

# Cognition: two forms of deductive reasoning assignment

[History](#)



Results indicated that both thematic and abstract deductive reasoning scores were significantly positively related with working memory capacity, with abstract reasoning having a stronger correlation than thematic reasoning. However, it was found that thematic deductive reasoning scores were significantly higher than abstract deductive reasoning scores. It appears that more complex cognitive processes are required for successful performance on abstract versions of the Wagon selection task than on the thematic version.

Results are discussed within the context of the mental model theory and dual systems theories, with specific reference to Van's (2006) horticulturalist theory. Areas for further research are discussed. 2 Introduction Current theoretical approaches to deductive reasoning include the mental models theory (Johnson-Laird, 1999) and the various dual systems theories (Evans, 2006; Evans & Over, 1996; Stanovich & West, 2000).

These have provided a framework to understand the evidence that performance on deductive reasoning tasks is strongly linked to working memory capacity (De Neys & Over, 2006; De Neys & Crastin, 1990; Sjö, Forbearer, Whitman, Wilhelm & Schulz, 2002). According to the mental model theory, individuals use the information contained in the premise to form a mental model of the reasoning problem or task.

Working memory capacity is the constraint on the ability to construct, assess and revise mental models (Johnson-Laird, 1999). The dual systems theories vary to some extent but are all based on the assumption that reasoning can involve two very different processing systems (Evans, 2008). One system is

rapid and automatic, and the other slower, deliberate and analytical, and Individuals with high working memory are more likely to engage the analytical system in reasoning problems.

In terms of intelligence, the analytical system has been broadly aligned to fluid Intelligence (Evans, 2002) working memory, described as a system or systems assumed necessary in order to keep things in mind while performing complex tasks such as reasoning, comprehension and learning (Biddable, 2010), is not a precisely designed construct (Sjū et al. , 2002). Biddable has proposed a four-part model of working memory (Biddable, 2000).