experiment, the participants of both studies completed a double-blind, repeated-measures test, which meant that information about the drug was unknown to the participants during the time it was taken and that several measures of the same variable were taken each with slightly different conditions. The first study included 24 participants, who were each tested twice, seven days apart. Before each test, the participants either consumed a small amount of caffeine (200 mg) or a drink containing a placebo. To ensure a double-blind procedure, half of the group took the caffeinated drink during the first test and the placebo drink in the second test, and vice versus for the other half. None of the participants knew which group they were in, and a bitter drink was used to disguise caffeine's taste. The second study, which included fifty-three participants, operated on the same procedure, though this time participants were required to report how many hours they had slept the night before without caffeine consumption so that sleep debt could be calculated.

Before the experiment began, participants completed the same tasks when they had not consumed caffeine in at least 12 hours, so that they acted as their own control group. Once the

beverage was consumed on the day of the first test, the participants had to complete tasks that tested their reading skills, memory, attention, and anxiety levels. The second study also tested these skills but involved different tasks for its participants to complete.

Based on the results of the studies, it could be concluded that caffeine had a significant effect on the reading skills of the participants, but no significant effect on their memory, attention, or anxiety levels. This is known through the P-value, which must be less than 0.05 to be significant, and the reading skill was the only test to produce such results. For the reading skill, the number of syllables per second that could be read was measured, increasing by 1.55% from placebo to caffeine (Graph 1) with a P-value of 0.037. For memory skill, the number of questions (up to 10) that could be answered correctly about a text they had just read was measured, increasing by 3.23% from placebo to caffeine (Graph 2) with a P-value of 0.532. For attention skills, the amount of time (s) it took the participants to identify the color of 30 squares was measured, which remained the same from placebo to caffeine (Graph 3) with a P-value of 0.253. Lastly, for anxiety levels, the scores achieved on an anxiety questionnaire (STAI) after consumption was measured, decreasing by 3.74% from placebo to caffeine (Graph 4) with a P-value of 0.136. Though it seems caffeine had a greater effect on everything but reading skills, the high P-values show that these findings are not significant. The results seem to match the previous studies that the article mentions at the beginning, where caffeine was shown to improve cognitive tasks, as well as having mixed results on how caffeine affects short term memory.



Graphs 1-4 display the changes that occurred between the means of each skill tested. When caffeine increased the mean (Graphs 1-3), the green bar represents the total mean of the placebo, while the green and blue bar combined represents the mean of the caffeine. When caffeine decreased the mean (Graph 4), the green and blue bar combined represents the mean of the placebo, while the green bar represents the mean of the caffeine.

With reading being such an important skill, finding anything that could help improve it is very useful. Now that this study has established that a small amount of caffeine can cause such improvements, more varied control sizes can be used in experiments to see what amount of caffeine is optimal for the best improvement. Questions such as whether a certain amount of caffeine can become detrimental or hit a plateau for improvement of reading skills can be answered through further research. Because caffeine is shown to have a positive effect, it could also be used to treat the before mentioned disorders, dyslexia, ADHD, and autism, for those who have more mild symptoms. Personally, as someone who drinks a lot of caffeine (about 80 to 120 mg per day) it's good to know that drinking it isn't all bad. I usually drink it before I do homework, so I wonder if this habit developed unconsciously due to the positive symptoms it gave me.

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