Abstract. In a retrospective analysis of data from three studies using a delayed response task in cynomolgus monkeys, we examined the subjects’ search patterns and success rates. Twenty-seven monkeys of both sexes, divided into three age groups, were tasked with retrieving two food items hidden in an array of six identical opaque cups. Although the task was challenging for all subjects, generating a high level of guesswork, evidence of common behaviors when approaching the spatial memory test were found. The search patterns employed by the monkeys suggest the use of landmark cues, adaption in response to failure and chronological memory recall. These strategies appeared to be shared by most subjects, however, the overall success rate appeared to also depend on individual characteristics including age, gender and whether the subject had been born in caged captivity or not. By elucidating some of the underlying cognitive mechanisms, these findings may serve to refine interpretation of future studies using similar delayed response tasks in non-human primates.

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Delayed response tasks are utilized for assessing working memory in non-human primates (1). These tests assess the subject’s ability to retain information that varies in time and/or in content, which is the type of memory that is often affected in dementias (2). Consequently, delayed response tasks have been frequently used in studying memory decline and dementias in aging primates (1, 3). In addition, the complex behavior exhibited by non-human primates in these tests can be used to infer underlying cognitive processes, making them valuable tools for studies in cognitive neuroscience and comparative psychology (4-7).

The present report collates the results from three delayed response task studies in a retrospective analysis, focusing on aspects of the data that were beyond the scope of the original studies. To assess the working memory in cynomolgus monkeys (Macaca fascicularis) of differing ages, we utilized a type of delayed response task where the subjects were assessed to see whether they remembered the location of food items hidden in two of six identical opaque cups arranged in a straight line. Part of the data used herein have previously been published in a pair of studies exploring impaired delayed response task performance in aging cynomolgus monkeys and its association to biomarkers associated with Alzheimer’s disease (8, 9). Additional data come from a study that relates delayed response task performance of old monkeys to clinical magnetic resonance imaging findings (10). The overall performance in the task referred to as the memory load test (MLT), which we will be focusing on in the present study, is summarized in Table I.

When analyzing the data of the aforementioned studies, it was noted that individuals within an age group would differ greatly in...