

Effects of Coffee and Caffeine on Selective Attention and Information Processing

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The aim of this research was to assess the effect of moderate amounts of caffeine, the equivalent to about 2 cups of coffee, on information processing in healthy students of about 22 years old. The participants in the study were all regular coffee consumers, drinking between 3-7 cups of coffee per day. For some of the testing scalp electrodes were used to record brain activity during performance of cognitive tasks.

In this current study different amounts (1.0, 3.0 and 7.5 mg/kg bodyweight) of caffeine were used in a dual task setting consisting of two choice reaction time tasks, with one of those tasks being presented at 2 levels of difficulty. The 7.0 mg dose shortened reaction time on both the primary and the secondary task. Overall there was a dose dependent decline in reaction time for both tasks and indications of increased quantity of processed information. There was no effect of dose on the quality of task performance (number of errors). There were no dose-related differences in the reported effort needed to perform the dual task. In opposite to previous work by this group, the effect of caffeine was found only on the output stage, in view of the shortened reaction times. Caffeine yielded a higher overall arousal level, more profound processing of both attended and unattended information and faster motor processes. Further recent research has evaluated whether 250 mg of caffeine would have an effect on the processing of spatial and non-spatial (colour) information, and which sites of the brain were affected. Caffeine did not affect the quite early components of the selection potentials as found before, suggesting that caffeine does not modulate spatial attention alone.

It was concluded by these researchers that caffeine may widen attention for initial processing thereby enlarging the amount of information that can be processed, while later on in the information processing stream its influence on frontal control mechanism may narrow attention to increase attentional selectivity.