Dopamine Induction Within Teen Cognitive Function: The Effects of Differing Dopamine Induction Strategies on Adolescent Working Memory and Neural Activity

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The current youth has been experiencing a decline in cognitive functioning, and many have attributed this to a Dopamine (DA) rewiring stemming from “easy” DA induction from online habits. However, there is also a faction that backs DA as a key promoter for working memory (WM). Therefore, by inducing dopamine through both cardio and social media, this research aimed to see any differences between “easy” and “earned” dopamine inductions, and reveal DA’s exact effects on teenage cognitive function. Furthermore, a novel addition of Electroencephalogram (EEG) recordings were added to the N-back tests, to see if any significant neural changes would be brought on by DA induction. Before the experiments, the researcher hypothesized that only the cardio-induced dopamine will show improvement in WM, and only the higher frequency EEG bands would show an increase from the DA induction. By conducting a working memory N-back test in a control state, after 15 minutes of cardio (“earned” DA), and after 15 minutes of social media scrolling (“easy” DA), it was observed that both DA inductions increased WM. Furthermore, the EEG recordings revealed only the lower-frequency Delta and Theta EEG bands showed a significant increase in only the cardio condition. Therefore, the hypothesis was rejected overall. However, the results of a lifestyle survey completed by participants showed that daily habits of social media actually debilitate cognitive function, supporting the argument of a "DA Rewiring" in the long term effects of social media DA induction. Further research on post-cardio brainwave patterns could reveal more information about the nature of lower frequency brainwaves, as well as similarities between cardio and meditation.

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