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EYE MOVEMENTS OF YOUNG AND ADULT CHIMPANZEES DURING A MEMORY TASK

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In previous studies about sequential learning in chimpanzees, we have found that young chimpanzees performed better than adult chimpanzees in a memory task (Inoue & Matsuzawa 2007, 2009). Young chimpanzees could memorize a set of numerals even in very short presentation duration of 210ms, latency close to human saccadic eye movement. On the other hand, performances of adults were considerably lower in the same condition. In the present study, we examined the correlation between the eye movements and the performances of two age groups in the memory task. The subjects were three young (all 7 year-old) and four adults (23 to 31 year-old). In the task, when the subject touched the white circle, several numerals appeared on the touch-sensitive monitor. After touching the first numeral, all other numerals were replaced by white squares. The subject had to remember which numeral appeared in which location, and then touch them in the ascending order. A video camera was positioned in front of the subjects' face to evaluate the subjects' eye movements in a trial. We analyzed 500 trials per subject and found that young chimpanzees moved their eyes significantly less frequently than adults before touching the first numeral even though more numerals appear in their task. Young moved eyes in 21.3% of trials, while adults moved eyes in 69.0% of trials. The result suggests that young chimpanzees caught an image of stimuli as a picture and it differed from adults who followed numerals one by one.

Keywords: eye movements, memory, chimpanzee, age difference