THE ROLE OF TIME-ON-TASK IN EXPLAINING STUDENTS' PERFORMANCE IN INDUCTIVE REASONING: FOLLOW-UP FROM GRADE 4 TO GRADE 5, AND FROM GRADE 7 TO GRADE 8

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The roots for differences in student achievement are mostly there already before children enter formal education (Grodsky, Huangfu, Miesner & Packard, 2017) but schooling plays a major role in fostering all students' learning and learning-supportive attitudes. The current presentation is part of a wider project aiming at building a view of the development of students' inductive reasoning through 11 years of Finnish education. The study follows four separate cohorts of students: from grade 1 to grade 3, from grade 4 to grade 6, from grade 7 to grade 9 and from grade 10 to grade 11, within the space of three years. The focus of this presentation is on the two middle cohorts with two measurements, one year apart. The study incorporates two strands of educational research and theory: Inductive reasoning as a key factor for all learning at school and beyond (Tomic & Klauer, 2002), and Carroll's (1963) learning model regarding the role of time in learning but also in students' engagement and attainment in various assessment tasks. The role of time on task, afforded by CBA, has proven a valuable indicator for effort in addition to or instead of a ques-tionnaire (Goldhammer et al., 2014; Kupiainen et al., 2014; Wise & Kong, 2005). In the present study, we use time measurement to shed further light on the role of two sets of motivational constructs, one comprising attitudes detrimental for learning and one supportive of learning, in students' test performance. The data comprises 295 grade 4→5 students, and 390 grade 7→8 students (mean age 10.5/11.5, and 13.5/14.5). The measurements in the analysis cover inductive reasoning (IR) with two different tasks (Figure Series and Figure Analogies, α=.822–.877 for 4→5 graders and α=.840–.922 for 7→8 graders) and a test for visuo-spatial memory (VM, α=.591/.8688). In Model 1 (SEM), IR at Time 2 was predicted on IR at Time 1, VM and the attitudinal factors. In Model 2, time-on-task (TOT) was added to mediate the role of the attitudes. All the models showed good fit (TLI>.900, CFI>.950, RMSEA<.050). For both age groups, the adding of TOT to the model increased its explanative power, often reducing the attitudinal factor close to redundant. Yet, there were differences related to the students' age (grade 4/5 vs. 7/8), gender, and the positive and negative atti-tudes. Overall, TOT proved to be as significant a predictor of students' performance in the low stakes IR test as their performance in the same test a year earlier. The results confirm the understanding of the role of time on task on students' performance but also show that the mere time spent on task is not adequate with achievement also based strongly on students' earlier reasoning skills and working memory (see Demetriou & Spanoudis, 2017). The results also shed light on the key role students' attitudes can have on learning – and on low stakes tests such as PISA – through time spent on a task while emphasizing on the affordance offered by CBA in revealing this.