

## **Economic Decision Making under Cognitive Load: The Role of Numeracy and Financial Literacy**

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**Abstract :** Financial literacy and numeracy have been regarded as paramount for rational household decision making in the increasing complexity of financial markets. However, financial decisions are often made under sub-optimal circumstances, including cognitive overload. The present study aims to clarify how financial literacy and numeracy, taken as relevant expert knowledge for financial decision-making, modulate possible effects of cognitive load. Participants were required to perform a choice between a sure loss or a gambling pertaining a financial investment, either with or without a competing memory task. Two experiments were conducted varying only the content of the competing task. In the first, the financial choice task was made while maintaining on working memory a list of five random letters. In the second, cognitive load was based upon the retention of six random digits. In both experiments, one of the items in the list had to be recalled given its serial position. Outcomes of the first experiment revealed no significant main effect or interactions involving cognitive load manipulation and numeracy and financial literacy skills, strongly suggesting that retaining a list of random letters did not interfere with the cognitive abilities required for financial decision making. Conversely, and in the second experiment, a significant interaction between the competing mnemonic task and level of financial literacy (but not numeracy) was found for the frequency of choice of a gambling option. Overall, and in the control condition, both participants with high financial literacy and high numeracy were more prone to choose the gambling option. However, and when under cognitive load, participants with high financial literacy were as likely as their illiterate counterparts to choose the gambling option. This outcome is interpreted as evidence that financial literacy prevents intuitive risk-aversion reasoning only under highly favourable conditions, as is the case when no other task is competing for cognitive resources. In contrast, participants with higher levels of numeracy were consistently more prone to choose the gambling option in both experimental conditions. These results are discussed in the light of the opposition between classical dual-process theories and fuzzy-trace theories for intuitive decision making, suggesting that while some instances of expertise (as numeracy) are prone to support easily accessible gist representations, other expert skills (as financial literacy) depend upon deliberative processes. It is furthermore suggested that this dissociation between types of expert knowledge might depend on the degree to which they are generalizable across disparate settings. Finally, applied implications of the present study are discussed with a focus on how it informs financial regulators and the importance and limits of promoting financial literacy and general numeracy.

**Keywords :** decision making, cognitive load, financial literacy, numeracy

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