

THE MEDIATING ROLE OF TIME ON TASK IN EXPLAINING STUDENTS' PERFORMANCE IN FIGURATIVE AND NUMERICAL TASKS OF INDUCTIVE REASONING

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One of the advantages of computer-based assessment (CBA) is the possibility to observe the impact of time on task (TOT) (Carrol, 1963, 1989) on students' performance. Goldhammer et al. (2014) reported better achievers to spend less time on routine-like tasks while their better performance in more complex tasks was partially explained by their longer time-use. Kupiainen et al. (2014) on the other hand, found TOT to act as a mediator between students' motivational attitudes and task performance, giving support to Wise's and Kong's (2005) interpretation of response time (RT) as an indicator for effort. The present study adds to this research by investigating the role of motivational attitudes and TOT in explaining students' performance in two types of inductive reasoning (IR) tasks (see Molnár et al. 2013), using the time-limited working memory (WM) task as a control. The data is drawn from three cohorts à 600 students in Finnish primary and secondary schools (grades 4, 7 and 10). The internal consistency of the WM and the IR tests were mostly good, varying from Cronbach's $\alpha=.846$ to $.868$ for figure analogies, and $\alpha=.832$ to $.870$ for figure series (à 15 items); $\alpha=.614$ (4th grade) to $.780$ for number analogies, and $\alpha=.722$ to $.825$ for number series (à 8 items); and $\alpha=.681$ (4th grade) to $\alpha=.794$ for WM (10 items). In preliminary analyses, for the oldest cohort, the relation of TOT and IR increases with task difficulty especially in the more demanding 12 and 11 item versions of the number analogies and series ($r=.379$ and $r=.472$). The relations of WM, motivational attitudes, TOT, and IR will be investigated using structural equation modelling (SEM) both across and individually for the three age cohorts. Regarding Finnish boys' and girls' attainment in and choice of mathematics (Ouakrim-Soivio, Kupiainen & Marjanen, in press), special attention will be paid to possible gender differences in the students' application of time and to the relative role of motivation and TOT in their performance. The study will shed light into the role of time as an indicator for effort and perseverance. The results will have a bearing on both learning and assessment regarding both curricular and transversal skills.