BOOK OF ABSTRACTS

EARLI 2019

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with teachers, perceived support) factors were included in a single survey, at the end of the school year. Results of hierarchical regression analyses showed that individual and institutional-academic factors explained more variance in satisfaction with academic life than in academic achievement. Results will be discussed in terms of the implications for students' adaptation to Higher Education.

Predicting study satisfaction and drop out intentions in higher education: the case of Serbia
Presenting Author: Ksenija Krstic, University of Belgrade, Serbia; **Co-Author:**Ivana Stepanović Ilić, University of Belgrade, Serbia; **Co-Author:**Marina Videnović, University of Belgrade, Serbia; **Co-Author:**Oliver Tošković Tošković, University of Belgrade, Serbia

Higher education is an influential factor supporting socio-cultural and economic development of both individuals and societies. Lowering the drop-out rate among HE students is one of the main goals of the EU strategy for jobs and growth (Europa 2020). Dropping out from HE is universal problem having significant economic and academic consequences, at the individual, institutional, and societal levels. For drop out as a complex and multifactorial problem, there is no one solution that can be applied in all situations and in all HE institutions. Research presented here is a part of a large, international project SunStar, focused on development of online learning platform as a support for students at risk of dropping out. The aim of this study is to determine which factors have the most predictive value for students' study satisfaction and drop out intentions in Serbian context. For purpose of this study a sample of 673 students (mean age 21.39, 79% females) participated in an online survey which included several aspects of students' evaluation of their university and study. Multiple regression model showed that 72% of study satisfaction was explained by following dimensions: study organisation, self-evaluation certainty, emotional positivity, intrinsic motivation, intellectual development, relevance to practice and living conditions. Similarly, 39% of drop out intentions can be explained by dimensions: help-seeking, self-efficacy, attainment, emotional positivity, emotional support, self-evaluation certainty, living conditions, grades and funding. Those dimensions refer to both institutional and individual factors. The role of students' socio-demographic characteristic and types of study programs will be also discussed.

"May I Help you?" – The project SUnStAR: Supporting University Students at Risk of Dropping-Out
Presenting Author: Philipp Nolden, RWTH Aachen University, Germany; **Co-Author:**Francisco Peixoto, ISPA - Instituto Universitário / CIE - ISPA, Portugal; **Co-Author:**Marold Wosnitza, RWTH Aachen University, Germany; **Co-Author:**Eleftheria Gonida, Aristotle University of Thessaloniki, Greece

Success in higher education is vital for the labour market, social equality and economic growth and therefore highly qualified professionals are indispensable for each society. Nonetheless, in most countries the completion rate in tertiary education is below 80%. Therefore, the phenomenon of university drop-out has been widely studied and numerous factors have been associated with it. However, there is still a need for research focusing on the contexts within which drop-out occurs informing the development of effective prevention strategies within various contexts. In this line the project SUnStAR (Supporting University Students at Risk of Dropping-Out) was designed to develop evidence-based measures of drop-out prevention. In this presentation we will introduce the rationale of SUnStAR and its main components: Firstly, the SRT, an online self-reflection tool with feedback intending to enable students to reflect on their situation at university, and secondly building on this diagnosis an self-regulated online learning tool and connection to institutional sources of support.

Session K 2

14 August 2019 12:00 - 13:30
Lecture Hall - H10
Symposium
Cognitive Science, Higher Education, Learning and Special Education

Mathematical giftedness and expertise

Keywords: Achievement, Cognitive skills, Competencies, Educational attainment, Higher education, Mathematics, Science education, Special education
Interest group: SIG 04 - Higher Education, SIG 08 - Motivation and Emotion, SIG 15 - Special Educational Needs
Chairperson: Roland H. Grabner, University of Graz, Austria
Chairperson: Bert De Smedt, KU LEUVEN, Belgium
Organiser: Roland H. Grabner, University of Graz, Austria
Organiser: Bert De Smedt, KU LEUVEN, Belgium
Discussant: Jake McMullen, University of Turku, Finland

There is increasing awareness and evidence that high mathematical abilities are an essential foundation for progress in modern technological societies. Most of previous research, however, has focused on typical mathematical development and low achievement in mathematics (in particular dyscalculia). Comparatively little is known about the mechanisms underlying high mathematical abilities and achievements as well as effective educational approaches that optimally support these high abilities. In addition, there are continuing discussions about the definition of mathematical giftedness, mathematical expertise and their constituting components. The aim of this symposium is to present different lines of current research on individuals with high mathematical abilities and to initiate an integrative discussion of this research with regard to the concepts of mathematical giftedness and expertise. The symposium consists of three empirical and one theoretical paper. The empirical papers involve individuals with high mathematical abilities in different developmental phases (from primary school to university students) and address cognitive and motivational correlates as well as outcomes of high mathematical abilities. The theoretical paper deals with the relationship between mathematical creativity and expertise as major components of mathematical giftedness. The discussant of the symposium will finally provide the basis for an integrative open discussion, with specific attention to educational implications of the four papers.

The domain-specific and domain-general cognitive correlates of high achievement in mathematics
Presenting Author: Merel Bakker, KU Leuven, Belgium; **Co-Author:**Joke Torbeyns, KU Leuven, Belgium; **Co-Author:**Lieven Verschaffel, KU Leuven, Belgium; **Co-Author:**Bert De Smedt, KU Leuven, Belgium

Several domain-specific and domain-general cognitive factors have been brought forward as predictors of individual differences in mathematical development. The current literature has focused predominantly on typical or delayed mathematical development. There is little systematic research on high math-ability children. The purpose of this study was to clarify the cognitive correlates of children's high achievement in mathematics. The performance of children with high math achievement was compared to that of children with average math achievement on several domain-specific and domain-general cognitive tasks. Participants were 64 Flemish children aged 8 to 10. To become part of the high-achieving group, children had to score above the 90th percentile of the standardized curriculum-based mathematical achievement test (LVS) at two consecutive time points. We matched the high-achieving children, based on class group, gender and age, with a child from the average-achieving group, who had to score between the 30th and 70th percentile of the same mathematical achievement test at two consecutive time points. Children completed two domain-specific tasks: a symbolic number comparison task and a symbolic number order task. The domain-general tasks were a backward Corsi block tapping test, backward digit span, and block design. We found a group difference in favor of the high-achieving group for the number order task, but not for symbolic comparison. There was a group difference in favor of the high-achieving group for spatial ability, but not for working memory. Further research, perhaps focusing on complex mathematical abilities, is needed to characterize young children with high achievement in mathematics.

Top 5% math students worldwide: A meta-analysis of gender differences in achievement and motivation
Presenting Author: Franzis Preckel, University of Trier, Germany; **Co-Author:**Lena Keller, University of Potsdam, Germany; **Co-Author:**Jacquelynne Eccles, University of California, Irvine, United States; **Co-Author:**Martin Brunner, University of Potsdam, Germany

The present study examined gender differences in top-performing math students' achievement, achievement profiles, and achievement motivation in mathematics, reading, and science across 80 countries worldwide. To this end, we meta-analyzed data from five representative, international, high-quality samples of the Programme for International Student Assessment (PISA, N = 175,744, 15-year-olds). On average, male students were slightly overrepresented in the top 5% in mathematics (mean female-to-male student ratio 1:1.44). The proportion of females in the top 5% in mathematics and gender gaps within this group varied strongly across countries. Male students slightly outperformed female students in mathematics (mean d = 0.15), whereas female students possessed better reading skills (mean d = –0.62). Gender differences in science achievement were negligible (mean d = 0.00). Male students demonstrated a