

Keynote Professor Sanna Järvelä 1

15 August 2018 10:30 - 11:30

Aula

ICM 2018 - Keynote Session

Motivational, Social and Affective Processes

ICM 2018 - Keynote Session - Prof. Dr. Sanna Järvelä

Keywords: Attitudes and beliefs, Learning approaches, Motivation, Self-regulation

Interest group: SIG 08 - Motivation and Emotion

Can motivation be designed? – researching and supporting motivation for 21st century learning

Keywords: Motivation, Self-regulation, Attitudes and beliefs, Learning approaches

Presenting Author: Sanna Järvelä, University of Oulu, Finland

Learning in and for the 21st century requires motivational competence in individual and collaborative learning settings. Today, it is more important than ever to help learners to become aware of their strengths and weaknesses in a learning situation, so as to help them develop their will and skill for learning and support them deepen their motivation and engagement to learn throughout their lives. Are our theories and concepts in motivation relevant for designing motivation? Yes – but there is a need to operationalize our theoretical understanding for providing support for motivation. In this talk I will discuss our progress in motivation research especially aiming to target motivation as multi-layered and situated phenomena and provide tools and prompts for both researching and supporting motivation.

Paper Session A 1

15 August 2018 12:45 - 14:15

Nobel 1481-237

Single Paper

Motivational, Social and Affective Processes

Achievement and Measurement

Keywords: Achievement, Attitudes and beliefs, Developmental processes, Educational attainment, Goals, Measurement, Motivation, Self-concept, Self-efficacy

Interest group: SIG 08 - Motivation and Emotion

Chairperson: Christine Rubie-Davies, University of Auckland, New Zealand

Beyond Grit: Capturing Mathematical Perseverance in Adolescents

Keywords: Achievement, Goals, Measurement, Educational attainment

Presenting Author: Pooneh Roney, University of Bristol, United Kingdom

In the UK, lower student enrolment in mathematics courses post-16 have impacted the pursuit of studies and careers in the STEM fields. Despite a great deal of investment to address this pressing issue, to date interventions have yielded limited results. Gaining a deeper understanding of the complexities of student participation and perseverance in mathematics can, therefore, contribute to future policies. The aim of the current study was to put forth mathematical grit, a domain-specific measure, that enables measurement of mathematical perseverance in adolescents. This measure conceptually mirrors the two dimensions of grit with particular emphasis on grit's long-term quality. The participants in this study were students (N=1448) from two UK schools, (M age = 14.00 years, SD = 0.46, 53% male). They completed a paper and pen survey in their mathematics lessons. Demographic data, measures of prior attainment and cognitive ability were also obtained. The internal consistency of this composite measure was $\alpha = .84$. Mathematical grit accounted for around 2% of all variance in the students' end of year mathematics grade, with each dimension explaining around 1% of the total variance. The composite measure had a higher predictive validity than each dimension alone, further endorsing its use. The findings of this study present initial support for use mathematical grit for the study of mathematical perseverance in adolescents and for the development of further domain-specific measures for the study of perseverance in different academic subjects. Implications of the findings for future research are discussed.

The relations between reading self-efficacy and reading fluency development

Keywords: Self-efficacy, Attitudes and beliefs, Achievement, Measurement

Presenting Author: Pilvi Peura, University of Jyväskylä, Finland; **Co-Author:** Tuija Aro, University of Jyväskylä, Finland;

Co-Author: Helena Viholainen, University of Jyväskylä, Finland; **Co-Author:** Eija Räikkönen, University of Jyväskylä, Faculty of Education, Finland; **Co-Author:** Mikko Aro, University of Jyväskylä, Finland

Efficacy beliefs, which refer to beliefs people hold about their capabilities, relate to effort and persistence for skill training. Therefore, efficacy beliefs might be especially important in skill areas requiring persistent independent practice, such as gaining fluent reading skills. However, existing studies offer a limited understanding of relation between self-efficacy and reading fluency, since most studies target reading comprehension. Our study examines the relation between reading fluency related efficacy beliefs, measured at three specificity levels, and the development of reading fluency in a sample of

Finnish primary school students ($n=1327$). The results showed that efficacy beliefs were positively related to reading fluency and fluency development. The association was dependent on the specificity level of self-efficacy and grade level of students. The more specific beliefs (specific and intermediate levels) showed positive independent and specific relations to fluency whereas general level self-efficacy did not. Only intermediate self-efficacy predicted positively the fluency development. Self-efficacy explained later reading fluency development especially for 2nd graders, and significantly but more weakly also for 3rd to 5th graders. These findings suggest a positive association between self-efficacy and reading fluency earlier than previously found, and shed light on the predictive role of self-efficacy on reading fluency development especially among the youngest students. This association has previously not been found among children (Mercer et al., 2011). Thus, efficacy beliefs should be identified and supported from the early primary school years. The findings support the specificity of self-efficacy and emphasize the importance for studying self-efficacy in close correspondence to skills.

Using task-specific assessment of self-efficacy to identify individual competency profiles

Keywords: Self-efficacy, Achievement, Self-concept, Measurement

Presenting Author:Katharina Siefer, Pädagogische Hochschule Freiburg, Germany; **Co-Author:**Timo Leuders, Pädagogische Hochschule Freiburg, Germany; **Co-Author:**Andreas Obersteiner, University of Education Freiburg, Germany

Research in mathematics education often focuses on cognitive aspects of competence, although studies show that non-cognitive aspects such as self-efficacy are important as well. Self-efficacy may play a particularly important role for non-routine mathematical problems in which the solution strategy is not obvious. Students with low self-efficacy may give up on such problems even if they have the cognitive abilities to solve them. Previous studies assessed self-efficacy on a general or domain-specific level but not on a content-specific level, using task-specific measures. Accordingly, the present study assesses the relation between self-efficacy and performance in the content area of linear functions. We were interested in (1) the reliability of assessing self-efficacy in linear functions, (2) the general relation between individual students' self-efficacy and performance in this content area, and (3) in students' individual profiles of performance and self-efficacy. We asked 120 8th- and 9th-graders to first predict their performance on concrete linear function problems without solving them. Afterwards, students were asked to solve the same problems. We found high reliabilities for both self-efficacy and performance measures. There was a moderate positive correlation between performance and self-efficacy. However, cluster analysis identified five groups of students with different profiles of self-efficacy and performance. While 47% of students had moderate values in both measures, 24% had very high performance combined with low self-efficacy, and 29% showed the opposite patterns. Our study highlights the importance of assessing non-cognitive aspects on a task-specific and individual level, in order to tailor instructional support to individual students' needs.

Examining students' self-efficacy across a sequence of lessons on a new topic in mathematics

Keywords: Motivation, Self-efficacy, Measurement, Developmental processes

Presenting Author:Karin Street, University of Oxford, United Kingdom; **Co-Author:**Lars-Erik Malmberg, University of Oxford, United Kingdom; **Co-Author:**Gabriel Stylianides, University of Oxford, Cyprus

Numerous cross-sectional studies have highlighted a positive relationship between students' self-efficacy expectations (SEE) and important learning behaviors and outcomes. Furthermore, longer-term longitudinal research has provided support for a reciprocal relationship between self-efficacy and performance. While theory indicates SEE are dynamic, and change as an effect of continued appraisals of personal experiences, to our knowledge, no previous studies have investigated changes in students' SEE across a sequence of classroom lessons in mathematics. In the present micro-analytic study, we aimed to address this gap by investigating the stability or change of students' SEE across a sequence of 3-4 lessons in mathematics. We followed 9 classes of Norwegian grade 6 ($n = 81$) and grade 10 students ($n = 100$) as they were introduced to a new topic. Students responded to questionnaires about their SEE for easy, medium difficulty, and hard tasks, at the beginning of every lesson. Autoregressive path models for three self-efficacy constructs indicated that the rank order stability of students' SEE was high. Furthermore, latent growth models indicated that the mean level of students' SEE changed in a non-linear fashion, where the change was characterised by steep initial growth, followed by a flattening trend over time. This study provides a way to measure how students' SEE change across classroom lessons when a new topic is introduced. Thus our micro-analytic perspective can inform practice about when students' SEE are most likely to change, as well as what level of difficulty tasks are associated with steeper mean level changes.

Paper Session A 2

15 August 2018 12:45 - 14:15

Nobel 1481-341

Single Paper

Higher Education, Motivational, Social and Affective Processes

Achievement

Keywords: Achievement, Achievement goal theory, Developmental processes, Engagement, Measurement, Motivation, Self-determination theory

Interest group: SIG 08 - Motivation and Emotion

Chairperson: Nina Bonderup Dohn, University of Southern Denmark, Denmark

The association of identity and motivation with students' achievement in higher education

Keywords: Motivation, Self-determination theory, Achievement, Developmental processes

Presenting Author: Evelyne Meens, Fontys University of Applied Sciences, Netherlands; **Co-Author:** Anouke Bakx, Fontys University, FHKE, Netherlands; **Co-Author:** Theo Klimstra, Tilburg University, Netherlands; **Co-Author:** Jaap Denissen, Tilburg University, Netherlands

Two main reasons for dropping out of higher education are making an erroneous educational choice (an identity commitment) and lack of motivation. This study examined whether identity formation and motivation among prospective students while choosing a bachelor's program, predicted their first year achievement. For this, we used a variable-centered and a person-centered approach. Furthermore, we examined whether identity and motivation dimensions could be combined into new motivation-based identity profiles, and whether these new profiles predicted students' achievement. Participants ($N = 8,723$, 47.1% female, $M_{age} = 19.64$, $SD = 1.95$) were divided into four students' achievement groups (the dependent variable). The independent variables, five identity dimensions and five types of motivation, were assessed by fixed-item questionnaires. For the variable-centered approach we conducted multinomial logistic regression analyses. For the person-centered approach we conducted Latent Profile Analyses followed by chi-squared tests. Motivational dimensions and profiles did predict students' achievement, whereas identity dimensions and profiles did not. Identity and motivation dimensions were integrated into five motivation-based identity profiles ('positively balanced', 'amotivated', 'negatively balanced', 'autonomously achieved', and 'controlled & troubled diffused'), which predicted achievement. In these profiles (lack of) commitment and exploration co-occurred with (lack of) autonomous motivation. The present study is the first to show that the co-occurrence of identity formation dimensions and motivation result in motivation-based identity profiles predicting students' achievement. Students who have an unfavorable identity profile combined with low quality motivation at the start of their bachelor's program, are more likely not to obtain the required credits and/or to drop out.

The development of achievement goal orientations in middle school: A latent growth curve analysis

Keywords: Motivation, Achievement goal theory, Achievement, Developmental processes

Presenting Author: Markku Niemivirta, University of Oslo, Norway; **Co-Author:** Francisco Peixoto, ISPA - Instituto Universitário / CIE - ISPA (Research Center in Education), Portugal; **Co-Author:** Joana Pipa, ISPA - Instituto Universitário / CIE - ISPA (Research Center in Education), Portugal; **Co-Author:** Lourdes Mata, ISPA - Instituto Universitário / CIE - ISPA (Research Center in Education), Portugal

Research on achievement goals has become one of the most prominent perspectives on students' motivation and achievement behaviour. Despite the extensive research on the structure and correlates of achievement goals, the study of achievement goal development has been scarce. Thus, the goal of this study was to examine i) the developmental trajectories of achievement goals over the middle school years, ii) how those trajectories are linked to each other and to achievement, and iii) the extent to which they are influenced by gender, age and grade retention.

Participants were 1626 students from 5th ($N=919$) and 7th ($N=707$) grades followed over three years. To assess students' achievement goals we used the Goal Orientations Scale, which comprises 4 types of goal orientations: task orientation, self-enhancing ego orientation, self-defeating ego orientation, and avoidance orientation.

Results of a series of multivariate latent growth curve analysis showed an overall decrease in task, self-enhancing and self-defeating ego orientations, and an increase in avoidance orientation. Change in task orientation correlated with change in self-enhancing orientation and GPA, and negatively with change in avoidance, which, in turn, was negatively associated with change in GPA. Self-Enhancing and self-defeating ego orientations also correlated positively. Older students showed less negative change in task orientation and achievement, and the latter also held for students who had repeated a year. Gender had no effect on the change in achievement goals over time, although boys reported higher self-enhancing ego and avoidance orientations than girls.

Childrens' motivational development during the transition from pre-school to school

Keywords: Motivation, Engagement, Achievement, Developmental processes

Presenting Author: Ineke van der Veen, Kohnstamm Institute, University of Amsterdam, Netherlands; **Co-Author:** Annemiek Veen, University of Amsterdam, Netherlands

For decades, educators have been concerned about the decline in motivated learning behaviour of students after school transitions. Less is known on the development in motivated learning behaviour of children after the transition from pre-school to school and on factors related to this development. It is of importance to learn more on this, as for children from a migrant or low socio-economic background less favourable developments in motivation and achievement have been found. More insight in developments in learning behaviour and the relation with developments in achievement already at an early age might give clues for ways to foster childrens' motivation and achievement. In the present study the development in motivated learning behaviour of children from the age of 2 to 7 was studied by ethnic background and parental education and related to academic achievement. Furthermore these developments were related to explanatory factors: stimulation of self-regulated learning by teachers, quality of teacher-student relationships and whether the pre-school and school were at the same location. Data from five measurements on 1009 children of the ongoing national cohort study pre-COOL were

used. Results showed an increase in effort in preschool, and a decrease in early school years. Children with a low-educated mother had a lower level of effort than children with a higher educated mother. Like for other school transitions, the integration of children in the school environment as assessed by the teacher-student relationship quality, offered an explanation for the decline in motivation after the transition from pre-school to school.

Mastery Motivation of Mild Intellectually Disabled and Typically Developing School Children

Keywords: Motivation, Achievement, Measurement, Developmental processes

Presenting Author: Beata Szenczi, Eotvos Lorand University, Hungary; **Co-Author:** Krisztian Jozsa, University of Szeged, Hungary

It has been argued that mastery motivation is among the key predictors of disabled child development besides type of disability, mother-child interaction and behavior problems (*Hauser-Cram, Warfield, Shonkoff, Krauss, Sayer, Upshur & Hodapp, 2001*). Still, studies investigating mastery motivation in children with intellectual disability is scarce. The aims of this paper were to study the mastery motivation of children with and without mild intellectual disability (MID), to analyze the relationship between self-ratings and teachers' ratings, and to examine the difference of mastery motivation between students with and without MID. Participants were MID and typically developing (TD) children from grades 3 ($N_{MID}=210$; $N_{TD}=147$), 5 ($N_{MID}=146$; $N_{TD}=249$) and 7 ($N_{MID}=220$; $N_{TD}=248$). The Hungarian version of the Dimensions of Mastery Questionnaire was used to assess mastery motivation. Results show that reliabilities of teacher ratings of TD and MID children, as well as self-ratings of TD and MID children are similar. Correlations between self-ratings and teachers' ratings are weak to moderate, in line with former studies on TD schoolchildren (*Józsa & Molnár, 2013*). Significant differences were found in the mastery motivation of TD and MID students. In grade-level and chronological age-matched samples teachers rated MID students' mastery motivation lower in all domains. When matched on mental age, neither teachers nor students with MID rated themselves as having lower motivation in the cognitive domain. Results demonstrate that self-report measures to assess mastery motivation are also relevant for students with MID. The finding that MID students self-perceived mastery motivation is higher than that reported by teachers has important educational implications.

Paper Session A 3

15 August 2018 12:45 - 14:15

Nobel 1481-264

Single Paper

Learning and Social Interaction, Motivational, Social and Affective Processes, Teaching and Teacher Education

Achievement and Self-determination Theory

Keywords: Achievement, Achievement goal theory, Emotion and affect, Goals, Measurement, Motivation, Self-determination theory, Self-efficacy, Self-regulation, Social motivation, Teaching approaches

Interest group: SIG 08 - Motivation and Emotion

Chairperson: Thomas Lösch, University of Bamberg, Germany

How do Classroom Structures shape Secondary School Students' Achievement Goals?

Keywords: Achievement goal theory, Teaching approaches, Achievement, Goals

Presenting Author: Marjon Fokkens-Bruinsma, University of Groningen, Netherlands; **Co-Author:** Esther Canrinus, University of Agder, Norway; **Co-Author:** Els van Rooij, University of Groningen, Netherlands

We investigated how students' achievement goals are related to the classroom goal structures teachers endorse. In classrooms where teachers focus on learning and effort -instead of on normative standards and social comparison-, mastery goals are enhanced. This type of classroom can be endorsed by focusing on the following structures: task design, autonomy, recognition, grouping, evaluation, and time (TARGET). 501 students, divided across three secondary schools in the Netherlands, completed a digital questionnaire on their achievement goals and classroom goal structures. Regression analyses indicated that the task dimension, which concerned designing challenging and varied tasks, predicted both mastery and performance goals. Our study provides more insight in how classroom structures are related to goals that focus on understanding/competence, thus informing educational developers.

Basic psychological need support by teachers and peers during collaborative learning

Keywords: Self-determination theory, Teaching approaches, Achievement, Social motivation

Presenting Author: Lisette Hornstra, Utrecht University, Netherlands; **Co-Author:** Anouschka van Leeuwen, Utrecht University, Netherlands; **Co-Author:** Barbara Flunger, Utrecht University, Netherlands

The present study used a mixed methods approach to investigate associations between need satisfaction and performance during collaborative learning and to examine how teachers and peers provide need support during collaborative learning. Our major aim was to combine and extend previous findings from research on collaborative learning and self-determination theory. The present study has an embedded mixed-methods design and was conducted in the context of a biology assignment concerning the topic of heredity. In study 1 ($N=466$ 8th grade students and $N=20$ teachers), students were randomly assigned to groups that were led by a teacher ($N=20$ groups) or worked independently without teacher support ($N=129$ groups). Quantitative results revealed that autonomy satisfaction and competence satisfaction were positively associated with performance, whereas relatedness satisfaction was negatively related to performance. Teacher-led groups

did not differ from groups without a teacher present with regard to either need-satisfaction or performance. Study 2 comprised an in-depth exploration of the interactions in a subsample of the groups of study 1 and compared need support in teacher-led groups (N=8 groups) and groups without a teacher (N=6 groups). Qualitative findings from study 2 suggested that students and teachers overall offer the same degree of support, although sometimes through different strategies.

2-Year Classroom Intervention based on SDT and its Effect on Autonomous Motivation in Math

Keywords: Motivation, Self-regulation, Emotion and affect, Self-determination theory

Presenting Author:Tina Hascher, University of Bern, Switzerland; **Co-Author:**Claudia C. Sutter-Brandenberger, University of Bern, Switzerland

An alarming trend, especially for students in lower achievement levels, is for academic self-determined motivation to significantly decline in conjunction with the transition from primary to secondary school, and more so in math than in any other school subject. To counteract this negative development, a long-term 2-year intervention study based on basic need satisfaction (self-determination theory, Deci & Ryan, 2002) was developed and implemented in math classes during the first two years of secondary education (lowest achievement level) in Switzerland. The study applied a quasi-experimental design using two experimental groups (a combined student/teacher intervention group and a students-only intervention group) and a control group. The sample for this study included 348 seventh and eighth grade students. The aim of this study was to examine the impact of each form of treatment (student/teacher intervention, student intervention) on students' motivation. The intervention was evaluated longitudinally (pre-, post-post-test) through a student questionnaire. For students in the combined intervention, the results show a significant positive development in grade 7 followed by non-significant decline in grade 8. In contrast, for students in the student-only intervention group, the results show a significant negative development in the first intervention year (grade 7) followed by a non-significant positive trend in the subsequent school year. No significant development was found for students in the control group over both intervention years. The results merit discussion regarding the following aspects: students' profile (secondary students' from low-achieving tracks in mathematics) student and teacher involvement and the pre-intervention motivational level.

How teachers' characteristics explain students' perceptions of teaching

Keywords: Self-efficacy, Self-determination theory, Teaching approaches, Measurement

Presenting Author:Jean-Louis Berger, Swiss Federal Institute for Vocational Education and Training (SFIVET), Switzerland; **Co-Author:**Fani Lauermann, University of Bonn, Germany

Students' reports of their teacher's instructional practices are closely related to students' own motivations and academic engagement. To the extent that systematic differences in students' perceptions of instructional quality can be attributed to differences in teaching, it is important to examine the associations between teacher-related characteristics and student-reported instructional practices. Based on prior research, the following teacher-related characteristics were considered in this study: (a) teaching experience, (b) class size, (c) teachers' motivational beliefs (teachers' sense of responsibility and self-efficacy), and (d) teachers' self-reported instructional practices. Based on self-determination theory, four types of practices were considered: autonomy-support vs control, and structure vs chaos. A total of 94 vocational education teachers in Switzerland and their 1344 students participated in the study. Both teachers and students rated the teachers' instructional practices. The teachers also reported their gender, years of teaching experience, self-efficacy beliefs, and sense of responsibility. A means-as-outcomes multi-level model revealed that teachers' and students' reports of instructional practices were not closely aligned: merely teacher-reported autonomy-support was significantly related to student-reported practices. Teacher-reported autonomy-support, in turn, was primarily shaped by teachers' motivational beliefs. A larger class size was linked to less chaos, but also to lower levels of student-reported autonomy-support and structure. Teacher's gender and experience were related to their self-reported instructional practices. This research contributes towards a better understanding of the foundations of students' perceptions of their teacher's instructional practices and underscores the relevance of teachers' motivational beliefs in explaining systematic differences in teachers' practices.

Paper Session A 4

15 August 2018 12:45 - 14:15

Nobel 1483-251

Single Paper

Assessment and Evaluation, Motivational, Social and Affective Processes

Expectancy-value Theory

Keywords: Engagement, Expectancy-value theory, Interest, Measurement, Motivation, Self-concept

Interest group: SIG 08 - Motivation and Emotion

Chairperson: Elizabeth Olivier, Université catholique de Louvain (UCL), Canada

Development and validation of a domain-specific expectancy-value form of learning motivation

Keywords: Motivation, Expectancy-value theory, Interest, Measurement

Presenting Author:Kerstin Kisielski, TU Dresden - Psychology of Learning and Instruction, Germany; **Co-Author:**Susanne Narciss, TU Dresden, Germany

This study aims at developing and validating a domain-specific expectancy-value form of learning motivation (EVF-LM).

Rooted in integrative expectancy-value models of motivation (e.g. Eccles et al. 1983; Heckhausen & Rheinberg, 1980; Narciss, 2006) and the current state-of-the art on the role of costs (e.g. Flake et al., 2015; Hofer et al., 2017) for learners' motivation the EVF-LM differentiates 13 subscales: Three expectancies scales (external level of control, level of personal mastery, instrumentality of outcome), five value scales (self-evaluation, external evaluation, utility value, activity-related intrinsic value, interest-related intrinsic value) and five cost scales (loss of other valued alternatives, task effort, two emotional cost scales, motivational interference). This study examined the EVF-LM's factor structure with data collected from 253 university students. Principal components analysis with varimax rotation was used as factor extraction method. The structure analysis suggests seven factors following the screeplot criterion: (1) [activity-, interest-related] *intrinsic value*; (2) *instrumentality* and *future utility*; (3) *external evaluation* and its *emotional costs*; (4) aspiration for success given the *external level of control* and the perceived *level of personal mastery*; (5) *loss of alternatives* due to *task effort*; (6) *self-evaluation*; (7) *motivational interference*. Item selectivity ($.39 \leq r_{it} \leq .78$) and scales' internal consistency ($.68 \leq \alpha \leq .91$) yielded satisfactory to very good results for all scales except one. The questionnaire's design allows to measure motivation at task- and domain-specific level. Present findings support major assumptions regarding the EVF-LM's theoretical structure. The EVF-LM's structure consistency across different domains will be investigated in further studies.

Relevance Interventions in the Classroom: A Means to Promote Students' Homework Motivation

Keywords: Motivation, Expectancy-value theory, Interest, Engagement

Presenting Author: Barbara Flunger, Utrecht University, Netherlands; **Co-Author:** Hanna Gaspard, University of Tübingen, Germany; **Co-Author:** Isabelle Haefner, University Tuebingen, Germany; **Co-Author:** Brigitte Brisson, German Institute for International Educational Research (DIPF), Germany; **Co-Author:** Anna-Lena Dicke, University of California Irvine, United States; **Co-Author:** Jiesi Guo, Australian Catholic University, Australia; **Co-Author:** Cora Parisius, University of Tuebingen, Germany; **Co-Author:** Benjamin Nagengast, Eberhard Karls Universität Tübingen, Germany; **Co-Author:** Ulrich Trautwein, University of Tübingen, Germany

Many students deal with motivational problems when doing homework and fail to complete their homework. To investigate whether an intervention that effectively promoted value beliefs in mathematics could also increase students' math homework motivation and homework behavior, data of a cluster randomized controlled study with two classroom-based relevance interventions were analyzed. Eighty-two classrooms with 1978 ninth grade students were randomly assigned to one of two experimental conditions (either writing a text or evaluating interview quotations) or a waiting control condition. Students' homework motivation and behavior were assessed with homework diaries. The students were asked to complete the homework diary over a period of four weeks after the intervention, immediately after they had worked on their homework. For the measures of students' homework motivation and homework effort, the seven daily responses per week were aggregated to four weekly measures. Using linear latent growth curve analysis, we examined whether the interventions affected students' homework motivation and behavior during the four weeks after the intervention. The results revealed that students in the text condition reported higher triggered interest but lower homework completion than students in the control condition after the intervention. Students in the quotations condition reported higher utility of homework for future life, higher maintained interest, and higher homework effort after the intervention. Thus, relevance interventions in the classroom can be a promising tool to foster students' homework motivation and behavior.

It Takes Two: Expectancy-Value Constructs and Vocational Interests Predict STEM Careers Differently

Keywords: Motivation, Expectancy-value theory, Interest, Self-concept

Presenting Author: Eike Wille, University of Tübingen, Germany; **Co-Author:** Jenna Cambria, University of Arkansas, United States; **Co-Author:** Gundula Stoll, University of Tübingen, Germany; **Co-Author:** Benjamin Nagengast, Eberhard Karls Universität Tübingen, Germany; **Co-Author:** Ulrich Trautwein, University of Tübingen, Germany

Eccles et al.'s (1983) expectancy-value theory and Holland's (1997) theory of vocational interests are two of the most prominent interest-based theories for investigating STEM career choices. Constructs from both models have been highly predictive in explaining young people's STEM careers. However, their relative value in predicting young people's STEM careers is so far unclear. Aiming to fill this gap, we analyzed longitudinal data from 4,984 students in Germany at the end of high school and 2 years later after the transition to university. We investigated different STEM outcomes (i.e., math achievement, which is an important pre-requisite of STEM careers, and the choice of different STEM majors at university) by applying multiple regression analyses and multiple logistic regression analyses. Results showed that both expectancy-value constructs and vocational interests predicted these indicators of STEM careers. Their relative predictive power, however, depended on the criterion variable investigated: Whereas expectancy-value constructs were better predictors of math achievement, vocational interests were better predictors of the choice of a STEM major at university in contrast to majors outside of STEM, and also of the choice of different subjects within the STEM field. Nonetheless, also expectancy-value constructs added incremental validity above and beyond the vocational interests. Results therefore suggest that expectancy-value constructs and vocational interests contribute uniquely to young people's STEM career pathways. Implications include the careful consideration of the constructs with respect to the outcomes under investigation in future research and with respect to outcomes targeted in interventions.

Understanding Utility-Value Intervention Effects: The Role of Personal and Interpersonal Writing

Keywords: Motivation, Expectancy-value theory, Interest, Engagement

Presenting Author: Stacy Priniski, University of Wisconsin - Madison, United States; **Co-Author:** Elizabeth Canning,

Indiana University, United States; **Co-Author:**Yoi Tibbetts, University of Virginia, United States; **Co-Author:**Emily Rosenzweig, University of Wisconsin-Madison, United States; **Co-Author:**Judith Harackiewicz, University of Wisconsin-Madison, United States

Utility-value interventions, in which students complete writing assignments about the relevance or usefulness of course material, show great promise for promoting interest and performance in difficult introductory science courses. However, prior intervention studies have used a combination of essays about utility value for the self (personal utility value) and letters about utility value for others (interpersonal utility value), without comparing their effects. Therefore, it remains unclear how and why these assignments are effective and thus what best practices should be for scale-up efforts. We systematically compared the features of personal and interpersonal utility-value assignments in a laboratory experiment (Study 1, N = 428), and then examined their effects, alone and in combination, in a randomized controlled trial in an introductory biology course (Study 2, N = 591). Both personal and interpersonal utility-value writing had positive effects on students' motivation in the laboratory study. In the field study, students performed better in the course when they had opportunities to write about both personal and interpersonal utility value. Variety in utility-value assignments increased students' engagement in the assignments and the level of utility value they articulated, and mediation analyses revealed that both of these mechanisms played a role in mediating the positive effects of combining personal and interpersonal utility value. Specifically, articulated utility value mediated the positive effects found for all students, on average, and for students with low performance expectations, whereas engagement mediated the positive effects found for students with low prior GPAs.

Paper Session A 5

15 August 2018 12:45 - 14:15

Nobel 1483-344

Single Paper

Cognitive Science, Motivational, Social and Affective Processes

Self-determination theory and Measurement

Keywords: Engagement, Expectancy-value theory, Measurement, Motivation, Resilience, Self-determination theory, Teaching approaches

Interest group: SIG 08 - Motivation and Emotion

Chairperson: Ib Ravn, The Danish University of Education, Denmark

How do People Handle Competence Frustration?: The Role of Resilience and Attentional Bias

Keywords: Motivation, Self-determination theory, Measurement, Resilience

Presenting Author:Joachim Waterschoot, Ghent University, Belgium; **Co-Author:**Maarten Vansteenkiste, Ghent University, Belgium; **Co-Author:**Bart Soenens, Ghent University, Belgium

Objectives. Although the notion of competence already received a great deal of attention in the motivational literature, research examining how people deal with feelings of failure, or competence frustration, is fairly scarce. Considering competence from a need-based perspective, and through the lens of Self-Determination Theory in particular, we examined whether individuals would display an attentional bias for competence-related cues after receiving competence-frustrating (i.e., negative) feedback. We also examined whether this attentional bias, along with inter-individual differences in resilience, would play a role in participants' ability to restore competence after negative feedback *Methods.* In the current experimental study, we manipulated the need for competence by providing positive, no or negative feedback after 90 undergraduates (65.56% female; $M_{age} = 21.97$) participated in a puzzle task. After the assessment of participants' attentional bias towards different competence related cues by a dot probe task, participants then had the opportunity to continue working on the puzzle task during a free-choice period. Feelings of competence were assessed on multiple occasions during the experiment. *Results.* The feedback manipulation yielded a main effect on feelings of competence, intrinsic motivation and an attentional bias for competence-related words. Further, repeated measures analysis revealed this attentional bias as being predictive for a decrease of competence frustration over time. Finally, multiple regression analyses indicated that resilience interacted with negative feedback such that only high-resilient participants displayed positive bias scores for competence-related words and, subsequently, showed a restorative movement of competence frustration. *Conclusion.* Resilience operates as need restoring mechanism through attentional bias.

Testing Gender Similarities: Subjective Task Value and Motivation to Transfer in Adult Education

Keywords: Motivation, Expectancy-value theory, Self-determination theory, Measurement

Presenting Author:Andreas Gegenfurtner, Technische Hochschule Deggendorf, Germany

Are female and male trainees similar or different in their reaction to training programs, specifically regarding their subjective task value and motivation to transfer? According to the gender similarities hypothesis, women and men are alike on most psychological variables. However, according to research in organizational behavior, female and male employees differ on certain aspects, such as their job satisfaction and work identity. To test these two views on gender similarities and differences in the context of human resource development and adult education, the present study examined the extent to which gender moderated reactions to training. Based on the expectancy-value theory of motivation and self-determination theory, a web-based questionnaire was used to measure six training reactions: intrinsic value, attainment value, utility

value, perceived relative cost, autonomous motivation to transfer, and controlled motivation to transfer. The results indicated that women and men differed in their ratings of attainment value but were similar for the remaining five reaction measures. These outcomes support the gender similarities hypothesis. The findings are discussed in terms of their theoretical implications for modeling gender effects in HRD research and their practical significance for promoting training effectiveness and transfer of training.

“All fun and no impact – is there a motivation-behavior gap in studies of games and gamification?”

Keywords: Motivation, Engagement, Self-determination theory, Measurement

Presenting Author:Andreas Lieberoth, Aarhus University, Denmark

Reviews of the literature on gamification have shown that adding game mechanics or superficial game feel to a variety of activity arenas, can engender experiences of added engagement, motivation, fun. This effect is by no means constant, but consistent enough across domains to suggest that the addition of game-elements to non-game contexts can affect motivation given the right circumstances. Methods for assessing effects, however, have differed wildly, and in many cases, measurable behaviour change did not follow from self-reported positive experiences (Hamari, Koivisto, & Sarsa, 2014 updated version *in prep*; Sailer, 2017). Since the idea of gamification first gained traction in the late 00's, practices and research have matured to a point, where we can begin to make assertions about not just if gamification works – the answer is clearly “sometimes” – but also how and why different design elements may succeed or fail in different behavioural contexts. In this paper we compare 3 instances of the motivation-behavior gap in empirical studies of gamification, in order to map out possible explanations for this disconnect both in terms of 1.) design elements, 2.) behavioural domains and 3.) research methodology. Centrally, we point to variation in behaviour contexts as a key factor in understanding the success and failure of gamification attempts. Based on this we assess the seriousness of the “all fun and no impact”-problem to gamification studies more broadly, and suggest methodological and theoretical solutions.

How do students with different motivational profiles perceive feedback during classroom interaction?

Keywords: Motivation, Self-determination theory, Teaching approaches, Measurement

Presenting Author:Katharina Dreiling, Institute for Educational Science, University of Göttingen, Germany; **Co-Author:**Ariane S. Willems, Institute for Educational Science, University of Göttingen, Germany

Self-Determination Theory distinguishes between different types of motivation which facilitate learning differently (Deci & Ryan, 2000). In accordance with SDT, empirical studies illustrate effects of different qualities of motivation on students' perception of their learning environment (Seidel, 2006). Recently, the power of feedback as part of the quality of a learning environment has been stressed (Hattie & Timperley, 2007): Whereas there is evidence that the quality of feedback differentially predicts students' learning motivation, little attention has been paid to how students' quality of motivation influences their perception and appraisal of teacher feedback. The study aims at contributing to a better understanding of the interplay between students' motivation and their perception of teacher feedback by (i) identifying students' individual motivational profiles and (ii) relating these profiles to their perception of feedback in classroom interaction. In our study, n = 440 senior high school students from 27 German language classes were investigated. A standardized questionnaire was developed to assess different dimensions of feedback (evaluative, elaborated, peer-related) and students' different types of learning motivation (intrinsic, identified, introjected, external). By using Latent Profile Analysis, three motivational profiles were identified: (i) students with high levels of autonomous forms of motivation, (ii) students with low levels of autonomous forms of motivation, and (iii) students with moderate levels of both intrinsic and extrinsic motivation. In accordance with our hypotheses, students whose motivational profile is characterized by generally high levels of autonomous types of motivation report higher levels of elaborated and peer-related feedback, and lower levels of evaluative feedback.

Paper Session A 6

15 August 2018 12:45 - 14:15

Nobel 1481-231

Single Paper

Motivational, Social and Affective Processes

Self-regulation

Keywords: Achievement goal theory, Attitudes and beliefs, Emotion and affect, Metacognition, Motivation, Self-regulation, Social motivation, Teaching approaches

Interest group: SIG 08 - Motivation and Emotion

Chairperson: Kristy Robinson, Michigan State University, United States

Contextual Differences of Students' Motivation Regulation Strategies in a Collaborative Project

Keywords: Motivation, Self-regulation, Metacognition, Social motivation

Presenting Author:Aishah Bakhtiar, University of Victoria, Canada; **Co-Author:**Allyson Hadwin, University of Victoria, Canada; **Co-Author:**Hanna Jarvenoja, University of Oulu, Finland

Research on motivation regulation in collaborative contexts is growing. While studies have uncovered specific motivation regulation strategies being used (e.g., Järvelä et al., 2008), more empirical work is needed to examine why and when specific strategies are deployed. The purpose of this paper is to examine students' choices of motivation regulation

strategies as a function of students' task appraisal and group experience in a semester-long collaborative project. Participants were 140 students enrolled in an undergraduate elective course. Students worked in groups of three to five (36 groups) to complete a project where they translated learning theories and study techniques into a one-page infographic. Preliminary findings described the major motivation hurdles anticipated and reported by students. The main challenge tended to relate to getting members to behavioural engaged and participate; however, not all students chose to address that challenge with a behaviour-focused strategy. Groups' team learning behaviour did not seem to influence students' motivation level toward the task, and potentially motivation regulation strategies as well. This research contributes to our understanding of the contextual factors underlying learners' motivation regulation strategies, and the evolving nature of students' regulatory actions in motivationally challenging situations in collaboration. Its implications for the design of collaborations and the supports provided in that context will be discussed.

Help seeking and motivational beliefs: The case of academically talented adolescents

Keywords: Motivation, Self-regulation, Achievement goal theory, Attitudes and beliefs

Presenting Author: Eleftheria Gonida, Aristotle University of Thessaloniki, Greece; **Co-Author:** Stuart Karabenick, University of Michigan, United States; **Co-Author:** Dimitrios Stamovlasis, Aristotle University of Thessaloniki, Greece; **Co-Author:** Panayiota Metallidou, Aristotle University of Thessaloniki, Greece; **Co-Author:** Center for Talented Youth (CTY) Greece, Anatolia College, Thessaloniki, Greece

Abstract The study aimed to explore the motivational profile of academically talented adolescents and their academic help-seeking intentions and beliefs. Adolescents' motivational profile was examined based on their achievement goals. The sample of the study consisted of 207 academically talented adolescents who were identified via a special testing process organized by the Center of Talented Youth in Greece. Students were administered self-report scales measuring mastery-approach, mastery-avoidance, performance-approach and performance-avoidance goals, intention to seek academic help, and perceived help-seeking benefits and costs. Latent class analysis indicated four latent clusters based on the four goal orientations as indicator variables: (i) medium mastery (approach and avoidance) and high performance goals (approach and avoidance), (ii) high mastery (approach and avoidance) and low performance goals (approach and avoidance), (iii) all four goals low, and (iv) all four goals high. Intention to seek help when needed (instrumental help) and perceived help-seeking benefits were highest for students in the high mastery and low performance goals cluster. The discussion will include comparisons with typically achieving students' motivational and help-seeking profiles, as well as implications for educational practices with talented adolescents.

Study-life balance: How mindfulness may help students to manage a stressful learning episode

Keywords: Motivation, Self-regulation, Emotion and affect, Metacognition

Presenting Author: Kerstin Senker, Universität Bielefeld, Germany; **Co-Author:** Axel Grund, University of Bielefeld, Germany; **Co-Author:** Stefan Fries, University of Bielefeld, Germany

Does trait-mindfulness have an action stabilizing effect both on daily study and leisure engagement? The aim of the present work was to examine two components of trait-mindfulness (being present and being non-judgmental towards thoughts and feeling) with respect to positive and negative activation and the experience of motivational conflicts. We used experience sampling methods to obtain daily data from university students ($N = 56$), who completed short questionnaires via their smartphones five times a day over eight consecutive days, resulting in a total of 1.889 everyday situations recorded during an intensive learning episode.

We used multi-level modeling to show that trait mindfulness predicts momentary positive (e.g. feeling motivated) and negative (e.g. stress, anger) activation and experiences of motivational conflict (i.e., whether students had the feeling that they want or should do something else). We found a significant effect for both mindfulness components in predicting less negative activation in both contexts. In case of positive activation, only being non-judgmental yielded a positive effect in learning situations. Non-judgmental students also experienced less want- and should-conflicts during their leisure time, and less should-conflicts during learning.

Taken together, mindfulness depicts an important self-regulatory capacity, especially with regard to the daily juggle between studying and leisure time. Our findings give valuable hints on the underlying mechanisms of mindfulness, the context-independent effect of mindfulness in contrast to other self-regulation strategies (i.e., self-control), and illustrate the significance of mindfulness in educational contexts.

Teachers' conceptions about academic effort and its development in school contexts

Keywords: Motivation, Self-regulation, Attitudes and beliefs, Teaching approaches

Presenting Author: Mary Louise Claux, Pontificia Universidad Católica del Perú, Peru

Although effort is referred to and attributed to academic success, in Peru little has been studied on how, both effort and willingness to strive in daily chores, tasks completion and goals pursuit is developed in school contexts. Accordingly, a qualitative study was carried out with the aim to understand how teachers conceive effort and its assessment, and what strategies they use to purposely develop effortful behavior in school context. Sixteen teachers from four public schools in Lima-Peru were interviewed. From a thematic analysis of these interviews, the following general results were found: 1) There are fundamental differences among teachers' conceptions on effort, which denotes a confused understanding of this motivational component. 2) Teachers' initiatives to promote their students' effort development are limited to written or

verbal communications and requests to exert effort, with no strategic orientations for students. 3) Criteria to assess effort in class and school activities are mainly related to achievement and task fulfillment. 4) Teachers distinguish motivation -as an extrinsic phase usually held at the beginning of their instructional event-, from effort, -as a personal and stable attribute acquired at home in early life that students bring with them when they enter to school. Results also include a proposal and discussion of an exploratory network model of codes that comprise social context variables, personal resources, motives and academic outcomes related to effort, in order to describe and understand teachers' implicit theories and beliefs about effort and its development promotion in academic context.

Poster Session A 1

15 August 2018 14:15 - 15:15

Nobel window hallway

Poster Presentation

Assessment and Evaluation, Higher Education, Instructional Design, Learning and Instructional Technology, Lifelong Learning, Motivational, Social and Affective Processes

Engagement and Motivation

Keywords: Achievement, Attitudes and beliefs, Developmental processes, Educational attainment, Engagement, Expectancy-value theory, Goals, Interest, Learning approaches, Measurement, Metacognition, Motivation, Self-determination theory, Self-efficacy, Self-regulation, Social motivation, Teaching approaches

Interest group: SIG 08 - Motivation and Emotion

A Self-Determination Theory approach to understand the motivational dynamics of Team-Based Learning

Keywords: Engagement, Self-determination theory, Teaching approaches, Educational attainment

Presenting Author: Lucas Matias Jenó, University of Bergen, Norway

The present study investigates the effect of Team-Based Learning (TBL) on students' engagement and learning. The study employs a Self-Determination Theory (SDT) approach to investigate the underlying motivational effects of implementing TBL among a higher education sample. Sixty-four students participated in a quasi-experimental study with a one-group pretest-posttest design. The results show that the students' increased significantly from pretest to posttest on intrinsic motivation, identified regulation, external regulation, perceived competence, and perceived autonomy support, as a function on TBL. The students' basic psychological needs for autonomy, competence, and relatedness increased from pretest to posttest. Further, the results show that the students' decreased in amotivation from pretest to posttest. Lastly, the students' engagement and perceived learning increased. A path-analytical model show that increases in intrinsic motivation, perceived competence and external regulation predicts increases in engagement, which in turn predicts increases in perceived learning. The results are in line with SDT. A teaching method that encourages active learning, as opposed to passive learning, facilitates autonomous motivation (i.e., intrinsic motivation and identified regulation) and decrease unintentionality (i.e., amotivation). In TBL, the teacher is a facilitator of learning, as opposed to a transmitter of information, which might account for the increases in autonomy support. Moreover, functions within TBL might enhance student engagement and perceived learning. However, TBL has several requirements that might be perceived as controlling, which might explain the increase in external regulation. Based on the results, we encourage teachers to consider the motivational pulls within TBL when implementing in courses.

The Relationship between Basic Psychological Needs, Learning Climate, and Academic Motivation

Keywords: Motivation, Self-determination theory, Teaching approaches, Educational attainment

Presenting Author: Rylee Oram, University of Ottawa, Canada; **Co-Author:** Maria Rogers, University of Ottawa, Canada

It is well-established in previous research that academic motivation has a significant, positive influence on students' academic success. Academic motivation has been broadly defined as a student's desire, effort, and persistence regarding their academic success. Although several theories have been used to examine academic motivation, self-determination theory (SDT) has guided much of the recent research. SDT is a motivation meta theory that is comprised of several mini-theories, including basic psychological needs theory (BPNT). According to BPNT, psychological wellbeing and academic motivation may arise when an individual's basic psychological needs (BPN)—autonomy, competence, and relatedness—are fulfilled. These needs can be fulfilled through autonomy supportive learning climates. Autonomy supportive learning climates can also lead to greater well-being and self-motivation. Despite the research suggesting learning climate and BPN both lead to academic motivation, the differential contributions of these variables in predicting academic motivation remains unclear. For this reason, the current study examined the significance of the BPN, and autonomy supportive learning climates, as predictors of academic motivation. One-hundred and ninety-seven undergraduate students at the University of Ottawa completed a 30-minute online questionnaire regarding their university experience. A hierarchical regression analysis was conducted to examine the relative incremental contributions of each independent variable in the prediction of academic motivation. Results indicated that the BPN predicted academic motivation, over and above an autonomy supportive learning climate, $F(4, 192) = 20.39, p < 0.001$. These findings suggest that fulfilling a student's BPN may be more crucial in increasing their academic motivation than an autonomy supportive learning climate.

First steps in LEAPS – developing an instrument for measuring engagement among students aged 6-15

Keywords: Self-efficacy, Engagement, Measurement, Developmental processes

Presenting Author: Morten Rask Petersen, University College Lillebælt, Denmark; **Co-Author:** Nadia Dyrberg Egemose, Laboratory for Cohesive Education and Learning, University of Southern Denmark, Denmark; **Co-Author:** Thomas Rohde Skovdal Albrechtsen, University College Syd, Denmark; **Co-Author:** Frank Jensen, University College Lillebælt, Denmark

Project LEAPS (Learning and Engagement through Authentic Projects with Science enhanced) transforms four Danish schools into schools focused on a project based approach to teaching and learning. The objectives are to foster students' development of 21st century skills and to motivate students' learning engagement with special emphasis on science. As part of an overall mixed-method research design questionnaires are utilised to monitor the objectives. During the first pilot year the questionnaires are answered by 1st, 4th, and 7th graders, but as the LEAPS project progresses, the data will be collected from all grades in Danish compulsory education. Previously validated questionnaires on the topic of motivation and interest often are targeting elder students. Therefore, new questionnaires that are appropriate for these age groups are needed. This presentation concerns the development and validation of the LEAPS questionnaires which after the first round of statistical analysis with explorative factor analysis include six categories: i) active learning strategies (7 items), ii) mastery orientation (9 items), iii) performance orientation (7 items), iv) science learning value (5 items), v) self-efficacy (5 items) and vi) interest in science (6 items). The second version of the LEAPS questionnaires will be distributed and evaluated in the spring of 2018. The poster will include these results and present the final LEAPS questionnaire which will be a valuable and important tool for gaining new insights in the development of children's engagement in school and, in particular, in science.

Teachers' attitudes towards and use of motivational concepts at a health sciences school

Keywords: Motivation, Attitudes and beliefs, Self-determination theory, Teaching approaches

Presenting Author: Abigail Snook, University of Iceland, Iceland; **Co-Author:** Asta B Schram, University of Iceland, Iceland

Abigail Snook, PT, MS, Med, doctoral candidate

Asta B. Schram, PhD, University of Iceland

The aim of this study was to examine teachers' attitudes towards and use of motivational concepts. Teachers at the University of Iceland's School of Health Sciences (n=863) were invited to participate in an online survey. A 6-point Likert agreement scale was used to assess teacher attitudes towards and recent use in the classroom of the MUSIC[®] Model of Motivation components, which were represented by the following statements: It is a part of a teacher's responsibility to: give students some choices in learning (M), make learning useful (U), provide feedback and organization to ensure student success (S), make learning interesting (I), and communicate caring and respect for students and their goals (C). Similar statements were used to determine recent use of the components in the classroom. The combined percentage of "strongly agree" or "agree" responses in attitudes toward the components were: M (51%), U (93%), S (71%), I (97%), C (96%), A similar pattern was seen in their reported use of these components in their recent classroom teaching but with values 10-20% lower. Results suggest that faculty are less likely to value or use the concept of giving students some choices as a part of supporting autonomy. These results give some indication of how teachers perceive these motivational components and suggest that faculty development programs need to educate faculty on the importance of giving students some choices and supporting autonomy as a way to enhance student motivation in the classroom.

Self-regulated Learning Profiles in College Students and their Needs for Learning Support

Keywords: Self-regulation, Expectancy-value theory, Attitudes and beliefs, Metacognition

Presenting Author: Ji Zhou, German Institute for International Educational Research (DIPF), Germany

The aim of this study is to identify different types of college students based on their self-regulated learning (SRL), investigate their needs for different SRL scaffolds, and examine the relationship between students' profiles and their needs. For this purpose, a questionnaire including measures of learning strategies (cognitive, motivational, resource management), motivational beliefs (value, expectancy and affect) and needs for different SRL support was constructed and administered to 209 college students. The questionnaire was based on the Motivated Strategies for Learning Questionnaire and several meta-analysis studies of SRL interventions. Results showed that generally students preferred motivational support and resource provision than cognitive and metacognitive scaffolds ($F(2.77, 576.68) = 8.99, p < .001$). Latent cluster analysis identified 3 clusters: low-, medium-, and high-SRL students. They had different learning strategies, motivations, and perception of needs for scaffolds (p s

Making lectures interactive and fun: Motivating students by means of digital response systems

Keywords: Motivation, Interest, Engagement, Teaching approaches

Presenting Author: Åge Diseth, University of Bergen, Norway

Student Response Systems (SRS) enables interaction between lecturer and students by assigning quizzes and tasks related to the topic of the lecture. The aim of the present study was to show how teaching by means of SRS is experienced by students regarding their motivation, learning, interaction, and engagement. The students (N=128) participated in multiple lectures throughout the semester, and were given multiple choice questions related to the study topic to which they responded by means of an SRS system (Socrative). This procedure was repeated in every lecture. At the end of the semester, students were then given the opportunity to report how they

experienced this combination of lectures and SRS. The results showed that students reported a high degree of satisfaction with use of the SRS, and they particularly appreciated possibilities to uncover gaps in their own knowledge. However, quite a few of the students did not agree that use of SRS contributed to their understanding of the subject. Students were also satisfied with the degree of difficulty in the quizzes. The results also indicated that students who expected relatively poor performance on their future exam considered use of SRS to be more useful than students who expected to perform relatively well. Results were discussed in accordance with theoretical assumptions about test-effect and «flow», in addition to challenges regarding design of multiple choice quizzes in SRS, and how use of SRS may be implemented as a motivational design to increase engagement and learning among students.

External predicts decreasing quality of motivation across three school subjects

Keywords: Motivation, Self-determination theory, Teaching approaches, Developmental processes

Presenting Author: Quint Oga-Baldwin, Waseda University, Japan; **Co-Author:** Luke K. Fryer, The University of Hong Kong, Hong Kong

For many students, education may offer opportunities for growth and self-discovery. For others, it is a path forced upon them. In this study, we sought to identify students' motivational profiles and how those profiles change over the course of a school year at six secondary schools. We measured students' intrinsic and extrinsic regulation to create profiles at two time points, and investigated how the pattern of changes between motivational profiles related to teacher autonomy support, structure, and external control. The most significant pattern for increasing students' intrinsic regulation in relation to external regulation came through a reduction in perceptions of teacher control. Results indicate the importance of minimizing negative external control during the transition from elementary to secondary school.

How to prevent dropout? Designing an approach to enhance motivation in adolescent language learners

Keywords: Motivation, Self-determination theory, Teaching approaches, Learning approaches

Presenting Author: Marianne Engen Matre, University of Agder, Norway; **Co-Author:** Esther Canrinus, University of Agder, Norway

In the South of Norway, many secondary school pupils drop out due to lack of motivation. We investigate how motivated pupils are for education in general and for language learning in particular. Based on the Self-Determination Theory we designed an intervention aimed at increasing pupils' motivation and enhancing their feelings of autonomy. Using survey data from 117 (T1, before the intervention) and 80 (T2, after the intervention) pupils, we find at T1 that pupils are mostly extrinsically motivated, particularly for their future profession, both in terms of general and subject specific motivation. At T2, our findings for both general and subject specific motivation are, again, similar. We find, in both cases, a move to even more extrinsic motivation. i.e., a sense of obligation or a lack of choice (subject specific motivation), and the aim for a high status/salary job (general motivation). In the intervention, pupils were given an opportunity to identify obstacles hindering academic achievement in an aim to enhance their autonomous motivation. Although we did not observe an increase in this type of motivation, offering teachers a didactic approach to promote autonomous learning might have prevented a decrease. Furthermore, the intervention ensures that learners should evaluate their own progress and use various learning strategies, an important aspect in Norway's educational policy.

Effective teaching interventions for improving learning and motivation of high ability students

Keywords: Motivation, Teaching approaches, Achievement, Learning approaches

Presenting Author: Katelijne Barbier, University of Antwerp, Belgium; **Co-Author:** Elke Struyf, University of Antwerp, Belgium; **Co-Author:** Vincent Donche, University of Antwerp, Belgium

The overall goal of this research is to provide an evidence-based answer to the question: 'What are effective interventions for improving learning outcomes (e.g. learning and motivation) for high ability students in everyday classroom settings?', and this specifically for the Flemish education system. Optimizing the quality of student motivation and student learning in everyday classrooms is an important challenge for teachers, but becomes even more challenging when confronted with a class population consisting of different levels of cognitive ability among students. In this poster, the goals, design and first outcomes of this review study will be presented. Its purpose is to map the effectivity of teaching strategies that aim to stimulate the motivation and learning capacity of highly able students in everyday learning environments (in elementary education) according to the present state-of-the art literature. Different research terms were inserted into two databases (namely 'ERIC' and 'Web of Science'): input terms, process terms, learning outcome terms (with motivational, regulatory, affective and cognitive aspects) and context search terms. In this analysis phase, 20 articles were found on the basis of the inclusion and exclusion criteria. Preliminary results suggest that most of the research has been conducted in North-America. Furthermore, different instruction strategies and training programs are discussed in the different articles and are argued to have a stimulating effect on the motivation and achievement outcomes of high ability students in a specific setting. The articles examine both students' and teachers' perceptions.

Does triggered interest relate to grades?

Keywords: Interest, Teaching approaches, Achievement, Measurement

Presenting Author: Clara Mumme, Goethe-University Frankfurt, Institute of Psychology, Germany; **Co-Author:** Christian Trautmann, Goethe-Universität, Germany; **Co-Author:** Regina Vollmeyer, Goethe-Universität, Germany

The purpose of the present study was to investigate how situational and individual interest in a school topic are related to

academic achievement. In addition, we asked whether men showed significantly higher interest-performance correlations than women. The study was conducted in a classroom learning environment where students' interest in politics and economy were triggered by illustrations. After the instruction to a politico-economic topic, situational interest of 23 German high school students ($n = 9$ females) with a mean age of 16 years was recorded. After 3 weeks of teaching, individual interest and academic achievement (grade in final exam) were measured. In general, situational interest had a significant effect in predicting the academic achievement ($\beta = .56, p$

Situational Interest During Science Enrichment Program as a Predictor of Personal Interest

Keywords: Interest, Engagement, Teaching approaches, Social motivation

Presenting Author: Anna Sansone, Michigan State University, United States; **Co-Author:** Kristy Robinson, Michigan State University, United States; **Co-Author:** Anthony Perez, Old Dominion University, United States; **Co-Author:** Rochelle Bloom, Duke University, United States; **Co-Author:** Lisa Linnenbrink-Garcia, Michigan State University, United States

The present study used hierarchical linear regression to examine whether undergraduate university students' ($N = 176$) situational interest (SI) during a summer enrichment experience predicted changes in personal interest (PI) in science the following spring. Gender and baseline science interest at the outset of the first year in college were used as control variables. Including three components of SI (triggered-SI, maintained-SI-feeling, and maintained-SI-value) resulted in a significant increase in variance explained in PI, beyond initial levels of PI and gender. However, of the three SI sub-components, only maintained-SI-value uniquely predicted PI. This was confirmed by ancillary analyses, which examined each of the SI sub-components independently, explored possible interaction effects with gender, and addressed potential issues of multicollinearity and statistical suppression. Results contribute to the literature on classroom supports for SI as well as research underscoring the importance of students' valuing of classroom activities as a potential intervention to support student interest development in science.

Self-Regulated Learning and Mental Health in University Students

Keywords: Self-regulation, Learning approaches, Measurement, Educational attainment

Presenting Author: Sarah Davis, University of Victoria, Canada; **Co-Author:** Allyson Hadwin, University of Victoria, Canada; **Co-Author:** Rebecca Edwards, University of Victoria, Canada

Student mental health needs on Canadian campuses are increasing, but programs designed to address these increasing mental health needs mainly operate in out-of-learning settings, ignoring the vital role of mental health in student success. Mental health is a person's state of well-being and the ability to productively deal with stress and work while contributing to society (WHO, 2016). Successful students are self-regulating learners; they exercise strategic control over their behaviour, motivation, emotion, cognition, and metacognition to reach goals (Winne & Hadwin, 1998; Zimmerman, 2000). Limited previous research on mental health and self-regulated learning (SRL) reveals two crucial findings about postsecondary students: a) lower rates of depression in students who use SRL strategies (Van Nguyen et al., 2015); and b) higher rates of motivation and SRL strategy use among students with better mental health (Brackney & Karabenick, 1995). However, there is a lack of research examining a) students' mental health and well-being over the course of an academic semester, or b) students' use of applied SRL processes and strategies to optimize their mental health. This research addresses these gaps in the context of an undergraduate learning-to-learn course by adding mental health and well-being content to the course for the first time. We examined a) fluctuations in students' mental health and well-being weekly during this 11 week course and b) SRL strategies and processes chosen by students to optimize their mental health. These results will provide information about the interplay between mental health and SRL for use by students, instructors, and researchers.

Investigating Similarity in Motivation Between Friends at High School

Keywords: Motivation, Self-regulation, Expectancy-value theory, Interest

Presenting Author: Laura Burgess, University of Reading, United Kingdom; **Co-Author:** Carolyn McNabb, University of Reading, United Kingdom; **Co-Author:** Patricia Riddell, University of Reading, United Kingdom; **Co-Author:** Amy Fancourt, University of Reading, United Kingdom; **Co-Author:** Kou Murayama, University of Reading, United Kingdom

This research aimed to gain perspective on the strength of similarity between friends across measures of motivation. 225 students were included, spanning 4 school year groups. Each student completed an online survey to assess their motivation, using both subject specific and subject general scales. Students also provided their social network information. To assess similarity between friends we calculated an assortativity index for each construct, within year groups. The assortativity index gives a correlation between the scores of individuals connected to each other via a friendship tie. Results showed that for subject specific scales, there is a significant negative assortativity index for maths anxiety, indicating that friendships are formed between anxious and non-anxious individuals. While in 13-14 year olds, we identify a positive assortativity index suggesting the opposite, that anxiety levels are similar between connected friends. A significant positive assortativity index was also identified in 14-15 year olds for maths competence. Among subject general scales, levels of agentic engagement showed a significant positive result in the 12-13 year olds, whilst the 11-12 year olds displayed a positive significant assortativity index for levels of intrinsic value. Overall, we identified that separate cohorts do not show comparable patterns of similarity in motivation, rather, they each have their own individual patterns of similarity. We believe that understanding where similarities lie in school year groups will aid our follow up investigations on the social and motivation contagion occurring within these year groups. The results contribute to our understanding of motivation dynamics in school cohorts.

Facilitation of Self-Regulated Online Learning: Goal Setting in Medical Massive Open Online Courses

Keywords: Self-regulation, Teaching approaches, Goals, Learning approaches

Presenting Author:Renée Hendriks, Leiden University Medical Center, Netherlands; **Co-Author:**Peter de Jong, Leiden University Medical Center, Netherlands; **Co-Author:**Marlies Reinders, Leiden University Medical Center, Netherlands

Aims

To promote Self-Regulated Learning (SRL) skills in online learning environments, designing with focus on course goals and personal goals is important. Goal Setting Theory (GST) states that performance is best when goals are specific, challenging, and accompanied by measurable short-term goals. Commitment to goals, and identifying goals that compete for one's time is essential. Additionally, self-set goals are at the core of self-regulation. Because of an increasing interest in using Massive Open Online Courses (MOOCs) in medical education, this study examined if and how effective goal setting is implemented in medical MOOCs with GST guidelines in mind.

Methodology

An overview of medical MOOCs was compiled using the search engine www.class-central.com and inclusion criteria were determined. Six questions were developed based on relevant findings of GST and validated by calibration with a second investigator. Data collection consisted of the investigators enrolling in selected MOOCs and answering the questions after thorough examination of all course pages. *Results*

The overview consisted of 410 MOOCs, of which 37 were included in the study. Of the investigated MOOCs, 83% contain long-term course goals and 33% contain short-term goals. Over 80% of the stated goals are measurable. Students were not encouraged to commit to specific goals, to identify obstacles for achieving goals nor were they invited to set their own goals.

Significance

Preliminary results show that medical MOOCs underutilized GST to enhance SRL skills. Considering the importance of promoting SRL skills, more attention should be directed towards including GST principles in the instructional design of future medical MOOCs.

The antecedents of pupils' mindsets: Structure and assessment of teachers' fixed-ability practices

Keywords: Motivation, Attitudes and beliefs, Teaching approaches, Measurement

Presenting Author:Pia Kreijkes, University of Cambridge, United Kingdom; **Co-Author:**Ros McLellan, Cambridge University, United Kingdom

Aims: Prior research has shown that teaching practices can influence pupils' mindsets. However, progress in the field has been hindered by a lack of a comprehensive conceptualisation of such practices and corresponding measurements. The present study addresses this issue by conceptualising practices that are likely to convey fixed mindset messages, termed fixed-ability practices (FAPs), and by developing teacher and pupil questionnaires for their assessment. Moreover, teachers' mindsets and associated beliefs are examined as predictors of FAPs. *Methods:* Based on theory, prior empirical research and teacher interviews, a conceptualisation of FAPs and corresponding teacher and pupil scales have been developed for a maths context. These were examined in a study with 883 English secondary school pupils (aged 11-12) and their maths teachers (N=30). Teachers completed self-report measures of mindsets and associated beliefs at the beginning of the current school year and all participants will complete the new FAPs scales in Spring 2018. *Results:* A conceptualisation of FAPs, with five dimensions, divided into 11 subdimensions, and one superordinate factor is proposed. This is work in progress; results will be presented regarding dimensionality of FAPs and the psychometric properties of the measures. It is expected that teachers' ability beliefs predict their use of FAPs. *Significance:* This study conceptualises and develops a new measure of teaching practices that are likely to influence pupils' mindsets and associated beliefs. This will advance research examining the development of pupils' mindsets. Furthermore, this work can provide teachers with practical advice on designing their practices to enhance students' motivation.

Strengthening self-efficacy in teaching for non-teachers through training student-focused teaching

Keywords: Self-efficacy, Attitudes and beliefs, Teaching approaches, Developmental processes

Presenting Author:Alex Shum, The University of Hong Kong, Hong Kong; **Co-Author:**Peter Lau, University of Hong Kong, Hong Kong; **Co-Author:**Luke Fryer, University of Hong Kong, Hong Kong

Teaching and effective communication skills are critical to the success of many roles beyond full-time teachers (e.g. medicine, law, engineering, apprenticeships, postgraduate students etc.). Such responsibilities include informally training others and giving presentations in addition to formal teaching roles. Introductory training courses can be employed to supplement a lack of experience.

The aim of the study was to investigate the effects of a short training course on beliefs in teaching (between a teacher-focused or a student-focused approach) and self-efficacy in teaching where teaching is a mandatory but not primary function of their role. The longitudinal variable-centred study examined participants (N=252) of a short teaching and communications training course. Participants were composed of graduate students attending a research-intensive university in Asia. Graduate students are primarily researchers but are also required to teach as tutors and give presentations on their research. The course consisted of 24 face-to-face hours over 4 weeks of teaching. Participants had little prior exposure and experience to student-focused teaching, consistent with those expected to teach with little training. Participants completed surveys on styles of teaching (Teacher-focused teaching, Student-focused teaching) and

Self-Efficacy in teaching at the beginning and end of the course. Student-focused teaching and self-efficacy exhibited small and moderate increases respectively. Teacher-focused teaching did not change significantly. A fully-forward structural equation modelling analysis revealed that all past latent variables largely predicted their future counterparts. Past student-focused teaching moderately predicted future self-efficacy, suggesting training provided means for participants to develop their student-focused teaching abilities. Theoretical and practical implications are discussed.

Interest in Informal Learning Environments: A Meta-Analysis

Keywords: Motivation, Interest, Achievement, Developmental processes

Presenting Author: Andreas Gegenfurtner, Technische Hochschule Deggendorf, Germany; **Co-Author:** Anna Braukmann, Technische Universität München (TUM), Germany; **Co-Author:** Doris Lewalter, Technical University of Munich (TUM), Germany; **Co-Author:** K. Ann Renninger, Swarthmore College, United States

An extensive body of research over the past three decades has identified interest as an important predictor of learning. Meta-analyses of this body of research include Young et al. (2017) on STEM interest in the context of summer camps; Su, Rounds, and Armstrong (2009) on sex differences in vocational interests; and Schiefele, Krapp, and Winteler (1992) on interest as a predictor of academic achievement. To date, however, no meta-analysis has synthesized available effect sizes of the relationship between interest and learning outcomes in informal learning environments. This is unfortunate because a growing number of studies have demonstrated the importance of interest in informal learning environments such as museums, zoos, aquariums, or after-school programs (e.g., Lewalter, Geyer, & Neubauer, 2014). To address this gap, this meta-analysis addresses interest (development) in informal learning environments. Available literature was searched in the Scopus, Web of Science, ERIC, PsycArticles, FIS Bildung, and Google Scholar databases. The identified studies were read, coded, and used for forward and backward cross-referencing. Meta-analytic methods followed the procedures of Schmidt and Hunter's (2015) meta-analysis of correlations using artifact distribution: (a) in a primary meta-analysis, effect sizes are corrected for sampling error and error of measurement overall and across settings; and (b) in meta-analytic moderator estimation, subgroup analysis is used to identify moderating effects and boundary conditions of the interest-learning relationship. The poster will present initial results and discuss their implications for understanding the role of interest in informal learning environments.

Increasing Student Motivation for Computer Science: An Evaluation of a Design-Based Approach

Keywords: Motivation, Expectancy-value theory, Interest, Learning approaches

Presenting Author: Neha Sharma, Santa Clara University, United States; **Co-Author:** Tim Urdan, Santa Clara University, United States

There is a serious shortage of qualified workers available to fill the jobs in computer science (CS). This shortage is particularly acute among women and under-represented minorities (URMs). The purpose of this project was to provide students (grades 6 through 12) with opportunities to learn more about computer science and to gain experience practicing with programming tools. To date, we have collected survey data from a sample of middle school students over four waves (1 year) to track changes in their attitudes about computer science. During this period, students have participated in a number of web-based modules designed to increase their understanding of computer programming and gain experience with basic computer programming activities within game-like settings. We were particularly interested in whether participants increased their knowledge of computer programming, interest and enjoyment of working with computers, and aspirations to work in a computer science field. With a sample of 88 students (46 female, 42 male) in grades 6 through 8, we found that over the four waves of data collection, participants reported a linear increase in their understanding of what CP means and what computer programmers do for work. In addition, we found gender x time interactions for interest/enjoyment and career aspirations in computer science. In both of these interactions, girls' scores were lower than boys' scores at the first two waves of data collection but surpassed boys scores by waves three and four. Data from a sample of 500 high school students will be reported in the poster.

Task value profiles across middle school transition in Finland - a longitudinal study

Keywords: Motivation, Expectancy-value theory, Interest, Developmental processes

Presenting Author: Janica Vinni-Laakso, University of Helsinki, Finland; **Co-Author:** Jiesi Guo, Australian Catholic University, Australia; **Co-Author:** Katariina Salmela-Aro, Helsinki University, Finland

The aim of the study is to examine students' task value cost profiles in STEM (Science, Technology, Engineering, and Mathematics) and to investigate the stability and change of the profiles across middle school transition. At time 1 the participants were at 6th grade (12-13 years, N=401) from 33 elementary schools in Helsinki. Students filled in a self-report questionnaire that assessed their subjective task values (STVs), (importance, utility, interest), competence, and cost (effort, exhaustion) in mathematics, biology/geography, and physics/chemistry. At time 2 the participants were at 7th grade and had transitioned to lower secondary education (13-14 years) in 20 schools. Students' STVs were assessed in mathematics, biology, and physics. We used latent profile analysis (LPA) to examine students' task value cost profiles. The class level was controlled for to gain statistically more valid results at the individual level. Four profiles were identified in both time points separately: 1. High value and low cost (T1: 17% / T2: 19,5%), 2. Low value and relatively high cost (T1: 17,8% / T2: 7,1%), 3. Mediocre value and cost (T1: 34% / T2: 49,2%) and 4. High importance and utility but relatively low interest and high cost (T1: 31,2% / T2: 24,1%). Crosstabulation of the profiles between time points revealed changes in students' task value cost profile memberships during transition mainly for more adaptive near profile. Still overall means of students'

values decreases while effort and exhaustion increases during transition.

A model to prevent early school leaving on an individual level.

Keywords: Motivation, Self-determination theory, Developmental processes, Educational attainment

Presenting Author: Nick Snell, University of Groningen, Netherlands

Leaving school without a degree can have severe consequences for both individuals and society. Individuals who drop out are less financially secure, experience more emotional problems, pay less taxes, and depend more on social services than their counterparts who finish school (e.g., Steeg & Webbink, 2006). Research on the causes of early school leaving has mainly focused on the role of risk factors such as gender or social economic status (e.g., Herweijer, 2008). This research is valuable for identifying risk groups, but it offers hardly concrete leads for interventions. To fill this void, we built a model, which focuses on weekly experiences and actions that accumulate over time (i.e., proximal mechanisms) and how they interact with the basic psychological needs (Ryan & Deci, 1985) to determine early school leave. We consider the properties of self-determination theory as highly important for our research, since need fulfillment is crucial to promote autonomously regulated motivation among young people (e.g., Alivernini & Lucidi, 2011). Proximal mechanisms are highly important to answer our research questions: what are the crucial processes prior to the decision to leave school on an individual level? And how can you intervene with these processes, in order to prevent early school leaving? We collect our data using a webapp which offers our participants (students as well as their mentors) weekly questionnaires during an eight months period. Since our model fulfills a key role within our research project, outlining the model and its research implications will be the main subject of our poster presentation.

Paper Session B 1

15 August 2018 15:15 - 16:45

Nobel 1483-251

Single Paper

Motivational, Social and Affective Processes

Emotion, Affect and Motivation

Keywords: Achievement, Developmental processes, Emotion and affect, Engagement, Expectancy-value theory, Motivation, Self-determination theory, Social motivation

Interest group: SIG 08 - Motivation and Emotion

Chairperson: Nina Bonderup Dohn, University of Southern Denmark, Denmark

Basic Psychological Need Satisfaction, Affect and Mental Health

Keywords: Motivation, Emotion and affect, Self-determination theory, Social motivation

Presenting Author: Nicola Schutte, University of New England, Australia

According to Self-Determination Theory, basic psychological needs for autonomy, competence, and relatedness fuel human motivation and satisfaction of these needs results in well-being and good mental health. Aims: The present study examined relationships between basic need satisfaction, affect, and mental health. Method: Three hundred and forty participants provided information regarding their need satisfaction, affect, and symptoms related to mental health. Results: A higher level of satisfaction of each of the basic psychological needs for autonomy, competence, and relatedness was associated with more positive affect, less negative affect, and better mental health, as indicated by fewer symptoms of depression, anxiety and stress. Satisfaction of competence needs and satisfaction of relatedness needs was most important in relation to positive affect. Satisfaction of competence needs and satisfaction of autonomy needs was most important in relation to both negative affect and mental health. Mediation analyses indicated that the association between a low level of satisfaction of basic needs and negative affect may in part explain the connection between less satisfaction of basic needs and more symptoms of poor mental health. Significance: The results confirm the importance of satisfaction of basic psychological needs as proposed by Self-Determination Theory. Increasing satisfaction of basic needs may promote good mental health.

Implicit and explicit affects: distinct roles in teaching activities?

Keywords: Motivation, Emotion and affect, Expectancy-value theory, Self-determination theory

Presenting Author: Cornelis de Brabander, Leiden University, Netherlands; **Co-Author:** Kim Stroet, Leiden University, Netherlands

This study investigated the hypothesized added value of measures of implicit affect to the measurement of valences as conceptualized by the Unified Model of Task-specific Motivation (UMTM). According to the UMTM valence appraisal, which is a proximal determinant of readiness for action, is the result of an interaction between relatively independent types of valences: affective and cognitive, that both can be positive and negative. In writing and graphically 60 Teachers were presented with 6 ordinary teaching activities: small group instruction, exchange with parents, lesson preparation, supervision by the principal, observation of colleagues, and grading and registering pupil progress. The Implicit Positive and Negative Affect Test (IPANAT) provided measurements of implicit affects. Also, all positive and negative, affective and cognitive valences of the UMTM were questioned. Separate regression analyses for the six activities revealed that implicit affect only contributed significantly to the prediction of readiness for action, when teachers considered the activity "supervision by the principal": implicit negative affect associated with this activity prompted teachers to step up their effort.

In other activities implicit affect did not contribute to readiness for action, but the patterns of differences in means and relations to valences were in line with the character of the different activities. Though further research is necessary, this direction promises an important contribution to the measurement of valences.

Parents' motivation for parent-child reminiscing and the relation with children's emotion regulation

Keywords: Motivation, Emotion and affect, Self-determination theory, Developmental processes

Presenting Author:Jolene van der Kaap-Deeder, Ghent University, Belgium; **Co-Author:**Maarten Vansteenkiste, Ghent University, Belgium; **Co-Author:**Bart Soenens, Ghent University, Belgium

Aims. Previous research has indicated that parents who are elaborative and autonomy-supportive during parent-child talk about past events not only foster their child's memory capacity but also their emotional understanding. Less is known, however, about (1) what fosters such an elaborative and autonomy-supportive parent-child reminiscing style and (2) what the consequences are for the child's emotion regulation skills. Therefore, we focused on the antecedent role of parents' motivation for discussing past events with their child and on the children's emotion regulation skills as an outcome. Method. Questionnaire and observational data were gathered among 90 families, including mothers, fathers, and their 3 – 6 year old toddler. Parents filled out a questionnaire about their autonomous (e.g., enjoyment) and controlled (i.e., pressure) reasons for discussing past events with their child. Additionally, parents indicated their degree of elaboration and autonomy support during such conversations and filled out a questionnaire about their child's emotion regulation skills. Results. We found that mothers and fathers who were more autonomously motivated with regard to parent-child reminiscing, indicated to be also more elaborative and autonomy-supportive during such conversations. Finally, we found the child's adaptive emotion regulation skills to be positively related to maternal elaboration and paternal autonomy support. Significance of the study. This study is unique in showing the importance of autonomous motivation for parent-child reminiscing and the beneficial effects of parental autonomy support and elaboration for the child's emotion regulation.

Motivation & emotion in the Opportunity-Propensity Framework:Are they predictive for math abilities?

Keywords: Motivation, Emotion and affect, Self-determination theory, Achievement

Presenting Author:Elke Baten, University of Ghent, Belgium; **Co-Author:**Annemie Desoete, Ghent University, Artevelde University College Ghent, Belgium

To provide insight in the nature of individual differences in mathematical abilities, this study examined the predictive value of motivation and emotion while embedding them as propensity variables in the Opportunity-Propensity framework. Even though there is evidence that motivation and emotion are important to predict academic performance, it is unclear how they interact with each other and with other predictors in order to influence math abilities. To take into account the interrelationship with other predictors, motivation and emotion was measured among other factors in 61 children with and 51 children without MLD from 3rd up until 6th grade in Flanders. Results revealed that children from both groups were equally motivated for mathematics because they had to, whereas children with MLD were less motivated for mathematics because they wanted to. For emotion, children with MLD experienced more negative affect towards mathematics than their peers in the same school context. There were no significant group differences found for positive affect. In contrast with literature, no significant relation was found between autonomous motivation and math abilities, when investigated within a holistic model. However, positive affect was found to predict procedural accuracy, but not fact retrieval speed. The findings indicate that adequately customized and broad assessments remain needed and suggest the importance of positive feedback and psychoeducation including the enhancement of the autonomous motivation in children who struggle with math, in addition to the focus on their math acquisition. Therapy should focus on their strengths and reward small positive steps in the correct direction.

Parents' scaffolding for autonomous motivation favor child homework motivation

Keywords: Motivation, Emotion and affect, Engagement, Self-determination theory

Presenting Author:Angelica Moè, University of Padova, Italy; **Co-Author:**Idit Katz, Ben-Gurion University of the Negev, Israel; **Co-Author:**Marianna Alesi, Università di Palermo, Italy

Students very frequently do not like homework: they experience negative affect and disengagement more during homework than with different school activities. Parents could help them to develop more positive attitudes by scaffolding for autonomous motivation during homework. Following the Self Determination Theory suggestions (SDT: Deci & Ryan, 2017), parents can scaffold motivation by favoring a caring climate, providing structure, sustaining autonomy, and giving rationales and choices (Reeve, 2011). Two studies aimed to assess the role played by perceived parental autonomy supportive scaffolding on child homework autonomous motivation, self-efficacy, affect, and engagement. Study 1 involved 122 parents and their children and it showed that the higher the parental autonomous motivation, the more their children perceived them as autonomy-supportive while scaffolding for motivation, and hence developed autonomous motivation, self-efficacy, and engagement in homework. Study 2 was an intervention study: 37 parents were involved in a four-session training program that focused on giving parents suggestions on how sustaining autonomy-supportive scaffolding modalities. The results confirmed the effectiveness of scaffolding for motivation: the training decreased parental negative affect, prevented child negative affect increase, and maintained child homework motivation. Parental autonomy supportive scaffolding could be an advisable way to help parents to decrease their negative affect during homework and to maintain their children engagement, self-efficacy, and positive affect.

Paper Session B 2

15 August 2018 15:15 - 16:45

Nobel 1481-341

Single Paper

Higher Education, Motivational, Social and Affective Processes

Self-regulation and Measurement

Keywords: Expectancy-value theory, Goals, Interest, Measurement, Motivation, Self-regulation

Interest group: SIG 08 - Motivation and Emotion

Chairperson: Neha Sharma, Santa Clara University, United States

Motivational conflicts in student's daily learning: Analyzing expectancy and value as predictors

Keywords: Motivation, Self-regulation, Expectancy-value theory, Measurement

Presenting Author: Nadia Catherine Reymond, Bielefeld University, Germany; **Co-Author:** Carola Grunschel, Bielefeld University, Germany; **Co-Author:** Olga Bachmann, Bielefeld University, Germany; **Co-Author:** Stefan Fries, University of Bielefeld, Germany

Students frequently experience motivational conflicts. They come into existence when different intentions to act are concurring for the limited resources of an individual. Motivational conflicts have negative consequences on affect, cognition, and behavior. Whereas these consequences of motivational conflicts are well-known already, there is limited knowledge about the conditions under which motivational conflicts arise. In this study we used the expectancy-value-theory to investigate factors that determine motivational conflicts when students pursue study-related activities. We assumed that high success expectancies, high intrinsic value, and high attainment value concerning the current activities are negatively associated with motivational conflict intensity in study-related activities. We conducted this study with $N = 138$ law students. Using the Experience Sampling Method, we assessed motivational conflict intensity for all situations, whereas expectancy, intrinsic value and attainment value were assessed only during study-related activities. Students experienced motivational conflicts in nearly 20 % of all study-related activities. As expected, multilevel random coefficient regression models showed that high attainment value for pursued study-related activities was negatively associated with motivational conflict intensity in these activities. In contrast, success expectancies and intrinsic value did not significantly predict motivational conflict intensity. In sum, our findings stress the importance of considering motivational conflicts when talking about everyday learning and self-regulation at university. Based on our results, we conclude that high attainment value of the pursued study-related activities can prevent students from experiencing motivational conflicts during studying. Thus, our findings provide a starting point for reducing motivational conflicts that usually have negative consequences for students.

Physiological Data as Unobtrusive Measures for Motivation and Self-Regulated Learning

Keywords: Motivation, Self-regulation, Interest, Measurement

Presenting Author: Moritz Niemann, MSH Medical School Hamburg, Germany; **Co-Author:** Thomas Martens, Medical School Hamburg, Germany

So far, insights about processes of self-regulated learning are gained by self-report data that are assessed post hoc as questionnaires or during the learning process itself by embedded experience sampling or thinking aloud techniques. Gathering self-report data after learning could be biased and self-report data during learning could be experienced as intrusive and therefore distort the learning process itself. So the aim of this study was to predict self-report data with sensor data. In a longitudinal study multilevel data were collected like self-report data with questionnaires and embedded experience samples as well as sensor data like electrodermal activity and EEG. 64 students from a private university in Germany performed a learning experiment followed by final measures of intrinsic motivation, self-efficacy and gained knowledge. During the learning experiment psychophysiological data like electrodermal activity combined with embedded experience sampling measuring motivational states like affect and interest every 270 seconds. Results show that electrodermal activity can predict energy, focus and interest in the learning process as well as final intrinsic motivation and interest. So far, predictions derived from EEG data are inconclusive. So physiological data seem to be very promising to track motivational measures in self-regulated learning and therefore support to identify processes of self-regulated learning in an unobtrusive way.

TIME: Time perspective Intervention of Motivation Enhancement

Keywords: Motivation, Self-regulation, Goals, Measurement

Presenting Author: Thea Peetsma, University of Amsterdam, Netherlands; **Co-Author:** Ineke van der veen, Kohnstamm Institute, University of Amsterdam, Netherlands; **Co-Author:** Jaap Schuitema, University of Amsterdam, Netherlands

Students' declining motivation for school in their adolescence has been observed in different countries. As time perspectives on school and professional career have been found to decline in the same stage of life and students' time perspectives have proved to be a predictor of their learning behaviour, influencing the development of adolescents' time perspectives could be a fruitful approach to enhance their motivation for learning. This led us to take time perspectives as the starting point for the development of an intervention to increase adolescent students' motivation for school: TIME [Time perspective Intervention of Motivation Enhancement]. TIME was used in three studies with younger adolescents, including students in pre-vocational education (in total 135 students). The motivation for school of students in this type of education

has been reported to be quite low. In a fourth study, TIME was tested with students in the first year of secondary vocational education (182 students): A type of education for older adolescents with a high drop-out rate. TIME consists of three parts: The first part is a role-play assignment about an imagined future in a non-school domain, the second also includes a role-play assignment in which students are asked to imagine a classmate who really wants to progress to the next year and get a diploma and the third part concerns the students themselves and takes the most time. In all, after systematic analyses, TIME seemed to influence the students' learning behaviour in school positively.

Enhancing motivational regulation competencies in higher education: Results from 2 training studies

Keywords: Motivation, Self-regulation, Expectancy-value theory, Measurement

Presenting Author:Gabriele Steuer, University of Augsburg, Germany; **Co-Author:**Nicole Eckerlein, University of Augsburg, Germany; **Co-Author:**Markus Dresel, University of Augsburg, Germany

Regulation of motivational processes is seen as a highly relevant aspect of self-regulated learning especially for students in higher education (Boekaerts, 1999; Garcia & Pintrich, 1994; Sansone & Thoman, 2006). We examined whether students' competencies for motivational regulation may be improved by training and conducted two consecutive training studies. For the construction of the training three key aspects for effective motivational regulation were considered: the situation-specific fit between strategy use and motivational problem, the quantity of strategy usage and the application quality. For the first study a training program for higher education students was developed that focused on the first two key aspects. 135 students participated in the respective study to assess the effectiveness of this training. Half of the students were trained in motivational regulation and the other half participated in a placebo control group training. The results indicate that the training program significantly improved the situation-specific fit and the quantity of strategy usage. Application quality could be improved on a 10% level of significance. The second training study ($N = 182$) included the third key aspect as well. Besides the training group and the control group (that this time received no training) an additional training group was established, that received an extended training that addressed aspects of application quality. As the second study is still ongoing no results may be presented at the moment. Implications for the design of training programs for motivational regulation and further research in the field are discussed.

Paper Session B 3

15 August 2018 15:15 - 16:45

Nobel 1483-354

Single Paper

Motivational, Social and Affective Processes, Teaching and Teacher Education

Self-efficacy

Keywords: Attitudes and beliefs, Emotion and affect, Goals, Motivation, Self-efficacy, Teaching approaches

Interest group: SIG 08 - Motivation and Emotion

Chairperson: Kerstin Helker, RWTH Aachen University, Germany

A pilot intervention to improve career decision self-efficacy and the alignment of aspirations

Keywords: Motivation, Self-efficacy, Teaching approaches, Goals

Presenting Author:Nathan Berger, Western Sydney University, Australia; **Co-Author:**Jose Hanham, Western Sydney University, Australia; **Co-Author:**Kate Stevens, Western Sydney University, Australia; **Co-Author:**Kathryn Holmes, Western Sydney University, Australia

Misalignment between career and education aspirations occurs when the minimum education required for a person's desired occupation exceeds their educational expectations. Misalignment has been associated with poorer achievement during adolescence and unstable employment in adulthood. In this study, we evaluated whether a simple intervention improved career decision self-efficacy and aspirational alignment. We sampled 211 teenagers living in disadvantaged areas of Sydney, Australia using a quasi-experimental non-equivalent groups design. Students completed pre- and post-questionnaires which measured aspirational alignment and career decision self-efficacy. Students in the intervention condition ($n = 102$) exclusively received between sampling occasions automated feedback on the alignment of their career and education aspirations, as well as a career information pamphlet detailing the educational pathways to a range of popular careers. The intervention appeared to improve alignment of career and education aspirations, as well as increase some dimensions of career decision self-efficacy. Students in the intervention group more frequently identified the correct qualification for their career aspiration in the post-questionnaire (57.9%) compared to in the pre-questionnaire (48.1%). Misaligned students in the intervention group reported higher self-efficacy in regards to gathering occupational information and selecting goals following the intervention. There were no pre- post-differences for students in the control condition. The study showed a simple intervention might help improve alignment between career and education aspirations, as well as aspects of career decision self-efficacy. The practical significance of this study is that an easy, low-cost intervention might help improve aspirational alignment and aspects of career decision self-efficacy.

How Teacher Vulnerability and Identity Affect their Relationships with Students

Keywords: Motivation, Self-efficacy, Emotion and affect, Teaching approaches

Presenting Author:Tim Urdan, Santa Clara University, United States; **Co-Author:**Marli Dunn, Santa Clara University,

The quality of the student-teacher relationship affects student motivation and achievement. But how might the unique demands of the teaching profession influence teachers' ability to forge those bonds with their students? Teaching requires a tremendous investment of time, energy, and ego. Teachers must figure out how to manage their emotional resources and their time, and sometimes this can involve the development of boundaries that can inhibit the nurturing of supportive relationships with students. I interviewed 10 veteran teachers to determine how they felt about their investment of time and emotional energy into teaching and what steps they have taken to protect their time and their ego. Three themes emerged from the interviews. First, almost all of the teachers described a period of being overwhelmed by the needs and demands of their students and of the job. Second, the teachers talked about critical moments where they realized they needed to make changes in their behavior or they would quickly burn out and leave the teaching profession. Third, teachers varied in how they reacted to these critical moments of change. Half of the teachers created hard borders with more distance and less emotional investment in their students. The other half described evolutions in their identities from "savior" to supporter. They described a shift from trying to provide for every need of their students—academic, financial, emotional—to a more realistic supporter of student potentials in their classrooms. Results from the full set of 25 teacher interviews will be presented in the conference paper.

Epistemic Cognition in Secondary Science Teachers' Instructional Decision Making

Keywords: Motivation, Self-efficacy, Attitudes and beliefs, Teaching approaches

Presenting Author: Annette Ponnock, University of Maryland, United States

One understudied barrier to science education reform concerns teachers' cognitive processes and how they relate to instructional decision-making. Epistemic cognition—teachers' beliefs about knowledge and knowledge acquisition and goals for their students' knowledge acquisition—could provide important insights into the choices science teachers make in the classroom and why they might and might not adopt different instructional practices. Previous research has found mixed results regarding the relationship between beliefs and practice. Uniquely, science teachers encounter epistemic beliefs from both science and education, with potential differences that may need to be negotiated. Three profiles of epistemic beliefs were identified that were significantly different on their epistemic beliefs in the natural sciences and the learning sciences. Those in Profile 3 (highest beliefs in certainty of knowledge, authority as source of knowledge, and attainability of truth) had significantly less self-efficacy than those in Profile 1, which predicted less frequent usage of investigative teaching practices and practices promoting a classroom culture of investigation. Those in Profile 2 (medium beliefs in certainty of knowledge, authority as source of knowledge, and attainability of truth) used practices promoting a classroom culture of investigation significantly less frequently than those in Profile 1. The findings from this study add to the literature on epistemic cognition and its influences.

Paper Session B 4

15 August 2018 15:15 - 16:45

Nobel 1481-239

Single Paper

Motivational, Social and Affective Processes

Engagement and Interest

Keywords: Emotion and affect, Engagement, Interest, Learning approaches, Measurement, Motivation, Teaching approaches

Interest group: SIG 08 - Motivation and Emotion

Chairperson: Kim Stroet, Leiden University, Netherlands

Science Classroom Activities Related to Student Situational Engagement

Keywords: Interest, Engagement, Teaching approaches, Learning approaches

Presenting Author: Kalle Juuti, University of Helsinki, Finland; **Co-Author:** Janna Inkinen, University of Helsinki, Finland; **Co-Author:** Katariina Salmela-Aro, Helsinki University, Finland; **Co-Author:** Christopher Klager, Michigan State University, United States; **Co-Author:** Barbara Schneider, College of Education, Michigan State University, United States; **Co-Author:** Joseph Krajcik, College of Education, Michigan State University, United States; **Co-Author:** Jari Lavonen, University of Helsinki, Finland

The aim of the presentation is to examine the association between student situational engagement and classroom activities in secondary school science classrooms in Finland and in the U.S. In this presentation, situational engagement is conceptualized as times when students feel that a task is interesting to them, challenging, and yet that students have skill to complete the task (Schneider et al., 2016). Data on situational engagement and classroom activities were obtained using the experience sampling method (ESM) from 288 Finnish students and 280 U.S. students in 33 secondary science classrooms. In both amount of samples, students tend to be situationally engaged only a small amount of the time during their science classes. Hierarchical logistics regression models were employed to observe the association between student situational engagement and classroom activities. The results suggest that Finnish students being situationally engaged

when calculating and presenting scientific information to others. In the U.S., students were more likely to be situationally engaged while discussing scientific concepts and less likely when listening to the teacher.

Development of Interest and the Role of Choice during Sequential Knowledge Acquisition

Keywords: Motivation, Emotion and affect, Interest, Engagement

Presenting Author:Greta Fastrich, University of Reading, United Kingdom; **Co-Author:**Kou Murayama, University of Reading, United Kingdom

Interest is an important motivational element for learning in the school environment. However, little research has empirically addressed how interest develops over time as knowledge accumulates. To gain a better understanding of interest development, we developed a paradigm where participants gain step-by-step information about lesser known countries. After reading each piece of information, participants rated their interest of the country. Growth-curve modelling showed that interest grow during knowledge acquisition until it eventually stalls and starts to decline. We also found that the opportunity to choose information boosted the growth in interest and delayed its decline. Further analysis revealed that people disengaged with a country when their interest stalled. These findings can be useful to both understand how to support interest development and interpret the findings of studies that assess situational interest at multiple time points.

Increased emotional engagement in game-based learning

Keywords: Emotion and affect, Engagement, Learning approaches, Measurement

Presenting Author:Manuel Ninaus, Leibniz-Institut für Wissensmedien, Germany; **Co-Author:**Simon Greipl, Leibniz-Institut für Wissensmedien, Germany; **Co-Author:**Kristian Kiili, Tampere University of Technology, Finland; **Co-Author:**Elise Klein, Leibniz-Institut für Wissensmedien, Germany; **Co-Author:**Hans-Otto Karnath, Hertie-Institute for Clinical Brain Research, University of Tübingen, Germany; **Co-Author:**Korbinian Moeller, Leibniz-Institut für Wissensmedien, Germany

Under the assumption that emotions modulate learning processes, the current study aimed to evaluate emotional engagement during the interaction with a game-based number line estimation task on fractions. Using both automatic facial emotion detection from live video recordings as well as conventional paper pencil instruments, we assessed emotional engagement of adult participants either interacting with a game-based interface or with a non-game-based equivalent. The former was a digital learning environment that made use of appealing visual design, storytelling and other game mechanics like tokens and achievements, while the latter was a purified variant in all of the previously mentioned aspects. Facial emotions were evaluated frame by frame for basic emotions and a “neutral” category. Based on the emotional profile of the most prevalently detected emotions (i.e. happiness, sadness & contempt), we were able to predict whether a person played the actual game or was dealing with its non-game based equivalent with an accuracy significantly above chance level. Moreover, results of the PANAS affect scales indicated significant increase in aspects of positive as well as negative affect in favour of the game condition. In line with the increased emotional engagement, participants felt more absorbed while playing the game-based version of the number line estimation task and perceived the actual game to be more attractive, more stimulating and more novel compared to its non-game-based equivalent as assessed by the flow short scale. Taken together, this work demonstrates that a game-based environment leads to increased emotional engagement of learners.

Students’ Interest in situ during science and other lessons: A Multilevel latent profile analysis

Keywords: Emotion and affect, Interest, Engagement, Learning approaches

Presenting Author:Kalle Juuti, University of Helsinki, Finland; **Co-Author:**Katja Upadyaya, University of Helsinki, Finland; **Co-Author:**Joe Krajcik, Michigan State University, United States; **Co-Author:**Barbara Schneider, Michigan State University, United States; **Co-Author:**Jari Lavonen, University of Helsinki, Finland; **Co-Author:**Katariina Salmela-Aro, Helsinki University, Finland

In developed countries, researchers and educators have been worried about adolescents’ lack of interest towards science. However, there is very little research on interest in actual situations in science classes and in other academic domains. To investigate students’ interest *in situ*, we applied experience sampling method (ESM). Participants included 682 grade 9 to 11 students from four schools in Helsinki, Finland. When beeped, on a mobile phone, students were answered to questions concerning their interest in the current activity. During the four-week data gathering period, students answered to the questionnaire randomly several times during the day, and during science classes with fixed scheduling. There were normal science lessons and designed science lessons emphasizing scientific practices. Data included more than 10 000beeps for interest. Using multilevel latent profile analysis (MLPA), profiles of students’ interest in normal science lessons, designed science classes and other classes were identified. Two situational interest profiles were identified corresponding “high” and “medium” (Level 1). Further, at the student level (Level 2), two interest profiles were identified corresponding to the “high” and “medium” interest. In normal science lessons, 65 % of students belonged to high interest profile and during designed science lessons 74 %, while during other academic classes 44 % of the students belonged to the high interest group. In all locations, MLPA analysis identified rather similar student level interest profiles.

Paper Session B 5

15 August 2018 15:15 - 16:45

Nobel 1483-444

Single Paper
Higher Education, Motivational, Social and Affective Processes

Self-determination Theory and Motivation

Keywords: Achievement, Educational attainment, Emotion and affect, Motivation, Self-concept, Self-determination theory, Self-efficacy, Social motivation

Interest group: SIG 08 - Motivation and Emotion

Chairperson: Benjamin Torsney, University College Dublin, Ireland

Shifts in Emerging Adults' Sleep Pattern during Examination Period: Psychological Needs and Stress

Keywords: Motivation, Emotion and affect, Self-determination theory, Educational attainment

Presenting Author:Maarten Vansteenkiste, Ghent University, Belgium; **Co-Author:**Rachel Campbell, Ghent University, Belgium; **Co-Author:**Wim Beyers, Ghent University, Belgium; **Co-Author:**Bart Soenens, Ghent University, Belgium

A university exam period is typically a stressful period for emerging adults, possibly involving sleep reduction. Grounded in Self-Determination Theory, the present short-term longitudinal study examined the covariation between within-person changes in the satisfaction and frustration of the basic psychological needs for autonomy, competence, and relatedness and within-person changes in sleep-related outcomes as emerging adults' ($N = 121$; 78% female; Mean age = 21.69, $SD = 1.39$, Range = 19-25) prepared for, were exposed to and emerged from a stressful period (i.e., an exam period). Results indicated that both need-based and sleep-related functioning deteriorated as participants entered the exam period, and then returned to and went beyond initial levels following the exam period. Second, as need frustration increased (i.e., from the pre to the exam period) both sleep and daytime functioning deteriorated, while subsequent decreases in need frustration (i.e., from the exam to the post exam period) were accompanied by improvements in sleep and daytime functioning. The reverse pattern was observed for need satisfaction. Lastly, the correlated changes in need experiences and sleep-related outcomes were largely accounted for by changes in stress. These findings suggest that stress is a critical explanatory mechanism that helps to explain why changes in psychological need-based experiences evolve in tandem with changes in sleep-related outcomes among emerging adults. Key words: Self-Determination Theory; Basic Psychological Needs; Sleep; Emerging adulthood; Stress

The impact of single parent families on primary students' motivation and achievement

Keywords: Motivation, Self-efficacy, Self-determination theory, Achievement

Presenting Author:Barbara Otto, Psychology, University of Landau, Germany; **Co-Author:**Natalie Vannini, Goethe-Universität Frankfurt, Germany

Many empirical findings revealed already disadvantages for children of single-parents in terms of academic performance. However, the impact of single-parenthood on students' academic motivation has not been investigated so far although there exists an association between motivation and performance. Referring to the well-established Self-Determination Theory (Deci & Ryan, 1985) it is assumed that children of single-parents do not only show lower academic achievement, but also lower autonomous motivation and self-efficacy. Altogether, 1173 4th graders voluntarily participated. 83.4% grew up in traditional families, while 15.4% lived with only their mothers and 1.2% only with their fathers. All students filled out a questionnaire in order to assess students' motivation and self-efficacy in mathematics and German language arts, respectively. In order to assess students' academic performance we asked the teachers to report the individual grades in mathematics and German language arts, respectively. Additionally, two objective tests (DEMAT 4; last subtest of ELFE 1-6) were applied. Data were analyzed by t-tests for independent samples. As expected students of single-parent families showed significantly lower intrinsic and identified motivation as well as self-efficacy for both mathematics and German language arts. With regard to students academic achievement, the grades in mathematics and German language arts as well as the achievement in DEMAT 4 and ELFE 1-6 were significantly better for students of traditional families. These findings are particularly relevant with regard to educational inequality showing that as early as primary school children of single-parents have already an disadvantage in their motivation and academic performance.

Predicting PhD students' persistence over a 5-year period

Keywords: Motivation, Self-determination theory, Self-concept, Educational attainment

Presenting Author:David Litalien, Université Laval, Canada; **Co-Author:**Gabriella Hamelin, Université Laval, Canada; **Co-Author:**Frederic Guay, Laval University, Canada

Although doctorate studies enrolment rose significantly in the last decade, graduation rates remain low (50 to 60 %; MELS, 2014). The purpose of the current research is to test a model predicting PhD students' persistence over a 5-year period and to examine the relative importance of various persistence determinants. Based on self-determination theory (SDT), the model posits that students' persistence will be predicted by dropout intentions, which in turn, are predicted by perceived competence. Furthermore, perceived competence is expected to be explained by autonomous and controlled regulations, which are in turn predicted by support provided by student's advisor, professors, and graduate students. A longitudinal study was conducted to test the model. PhD students first completed an online questionnaire in fall 2011 ($N = 1060$; $M_{age} = 31.9$ years, $SD_{age} = 8.1$; 52.1% female). Six months later, participants (13.7% attrition, $N = 914$) completed a second questionnaire assessing dropout intentions. Five years after the first time measurement, their persistence status was obtained from their registration records. Overall, results from structural equation modelling support the proposed model.

Doctoral students persistence was negatively predicted by dropout intentions, which were negatively predicted by perceived competence. Persistence was also positively predicted by research productivity (presentation and publication rates), the number of completed semesters, and negatively predicted by indebtedness and perceived support from professors. By testing a model which specifically addresses persistence at the PhD level, our study highlights specific determinants that could be targeted in interventions aiming to enhance persistence.

What is psychologically happening in a music class?

Keywords: Motivation, Self-determination theory, Social motivation, Educational attainment

Presenting Author:Dora Herrera, Pontificia Universidad Católica del Perú, Peru; **Co-Author:**Lennia Matos, Pontifical Catholic University of Peru, Peru; **Co-Author:**Rafael Gargurevich, Pontificia Universidad Católica del Perú, Peru

What is psychologically happening in a music class? Motivational variables implied in the professor-student relationship? Dra. Dora-Herrera; Dra. Lennia-Matos & Dr. Rafael-Gargurevich Pontificia Universidad Católica del Perú It is impossible to imagine human life without music. Music performers have been taught using different methods, but clearly the impact is different on student's performance and enjoyment of music. Using self determination theory, this study investigated (cross-sectionally) the relation between, the perception of the music professor teaching style, need satisfaction/frustration as well as perfectionism and flourishing. A total of 150 music student answered the questionnaires after giving their consent. They answered The Short Almost Perfect Scale, The Learning Climate Questionnaire, the Perceived controlling style of the teacher questionnaire, the Basic Psychological Need Satisfaction and Frustration Scale, and the Flourishing Questionnaire. Results from path analyses were as expected ($\chi^2(15)=16.81$, $p=.330$, $RMSEA=.029$, $SRMR=.072$, $CFI=.98$). Autonomy supportive teaching style positively predicted need satisfaction and adaptive perfectionism, which in turn positively predicted flourishing. Also, psychologically controlling teaching positively predicted need frustration and maladaptive perfectionism, which in turn, negatively predicted flourishing. Need satisfaction-frustration and adaptive-maladaptive perfectionism mediated the relation between teaching styles and flourishing. Interestingly, this study is novel in several ways: it is the first time autonomy and psychologically controlling teaching contexts are studied together in a sample of music students in Peru, along with adaptive and maladaptive perfectionism and flourishing. These findings add to the research evidence the maladaptive outcomes associated with psychological control in the classrooms and the positive outcomes associated with autonomy supportive contexts.

Paper Session B 6

15 August 2018 15:15 - 16:45

Nobel 1481-237

Single Paper

Higher Education, Motivational, Social and Affective Processes

Engagement, Attitudes and Beliefs

Keywords: Attitudes and beliefs, Engagement, Expectancy-value theory, Interest, Motivation, Self-regulation, Social motivation

Interest group: SIG 08 - Motivation and Emotion

Chairperson: Eleftheria Gonida, Aristotle University of Thessaloniki, Greece

The Relation of Help-Seeking Attitude, Adaptive Help-Seeking Behavior and Drop-out Tendencies

Keywords: Motivation, Self-regulation, Engagement, Attitudes and beliefs

Presenting Author:Philipp Nolden, RWTH Aachen University, Germany; **Co-Author:**Marold Wosnitza, RWTH Aachen University, Germany; **Co-Author:**Stuart Karabenick, University of Michigan, United States

Despite various efforts, student drop-out from Higher Education institutions is still an issue in most European countries (Vossensteyn et al., 2015). Universities often provide a huge spectrum of support services as measures of drop-out prevention. To seek help from these sources thus can be an adaptive and self-regulating strategy used by students. However, studies show that students who are struggling the most are the least likely to seek help (Ciscell, Foley, Luther, Howe & Gjesdal, 2016). Assuming that attitudes towards a certain behavior impact actual behavior (e.g., Fishbein & Ajzen, 1975), this study investigates two main questions: 1. How do general attitudes towards seeking help impact the actual process of seeking help? and 2. How is the help-seeking process related to drop-out tendencies? Results of structural equation modelling with a sample of N=492 German students show that attitudes toward help-seeking determine the following behavioral process; whether (a) students knew where to get help, (b) they were successful in getting help and (c) this help made a difference in continuing their studies. In summary, negative help-seeking attitudes suppress the help-seeking process while positive attitudes foster adaptive help-seeking behavior. Second, help seeking as a self-regulation strategy is confirmed by the finding that the successful reception of help reduces drop-out tendencies. Implications and practical applications for university support systems are discussed.

Which students comply with writing tasks in classroom-based value interventions—and does it matter?

Keywords: Motivation, Expectancy-value theory, Engagement, Attitudes and beliefs

Presenting Author:Brigitte Brisson, German Institute for International Educational Research (DIPF), Germany; **Co-Author:**Chris Hulleman, University of Virginia, United States; **Co-Author:**Isabelle Häfner, University of Tübingen,

Germany; **Co-Author:**Hanna Gaspard, University of Tübingen, Germany; **Co-Author:**Barbara Flunger, Utrecht University, Netherlands; **Co-Author:**Anna-Lena Dicke, University of California Irvine, United States; **Co-Author:**Ulrich Trautwein, University of Tübingen, Germany; **Co-Author:**Benjamin Nagengast, Eberhard Karls Universität Tübingen, Germany

Why do some students profit from motivation interventions and others do not? Although research on interventions implemented in real-life educational settings is steadily growing, systematic studies on the processes leading to the effectiveness of these interventions are still rare. By investigating the antecedents and consequences of students' responsiveness to a utility-value intervention, the current study aims to shed a closer light on the psychological components that make classroom-based value interventions work. In a cluster-randomized trial with 1916 ninth grade students in 82 classrooms, students in the experimental conditions completed one out of two different written intervention tasks about the personal relevance of mathematics (quotations condition: evaluating quotations; text condition: writing a text). Students' responsiveness to the intervention tasks was analyzed by coding 1280 essays on three theory-driven indicators (positive arguments, personal connections, degree of reflection) which were combined into a responsiveness index. Linear regression analyses showed that students' conscientiousness, gender, math achievement, and math motivation predicted the responsiveness index. Complier-average causal effects analyses revealed that intervention effects on students' math utility value beliefs compared to the control group were stronger for responsive than for nonresponsive students, in particular in the text condition. The current study highlights the importance of investigating the processes underlying the intervention effects in order to optimize the theories, designs, and effectiveness of classroom-based motivation interventions.

Development of computational thinking, scientific reasoning and interest

Keywords: Motivation, Interest, Engagement, Attitudes and beliefs

Presenting Author:Marjaana Veermans, University of Turku, Finland; **Co-Author:**Jenni Airola, University of Turku, Finland

The aim of the study is to examine the promotion of scientific reasoning and computational thinking in primary education through art and design practices. More precisely: to develop a questionnaire, and to develop practices that would enhance primary school students' computational thinking and scientific reasoning and interest. The empirical part of the study has two phases: during the phase a questionnaire was developed and tested in two different classrooms while students were engaged in art and design activities organized by their teachers. During the second phase the questionnaire is used in two classroom while students are engaged in art design activities designed by the teachers and researchers together. The participating students will be also interviewed. The first part of the analysis of the phase one included 22 5th and 6th grades students. This integrated project lasted three weeks. A pre- and post test design was used. The results of the first set of the data showed that the students are interested in computational thinking and scientific reasoning, however their interest did not increase during the project. The most interesting finding was that the students has interpreted some of the open questions related to computational thinking and scientific reasoning skills very differently than they should be solved. Therefore it is important to interview students to understand how and why they approach complex problems in a certain ways, and how interest is playing a role in this process. In the conference all the results will be presented and overall results will be discussed.

Social and Academic Popularity: Disentangling Two Distinct Dimensions of Interpersonal Perception

Keywords: Motivation, Engagement, Attitudes and beliefs, Social motivation

Presenting Author:Thomas Lösch, University of Bamberg, Germany; **Co-Author:**Katrin Rentzsch, University of Bamberg, Germany

Interpersonal perceptions of a target student by his or her peers are linked to favorable outcomes. Students who are liked by their peers show favorable social development and students who are perceived as competent show increases in engagement and achievement. Interpersonal perceptions in the classroom, thus, seem to be relevant for two domains: a social and an academic domain. In the present study we tested this differentiation within an interpersonal framework. In a round-robin design, 330 students in 20 eight-grade classrooms rated all of their classmates in the social domain (whether they wanted to spend free time together) and academic domain (whether they wanted to spend time on academic tasks together). We analyzed these ratings within a Bayesian *Social Relations Model* (SRM) to disentangle the academic and the social domain. Furthermore, we validated this differentiation by investigating how interpersonal ratings were related to Big Five personality and academic grades. The SRM analysis showed that the social and academic domain were related, yet distinct aspects of students' interpersonal perception. Associations with the Big Five and grades supported this result: Extraverted students were rated as suitable targets to spend free time with and conscientious students and students with good grades were rated as suitable targets to work on academic tasks. In sum, this study provides evidence for a social and an academic domain of interpersonal perception. Future studies should investigate how ratings in these two domains interact in predicting outcomes like engagement or academic achievement.

Symposium Session A 1

16 August 2018 08:30 - 10:00

Nobel 1481-239

Symposium

Motivational, Social and Affective Processes

Promoting Well-Being and Psychosocial Adjustment: Adaptive and Maladaptive Emotion Regulation

Keywords: Attitudes and beliefs, Developmental processes, Emotion and affect, Goals, Motivation, Resilience, Self-determination theory, Self-regulation, Teaching approaches

Interest group: SIG 08 - Motivation and Emotion

Chairperson: Moti Benita, University of Haifa, Israel

Organiser: Moti Benita, University of Haifa, Israel

Organiser: Guy Roth, Ben-Gurion University of the Negev, Israel

Discussant: Maarten Vansteenkiste, Ghent University, Belgium

Self-determination theory (SDT; Ryan & Deci, 2000) is increasingly used to explore emotion regulatory processes, setting the stage for a conceptualization of emotion regulation (ER) that highlights the role of autonomy and volition in emotional experiences. SDT researchers have introduced several useful concepts to the study of ER. For example, integrative emotion regulation has been discussed as an adaptive emotion regulation strategy (Ryan et al., 2006), featuring an open and interested stance to emotions. Another line of research suggests autonomy supportive and controlling socialization practices may be antecedents of ER capacities. This symposium will build on the recent advances in the study of ER from the SDT perspective. Specifically, it will explore antecedents (P1 and P4) and outcomes (P1, P2, and P3) of ER, as well as the efficacy of diverse research methods (experimental in P2 and correlational with multiple reporters in P1, P3, P4). The questions will be applied to three culturally diverse nations (Israel, Peru, and Belgium). P1 focuses on teaching and parenting as antecedents of ER and on well-being, empathy and pro-social behavior as outcomes. P2 focuses on emotion goal pursuit as a consequence of motivators' practices, and P3 explores cross-culturally the association of ER styles with measures of psychological health. P4 examines the intergenerational transmission of parental practices and their relationship to parents' and children's ER styles. As the topics suggest, SDT is a promising avenue for the development of research on emotion regulation, with a potential impact on the psychosocial adjustment of children and adolescents.

Adaptive emotion regulation: Socialization and outcomes

Presenting Author: Guy Roth, Ben-Gurion University of the Negev, Israel

Well-being and the regulation of emotions are known to be interconnected, but research on antecedents and consequences of emotion regulation in educational contexts is scarce. This presentation begins to fill the knowledge gap. Self-determination theory defines *integrative emotion regulation* (IER) as adaptive, involving a differentiated awareness of one's emotional states and the use of this awareness to regulate behavior volitionally. The presentation discusses six studies: four compared outcomes for students' IER, suppression, and dysregulation, and two explored students' socialization. Two correlational studies examining students and close friends (n 's=120,160) pinpointed emotional integration as the best predictor of eudaimonic well-being and relationship quality. Three studies focused on prosocial behavior and attitudes; the first (n =240 adolescents and their teachers) demonstrated that only integration predicted prosocial behavior in class, and this was mediated by empathy to classmates. The next two studies (n >300 each) focused on support for humanitarian aid given to out-group members in intractable conflict. The first revealed that Jewish Israelis' IER was related to support for humanitarian aid to Palestinians in Gaza through empathic ability. The second found that the relation between liberal attitudes and support for humanitarian aid was stronger when integrative regulation was high rather than low. The final two studies explored socialization of emotion regulation. The first focused on parenting (n =169) and found autonomy supportive parenting predicted integration whereas controlling parenting predicted suppressive regulation. The second study (n =1100 students and their teachers) demonstrated that teachers' "emotional coaching meta-philosophy" predicted integration but "emotional dismissing meta philosophy" did not.

Choosing to Regulate Emotions: Autonomous vs. Controlled Emotion Goal Pursuit

Presenting Author: Moti Benita, University of Haifa, Israel

According to a motivational approach to emotion regulation, emotion regulation is based on the pursuit of an emotion goal. In our investigation, we applied self-determination theory to emotion regulation and tested the potential effects of autonomous versus controlled motivations on the pursuit of emotion goals, emotional intensity, and emotional processing. In three experimental studies (N =242), in which participants viewed a fear-eliciting film clip or emotion-eliciting pictures, participants were prompted to pursue emotion goals with either autonomy supportive or autonomy suppressive instructions. We found that autonomous and controlled participants were equally likely to engage in emotion regulation when directly instructed to do so. However, when they were allowed to spontaneously choose whether to regulate emotions or not, autonomous participants were more likely than controlled participants to independently pursue emotion goals. Studies 1 and 2 showed that in such instances, autonomous participants experienced reduced levels of fear over time, but controlled participants did not. Study 3 found that autonomous participants reported less increase in emotional intensity than controlled participants when moving between trials in which they were instructed to regulate and trials in which they were instructed to choose. Finally, Study 2 showed that autonomous participants engaged in less defensive processing of emotion-eliciting stimuli, while controlled participants' written expressions were more indicative of defensive coping. These results indicate that people are more likely to regulate their emotions of their own accord when they pursue emotion goals in an autonomous manner.

Emotion Regulation, Basic Need Satisfaction, and Psychological Health: Cross-Cultural Research

Presenting Author: Lennia Matos, Pontifical Catholic University of Peru, Peru; **Co-Author:** Moti Benita, University of Haifa,

Israel

Individual differences in the ways individuals regulate emotions are differentially related to well-being. Self-determination theorists have recently differentiated between three types of emotion regulation: integrative, suppressive, and dysregulated emotion. Integrative emotion regulation is considered more adaptive than the other two, but no research has tested whether they are differentially associated with well-being or psychological health, more broadly. This study tested the associations between college students' habitual use of the three types of emotion regulation, their basic need satisfaction, and their psychological health (psychological well-being and depression). Data were collected in two cultures, Israel (n=257) and Peru (n=305). Participants filled in questionnaires assessing the study variables. Multigroup structural equation modeling (SEM) results demonstrated that in both cultures, integrative emotion regulation positively predicted well-being, mediated by autonomy need satisfaction. In addition, suppressive and dysregulated emotion regulation were either negatively related to psychological health or not related at all. However, while suppressive regulation was a more robust negative predictor of basic needs satisfaction in the Peruvian sample, dysregulation was a more robust negative predictor of these basic needs in Israel. These findings support previous research showing cultural variances in the adaptiveness of emotion regulatory strategies. Furthermore, integrative emotion regulation is an important predictor of healthy adjustment in both cultures.

Early Antecedents of Psychologically Controlling Parenting during Toddlerhood

Presenting Author:Jolene van der Kaap-Deeder, Ghent University, Belgium; **Co-Author:**Katrijn Brenning, Ghent University, Belgium; **Co-Author:**Bart Soenens, Ghent University, Belgium; **Co-Author:**Maarten Vansteenkiste, Ghent University, Belgium; **Co-Author:**Lisa Dieleman, Ghent University, Belgium

This study investigated the role of both maternal (i.e., mothers' parenting history and emotion regulation strategies) and child (i.e., child temperament) factors in mothers' use of psychological control (i.e., a demotivating parental style) during toddlerhood. A community sample of 214 mothers participated in a three-wave longitudinal study. During pregnancy (Time 1), mothers' perceived history of psychologically controlling parenting and their general emotion regulation strategies were measured. Two years postnatally (Time 2), mothers' psychologically controlling parenting behaviors towards their toddlers, mothers' emotion regulation strategies, specifically in interactions with the children, and perceived child temperament were measured. Finally, three years postnatally (Time 3), mothers' psychologically controlling parenting behaviors towards the child were measured once more. Results provided evidence of an intergenerational similarity in psychologically controlling parenting habits, with mothers' integrative emotion regulation and emotional dysregulation functioning as underlying psychological processes. Moreover, a difficult child temperament tended to relate positively to maternal psychological control (albeit marginally significantly) and played a moderating role in some of the abovementioned associations. The results highlight the importance of mothers' own parenting history, mothers' emotion regulation strategies, and the child's perceived temperament as early antecedents of mothers' use of psychological control in interactions with their toddlers.

Symposium Session A 2

16 August 2018 08:30 - 10:00

Nobel 1481-231

Symposium

Motivational, Social and Affective Processes

Theoretical and Methodological Advancements in Examining Teachers' (De)motivating Styles

Keywords: Developmental processes, Emotion and affect, Engagement, Motivation, Self-determination theory, Teaching approaches

Interest group: SIG 08 - Motivation and Emotion

Chairperson: Nathalie Aelterman, Ghent University, Belgium

Organiser: Nathalie Aelterman, Ghent University, Belgium

Discussant: Maarten Vansteenkiste, Ghent University, Belgium

Given the pivotal role teachers play in students' engagement, learning and well-being, it is critical to gain a better understanding of the practices they rely on to foster students' motivation. Multiple studies in the Self-Determination Theory literature (SDT; Ryan & Deci, 2017) have examined correlates of autonomy-supportive and controlling teaching styles as well as the role of structure, whereas chaos has been largely ignored. In addition, few studies have included assessments of multiple critical motivating dimensions simultaneously. Therefore, a new vignette-based instrument (i.e., Situations-in-School Questionnaire, SIS) was recently developed to obtain an integrative and more fine-grained insight into a broad variety of motivating (i.e. autonomy support, structure) and demotivating (i.e., control, chaos) practices. Relying on multidimensional scaling analyses among secondary school teachers and students, initial evidence was obtained for a circumplex model, constituting of eight different subareas (e.g., participative, attuning, guiding, clarifying, demanding, domineering, abandoning, and awaiting). Building on this emerging line of research, in this symposium, presenters will provide evidence for the circumplex structure among other age groups (i.e. primary and higher education; Branko Vermote), by adopting a longitudinal design (Idit Katz), and by seeking cross-fertilization with other taxonomies (i.e., Model for Interpersonal Teacher Behavior; Tim Mainhard). In addition, attention is devoted to other newly developed instruments, for instance, to measure students' perceptions of teachers' (de)motivating style at the task-specific level (Martijn Leenknecht).

The discussion focuses on the conceptual implications and practical advantages of a more dynamic approach towards a (de)motivating teaching style.

(De)motivating Teaching in Primary and Higher Education: The Value of a Circumplex Approach

Presenting Author:Branko Vermote, University of Ghent, Belgium; **Co-Author:**Maarten Vansteenkiste, Ghent University, Belgium; **Co-Author:**Ruben Vanderlinde, Ghent University, Belgium; **Co-Author:**Nathalie Aelterman, Ghent University, Belgium

Previous research within Self-Determination Theory has extensively documented the content and meaning of a (de)motivating teaching style, thereby considering autonomy-supportive, controlling, structuring and chaotic teaching styles as separate classifications. Recently, Aelterman, Vansteenkiste et al. (in revision) argued for a more integrative and refined insight in those teaching styles, and provided initial promising evidence for a circumplex approach among a secondary school population. The present study aims to apply and evaluate this circumplex model in primary education, using an adjusted version of the Situations-in-School (SIS) Questionnaire that was developed by Aelterman et al. (in revision). After pilot testing, the SIS – Primary Education was validated in a sample of 323 Belgian primary school teachers (13.9% men; $M_{age} = 39.57$ years; $M_{teaching\ experience} = 15.22$ years). Analogous to the secondary education context, multidimensional scaling indicated that motivating and demotivating teaching practices could best be graphically represented by a two-dimensional configuration, with practices differing in terms of need support and directiveness. In addition, the same eight subareas (two subareas per style) could be distinguished along the circumplex model: participative, attuning, guiding, clarifying, demanding, domineering, abandoning, and awaiting. Further testifying to the circumplex approach, evidence was obtained for an ordered pattern of correlations, with each subarea being most strongly correlated with the adjacent subareas and the pattern becoming decreasingly positive and increasingly negative as one moves along the circle. Results concerning construct validation and associations with outcome variables, as well as findings in the higher education context will be available at the conference.

Developmental Changes of Teachers' Motivating Style and Students' Academic Motivation

Presenting Author:Idit Katz, Ben-Gurion University of the Negev, Israel; **Co-Author:**Rinat Cohen, Ben Gurion University of the Negev, Israel; **Co-Author:**Nathalie Aelterman, Ghent University, Belgium; **Co-Author:**Maarten Vansteenkiste, Ghent University, Belgium

While there seems to be a fairly strong agreement that students' adoptive motivation to learn tends to decrease over time, the reasons for this decline is yet not fully understood. Grounded in self-determination theory (SDT), the present study investigates whether changes in teachers' motivating style contribute to this documented decrease in students' motivation to learn. Four hundred and seventy-two seventh- and eighth-grade students completed questionnaires at the very beginning and at the end of an academic school year. Using the Situation-in-School (SIS) questionnaire, students' reported their perception of their homeroom teacher's motivating style (provision of autonomy support, structure, control, and chaos). Students also reported their type of motivation to learn, their engagement in learning, and their emotions in school. The results indicated a significant decrease from the beginning to the end of the academic year in students' perceptions that their teachers provided autonomy support and structure, as well as in students' need satisfaction, autonomous motivation, engagement, and positive emotions. A significant increase was found in students' perceptions of their teachers as controlling, and as creating a chaotic atmosphere, as well as in students' controlled motivation and negative emotions. Structural Equation Modeling analysis revealed that this change in teachers' motivating style predicts students' decreased positive motivational outcomes and increased negative motivational outcomes, through the level of students' need satisfaction.

Examining Correlates of (De)Motivating Teaching Styles from Two Theoretical Perspectives

Presenting Author:Tim Mainhard, Utrecht University, Netherlands; **Co-Author:**Nathalie Aelterman, Ghent University, Belgium; **Co-Author:**Leen Haerens, Ghent University, Belgium; **Co-Author:**Jan van Tartwijk, Utrecht University, Netherlands; **Co-Author:**Maarten Vansteenkiste, Ghent University, Belgium

How students perceive the motivational climate of their classroom, and especially the (de)motivating interpersonal style of their teacher, is strongly related to their engagement, learning, and overall well-being. Relying on two theoretical frameworks, that is Self-Determination Theory and the Model for Interpersonal Teacher Behavior, the present study investigates how perceptions of teachers' (de)motivating styles are related to students' motivational experiences and school functioning. Participants were 564 (45% boys; $M = 14.15 \pm 1.32$ years) 7th-10th-grade students, who completed the Situations-in-School (SIS) Questionnaire and the Questionnaire for Teacher Interaction (QTI) as to assess their perceptions of their teacher's interpersonal style, as well as measures tapping into their need-based experiences, quality of motivation, test anxiety, procrastination, feelings of resentment, and rated teacher quality. Correlations between the eight SIS-subareas and outcome variables followed an ordered sinusoid pattern with the attuning and guiding subareas yielding the strongest positive correlates with desirable outcomes and the strongest negative correlates with undesirable outcomes, while the opposite pattern was found for the domineering and abandoning subareas. Similarly, the helpful and understanding subareas of the QTI yielded the most adaptive pattern of outcomes, whereas depending on the specific outcome, the uncertain, dissatisfied and confrontational QTI-subareas yielded the most maladaptive pattern. Further, the distinguished subareas of both circumplex models were found to be meaningfully interrelated.

Students' Task-specific Perceptions of Teacher's (De)motivating Teaching Style

Presenting Author: Martijn Leenknecht, Roosevelt Center for Excellence in Education, Netherlands; **Co-Author:** Lisette Wijnia, University College Roosevelt, Netherlands; **Co-Author:** Sofie Loyens, University College Roosevelt, Netherlands; **Co-Author:** Remigius (Remy) Rikers, UCR / Utrecht University, Netherlands

Need-supportive teaching is considered to be an important instrument for teachers to promote students' motivation. Teachers can promote students' basic psychological needs for autonomy, competence, and relatedness by providing respectively autonomy support, structure, and involvement. Last decade, two discussions emerge in research on need-supportive teaching: 1) the interplay among the dimensions, and 2) the distinction between a bright and dark side of need-supportive teaching. In those discussions the level of generality of the studies on need-supportive teaching gets more attention, as taking this aspect into account could probably sort out differences that are found among studies. For that reason, the need for appropriate measurement instruments on both the contextual and situational level is highlighted. In the current study a questionnaire will be developed to measure students' task-specific perceptions of need-supportive teaching (i.e., the situational level). Not only the bright path is included, also the dimensions control, chaos, and coldness are part of the new questionnaire. The new questionnaire will be developed in four steps: 1) defining items; 2) analyzing the factor structure; 3) confirming the factor structure; and 4) analyzing task-specific student perceptions. The development of the questionnaire will take place between November 2017 and July 2018 and the results will be presented at ICM.

Symposium Session A 3

16 August 2018 08:30 - 10:00

Nobel 1481-264

Symposium

Motivational, Social and Affective Processes

Processes matter? Exploring the role of motivation and emotions in the process of learning

Keywords: Emotion and affect, Engagement, Interest, Learning approaches, Measurement, Motivation, Self-efficacy, Self-regulation, Social motivation

Interest group: SIG 08 - Motivation and Emotion

Chairperson: Hanna Jarvenoja, University of Oulu, Finland

Organiser: Thomas Martens, Medical School Hamburg, Germany

Organiser: Hanna Jarvenoja, University of Oulu, Finland

Discussant: Marold Wosnitza, RWTH Aachen University, Germany

The role of emotions and motivation in fostering learning and achievement has been widely acknowledged in the field of learning sciences. This empirically supported knowledge is often based on research that combines measures of emotion and motivation with an outcome. However, learning is a process leading to an outcome, and hence, exploring learning concurrently as it unfolds is needed in order to understand how motivation and emotions function as an inherent component of the learning process, not only as a variable affecting on the conditions of learning. Studies aiming to implement such research designs and methods that better trace the learning process and students' motivational expectations in real contexts can provide evidence on the fluctuation, patterns and intertwined connection of motivation and emotions in learning. The aim of this symposium is to introduce recent empirical evidence from studies that engage in the use of process-oriented methods for exploring motivation and emotions in learning. The symposium comprises four presentations, which together cover the varying learning contexts, encompassing social, interactive, and technology enriched learning. Each of the presentation present results from studies that have employed different, innovative on-line measures and analytical techniques to conceptually and empirically capture multiple layers of motivation and emotions as they take place, "on the fly". In the discussion, the meaning of process-oriented methods for studying the multifaceted role of motivation and emotions in learning is elaborated by reflecting the empirical decisions, results and the challenges the presented studies encountered.

Planning and Emotion Regulation During Two Online Collaborative Tasks

Presenting Author: Elizabeth Webster, University of Victoria, Canada; **Presenting Author:** Sarah Davis, University of Victoria, Canada; **Co-Author:** Allyson Hadwin, University of Victoria, Canada; **Co-Author:** Aishah Bakhtiar, University of Victoria, Canada

This study examines the link between patterns of planning prior to a computer-supported collaborative learning task and patterns of emotion regulation during that task. Participants were 178 students enrolled in an undergraduate learning-to-learn course. Students worked in groups of three to five to complete two collaborative tasks. Preliminary findings from the first task indicate that students who are well-prepared enter the task feeling less positive and are more likely to plan on *self-regulating* their emotions than students who are less well-prepared. In contrast, students who are less well-prepared are more likely to plan on *sharing in* the regulation of their emotions. When broken down by valence of emotions, both groups of students plan to share in the regulation of positive emotions, but self-regulate negative emotions. Further analysis may reveal more differences between well-prepared and ill-prepared students.

Emotion Regulation in collaborative learning: Individual experiences and group level regulation

Presenting Author: Kristiina Kurki, University of Oulu, Finland; **Co-Author:** Hanna Jarvenoja, University of Oulu, Finland; **Co-Author:** Tiina Törmanen, University of Oulu, Finland, Finland; **Co-Author:** Aishah Bakhtiar, University of Victoria,

Canada

Situational variations of emotions among students play a part in the learning process both on individual and group level. Thus, identifying and regulating emotions during learning process is a key prerequisite for successful learning. This study aims to explore students' situational emotions in group learning process by investigating 12-year old primary school student's (N = 41) socio-emotional interactions in group task in science. The study relates observed group level negative valence and related regulation processes with students' perceived emotional experiences before and after the group task. Furthermore, it explores the changes in the valence of group level socio-emotional interaction during working. Groups' collaborative working was videotaped and group members assessed their emotional state before and after the task. They also wore a bracelet to measure their physiological reactions. In the analysis, groups' socio-emotional interaction were detected, and emotional valence and actualised regulation was coded from these instances. Socio-emotional interaction instances were then explored both by connecting them to the individual students' perceived emotions before and after the group task and by analysing sequentially the changes in the valence of interaction during the group task. The study indicates that students' individual emotions are affected by negative group interactions and that there is variations in group level regulation attempts between the groups: some groups don't always succeed in changing the valence of interaction or students emotional state regardless of their efforts to regulate the situation. In the presentation, it is discussed if this variation is reflected in the students' physiological reactions.

Sensor Measures for Tracking and Predicting Motivation in Learning Processes

Presenting Author:Thomas Martens, Medical School Hamburg, Germany; **Co-Author:**Moritz Niemann, MSH Medical School Hamburg, Germany

The aim of this study is to identify sensor measures that could track and predict important motivation variables like interest or intrinsic motivation. In a combined cross-sectional and longitudinal study, multilevel data were collected like self-report data with questionnaires and embedded experience sample as well as sensor data like electrodermal activity and EEG. 572 students from a private university in Germany were asked with an online questionnaire that covers most scales regarding the Integrated Model of Learning and Action. In a 2-step-analysis process based on IRT methods five typical motivational profiles can be identified: pragmatic, anxious, self-determined, negative and strategic. 64 of these students performed a learning experiment followed by final measures of intrinsic motivation, self-efficacy and gained knowledge. During the learning experiment, consumer-grade wearables were used to assess psychophysiological data like electrodermal activity and EEG. In addition, motivational states like affect and interest were measured with embedded experience sampling every 210 seconds. Results show that electrodermal activity can predict energy, focus and interest in the learning process as well as final intrinsic motivation and interest. So far, predictions derived from EEG data are inconclusive. Furthermore, psychophysiological data alone cannot predict the gained knowledge as learning outcome. In contrast, motivational types can predict gained knowledge significantly. These results are in line with prior theoretical assumptions: learning outcome can achieved with qualitative different motivational regulation processes. Nevertheless, sensor measures can track motivational process in a learning situation and might be used for adapting the learning environment for long-term motivation.

Exploring differences between students' motivation processes in collaborative learning

Presenting Author:Kayley Lyons, University of North Carolina, United States; **Co-Author:**Nikki Lobczowski, University of North Carolina at Chapel Hill, United States; **Co-Author:**Jeff Greene, University of North Carolina, United States; **Co-Author:**Jacqui McLaughlin, University of North Carolina, United States

This study is a comparative extreme case study of how individual students and groups differ in their motivation processes and motivation regulation during collaborative learning. In an entrepreneurship course, pharmacy students worked on a collaborative project to solve a variety of authentic ill-defined health care problems. We compared a group in which all members rated their motivation high throughout the group project and a group in which most members rated their motivation average to start and low at the end of the semester. The analysis consisted of semester-long video observations of group collaboration paired with weekly surveys of students' perceptions. We conducted an in-depth micro-analysis by coding process data (i.e., utterances, non-verbal cues) for the occurrence of motivation regulation, motivation challenges, and behavioral engagement as well as manifestations of socio-cognitive (e.g., goal achievement orientations, causal attributions, and competence self-beliefs) and situative (e.g., identity talk) motivation constructs. Our preliminary results indicate that the group with low self-rated motivation shared a performance orientation, work avoidance goals, and maladaptive attributions, whereas the group with high self-rated motivation shared high subjective teamwork value, created a positive group identity, and frequently monitored their engagement. Our full analysis will have implications for basic research on motivation processes within collaborative learning as well as implications for future research on building supports for social regulation in collaborative learning.

Symposium Session A 4

16 August 2018 08:30 - 10:00

Nobel 1481-237

Symposium

Motivational, Social and Affective Processes

The Development of Math- and Language Arts-related Expectancy-Value Beliefs: Cross-Domain Analyses

Keywords: Attitudes and beliefs, Developmental processes, Expectancy-value theory, Interest, Motivation, Self-concept

Interest group: SIG 08 - Motivation and Emotion

Chairperson: Fani Lauermann, University of Bonn, Germany

Organiser: Fani Lauermann, University of Bonn, Germany

Discussant: Stuart Karabenick, University of Michigan, United States

Students' expectancy-value beliefs—their self-concepts of ability and expected success in academic domains like math and language arts, as well as their subjective valuing of these domains—play a central role in shaping such consequential life choices as educational and occupational decisions. For instance, being (objectively and subjectively) good at math and valuing math is associated with a comparatively higher probability of pursuing math-intensive educational and career opportunities, whereas being good at and valuing other domains (e.g., language arts) can decrease this probability. Such cross-domain effects—for instance, across mathematics and language arts—can play a crucial role in the decision process. Yet, despite their importance for understanding achievement-related choices, there is still insufficient evidence regarding the joint developmental trajectories of students' expectancy-value beliefs across academic domains. Accordingly, the four papers featured in this symposium use complementary theoretical perspectives—expectancy-value theory and the internal-external frame of reference model, including its extensions in the dimensional comparisons theory—to examine the cross-domain developmental trajectories of students' expectancy beliefs (Paper 1), value beliefs (Paper 4), or both (Papers 2-3). Papers 2 and 3 additionally examine the associations between students' expectancy-value beliefs and career aspirations. The four papers examine cross-domain effects and use longitudinal designs (Papers 1-4), analyze data from Germany (Papers 1-2, 4) the United States (Papers 3-4), Australia, and Finland (Paper 4), use similar assessments, thus ensuring comparability and consistency within the symposium (Papers 1-4), and cover a range of developmental stages, from childhood (Papers 1 and 3) through adolescence (Papers 2-4).

Ability Self-Concept Formation in Mathematics and Language Arts in the Early School Years

Presenting Author: Anne Franziska Weidinger, Technical University Dortmund, Germany; **Co-Author:** Ricarda Steinmayr, TU Dortmund, Germany; **Co-Author:** Birgit Spinath, Heidelberg University, Germany

In line with the reciprocal internal/external frame of reference model (RI/EM), it is well-established that secondary school students generate domain-specific ability self-concepts by comparing their own performance in a given domain to other students' performances (socially), to their own past performances (temporally), and to their performances in other domains (dimensionally). However, developmental theories of ability conceptions suggest that the use of such performance comparisons to evaluate own abilities may differ by students' developmental stage because of different developmental tasks throughout students' educational careers. Specifically, engaging in dimensional comparisons might be dysfunctional in the early school years because elementary school students need to acquire fundamental knowledge in different domains. Accordingly, the need to specialize in a given domain might not be salient at this stage, and the comparative processes described in the RI/EM might change over time. Yet, to our knowledge, no study has investigated dimensional comparisons in elementary school longitudinally. We hypothesize that—in contrast to social and temporal comparisons—dimensional comparisons will not occur in the early school years. The ability self-concepts and grades in math and German of 542 German elementary school students were assessed seven times over 24 months from Grade 2 to Grade 4. Latent cross-lagged models revealed evidence for social and temporal, but not for dimensional comparison effects. Thus, dimensional comparisons may not be as important in ability self-concept formation in the early school years as they tend to be later on. Therefore, developmental differences should be considered to better understand ability self-concept formation.

Bidirectional Cross-domain Associations of Adolescents' Expectancies, Values, and Career Aspirations

Presenting Author: Rebecca Lazarides, University of Potsdam, Germany; **Co-Author:** Charlott Rubach, University of Potsdam, Germany

Based on Eccles et al.'s expectancy-value theory (EVT; Eccles et al., 1983) and the dimensional comparisons theory (DCT; Möller & Marsh, 2013), this study investigated the longitudinal bidirectional relations between students' self-concepts of ability, task values, and career aspirations in mathematics and language arts-related domains. In addition, to gain a more detailed understanding of the interplay of students' ability self-concepts, task values, and occupational aspirations in math and language arts, we tested whether these relations varied depending on student gender and immigrant background. As expected, longitudinal structural equation modelling in a sample of 997 German upper secondary level students showed negative cross-domain and positive same-domain longitudinal effects across academic motivations (i.e., students' expectancy-value beliefs) and career aspirations. However, multiple group analyses revealed notable differences as a function of gender and immigrant background. The analyses indicated negative cross-domain effects for girls as girls' mathematics intrinsic value negatively predicted their perceived utility of the language arts domain, whereas these associations were not significant for boys. Positive same-domain effects emerged for boys as their intrinsic value for the language arts domain was positively associated with their aspirations to language arts-intensive careers. Only for non-native speakers of German, career aspirations related to language-intensive occupations negatively predicted math-related career aspirations. These differential effects highlight a need to consider the interrelations between learning contexts and student characteristics in analyses of dimensional comparison effects.

Joint Trajectories of Students' Expectancies and Values in Math and Language Arts

Presenting Author:Hanna Gaspard, University of Tübingen, Germany; **Co-Author:**Fani Lauermann, University of Bonn, Germany; **Co-Author:**Norman Rose, University Tuebingen, Germany; **Co-Author:**Allan Wigfield, University of Maryland, United States; **Co-Author:**Jacquelynne Eccles, University of California, Irvine, United States

On average, students' reported expectancies and values for different academic domains have been found to decrease over the school years (e.g., Jacobs, Lanza, Osgood, Eccles, & Wigfield, 2002). However, a differentiation of students' interests as one of the explanations for this decline (Schiefele, 2009) suggests that there should be heterogeneity in these trajectories across subjects. Accordingly, we examined whether meaningful subgroups can be identified in the trajectories of students' expectancies and intrinsic values across math and language arts for Grades 1 through 12, using data of 1069 students from the US-American Childhood and Beyond study. Growth-mixture modeling was used to examine latent classes in the trajectories of expectancies and intrinsic values in both domains. For expectancy trajectories, we found two latent classes, a "moderate math decline/high language arts" class and a "moderate math decline/strong language arts decline" class. For intrinsic value, we identified three latent classes, (a) a "strong math decline/language arts decline leveling off", (b) a "moderate math decline/strong language arts decline", and (c) a "stable math and language arts" class. The findings show that classes in the trajectories of expectancies and values in math and language arts become more differentiated over the school years. The classes showed meaningful differences in terms of students' characteristics, including gender and teacher-rated math and reading abilities. They were also associated with math course taking and career aspirations in high school.

Task Value Profiles among Adolescents in Australia, Finland, the United States, and Germany

Presenting Author:Jaana Viljaranta, University of Eastern Finland, Finland; **Co-Author:**Helen Watt, The University of Sydney, Australia; **Co-Author:**Heta Tuominen, University of Helsinki, Finland; **Co-Author:**Markku Niemivirta, University of Helsinki, Finland; **Co-Author:**Fani Lauermann, University of Bonn, Germany; **Co-Author:**Jacquelynne Eccles, University of California, Irvine, United States; **Co-Author:**Birgit Spinath, Heidelberg University, Germany; **Co-Author:**Ricarda Steinmayr, TU Dortmund, Germany; **Co-Author:**Katariina Salmela-Aro, Helsinki University, Finland

Studies using a person-oriented approach within expectancy-value theory (Eccles et al., 1983) have shown that students at different stages of their school careers show various *profiles* in terms of their academic task values (e.g. interest, attainment, and utility values). However, the diversity in identified profiles raises a question about which profiles might be generalizable across study populations and time points. Most studies of task value profiles are cross-sectional, and relatively little is known about developmental aspects of students' task value profiles. Accordingly, there is a need for longitudinal research across educational contexts using similar kinds of measures from corresponding age groups. The present study used longitudinal data sets from four countries covering approximately the same age groups (grades 9–11 in Australia and Finland; 11–13 in Germany; and 10–12 in the United States). Students' task value profiles in the mathematics and language arts domains were examined, as well as profile stability and potential gender differences. Latent class clustering revealed three profiles in each data set: subject-specific profiles for "high values in math" and "high values in language arts" were found in all data sets, and depending on the data, the third one indicated either generally high or generally low values across domains. Boys were typically overrepresented in high math value profiles and girls in high language value profiles. In addition, the profiles showed high stability over time. Despite differences across educational systems, our findings concerning profiles, stability, and gender differences were highly consistent across national contexts.

Symposium Session A 5

16 August 2018 08:30 - 10:00

Nobel 1483-251

Symposium

Teaching and Teacher Education

Teachers' enthusiasm: antecedents, effects, and underlying mechanisms

Keywords: Attitudes and beliefs, Emotion and affect, Interest, Learning approaches, Measurement, Motivation, Teaching approaches

Interest group: SIG 08 - Motivation and Emotion

Chairperson: Angelica Moè, University of Padova, Italy

Discussant: Idit Katz, Ben-Gurion University of the Negev, Israel

Enthusiasm is the behavioural expression of enjoyment, and it could also be considered as an effective delivering style which should favour positive outcomes, such as increased satisfaction and positive affect, in both the teachers and the students. The enthusiastic teacher is motivated and can transmit motivation to students. Additionally it could raise achievement. However the underlying mechanisms are still underexplored. The aims of this symposium are a) focusing on antecedents, characteristics and effects of felt and displayed enthusiasm; b) linking teachers' enthusiasm with students' outcomes; c) exploring some potential underlying mechanisms. Who is enthusiastic, how and under which conditions is being enthusiastic worthwhile? There will be four presentations differing in their methodological approaches: one diary, two experimental studies, and one longitudinal study. Presentations 1-3 from Germany and Italy outline the facets and the characteristics of teachers' enthusiasm in a diary study (Melanie Keller, Eva Becker, Anne Frenzel, & Jamie Taxer), the positive effects of an enthusiastic delivering style in particular on students' learning and attention (Angelica Moè and Anne

Frenzel), and on students' positive affect (Lik Au, Anne Frenzel, Angelica Moè) in two experimental studies. Presentation 4 from Australia explores, in a longitudinal design, motivational antecedents of teachers' interest and confidence in teaching their classes (Jean-Louis Berger, Helen Watt, & Paul Richardson). Our Discussant will focus on collective emergent ideas, principles, strengths and weakness of improving both students' and teachers' motivation by fostering an enthusiastic delivery style.

Lesson profiles of teacher enthusiasm and relations to students' emotions

Presenting Author:Melanie Keller, Leibniz Institute for Science and Mathematics Education, University of Kiel, Germany, Germany; **Co-Author:**Eva Becker, University of Konstanz, Germany; **Co-Author:**Anne Christiane Frenzel, University of Munich, Germany; **Co-Author:**Jamie Taxer, Stanford University, United States

Research on teacher enthusiasm featured two distinct conceptualizations and investigated teacher enthusiasm as either experienced teaching-related enjoyment or as displayed enthusiastic teaching behaviors. In an extensive review of the past 20+ years of research on teacher enthusiasm, Keller, Woolfolk Hoy, Goetz, and Frenzel (2016) proposed that teacher enthusiasm would be ideally conceptualized as the joint occurrence of these two components. The present study investigated the extent to which the two components co-occur in teaching situations. Utilizing lesson diaries (investigating a total of $N=316$ mathematics lessons), the present study aimed to identify patterns of teacher-reported enjoyment and student-reported enthusiastic teacher behaviors, and investigate whether those patterns were related to students' emotions (enjoyment and boredom). Findings imply that the two enthusiasm components do not always co-occur. Four lesson profiles in teacher enthusiasm were identified, which were characterized by (1) enjoyment and enthusiastic teaching behavior coinciding at a high level, (2) teachers reporting high levels of enjoyment but not being perceived as enthusiastic, (3) teachers being perceived as enthusiastic, but not reporting high levels of enjoyment, and (4) teachers reporting low levels of enjoyment and not being perceived as enthusiastic. The first pattern was the most prominent, occurring in about 60% of all lessons and was found to be superior to the other profiles with regards to students' emotions. Enthusiasm profiles in teacher enthusiasm exhibited a pattern congruent with both variability and stability within teachers, with particularly the second profile appearing to be more teacher specific.

Displayed enthusiasm fosters recall and attention

Presenting Author:Angelica Moè, University of Padova, Italy; **Co-Author:**Anne Christiane Frenzel, University of Munich, Germany

Most studies about effects and characteristics of teachers' and students' enthusiasm considered as outcomes motivations and emotions, while only a few addressed the point if enthusiasm is beneficial also for learning and achievement. Moreover in the main a correlational approach was adopted. This study aimed at comparing the effects of two delivery styles characterized by High (HE) or Low (LE) displayed Enthusiasm. The overall hypothesis was that enthusiasm favour recall, intrinsic motivation and absorption. Further, in Experiment 2, through a dual task paradigm, it was studied whether attention could be the underlying mechanism explaining the higher recall in the HE compared to LE condition. Participants were primary school children to whom short passages were read with HE or LE. The analyses on subsequent recall showed higher scores in the HE compared to the LE condition. Experiment 1 confirmed also higher intrinsic motivation and higher absorption in the HE condition compared to the LE. Experiment 2 showed that when attention is captured by a concurrent attentive task the beneficial effects of HE disappear, suggesting that a) attention paid during listening to the enthusiastic person is an underlying mechanism explaining the beneficial effects of displayed enthusiasm on recall, b) teachers should be enthusiastic when this delivering style is worthwhile, i.e. when the students are not involved in other tasks or distracted. The results outline the beneficial effects of an enthusiastic delivery style on students' recall, when attention is devoted to listening to the enthusiastic instructor.

Effects of teacher expressive behaviors on students' attention, recall and affect

Presenting Author:Lik Au, University of Munich (LMU), Germany; **Co-Author:**Anne Christiane Frenzel, University of Munich, Germany; **Co-Author:**Angelica Moè, University of Padova, Italy

Teachers' enthusiasm, defined here as nonverbal expressive behaviors, positively impacts students' motivation, learning and affect (Keller, Hoy, Goetz, Frenzel, 2016; Moè, 2015). While a linkage between teacher expressive behaviors and students' attention has been proposed (e.g. Bettencourt, Gillett, Gall, & Hull, 1983), empirical evidence is lacking regarding a causal effect. The current study investigates the effects of teacher expressive behaviors on students' attention (operationalized as observed attentive behaviors), recall performance and affect. In a field experiment with a within-subjects one-factorial design, we manipulated two levels of expressiveness (high vs. low) based on the nonverbal indicators of enthusiastic teaching introduced by Collins (1978). Students ($N=196$, nested within 16 classes) were read two texts (one descriptive and one narrative), once with low and once with high expressiveness. Students' attention was recorded during the experiment and their recall performance and affect during the delivery were assessed via questionnaire and with a free recall test. We found students showed more attention (looking towards the experimenter) in the high as compared to the low expressiveness condition. Additionally, we found a positive impact of high teacher expressiveness on students' ratings of their positive affect. Students did not differ in recall between high and low expressiveness, but both order of presentation and the kind of passage had an effect. The study suggests teacher expressiveness plays a key role in attracting students' attention and enhancing their positive affect during learning.

Motivations and attributions that predict teachers' interest and confidence in teaching

Presenting Author: Jean-Louis Berger, Swiss Federal Institute for Vocational Education and Training (SFIVET), Switzerland; **Co-Author:** Helen Watt, The University of Sydney, Australia; **Co-Author:** Paul Richardson, Monash University, Australia

Teachers' enthusiastic behaviour could depend on their initial motivations to teach which could subsequently affect their confidence and interest in teaching their classes. This study assessed the relationships among teachers' initial motivations, attributions for students' success and failure, in predicting positive teaching experiences (interest and confidence) versus negative burnout symptoms, during their early career. 1651 teachers filled in questionnaires to assess motivations, causal attributions, and quality of teaching experience at three timepoints. The results highlighted the enduring importance of initial motivations and key role played by causal attributions in predicting early career quality of teaching experience. The more that teachers attributed effort as the reason for students' success, the higher their interest and confidence in teaching their classes. In contrast, the more they considered innate ability as the cause of students' success and failure, they experienced reduced interest and confidence, and reported symptoms of burnout already during their early career. The discussion focuses on motivations that could lead teachers to be more enthusiastic and less burned out by teaching.

Symposium Session A 6

16 August 2018 08:30 - 10:00

Nobel 1483-344

Symposium

Associations between teacher-student relationship and students' school motivation

Keywords: Achievement, Developmental processes, Emotion and affect, Engagement, Expectancy-value theory, Interest, Motivation, Teaching approaches

Interest group: SIG 08 - Motivation and Emotion

Chairperson: Maaïke Engels, KU LEUVEN, Belgium

Organiser: Sanni Pöysä, University of Jyväskylä, Finland

Organiser: Eija Pakarinen, Finland

Discussant: Eleftheria Gonida, Aristotle University of Thessaloniki, Greece

Strong evidence indicates that teacher-student relationship and interactions within classrooms are important for students' learning and motivation. This symposium, consisting of four studies presented by researchers from Finland, Belgium, and Norway, contributes to prior research by increasing our knowledge of the role of teacher-student relationship and interactions in students' interest, engagement, and task values throughout the comprehensive education. The first paper (Pakarinen, Suchodoletz, & Lerkkanen) investigates the transactional associations between children's interest in literacy and math and quality of teacher-student relationship across the kindergarten year. The second paper (Engels, Pakarinen, Lerkkanen, & Verschuere) focuses on the transition from primary to secondary school in order to investigate how students' engagement, achievement, burnout, and teacher conflict evolve together over time. The third paper (Pöysä, Virtanen, & Lerkkanen) utilizes observational data from 155 lessons in order to assess the associations between the quality of teacher-student interaction and students' self-rated subject-specific task values. The fourth paper (Virtanen, Ertesvåg, & Vaaland) reports the results concerning the associations between observed classroom interactions, students' classroom engagement, teacher-reported job satisfaction and well-being. Together, these four papers increase our understanding of the associations between teacher-student relationship and students' school motivation. The implications for theory and practice will be discussed.

Cross-lagged associations between children's academic interest and teacher-student relationship

Presenting Author: Eija Pakarinen, New York University Abu Dhabi/ University of Jyväskylä, Finland; **Co-Author:** Antje von Suchodoletz, New York University Abu Dhabi, United Arab Emirates; **Co-Author:** Marja-Kristiina Lerkkanen, University of Jyväskylä, Finland; **Co-Author:** Jaana Viljaranta, University of Eastern Finland, Finland

This study investigated the cross-lagged associations between children's interest in literacy and math and quality of teacher-student relationship across the kindergarten year. The participants were 504 Finnish kindergarteners (51% girls, 49% boys). Children's interest in literacy and math and performance on pre-math and pre-literacy skills were measured in individual test situations at the beginning and at the end of kindergarten year. Kindergarten teachers (n = 51; 1 male) rated the quality of teacher-student relationship (i.e., closeness and conflict) with a particular child twice during the kindergarten year. Child's age and parental level of vocational education were used as control variables. Gender was tested as a possible moderator in the associations. Complex models with Mplus statistical package were specified to investigate the reciprocal associations. First, the results supported the fully cross-lagged models for the data. The results of multi-group analyses showed that teacher-perceived conflict predicted lower interest in literacy and math in both genders. The moderator analyses further showed that in boys, conflicted relationship with kindergarten teacher was related to lower pre-math skills, and interest in math predicted less teacher-perceived conflict at the end of kindergarten year. The findings suggested that academic interest and teacher-perceived conflict have reciprocal links in boys. The results emphasize the importance of warm and supportive relationship with kindergarten teacher for enhancing academic motivation and successful school transition.

Students' academic and emotional adjustment during school transition: A cross-lagged study

Presenting Author:Maaike Engels, KU Leuven, Belgium; **Co-Author:**Eija Pakarinen, New York University Abu Dhabi/ University of Jyväskylä, Finland; **Co-Author:**Marja-Kristiina Lerkkanen, University of Jyväskylä, Finland; **Co-Author:**Karine Verschueren, KU Leuven, Belgium

For many students, the transition from primary to secondary education is challenging for their academic and emotional adjustment to school. This study investigated several indicators of students' academic and emotional adjustment during the transition from primary (i.e., Grade 6) to secondary school (i.e., Grade 7 and 9). In specific, it investigated how students' engagement, achievement, burnout, and teacher conflict evolve together over time. The study used a subsample of the First Step Study conducted in Finland. A total of 356 adolescents ($M_{age} = 12.75$, $SD = 0.29$; 57.3% boys) were selected as they had teacher-ratings of conflict in the teacher-student relationship. Students filled out questionnaires about their behavioral and cognitive engagement, and burnout. Students' achievement was measured using standardized test scores, and teacher-student conflict was assessed using teacher-ratings. Separate cross-lagged models were estimated for students' behavioral and cognitive engagement using Mplus 7.4. Cross-lagged models revealed that more behavioral engagement was associated with less burnout and teacher-conflict, and higher achievement one or two school years later. Moreover, more teacher-conflict was related to less behavioral engagement over time. Furthermore, students' cognitive engagement was associated with lower levels of burnout one or two school years later, and higher achievement one school year later. In turn, higher achievement predicted more cognitive engagement over time. Results underscore the importance of promoting students' engagement in the transition from primary to secondary school.

Teacher-student interaction and students' task values in mathematics and language arts

Presenting Author:Sanni Pöysä, University of Jyväskylä, Finland; **Co-Author:**Tuomo Virtanen, University of Stavanger, Norway, Norway; **Co-Author:**Marja-Kristiina Lerkkanen, University of Jyväskylä, Finland

The aim of the present study was to examine the extent to which the quality of teacher-student interaction in lower secondary school is associated with students' subject-specific task values. Participants were 775 students and 50 teachers at Grade 7. Students' rated their subject-specific task values for mathematics and language arts at the end of Grade 6 (spring 2013) and Grade 7 (spring 2014). In addition, a total of 155 lessons (65 mathematics; 90 language arts) were video-recorded at Grade 7 in order to assess the quality of teacher-student interaction with the CLASS-S instrument. The associations between the quality of teacher-student interaction and student's task values were assessed with path models using the COMPLEX option of the Mplus statistical package. The results showed that the quality of teacher-student interaction was positively related to students' task values in mathematics and language arts when gender, mother's education, prior task values and achievement level in mathematics and language arts were controlled for. In language arts statistically significant relation between the quality of teacher-student interaction and task values was found in emotional support. In mathematics similar significant relations were found in emotional support and instructional support. The results provided evidence on the importance of high-quality teacher-student interaction on students' task values in lower secondary school. Thus, these results confirm that educators should acknowledge the value of providing warm climate and sensitive and caring relationship with students in lower secondary school.

Observed classroom interactions, students' classroom engagement, and teachers' well-being

Presenting Author:Tuomo Virtanen, University of Stavanger, Norway, Norway; **Co-Author:**Sigrun Erstesvag, University of Stavanger, Norway; **Co-Author:**Grete Vaaland, University of Stavanger, Norway

The present study reports the results concerning the associations between observed classroom interactions, students' classroom engagement, teacher-reported job satisfaction and well-being. The sample of 79 Norwegian teachers were observed using Classroom Assessment Scoring System Secondary (CLASS-S). Latent profile Analysis was conducted to identify subgroups of teachers based on means of the 11 CLASS-S classroom interaction dimensions (Positive Climate, Teacher Sensitivity, and Regard for Adolescent Perspectives forming Emotional Support domain; Behavior Management, Productivity, and Negative Climate forming Organizational Support domain; and Instructional Learning Formats, Content Understanding, Analysis and Inquiry, Quality of Feedback, and Instructional Dialogue forming Instructional Support domain). Four subgroups were identified: Low in all; Low in Emotional and Instructional Support, high in Organizational Support, High in Regard for Adolescents' Perspectives; and Low in all. The results, further, showed that the subgroups differed in perceived job satisfaction and well-being as well as students' observed classroom engagement. The *High in all* ($n=28$) subgroup showed the highest levels of observed students' engagement and self-reported job satisfaction and well-being while teachers belonging to the *Low in all* ($n=9$) subgroup showed the lowest levels of student engagement, job satisfaction and well-being. The current study indicate that increasing teachers' job satisfaction and well-being has a potential to enhance classroom interactions students are exposed to and, thus improve students' classroom engagement.

Symposium Session A 7

16 August 2018 08:30 - 10:00

Nobel 1483-354

Symposium

Motivational, Social and Affective Processes

Zooming in on motivational processes in teacher-student interactions

Keywords: Achievement, Developmental processes, Engagement, Learning approaches, Measurement, Motivation, Self-concept, Self-efficacy, Social motivation, Teaching approaches

Interest group: SIG 08 - Motivation and Emotion

Chairperson: Elisa Kupers, University of Groningen, Netherlands

Discussant: K. Ann Renninger, Swarthmore College, United States

Traditionally, the majority of motivational research in education has been conducted with questionnaires which assess the general level of students' motivation and self-determination, and teachers' motivational strategies (Stroet, Opdenakker en Minnaert, 2014). However, in the past decade, there has been an increasing attention for the moment-to-moment processes in the classroom from which long-term motivational outcomes emerge. Being able to understand these mechanisms would not only be an important contribution to motivational theory, but also would provide us with tangible knowledge about what teachers say and do that might contribute positively or negatively to students' motivation on the long term. The papers in this symposium are all aimed at better understanding motivation-related aspects as real-time, socially embedded constructs and at unraveling the complex, bi-directional influences between teacher and student(s) using sophisticated methods. The presentation of De Ruiter focuses on how children's fixed and growth mindsets emerge from teacher-student interactions. The second and third presentation describe in detail how specific complex skills are scaffolded and motivated from moment to moment; respectively reading comprehension for low achieving students (Kajamies and colleagues) and student creativity (Kupers & van Dijk). The fourth presentation by Mascareño Lara and colleagues focuses on the real-time interplay between students' collective engagement and teacher talk.

The co-dependency and dynamics of teacher and student fixed- versus growth-mindset behavior

Presenting Author: Naomi de Ruiter, Utrecht University, Netherlands

The importance of students' theories of intelligence has been largely established, where students with a growth mindset tend to show more progress and motivation in school than students with a fixed mindset. Adult feedback plays an important role in eliciting children's 'growth-oriented' responses to difficult tasks versus 'fixed-oriented' responses. But how do teacher feedback and child responses regulate each other within the classroom? Using a process approach, this study is the first to delve into the continuous moment-to-moment co-dependency of these behaviors within the classroom. We filmed 10 different elementary-school teachers as they interacted with their students during math lessons. Each teacher and student utterance/action was coded based on whether it can be characterized as being 'growth-oriented' or 'fixed-oriented'. Transition diagrams were created for each dyad based on the teacher- and student-utterances and behavior. The transition diagrams reveal the patterns of actions and reactions within and across teach-student dyads. By investigating continuous teacher-child interactions as they naturally occur within the classroom this study provides unique insight into the within- and between-individual variability of teachers' feedback and children's responses related to fixed and growth mindsets, and into the bi-directional nature of these behaviors. This approach is in contrast with existing research, which commonly focuses on group differences based on highly controlled snap-shots of adult feedback and child responses, which has thus been unable to explore the variability and dynamics of these relationships.

Motivating creativity: a process measure of creativity and its relation with teacher instruction

Presenting Author: Elisa Kupers, University of Groningen, Netherlands; **Co-Author:** Marijn Van Dijk, University of Groningen, Netherlands

As one of the '21st century skills', creativity should be one of the leading concepts in today's educational design and policy. But what exactly is creativity when looking at student actions and reactions in the classroom? And how can teachers motivate students to be more creative? The goal of this paper is to present a newly developed observational measure of creativity on the real-time level. By means of an empirical illustration in a case study, we will illustrate how this measure can be used in different settings, and how creativity relates to teacher's motivational strategies (particularly autonomy support). In a three-step process, a coding frame was developed for the two main dimensions of creativity: novelty and appropriateness. One teacher-student dyad (a music teacher and a 5th grade student) participated in a musical composition task, using musical composition software. Both creativity and teacher autonomy support were coded moment by moment from the video recording of this session and further analyzed by means of a State Space Grid. Results indicate that, in the case of this dyad, the creative process is characterized by much variability in the levels of novelty, with lower levels of novelty being more prevalent than high levels, but much less variability in the levels of appropriateness, which remain high throughout the interaction. We further see that the dyad is relatively student-led, indicated by many student self-iterations and very few teacher self-iterations, as well as overall high levels of teacher autonomy support.

How is teachers' scaffolding dynamically intertwined with low achievers' learning and engagement?

Presenting Author: Anu Kajamies, University of Turku, Finland; **Co-Author:** Marja Vauras, Department of Teacher Education, University of Turku, Finland, Finland; **Co-Author:** Erno Lehtinen, Department of Teacher Education, University of Turku, Finland, Finland; **Co-Author:** Julianne Turner, Department of Psychology, University of Notre Dame, United States, United States

This paper describes a longitudinal case study on the dynamics of scaffolding interactions. Our aim is to develop analytical tools to capture the complexity of teacher-student interactions simultaneously in the cognitive-metacognitive and motivational domains. In this study, two experienced teachers implemented a half-year-long intervention to foster six low

achievers' reading comprehension. All verbal communications and relevant nonverbal activities were analyzed from videotapes from the perspectives of cognitive—metacognitive and motivational participation (altogether 21 466 turns). Teacher-student interaction pairs were plotted on State Space Grids to capture the calibration of teacher scaffolding and student participation as it unfolds over time and at different levels. Lag Sequential Analysis was used to examine how multi-domain participations evolved around critical moments in practicing reading comprehension. Results revealed that teachers faced difficulties in scaffolding their low achievers. Reading comprehension was mainly practiced at low levels and too few opportunities were created for high-level learning. Scaffolding was mainly motivationally neutral and students most typically compliantly followed. The teachers did not systematically strengthen their motivational support while students were disengaged or the tasks were challenging. Interesting differences were found between the groups. Based on the findings, there is a need to carefully consider how to optimally spend the very unique time that can be afforded for scaffolding low achievers. If this time is spent mostly on motivationally neutral scaffolding of low-level skills, the optimal development of low achievers' high-level skills cannot be expected. Tools developed proved to be powerful in scrutinizing multi-domain interactions over time.

Moment-to-moment patterns of teacher talk and collective engagement in kindergarten classrooms

Presenting Author:Mayra Mascareño, University of Groningen, Netherlands; **Co-Author:**Marjolein Deunk, University of Groningen, Netherlands; **Co-Author:**Annegien Langeloo, University of Groningen, Netherlands

Whole-class activities are widely used in early childhood education classrooms. In this setup, the teacher orchestrates classroom interaction mainly by means of talk. While there are potential benefits associated with this setup, research shows that whole-class activities lead to unbalanced levels of engagement among children of diverse characteristics. In order to promote engagement, teachers need to balance cognitive challenge and emotional and motivational support offered to the class. This balance can be altered by characteristics of the classroom composition, such as the group's linguistic diversity. We focus on the reciprocal, moment-to-moment relations between teacher talk and collective engagement in whole-class activities in 20 Dutch, linguistically diverse kindergarten classrooms. Our interest is to identify patterns that best represent these relations and to explore whether these patterns differ depending on the class linguistic composition. A micro-analytic coding of audio and video data will be focused on a) teacher talk indicators of cognitive challenge, motivational support and organizational management, and b) behavioral indicators of collective engagement. An innovative technique (T-pattern analysis) will be employed to identify patterns of teacher-talk and collective engagement, and to explore whether these patterns differ depending on classroom linguistic composition. Results will be available at the moment of the conference. They will provide rich information about the interplay between teacher talk and collective engagement on a moment-to-moment basis. This level of granularity is needed in the literature in order to inform concrete teacher practices that are linked to more productive learning behavior in early childhood settings.

Paper Session C 1

16 August 2018 10:15 - 11:45

Nobel 1483-354

Single Paper

Motivational, Social and Affective Processes

Achievement Goal Theory

Keywords: Achievement, Achievement goal theory, Goals, Measurement, Motivation, Social motivation

Interest group: SIG 08 - Motivation and Emotion

Chairperson: John Malouff, Australia

Challenging the Universality of Achievement Goals: A Comparison of Two Culturally Distinct Countries

Keywords: Motivation, Achievement goal theory, Goals, Measurement

Presenting Author:Anders Hofverberg, Umeå University, Sweden; **Co-Author:**Mikael Winberg, Umeå University, Sweden

The aim of this study was to investigate the factor structure of achievement goals among students in Sweden and Germany, two countries differing substantially in competitiveness according to Hofstede's dimensions of national culture. As the competitiveness dimension resembles performance goal classroom structures, shown to affect students' achievement goals, we propose that the structure of students' achievement goals may differ between the countries. Through confirmatory factor analyses, we found that a three-factor model, separating mastery-approach, performance-approach, and performance-avoidance goals, fitted the German students' data best. In Sweden, the three-factor model and a two-factor model combining the two performance goals fitted the data equally well. However, the correlation between the performance approach and avoidance goals in the Swedish three-factor model was not significantly different from 1 and we thus considered the separation to lack practical significance. We discuss national culture, and other variables, as explanations for the differences in achievement goal factor structures.

Does learning goal orientation buffer stereotype threat in sport education?

Keywords: Motivation, Achievement goal theory, Goals, Social motivation

Presenting Author:Johanna Hermann, Johann-Wolfgang-Goethe Universität, Germany; **Co-Author:**Kathrin Rumrich, no institutional affiliation, Germany

Based on stereotype threat theory (Steele & Aronson, 1995) this study aimed to test, whether negatively stereotyped girls' sprint performance in education class suffers, when the stereotype "*boys are faster*" is salient. Additionally, we tested the assumption that high learning goal orientation increases sprint performance and buffers stereotype threat. Altogether, $N = 114$ female students (age: $M = 13.92$, $SD = 1.09$) participated in the study. The results revealed a significant stereotype threat effect for sprint performance as girls under stereotype threat ran slower than girls in the control group. High learning goal orientation did not specifically buffer stereotype threat, but it increased the sprint performance for all participants. Practical implications for physical education class are discussed.

New Perspectives on Avoidance Goal Orientations: The Approach to Avoid and Pure Avoidance

Keywords: Motivation, Achievement goal theory, Goals, Measurement

Presenting Author: Sigrid Wimmer, University of Graz, Austria; **Co-Author:** Manuela Paechter, University of Graz, Austria;

Co-Author: Helmut Lackner, Medical University of Graz, Austria; **Co-Author:** Ilona Papousek, University of Graz, Austria

While some individuals try their utmost in an achievement situation, others just want to get the situation over and done with. The present study investigates the role of students' tendencies for approach or avoidance motivation while anticipating a task in an achievement situation. Moreover, it investigates to which degree different types of goal orientations are related to the activation of the approach respectively avoidance motivational system as indicated by transient changes of EEG alpha asymmetry. Overall, 62 students (50 female; age: $M = 23.8$, $SD = 3.5$) completed an academic goal orientation questionnaire (SELLMO-ST; scales: learning goals, performance-approach, performance-avoidance, and work avoidance) and joined a laboratory experiment. In the experiment, EEG was recorded during resting condition, while students were anticipating a task, and during task accomplishment. Standard multiple regression analysis was conducted (predictors: SELLMO-ST scales; dependent variable: EEG alpha asymmetry response to the imminent performance situation ($F(4,57) = 2.9$, $p = .032$, $R^2 = .17$). While awaiting the task, participants with higher levels of work avoidance showed more relative activation of avoidance versus approach motivation whereas participants scoring higher on performance-avoidance goals showed more relative activation of approach versus avoidance motivation. The results provide new insights into the characteristics of avoidance related goal orientations. Higher values on performance-avoidance were related to a higher activation of the approach system. This questions the term of "performance-avoidance" as it emphasizes the potential of mobilizing energy. Moreover, only work avoidance seems to represent "pure" avoidance motivation and instructors should consider such dysfunctional goal orientations.

Achievement goal orientations, physical activity, and fitness

Keywords: Motivation, Achievement goal theory, Achievement, Goals

Presenting Author: Antti Pulkka, National Defence University, Finland; **Co-Author:** Jani Vaara, National Defence

University, Finland; **Co-Author:** Markku Niemivirta, University of Oslo, Norway; **Co-Author:** Heikki Kyröläinen, University of Jyväskylä, Finland

The purpose of this study was to examine how physical fitness of young adult men varies as function of their achievement goal orientation profiles. Based on latent profile analysis, participants ($N=252$) were classified into groups according to their ratings of achievement goal orientations, and then compared to each other in terms of their physical fitness, adjusting for self-reported leisure time physical activity. Three groups were identified based on the analysis: development-oriented ($n=130$, 52%), mediocre ($n=89$, 35%), and performance-avoidance-oriented ($n= 33$, 13%). After controlling for physical activeness, achievement goal orientation groups differed significantly in cardiorespiratory fitness, standing long jump, sit-ups, push-ups, and maximal strength of upper and lower extremities. The development-oriented scored highest and differed significantly from the mediocre subjects, and regarding standing long jump and push-ups, they differed significantly from both the other two groups. The results showed that even though more physical training results in better fitness, the motivational orientation to training has some added value. That is, exercising with a more adaptive set of goals seems to be beneficial in terms of fitness outcomes. The mediating mechanisms remain to be examined in future studies.

Paper Session C 2

16 August 2018 10:15 - 11:45

Nobel 1481-264

Single Paper

Motivational, Social and Affective Processes

Emotion and Affect

Keywords: Achievement, Attitudes and beliefs, Emotion and affect, Interest, Measurement, Motivation

Interest group: SIG 08 - Motivation and Emotion

Chairperson: Ib Ravn, The Danish University of Education, Denmark

Mapping out curiosity: A validation study of the Epistemic Curiosity Scale.

Keywords: Motivation, Emotion and affect, Interest, Measurement

Presenting Author: Hanke Korpershoek, University of Groningen, Netherlands; **Co-Author:** Anneke Hesseling, Alfa-

college, Groningen., Netherlands; **Co-Author:** Fenneke Venema, Master student, University of Groningen, Netherlands; **Co-Author:** Nienke Verduyn, Hogeschool Windesheim, Zwolle., Netherlands; **Co-Author:** Rik Talens, IKC Vlakenhorst, Plateau

Assen., Netherlands

Piaget (1952) stated that children are curious by nature. Curiosity receives more and more attention in educational practice, following the idea that a curious student is a motivated student. One of the major challenges among scholars is the development of measurement instruments that adequately capture students' curiosity. Litman (2008) developed the Epistemic Curiosity Scale (ECS) for this purpose, which is a 10-item self-report questionnaire that can easily be used in educational settings. The scale is based on the "interest/deprivation model of curiosity" (the I/D-model) of Litman and Jimerson (2004), in which epistemic curiosity is proposed to consist of two components: feelings of interest (I-type curiosity) and feelings of deprivation (D-type curiosity). The main aim of the present study was to develop a Dutch version of the ECS and to evaluate its methodological properties, by conducting a validation study among a diverse set of Dutch student samples. The study included 601 students in total. The central research question was: *To what extent does the Dutch version of the ECS validly and reliably measure secondary and tertiary students' epistemic curiosity?* The results showed that the translated instrument provided a good representation of the curiosity level of the students in all samples. The I-type and D-type scales were reliable and showed reasonable model fit of the two-factor structure. The study provides new empirical support for the I/D-type model among various student samples, in addition to prior studies mostly conducted among first-year psychology students.

Academic coping, motivation, and achievement

Keywords: Motivation, Attitudes and beliefs, Achievement, Measurement

Presenting Author: Maria Teresa Goncalves, Universidade do Porto, Portugal; **Co-Author:** Catarina Canário, University of Porto, Portugal; **Co-Author:** Marina Lemos, University of Porto, Portugal

Academic demands are frequently referred by children as sources of daily stress. Coping adaptively with daily academic stressors is essential to students' learning and performance. Within a theoretical model of motivation and coping Skinner developed the Multidimensional Measure of Coping (MMC) assessing eleven ways of coping that children may use when facing obstacles and setbacks in the academic domain, and to understand their differential adaptability. Moreover, it is interesting to investigate how motivational resources, such as perceptions of competence may facilitate adaptive coping. The aim of this study was to examine the cultural transferability and to validate the structure of academic ways of coping underlying MMC. A preliminary study using cognitive interviewing with an independent sample of 30 students confirmed the cultural validity of the MMC. Then, the main study used a representative sample of 459 students (grades 5th-9th) stratified by gender and cycle of education. CFA results confirmed and cross-validated (randomly splitting data into a calibration and a validation sample) the unidimensional and multidimensional structures of the ways of coping and their relations. Results also showed the theoretically proposed relations of ways of coping with achievement and the role of motivation (students' competence appraisals assessed by Harter's Self-perception Profile) in shaping students' coping. These findings contribute to establish discriminant validity of the various ways of coping, as well as the external validity of MMC. Investigating students' ways of coping may provide important information about useful strategies for the range of daily stressors with which students must deal.

Unpacking the Epistemic Components of Epistemic Curiosity

Keywords: Motivation, Emotion and affect, Interest, Attitudes and beliefs

Presenting Author: Emily Grossnickle Peterson, American University, United States

Curiosity is a critical motivator for learning, and a characteristic that is desirable to cultivate within students (Chak, 2007). Given that curiosity within educational contexts is often centered around gaining knowledge (i.e., epistemic curiosity), an individual's beliefs about knowledge (i.e., epistemic beliefs) may provide important insights into how curiosity is experienced. Integrating literature on the multidimensional nature of both epistemic curiosity and epistemic beliefs, this theoretical review examines how epistemic beliefs have the potential to impact the quantity and quality of curiosity experiences. Configurations of beliefs that support knowledge as simple, certain, and derived from authority tend to be associated with a low tolerance for ambiguity, commonly associated with curiosity to resolve feelings of ignorance (Litman, 2010). In contrast, beliefs that knowledge stems from individual inquiry and reasoned evaluation have been related to positive aspects of curiosity (Muis et al., 2015). This review addresses how domain-general and domain-specific aspects of epistemic beliefs may impact the experience of curiosity across domains, and extends theoretical conceptualizations of curiosity, which have neglected domain-specific differences in curiosity. Developing a theory of epistemic curiosity that accounts for epistemic beliefs builds on general models of epistemic emotions and epistemic beliefs (Muis et al., 2015) to account for the specific characteristics of epistemic curiosity. The current theoretical review provides a more nuanced understanding of how curiosity unfolds in educational settings and has implications for how to support curiosity in research and practice.

Interrelationships, antecedents, and outcomes of course-specific motivational appraisals

Keywords: Motivation, Emotion and affect, Interest, Attitudes and beliefs

Presenting Author: Anna Rawlings, University of Helsinki, Finland; **Co-Author:** Anna Tapola, University of Helsinki, Finland; **Co-Author:** Markku Niemivirta, University of Oslo, Norway

Appraisals of learning situations may trigger both academically adaptive and emotionally costly responses. This study examined interrelationships, antecedents, and outcomes of upper-secondary students' (N = 155) motivational appraisals (interest, strain, effort) in Finnish, English, and Mathematics. Research on antecedents is scarce, but some empirical

results suggest temperamental reward and punishment sensitivities and previous interest might be relevant. Temperament (punishment sensitivity, interindividual reward sensitivity, positive expressiveness, novelty-seeking) was self-rated early in the school year, motivational appraisals early in the first course (t1) of each subject and after each course exam (t2), and satisfaction in course performance after receiving course grade. Previous achievement was controlled, and course grade used as indicator of achievement. Using PLS-SEM, a model was specified where course satisfaction was regressed on course grade, and both on all preceding variables; t2 motivational appraisals were regressed on t1 appraisals and antecedents (temperament, interest, prior achievement); and t1 appraisals on antecedents. Analyses were run separately for each subject. All appraisals exhibited rank-order stability in all subjects, but remained relatively independent of each other. Subject interest consistently predicted course interest positively and strain negatively. Previous achievement positively predicted course grades, which positively predicted course satisfaction. In English and Mathematics, previous achievement also negatively predicted strain. In English, interindividual reward sensitivity positively predicted strain, which in turn predicted course grade negatively. Results highlight importance of subject interest and previous achievement. Interindividual reward sensitivity may render students vulnerable to strain and impair achievement. The complex relationships warrant further research.

Paper Session C 3

16 August 2018 10:15 - 11:45

Nobel 1483-444

Single Paper

Motivational, Social and Affective Processes

Motivation and Interest

Keywords: Achievement, Developmental processes, Expectancy-value theory, Interest, Metacognition, Motivation, Self-concept, Self-determination theory, Self-efficacy, Teaching approaches

Interest group: SIG 08 - Motivation and Emotion

Chairperson: Kirsti Lonka, University of Helsinki, Finland

Effects of Experimentally Induced Choice on Motivation in Middle Childhood

Keywords: Motivation, Interest, Self-determination theory, Teaching approaches

Presenting Author: Joachim Waterschoot, Ghent University, Belgium; **Co-Author:** Bart Soenens, Ghent University, Belgium; **Co-Author:** Elien Mabbe, Ghent University, Belgium; **Co-Author:** Maarten Vansteenkiste, Ghent University, Belgium

Objectives. Based on Self-Determination Theory (SDT), many studies have investigated the effects of choice provision on people's intrinsic motivation. However, the number of experimental studies is still limited and many questions concerning moderating factors are still open. Therefore, we set up an experimental field study to examine the effect of choice provision (versus choice deprivation) on the intrinsic motivation of elementary school children. In doing so, we addressed the moderating role of teacher (i.e., child-teacher relatedness and teachers' general autonomy-supportive teaching style) and child (i.e., indecisiveness) characteristics. **Methods.** In a group of elementary school children, we induced an experimental manipulation of choice in which the teacher allowed half of the children to perform their preferred painting activity (i.e., choice provision condition), while the other half was obliged to do another one (i.e., choice deprivation condition). After actually performing the activities, we assessed levels of intrinsic motivation, need satisfaction, and psychological well-being through questionnaires. **Results.** Results showed that children in the choice condition displayed enhanced intrinsic motivation, higher levels of need satisfaction, and more vitality in performing the painting activity. In addition, the perceptions of choice and the experience of competence satisfaction mediated these main effects of choice provision. Further, multiple regression analyses showed that high-indecisive children benefitted less from choice provision in terms of intrinsic motivation. **Conclusion.** This study identifies choice provision as a contextual factor to enhance children's intrinsic motivation and reveals the attenuating effect of indecisiveness. Limitations and future directions are discussed.

Intrinsic motivation and reading competence: A comparison between native and immigrant students

Keywords: Motivation, Interest, Achievement, Metacognition

Presenting Author: Ai Miyamoto, Leibniz Institute of Social Sciences (GESIS), Germany

The goal of the present study was to investigate the mechanism of how intrinsic motivation influences reading competence. We hypothesized that declarative metacognition and the amount of reading will explain the relation between intrinsic motivation and reading competence. Within the framework of German National Educational Panel Study (NEPS), 3,829 secondary school students were included in the study. As hypothesized, the effect of grade 5 intrinsic motivation on grade 7 reading competence was found to be mediated by grade 6 declarative metacognition as well as reading amount while controlling for grade 5 reading competence. Furthermore, exploratory analyses comparing native and immigrant students showed that despite the overall similarities in the mechanism of how intrinsic motivation influences reading competence, immigrant students had a significantly lower total effect of intrinsic motivation on reading competence compared to native students. Results and limitations of the present study are discussed.

Development of math efficacy, interest, and their impact on choices for Hispanics across adolescence

Keywords: Motivation, Expectancy-value theory, Achievement, Developmental processes

Presenting Author:Stuart Karabenick, University of Michigan, United States; **Co-Author:**Nayssan Safavian, University of California, Irvine, United States; **Co-Author:**Anna-Lena Dicke, University of California, Irvine, United States; **Co-Author:**Jacquelynne Eccles, University of California, Irvine, United States; **Co-Author:**AnneMarie Conley, University of California, Irvine, United States

Research using the Expectancy-Value Theory (Eccles et al., 1983) has shown students' expectations for success and interest to drive their achievement and educational choices. However, most research has been conducted with largely middle-class European and Caucasian-American populations. There is reason to believe that these constructs function differentially across other ethnic groups. For instance, misalignment between success expectations and actual achievement has been documented across different race-ethnic groups (Stevens et al., 2004). Building on these findings, we examine the longitudinal associations between efficacy, and interest across one school year, and their relations to achievement and enrollment preferences among a sample of adolescent Hispanic youth (N=6,025) spanning from 7th to 10th grade. Given findings on gender differences for white populations, we also examine whether associations differentially inform outcomes for females and males. Multi-group path analyses by grade level showed that interest beliefs consistently and positively predicted the development of efficacy from 7th to 10th grade. In all grades, math efficacy beliefs more strongly predicted math achievement than interest, whereas higher levels of interest increased the likelihood of a math course preference across all grades. However, when investigating associations separately by gender, gendered patterns emerged for later grades (9th/10th): Interest beliefs appeared to be more important for motivational development, achievement and math course preference for females, whereas efficacy beliefs were more important for males. While matching some of the previous research conducted with white middle-class populations, our findings indicate some important difference for this Hispanic sample that needs to be explored further.

Mutual predictions between interest, self-efficacy, and performance during a task

Keywords: Motivation, Self-efficacy, Interest, Self-concept

Presenting Author:Katariina Nuutila, University of Helsinki, Finland; **Co-Author:**Anna Tapola, University of Helsinki, Finland; **Co-Author:**Heta Tuominen, University of Helsinki, Finland; **Co-Author:**Sirkku Kupiainen, University of Helsinki, Finland; **Co-Author:**Attila Pásztor, MTA-SZTE Research Group on the Development of Competencies, Hungary; **Co-Author:**Markku Niemivirta, University of Oslo, Norway

In the present study, we examined i) how situational interest (i.e., heightened attention and enjoyment), self-efficacy (i.e., confidence in one's ability to perform well), and performance predict each other during an inductive reasoning task, ii) how they predict continued interest (i.e., interest continuing beyond the task) and iii) whether these are predicted by domain-specific motivation in mathematics. Finnish fourth-graders (N = 265) did an inductive reasoning task consisting of two sections, the first one using abstract figures, and the second one numerical stimuli. Students reported their situational interest and self-efficacy before and after each section. At the end of the task, students were shown their total score, and asked whether they would like to do similar tasks again (i.e., continued interest). Students also rated their motivation in mathematics (i.e., individual interest and self-concept) before the task. A cross-lagged panel model was estimated. Relatively high rank-order stability in situational interest and self-efficacy was found, but only few cross-lagged effects were observed: self-efficacy in the figural section predicted post-task situational interest negatively and performance positively, and post-task interest in the figural section predicted pre-self-efficacy and performance in the numerical section positively. Motivation in mathematics predicted situational interest, self-efficacy and performance in both sections. Continued interest was predicted by situational interest at the end of the task. Situational interest had various positive effects, which highlights its role in novel and demanding tasks. Motivational beliefs seem to influence situational motivation even in tasks not directly reflecting any specific domain.

Paper Session C 4

16 August 2018 10:15 - 11:45

Nobel 1483-344

Single Paper

Motivational, Social and Affective Processes

Self-regulation and Self-efficacy

Keywords: Achievement, Attitudes and beliefs, Emotion and affect, Learning approaches, Measurement, Self-efficacy, Self-regulation, Teaching approaches

Interest group: SIG 08 - Motivation and Emotion

Chairperson: Leen Haerens, Ghent University, Belgium

Epistemic and achievement emotions: the relationship with revealed learning strategies

Keywords: Self-regulation, Emotion and affect, Achievement, Learning approaches

Presenting Author:Dirk Tempelaar, Maastricht University, Netherlands

In this empirical contribution, we apply multi-modal data composed of trace data from technology-enhanced learning systems and survey data to investigate the relationship between learning emotions and revealed preferences for learning strategies. Learning strategies include learning by worked examples, tutored problem-solving and untutored problem-solving (McLaren et al., 2016). Existing studies looking into the relative efficiency of these learning strategies (see, e.g. McLaren et al., 2016; Renkl, 2014), are mostly based on experimental designs where students are assigned to use one specific strategy. In previous research (Tempelaar et al., 2017a,b,c) we investigated what choices students make about learning strategies in an observational study, when learning in a digital learning environment that offers all three strategies as learning scaffolds. Applying insights from dispositional learning analytics, we next investigated how these strategy preferences relate to individual differences in learning dispositions. In the current study, we will extend this analysis by focusing on the role of learning emotions as antecedents of learning strategy choices. We distinguish epistemic emotions (Pekrun et al., 2017) and achievement emotions of activity type (Pekrun et al., 2011). In a first analysis, we find that especially epistemic emotions act as antecedents for the intensity of using the three learning strategies. Negative epistemic emotions as confusion, anxiety and frustration are associated with the more intensive use of learning strategies that provide most guidance, worked-out examples and tutored problem-solving, whereas the positive epistemic emotion enjoyment demonstrates the reverse effect. Achievement emotions are characterized by similar patterns but less strong in size.

Control and Value Appraisals, Emotions, and Online Multiple-document Comprehension in Primary School

Keywords: Self-efficacy, Emotion and affect, Attitudes and beliefs, Learning approaches

Presenting Author: Daniela Raccanello, University of Verona, Italy; **Co-Author:** Elena Florit, University of Padova, Italy;

Co-Author: Margherita Brondino, University of Verona, Italy; **Co-Author:** Lucia Mason, University of Padova, Italy

Nowadays, great attention has been devoted to the role played by emotions within school contexts, given its relevance for students' wellbeing and performance (Pekrun & Perry, 2014). Notwithstanding the large amount of studies on achievement emotions' antecedents and outcomes, only recently has attention been paid to primary school students, focusing on domains such as mathematics or native language (Lichtenfeld, Pekrun, Stupnisky, Reiss, & Murayama, 2012; Raccanello, Brondino, Moè, & Lichtenfeld, 2017). However, attention on specific abilities such as online multiple-document comprehension has been limited (e.g., Mason, Scrimin, Tornatora, & Zaccoletti, 2017). Therefore, our main aim was to investigate the relations between reading-related control and value appraisals, reading-related achievement emotions, and online multiple-document comprehension in primary school students. The sample included 335 fourth and fifth-graders who filled in self-report questionnaires on self-efficacy and task-value, and achievement emotions, and underwent some tests on online multiple-document comprehension and other reading-related skills. Preliminary confirmatory factor analyses supported the goodness of the factorial structure of the measures. A series of path analyses indicated the predictive role of self-efficacy and task-value on achievement emotions. Moreover, they showed the predictive role of some achievement emotions, namely homework-related enjoyment and test-related boredom, on online multiple-document comprehension. From a theoretical perspective, our findings enabled to extend the generalizability of the control-value theory to primary school students' specific abilities to comprehend online multiple-documents. From an applied perspective, this knowledge could be useful in planning intervention programs to promote critical literacy skills in the 21st century, focusing on their antecedents.

Teacher and student self-efficacy are linked through teaching practices: A look at 17 nations

Keywords: Self-efficacy, Teaching approaches, Learning approaches, Measurement

Presenting Author: Arielle Bonneville-Roussy, Roehampton University, United Kingdom; **Co-Author:** Olympia Palikara, University of Roehampton, Unknown; **Co-Author:** Therese Bouffard, Université du Québec à Montréal, Canada

Do teachers transmit their own self-efficacy to their students when they teach? Is this transmission culturally grounded? Data from a large study (PISA, 2015) involving more than 135,000 children, 23,000 of their teachers, in 17 nations were used to investigate these questions. Using a multilevel data analysis framework, this study has three main objectives: (1) To test a path linking teacher and student self-efficacy; (2) To examine teacher-led and inquiry-based teaching practices as mediators of the links between teachers and student self-efficacy; and (3) To evaluate cross-cultural variations on the links between teacher self-efficacy and teaching practices on student self-efficacy, in line with Hofstede's (1986) framework of cultural values: Individualistic and Collectivistic cultures, Power Distance and Uncertainty Avoidance. Results indicated that teacher and student self-efficacy were linked indirectly through the use of both types of teaching practices, but more strongly through inquiry-based practices. We found cross-cultural differences in the levels of student self-efficacy across nations, and on the associations between inquiry-based and teacher-based teaching practices, and student self-efficacy, and finally on the links between those variables and the cultural value of uncertainty avoidance. The findings suggest that teacher self-efficacy is transmitted to their students mostly through inquiry-based teaching practices. Overall, this study highlights that, although student self-efficacy may be universally important, its sources and manifestations through teaching may be culturally grounded. It also validates the use of secondary data research designs as a means to gather information on the motivational processes of students internationally.

Bridging the Gaps and Moving Forward: Expanding the Field of Socioemotional Regulation

Keywords: Self-regulation, Emotion and affect, Learning approaches, Measurement

Presenting Author: Nikki Lobczowski, University of North Carolina at Chapel Hill, United States

Collaboration is an important 21st century skill, and collaborative learning is a growing pedagogical practice. Students often struggle, however, to negotiate, manage conflict, and construct knowledge with other group members. Students in collaborative settings must be able to effectively regulate their emotions at both the individual and group level. This theoretical paper consists of a review and synthesis of the foundational constructs of emotion regulation in general, social, educational, and collaborative learning settings, focusing on definitions, theories of appraisals, theoretical models, strategies, and measurement tools. Using this information, I make suggestions for theoretical models of socioemotional generation and regulation, empirical research related to socioemotional regulation strategies and measurement tools, and practical applications in the form of explicit instruction and interventions of socioemotional regulation skills. These suggestions aim to bridge the gaps between the existing literatures and continue to move the emerging field of socioemotional regulation in education settings forward.

Paper Session C 5

16 August 2018 10:15 - 11:45

Nobel 1483-251

Single Paper

Motivational, Social and Affective Processes

Learning Approaches

Keywords: Achievement goal theory, Emotion and affect, Engagement, Interest, Learning approaches, Motivation, Social motivation

Interest group: SIG 08 - Motivation and Emotion

Chairperson: Marko Lüftenegger, University of Vienna, Austria

The Understanding of a Learner's Motivation Through a Phenomenological Lens

Keywords: Motivation, Emotion and affect, Engagement, Learning approaches

Presenting Author:Yahui Su, National Kaohsiung University of Hospitality and Tourism, Taiwan

This paper argues that the psychological notion of motivation may lose sight of the ontological aspect of motivation and that a phenomenological notion of motivation based on Merleau-Ponty (2002), which is primordial and fundamental, needs to be considered in order to build greater continuity and integrity over learners' lifelong learning. Through the phenomenological lens, a learner's motivation is a dynamic moving towards significance rather than knowledge or truth. The paper is conceptual, and the practical implication is that in educational settings instructors develop sensitivity to relating knowledge to the learner's world by considering actions or concrete practices rather than simply delivering knowledge as conceptual or abstract content. A phenomenological and meaning-rich assignment, for instance, would not be one that ends with learners presenting a set of facts or statements, but one that invites and refers learners back to the world with inquiries concerning learners' 'being' in order to feel what matters and to link that to their own future possibilities.

Shared Achievement Goals in Collaborative Learning Contexts: A case of multiple goals

Keywords: Motivation, Achievement goal theory, Learning approaches, Social motivation

Presenting Author:Toni Rogat, Purdue University, United States; **Co-Author:**Karlyn Adams-Wiggins, Portland State University, United States; **Co-Author:**Temitope Adeoye, Purdue University, United States

This study adopts a situative lens to examine co-constructed shared achievement goals in collaborative groups. We maintain theoretical grounding in achievement goal theory to conceptualize goals, but extend this to examine the negotiation of shared motivational norms. We use a case study approach to investigate a group's joint focus on mastery coupled with performance-approach goals (i.e., multiple goals). This research informs understanding of performance goals within interpersonal settings and the implications for espousing mastery goals alongside performance goals in groups.

Participants were members of one collaborative group during a 7th grade inquiry unit designed to promote scientific reasoning. Videotaped observations were coded using our previously developed framework, and lesson and group summaries were central to analyses. The case group jointly negotiated a focus on moderate mastery and high performance-approach goals. We identified two primary themes for shared mastery norms and three primary performance themes. The negotiated mastery goals were best represented by a pattern for knowledge co-construction coupled with high standards and accountability for accuracy. Performance goals were co-constructed through a status hierarchy and social comparison. A social hierarchy, negotiated using social positioning, and within-group relative ability comparisons predominated interactions exemplifying shared performance-approach goals. Mastery coexisted by applying those motivational norms narrowly to content and task negotiations, facilitated by the group being contextualized in a specific set of curricular tasks. Findings suggest that performance goals targeted at groupmates may yield less adaptive outcomes, with challenges for mastery goals in buffering those detrimental effects.

Doing homework at home or at school: studying students' behavior, motivation and emotion

Keywords: Motivation, Emotion and affect, Interest, Learning approaches

Presenting Author:Desiree Theis, German Institute for International Educational Research (DIPF), Germany; **Co-Author:**Brigitte Brisson, German Institute for International Educational Research (DIPF), Germany

Schools offering regular lessons and extracurricular activities during extended school hours (“all-day schools”) increasingly replace traditional homework by tasks that students complete during compulsory study periods at school. Research on traditional homework shows a positive link between homework and achievement when students complete their homework thoroughly. Furthermore, homework completion rates have been shown to be higher among students who are motivated, who associate positive feelings with homework, and who perceive the assignments as interesting and useful. In contrast, little is known about the perceived quality of tasks assigned during compulsory study periods, and students’ behavior, motivation, and emotions when completing them. Using an experience sampling method, the aim of the current study was to explore how students completing tasks during compulsory study periods (i.e., “schoolwork”) differ from students completing traditional homework. 320 fifth-graders completed questionnaires on their smartphones once a day for three weeks. They answered questions about the interestingness and usefulness of their assignments, and their concentration, effort, perceived cost, feelings, and perceived competence when completing the tasks. Using t-tests, we examined whether the investigated groups differed significantly on these variables on average and on intra-individual variations. Preliminary results (N=100) indicate that students completing schoolwork find their assignments less interesting and less useful, are less concentrated and fluctuate more in their effort during task completion than students doing homework. The present study provides first insights into how integrating homework into compulsory lessons affects variables that have been shown to be related to the effectiveness of homework regarding students’ achievement.

The role of students’ shared perceptions on goal structures in predicting socio-emotional outcomes

Keywords: Motivation, Emotion and affect, Achievement goal theory, Learning approaches

Presenting Author:Lisa Bardach, University of Vienna, Austria; **Co-Author:**Marko Lüftenegger, University of Vienna, Austria; **Co-Author:**Takuya Yanagida, University of Vienna, Austria; **Co-Author:**Barbara Schober, University of Vienna, Austria; **Co-Author:**Christiane Spiel, University of Vienna, Austria

Within-class consensus on classroom goal structures describes the extent to which students share the same perceptions of classroom goal structures. Research on (work) teams suggests that higher levels of consensus within a group indicate a well-functioning social environment and are thus positively related to beneficial socio-emotional outcomes. In research on classroom goal structures, however, the potential of within-class consensus to predict socio-emotional student outcomes has not been explored so far. This study aims to test whether within-class consensus on the three classroom goal structures dimensions of task, autonomy, and recognition/evaluation has predictive power for socio-emotional outcomes in terms of classroom climate, negative classmate reactions to errors, and cooperative learning. 1455 Austrian secondary school students (65.70% female) participated in this study. Results from multilevel structural equation models revealed that within-class consensus on all classroom goal structures dimensions predicted a less negative error climate. Additionally, consensus regarding task and autonomy predicted more frequent use of cooperative learning strategies, and consensus regarding task predicted a more positive classroom climate. Our findings show that higher levels of within-class consensus on classroom goal structures enhance beneficial socio-emotional student outcomes. Moreover, the results emphasize the value of expanding the scope of educational research to the study of within- class consensus.

Paper Session C 6

16 August 2018 10:15 - 11:45

Nobel 1481-237

Single Paper

Motivational, Social and Affective Processes, Teaching and Teacher Education

Developmental Processes and Expectancy-value Theory

Keywords: Attitudes and beliefs, Developmental processes, Expectancy-value theory, Motivation, Social motivation

Interest group: SIG 08 - Motivation and Emotion

Chairperson: Emily Rosenzweig, University of Wisconsin-Madison, United States

Parents’ Beliefs about Students’ Spatial Abilities Predict Students’ Intentions to Major in STEM

Keywords: Expectancy-value theory, Attitudes and beliefs, Social motivation, Developmental processes

Presenting Author:Katherine Muenks, Indiana University, United States; **Co-Author:**Emily Grossnickle Peterson, American University, United States; **Co-Author:**Adam Green, Georgetown University, United States; **Co-Author:**Robert Kolvoord, James Madison University, United States; **Co-Author:**David Uttal, Northwestern University, United States

According to the parent socialization model embedded within expectancy-value theory (Eccles et al., 1993), parents’ beliefs about their children’s abilities, which are communicated via parents’ behaviors, shape students’ academic choices such as whether to pursue a STEM career. Although much research has examined parents’ beliefs about their child’s *math* ability as a predictor of STEM outcomes, this study is the first to investigate parents’ beliefs about their child’s *spatial* abilities (i.e., spatial visualization, mental manipulation, and navigation), despite evidence for the role of spatial ability in STEM. After surveying 117 high school students and their parents, we found that parents of boys reported that their child had higher mental manipulation and navigation abilities than parents of girls, controlling for students’ performance on a spatial task. Parents’ beliefs about their child’s spatial visualization ability predicted students’ own intentions to major in STEM, above and beyond parents’ beliefs about their child’s math ability. Further, this association was mediated by parents’ self-reported encouragement of their child to pursue a STEM career. This study is the first to show that parents hold gendered beliefs

about their high school aged children's spatial abilities, and that parents' beliefs about their child's spatial abilities are differentiated from parents' beliefs about their child's math ability. It also provides support for the parent socialization model by demonstrating that parents' beliefs predict parents' behaviors which then predict children's academic choices—and extends the model to a new domain (i.e., spatial ability).

Short-term changes in students' expectancies, values, and performance in math-intensive courses

Keywords: Motivation, Expectancy-value theory, Attitudes and beliefs, Developmental processes

Presenting Author:Daria Katharina Benden, University of Bonn, Germany; **Co-Author:**Fani Lauermann, University of Bonn, Germany

Students' motivation is an important determinant of academic success in higher education. Prior research on students' expectancies of academic success and their subjective valuing of academic work mainly focuses on long-term changes in motivation. However, students' experiences in single courses can also play a critical role in the progression of their postsecondary education. Experiences in highly demanding university courses—e.g., in the math domain—can be particularly influential and can serve as a gateway to future success in the fields of math and science. Accordingly, we follow students enrolled in two math-intensive college majors across five time points at the beginning of the semester at a German university (N=181). We explore the development of students' expectancy-value beliefs and performance in weekly mandatory worksheets across two required math courses. Multivariate analyses revealed an initial "shock" at the beginning of the semester, characterized by a sharp decline in students' expected academic success and task values, and by an increase in perceived demands and emotional costs. Students' satisfaction with their weekly performance declined throughout the first four weeks of the semester but increased towards the later time points, whereas students' expectancy-value beliefs failed to increase during this time. Gender differences were negligible whereas students' high school GPA served as a protective factor against the initial motivational shock. The results reveal qualitatively different trajectories for the short-term development of students' expectancy-value beliefs, performance satisfaction, and achievement, and underscore the importance of considering developmental aspects in the identification of at-risk factors for academic failure.

Bridging the personal-social in teacher motivation: how qualitative methods can deepen understanding

Keywords: Motivation, Expectancy-value theory, Attitudes and beliefs, Social motivation

Presenting Author:Bethan Garrett, Edge Hill University, United Kingdom

This paper explores the potential of using qualitative data to deepen our understanding of teachers' motivation, by presenting the findings and reflections of a series of case studies involving 36 primary school teachers from 7 schools in the United Kingdom. As part of their practice, teachers frequently face a variety of complex, multi-faceted dilemmas when attempting to provide valuable educational experience for their pupils, indicating that more diverse methods may be required to explore these. In a primary school setting, these dilemmas extend to curriculum coverage and decisions about which subjects to prioritise within a pressurised timetable. Drawing upon data from extensive, narrative interviews and ethnographic reflections, I demonstrate how the practitioners' motivation to engage with more peripheral curriculum areas is constructed through a complex interaction of both self- and socially-situated layers of influence. Qualitative methods which explore the minutiae of these processes can offer researchers a way of understanding the complexity of teachers' decisions and actions more deeply, and the data presented will demonstrate *how* their motivation to engage with a particular subject domain was constructed. In particular, I focus upon the ways in which teachers' understandings and perceptions are influenced not only by their life histories, but also by a network of socially situated interactions, relationships, norms and expectations, many of which have the potential to challenge one's previous experiences and past perceptions. This is an important finding which points to the social setting as a potentially fertile ground for enhancing teacher motivation in non-core subjects.

Motivation for Teaching in Urban Schools in the United States

Keywords: Motivation, Expectancy-value theory, Attitudes and beliefs, Social motivation

Presenting Author:Annette Ponnock, University of Maryland, United States; **Co-Author:**Danielle Sutherland, Temple University, United States; **Co-Author:**Will Jordan, Temple University, United States; **Co-Author:**Peshe Kuriloff, Temple University, United States; **Co-Author:**Brooke Hoffman, Temple University, United States

Resources for urban schools are shrinking as demands on teachers in these schools grow. Teachers in these schools are generally less experienced and have higher rates of attrition than teachers in suburban schools. While the body of literature on teacher motivation is growing, this study sought to explore specifically why teachers are motivated to teach in a high-poverty urban school district. Using the FIT-Choice model of teacher motivation, we found that participants in our sample were mostly motivated to teach in this district because of high intrinsic value in the act of teaching and social utility value, or a desire to give back to society. These results were echoed in the qualitative findings, with the addition of the importance of social influences on teaching. Many of the teachers in our sample had teachers or family members who were teachers who left a positive impression on them and they wanted to inspire their students in a similar way. The findings of this study point to the importance of early field experience and an emphasis on social justice in pre-service training.

Keynote Dr. Christoph Sebastian Deterding 1

16 August 2018 12:00 - 13:00

Aula

ICM 2018 - Keynote Session
Motivational, Social and Affective Processes

ICM 2018 - Keynote Session - Prof. Dr. Christoph Sebastian Deterding

Keywords: Achievement, Engagement, Motivation, Self-regulation

Interest group: SIG 08 - Motivation and Emotion

Designing for Motivation: Bridging the Gap Between Psychology and Design Practice

Keywords: Motivation, Self-regulation, Engagement, Achievement

Presenting Author: Christoph Sebastian Deterding, University of York, United Kingdom

As everyday life is increasingly mediated by digital applications and services, motivation has become a new core challenge for design: How do we design our digital lifeworld to motivate people to live more healthily, save energy, learn, work, play, commune, or participate in politics? Naturally, designers turned to psychological research for guidance -- but often left unsatisfied, finding psychological research too abstract or analytic to be useful. As a result, small multidisciplinary fields like persuasive technology, design for behavior change, nudging, or gamification emerged that tried to translate between psychology and design, yet often with questionable results. In this keynote, I will reflect on my own research on applied game design and my experience traversing academia and industry to tease out some of the epistemic differences between psychological and design knowledge that make translating between them difficult, and suggest some ways forward towards a principled and practical science of motivational design.

Keynote Dr. Kou Murayama 1

16 August 2018 14:00 - 15:00

Aula

ICM 2018 - Keynote Session

Motivational, Social and Affective Processes

ICM 2018 - Keynote Session - Prof. Dr. Kou Murayama

Keywords: Interest, Learning approaches, Motivation, Self-regulation

Interest group: SIG 08 - Motivation and Emotion

Interest as reward for extrinsic incentives: its nature, consequences and metamotivational belief

Keywords: Motivation, Self-regulation, Interest, Learning approaches

Presenting Author: Kou Murayama, University of Reading, United Kingdom

Interest constitutes a fundamental part of students' learning and behaviour but its nature has still been contentious. The current presentation addresses a preliminary theory called "Interest as a complementary reward for extrinsic incentives". The basic idea is simple --- the theory posits that interest involves reward processes that are internally generated when extrinsic incentives are not available. Extrinsic incentives play an important role to shape our behavior, but extrinsic incentives are not always available, especially when someone is engaged in higher-order activities (e.g., reasoning, creativity). The theory posits that, in the evolutionary process, humans (and other higher organisms) acquired the ability to self-generate rewards to sustain their behavior when extrinsic incentives are not available and this is what we naively call, interest. Based on this idea, I will argue that (1) interest involves internal reward processing, (2) the effect of interest accumulates over time, and (3) the rewarding process is elicited only when extrinsic incentives are not explicitly available. With the combined use of survey, experimental, and neuroimaging methodologies, and with the focus on long-term consequences and metamotivational belief of interest, I will present some preliminary evidence supporting these ideas.

Poster Session B 1

16 August 2018 15:15 - 16:15

Nobel window hallway

Poster Presentation

Motivational, Social and Affective Processes

Motivation, Achievement and Beliefs

Keywords: Achievement, Achievement goal theory, Attitudes and beliefs, Developmental processes, Educational attainment, Emotion and affect, Engagement, Expectancy-value theory, Goals, Interest, Learning approaches, Measurement, Motivation, Self-concept, Self-determination theory, Self-efficacy, Self-regulation, Social motivation, Teaching approaches

Interest group: SIG 08 - Motivation and Emotion

Motivational processes underlying the gender gap in school achievement: The role of mindset and grit

Keywords: Motivation, Attitudes and beliefs, Achievement, Educational attainment

Presenting Author: Junlin Yu, Cambridge University, United Kingdom; **Co-Author:** Ros McLellan, Cambridge University, United Kingdom

Boys are falling behind girls in school. To understand this gender gap in academic achievement, the current study examined gender differences in adolescents' achievement-related beliefs, goals, and behavioural tendencies. Participants were 566 secondary school students (ages 14-16) in England who completed measures of mindsets, grit and goal orientations. Students' achievement in maths and English was obtained from school records. Initial results indicated that, compared to boys, girls reported higher levels of grit and mastery goals in maths and English. Next, it will be tested whether gender differences in these constructs might account for the gender gap in school achievement. Furthermore, although mindsets and grit appear to be uniquely predictive of academic performance, preliminary results show that mindsets and grit may be more strongly associated with girls' achievement than boys'. This suggests that school motivation may be differentially linked to achievement for girls and boys. Findings of this study enhance our understanding of motivational processes that underlie the gender difference in academic achievement.

Math anxiety in young children: Concurrent associations with math motivation and achievement

Keywords: Motivation, Emotion and affect, Achievement, Measurement

Presenting Author:Yaheng Lu, Purdue University, United States; **Co-Author:**Qian Li, Purdue University, United States; **Co-Author:**Panayota Youli Mantzicopoulos, Purdue University, United States; **Co-Author:**Helen Patrick, Purdue University, United States

Math anxiety's structure and its associations with other academic outcomes are rarely examined in young children. A developmentally appropriate scale can provide information on the conceptualization of math anxiety in this age group. To meet this goal, we developed the Young Children's Math Anxiety Scale (YCMAS), a measure to investigate young children's math anxiety. We administered YCMAS to a sample of kindergarteners ($N=355$). Factor analyses supported a two-factor structure: Worry and Physiological Reactions. We considered psychometric data on both subscales and the whole YCMAS. For evidence of validity, we examined associations between YCMAS scores and measures of math motivation and achievement. We also considered children's open-ended responses to questions about their math tests. Our findings suggest that young children experience math anxiety; it tends to be associated with low levels of value and interest in math, and poor math achievement. YCMAS appears to be a useful tool to investigate math anxiety in young children. Children's comments about their anxiety and math tests also expand our knowledge about math anxiety in this age group.

Motivational perseverance between parents and children: theory of intelligence and grit

Keywords: Motivation, Engagement, Achievement goal theory, Social motivation

Presenting Author:Kazuhiro Ohtani, Hokkaido University, Japan; **Co-Author:**Ryo Ishii, Doshisha University, Japan; **Co-Author:**Noriaki Fukuzumi, Kochi University of Technology, Japan; **Co-Author:**Kou Murayama, University of Reading, United Kingdom; **Co-Author:**Takashi Suzuki, Kochi University of Technology, Japan; **Co-Author:**Shinichi Ishikawa, Doshisha University, Japan; **Co-Author:**Michiko Sakaki, University of Reading, United Kingdom; **Co-Author:**Ayumi Tanaka, Doshisha University, Japan

Aims The present research examined the degree to which parental motivational factors relating to perseverance (implicit theory of intelligence and grit) were related to those of their children. We also investigate implicit theory of intelligence and grit in terms of children's depressive symptoms. *Method.* Four hundred pairs of parents and junior high school children participated in the survey. They answered questions on demographic information and implicit theory of intelligence, grit, and depressive symptoms. *Results.* The result confirmed that parental theory of intelligence was positively related to children's implicit theory of intelligence, indicating that the more incremental theory of intelligence a parent has, the more his or her child has. More importantly, parental theory of intelligence was also related to children's depressive symptoms; the higher a parent's incremental theory of intelligence, the lower the child's depressive symptoms. In addition, parental grit was a positive predictor of children's grit, indicating that a high-grit parent tends to have a high-grit child. Those relations were significant despite controlling for a variety of variables including SES (Socio Economic Status), social desirability of children, parental depression, and so on.

Control and Value as Predictors of Momentary Emotion Profiles in High School Science

Keywords: Motivation, Emotion and affect, Achievement, Self-concept

Presenting Author:Kristy Robinson, Michigan State University, United States; **Co-Author:**Patrick Beymer, Michigan State University, United States; **Co-Author:**John Ranellucci, Hunter College of the City University of New York, United States; **Co-Author:**Jennifer A. Schmidt, Michigan State University, United States

The present study used latent profile analysis to identify complex momentary experiences reported by high school students in science class ($N = 244$). Profiles were characterized by unique patterns of four emotions: happiness, excitement, boredom, and stress. Momentary appraisals of control and value were examined as predictors of momentary emotion profiles, and outcomes included achievement on standardized science exams and science attitudes at the end of the year. Four profiles were identified, characterized by *Negative*, *Positive*, *Moderate-Low Deactivated*, and *Moderate-High All* emotions. Control and value predicted distinct patterns of emotions, with higher perceptions of control predicting *Positive* and *Moderate-High All* emotions, and higher value for the activity predicting both *Positive* and *Negative* emotions rather than *Moderate-Low Deactivated* emotions. Preliminary results indicate that emotion profiles were significantly associated with science career intentions at the end of the academic year and standardized science test scores the following year. Results contribute to the control-value theory by adopting a person-oriented approach to capture complex affective experiences, and by assessing momentary state emotions and control-value appraisals during science classes multiple

times throughout the semester.

I love this course! A Case for Preference in Education

Keywords: Motivation, Emotion and affect, Attitudes and beliefs, Achievement

Presenting Author: Adar Ben-Eliyahu, University of Haifa, Faculty of Education, Israel; **Co-Author:** Anat Gilad, University of Haifa, Faculty of Education, Israel

The study's goal was to investigate why students favor certain courses while loathing others. Across two studies, participants substantiated their views. In Study 1 ($N=250$), a codebook for classifying reasons for course preference was developed. Twenty reasons for course preference emerged, classified into three categories. The most prominent category, *Content and Material*, comprised eleven aspects; five relating to course content and learning process (subject material, difficulty, learning/understanding, success, competition), three relating to affective components (interesting/boring, positive/negative emotion, and preference), and three relating to students' beliefs and identity (utility, control beliefs, identity). *Class Dynamics* comprised six aspects relating to interactions between students and teacher, course organization, course requirements, autonomy support, course learning conditions, and social elements. The *Teacher* category revealed three aspects (teacher personality, teaching skills, and fairness of teacher). The codebook served to classify student responses in Study 2 (high school, $N=178$; college, $N=280$). Across both studies, four reasons for course preference consistently emerged in at least two samples: experiencing (or absence) of positive emotions, usefulness (or lacking usefulness), interest (or lacking interest), and focus on learning (or not understanding course material). Additionally, for favorite courses, participants cited the instructor's teaching skills or having positive feelings, while for least favorite courses, participants noted excessive course requirements and troubling social elements. The information from merely asking students why they like or dislike a course can be used to shape classroom contexts to elicit course affinity, thus motivating the student and garnering positive emotions to encourage broader learning repertoires.

Succeeding at JHS: Students' Reasons, Reach and the Teaching that H(inders)elps Their Grasp

Keywords: Self-efficacy, Self-determination theory, Teaching approaches, Educational attainment

Presenting Author: Luke K. Fryer, The University of Hong Kong, Hong Kong; **Co-Author:** W. L. Quint Oga-Baldwin, Waseda University, Japan

How do we support students through the difficult transition from primary to secondary school? This question must begin with students' value and ability related motivations: their interaction with the learning environment and shared role with learning experiences. We examined the shared role of value and self-efficacy within first year junior-high school students' mathematics, native language, and foreign language classes across one year of study. Modelling was supplemented by pre-post achievement and perceived instruction. Latent structural equation modelling of the longitudinal data was undertaken to examine students' motivational and instructional experiences across the academic year. Findings support the shared roles of intrinsic motivation and self-efficacy within achievement. The importance of instructional quality within these motivations highlighted the powerful role of instructors.

Fourth- to sixth-graders' value beliefs in different school subjects: A pilot study

Keywords: Motivation, Expectancy-value theory, Attitudes and beliefs, Measurement

Presenting Author: Iris Dinkelmann, Thurgau University of Teacher Education, Switzerland

Abstract As a further development of the Eccles and colleagues' theory of achievement motivation, Trautwein and colleagues introduced a multiple-facets approach of the value component of motivation (short: multiple-values approach). This approach has recently been evidenced by Gaspard and colleagues, based on data collected from a German cohort of students (fifth to twelfth graders) attending academic-track secondary schools. This poster aims to adopt the recently proposed multiple-values approach to a cohort of fourth to sixth graders from the German-speaking part of Switzerland. As primary school lasts six years in the participants' school districts, the students have not yet been split up according to their achievement levels and/or career intentions. As a consequence, compared to the study presented by Gaspard and colleagues, this pilot not only considers in part younger students but also students with lower achievement levels. It is hypothesized that the multiple-values approach proposed and evidenced by Trautwein, Gaspard, and colleagues can be replicated and that strong factorial invariance across grades and gender exists. Approximately 500 Swiss children attending grade four to six will complete a questionnaire in their class end of April 2018. Confirmatory factor analyses including tests of measurement invariance across grades and gender will be conducted using Mplus 7. This study is a pilot for a planned intervention study which aims to improve fourth to sixth graders' learning motivation.

Improving engagement in Australian high school students: The role of personal best (PB) goal setting

Keywords: Motivation, Engagement, Goals, Developmental processes

Presenting Author: Emma Burns, University of New South Wales, Australia; **Co-Author:** Andrew Martin, University of New South Wales, Australia; **Co-Author:** Rebecca Collie, University of New South Wales, Australia

There is a well-documented developmental decline in engagement among adolescents in high school. As a growth-oriented strategy, personal best (PB) goal setting may be one viable option to challenge this engagement decline, which poses significant problems for students' academic and personal well-being. Using latent growth modelling, the impact of PB goal setting on engagement was examined from four perspectives: (1) initiating effect, such that initial PB goal setting positively predicts higher initial engagement; (2) contemporaneous effect, such that PB goal setting positively predicts higher engagement at each time point; (3) escalating effect, PB goal setting has an increasing impact on engagement across the

time points; and (4) slope effect, such that initial PB goal setting improves the negative rate of change of engagement. Data were collected across three years (2014-2016) from a sample of $N=368$ Australian high school students. Findings confirmed an initiating effect, contemporaneous effect, and escalating effect of PB goal setting on engagement, but not a slope effect. These results suggest that, despite the developmental decline in engagement that appears to be somewhat pervasive during adolescence (i.e., no slope effect), PB goal setting may be a viable strategy to positively impact early levels of engagement (initiating effect), engagement at any given time point (contemporaneous effect), and increasingly impact engagement across time (escalating effect). Taken together, this suggests that PB goal setting may be a viable strategy for combating this decline and assisting students' engagement during this period of adolescent development.

Moderating Effects of Autonomy on Relationship Between Environments and Motivation

Keywords: Motivation, Emotion and affect, Interest, Self-determination theory

Presenting Author:Juming Jiang, Doshisha University Graduate School of Psychology, Japan; **Co-Author:**Misaki Kusamoto, Doshisha University, Japan; **Co-Author:**Ayumi Tanaka, Doshisha University, Japan

Present study verified the moderating effects of reflective and reactive autonomy, on the relationship of external reward and choice on intrinsic motivation. 160 undergraduate students were randomly assigned to one of four conditions: reward with choice, no reward with choice, reward with no choice and no reward with no choice. All participants provided solutions to an interesting puzzle and then were required to provide further solutions to puzzle in a free-choice period. The time spent on solving the puzzle during the free-choice period, task enjoyment and frustration towards performance constituted the dependent measure of intrinsic motivation. Results found no significant moderating effects for reflective autonomy, but participants who are high on reactive autonomy enjoyed task more when they received reward.

Motivation and achievement in mathematics among Finnish third graders

Keywords: Motivation, Expectancy-value theory, Interest, Achievement

Presenting Author:Riikka Mononen, University of Oslo, Norway; **Co-Author:**Henriikka Lohvansuu, University of Helsinki, Finland; **Co-Author:**Anu Laine, University of Helsinki, Finland

This study aimed to find out how third graders' motivation and achievement in mathematics are related, and if there are gender differences found. The participants were 215 Finnish third graders (9 yo.). Motivation in mathematics (intrinsic value, utility value, cost value, and perceived competence) was measured using a questionnaire. Mathematics achievement was measured using a selection of tasks from TIMMS test and a standardized arithmetic fluency test. The results from the correlation analyses showed that different motivational factors had relatively weak relations to mathematics achievement. Of these, perceived competence had the strongest positive relation: with TIMSS tasks, $r = .388$, and with arithmetic $r = .313$. No gender differences were found in mathematics achievement, but girls tend to show slightly more interest to mathematics and find it more useful than boys. As implications for practice, it would be important that teachers create learning environments, in which children could have positive learning experiences in mathematics with encouraging feedback, thus possibly affecting positively to their competence perceptions in mathematics. To increase interest in and usefulness of mathematics, especially among boys, it would be important to provide students with mathematics tasks that are meaningful and connected to their everyday life.

Small Group Design: The Effect of Gender Composition on Student Motivation in STEM

Keywords: Motivation, Self-determination theory, Self-concept, Social motivation

Presenting Author:Julie Robinson, University of North Dakota, United States; **Co-Author:**Martina Nieswandt, University of Massachusetts Amherst, United States; **Co-Author:**Elizabeth McEaney, University of Massachusetts Amherst, United States

Decades of research and initiatives have sought to increase girls' declining motivation in STEM (science, technology, engineering, and math) classrooms. Throughout their secondary and higher education careers, girls experience numerous familial, societal, and educational factors that negatively impact their motivation in many STEM domains. Situated in Ryan and Deci's *self-determination theory* (Ryan & Deci, 2000) and incorporating Dasgupta's *stereotype inoculation model* (Dasgupta, 2011), this qualitative study explores how small group design, particularly group gender composition, impacts the motivated behaviors of the students as they are working on collaborative science and engineering tasks. Particular attention is paid to how the motivational conditions of autonomy, competence, and relatedness are manifested in the students' behaviors. Participants include five small groups of high school students, representing varying gender composition, from three biology classrooms in two New England schools. Thematic analysis indicates that autonomous behaviors tend to differ between genders regardless of group gender composition, with girls enacting autonomy in more task-oriented, facilitative ways and boys showing more directive, exploratory behaviors. Competence and relatedness, in contrast, appear to manifest more distinctly between groups of varying gender composition. Students in groups with a female majority, particularly girls, tend to show more vocal participation and cohesion than those with gender parity. These findings suggest that designing small groups to incorporate a gender majority in collaborative contexts can increase the motivated behaviors of the students, thereby increasing access for all students to the conditions required for motivation in STEM.

Does Within-class Consensus on Classroom Goal Structures predict Achievement and Achievement Goals?

Keywords: Motivation, Achievement goal theory, Achievement, Goals

Presenting Author:Sophie Oczlon, University of Vienna, Austria; **Presenting Author:**Marko Lüftenegger, University of

Vienna, Austria; **Co-Author:**Lisa Bardach, University of Vienna, Austria

In the present study, we investigated students' shared perceptions, i.e. within-class consensus, on classroom goal structures, and how within-class consensus is related to achievement and achievement goals in mathematics and language classes. Within-class consensus was assessed for six dimensions of mastery goal structures, namely task, autonomy, recognition, grouping, evaluation, and time. Drawing on a sample of 1,080 Austrian secondary school students enrolled in 22 mathematics and 24 language classes, we estimated the effects of consensus on the outcome variables (achievement, mastery goals, performance approach goals, performance avoidance goals) in multilevel models. The results indicated that achievement was positively predicted by consensus on evaluation in both subjects and by consensus on recognition in mathematics. Effects on performance goals occurred only in mathematics classes, with consensus on recognition and time decreasing levels of performance-approach goals and consensus on task, recognition, and time decreasing levels of performance-avoidance goals. No relations between consensus and mastery goals were found in either subject. We conclude that within-class consensus on classroom goal structures can provide information about qualities of the classroom environment in terms of student outcomes. In light of our results, we posit that consensus on classroom goal structures has an important substantive interpretation and should thus be considered as a conceptual and analytic variable within achievement goal theory.

Not the parents' business!? Parental involvement in their child's study decisions and motivation

Keywords: Motivation, Goals, Self-concept, Educational attainment

Presenting Author:Kerstin Helker, RWTH Aachen University, Germany; **Co-Author:**Paul Anlauf, RWTH Aachen University, Germany; **Co-Author:**Marold Wosnitza, RWTH Aachen University, Germany

Possible selves have been conceptualized in prior research as cognitive manifestations of enduring goals, aspirations, motives, fears and threats that a person holds for their future, imagining the ideal self they would like to become, they could become or are afraid of becoming (Markus & Nurius, 1986). Parents' also hold views of various possible selves of their child and their evaluations of their child's competence. School-related hopes, expectations and values do, for example, influence the child's values and expectations and thus affect the school performance. Especially when children start university, these emerging adults' concepts of their ideal future self may compete with their parents' ideas of their "future child". Consequently, in study 1, this paper explores parents' research strategies for study information and their involvement in their child's study orientation process. While only the minority of parents in this study could be identified as authoritarian regarding their child's study decision, prior research with emerging adults has yielded different results with students stating their study decisions to be strongly influenced by their perceptions of their parents' aspirations. Study 2 thus focused on emerging adults' possible selves, how these compare to their parents' ideals and wishes for their studies and the impact of these factors on student motivation.

The link between classroom climate, academic achievement and affective components of learning

Keywords: Motivation, Emotion and affect, Engagement, Achievement

Presenting Author:Lara Forsblom, University of Fribourg, Switzerland; **Co-Author:**Francisco Peixoto, ISPA - Instituto Universitário / CIE - ISPA (Research Center in Education), Portugal

Research on classroom climate has received increased attention during the last 40 years. There exists plenty of empirical evidence for the importance of classroom climate in the school and classroom context. Numerous studies demonstrate a positive influence on students' achievement, motivation and emotions. In the majority of these studies classroom climate, students' achievement, motivation and emotions are studied in an isolated way, without looking at them in an articulated way. The specific link between the four constructs is rarely addressed. However, many scholars consider these constructs as intertwined elements that have to be studied together. Existing studies show, that the link between classroom climate and achievement is mediated by engagement. Research on emotions in academic settings shows that students' emotions are related to their motivation and achievement. Nevertheless, the precise link between classroom climate, students' emotions, motivation and achievement is still not fully understood. The goal of this study is to gain new insights about the specific link between the four constructs in maths classes by analysing classroom climate, students' intrinsic motivation, emotions and achievement in maths as intertwined elements with long-term data. Data was collected from 800 students from the 5th and 7th grade from public schools in Lisbon. Variables were collected in a 2-wave longitudinal sequential study with participants followed during three years. The study is on its initial stage. It is expected, that the influence of classroom climate on students' achievement in maths is mediated by their intrinsic motivation and emotions. **Keywords:** Classroom climate, Emotions, Motivation, Achievement, Mathematics

Relationships of Friends' Praise with Theories of Intelligence and Achievement Goals

Keywords: Motivation, Achievement goal theory, Attitudes and beliefs, Goals

Presenting Author:Kyosuke Kakinuma, Doshisha University, Japan; **Co-Author:**Ayumi Tanaka, Doshisha University, Japan

Although praise is common among students, most research has focused on praise received from authority figures. The present research examined the effect of effort- versus ability-focused praise between friends on theories of intelligence (Dweck, 1999) and achievement goals (Dweck, 1986; Elliot, 2005). Moreover, the effect of praise on praisers as well as praisees was examined. The present study assessed the frequency of receiving and offering different types of praise, theories of intelligence, and achievement goals. Results revealed that the frequency of receiving or offering effort-focused

praise was positively related to the endorsement of the incremental theory, while ability-focused praise was negatively related to it. There were positive relationships between the frequency of receiving effort-focused praise and mastery-approach goal and between the frequency of receiving ability-focused praise and performance-approach goal. These results indicate that praise from friends could have the same effect as that from authority figures and could affect the beliefs of praisers and praisees.

How space and aesthetics create motives

Keywords: Motivation, Emotion and affect, Self-concept, Social motivation

Presenting Author: Morten Nissen, University of Aarhus, Denmark

Abstract (250 words) The research program ReforM is about Re-articulating the Formation of Motivation. We study how motivation is made the object of science and of practice in various fields. The program is inter- and trans-disciplinary, and we address historical as well as current practices that create, maintain, develop or discuss motivation. Articulating motivational work and its subject-matter using 'foreign' theoretical concepts enables us to challenge and develop the theory and practice of the field. We participate at this conference to learn, to do field work, and to engage in dialogue with researchers and professionals who design for motivation in education. This study aims to articulate qualitatively how social workers and counsellors design for motivation and for creating motives by deploying space and aesthetics in their pedagogical work with young drug users. While many users and professionals are attracted to a diagnostic approach to 'dependency', and to the (mostly cognitive and client-centered) counselling methods that correspond to it, another trend, especially in youth work, is to problematize diagnostics and address drug use as a broadly social and pedagogical issue. The 'U-turn', Copenhagen City's facility, has achieved state recognition as a 'model'. This study contributes to understanding what it does, through an ongoing documented dialogue with professionals and users, at times formalized as interviews, group sessions, or ethnographic fieldwork, and analyzed with a wide range of theories. Here we highlight how spatial design and aesthetic production might replace diagnostic self-monitoring to create motives, rather than to enhance a predefined motivation.

Using Flow Interventions to increase motivation and well being at work

Keywords: Motivation, Self-regulation, Emotion and affect, Engagement

Presenting Author: Frans Andersen, Educational psychology, Denmark

By Frans Ørsted Andersen, Associate Professor at Aarhus University

At a stressed Danish IT-workplace a flow-intervention was designed to increase intrinsic motivation and well being at work. The intervention was composed of an educational program for the employees and researched by using the ESM method with a Flow Short Scale. The intervention used 4 basic flow concepts: (1) The Flow Channel, (2) Flow State Cycle, (3) Flow triggers and (4) Team flow. Employees (n=6) completed the ESM using a survey tool three times a day (at 10 am, 12 pm, and 2 pm), leading to a total of 106 measurements (response rate 70%; validity grade 100%). It took an average 3 minutes to complete every survey. The results of the research showed a positive effect of the intervention. The employees saw flow as a mental tool, and understood their own prerequisites for flow.

Further and larger well-designed studies are needed to examine the effect of using Flow interventions in business settings, as this study was based on a small sample. The links between the state of flow and intrinsic motivation also needs further discussions.

At the conference the detailed survey data will be presented.

Parental influence of avoidance personal goal pursuit

Keywords: Motivation, Emotion and affect, Goals, Social motivation

Presenting Author: Ryo Ishii, Doshisha University, Japan; **Co-Author:** Noriaki Fukuzumi, Kochi University of Technology, Japan; **Co-Author:** Shin-ichi Ishikawa, Doshisha University, Japan; **Co-Author:** Kou Murayama, University of Reading, United Kingdom; **Co-Author:** Kazuhiro Ohtani, Hokkaido University, Japan; **Co-Author:** Michiko Sakaki, University of Reading, United Kingdom; **Co-Author:** Takashi Suzuki, Kochi University of Technology, Japan; **Co-Author:** Ayumi Tanaka, Doshisha University, Japan

Personal goals are the consciously articulated, personally important objectives that individuals pursue in their daily lives (Emmons, 1986; Little, 1983). Elliot and his colleagues (e.g., Elliot & Sheldon, 1997; Elliot, Thrash, & Murayama, 2011) have shown that the adoption of avoidance goals—that is, goals focused on a negative outcome—has a negative impact on psychological adjustment and physical health. Based on previous findings on the relationships between personal goals and parental presence (e.g. Elliot & Church, 2002), we expect that parental influences are critical for understanding the mechanism of personal goal pursuit. We investigated the relationship between parenting behaviors and the adoption of avoidance goals among adolescents, and how parental avoidance goals influence the motivational traits of their children. A

total of 196 middle school child–parent pairs completed a questionnaire on personal goals and approach–avoidance temperament. We also measured parenting behavior and children’s test anxiety. The results of multiple regression analysis showed that the positive parenting behavior of “involvement and monitoring” was positively related to percentage of avoidance goals in adolescents. Furthermore, parental avoidance goals were positively related to adolescents’ test anxiety. These provide direct evidence that adolescents’ avoidance goals are constructed through parenting behavior, which indicates that avoidance goals can have a negative influence on subsequent generations. We further discuss how adolescents’ avoidance goal are constructed through parenting behavior.

Students’ emotional valence and physiological arousal during collaborative learning

Keywords: Emotion and affect, Learning approaches, Measurement, Social motivation

Presenting Author: Tiina Törmänen, University of Oulu, Finland, Finland; **Co-Author:** Hanna Jarvenoja, University of Oulu, Finland; **Co-Author:** Kristiina Kurki, University of Oulu, Finland; **Co-Author:** Sanna Järvelä, University of Oulu, Finland; **Co-Author:** Ricardo Devai, University of Oulu, Finland, Finland

During collaborative learning, individual students’ emotions affect the socio-emotional state of the whole group. Also, there is a growing evidence that socio-emotional aspects of collaborative learning process have an effect on group members’ interaction and engagement in knowledge co-construction. Emotions, experienced in learning situations, have two dimension: valence and activation. The aim of this study is to explore with one group case example how students’ emotional valences and physiological arousal (activation) vary during a collaborative learning task. Furthermore, the aim is to study whether there is a relation between emotional state and physiological arousal. Students’ emotional valences were coded from the video data while physiological arousal was depicted from electrodermal activity recorded with Empatica E4 wristbands. From the video data, it was also coded whether students’ emotional expressions happened during on-task or off-task activities. The preliminary results indicate that students’ emotional valence vary during collaborative learning. Also individual students’ physiological arousal varied during the session but the average number of SCR peaks per minute did not vary between the case group students. However, emotional valence does not seem to indicate differences in students’ on-task behavior and commitment to the collaboration. Therefore, in the further analysis students’ emotional state and on-task behavior (video) will be analyzed in more depth and contrasted with physiological arousal (EDA). The purpose is to investigate if the physiological arousal measures can be employed in depicting socio-emotional situations and commitment to the collaborative group work.

Antecedents and affective outcomes of motivation in a multidimensional and hierarchical perspective

Keywords: Motivation, Emotion and affect, Self-determination theory, Measurement

Presenting Author: Delphine Paumier, University of Geneva, Switzerland; **Co-Author:** Julien Chanal, University of Geneva, Switzerland

The aim of this study was to investigate antecedents and affective consequences of academic motivation in a multidimensional (i.e., self-determination theory, SDT, Deci & Ryan, 1985) and hierarchical (i.e., at the global, contextual and situational levels) perspective. The first objective was to replicate the specificity-hypothesis (Chanal & Guay, 2015) with university students. Specifically, we wanted to demonstrate that autonomous motivations were more school-subjects-specific than controlled ones. The second objective was to investigate relationships that exist between antecedents and affective consequences with particular regulations in light of this hypothesis.

In a longitudinal study, 314 psychology university students assessed a three waves in-line questionnaires. At time 1, they were assessed some individual antecedents of motivation. At time 2, they answered about their motivation for different academic school-subjects and their motivation for their global motivation in psychology. Finally, at time 3, they were assessed their affective feelings according to the different school subjects.

Results confirmed the specificity-hypothesis. Autonomous motivations were found to be more specific (...) than controlled motivations (...) depending on their position on the self-determination continuum. Moreover, relationships between antecedents and motivational regulations also depend on this position. For example, autonomy-supportive climate in different school subjects are specifically related to autonomous motivation in these subjects but not related to controlled ones. This study specifically tested important assumptions of the well-known Hierarchical Model of Intrinsic and Extrinsic Motivation of Vallerand (1997) and show that this model need to be redefined considering the specificity-hypothesis.

Explaining the motivation to strive for a research career

Keywords: Motivation, Engagement, Attitudes and beliefs, Self-determination theory

Presenting Author: Julia Sabine Germershausen, LMU Munich, Germany; **Co-Author:** Julia Eberle, Ruhr-Universität Bochum, Germany; **Co-Author:** Pamela Flores, LMU Munich, Germany; **Co-Author:** Birgit J. Neuhaus, LMU Munich, Germany

Explaining the motivation to strive for a research career – An investigation of basic needs satisfaction, their influence on motivation and consequences for career aspirations of early career life scientists

In line with empirical findings about the influence of motivation on career decisions, we assume that intrinsic motivation affects career aspirations of early career researchers. According to self-determination theory, satisfying three basic psychological needs (need for competence, need for autonomy and need for relatedness) are necessary for intrinsic motivation. Consequently, the relation between satisfaction of competence, autonomy and relatedness at the academic

workplace and intrinsic motivation to work in an academic field are investigated in this study, taking a longitudinal perspective. Additionally, we test the influence of intrinsic motivation on academic career aspirations. Data is taken from a panel study on German doctoral graduates in the life sciences within the BMBF-funded project “*E-Prom - Influencing factors on academic careers of graduates in the life sciences*”. Three survey waves over several years are analyzed, the last wave being still in progress. Currently, 216 graduated life scientists have answered all three questionnaires. The outcomes of the longitudinal analysis will be presented and discussed at the EARLI Sig 8 conference in 2018.

Toward a Taxonomy of Research on Competition

Keywords: Motivation, Self-determination theory, Achievement, Social motivation

Presenting Author:David Bergin, University of Missouri/Columbia, United States; **Co-Author:**Christi Bergin, University of Missouri/Columbia, United States

Toward a Taxonomy of Research on Competition Thousands of people participate in competitions each year, yet motivation researchers criticize competition as undermining motivation and performance, and reviews of research show that individual competition has little average effect on performance. The current review presents dimensions and categories for classifying competition and provides example studies that fit into different categories. Although many studies have investigated the topic of competition, the characteristics of competition vary radically from one study to another. Competition may be imposed by teachers (or a researcher) or may be freely chose. Competition may occur for individuals or groups. Winning a competition may result in a tangible reward or in personal satisfaction. Different types of competition likely have different effects, and there is a need to categorize types in order to understand their effects. Therefore, the purpose of this paper is to present a taxonomy and begin to categorize studies of competition. Possible outcome measures include academic performance, athletic performance, cheating, short-term motivation, self-handicapping, strategies for improvement, quitting, and so forth. We propose a taxonomy of 16 different types based on the following four dimensions: (1) imposed versus autonomous, (2) tangible versus intangible rewards, (3) individual versus group, and (4) psychomotor versus non-psychomotor. Future research could search for patterns in results that depend upon types of competition. It seems likely that competitions that people choose to participate in can provide broadening and adaptive experiences.

Parental Supporting Behaviors and School Adjustment: The Role of Psychological Need Satisfaction

Keywords: Motivation, Emotion and affect, Engagement, Self-determination theory

Presenting Author:David Litalien, Université Laval, Canada; **Co-Author:**Catherine Ratelle, Université Laval, Canada; **Co-Author:**Stéphane Duchesne, Université Laval, Canada

Based on self-determination theory (Ryan & Deci, 2017), this 3-year prospective study examined the contribution of parental supportive behaviors for students' adjustment in school, as mediated by psychological need satisfaction in school. Parents contribute to their children's successful adjustment by being autonomy supportive (recognizing their child's volitional nature), involved (allocating material and emotional resources), and structuring (i.e., making the environment predictable; Pomerantz et al., 2012). Parents' positive contribution is posited to occur through the satisfaction of their psychological needs for autonomy (being at the origin of one's actions), competence (perceiving one's actions as having consequences), and relatedness (developing meaningful relationships with other individuals). Here, the focus was on predicting adaptation to school, conceptualized as multidimensional (i.e., academic, social, and personal-emotional: Baker & Siryk, 1989). A sample of 579 students (45% boys) participated in a survey study where both completed a questionnaire in secondary 2 (Time 1; parental behaviors), secondary 3 (Time 2; psychological need satisfaction) and secondary 4 (Time 3; school adjustment). A structural equation model showed that maternal behaviors predicted students' academic, social, and personal-emotional adjustment directly as well as mediated through students' autonomy, competence, and relatedness in school. Results are discussed in line with theory on research on motivation and adjustment in school.

Motivation, Anxiety, Self-Efficacy, and Strategy-Use in Willingness to Communicate and L2-Use

Keywords: Motivation, Self-regulation, Emotion and affect, Attitudes and beliefs

Presenting Author:Jeannine Turner, Florida State University, United States; **Co-Author:**Phil Hiver, Florida State University, United States; **Co-Author:**Maipeng Wei, Florida State University, United States

Students' volition for L2 oral-communicative interaction—i.e., one's willingness to communicate—is widely regarded as a desirable outcome of classroom instruction that is predicated on students' motivation (e.g., ideal/ought-to self-guides, self-efficacy/anxiety). We investigated speaking-specific predictors of students' L2 communicative-interaction in a formal L2 (learning-English) classroom-setting in China. We proposed a model suggesting an impact of students' Ideal L2-Self and Ought-to L2-Self on their L2-Speaking Self-efficacy and L2-Speaking Anxiety, to subsequently influence their L2-Speaking Strategy-Use. We then extended our analysis to identify the effect of these factors on students' L2 Willingness-to-Communicate and their reported L2-Speaking-Frequency within the classroom-setting.

Engagement and disengagement of pre-service Health and Physical Education teachers

Keywords: Motivation, Emotion and affect, Engagement, Social motivation

Presenting Author:Jennifer Archer, The University of Newcastle, Australia; **Co-Author:**Tracey Kelty, University of Newcastle, Australia; **Co-Author:**John Fischetti, University of Newcastle, Australia

There is considerable interest in the factors that encourage students to remain or leave university programs. The current study is an examination of the engagement and disengagement of students studying to become Health and Physical

Education (HPE) teachers in an Australian university. The attrition rate for HPE students (20-30% of the cohort) is considerably higher than the university-wide attrition rate (about 12%). Research questions: (1) What factors, both personal and institutional, lead to attrition from the HPE program? (2) What factors, both personal and institutional, enhance engagement with the HPE program? Quantitative and qualitative data (across the four years of the program) have been gathered. Longitudinal data (survey data and interview data) have been gathered from first year students. Preliminary findings (the data will be analysed fully in the first half of 2018): Students who remain in the program tend to be younger full-time students who entered directly from high school. They have supportive families both in terms of encouragement and financial support so that they do not have to spend considerable time in employment. Students who leave the HPE program and who do not transfer to another university program tend to be older part-time students. They often come from lower SES backgrounds and often spend considerable time in employment. We argue that, given their limited connection because of their part-time status and long hours in employment, these students are less likely to feel a strong sense of belonging to the program and less likely to have strong friendships with fellow students.

If I Value the Test Do I Feel More or Less Shame When I Fail? Exploration of Value and Emotions

Keywords: Motivation, Emotion and affect, Expectancy-value theory, Attitudes and beliefs

Presenting Author:Jenefer Husman, University of Oregon, United States; **Co-Author:**Shawn Lamkins, University of Oregon, United States; **Co-Author:**Idalis Villanueva, Utah State University, United States; **Co-Author:**Darcie Christensen, Utah State University, United States; **Co-Author:**Paul Vicioso Osoria, Utah State University, United States; **Co-Author:**Kate Youmans, Utah State University, United States

Taking tests is an emotional experience. Students can experience positive (e.g., relief, pride) and negative (e.g., shame, anxiety) emotions. Their emotional responses are due, in part to an interaction between their performance assessments and their valuing of the content and activity (Perceptions of Instrumentality, PI). This study focuses on 34 students' assessments of their ability to succeed, assessed during a performance activity and their value of the course content for their future. Utilizing students' self-report of their self-efficacy for completing each exam question, their perceptions of instrumentality (value of the course content for their personal futures), and their reporting of their emotions after the exam (shame and pride) linear regression analysis was used to test the independent contribution of self-efficacy and PI to explaining the variance of students' shame and pride. The results are interesting, if limited by sample size. Students' PI and self-efficacy were negatively related to students' feelings of shame. The interaction was low (not statistically or practically significant). This provides evidence for the independent relationship between shame, self-efficacy, and perceptions of instrumentality. Students' self-efficacy assessments were significantly and positively related to pride, as expected. These findings provide further evidence of the need to investigate discrete emotions in different contexts. We argue that the results of this study indicate relationships between value and emotions may differ depending on the specific academic emotion under examination. Understanding these relationships in detail will allow us to better assist students identify emotional regulation strategies.

Symposium Session B 1

16 August 2018 16:15 - 17:45

Nobel 1483-354

Symposium

Motivational, Social and Affective Processes

New roads to emotion and well-being research in school

Keywords: Achievement, Developmental processes, Educational attainment, Emotion and affect, Engagement, Measurement, Motivation

Interest group: SIG 08 - Motivation and Emotion

Chairperson: Tina Hascher, University of Bern, Switzerland

Chairperson: Dave Putwain, Liverpool John Moores University, United Kingdom

Organiser: Tina Hascher, University of Bern, Switzerland

Organiser: Dave Putwain, Liverpool John Moores University, United Kingdom

Discussant: Daniela Raccanello, University of Verona, Italy

During their academic trajectories students experience a multitude of emotions. In contrast to negative emotions and school alienation, positive emotions and well-being constitute affective reactions to positive experiences in school such as experiencing success or mastery, learning with friends, or being supported by teachers. Positive emotions and well-being are powerful resources for students in terms of coping with academic challenges, and function as important drivers of high quality learning. The symposium combines the work of four research teams from four different countries that aim at a more precise understanding of the development of emotions and well-being in school. In doing this, they chose different approaches for measuring positive emotions and well-being in school and tackle four different levels of school/learning contexts: (a) schools in various countries, (b) primary versus secondary education, (c) transitioning to a new school, and (d) classroom settings involving authentic versus masked emotion display of teachers. The research topics are: (1) Cultural measurement invariance and external validity of a school-related well-being scale (2) Development of student well-being and its association with alienation from school (3) Transition into a new school and student well-being (4) Student emotions

and the authenticity of teacher emotions

Does Students' Well-Being at School Measure Up Across Cultures?

Presenting Author:Kristina Loderer, Ludwig-Maximilians-Universität (LMU), Germany; **Co-Author:**Kou Murayama, University of Reading, United Kingdom; **Co-Author:**Dave Putwain, Liverpool John Moores University, United Kingdom; **Co-Author:**Reinhard Pekrun, Ludwig-Maximilians-Universität (LMU), Germany; **Co-Author:**Ayumi Tanaka, Doshisha University, Japan; **Co-Author:**Elisabeth Vogl, Ludwig-Maximilians-Universität (LMU), Germany; **Co-Author:**Anna Loeffler-Gutmann, Institute of Psychology, University of Munich (LMU), Germany

Students' well-being can profoundly impact their psychological health as well as academic success. This study reports on a cross-cultural evaluation of a 6-item context-specific scale designed to assess students' school-related wellbeing (School-Related Well-Being Scale, SWBS). Data from 202 German, 668 English, and 400 Japanese secondary school students were used to probe measurement invariance of the SWBS and evaluate its external validity by examining linkages with related constructs (i.e., achievement emotions; adaptability; academic buoyancy; school-related worries; academic achievement; and students' parent-perceived well-being at school). Using multi-group confirmatory factor analysis, configural and partial metric invariance of the intended unidimensional scale structure were established. Interestingly, pairwise cross-country comparisons revealed full metric invariance across German and Japanese students. Within-culture correlational analyses revealed that well-being at school is meaningfully related to, but conceptually distinct from, other constructs. The SWBS related positively to scores for positive achievement emotions, adaptability, academic buoyancy, GPA, and parent ratings, and negatively to negative achievement emotions and school-related worries. Future work examining both methodological (e.g., translation-focused) and substantive-theoretical sources of cross-cultural metric and scalar variance of the SWBS is needed to move research on students' quality of their academic lives forward.

Understanding Primary and Secondary Students' Well-Being and School Alienation

Presenting Author:Tina Hascher, University of Bern, Switzerland; **Co-Author:**Julia Morinaj, Institute of Educational Science, University of Bern, Switzerland

Although prior research in well-being mainly focused on the well-being of adults, currently a greater attention has been devoted to the well-being of children and adolescents. Addressing the question of how well-being in school can be stimulated is important for both theoretical and practical reasons and represents one of the central educational goals for teachers and schools. Hence, to understand the development of well-being and what needs to be done to foster student well-being, it is necessary to be aware of the factors and processes that impact student well-being. In our longitudinal study, we explored the development of student well-being and feelings of alienation from school among Swiss primary ($N = 439$) and secondary school ($N = 508$) students over the timespan of a year (two measurement points: grade 4 to 5, and grade 7 to 8, respectively). Primary and secondary school students have been shown to differ systematically in their levels of subjective well-being and feelings of school alienation, with primary students showing higher levels of well-being and lower levels of school alienation. Also, the patterns of associations between student well-being and school alienation differ between school grades and forms. These results emphasize the importance of analyzing the development of psychological processes, to better understand students' lives in school.

School-related Wellbeing Promotes Adaptability, Achievement and Behavioural Conduct

Presenting Author:Dave Putwain, Liverpool John Moores University, United Kingdom; **Co-Author:**Kristina Loderer, Ludwig-Maximilians-Universität (LMU), Germany; **Co-Author:**Diahann Gallard, Liverpool John Moores University, United Kingdom; **Co-Author:**Joanna Beaumont, Liverpool John Moores University, United Kingdom

Prior studies have shown that school-related wellbeing (positive emotions, relationships, and need-fulfilment in school settings) and adaptability (the capacity to respond constructively to change), are associated with adaptive educational beliefs and behaviours, and consequently higher educational achievement. In the present study we examined how adaptability and wellbeing were reciprocally related in a sample of students having transitioned to upper secondary education (6th Form College). Educational transitions are a period of uncertainty and change where high adaptability would relate to a more successful transition and higher subsequent wellbeing. Furthermore, we examined how school-related wellbeing and adaptability were related to subsequent achievement and behavioural conduct. Data were collected from 539 students with a mean age of 16.9 years. School-related wellbeing and adaptability were measured at two time points over the school year (November and March), end-of-year achievement taken from standardised high-stakes tests, and the number of misconduct warnings from college records. Prior achievement was taken from students' high-stakes secondary school exit examinations. Having controlled for autoregressive relations, wellbeing predicted subsequent adaptability, but adaptability did not predict subsequent wellbeing. Furthermore, wellbeing, but not adaptability, predicted higher achievement and better behavioural conduct, after controlling for prior achievement. These findings point to the importance of wellbeing for both academic (i.e., achievement) and non-academic (i.e., behavioural conduct) outcomes. Schools should ensure that they have an effective policy to promote student wellbeing.

Perceived teachers' emotional authenticity: Intraindividual relations to students' emotions

Presenting Author:Eva Becker, University of Zurich, Switzerland; **Co-Author:**Melanie Keller, Leibniz Institute for Science and Mathematics Education at Kiel University, Germany

Teacher emotions have been shown to "cross-over" in interpersonal settings, thus impacting students' emotional responses

in class such as their enjoyment (Frenzel et al., 2009). Beyond emotional experiences and expressions, perceived emotional authenticity also impacts the emotional reaction of the receiver (Johnston et al., 2010). Given that teachers regulate their emotions while in class (Sutton & Harper, 2009), it is likely that at least sometimes their emotions might not be perceived as authentic by students, yet empirical evidence whether that is indeed the case and what effect it has on students is so far largely lacking. The present study investigated the effects of teachers' emotions and emotional authenticity on students' enjoyment, anger and anxiety. The Experience-Sampling-Method was employed and secondary school students ($N = 149$) randomly within a lesson reported on their perceptions of teachers' emotions and emotional authenticity, as well as their own momentary emotional experience, resulting in multiple assessments per student (total $N = 2668$ assessments). Analyses were conducted on the within-person level, thus delineating intraindividual mechanisms. Overall, teachers were perceived as highly authentic. Authenticity also had a high within-student variability. Above and beyond teachers' emotions, perceived teacher emotional authenticity predicted students' emotions. Contrary to assumptions, however, authenticity did not moderate the teacher-student emotion relationship, thus indicating that emotional contagion occurred irrespective of perceived emotional authenticity. Implications regarding whether it makes sense for teachers' to regulate their emotion expression even at the cost of being perceived as less authentic will be discussed.

Symposium Session B 2

16 August 2018 16:15 - 17:45

Nobel 1481-231

Symposium

Motivational, Social and Affective Processes

Gaining Deeper Insights in the Interplay between Autonomy Support and Structure

Keywords: Emotion and affect, Motivation, Self-determination theory, Teaching approaches

Interest group: SIG 08 - Motivation and Emotion

Chairperson: Leen Haerens, Ghent University, Belgium

Organiser: Nathalie Aelterman, Ghent University, Belgium

Discussant: Johnmarshall Reeve, Korea University, Korea, Republic of

While it is argued in Self-Determination Theory (SDT; Ryan & Deci, 2017) that both autonomy support (versus control) and structure are needed to foster learners' performance and adjustment, most studies to date focused on autonomy support, with only fewer studies addressing the complementary key role of structure. Recent studies have begun to demonstrate that teacher structure brings multiple benefits, including better self-regulated learning, less depressive feelings, and greater engagement. In this symposium, presenters will examine the motivational effects of various components of a structuring motivating style, that is, setting clear goals (Christa Krijgsman), giving detailed instructions (Sophie Goemaere) and providing process-oriented feedback (Christa Krijgsman, Joëlle Carpentier). In addition, because the way of providing structure can vary, that is, structure can be introduced in an autonomy-supportive (e.g., by providing rationales) or in a controlling (e.g., by threatening students who don't follow teachers' guidelines) way, attention is also devoted to the role of autonomy-supportive behaviors in situations where high structure is required including the establishment of clear classroom rules (Nathalie Aelterman) and the provision of change-oriented (aka negative) feedback (Joëlle Carpentier). The authors will present findings from experimental and observational studies conducted in diverse life domains (i.e., education, sports, and human space exploration), and involving a variety of motivational (e.g., intrinsic motivation, need satisfaction), behavioral (e.g., performance), and affective (e.g., affect) outcomes. The discussion focuses on theoretical and practical implications, and provides directions for future research.

Do Goal Clarification and Process Feedback Foster Students' Motivational Functioning?

Presenting Author:Christa Krijgsman, Utrecht University, Netherlands; **Co-Author:**Tim Mainhard, Utrecht University, Netherlands; **Co-Author:**Jan van Tartwijk, Utrecht University, Netherlands; **Co-Author:**Lars Borghouts, Fontys Sporthogeschool Eindhoven, Netherlands; **Co-Author:**Leen Haerens, Ghent University, Belgium

According to Self-Determination Theory, goal clarification (GC) and process feedback (PF) aim at improving learning through fostering volitional types of motivation. Previous research mainly relied on cross-sectional or longitudinal data. Therefore, the present experimental and ecologically valid study tested the effects of GC and PF on students' motivational functioning. Twenty classes with 493 ($n=236$ boys, $n=257$ girls) 7th grade physical education students participated. All classes were randomly assigned to one of the four conditions ($n=128$, $n=117$, $n=125$ and $n=123$) of a 2x2 factorial design, in which GC (presence vs. absence) and PF (presence vs. absence) were manipulated. All students engaged in their first lesson on a new motor skill, which was taught by one teacher. Also, all students were instructed by means of a series of videos, in which exercises of differential levels of difficulty were provided as to optimally challenge every student. Students' motivational functioning was measured prior to the lesson. Students' perceptions of GC and PF and motivational functioning were measured post-lesson. Simultaneously, all classes were observed by a research-assistant to discern whether manipulations were done according to a condition-specific script (manipulation check). Multilevel analyses will be employed. Results are currently being analysed and will be presented at the conference. It is expected that students' positive motivational functioning will be enhanced the most when both goal clarification and process feedback are present,

while poor motivational functioning will occur in case goals are not clarified and no process feedback is provided.

How to Avoid the Motivational Deficits of An Overload of Instructions: An Experimental Study

Presenting Author:Sophie Goemaere, Ghent University, Belgium; **Co-Author:**Maarten Vansteenkiste, Ghent University, Belgium; **Co-Author:**Wim Beyers, Ghent University, Belgium; **Co-Author:**Gert-Jan De Muynck, Ghent University, Belgium

The present set of studies aims to examine how instructions can be optimally designed to safeguard or even enhance individuals' motivation. This question arose from the observation that in human space exploration astronauts are provided with excruciatingly detailed instructions and a lack of decision-making power, even for simple routine tasks (Goemaere, Vansteenkiste, & Van Petegem, 2016). Many astronauts report feelings of demotivation, irritation, and even defiance against this working method, and anecdotic evidence suggests that it can lead to situations where astronauts read instructions diagonally or avoid checking in with Mission Support, thereby ironically increasing the risk of error making. Based on Self-Determination Theory (Ryan & Deci, 2000), Study 1 and Study 2 examined how length of instructions (i.e. short versus long) for assembly and computer tasks impacts the psychological well being, motivational experiences, and performance of participants, and how this relates to prior knowledge and experience ($N = 113$ and 120 , respectively). Additionally, Study 2 also examined whether the repeated provision of a choice between short or long instructions through adaptive instructions, and the provision of a need-supportive communication style, could alleviate the negative effects of long instructions. Results are discussed, as well as implications for practice and future studies.

Effects of Teachers' Style of Rule Setting on Students' Psychological Needs and Behavioral Responses

Presenting Author:Nathalie Aelterman, Ghent University, Belgium; **Co-Author:**Bart Soenens, Ghent University, Belgium; **Co-Author:**Maarten Vansteenkiste, Ghent University, Belgium; **Co-Author:**Joachim Waterschoot, Ghent University, Belgium; **Co-Author:**Leen Haerens, Ghent University, Belgium

At the start of a new school year, teachers face the challenging task of setting clear classroom rules to prevent disruptive behaviour among students and to support their learning. However, there is considerable variability in teachers' style to introduce these rules. Grounded in Self-Determination Theory (SDT; Ryan & Deci, 2017), this video-based vignette study aims to garner experimental evidence for the effect of the style of rule setting on students' need-based experiences and behavioral responses. Students were randomly assigned to one out of three conditions: a controlling condition (i.e., teacher imposes rules and consequences in a controlling way), an autonomy-supportive condition (i.e., teacher uses informational language and provides a meaningful rationale for introduced rules), and an autonomy-supportive condition with participation (i.e., teacher additionally engages in a dialogue with students as to arrive at a common viewpoint on rules and consequences). Participants were asked to imagine being part of the class they watched in the video. Although data collection is still ongoing, repeated measures ANOVAs among 234 students (54% boys, $M_{age} = 14.39 \pm .69$ years) revealed that the manipulation check was successful. Further, students in the autonomy-supportive conditions reported significantly more need satisfaction, less need frustration, less oppositional defiance, more accommodation, and more intentions to follow the established rules, compared to the controlling condition. Interestingly, the findings seem to suggest that the benefits of an autonomy-supportive (relative to a controlling) approach are enhanced when students additionally perceive the teacher to engage in a dialogue about rules and associated consequences.

Investigating Change-Oriented Feedback Quantity and Quality in a Real-Life Setting

Presenting Author:Joelle Carpentier, Ecole des Sciences de la Gestion - Université du Québec à Montréal, Canada; **Co-Author:**Geneviève Mageau, Université de Montréal, Canada; **Co-Author:**Richard Koestner, McGill, Canada

Autonomy support and structure are two crucial aspects of optimal hierarchical relationships (Jang et al., 2010). Yet, little is known about the specific behaviors that can enable authority figures to offer a high level of structure while simultaneously supporting their subordinates' autonomy. Recently, Carpentier and Mageau (2013, 2016) addressed this issue in the sport context and identified six characteristics that make change-oriented feedback (aka negative feedback) more autonomy-supportive. Results from cross-sectional data with multi-informants and experience sampling methods showed that feedback quality (i.e., presence of the six characteristics) predicts subordinates' positive outcomes over and above feedback quantity. The present study further explored the links between the quantity and quality of change-oriented feedback and receivers' phenomenological experiences but this time using observational measures of feedback quantity and quality in a real-life setting. Fifty-three coaches and 310 athletes were videotaped during a training session. Feedback quality and quantity were then coded by independent observers. Athletes reported their satisfaction of basic psychological needs, well-being and motivation. Multilevel analyses indicated that change-oriented feedback quality was positively linked to athletes' perceptions of autonomy and competence, and negatively associated with negative affect. Marginally positive links were also observed between change-oriented feedback quality and athletes' motivation and perceptions of affiliation. In contrast, change-oriented feedback quantity did not predict athletes' outcomes when controlling for feedback quality. Results will be discussed in light of their contribution to the literature on optimal hierarchical relationships and self-determination theory. Their applicability to the education domain will also be addressed.

Symposium Session B 3

16 August 2018 16:15 - 17:45

Nobel 1483-344

Symposium

Learning together - dynamics of motivation and emotions in collaborative groups

Keywords: Achievement goal theory, Emotion and affect, Learning approaches, Motivation, Self-regulation, Social motivation

Interest group: SIG 08 - Motivation and Emotion

Chairperson: Piia Naykki, University of Oulu, Finland

Organiser: Piia Naykki, University of Oulu, Finland

Organiser: Hanna Jarvenoja, University of Oulu, Finland

Organiser: Toni Rogat, Purdue University, United States

Discussant: Lisa Linnenbrink-Garcia, Michigan State University, United States

The premises for effective collaborative learning are that the group members are engaged to build, monitor and maintain the group's motivated learning. Several studies have requested for the insights of the functioning of individual interpretations of the motivational and emotional conditions and the intertwined appraisals of emotional experiences in collaborative learning situations. We still, however, lack the evidence on what kind of emotional challenges, emotional reactions and regulation of emotions are shared between the group members. This is important in order to create scaffolding for students to engage in, and to progress in active and effective collaborative learning. This symposium comprises four presentations that investigate motivation and emotions "in action" by implementing video-observation. The complementary perspectives of the symposium presentations include: 1. analysis of personal goal endorsements in relation to group processes, engagement and achievement, 2. analysis of socio-emotional and socio-cognitive challenges in group interaction, 3. analysis of emotions in online collaborative learning, and 4. analysis of co- and socially shared emotion regulation during collaborative task. The present symposium aims at taking the research on motivation and emotions to the next level by presenting findings derived from empirical directions mentioned above. Further, by addressing facilitative instructional designs, the symposium provides valuable input on how to re-design collaborative learning interventions. Combining insights from video-based analyses conducted in a variety of settings further unravels important methodological guidelines and challenges. The symposium consequently advances both the theory and future research on motivational and emotional processes in collaborative learning.

Measuring, analysing and understanding emotions during online collaboration

Presenting Author: Carolin Schultz, RWTH Aachen University, Germany; **Co-Author:** Marold Wosnitza, RWTH Aachen University, Germany

Collaborative learning activities are popular in higher education. How groups perform depends on different factors such as communication or group members' perception of the group-work process. Both can have major motivational and emotional consequences. Research focusing on the emotional aspects of learning has noted the relevance of this affective dimension for individual learning and achievement as well as for collaborative settings. In either case measuring emotions is a methodological challenge - even more for group-work situations, as it is still unclear, what triggers emotions in collaborative learning activities and how the respective group members' emotions are intertwined. In this study, video footage of 120 university students working in collaborative groups of 4 during a serious game were analyzed. The aim of this study is twofold. First, this study explores emotional valences the individual group members experience and investigates whether specific aspects of the collaborative activity can be identified that give rise to these valences. Second, the current study addresses the methodological challenges of measuring emotions in group-work situations. Preliminary results show that different emotional patterns regarding valence and depending on group attributes can be identified. Further analyses will focus on specific circumstances in which emotions arise and explore the mutual dependence of the participants' emotions as well as developing methodological approaches in the field of emotion research. The results will provide useful pragmatic clues and beneficial advice for educators regarding group-work design and implementation with the aim to foster favorable emotional experiences and thus positive attitudes towards group-work.

Achievement goals within collaborative groups: Differentiating within and between-group comparison

Presenting Author: Toni Rogat, Purdue University, United States; **Co-Author:** Lisa Linnenbrink-Garcia, Michigan State University, United States

To enrich our understanding of how motivation is shaped within interpersonal contexts, this study investigates students' achievement goals for group activity. Previous research considers the implications of students' demonstrating competence relative to *one's own* groupmates. However, performance-approach focused students may also join with groupmates to target *other* groups (between-group competition), which may not yield the same detrimental impacts. Thus, the differentiation between demonstrating competence to best one's own groupmates (PAP-within) or other groups (PAP-between) may be especially important. Across two distinct samples, person-oriented analyses were used to identify patterns of personal goal endorsement during group work (mastery, PAP-within, PAP-between) and to consider how these patterns related to group processes, engagement, and achievement. Participants were drawn from two studies of 5th & 6th ($N = 218$) and 7th ($N = 312$) grade students, who worked in stable heterogeneous groups during mathematics or science units. Three common profiles were identified across samples: (1) *High All*, (2) *High Mastery, Low PAP (within & between)*, (3) *High Mastery, High PAP-Between, Low PAP-Within*. The *Moderate All* and *Low All* profiles showed distinct patterns

across studies. These profiles differentially predicted group processes, engagement, and achievement. Findings highlight the utility of differentiating forms of performance goals, such that profiles with higher PAP-within related to negative outcomes, while profiles with higher PAP-between combined with high mastery and low PAP-within related to higher achievement and more adaptive group processes. As expected, strongly endorsing mastery goals with low performance goals was beneficial across outcomes.

Regulating emotions together in collaborative learning: Does it matter how you feel?

Presenting Author:Hanna Jarvenoja, University of Oulu, Finland; **Co-Author:**Tiina Törmänen, University of Oulu, Finland; **Co-Author:**Kristiina Kurki, University of Oulu, Finland; **Co-Author:**Hannie Gijlers, University of Twente, Netherlands; **Co-Author:**Sanna Järvelä, University of Oulu, Finland

Collaborative learning situations create a context in which multiple learners bring their motivational and emotional appraisals on a social plane. Groups' joint efforts to regulate emotions to ensure balanced conditions for learning are founded on these individual interpretations of the emotional conditions and reactions. Theoretical advancement in the conceptualisation of regulation in collaboration has advanced rapidly, but we still lack evidence on how and when emotions and regulation of emotions are shared between the group members as a part of collaboration. This study investigates when students activate co- and socially shared emotion regulation during collaborative science task. Participants were 41 primary school students who studied in three members groups to complete a task on heat energy. The episodes of socio-emotional interaction, the emotional valence of these episodes, and the related co- and socially shared regulation was analysed from the videotaped group working. The results follow earlier findings indicating co-regulation as a more typical type of regulation, while socially shared regulation was activated less. Overall, the students addressed socio-emotional situations by regulating them on a group level rarely, and it was particularly rare in the situations with a mixed emotional valence. To conclude, it is argued that to be able to engage in co- and socially shared regulation and, further, to constructive learning and collaboration, groups need support particularly in the challenging, emotionally diverse situations where their appraisals of the conditions for collaboration vary.

Identifying and describing socio-emotional and socio-cognitive challenges in collaborative learning

Presenting Author:Piia Naykki, University of Oulu, Finland; **Co-Author:**Kaisa Manninen, University of Oulu, Finland; **Co-Author:**Jaana Isohätälä, University of Oulu, Finland; **Co-Author:**Sanna Järvelä, University of Oulu, Finland

This study examines what kind of socio-cognitive and socio-emotional challenges are observed in collaborative learning and how the group members themselves describe the challenges they are experiencing. The participants of this study were teacher education students whose collaborative learning was supported with a designed regulation macro script during a six-week mathematic course. The script divided the group work into three phases, namely: the orientation phase, intermediate phase, and reflection phase. The script was put in use by prompting questions that instructed groups to plan their collaborative activities, to stop and reflect on the challenges they were experiencing, and the efficiency of their strategies and outcomes of their learning process. The data were collected by videotaping the groups' face-to-face work and analysed by focusing on the different types of challenges they were experiencing during their task working and the type of challenges they described during their scripted interaction. The results show that the student groups experienced more socio-cognitive challenges than socio-emotional challenges. Furthermore, the results of the scripted interaction show that in overall the groups described more the socio-cognitive challenges than the socio-emotional challenges. However, the percentage distribution of the described versus observed challenges shows that the groups described more often socio-emotional compared with socio-cognitive challenges. The case analysis illustrates in detail about how the groups reflect the challenges they experienced. The implications to enable the groups to identify the challenges in group interaction are discussed.

Symposium Session B 4

16 August 2018 16:15 - 17:45

Nobel 1481-264

Symposium

Motivation in teaching careers

Keywords: Achievement goal theory, Attitudes and beliefs, Developmental processes, Educational attainment, Expectancy-value theory, Goals, Interest, Measurement, Motivation

Interest group: SIG 08 - Motivation and Emotion

Chairperson: Burkhard Gniewosz, University of Salzburg, Austria

Chairperson: Helen Watt, The University of Sydney, Australia

Organiser: Burkhard Gniewosz, University of Salzburg, Austria

Organiser: Helen Watt, The University of Sydney, Australia

Discussant: Fani Lauermann, University of Bonn, Germany

This international symposium (with data from Germany, Switzerland, Australia, Austria, and Indonesia) brings together several theoretical backgrounds (expectancy x value theory, the FIT-Choice model, achievement goal theory) and methods (quantitative and qualitative) to further our understanding of the burgeoning field of motivation in relation to teachers and teaching careers. The first paper compared the career motivations of Australian final-year secondary school students

considering teacher as a career, versus those students who did not. The second and the third papers focus on university teacher students in training to become a teacher, and investigate their career motivations. Paper 2 from Indonesia explores differences between four programs of study, while Paper 3 from Austria aims to predict motivational profiles according to retrospective school experiences. The fourth paper from Germany examines motivations of university teachers and seeks to identify their different goal orientations. Collectively, this symposium provides insights into motivational underpinnings of choosing a teaching career as well as the generalizability of motivational theories on various levels: First, the motivational theories are applied to different stages in regard of the decision to teach, i.e., secondary school students (pre-decision), university students (post-decision, preservice), as well as university teachers (post-decision, in-service). Second, quantitative and qualitative methodologies are brought together. Third, theoretical predictions can be compared across samples from five nations. Finally, our Discussant will distil key themes and highlight fruitful directions for next research.

Motivated to teach or not? Career motivations of high-school graduates

Presenting Author:Helen Watt, The University of Sydney, Australia; **Presenting Author:**Paul Richardson, Monash University, Australia

Until now, motivations to teach have been assessed primarily among those intending to teach. Investigation of a large sample of adolescents ($N = 1,172$) while still in their final year of secondary school thus not yet self-selected into particular fields of professional training, enabled exploration of potentially *distinguishing* career motivations among those who do, versus do not, intend to teach. Motivations to teach have been mostly assessed by the FIT-Choice Scale (see Richardson & Watt, 2006; Watt & Richardson 2007, 2008), grounded in the expectancy-value theory (EVT; Eccles et al., 1983). The Motivations for Career Choice scale (MCC; Watt & Richardson, 2006) is a generalisation and extension of the FIT-Choice scale (Watt & Richardson 2007). A preceding open-ended question asks respondents to nominate their aspired career. Prefaced by the stem, "It is important to me to have a career that...", the MCC assesses EVT constructs previously adopted in the FIT-Choice scale, and adds features of the interpersonal environment. Confirmatory factor analysis supported the theorised structure. Intriguingly, motivations found to be highest-rated among aspiring teachers in studies around the world using the FIT-Choice scale were highest-rated in the present study using the MCC (intrinsic and ability motivations). However, motivations that distinguished those aspiring to teach were altruistic-type motivations, role-models, and a team environment. Implications for theory and policy are advanced.

What factors motivate Indonesian students to become teachers?

Presenting Author:Paul Richardson, Monash University, Australia; **Co-Author:**Anne Suryani, The University of Melbourne, Australia; **Co-Author:**Helen Watt, The University of Sydney, Australia

Teacher quality significantly impacts students' learning outcomes (Goe, 2007; World Bank, 2010) and the success of educational development (Ingersoll & Smith, 2003; Kennedy, 2008). This paper reports on Indonesian students' motivations for entering teacher education, their perceptions of the teaching profession, and different motivations and perceptions among participants based on program of study. The study applies the Factors Influencing Teaching Choice (FIT-Choice; Watt & Richardson, 2007) theoretical framework which was founded on the expectancy-value theory of achievement motivation (Eccles [Parsons] et al., 1983; Wigfield & Eccles, 2000). The FIT-Choice framework consists of 12 motivations (*ability, intrinsic value, fallback career, job security, time for family, job transferability, shape future of children/adolescents, enhance social equity, make social contribution, work with children/adolescents, prior teaching and learning experiences, social influences*), five perceptions about the teaching profession (*expertise, difficulty, social status, salary, and social dissuasion*) and one *career choice satisfaction* factors. Participants were final-year undergraduate teacher education students ($N=802$) from four Indonesian universities ($M\text{ age}=21.61$ years). Findings indicated that *make social contribution, prior teaching and learning experiences, and work with children/adolescents* were the highest rated motivations. Primary education participants were more motivated by *ability, intrinsic value, job security, time for family, second job, job transferability, make social contribution, work with children/adolescents, prior teaching and learning experiences, and social influences* than all other programs of study. This study contributes to international and national literature, particularly on future teachers' motivations in a non-Western setting and developing country like Indonesia.

Utility belief profiles and school experiences in the choice of a teaching career

Presenting Author:Burkhard Gniewosz, University of Salzburg, Austria; **Co-Author:**Michaela Katstaller, School of Education, Austria; **Co-Author:**Tom Scherndl, Paris-Lodron University Salzburg, Austria; **Co-Author:**Ulrike Greiner, Paris-Lodron University Salzburg, Austria

This study investigates future student teacher's utility belief profiles. Based on expectancy value theory these profile are predicted by retrospective own school experiences. Latent class analyses of 228 Austrian first-year future teachers' value ratings educed three value profiles: one emphasizing "social reasons" (21.6 %), one mostly stressing "working with children and adolescents" (61.1 %), and one with a balanced perspective (16.7 %). In logistic regressions, these profiles were predicted by the students' gender, age, and their school experiences. Students exhibiting a balanced value profile reported the highest levels of perceived teacher competence and the lowest levels of positive school experiences. In comparison to the students in the "working with children and adolescents" group, the students with balanced profiles reported lower levels of perceived teacher support. In general, student teachers in the "working with children and adolescents" class reported the highest levels of negative school experiences. This pattern points to motive distributions that vary according to prior school experiences, supporting the socialization of motives hypothesis. Such socialization may prove important for student

teachers' academic success and ultimately their professional development as teachers, since motives are associated with students' achievement. Thus, primary and secondary education seems to be an important context shaping later motivations to pursue teaching careers.

An exploratory qualitative study of university teachers' goal orientations

Presenting Author:Marold Wosnitza, RWTH Aachen University, Germany; **Co-Author:**Kerstin Helker, RWTH Aachen University, Germany

Over the last years an increasing number of studies has focused on teacher motivation but only little research exists the motivation of university teachers. This study aims helping to close this research gap. The here presented survey study is exploring the goal orientations of 215 German, 71 Swiss early career and 91 experienced University Teachers. In analogy to Ruth Butler's approach to studying school teachers' goal orientations, university teachers were asked to state what makes them say they had a successful teaching session. Data was categorized and first results show that besides goal orientations that are in accordance to those identified with school teachers, university teachers especially define their mastery and performance goals in relation to their students' success. More detailed analyses of the data will be presented and discussed at the conference.

Symposium Session B 5

16 August 2018 16:15 - 17:45

Nobel 1483-444

Symposium

Fostering Motivation, Engagement and Resilience in Second and Third Level Schooling

Keywords: Attitudes and beliefs, Developmental processes, Educational attainment, Emotion and affect, Engagement, Interest, Learning approaches, Measurement, Motivation, Resilience, Self-efficacy

Interest group: SIG 08 - Motivation and Emotion

Chairperson: Benjamin Torsney, University College Dublin, Ireland

Organiser: Jennifer Symonds, University College Dublin, Ireland

Discussant: Markku Niemivirta, University of Oslo, Norway

Fostering Motivation, Engagement and Resilience in Second and Third Level Schooling In this symposium, four presenters will explore how the fundamental research on motivation, engagement and resilience can be translated into interventions for promoting adaptive functioning in young people at school and university. First, we will present new findings on real-time motivation in German learning contexts, that can inform the design of interventions at university and school. There, the objective interestingness of a task across students, is differentiated from fluctuating personal interest in that task; indicating how pedagogues can attend to a task's enduring and inconstant motivational properties in instructional design. Second, we will overview how a model of real-time engagement informed the design of a 30-hour, 6-week intervention for early adolescents in Ireland, that has a dual purpose of fostering conceptual change in students' schoolwork engagement psychology and supporting their literacy development. Third, we will present a small-scale randomized controlled trial from Finland, where we tested the impact of an intervention for supporting university students' life management, self-efficacy and resilience on treatment and control groups. Here we found effects that lasted up to 6-months post-treatment. Finally, we will present a second Irish school-based intervention, which aims to enhance mid-adolescents' career motivation, using a suite of pedagogies from evidence based training programmes to translate theories of career competencies and work readiness into educational practice.

Feasibility study of PROSPER: The Professional Student Programme for Educational Resilience

Presenting Author:Benjamin Torsney, University College Dublin, Ireland; **Co-Author:**Jennifer Symonds, University College Dublin, Ireland

The focus of this presentation is to outline the design of the Professional Student Programme for Educational Resilience (PROSPER) which is intended to enhance the engagement competencies of 12 – 14-year-old students; and to report initial findings from a small-scale feasibility study of this curricular resource. Currently, PROSPER is being conducted in three secondary schools in Dublin, Ireland. The full data collection in progress includes: student self-report surveys, student focus groups interviews, student comprehension tests, video observations of student engagement, and individual teacher interviews. The PROSPER curricular resource has been constructed by applying a real-time model of student engagement to the instructional design of 30-hours of English lessons. We have partnered with the teachers of PROSPER to help us create lessons that fulfil the English oral, reading and writing objectives for the Irish national school curriculum. Implications for research and practice include a detailed investigation of how pedagogy and instructional design can impact student engagement competencies, and how psychosocial competencies training can be integrated into standard educational practice.

Level Up: Enhancing adolescents' career and work motivation

Presenting Author:Jennifer Symonds, University College Dublin, Ireland; **Co-Author:**Benjamin Torsney, University College Dublin, Ireland

This presentation will focus on the design of the Level-Up curricular resource for enhancing adolescents' career and work

competencies, that aims to support their motivation in obtaining work-experience in adolescence, developing their career pathways via careful selection of school subjects for upper secondary education, and thriving as 'workers' both in employment and schoolwork contexts. The design and implementation of Level-Up will be discussed in relation to a small-scale feasibility study of around 200 14 – 15-year old adolescents who are receiving Level-Up in 3 schools, in treatment and comparison (delayed treatment) groups. Implications for research and policy include provision of empirical data on the under-researched area of career and work competency development in Irish 'Transition Year' students, and details on the feasibility of incorporating a curricular resource based on educational and occupational psychology into schools' standard educational practice.

Skills for life : Intervention effects on self-efficacy and preparedness among university students

Presenting Author:Elina Marttinen, University of Jyväskylä, Finland; **Co-Author:**Katariina Salmela-Aro, Helsinki University, Finland; **Co-Author:**Minna Savolainen, Nyyti ry, Finland

The aim of this study was to examine to what extent the preventive psycho-educative cognitive-behavioral Skills for Life – group intervention (Nyyti ry, 2012) effected university students' life management related self-efficacy beliefs as well as preparedness for possible future setbacks in life. The study was carried out among young adults with minor health or mental health concerns. The subjects (N = 159) were recruited through health questionnaire of the Finnish Student Health Service (FSHS) that was aimed for students at the beginning of their university studies. Participants were randomized in to intervention (N = 50) and control conditions (N = 109). The intervention was modified, and broadened version of well-known group intervention Control your depression (Lewinsohn, Muñoz, Youngren, & Zeiss, 1978). Participants filled in self-efficacy, preparedness and well-being questionnaires at baseline (T1), 8 weeks later (T2), and 6 months later (T3). The intervention was held between T1 and T2. Preliminary results revealed among intervention group the increase in self-efficacy beliefs concerning ability to change one's disrupting thoughts, ability to hold positive thoughts in mind, and ability to overcome future obstacles during studies and work compared to control group. The expectations of possible failures and obstacles in the future decreased among intervention group compared to control group. Finally, it was indicated that the life-satisfaction was higher among intervention group six months later compared to control group. In conclusion preliminary results indicate that general life management skills training might support important development in self-efficacy beliefs and preparedness among university students.

Using experience sampling method data for evaluating learning activities

Presenting Author:Julia Dietrich, Friedrich Schiller University of Jena, Germany; **Presenting Author:**Baerbel Kracke, University of Jena, Germany; **Co-Author:**Julia Moeller, University of Leipzig, Germany; **Co-Author:**Jaana Viljaranta, University of Eastern Finland, Finland

Learning situations vary in their motivational characteristics, such as their interestingness or the extent to which they make students feel competent. Moreover, individual students can vary within themselves; and the magnitude of such short-term fluctuations in situational interest and competence beliefs can vary from one student to the next. This study is based on intensive data of students' situational interest and competence perceptions that are collected using the experience sampling method (ESM). With this type of data, we aimed to model two measures that can be used in evaluating learning activities. First, we aimed to measure objective motivational characteristics of a situation which are, for example, reflected in the average interestingness of a learning situation. Second, we aimed to quantify the amount of intra-individual variation per student and test whether there are systematic differences between students in their momentary fluctuations of interest and felt competence. This study employed a novel design of ESM, in which multiple subjects are asked at the same time about their motivation in a given learning context (here: a university lecture). The sample consisted of 155 students who completed together 2.227 ESM surveys over the course of 10 weeks (3 surveys per lecture day). The information from such ESM studies could be useful in two ways. The objective motivational characteristics of situations could be interesting for teachers: They could be given *in situ*-feedback about the learning activities they use. The intra-individual variation could be interesting for researchers as a possible target of motivational interventions.

Symposium Session B 6

16 August 2018 16:15 - 17:45

Nobel 1481-239

Symposium

Motivational, Social and Affective Processes

Grit's Relations to Academic Achievement: Mechanisms and Relations in International Samples

Keywords: Achievement, Engagement, Expectancy-value theory, Goals, Motivation, Self-efficacy, Self-regulation

Interest group: SIG 08 - Motivation and Emotion

Chairperson: Jessica Gladstone, University of Maryland, United States

Organiser: Jessica Gladstone, University of Maryland, United States

Discussant: K. Ann Renninger, Swarthmore College, United States

Objectives Duckworth and colleagues (2007) defined grit as an individuals' passion and perseverance (PE) in pursuing long term goals and having consistent interests (CI). Their initial research on grit showed that students' grit predicts achievement, although the strength of that relationship is inconsistent across studies (Credé et al., 2016). However, most

work on grit has been done in the U.S. and grit was the only non-cognitive predictor of achievement explored. Little research has examined the factor structure of Duckworth's grit measure in international samples. Additionally, few studies have examined mechanisms that explain grit's relations to achievement. This symposium extends previous work on grit by: (1) testing Duckworth's grit measure's factor structure in different cultural contexts, and how grit and academic goal orientation predict academic wellbeing; (2) exploring how grit predicts achievement when controlling for cognitive and non-cognitive variables in U.S. and non-U.S. samples; and (3) examining variables that may explain grit's relations to achievement in samples from several countries. Thus, the major objective of this symposium is to present recent work conducted in different countries contending whether grit is an important predictor of academic outcomes. Significance Grit and its relations to academic outcomes continues to be a much-discussed topic, even as strong questions emerge about its strength as a unique predictor of academic outcomes. Because most of the work on grit has been done with U.S. samples, the research with international samples presented in this symposium will greatly increase our understanding of its structure and generalizability.

The Predictive and Interactive Role of Grit with Goal Orientation in Academic Wellbeing

Presenting Author:Katariina Salmela-Aro, Helsinki University, Finland; **Co-Author:**Xin Tang, University of Helsinki, Finland; **Co-Author:**Jiesi Guo, Australian Catholic University, Australia

The present study aims to examine the associations between grit (consistency of interest and perseverance of effort) and academic wellbeing (engagement, burnout, academic withdrawal, fear of failure). In addition, we examined how grit interacts with mastery and performance goal orientations contribute to the prediction of academic wellbeing. The participants are drawn from 925 Finnish 11th graders, (68.5% female, ages 17/18). Structure Equation Modelling with latent moderated structural (LMS) equation approach were used. After controlling gender and 9th grade GPA, results showed that both consistency of interest and perseverance of effort contributed to students' academic wellbeing, with an exception that consistency of interest did not affect school engagement. We also found a compensatory interaction between performance-avoidance orientation and perseverance of effort in predicting school engagement and burnout, indicating that perseverance of effort is more important for students with higher performance-avoidance orientation to promote engagement and alleviate burnout in school. The results suggest that grit plays an important role in enhancing academic wellbeing.

Are "Gritty" Students more Successful in School? Relative Importance of Grit for School Achievement

Presenting Author:Ricarda Steinmayr, TU Dortmund, Germany; **Co-Author:**Anne Franziska Weidinger, Technical University Dortmund, Germany; **Co-Author:**Allan Wigfield, University of Maryland, United States

Duckworth and colleagues (2007) introduced grit as a purportedly new construct predicting different achievement outcomes. However, recent findings call into question its predictive validity for educational outcomes when other conceptually similar constructs are included in the analyses. To clarify further grit's relations to school achievement, we investigated in two studies the incremental predictive validity of school achievement by its two components, consistency of interests (CI) and perseverance of effort (PE), above conceptually and empirically related predictors. Both studies were done with German adolescents. Study 1 ($N = 227$) examined the relative importance of CI and PE for students' current school grades (GPA, math, German) when controlling for prior school grades, the Big Five personality traits, school engagement, values, expectancies of success, and self-efficacy. Study 2 ($N = 586$) assessed the relative predictive power of CI and PE on GPA, math grades, and math test performance, controlling for both cognitive (crystallized intelligence) and non-cognitive variables (conscientiousness, and established constructs from the motivation and engagement literatures). Relative weight analyses revealed that neither CI nor PE explained a substantial amount of variance in math and German grades or in math test performance above and beyond the other personality, engagement, and motivation constructs. However, in both studies, PE significantly explained variance (3.7%) in GPA when controlling for the other cognitive and non-cognitive predictors. Results call into question grit's importance in predicting academic achievement.

Clarifying Grit's Predictive Role: Exploring Mechanisms of the Relation Between Grit and Achievement

Presenting Author:Jessica Gladstone, University of Maryland, United States; **Co-Author:**Katherine Muenks, Indiana University, United States; **Co-Author:**Ji Seung Yang, University of Maryland, United States; **Co-Author:**Allan Wigfield, University of Maryland, United States

Duckworth and colleagues (2007) defined grit as trait-level passion and perseverance toward long-term goals. They proposed that grit consists of two components: consistency of interests (CI) and perseverance of effort (PE). They found that different-aged students' grit positively predicts their achievement. Further, several recent studies including a meta-analysis suggest that the associations between grit and achievement are driven more by PE than CI (Credé et al., 2017; Muenks et al., 2017); we therefore focus on PE in this study. However, few studies have explored *how* the associations of PE to achievement occur; that is, the mechanisms that explain the associations. Because PE is a domain-general (i.e., trait-level) variable, it may positively predict students' academic achievement in specific courses via their domain-specific self-regulation, engagement, and motivation in that course. In the present study we assessed this possibility by surveying 335 U.S. college students on their grit and course-specific self-regulation, engagement, and motivation; we also obtained students' grades in the course they responded about. Results demonstrated that the relation between PE and grades was mediated by course-specific self-regulation, effort regulation, behavioral engagement, behavioral disaffection, mastery-approach goals, and task value. These findings suggest that students who are more perseverant toward long-term goals *in*

general also tend to be better self-regulated, engaged, and motivated *inspecific* courses; and thus, receive higher grades in those courses. Theoretical implications of the results with respect to views on how PE, self-regulation, engagement and motivation relate to achievement outcomes will be discussed.

Cross-Cultural Mediation Study of Grit, Self-Regulated Learning and Achievement in Multiple Domains

Presenting Author:Kate Xu, Welten Institute - Open University of the Netherlands, Netherlands; **Co-Author:**Anna Rita Cunha-Harvey, Erasmus University Rotterdam, Netherlands; **Co-Author:**Ronnel King, The Education University of Hong Kong, China; **Co-Author:**Bjorn de Koning, Erasmus University Rotterdam, the Netherlands, Netherlands; **Co-Author:**Martine Baars, Erasmus University Rotterdam, the Netherlands, Netherlands; **Co-Author:**Allan Wigfield, University of Maryland, United States; **Co-Author:**Fred Paas, Erasmus University Rotterdam, Netherlands

Grit, or more specifically the perseverance dimension of grit, positively predicts academic achievement. Yet the mechanisms through which grit might lead to academic success remain less explored, particularly in cross-cultural research. The current study investigated such mechanisms by examining the possible mediating effects of self-regulated learning strategies (control, memorization, elaboration) and motivational beliefs (instrumental motivation and self-efficacy) on the predictive relations of students' perseverance to their academic achievement in multiple school subjects (reading, mathematics and science). The sample for the study came from the PISA 2000 dataset and included 24,352 population-representative 15-year-old students from six PISA-participating countries representing distinct cultures: East Asia (Hong Kong and the Republic of Korea) and English-speaking Western culture nations (Australia, New Zealand, Scotland and the US). Students' perseverance positively predicted their strategy use, motivation, and achievement, and the effects were of similar magnitude across subject areas, but stronger in East Asian cultures. Mediation analysis indicated that motivation and self-regulated strategy use mediated the effect of perseverance on achievement; these effects were stronger in Asian cultures. There were cultural differences in which perseverance showed indirect effects through different mediators on achievement; self-efficacy and control strategy had positive and substantially stronger indirect effects in Western countries. Instrumental motivation, memorisation and elaboration strategy use showed more negative indirect effects in Western countries. The results provide important new information on the relationship between perseverance and achievement in different countries, cultures, and domains, and so have important implications for educational practice in these countries.

Symposium Session B 7

16 August 2018 16:15 - 17:45

Nobel 1481-237

Symposium

Motivational, Social and Affective Processes

I. The development of interest in higher education: What parts of this process can we influence?

Keywords: Developmental processes, Emotion and affect, Engagement, Expectancy-value theory, Goals, Interest, Motivation, Social motivation

Interest group: SIG 08 - Motivation and Emotion

Chairperson: Judith Harackiewicz, University of Wisconsin-Madison, United States

Organiser: K. Ann Renninger, Swarthmore College, United States

Discussant: Niels Dohn, Aarhus University, Denmark

In this double-session symposia, researchers studying the development of interest in higher education will draw on at least two studies to address the question: How do students in higher education explore multiple interests, commit to interest, and stay interested over time, and what parts of this process can we influence? Higher education places different demands on students than they have experienced in primary or secondary schooling. Typically, university classes differ from earlier schooling with lectures commonly enrolling hundreds of students, opportunities to make choices about courses and class attendance, and, in some countries, they relocate and are immersed full time in a new campus environment. These differences have resulted in models of learning that require self-regulation, and in which interest plays a critical role in course choices, selection of academic major and career plans (see Zusho, 2017). Although much can be learned from research on primary and secondary school children's interest, research on university students' interest must consider the affordances of the particular socio-cultural context of higher education. Presenters in Symposia I will address the session question by examining the development and maintenance of interest in this important context, with a focus on the development of interest, and those in Symposium II will extend the discussion of Symposium I by considering motivational interventions and the contextual determinants of interest. Symposium participants include a mix of science educators and motivation researchers, working in a variety of higher education contexts, allowing exploration of critical issues from a variety of perspectives.

Developing New Academic Interests in College by Promoting a Growth Theory of Interest

Presenting Author:Paul O'Keefe, Yale-NUS College, Singapore; **Co-Author:**E.J. Horberg, Yale N.U.S., Singapore; **Co-Author:**greg walton, Stanford University, United States; **Co-Author:**Carol Dweck, Stanford University, United States

This research examined how implicit theories of interest influence the development of new interests. Two lab studies and one year-long randomized controlled field study examined undergraduates' implicit theories of interest—the belief that personal interests are inherent and fixed (fixed theory) or that they are developed (growth theory). Whether measured

(Study 1; $N=126$) or experimentally induced (Study 2; $N=85$) in the lab, a growth theory increased interest in academic topics outside undergraduates' established interests, without negatively affecting their interest in topics that matched their established interests. Results from lab studies, therefore, suggested that inculcating a growth (vs. fixed) theory promotes the development of new academic interests among college students. To test the real-world significance of these findings, we conducted a pre-matriculation intervention on Liberal Arts undergraduates who showed little preexisting interest in math (Study 3). Incoming students ($N=175$; 85% of the cohort) completed a 30-min online training program. Half were randomly assigned to a growth theory condition in which they learned that interests are developed, not fixed. The other half were assigned to a control condition in which they learned optimal study skills. At the end of the year, we assessed interest in their required math course and obtained grades from registry. Results showed that the growth theory intervention (vs. control) increased interest in math, which, in turn, increased math grades. Taken together, our results suggest that a growth theory promotes the development of new interests, which is crucial for successfully navigating a diverse college curriculum.

Interest Development in and out of University Classrooms: Poetic Case Examples

Presenting Author:Kathleen M. Quinlan, University of Kent, United Kingdom

Higher education has both unique demands and opportunities for the development of students' interest. This paper presents two related exploratory studies that address the question of how teachers and administrators can create the conditions that support the development of higher education students' interests. The first study aims to identify features of students' experiences *outside* the formal curriculum that influence the growth of individual interest (Hidi & Renninger, 2006). The second study examines experiences *within* the formal curriculum that challenge students' interest development (Azevedo, 2011). Both studies use poetic case examples drawn from the same, larger project that included more than 51 cases (Quinlan, 2016). Using arts-based qualitative inquiry in education (e.g. Eisner, 2017), the poem-cases are interrogated by multiple, close, interpretive readings through different theoretical/epistemological lenses (Ashwin, 2012). The final paper will present their texts in full. Study 1 analyses 2 case examples that focus on students' interactions in and with places that provide space for intellectual exploration in good company (a student apartment; a library). Study 2 focuses on 3 examples that highlight ways in which disciplinary practices (in English and physical sciences) create experiences of what I call "situational disinterest." Taken together, they highlight person-environment interactions both within and beyond the formal curriculum in higher education that influence the development of students' interest during higher education.

Getting and Keeping University Students Interested: An Educational Technology Perspective

Presenting Author:Luke K. Fryer, The University of Hong Kong, Hong Kong; **Co-Author:**Mary Ainley, University of Melbourne, Australia; **Co-Author:**Andrew Thompson, Kyushu Sangyo University, Japan; **Co-Author:**Kaori Nakao, Seinan Gakuin University, Japan

This presentation will examine research from three studies (recently published, under-review and ongoing) examining how (whether) educational technology (ed-tech) might support university students' interest in a domain of study. The three studies compared students' interest in human versus ed-tech interactions. Study 1 employed a counter-balanced design and SEM to test the two task conditions on future interest in the course. Study 2 followed up with a subsample of the original (Study 1) students, examining the duration of novelty effects four months later and triangulating with students' open-ended comments about the tasks. Study 3 extended the comparison to four tasks and controlled for prior perceived and actual competence (preliminary analyses completed). Study 1 indicated a novelty effect for ed-tech and that only the human-human task supported future interest in the course. Study 2 suggested a substantial rebound in interest after the novelty effect and indicated the potential role of prior competence for ed-tech usage. Qualitative data also indicated the power of students' perceptions of the technology in overcoming difficulties during interactions. Preliminary results from Study 3 supports Study 1 novelty-effect findings and confirms that prior perceived competence plays a different role within human and technology related tasks. Together these studies indicate that the effect of ed-tech on students' motivations/beliefs is still poorly understood. Branding the differences between human-human and human-technology interactions as "novelty effects" is an oversimplification of a complicated impediment to our omni-present ed-tech future. These studies demonstrate that the increased student engagement many instructors seek from ed-tech might represent "a lot-of-smoke but little-actual-fire."

Value-expectancies and interest in university students - development in 5 disciplines

Presenting Author:Kirsti Lonka, University of Helsinki, Finland; **Co-Author:**Elina E. Ketonen, University of Helsinki, Finland; **Co-Author:**Katariina Salmela-Aro, Helsinki University, Finland

In two related investigations, we looked at university students' expectancies and values regarding their studies and how they develop through the first three years of academic studies across five different domains. Questions such as "how interesting, important and useful are the studies," "how difficult are they," "how do students expect to succeed," and "were there consequences for actual academic achievement?" guided our research. According to previous theories (Carver, Scheier & Segerstrom, 2010; Eccles & Wigfield, 1983; 2000), such expectations play in academic context. Our previous study suggested that only interested and engaged students were able to achieve the institutional goals. In this study, we attended to the three year trajectories; 215 out of the 498 original study members participated in the three-year follow-up. Five disciplines were investigated: teacher education, chemistry, law, theology and engineering. The data were collected by a self-report questionnaire over three years and by accumulation of credits retrieved from universities' records. Across the five disciplines, students seemed to start their studies in similar positions: they perceived the first academic year as

positive and valuable, although some differences were found in terms of domain value. When proceeding to the second academic year, some differing trajectories between disciplines were recognized. While students in some domains clearly valued their studies, the students' perceived domain value decreased in others. Educational implications of these trajectories, such as interventions to sustain interest, are discussed.

Symposium Session C 1

17 August 2018 08:30 - 10:00

Nobel 1481-231

Symposium

Motivational, Social and Affective Processes

Utility-Value Interventions: How Effective Are They and When Do They Work?

Keywords: Achievement, Attitudes and beliefs, Engagement, Expectancy-value theory, Measurement, Motivation, Teaching approaches

Interest group: SIG 08 - Motivation and Emotion

Chairperson: Hanna Gaspard, University of Tübingen, Germany

Discussant: Helen Watt, The University of Sydney, Australia

Over the last years, researchers have developed and tested different interventions to foster students' motivation. Grounded in expectancy-value theory (Eccles et al., 1983), utility-value interventions prompt students to make connections between the course material and their lives. A number of studies have shown the potential of these interventions to foster students' motivation and achievement. As researchers and practitioners become increasingly interested in studying or implementing utility-value interventions, we need to know more about the conditions under which these interventions are effective. This symposium is therefore aimed at providing an overview on recent empirical evidence on the effectiveness of utility-value interventions. The four papers included in this symposium will address key questions for continuing research on utility value interventions such as: (1) How effective are utility value interventions?, (2) On which factors does the effectiveness of these interventions rely?, and (3) How can these interventions be implemented in practice? Papers 1 and 2 provide insight into the lessons learned in two large utility-value intervention studies conducted in different contexts. Papers 3 and 4 review the existing empirical evidence with respect to the analytical choices made in different studies and their impact on the results (Paper 3) and the average, moderator, and mediator effects of utility-value interventions (Paper 4).

Implementing Utility-Value Interventions in the Real World

Presenting Author:Chris Hulleman, University of Virginia, United States; **Co-Author:**Yoi Tibbetts, University of Virginia, United States; **Co-Author:**Maryke Lee, Valencia College, United States; **Co-Author:**David Silverman, University of Virginia, United States; **Co-Author:**Kevin Foley, University of Virginia, United States; **Co-Author:**Megan Moran, University of Virginia, United States; **Co-Author:**Michelle Francis, University of Virginia, United States; **Co-Author:**Hadassah Muthoka, University of Virginia, United States; **Co-Author:**Deborah Howard, Valencia College, United States; **Co-Author:**Stephanie Wormington, University of Virginia, United States

This presentation describes lessons learned from a four-year, randomized field study examining student motivation, performance, and persistence in developmental math courses. University researchers and community college faculty have established a strong researcher-practitioner partnership that has facilitated the successful implementation of two social-psychological interventions in developmental math. Through this collaboration, researchers have gleaned key insights into how to successfully implement social-psychological interventions (i.e., utility-value and growth-mindset) in a context where these interventions have not previously been studied (i.e., developmental math courses in community college). For example, intervention materials should be customized to the context. Extensive focus groups, pilot testing, and prototyping has allowed the research team to revise intervention materials to be more relevant for community college students. This project has also underscored the importance of prioritizing relationship building with practitioner partners. Besides holding invaluable insight into student and faculty needs and providing feedback on the relevance of intervention material, our practitioner partners have also ensured successful intervention implementation during extreme external events that could have jeopardized the project's success. The research team will describe their experience building a strong researcher-practitioner partnership, provide two examples of when this partnership was critical to the project's success, and share lessons learned as a result of this long-standing collaboration.

The Efficacy and Effectiveness of a Utility-Value Intervention in Math Classrooms

Presenting Author:Hanna Gaspard, University of Tübingen, Germany; **Co-Author:**Heide Kneißler, University of Tübingen, Germany; **Co-Author:**Cora Parrisius, University of Tübingen, Germany; **Co-Author:**Eike Wille, University of Tübingen, Germany; **Co-Author:**Benjamin Nagengast, Eberhard Karls Universität Tübingen, Germany; **Co-Author:**Ulrich Trautwein, University of Tübingen, Germany; **Co-Author:**Chris S. Hulleman, University of Virginia, United States

Interventions targeting students' utility value have shown a high potential to foster motivation and achievement (Lazowski & Hulleman, 2015). Yet, further research is warranted to better understand how such interventions can be successfully implemented in the classroom setting. In the "Motivation in Mathematics" (MoMa) study, we tested a utility-value intervention in ninth-grade mathematics classrooms in Germany with two consecutive cluster-randomized field trials, testing different steps towards implementation in practice. The intervention consists of a 90-min session in the classroom,

in which students participate in a psychoeducational presentation and relevance-inducing tasks. In a first efficacy trial with 82 classrooms, two intervention conditions with different relevance-inducing tasks were implemented by the research team and compared with a waiting control condition. Positive effects were found for one of the intervention conditions on students' value beliefs, competence beliefs, effort, and achievement in math until five months afterwards (Brisson et al., 2017; Gaspard et al., 2015). In a second effectiveness trial with 78 classrooms, we aim at testing whether the positive effects of the intervention (using an optimized version of the more successful relevance-inducing task) can be replicated when the intervention is implemented (a) by master's students, who are trained as part of a two-semester course on motivation interventions, or (b) by the regular math teachers, who received a three hour training on the specific content of the intervention. The two intervention conditions will be compared with respect to the quality of the implementation in the classroom and their effects on students' motivation and achievement.

Data Analysis of Utility-Value Interventions: Is it Consistent? Does That Matter?

Presenting Author:Emily Rosenzweig, University of Wisconsin-Madison, United States; **Co-Author:**Benjamin Nagengast, Eberhard Karls Universität Tübingen, Germany

Utility-value interventions, which ask students to make connections between their course material and their lives, have improved students' value, effort, and course achievement in many academic subjects. However, there is much potential variation in how researchers can choose to analyze and present data from these interventions. It is important to examine whether such variations exist or change the estimates of utility-value interventions' effects, in order to determine these interventions' robustness and replicability. To that end, we reviewed 27 previously-published utility-value intervention studies for the statistical models, covariates and moderator decisions made by researchers. Then, we analyzed archival data from the Motivation in Mathematics intervention (MoMa; Gaspard et al., 2015), to explore whether the estimates of the intervention's effects on utility value changed if we altered the statistical models and covariates included in analyses. Our review revealed much variability in the analytical choices made in prior utility-value intervention studies, particularly in choices of moderators and covariates. In data re-analysis, estimates of the MoMa intervention's effects did not change much as a function of changing analytical models, but effects were smaller when controlling for pre-test levels of utility value. Our review leads us to recommend that researchers pre-register their analytical model choices before beginning data analyses, and that they test for moderation by prior competence-related beliefs and report results after controlling for students' prior scores on outcome variables, when this information is available.

A Meta-Analytic Synthesis of Utility-Value Interventions in Education

Co-Author:Yoi Tibbetts, University of Virginia, United States; **Co-Author:**Chris Hulleman, University of Virginia, United States; **Co-Author:**Stephanie Wormington, University of Virginia, United States; **Co-Author:**Mary Rose Philipoom, University of Virginia, United States

While utility-value interventions have become increasingly common in educational settings, questions remain regarding the extent to which participating in the intervention benefits students, for whom the intervention is most effective, and through which mechanisms the intervention may affect relevant academic outcomes. This presentation will review findings from a meta-analytic review of utility-value interventions. This review examines not only the overall effect of the intervention, but also key moderators including individual, contextual, implementation, and psychological factors that promote effectiveness. When it is completed, the review will include both published and unpublished literature. In this proposal, we present the results from 18 published studies that tested a utility-value intervention in an educational context. Our initial findings, which included 7,319 students indicated an overall positive effect on student outcomes (i.e., student interest, value, engagement, and performance), with an average effect size of 0.33. Future analyses, which will be presented at the conference, will incorporate unpublished field studies, examine moderation effects by individual and contextual factors, and explore mediation effects as a function of theoretically-derived psychological variables and intervention mechanisms. Together, findings will inform both research and practice on how and when to incorporate utility-value intervention activities into educational settings.

Symposium Session C 2

17 August 2018 08:30 - 10:00

Nobel 1481-237

Symposium

Motivational, Social and Affective Processes

Implicit Teacher Bias for Minority Students: Links to instructional practices and student outcomes

Keywords: Achievement, Attitudes and beliefs, Emotion and affect, Teaching approaches

Interest group: SIG 08 - Motivation and Emotion

Chairperson: Christine Rubie-Davies, University of Auckland, New Zealand

Discussant: Stuart Karabenick, University of Michigan, United States

Teachers' biased attitudes toward minority students can potentially lead to decreased opportunity to learn and associated declines in student motivation. Although the role of explicit teacher expectations on student outcomes is well established, only recently have researchers started examining the impact of teachers' implicit biases toward minority students on their teaching behaviors and student outcomes. This session will: 1. Examine the theoretical frameworks and

methodological advances in the field of implicit social-cognitions and implications for the study of pre- and in-service teachers' implicit attitudes (IA) in relation to their teaching practices and student outcomes. 2. Conceptualization and testing of new relations between pre- and in-service teachers' IA, their classroom behaviors and teaching practices. The papers will expand our knowledge on how biased IA, primed automatically in the classroom context, can disadvantage ethnic minority students and will demonstrate the importance of enhancing teachers' self-awareness through targeted professional development. The symposium will bring together researchers from the Netherlands, Germany, the US and New Zealand who are initiating ground-breaking research in this important new field of psychological research.

Research Contributions to Implicit Measures of Teachers' Attitudes, Practices, and Student Outcomes

Presenting Author:Lisette Hornstra, Utrecht University, Netherlands; **Co-Author:**Eddie Denessen, Faculty of Social and Behavioural Sciences, Leiden University, Netherlands; **Co-Author:**Linda van den Bergh, Fontys Opleidingscentrum Speciale Onderwijszorg, Netherlands

The aim of this introductory overview is to describe the theoretical and methodological underpinnings of the use of implicit measures of teacher attitudes in educational research, and to discuss challenges for research on implicit teacher attitudes. With explicit (i.e. self-reported) attitude measures, problems arise due to social desirability or the unawareness of teachers regarding their stereotypical attitudes. The use of implicit attitude measures to study teacher biases only began in 2010. A literature search resulted in 20 papers published in this field. The research on the effects of implicit attitudes shows predictive validity regarding multiple outcomes, such as teacher expectations, teaching-related beliefs, and student motivation and academic outcomes. The use of implicit measures of teacher attitudes contributes additional understandings to the empirical research on self-fulfilling prophecy effects. Hence, it is important to discuss the current state of this field and to examine potential directions for future research in this rather new field of research. For example, future research might focus more on the translation of biased teacher attitudes into observable teacher-student interactions to understand how the effects of implicit teacher bias are established and what this might mean for student academic and motivational outcomes.

Pre-Service Teachers' Practices and Implicit and Explicit Attitudes toward Minority Students

Presenting Author:Revathy Kumar, University of Toledo, United States; **Co-Author:**Nurit Kaplan Toren, University of Haifa and Oranim Academic College of Education, Israel

According to the theory of planned behaviour, people behave in concert with their explicit attitudes. In contrast, implicit attitudes operate outside the realm of conscious awareness, stem from cultural associations, and are easily accessible. Dual-process attitude theories integrate the two perspectives to demonstrate that behaviour is a consequence of both conscious and automatic mental processes. While some preservice teachers may report their true attitudes, positive or negative, on surveys, the social undesirability of endorsing negative attitudes toward minorities may bias others to report attitudes compliant with social norms. In contrast, Implicit Association tests (IATs) capitalize on automatic associations and are effective in predicting IA in contested domains such as race. European-American preservice teachers ($N = 114$; Female 73%) from a mid-western university in the United States participated in the IAT and a web-based survey. The IAT measured implicit attitudes toward European-American relative to African-American students. The survey included explicit attitudes (negative) toward minority students, feelings of cultural responsibility and efficacy to meet the needs of diverse students, intention to promote respect, and proposed mastery- and performance- focused instructional practice measures. Cluster analysis identified three groups. The first group who showed little endorsement of negative attitudes—explicit and implicit—towards minority groups, were much more likely than the other two groups (moderate and strong bias) to feel efficacious, culturally responsible, promote respect, endorse mastery-focused practices, and significantly less likely to endorse performance-focused practices. These findings have important implications for educating preservice teachers.

Teachers' and Preservice Teachers' Implicit Stereotypes and Attitudes toward Ethnic Minorities

Presenting Author:Sabine Glock, Bergische Universität Wuppertal, Germany; **Co-Author:**Hannah Kleen, School of Education, Bergische Universität Wuppertal, Germany

Ethnic minority students experience many disadvantages during their schooling. One mechanism that can play a pivotal role in judgments about students is teacher expectations, which are related to stereotypes and to attitudes, both operating on an explicit and implicit level. The aim of this study was the investigation of teachers' explicit attitudes, implicit stereotypes and implicit attitudes toward ethnic minority students. Implicit stereotypes often work outside of conscious awareness and influence perception regardless of people's motivation to control prejudice and regardless of whether these implicit stereotypes are reflected in explicit stereotypes. The same differentiation between implicit and explicit stereotypes also holds for attitudes. Among a sample of 85 teachers, Study 1 investigated implicit stereotypes regarding ethnic minority students. In Study 2, a total of 113 teachers participated. A personalized variant of the IAT was used to assess implicit attitudes, and teachers were also confronted with a computerized spontaneous judgment task. Study 1 showed that teachers implicitly associated ethnic minority students with negative working and learning behaviours and Study 2 revealed negative implicit attitudes. Multiple regression analysis showed that teachers with more negative implicit attitudes judged ethnic minority students less favourably. Explicit attitudes were positive in both studies. This research highlights the need for implicit measures in educational research and shows that teachers' judgments are related to their negative implicit attitudes. Thus, when discussing the disadvantages that ethnic minority students face in educational systems, the

contributing role of teachers' implicit stereotypes and attitudes should not be neglected.

The Implicit Attitudes of Pre-service Teachers: Are they Biased and Can They Change?

Presenting Author:Christine Rubie-Davies, University of Auckland, New Zealand; **Co-Author:**Jason Stephens, The University of Auckland, United States; **Co-Author:**Elizabeth R Peterson, University of Auckland, New Zealand

This study examined the implicit biases pre-service teachers held concerning the academic achievement of the ethnic majority compared to indigenous group members. The study also investigated whether teacher education courses focused on equal opportunities for the indigenous group in society and education decreased preservice teachers' implicit biases over three years of pre-service teacher education. Teacher expectations have typically been measured explicitly but such responses could reflect social desirability biases. However, some recent research has shown that in mathematics, teachers' implicit (but not explicit) biased expectations predicted student achievement. In the current study, first year pre-service teachers ($N=313$) completed an Implicit Association Test (IAT). A smaller sample of the same pre-service teachers ($n=66$) completed the IAT test in the second and third years of their teacher education programme. Analyses showed that at the beginning of the teacher education programme, European, Pacific Island and Asian pre-service teachers all favored European students more so than did Māori pre-service teachers. However, mean implicit biases decreased from the first year of the preservice programme to the third year, although pre-service teachers still favored European over Māori students. Although implicit biased expectations remained after three years, they were attenuated, thus indicating that targeted professional development courses may reduce implicit teacher biases. It is important to reduce teacher bias in order to promote student motivation and achievement outcomes.

Symposium Session C 3

17 August 2018 08:30 - 10:00

Nobel 1481-341

Symposium

Motivational, Social and Affective Processes

Emotions in Learning Processes: Further Data on Achievement Emotions' Characteristics and Correlates

Keywords: Achievement, Attitudes and beliefs, Educational attainment, Emotion and affect, Engagement, Motivation, Self-efficacy, Teaching approaches

Interest group: SIG 08 - Motivation and Emotion

Chairperson: Daniela Raccanello, University of Verona, Italy

Chairperson: Francisco Peixoto, Portugal

Discussant: Eleftheria Gonida, Aristotle University of Thessaloniki, Greece

The interest on emotions in academic settings has burgeoned in the last two decades as research has shown that other emotions besides anxiety play an important role for learning processes. Empirical findings have revealed the mediating role of emotions between context and motivational variables and learning outputs. In this symposium we present recent findings showing the role of a wide range of emotions in different academic settings from elementary school students to future primary school teachers and comprising also middle and high school students, focusing on both emotions' characteristics and correlates. The paper of Wosnitza, Nolden, Karabenick, and Delzepich focuses on the role of emotions on university students' drop-out and study satisfaction. The main goal of Raccanello, Hall, and Burro's paper is to discuss the salience of achievement emotions and their perceived antecedents for different age students at different levels of schooling. Woods-McConney's presentation has as main goal to analyse the interplay between emotions and self-efficacy in the teaching of science in pre-service elementary teachers. The last presentation, from Peixoto and Mata, focuses on the stability of achievement emotions in middle school students and the role played by teachers for this stability. The presentations of this symposium highlight the role of emotions for motivational processes in a wide range of different learning contexts. Their findings can inform professionals of education and decision makers about the importance of taking into account several features of achievement emotions in the learning context in order to have more adapted learners.

The Influence of Emotions on Drop-out Tendency and Study Satisfaction

Presenting Author:Marold Wosnitza, RWTH Aachen University, Germany; **Co-Author:**Philipp Nolden, RWTH Aachen University, Germany; **Co-Author:**Stuart Karabenick, University of Michigan, United States; **Co-Author:**Ralph Delzepich, RWTH Aachen University, Germany

Student drop-out rates in Bachelor degree programs in Germany are up to 29 percent. In a prior study, we identified in the literature more than 50 subjectively perceived and objectively existing factors that can lead to drop-out from Higher Education. In this presentation, we focus on the mediating influence of emotions on drop-out tendency and study satisfaction, which are well known predictors of Higher Education drop-out. 492 German University students (51% females) from different universities and different programs of study participated in this online-survey. Structural equation modelling shows only little to no direct influence from contextual and individual factors on the criteria drop-out tendencies and study satisfaction. Instead, the impact of cognitive evaluations on drop-out tendencies is mediated by negative emotions (true for job-perspective, supportive teacher-student relationship, teacher neglect, negative help-seeking attitude) while positive

emotions mediate effects of the perception of study organisation and study atmosphere on study satisfaction. Besides emotions, a crucial factor is the impression of the study program as a stimulating environment fostering intellectual development, which predicts drop-out tendencies negatively as well as study satisfaction positively. Concerning the explained criteria, study satisfaction has a negative effect on drop-out tendencies. The results of this study will, on the hand, inform the development of a self-reflection and support tool which is currently developed for 7 countries in Europe. On the other hand, the results can inform decision makers in higher education and their efforts to support students at risk of Higher Education drop-out.

Salience of Elementary, Middle, and High School Students' Achievement Emotions and Antecedents

Presenting Author:Daniela Raccanello, University of Verona, Italy; **Co-Author:**Rob Hall, Environmetrics, Australia; **Co-Author:**Roberto Burro, University of Verona, Italy

Theoretical models such as Pekrun's control-value theory (Pekrun & Perry, 2014) have recently given particular impetus to the research on achievement emotions and their antecedents. Notwithstanding the large amount of studies on these issues, scarce attention has been paid to the use of instruments different from structured data collection techniques, involving also young students. Therefore, we examined individual differences in elementary, middle, and high school students' achievement emotions and their antecedents, using a qualitative approach to investigate their salience and the relations between them. The subjects were 149 fourth, seventh, and eleventh-graders (55% females), who participated in semi-structured interviews focused on how they usually felt when facing literacy or mathematics, and on their perception of the underlying antecedents that triggered the emotions. A Generalized Linear Mixed Models analysis indicated higher salience of enjoyment and relaxation compared to a range of other positive and negative emotions. There were class level differences in terms of a higher number of spontaneously reported emotions for eleventh-graders compared to younger students. Using a Self-Organizing Maps algorithm, we identified five groups of students, each characterized by a different pattern of emotions. Applying Multiple Correspondence Analysis revealed differences between groups in the pattern of perceived antecedents. Acknowledging limitations, these findings have particular value considering the role played by early emotional competence in predicting later school performance. They also help inform our understanding of children's "emotional worlds" with a view to providing appropriate support to foster general emotional wellbeing—a central role for schools.

Emotions and Teacher Education Students' Self-Efficacy for Teaching Primary Science in Australia

Presenting Author:Marold Wosnitza, RWTH Aachen University, Germany

Primary school science is an area where primary teachers typically have less subject knowledge and experience in formal science coursework. This can lead to less efficacy in teaching science and results in a limited amount of time per week spent teaching science. If primary school teachers do not feel efficacious to teach the subject and not well supported, the science simply does not get taught. This presentation will focus on students studying to become primary school teachers in Australia. The primary research question of the presentation is: *How do these students view their capacity to teach science and how are emotions and motivation associated with their teacher self-efficacy?* In a pilot study with approximately 100 teacher education students in their last year of a teacher education program it became clear that emotions and subject knowledge were predicting self-efficacy to teach science while motivation (achievement motivation and interest) did not have a significant influence. The strongest predictor was the abundance of anxiety followed by enjoyment. Further study was conducted with approximately 440 students in their first year of the teacher education program. Initial results of the data at the beginning of a science content course also show that abundance of anxiety was the primary predictor. At the end of the science content course, abundance of anxiety and science subject knowledge were predictors for self-efficacy in teaching science. At the presentation, more details and in-depth analysis of the data of the main study will be presented.

Achievement Emotions Stability – Effects of Maintaining or Changing the Teacher

Presenting Author:Francisco Peixoto, ISPA - Instituto Universitário / CIE - ISPA (Research Center in Education), Portugal; **Co-Author:**Lourdes Mata, ISPA - Instituto Universitário / CIE - ISPA (Research Center in Education), Portugal; **Co-Author:**Lara Forsblom, CIE - ISPA; ISPA - Instituto Universitário, Switzerland

Control-value theory provides a social-cognitive perspective of achievement emotions. It maintains that control appraisals (e.g., competence beliefs) and value appraisals (perceived value of activities or outcomes) are critical antecedents of achievement emotions. Control-value theory also states that the relations between antecedents, emotions, and effects are dynamic processes sustained by reciprocal causation over time. In this study we aimed to study the relationships between value and control appraisals with emotions during three years. A second aim was to analyze the effects of teacher change in the stability of emotions and in the interplay between emotions and control-value appraisals. Participants were 1060 students from fifth and seventh grade followed during three years. Students responded to measures of perceived competence, value, and emotions. Structural Equation Models relating control-value appraisals (perceived competence and values) and emotions in year 1, year 2, and year 3 were tested separately for each emotion. Results showed that emotions felt during math classes are relatively stable over time and that perceived competence influences emotions in the following year. Findings also showed that for positive emotions maintaining the teachers leads to higher stability in emotions.

Symposium Session C 4

17 August 2018 08:30 - 10:00

Nobel 1483-344

Symposium

Motivational, Social and Affective Processes

The network approach in motivation research - psychological, social and similarity-based networks

Keywords: Achievement, Attitudes and beliefs, Emotion and affect, Engagement, Interest, Motivation, Self-efficacy, Self-regulation, Social motivation, Teaching approaches

Interest group: SIG 08 - Motivation and Emotion

Chairperson: Thea Peetsma, University of Amsterdam, Netherlands

Discussant: Fani Lauermann, University of Bonn, Germany

In researching motivation, different constructs that vary between actors (e.g., interest, self-efficacy) as well as various actors themselves (e.g., teachers, peers) are important to take into consideration. Interactions between these constructs or actors form complex (social) systems in which they all influence each other, and the effect of one depends on the state of all the others. Network models can be used to visualize and subsequently analyze these interactions. The current symposium's aim is to use the multifold opportunities network approaches offer in researching motivation. The four studies included in this symposium are all concerned with different motivation-related questions and use various network perspectives to approach their research problems. The first two studies use a *psychological* network approach, whereby causal relations between indicators are estimated. The first explores multicultural classroom dynamics and their influence on ethnic minority and majority students' motivation, showing the importance of social integration for ethnic minority students. The second applies the *psychological* network approach to the PISA 2015 data of two countries to illuminate differences in the science interest structure between countries. The third study uses a longitudinal *social* network approach, whereby relationships between individuals are key; and investigated the effect of classroom goal structure (achievement vs. performance) on the selection and influence of friends in relation to help-seeking tendencies. The last study, about the implementation of formative assessment to improve students' motivation and achievement, uses a *similarity-based* network approach to detect groups of teachers based on their answers on a self-efficacy questionnaire.

The Role of Friends in Help-seeking Tendencies during Early Adolescence

Presenting Author: Huiyoung shin, Oklahoma State University, Korea, Republic of

Research has evidenced that help-seeking is an important self-regulatory strategy of learning. However, the role of friends in help-seeking has been underexplored. The current study examined the longitudinal associations between early adolescents' selection and influence of friends and help-seeking tendencies, and whether students' perceived classroom goal structures moderate these associations among fifth and sixth graders (N=736 at w1, N=677 at w 2). Analyses were conducted using longitudinal social network analysis (RSiena; Stochastic actor-based modeling), which incorporates information about friend social networks and individual characteristics at multiple time points and simultaneously estimates structural network features (e.g., size and reciprocity), selection and influence of friends. Results indicated that friends were similar to each other in adaptive as well as avoidant help-seeking tendencies, and this similarity was explained by selection and influence of friends, controlling for students' gender and level of achievement. Students chose friends who were similar in adaptive help-seeking tendencies to themselves. Friends influenced one another on their avoidant help-seeking tendencies over time. Further, students' perceived classroom goal structures moderated selection and influence of friends in both adaptive and avoidant help-seeking tendencies. Students who perceived higher mastery emphasis in their classroom were more likely to select friends who seek adaptive help, and were more influenced by friends' adaptive help-seeking behavior. Over time, these students displayed increased adaptive and decreased avoidant help-seeking tendencies. Conversely, students who perceived higher performance emphasis in their classroom were more likely to select friends who avoid seeking help. Over time, these students displayed increased avoidant help-seeking tendencies.

Psychometric network models to illuminate cross-national differences in science interest structure

Presenting Author: Maien Sachisthal, University of Amsterdam, Netherlands; **Co-Author:** Brenda Jansen, University of Amsterdam, Netherlands; **Co-Author:** Thea Peetsma, University of Amsterdam, Netherlands; **Co-Author:** Jonas Dalege, University of Amsterdam, Netherlands; **Co-Author:** Han L.J. van der Maas, UvA, Netherlands; **Co-Author:** Maartje Raijmakers, University of Amsterdam, Netherlands

In this study, we introduce a causal science interest network (CSIN) and establish that science interest can be represented and analyzed using a psychological network approach. More specifically, we extended the Causal Attitude Network model, which has been developed to represent attitudes as networks of evaluative reactions (Dalege et al., 2016), to be applicable in the context of science interest. We applied the CSIN to the PISA 2015 data of two countries, which differ importantly on Inglehart's and Baker's (2000) macro-cultural dimensions, traditional vs secular-rational orientations, and survival vs self-expression values, that is, the Netherlands and Colombia. Applying the CSINs of the two countries, we modeled two important theoretical assumptions of science interest: a) the mutual interactions between interest-related constructs hypothesized to underlie the development in interest and b) variation in domain specificity of interest. Using the CSIN not only allowed us to model these theoretical assumptions, but we were also able to replicate earlier findings of the literature, namely that enjoyment is central within the network of interest-related constructs and that important structural differences exist in the interest network across countries. The network approach is thus sensitive to structural differences in science

interest across countries. Importantly, the structural differences between countries do not only have theoretical implications but also practical ones, as they can indicate which indicators are most promising to target in an intervention aimed at increasing science interest.

Exploring multicultural classrooms dynamics: A network analysis.

Presenting Author:Ceren Abacioglu, University of Amsterdam, Netherlands; **Co-Author:**Adela Isvoranu, University of Amsterdam, Netherlands; **Co-Author:**Maykel Verkuyten, University Utrecht, Netherlands; **Co-Author:**Jochem Thijs, University Utrecht, Netherlands; **Co-Author:**Sacha Epskamp, University of Amsterdam, Netherlands

Student outcomes may result from a complex interplay of social and psychological dynamics in the classroom. Students' relationships with peers and teachers, for instance, strongly influence their motivation to engage in learning activities. Ethnic minority students, however, are often victimized in schools, and their educational achievement lags behind that of their majority group counterparts. On this account, the aim of the present study was to explore teachers' approach to multiculturalism as a possible factor of influence over students' motivation in relation to their peer relationships in European classrooms. Grounded on an ecological framework, the current study viewed classrooms as complex social systems in which all actors (students and teachers) in a classroom influence each other and the effect of one depends on the nature of the other; and, utilized the novel methodology of estimating *psychological networks* in order to map out multicultural classroom interactions. Results indicate that teachers' approach to multiculturalism might constitute a distal (main) factor of influence on both majority and minority students' motivation. In addition, social integration might constitute a more proximate (more immediate) factor of influence for ethnic minority group children, signaling a possible process of mediation. The hypothesis generating nature of our study speaks to the need for further investigating the influence of teachers' approach to multiculturalism on student motivation in relation to peer relationships.

Self-efficacy development in local teacher working groups – beyond simple gains

Presenting Author:Jesper Bruun, Department of Science Education, Denmark; **Co-Author:**Robert Evans, University of Copenhagen, Netherlands

In a European project about assessment, participating countries made use of a format for teacher-researcher collaboration, called local working groups (LWGs). Each LWG consisted of approximately 20 teachers and 3 researchers. The activities in each LWG involved discussions and reflections upon implementation of new assessment formats. One key aim of the LWGs was a close collaboration between teachers and researchers to develop teachers' self-efficacies in relation to their use of new formative assessment practices. This article aims to investigate the degree to which the LWG design was successful in changing teachers' self-efficacies. The research question is: to what extent does working with formative assessment strategies in collaboration with researchers and other teachers affect individual self-efficacies of practicing teachers in different educational contexts? Using a pre-post-design with control group, a 12-item teacher questionnaire, adapted from a commonly used international instrument for science teaching self-efficacy, showed an overall significant gain for participants but not for non-participants, and there was item-by-item variation. For fine-grained analyses, we employed a novel method for network analysis, where participants are linked based on the similarities of their answers. Teachers were linked in the network based on the overlap of their answers. Thus, teachers answering similarly were connected in the network. A contemporary algorithm for partitioning the network extracted groups of teachers based on similarity. This procedure revealed that some groups of participants did not change their self-efficacies. Participants from one LWG were overrepresented in these groups, which might have a culturally embedded explanation.

Symposium Session C 5

17 August 2018 08:30 - 10:00

Nobel 1483-251

Symposium

Motivational, Social and Affective Processes

II. The development of interest in higher education: What parts of this process can we influence?

Keywords: Developmental processes, Educational attainment, Emotion and affect, Engagement, Expectancy-value theory, Goals, Interest, Motivation

Interest group: SIG 08 - Motivation and Emotion

Chairperson: K. Ann Renninger, Swarthmore College, United States

Organiser: Judith Harackiewicz, University of Wisconsin-Madison, United States

Discussant: Niels Dohn, Aarhus University, Denmark

In this double-session symposia, researchers studying the development of interest in higher education will draw on at least two studies to address the question: How do students in higher education explore multiple interests, commit to interest, and stay interested over time, and what parts of this process can we influence? Higher education places different demands on students than they have experienced in primary or secondary schooling. Typically, university classes differ from earlier schooling with lectures commonly enrolling hundreds of students, opportunities to make choices about courses and class attendance, and, in some countries, they relocate and are immersed full time in a new campus environment. These differences have resulted in models of learning that require self-regulation, and in which interest plays a critical role in course choices, selection of academic major and career plans (see Zusho, 2017). Although much can be learned from

research on primary and secondary school children's interest, research on university students' interest must consider the affordances of the particular socio-cultural context of higher education. Presenters in Symposia I will address the session question by examining the development and maintenance of interest in this important context, with a focus on the development of interest, and those in Symposium II will extend the discussion of Symposium I by considering motivational interventions and the contextual determinants of interest. Symposium participants include a mix of science educators and motivation researchers, working in a variety of higher education contexts, allowing exploration of critical issues from a variety of perspectives.

Interest Development Within Teaching and Learning Cultures in University STEM Programs

Presenting Author: Maria Vetleseter Boe, University of Oslo, Norway

Academic integration into the discipline culture is central for students' well-being and success when entering higher education. The first-year experience is important in this respect, for example to reduce the observed expectation-experience gap for first-year science, technology, engineering and mathematics (STEM) students and the risk of drop-out. For students to feel successfully integrated academically, they need to be able to develop their subject-related interests within the university teaching and learning culture. In this paper, I draw on two related Norwegian studies to investigate how teaching and learning cultures support or hinder students in their interest development in STEM. The first study investigated how students from traditional upper secondary physics classrooms related to an innovative approach to quantum physics. The study demonstrated that different physics teaching and learning activities hold different implicit expectations for how students develop their interest and self-efficacy. The second study uses longitudinal interviews with nine students who were originally secondary physics students within the cohort of the first study, and have since moved on to tertiary education, mostly university STEM programs. This study showed that similar classroom experiences can influence students' interest development very differently. Drawing on these two studies, I use Ulriksen's (2009) *Implied student* to discuss how the teaching and learning cultures in university STEM programs can best support interest development for a diverse range of students.

STEM Interest and Instructional Context

Presenting Author: K. Ann Renninger, Swarthmore College, United States; **Co-Author:** Lynne Schofield, Swarthmore College, United States

When students have similar demographic characteristics (preparation, SAT scores, etc.) and enter higher education with the intention of majoring in a STEM discipline, but then decide not to, faculty members wonder whether there is something more that they could be doing—and, if so, what? This contribution will address the session question using findings from two studies designed and undertaken to address educators' questions about who continues to pursue STEM, and what is needed to support those who intended to do so, but do not. The first study ($N = 4182$) used an online survey which included an open-ended survey item to explore the relation among factors that the educators considered to be important (e.g. interest, instructional practices, career plans and choices, motivational orientation), and to which individual literatures have pointed, but that are not typically assessed together. In the second study, institutional data, online survey, and in-depth unstructured interviews were used to allow consideration of the relation among interest, self-concept of ability, and pedagogical needs of a cohort of 32 students who entered higher education intending to pursue engineering. Findings from the two studies suggest that the relation between students' interest in a STEM discipline and its match to the characteristics of the instructional context warrants continued attention in the effort to determine whether and why students in higher education explore multiple interests, commit to interest and stay interested over time. Students with less- and those with more- developed interest differ in their instructional needs.

Development of Personal Interest in Science: Contextual and Individual Factors

Presenting Author: Lisa Linnenbrink-Garcia, Michigan State University, United States; **Co-Author:** Anthony Perez, Old Dominion University, United States; **Co-Author:** Kristy Robinson, Michigan State University, United States; **Co-Author:** Michael Barger, University of Illinois, United States; **Co-Author:** Anna Sansone, Michigan State University, United States; **Co-Author:** Lisa Huettel, Michigan State University, United States

Many students enter college with an interest in studying science, technology, engineering, or mathematics (STEM) fields. However, fewer than half of these students complete a degree in a STEM discipline (President's Council of Advisors on Science and Technology [PCAST], 2012). One potential factor contributing to this "leaky pipeline" is that the undergraduate context fails to support and sustain students' interest in STEM fields. Two studies are presented to address the question of how to support interest development in STEM fields among undergraduates. Study 1 utilized longitudinal survey data to examine changes in personal interest (PI) in science across four years of college ($N = 1,170$). Latent growth curve analyses indicated that PI declined across college; parallel growth analysis suggested declines in PI were associated with parallel declines in the degree to which students actively explored science careers. Moreover, perceived academic competence in the second year positively predicted the slopes of PI and science career exploration. Study 2 evaluated the impact of a classroom intervention designed to introduce engineering undergraduates to solving real world problems (Grand Challenges) in engineering ($N = 873$) on situational interest (SI) and changes in PI across one semester. Results varied for introductory and advanced engineering students such that the instructional intervention was only associated with SI and, indirectly changes in PI, among advanced students. SI, however, was significantly associated with changes in PI for both introductory and advanced students. Implications for supporting interest development during college are discussed.

Promoting Long-term Interest with Utility Value Interventions

Presenting Author:Judith Harackiewicz, University of Wisconsin-Madison, United States; **Co-Author:**cameron hecht, University of Wisconsin-Madison, United States; **Co-Author:**Stacy Priniski, University of Wisconsin - Madison, United States; **Co-Author:**Elizabeth Canning, Indiana University, United States; **Co-Author:**Chris Rozek, University of Chicago, United States

There is great concern about the number of students pursuing courses in science, technology, engineering, and mathematics (STEM) in universities around the world. We discuss the effects of two motivational interventions to promote the perceived utility value of STEM courses, and examine long-term effects on academic performance, interest, course-taking and academic majors over time. In Study 1, we evaluated the effects of an intervention designed to help parents convey the importance of mathematics and science courses to their high-school-aged children, and followed the teens through university. A prior report on this intervention showed that it promoted STEM course-taking in high school; in the current follow-up study, we found that greater STEM course-taking was associated with increased STEM career pursuit (i.e., STEM career interest and the number of college STEM courses taken) five years after the intervention. In Study 2, we tested the long-term effects of a utility-value intervention designed to improve performance in an introductory biology course for majors in the biomedical sciences. A previous evaluation indicated that this intervention improved performance for all students in the class, on average, and particularly for disadvantaged students, reducing achievement gaps in the course. In this follow-up study, we tested whether these positive effects translated into long-term persistence in a biomedical major throughout college, and found that course grades were a strong predictor of long-term persistence over a 2-year follow-up. These findings indicate that utility value interventions can promote interest and retention in STEM fields throughout college.

Symposium Session C 6

17 August 2018 08:30 - 10:00

Nobel 1481-264

Symposium

Motivational, Social and Affective Processes

Can learning situations be positive and negative at the same time?

Keywords: Developmental processes, Emotion and affect, Engagement, Expectancy-value theory, Motivation

Interest group: SIG 08 - Motivation and Emotion

Chairperson: Julia Dietrich, Friedrich Schiller University of Jena , Germany

Discussant: Kou Murayama, University of Reading, United Kingdom

This symposium brings together three studies that examine academic motivation and emotions in the moments in which they occur, that is, through experience sampling or intensive data. This enables researchers to address important research questions: First, to what extent are motivation and emotions alterable through micro-changes in specific learning situations? A growing research body suggests that situational fluctuations are quite substantial (e.g., Martin et al., 2015), forming the basis for further questions. Which sorts of motivation and emotion tend to occur together? Further, which malleable characteristics of a situation can change motivation and emotions? And finally, how do stable motivational patterns emerge out of repeated experiences? The studies in this symposium seek answers to these questions. From a practical perspective, this can offer insights into how teachers and educators can foster and sustain motivation and adaptive emotional experience in specific learning tasks for different kinds of students. The contributions focus on flow (Moeller et al.), academic emotions (enthusiasm, anxiety, and boredom; Ketonen et al.) and expectancies, task values, and costs (Dietrich et al.). One finding emerged in all three studies: Positive and negative motivation and emotions can occur in the same learning situation.

References

Martin, A. J. et al. (2015). Real-time motivation and engagement during a month at school: Every moment of every day for every student matters. *Learning and Individual Differences*, 38, 26–35.

States of flow: Not beyond anxiety, but right at the heart of it?

Presenting Author:Julia Moeller, Yale University, United States; **Co-Author:**Zorana Ivcevic, Yale Center for Emotional Intelligence and Yale Child Study Center, United States; **Co-Author:**Marc Brackett, Yale Center for Emotional Intelligence and Yale Child Study Center, United States; **Co-Author:**Arielle White, Yale Center for Emotional Intelligence and Yale Child Study Center, United States

Flow is defined as situations of high challenges and high skills and considered optimal motivation, in which the learner experiences absorption, strong concentration, and positive emotions. While the flow theory states that anxiety is low in flow states, the theory of challenge and threat states in athletes (TCTSA; Jones et al., 2009) predicts that all challenging situations, including flow, elicit anxiety, and that the skill level determines whether this anxiety is motivating / beneficial, or inhibiting / harmful.

This study tested both theories against another, using experience sampling method data from 472 U.S. high school

students. Students received ESM surveys at school on their own phones.

Results showed that both flow states (defined as situations of high skills and high challenges) and anxiety states (defined as situations of low skills and high challenges) were characterized by elevated levels of stress. Moreover, 41.3% of the 'flow states' and 55.0% of the 'anxiety states' were characterized by elevated anxiety (scores of 3 and 4 on a scale from 1 – not at all to 4 very much). In contrast, elevated anxiety was much less frequent in states of low challenges ('relaxation' –high skills, low challenges, and 'apathy' –low skills, low challenges). Thus, the results support more the predictions made by the TCTSA than those made by the flow theory. We discuss methodological implications and show that the data replicate in a second dataset used in previous flow studies.

University students' mixed emotion states and academic emotion profiles

Presenting Author:Elina E. Ketonen, University of Helsinki, Finland; **Co-Author:**Katariina Salmela-Aro, Helsinki University, Finland; **Co-Author:**Kirsti Lonka, University of Helsinki, Finland

This study examined 1) whether different types of academic emotions co-occur within educational situations and 2) is the occurrence of these mixed emotion states related to the context of the activity and individual differences between students. The data were collected via mobile phone based experience sampling. Five times a day over two weeks, university students (N=40) reported the content and context of their current activity (only academic activities were analyzed) and appraised that activity in terms following academic emotions: enthusiasm (positive activating state), anxiety (negative activating state) and boredom (negative deactivating state). The data represent a hierarchical two-level structure with situations (Level 1, N=1113) nested within students (Level 2, N=40). Multilevel latent profile analysis was used to identify the co-occurrence of academic emotions within situations (on Level 1) and to identify student profiles (on Level 2). Results revealed four different patterns of emotions within situations: high enthusiasm (60.2%), high anxiety-moderate enthusiasm (16.4%), high boredom-anxiety (6.8%), and moderate-low all emotions (16.6%). High enthusiasm was more often experienced in informal learning environments, whereas high boredom-anxiety combination emerged in lecture, small group and library contexts. Finally, there were also differences between students in the occurrence of the emotion states. Four student profiles were detected and named based on the manifestation of situational experiences: Enthusiastic (n=14), Anxious-enthusiastic (n=6), Anxious-bored (n=5) and Bored/moderate emotions (n=15) profile. Findings provide support for the importance of examining students' (mixed) academic emotion states contextually and add important contribution to largely variable-oriented literature on academic emotions.

In-the-moment profiles of expectancies, task values, and costs

Presenting Author:Julia Dietrich, Friedrich Schiller University of Jena, Germany; **Co-Author:**Julia Moeller, Yale University, United States; **Co-Author:**Jiesi Guo, Australian Catholic University, Australia; **Co-Author:**Jaana Viljaranta, University of Eastern Finland, Finland; **Co-Author:**Baerbel Kracke, University of Jena, Germany

This study investigated in-the-moment profiles of expectancies, task values, and costs within learning situations (n = 2,221) during a university lecture in a sample of n = 155 undergraduate students across one semester. We moreover examined the associations of such situational motivation profiles with changes in students' dispositional motivation. Results of multilevel latent profile analysis revealed three situational profiles with symmetric levels of expectancies, values, and costs, and one profile reflecting motivating but costly situations. This suggests that students experience similar expectancies and values, and opposite levels of costs in most learning situations, while a few learning situations are characterised by positive (expectancies, values) and negative motivation (costs) at the same time. Our results further showed significant associations of situational profiles with students' motivational dispositions at the beginning and at the end of the semester. Moreover, how often a student experienced a certain type of profile predicted the change of dispositional task values during the semester.

Paper Session D 1

17 August 2018 10:15 - 11:45

Nobel 1483-444

Single Paper

Higher Education, Motivational, Social and Affective Processes

Educational Attainment

Keywords: Achievement, Attitudes and beliefs, Educational attainment, Engagement, Expectancy-value theory, Motivation, Self-concept, Self-regulation

Interest group: SIG 08 - Motivation and Emotion

Chairperson: Julia Eberle, Ruhr-Universität Bochum, Germany

Attainment Value Protects Performance Against Low Expectancy of Success

Keywords: Expectancy-value theory, Engagement, Achievement, Educational attainment

Presenting Author:Dave Putwain, Liverpool John Moores University, United Kingdom; **Co-Author:**Laura Nicholson, Edge Hill University, United Kingdom; **Co-Author:**Sandra Becker, Ludwig-Maximilians-Universität (LMU), Germany; **Co-Author:**Wendy Symes, University of Birmingham, United Kingdom; **Co-Author:**Reinhard Pekrun, Ludwig-Maximilians-Universität (LMU), Germany

Recent studies examining expectancy value theory have shown how expectancy of success and subjective value interact to predict achievement-related choice, behaviour, and performance. Furthermore, studies have shown that expectancy of success and subjective value may be indirectly related to achievement through effort, engagement, and learning style. The aim of this study was to examine how expectancy of success, attainment value, and their interaction, predicted subsequent behavioural engagement, and how behavioural engagement in turn, predicted achievement in a single moderated mediational model. Data were collected from 586 students in their final year of primary school aged 10-11 years in a longitudinal design with five waves of data collection and analysed using structural equation modelling. The moderating role of attainment value was established using the unconstrained approach and conditional indirect relations between expectancy of success and achievement, mediated by behavioural engagement, modelled at different levels of attainment value. Expectancy of success was positively related to subsequent achievement directly and indirectly, mediated by behavioural engagement, over and above the variance accounted for by prior achievement and behavioural engagement. Indirect relations from expectancy of success to achievement were moderated by attainment value. Higher attainment value protected performance from low expectancy of success through higher behavioural engagement. The performance protective role of high attainment value diminished at higher levels of expectancy of success. Findings add to the evidence base for expectancy value interactions, as well as showing that the relations from expectancy of success to achievement are both direct and indirect.

Beliefs of effort utility and their skill-specificity among children with learning difficulties

Keywords: Motivation, Attitudes and beliefs, Achievement, Educational attainment

Presenting Author:Helena Viholainen, University of Jyväskylä, Finland; **Co-Author:**Tuija Aro, University of Jyväskylä, Finland; **Co-Author:**Tuire Koponen, University of Jyväskylä, Finland; **Co-Author:**Paula Salmi, Niilo Mäki Institute, Finland; **Co-Author:**Pilvi Peura, University of Jyväskylä, Finland; **Co-Author:**Riikka Sorvo, University of Jyväskylä, Finland; **Co-Author:**Mikko Aro, University of Jyväskylä, Finland

Children with learning disabilities (LD) face often setbacks when trying to achieve new skills. Therefore, effort and persistence are needed during learning. The effort put in learning is guided by the beliefs of effort utility. However, these beliefs have seldom been studied among children with LD. Furthermore, it has been rarely examined whether effort beliefs are skill-specific. Since development of fluent reading and math skills is an important goal at primary school due to their importance for later learning, these were chosen as target skills. The participants were 603 children from Grade levels 2 to 5 (girls=285, boys=318). The identification of learning problems was based on three reading fluency tasks (Word Chain test, Sentence Reading Task, Text Reading Task) and three arithmetic fluency (Addition, Subtraction and Basic Arithmetic tests). Four groups were formed on the basis of arithmetic and reading fluency: children with learning disabilities in either reading or math (R,M), a combined disability group (RM), and children with no learning disabilities (NLD). The cut-off point used was 1 SD below the Grade level mean for learning disabilities, and less than -0.5 SD below Grade level mean for no learning problems. MANCOVA indicated differences between the groups both in reading and math related effort utility beliefs. Especially the RM group had lower beliefs than the NLD-group. Only weakly support was found for skill-specificity. The results indicate that especially children with comorbid problems are in higher risk to believe that skills are not malleable via effort put in learning.

Does the use of motivational self-regulation strategies contribute to university success?

Keywords: Motivation, Self-regulation, Achievement, Educational attainment

Presenting Author:Olena Kryshko, Universität Duisburg-Essen, Germany; **Co-Author:**Jens Fleischer, University of Duisburg-Essen, Germany; **Co-Author:**Detlev Leutner, University of Duisburg-Essen, Germany

In the last two decades, motivational self-regulation has gained increasing attention as an important component of self-regulated learning. Particularly in the context of higher education, it was shown to affect student effort, performance, and general satisfaction. The purpose of this study was to examine the incremental predictive power, after controlling for high school GPA, of nine motivational regulation strategies on university students' performance, satisfaction with the subject of studies, satisfaction with mastering study-related workload, and dropout intentions. We also investigated whether the effect of motivational self-regulation on different aspects of university success is mediated by academic effort. The sample consisted of 249 undergraduate students enrolled at a German university. Correlational analyses revealed that each of the examined strategies was significantly associated with at least one and in most cases with several aspects of university success. After controlling for high school GPA, five strategies were found to be predictive of university performance and four of dropout intentions. Furthermore, seven strategies predicted satisfaction with the subject, whereas two strategies appeared as predictors of satisfaction with mastering study-related workload. Thereby, the amount of additionally explained variance ranged from 2% to 9%. Finally, the results of mediation analyses largely confirmed the presence of indirect effects through academic effort. These findings provide further evidence for the effectiveness of specific motivational self-regulation strategies in contributing to university success and will be discussed in terms of their application within training programs focusing on the enhancement of university performance and satisfaction as well as prevention of student dropout.

Self-concept, mastery motivation and school achievement in school aged children

Keywords: Motivation, Achievement, Self-concept, Educational attainment

Presenting Author:Beata Szenczi, Eotvos Lorand University, Hungary; **Co-Author:**Krisztian Jozsa, University of Szeged, Hungary; **Co-Author:**Noémi Kis, University of Szeged, Hungary

Over the past decades research has established that both mastery (competence) motivation and competence beliefs are positively related to academic achievement (*Arens, Marsh, Pekrun, Lichtenfeld, Murayama, & vom Hofe, 2017; Józsa & Morgan, 2014*). However, empirical research on the relationship between these two non-cognitive predictors of academic success is scarce. The present investigation aimed to contribute to the addressing of this limitation. The goal of our study was to explore the mastery motivation (MM) and the self-concept (SC) of school aged children, and to test how they are related to each other and to school achievement. Participants were 2110 Hungarian students from grade 2 (n=682, ages 7-8), 4 (n=460, ages 9-10), 6 (n=408, ages 11-12), 8 (n=357, ages 13-14), 10 (n=204, ages 15-16). MM was measured with the Hungarian version of the Dimensions of Mastery Questionnaire 17 (H-DMQ, *Morgan, 1997*), and for SC the Hungarian adaptation of the Self-Description Questionnaire-I (SDQ-I, *Marsh, 1992*). Both instruments were computerized so that they could be used with younger children. CFA confirmed the five MM factors and the seven SC factors. Both measures had good internal consistencies. Significant moderate to strong correlations were found between the different dimensions of MM and SC. Associations between the corresponding components of the two constructs were generally higher than those across domains. Significant grade-level differences also emerged in the pattern of associations. MM and SC both contribute to academic achievement, but the roles of domain specific academic self-concepts are the most prominent.

Paper Session D 2

17 August 2018 10:15 - 11:45

Nobel 1481-264

Single Paper

Teaching and Teacher Education

Self-regulation and Motivation

Keywords: Goals, Measurement, Motivation, Self-determination theory, Self-regulation, Teaching approaches

Interest group: SIG 08 - Motivation and Emotion

Chairperson: Arielle Bonneville-Roussy, Roehampton University, United Kingdom

The Origin of Teachers' Intrinsic vs. Extrinsic Instructional Goals

Keywords: Motivation, Self-determination theory, Teaching approaches, Goals

Presenting Author: Hye-Ryen Jang, Korea University, Korea, Republic of; **Co-Author:** Johnmarshall Reeve, Korea University, Korea, Republic of

The present research investigated the origins of intrinsic vs. extrinsic instructional goals in Self-Determination Theory (SDT, Ryan & Deci, 2017). This is educationally important because some goals are beneficial in terms of students' classroom functioning and well-being while some goals are harmful. Further, intrinsic vs. extrinsic instructional goal predicted either autonomy - supportive or controlling motivating styles (Jang, 2017). Study 1 examined the origin of the intrinsic vs. extrinsic instructional goals, and their consequential influence on classroom motivating styles. 147 K-12 (53 males, 94 females) teachers were recruited from 21 different schools, and structural equation modeling (SEM) analysis by using Mplus 7.0 resulted that needs satisfaction predicted intrinsic instructional goal, and that predicted autonomy support. Whereas, needs frustration didn't predict extrinsic instructional goals, but that predicted controlling style. Study 1 unfolded needs satisfaction as the origin of intrinsic instructional goals, but failed to examine where extrinsic goals come from. Thus, Study 2 was focused on investigating the origin of extrinsic goals and was designed 1- year longitudinal study. 144 (56 males, 88 females) teachers were recruited (17 middle schools, 15 high schools). Needs frustration, social norm, and interaction of them were proposed as the origin of extrinsic goals. SEM analysis demonstrated that T1 social norms at the beginning of the 1st semester predicted the change of T3 extrinsic goals at the end of 2nd semester. The present research expended to understand teachers' goal aspiration during a classroom instruction and it would implicate for teachers' motivating styles, well-being, and effective practice.

Autonomy-supportive and controlling teaching in the classroom: Video-based case studies

Keywords: Motivation, Self-determination theory, Teaching approaches, Measurement

Presenting Author: Jingwen Jiang, University of Turku, Finland

The present study aimed to explore teachers' autonomy-supportive and controlling instructional behaviors and to provide concrete classroom examples of them through video-based case studies. Two teachers from a secondary school in Finland participated in this study, and four lessons of them were video-taped. A rigorous and systematic process of analysis was conducted using a linguistic annotation software ELAN. The coding schemes were developed a priori based on an extensive review of the existing literature regarding autonomy and control. Inter-coder reliability was calculated using the built-in function of ELAN. It was found that error tolerance is also a category of autonomy-supportive teaching behaviors, although not investigated from the perspective of autonomy support in previous research. This study also found that teachers employed both autonomy-supportive and controlling teaching strategies during the lesson, and even combined both in the same instruction. The findings of this study shed light on the nature of adoption of autonomy support and control as a complex rather than a simple all-or-none issue. In addition, the findings suggest that offering choices is a tricky autonomy-supportive strategy which may produce different outcomes. Further, more attention ought to be paid to indirect controlling strategies which are hidden in the classroom. Finally, the practical classroom examples of autonomy support and control provided in this study could facilitate in-service or novice teachers to self-reflect on the motivational strategies

they employ.

The Impact of Report Cards on Student Motivation

Keywords: Motivation, Self-regulation, Self-determination theory, Teaching approaches

Presenting Author: Latham Cameron, Durham University, School of Education, United Kingdom

This study investigates the effect of changes in grade reports on the motivation of middle school students at an international school. Within the broader standards movement to establish clear learning criteria in U.S. education, reform also focused on the methods of reporting on student learning. By reporting on individual criteria for each class and separating behavior from learning measurements, standards-based report cards (SBRC's) attempted to avoid the pitfalls of opaque letter grades through providing clearer information about student learning. This method is a recent development, however, and its impact on students is largely unknown. Student motivation in the study is conceptualized using Self-Determination Theory (SDT), with SDT's Academic Self-Regulation Questionnaire used to measure student motivation. The study uses a population sample of the entire middle school and implements a cohort control group quasi-experimental design with a pre-test from each cohort. The school used traditional letter grade report cards in Year One of the study, while Year Two has seen the school shift to SBRC's. Pre-tests were administered near the start of the school year with post-tests administered in late January just after first semester report cards were distributed to students. In addition to Questionnaire data, 16 grade-level focus group sessions were conducted across the two-year study to investigate the meaning students constructed from grades. Analysis of initial data suggests that letter grade report cards lead to more extrinsic forms of motivation in students and that students view standards-based grades in more autonomous ways connected with their learning.

Do extracurricular and school learning settings differ regarding (self-regulated) motivation?

Keywords: Motivation, Self-regulation, Self-determination theory, Teaching approaches

Presenting Author: Linda Schuermann, University of Koblenz-Landau, Germany; **Co-Author:** Claudia Quaiser-Pohl, University of Koblenz-Landau, Germany

A growing body of evidence suggests that extracurricular learning settings are an opportunity to foster (learning) motivation in students due to their support of self-regulated forms of behavior, such as intrinsic motivation, which in self-determination theory are thought to benefit learning. To our knowledge, there is a lack of empirical research directly comparing behavior regulation forms in extracurricular learning and classroom settings. Thus, in this pilot study, we compared pupils' motivational patterns in an extracurricular learning setting, the ecological-biological station *Mosenberg*, and a regular biology lesson. $N=34$ German 12th-graders ($M=18.43$ years old, $SD=0.59$, 65% girls) were asked about their behavior regulation and factors associated with their intrinsic motivation in both learning settings using the Situational Motivation Scale (Guay et al., 2000) and the Short Scale on Intrinsic Motivation (Wilde et al., 2009). Paired-samples t -tests revealed significantly higher levels of intrinsic motivation, interest, perceived competence, and amotivation at the extracurricular learning setting and higher levels of identified regulation and pressure/tension at school, but no difference regarding external regulation and perceived choice. Results suggest that there are beneficial, complex motivational differences between extracurricular and school learning settings, which have to be investigated in more detail in future research. However, bigger sample sizes are needed and specific characteristics of learning settings such as the amount of autonomy support or individual motives to visit the extracurricular learning setting should be additionally assessed in order to be able to better describe and discuss the specific motivation patterns.

Paper Session D 3

17 August 2018 10:15 - 11:45

Nobel 1481-237

Single Paper

Motivational, Social and Affective Processes, Teaching and Teacher Education

Emotion, Affect and Achievement

Keywords: Achievement, Developmental processes, Emotion and affect, Expectancy-value theory, Motivation, Resilience, Self-efficacy, Teaching approaches

Interest group: SIG 08 - Motivation and Emotion

Chairperson: Lisa Linnenbrink-Garcia, Michigan State University, United States

The interplay of students' pride with motivation and learning

Keywords: Motivation, Emotion and affect, Expectancy-value theory, Achievement

Presenting Author: Judith Fraenken, RWTH Aachen University, Germany; **Co-Author:** Kerstin Helker, RWTH Aachen University, Germany

Pride as a positive activating emotion is believed to promote both extrinsic and intrinsic motivation. However, existing measures of pride do not directly apply to the achievement context. Buechner et al. (2016) developed a conceptual model of self-based and social comparison-based pride which refer to intrapersonal improvement in performance or successfully outperforming others. To further explore this model, the present study focuses on the interplay between students' pride and their motivation and learning in mathematics.

In the first of a series of studies, 140 students filled in a survey that measured students' pride with the Achievement Pride Scale (Buechner et al., 2016). Additionally, students' sense of competence, autonomy and relatedness in mathematics was measured as well as their ability beliefs, expectancies, values, intrinsic interest and perception of utility and cost in the domain of mathematics (Eccles et al.).

Results show a small positive correlation between the attainment value and self-based pride as well as social-comparison pride. Between both types of pride there was a strong, positive correlation. Cluster analyses revealed two types of students which differ in the extent of their pride. As the first type of students generally has a higher concept of pride, it is also more important for them to be good in mathematics than for the second type of students

As positive emotions have been under-researched in the achievement goal literature of prior research, this study will provide a basis for further investigation in the field of positive emotions like pride and their influence on motivation.

Self-efficacy and insecurity among senior high school psychology teachers in Norway

Keywords: Motivation, Self-efficacy, Teaching approaches, Developmental processes

Presenting Author:Anja Møgelvang Jacobsen, IPED, University of Bergen, Norway; **Co-Author:**Åge Diseth, University of Bergen, Norway

The experience of control is an important motivational variable, also for teachers in the classroom. The presence of control is often termed as self-efficacy, and the lack of control may be indicated by insecurity. Of particular interest in the Norwegian senior high school system is the high demand for teachers in psychology, due to an increasing number of students. Many of these teachers have less formal educational in the subject, and are less experienced regarding teaching of psychology. Hence, the aim of the present study was to investigate how Norwegian high school teachers experience self-efficacy and degree of insecurity in their teaching of psychology, relative to their teaching of other school subjects. The study was conducted by means of a survey. Confirmatory factor analysis supported a two-factor solution for self-efficacy, one for teaching of psychology and one for teaching of other school subjects. The results also showed that teachers experience significantly more insecurity and less self-efficacy in the psychology subject than in their other teaching subject. The psychology teachers who have previously earned a degree in subject didactics in psychology reported a significantly lower degree of insecurity. Psychology teachers in senior high school may benefit from having the opportunity to engage in further education in terms of subject didactics in psychology. A motivational design to improve self-efficacy and reduce insecurity may be to give the teachers access to further education in order to improve their skills in psychology didactics and teaching of psychology.

The associations of academic emotions and buoyancy with learning-related behaviors

Keywords: Motivation, Emotion and affect, Achievement, Resilience

Presenting Author:Riikka Hirvonen, University of Jyväskylä, Finland; **Co-Author:**Dave Putwain, Liverpool John Moores University, United Kingdom; **Co-Author:**Noona Kiuru, University of Jyväskylä, Finland

The aim of the study was to examine to what extent sixth-grade students' academic emotions contribute to their planning and task-avoidant behavior in learning situations via their academic buoyancy. In addition, the moderating role of GPA in these associations was examined. A total of 687 students (55% girls; mean age 12.3 years, SD = 0.4) participated in the study. The students rated their academic emotions and academic buoyancy in the fall of Grade 6 and their planning behavior in the spring of Grade 6. Parents rated students' task-avoidant behavior in homework situations in the fall semester. The results of structural equation modeling showed that hope had a positive direct effect on students' planning behavior and a negative indirect effect on task-avoidant behavior via academic buoyancy: the more hopeful students felt in learning situations, the more planning behavior and buoyancy they reported and, subsequently, the less task-avoidant behavior they showed. Boredom had a negative direct effect on planning behavior, whereas anxiety and shame had indirect effects on task-avoidant behavior via academic buoyancy. These associations were similar among high-performing and low-performing students. However, task-avoidant behavior was found to have a negative effect on subsequent GPA only among low-performing students. The findings suggest that specific academic emotions and buoyancy significantly contribute to students' learning-related behaviors, and that these associations are partly affected by students' performance level.

Value beliefs in math, perfectionism and exhaustion among students in Germany and Finland

Keywords: Motivation, Emotion and affect, Expectancy-value theory, Achievement

Presenting Author:Heta Tuominen, University of Helsinki, Finland; **Co-Author:**Hanna Gaspard, University of Tübingen, Germany; **Co-Author:**Yi Jiang, Faculty of Education, East China Normal University, China; **Co-Author:**Markku Niemivirta, University of Oslo, Norway

Students' value beliefs have been shown to be crucial predictors of academic outcomes, such as performance and choices, but less is known about how they are related to another important educational outcome, students' well-being. Following a person-oriented approach, the aim of this study was to investigate what kinds of math-specific task value profiles can be identified among students in Germany and Finland, and how students with different profiles differ in well-being (i.e., perfectionism and school-related exhaustion). We considered all four value components (i.e., intrinsic, attainment, and utility values, and cost) and multiple facets of them. A total of 483 students from academic track schools in Germany and 433 students from general upper secondary schools in Finland completed a questionnaire assessing value beliefs in math, perfectionism, and exhaustion. Confirmatory factor analyses were conducted to test the separability of value and cost

facets, latent profile analyses were used for identifying task value profiles, and ANOVAs were conducted to examine group differences. Three similar profiles were identified in both countries: *average all* (32%/46%), *high positive value, low cost* (33%/33%), and *low positive value, high cost* (18%/21%) and, also, a profile characterized by *average positive value, high importance of achievement, and high cost* (17%) was identified in Germany. In general, students displaying high positive values scored relatively high on setting high standards, while students characterized by high cost were most likely to report exhaustion. Our study extends previous research by considering the role value beliefs and particularly perceived cost play in well-being.

Paper Session D 4

17 August 2018 10:15 - 11:45

Nobel 1481-231

Single Paper

Instructional Design, Learning and Social Interaction, Motivational, Social and Affective Processes

Engagement and Learning Approaches

Keywords: Engagement, Interest, Learning approaches, Measurement, Motivation, Self-concept, Self-regulation, Social motivation

Interest group: SIG 08 - Motivation and Emotion

Chairperson: Ashley R Vaughn, University of Cincinnati, United States

What motivates students' hand-raising? Results from a video-study in two school subjects.

Keywords: Motivation, Engagement, Self-concept, Measurement

Presenting Author: Ricardo Böheim, Technische Universität München, Germany; **Co-Author:** Maximilian Knogler, Technical University of Munich (TUM), Germany; **Co-Author:** Tina Seidel, Technische Universität München (TUM), Germany

If students want to participate in classroom discourse, they first have to raise their hands. Although this is true for most classrooms, hand-raising has received little attention in previous research. In the present video-based study, we analyze how student hand-raising behaviors vary across twenty classrooms in two school subjects ($N=503$ eight graders). Our results reveal substantial variations among students including a large percentage of students, who do not raise their hand at all. Further, we investigate students' motivational learner characteristics and their predictive effects on hand-raising in Mathematics and German Language Arts. Multilevel modeling results suggest that motivational learner characteristics explain a substantial amount of variance in students' hand-raising ($R^2=30\%$ (M); $R^2=23\%$ (GLA)). Students' extrinsic motivation had a strong influence on students' hand-raising in both subjects. In mathematics classrooms, students' perceptions of their own abilities (self-concept) was an additional significant predictor for hand-raising. Contrary to our assumptions, students' intrinsic, situational motivation did not predict their hand-raising behavior. The present study provides a systematic analysis of an unexplored classroom behavior. It points to an unbalanced distribution of hand-raising across classrooms in two subjects and identifies predictive factors from a motivational perspective. Implications for further research and classroom practice are discussed within the framework of active student engagement.

The effects of interest, self-control and their interaction on math effort, strain and concentration

Keywords: Motivation, Self-regulation, Interest, Engagement

Presenting Author: Anna Tapola, University of Helsinki, Finland; **Co-Author:** Maximilian Knogler, Technical University of Munich (TUM), Germany; **Co-Author:** Markku Niemivirta, University of Oslo, Norway

While both interest and self-control play an important role in academic endeavors, little is known about their interaction and how it contributes to students' effort expenditure and task engagement. The aim of this study was to replicate and extend previous research by examining how eighth-graders' ($N=178$) self-control and individual interest are connected to students' domain-specific effort and strain, as well as their task-related concentration and strain in mathematics. Based on previous studies, in addition to independent main effects, we assumed to find an interaction between interest and self-control, and that the effect on students' self-reported effort in mathematics and task concentration is compensatory. We further assumed to find a similar compensatory effect showing that interest partly buffers the effect of low self-control on students' experienced strain (feelings of stress, difficulty, and exhaustion) in mathematics and during task. Findings from hierarchical regression analyses confirmed our hypotheses: the effects of low self-control on domain-specific effort and task concentration were to some extent compensated by high interest, and vice versa. In addition, students experienced less strain during the task when self-control was accompanied with high rather than low interest. Together, these findings suggest that individual interest may function as an important resource supporting students' effort and concentration on tasks, and reducing feelings of strain, especially when self-control is low.

Implicit conceptual conflation in context-sensitive accounts of motivation: Implications for design

Keywords: Motivation, Engagement, Learning approaches, Social motivation

Presenting Author: Nina Bonderup Dohn, University of Southern Denmark, Denmark

This theoretical paper addresses the question of what is involved in *taking context into account* in design for motivation.

The significance of context is a recurrent theme across approaches to motivation, represented in questions of how “social aspects” relate to “individual aspects”, how “situational demands” interplay with “cognitive factors”, and how “context” interacts with “the individual”. These questions tend to be conflated and treated as one. This means conflating concepts that need to be distinguished: *Primary contexts* elsewhere are relevant for designing for motivation. Situational demands are not reducible to social aspects, but involve a complex set of material, bodily, social, informational, organizational etc. conditions. Focusing on the individual cannot be equated with analysing a sum of ‘individual aspects’ because the individual’s possibilities for engaging in classroom interaction are determined in part by the positionings effected in the classroom, viewed as an interactional system. Positioning may take place without conscious awareness. Design for motivation building on the conceptual confluences will focus on social interaction in the classroom, as consciously perceived by the individual. Design for motivation recognizing their distinction will focus on the relationship between the classroom context and students’ (other) primary contexts, in addition to the classroom context itself. Within the latter, the focus will be on the complex interplay of material, bodily, social, organizational etc. conditions, and learners’ accommodation to them. Extensive conscious awareness of the accommodation processes will not be presupposed. The presentation will discuss the relationship between these different foci for design for motivation.

Fostering Culturally Diverse Learners' Engagement and Motivation through Inquiry-based Learning

Keywords: Motivation, Self-regulation, Engagement, Learning approaches

Presenting Author: Aloysius C. Anyichie, The University of British Columbia, Vancouver, Canada

Research on Self-regulated learning (SRL) has focused attention on individual in explaining learning engagement and motivation. On the other hand, culturally responsive teaching (CRT) pays attention to cultural influences on learning, which SRL is yet to give adequate attention. However, current research has shown how interaction between the individual and context shape learning processes. Culturally responsive teaching (CRT) and self-regulated learning (SRL) identify pedagogical practices that enhance student engagement and motivation. This study examined how students at a culturally diverse public elementary school in the West Coast of Canada participated in classroom context that integrated CRT and SRL practices. Specifically, this completed pilot study explored culturally diverse learners’ engagement and motivation during an inquiry-based learning project. Data collected included classroom observations, practice records and documents, students’ work samples, teacher and student interviews and student surveys. The results demonstrated: (1) variations in levels of engagement and motivation based on specific contexts; and (2) associations between culturally diverse learners’ engagement and motivation; and, qualities of the inquiry-based learning context. Implications for theory, practice, and research are discussed.

Paper Session D 5

17 August 2018 10:15 - 11:45

Nobel 1483-344

Single Paper

Higher Education, Motivational, Social and Affective Processes

Interest and Engagement

Keywords: Developmental processes, Engagement, Goals, Interest, Motivation, Teaching approaches

Interest group: SIG 08 - Motivation and Emotion

Chairperson: GONUL SAKIZ, Marmara University, Turkey

Using the MUSIC® Model of Academic Motivation Inventory (MMAMI) to measure student motivation

Keywords: Motivation, Interest, Engagement, Teaching approaches

Presenting Author: Asta B Schram, University of Iceland, Iceland

There is a strong relationship between student motivation, learning and achievement (Schunk, Pintrich, & Meece, 2008). However, students often lack motivation and teachers find it complicated to gauge how to influence the situation. The MUSIC® Model of Motivation was developed after an intensive study of motivation research and theories (www.themusicmodel.com). The acronym, MUSIC, describes components that are strongly related to student motivation, eMpowerment, Usefulness, Success, Interest and Caring. The model and the MUSIC® inventory are practical tools to evaluate student motivation, and subsequently, modify the classroom environment. The practicality of the inventory will be highlighted using an example from the University of Iceland where the aim of the study was to measure student motivation with regards to the five MUSIC components. Undergraduate students (420) in two departments responded to the validated Icelandic translation of the inventory. Students perceived teachers as *caring* and respectful and their courses as *useful*. However, they indicated that they did not feel *empowered* to make choices in their studies. Most believed that they could be relatively *successful* in their courses but were not as sure about getting high grades. Students claimed to be *interested* in their courses but indicated that teaching methods did not help them keep the attention, and teaching strategies were not diverse. In traditional departments, teaching is often carried out with lectures where students’ input is limited. Suggestions will be given as to how teachers might modify their teaching, making it more student-centered, and thereby support motivational components.

Effects of a Brief Online Intervention Aimed at Increasing Science-Related Curiosity

Keywords: Motivation, Interest, Engagement, Goals

Presenting Author: John Malouff, University of New England, Australia, Australia; **Co-Author:** Tayla Fitzsummons, University of New England, Australia

Political polarization on critical issues such as climate change exists despite overwhelming scientific consensus on the topic. Research findings indicate that such observed polarization is partially due to Politically Motivated Reasoning (PMR), a bias that occurs when individuals are motivated to process information in a way which helps them to maintain their political group membership, inhibiting their ability to come to an accurate conclusion. Recently, researchers have provided evidence suggesting that the trait of science curiosity may serve to counteract the effects of this type of motivated reasoning. The present experiment investigated whether it was feasible to foster science curiosity using a brief online intervention using social cognitive theory elements of modeling and vicarious reinforcement. The study involved randomly assigning 99 adults to either an experimental or control condition. The experimental condition included anecdotes of two individuals who benefitted from learning about recent research findings. The control group received no such information. Both conditions then were invited to watch as much as they wanted of a science-based documentary on a topic unrelated to the specific intervention content. An ANOVA showed that participants in the experimental condition watched significantly longer than those in the control condition. The results indicate that a brief online intervention may have the potential to prime science curiosity in the public. The findings of this study have implications for increasing (1) motivation to satisfy science curiosity and (2) increasing the effects of science communication.

Intra-individual Dynamics of Situation-Specific Classroom Engagement

Keywords: Motivation, Interest, Engagement, Developmental processes

Presenting Author: Kati Vasalampi, University of Jyväskylä, Finland; **Co-Author:** Joonas Muotka, University of Jyväskylä, Finland; **Co-Author:** Lars-Erik Malmberg, University of Oxford, United Kingdom

The present study aims to expand the current understanding of engagement by examining variations in students' situation-specific engagement in lower secondary school. In particular, students' situation-specific behavioral and emotional engagement, disaffection, and competence experiences were predicted with previous situation. The sample consisted of 57 Finnish students attending Grade 7. The students filled in mobile ratings on their lesson-specific engagement after all lessons during one week. A total of 975 lessons were rated and each student rated an average of 17.105 lessons. The results indicated that although students' situation-specific classroom experiences of behavioral and emotional engagement, disaffection, competence experiences, and help-seeking vary from lesson to lesson, they show also some stability. The stability between situations was highest in behavioral engagement and lowest in competence experiences. Furthermore, high behavioral engagement in a lesson is important, because it predicted high level of emotional engagement and competence experiences in next lesson. In contrast, low level of competence experiences predicted high level of disaffection during next lesson. Finally, disaffection in previous lesson predicted disaffection in next lesson significantly more among girls than among boys. *Keywords:* situation-specific classroom engagement; student engagement; learning motivation; mobile ratings; lower secondary school

Athlete and non-athlete students' perfectionism, school burnout, and schoolwork engagement

Keywords: Motivation, Interest, Engagement, Goals

Presenting Author: Jenny Ståhlberg, University of Helsinki, Finland; **Co-Author:** Antti Pulkka, National Defence University, Finland; **Co-Author:** Heta Tuominen, University of Helsinki, Finland; **Co-Author:** Markku Niemivirta, University of Oslo, Norway

Perfectionistic strivings (i.e., setting extremely high standards, and feeling a discrepancy between one's goals and accomplishments) may lead to school-related burnout, but also foster engagement. Given that the levels of perfectionism have been found to vary across contexts of academics and sports, we investigated differences in and combinations of perfectionistic strivings and their outcomes between athlete (i.e., sports programme) and non-athlete (i.e., ordinary programme) upper secondary school students (N = 424). Four perfectionistic profiles were identified: ambitious (relatively high standards, low discrepancy; 35.6 %), perfectionists (relatively high standards and discrepancy; 23.6 %), dissatisfied (relatively low standards, high discrepancy; 21.7 %), and non-perfectionists (relatively low standards and discrepancy; 19.1 %). The dissatisfied profile was slightly more frequent among non-athlete students. Ambitious students expressed relatively low levels of burnout (i.e., exhaustion, cynicism, and inadequacy) and were rather engaged in schoolwork (i.e., energized, absorbed, and dedicated). Perfectionists were the most exhausted, and experienced cynicism and inadequacy, but were also quite engaged in schoolwork. In contrast, dissatisfied students exhibited feelings of exhaustion, cynicism, and inadequacy, and were rather disengaged from schoolwork. Non-perfectionists reported relatively low levels of exhaustion and inadequacy, but were more cynical and less engaged in schoolwork in relation to other groups. The relatively high number of perfectionists and dissatisfied students imply that attention should be paid on how to support students to value their accomplishments.

Paper Session D 6

17 August 2018 10:15 - 11:45

Nobel 1483-251

Single Paper

Developmental Processes

Keywords: Developmental processes, Emotion and affect, Engagement, Interest, Learning approaches, Measurement, Self-determination theory, Teaching approaches

Interest group: SIG 08 - Motivation and Emotion

Chairperson: Lisa Benson, Clemson University, United States

Motivation in the classroom: The effects of control and the use of technology

Keywords: Engagement, Self-determination theory, Teaching approaches, Learning approaches

Co-Author:Jennifer Moss, Purdue University, United States; **Co-Author:**Cong Wang, Purdue University, United States;

Co-Author:Erica Carlson, Purdue University, United States; **Co-Author:**Stephanie Gardner, sgardne@purdue.edu, United States; **Co-Author:**Chantal Levesque-Bristol, Purdue University, United States; **Co-Author:**Ludmila Nunes, Purdue University, United States

In this study, we aim at evaluating the effects of increased control over homework on motivation in the classroom. A randomized controlled trial was implemented in a large undergraduate Physics course. During Fall 2016 and 2017, students were randomly assigned to one of two conditions: "business-as-usual", with online homework sets due twice a week; and "self-regulated", with access during the whole week to an online bank of homework questions, and choice of how much to practice before a timed online quiz. According to self-determination theory (SDT; Deci & Ryan, 2000), the freedom of choice for students in the "self-regulated" condition should increase their perceptions of autonomy, contributing to higher motivation. Basic psychological needs and motivation were assessed by a student perception survey, applied in the beginning and end of each semester. Overall, the results obtained indicate that in Fall 2016, students in the "self-regulated" condition showed more gains across the semester in their perceptions about the centeredness of learning climate, and their satisfaction of basic psychological needs, relatively to the students in the "business-as-usual" condition. On the contrary, in Fall 2017, students in the "self-regulated" condition showed less gains than the "business-as-usual" condition. A post-hoc explanation for these results is that in Fall 2017, the online platform used for the homework did not work properly. This study is an example of how certain educational practices that rely on technology might increase student motivation but, when technology does not work and fails to provide needed support, negative results might arise.

The development and validation of a scale measuring interest development

Keywords: Interest, Self-determination theory, Measurement, Developmental processes

Presenting Author:Vanessa van den Bogaert, Institute of Educational Sciences Ruhr-University Bochum, Germany; **Co-Author:**Joachim Wirth, Institute of Educational Sciences Ruhr-University Bochum, Germany; **Co-Author:**Matthias Wilde, Universität Bielefeld, Germany

Interest development is still a basic issue in the current debate (e.g. Schmidt & Rotgans, 2017). The four-phase model of interest development by Hidi and Renninger (2006) is the most reputable way to understand and describe the process from a situation-dependent to temporally stable and thus a more or less situation-independent interest. However, the development of interest in this model is rather described on a quantitative level, which differentiates the strength of the expression of defined interest dimensions in the four phases. The present studies are an attempt towards the development of a standardized procedure that makes a distinction between the quantity and the quality of interest. We suggest that the development of individual interest is an internalization-process of (1) value related, (2) cognitive-epistemic and (3) feeling related components. We propose that the central mechanism, and thus the quality of an interest, responsible for the emergence of individual interest is an internalization-process as already described in the self-determination theory (SDT) of human motivation and well-being (Deci & Ryan, 2000). In the current studies a multi-dimensional scale that measures interest development, as assumed above, is presented. Psychometric characteristics of the instrument were tested among a set of samples of German students at an extracurricular learning location (N=355). First by performing an explorative factor analysis, which confirmed the hypothesized three dimensions of interest, taking into account the internalization-process. Second convergent validity was investigated with theoretically related constructs, such as flow (Csikszentmihalyi, 1990) and academic motivational-self-regulation (Ryan & Connell, 1989).

Students' general and situational engagement at Grade 7

Keywords: Emotion and affect, Engagement, Measurement, Developmental processes

Presenting Author:Sanni Pöysä, University of Jyväskylä, Finland; **Co-Author:**Marja-Kristiina Lerkkanen, University of Jyväskylä, Finland; **Co-Author:**Anna-Maija Poikkeus, University of Jyväskylä, Finland

The present study focuses on students' general and situational engagement. The aim of the study is first, to examine what kind of subgroups can be identified based on the students' profiles of general engagement, and second, how students in different subgroups differ in situational engagement. Participants were 303 Finnish students at Grade 7. Students' engagement was measured on general engagement at Spring 2014 using the Finnish short version of Student Engagement Instrument (SEI-F) and Research Assessment Package for Schools (RAPS). Situational engagement was measured with InSituations (InSitu) Instrument at the end of each lesson (3 to 8 lessons per student) during Spring 2014. Latent profile analysis was conducted to identify subgroups based on five factors of students' general engagement: relevance of schoolwork, teacher-student relationship, future aspirations and goals, peer support in learning, family support

in learning, behavioral engagement. Four profiles were identified: *highest-in-all-factors* (N=89), *lowest-in-all-factors* (N=14), *mid-with-high-future-goals* (N=84), and *mid-in-all-factors* (N=116). Further analyses showed differences in students' ratings of situational engagement between the profiles. The highest-in-all subgroup showed highest levels of situational engagement as well whereas lowest-in-all subgroup showed lowest levels of situational engagement. The implications for theory and practice will be discussed.

Keynote Dr. Maria Tulis-Oswald 1

17 August 2018 13:00 - 14:00

Aula

ICM 2018 - Keynote Session

ICM 2018 - Keynote Session - Dr. Maria Tulis-Oswald

Keywords: Learning approaches, Motivation, Self-regulation, Social motivation

Interest group: SIG 08 - Motivation and Emotion

Learn to fail, don't fail to learn! The importance of motivation for learning from setbacks

Keywords: Motivation, Self-regulation, Learning approaches, Social motivation

Presenting Author: Maria Tulis, University of Salzburg, Austria

Failure is currently seen as key to innovation in some spheres. Indeed, errors may be a powerful learning tool – especially in academic learning contexts – but only if learners are able to deal with their errors in an adaptive and reflexive manner. We need to know the dynamics of the processes and skills needed to learn effectively from mistakes and errors. In this presentation, I will review different perspectives on error-related learning and the importance whether an error is interpreted as failure or as learning opportunity. Based on a theoretical framework and empirical evidence my talk will act as a springboard for discussion: (How) can we design motivation and learning environments to support „learning by failing“?

Paper Session E 1

17 August 2018 14:15 - 15:45

Nobel 1483-444

Single Paper

Higher Education, Motivational, Social and Affective Processes

Engagement and Self-efficacy

Keywords: Achievement, Educational attainment, Emotion and affect, Engagement, Self-determination theory, Self-efficacy, Self-regulation, Teaching approaches

Interest group: SIG 08 - Motivation and Emotion

Chairperson: Moti Benita, University of Haifa, Israel

Does Increased Effort Compensate for Performance Debilitating Test Anxiety?

Keywords: Emotion and affect, Engagement, Achievement, Educational attainment

Presenting Author: Wendy Symes, University of Birmingham, United Kingdom; **Co-Author:** Dave Putwain, Liverpool John Moores University, United Kingdom

It is well established that test anxiety is negatively related to examination performance. Based on attentional control theory, the aim of this study was to examine whether increased effort can protect against performance debilitating test anxiety. Four hundred and sixty-six participants (male = 228, 48.9%; white = 346, 74.3%; mean age = 15.7 years) completed self-report measures of test anxiety and effort that were matched to performance on a high-stakes secondary school examination. The worry and bodily symptoms components of test anxiety were negatively, and effort, positively related to examination performance. Effort moderated the negative relation between bodily symptoms and examination performance. At low effort the negative relationship was amplified and at high effort was attenuated. Compensatory effort protects performance against bodily symptoms but not worry. It is possible that the cognitive load on working memory arising from the combination of worry and examination tasks may be too high to be compensated by effort.

Student Sense of Competence, Classroom Engagement, and Academic Achievement: What Mediates What?

Keywords: Self-efficacy, Engagement, Self-determination theory, Achievement

Presenting Author: Elizabeth Olivier, Université catholique de Louvain (UCL), Canada; **Co-Author:** Isabelle Archambault, Université de Montreal, Canada; **Co-Author:** Benoît Galand, Université catholique de Louvain (UCL), Belgium

The Self-System Model of Motivational Development (SSMMD; Connell & Wellborn, 1991) postulates that student engagement is a mediator between sense of competence (SC) and academic achievement. Although a few studies support this assumption, none has explicitly tested the hypothesized mediations. Alternative theoretical frameworks (i.e., Self-Efficacy Theory and Expectancy-Value Model) also point toward different mediation processes. There is thus no consensus on the roles of SC, engagement, and achievement: which is a mediator and which is an outcome? Our study aims at testing the assumptions of these models between SC, engagement, and achievement. We followed 671 students from 4th to 6th

grades in Quebec (Canada). We assessed the main and mediation effects by testing three path analysis models using the Mplus7 bootstrap resampling procedure. Each model included SC, one dimension of engagement (behavioral, emotional, or cognitive), and achievement. Our results do not support the expected mediation effects of student engagement in the association between SC and achievement as postulated in SSMM. Instead, we found bidirectional associations between SC and achievement, as well as between SC and student emotional engagement from one school year to the next.

Moreover, SC in 5th grade mediated the association between emotional engagement in 4th grade and achievement in 6th grade ($\beta=0.03$, $p < 0.05$). Yet, behavioral engagement was marginally associated with SC and cognitive engagement was not associated with SC or achievement. These findings are congruent with the Expectancy-Value Model and Self-Efficacy Theory. We discuss implications of these results for prevention practices.

First-year students' academic achievement: why autonomous motivation and time-management matter.

Keywords: Self-efficacy, Self-regulation, Engagement, Achievement

Presenting Author:Marjon Fokkens-Bruinsma, University of Groningen, Netherlands; **Co-Author:**Carlien Vermue, University of Groningen, Netherlands; **Co-Author:**Jan Folkert Deinum, University of Groningen, Netherlands; **Co-Author:**Els van Rooij, University of Groningen, Netherlands

How can we engage first-year university students and retain them throughout the first year? We focused on four factors, namely academic self-efficacy, autonomous motivation, time-management and engagement, and their relationships with academic achievement at the end of the first year. Prospective students in the fields of science (N = 930), humanities (N= 712) and social sciences (N= 792) filled out an online questionnaire. Our analyse indicated gender-based differences for all variables favoring female students. Furthermore, we found significant differences in field of study for all variables except for engagement. The analyses showed that autonomous motivation and time-management were positive predictors of academic achievement. Our study thus provides us information on the importance of feeling autonomously motivated and feeling prepared for university in terms of time-management. As such it can provide us with more information on how to develop more individualized intervention trajectories and identify those students who may be at risk for dropout.

Emotionally Supportive Learning Environments: Linking Students' Appraisals and Achievement Emotions

Keywords: Self-efficacy, Emotion and affect, Engagement, Teaching approaches

Presenting Author:Sandra Becker, Ludwig-Maximilians-Universität (LMU), Germany; **Co-Author:**Reinhard Pekrun, Ludwig-Maximilians-Universität (LMU), Germany; **Co-Author:**Petra Bod, LMU Munich, Germany

A key proposition of control value theory (CVT; Pekrun, 2006) is that students' perceptions of classroom characteristics relate to their emotional experiences in the classroom. However, the specific appraisal mechanisms proposed to underly the connections between perceptions of classroom characteristic and achievement emotions have not been systematically addressed so far. Consequently, the aim of the present study was to investigate if control and value appraisals serve as mediators in linking the characteristics of the classroom environment (e.g. adaptive instruction and teacher expectations) with positive (e.g. enjoyment) and negative (e.g. anxiety and hopelessness) achievement emotions. Data were collected from 1421 students in their first year of secondary school (aged 11-12 years) in a cross-sectional design and were analyzed using structural equation modelling. The mediating role of students' perceived control and value appraisals was confirmed by indirect relations found between classroom characteristics and achievement emotions. Adaptive instruction was positively related to enjoyment, which relationship was mediated by students' perceptions of value. The indirect link between pressure to achieve and enjoyment was small, as intrinsic and extrinsic value exerted opposing relations in the mediation. Adaptive instruction was negatively related to anxiety and hopelessness, mediated by negative control and positive extrinsic value appraisals. Similarly, pressure to achieve positively inflated anxiety and hopelessness, primarily driven by the mediating role of extrinsic value. The mediating functions of student appraisals signify the importance of attending to adaptive classroom characteristics for creating emotionally supportive learning environments.

Paper Session E 2

17 August 2018 14:15 - 15:45

Nobel 1481-341

Single Paper

Higher Education, Motivational, Social and Affective Processes

Teaching and Learning Approaches

Keywords: Achievement, Emotion and affect, Learning approaches, Motivation, Self-regulation, Teaching approaches

Interest group: SIG 08 - Motivation and Emotion

Chairperson: Pooneh Roney, University of Bristol, United Kingdom

The impact of emotional decorative pictures on online learning of mathematics and statistics

Keywords: Motivation, Emotion and affect, Achievement, Learning approaches

Presenting Author:Sascha Schneider, Chemnitz University of Technology, Germany; **Co-Author:**Maria Mikheeva, Chemnitz University of Technology, Germany; **Co-Author:**Günter Daniel Rey, Chemnitz University of Technology, Germany

Mathematics and statistics are obligatory subjects for many students at the university with high exam failure rates. Even

though most of the research showed that decorative pictures impeded learning, these pictures improve learning when activating learning-relevant emotions. Two studies examined if inserting emotional decorative pictures can also enhance the performance of students in mathematics and statistics. Both online experiments consisted of two sections each with a decorative emotional picture, instructional material and exercises. While the experimental materials on statistics covered facts on nonparametric methods, the materials on mathematics consisted of explanations about logarithms. A 2 × 2 between-subjects design with the factors “decorative picture in the first section” (negative vs. positive) and “decorative picture in the second section” (negative vs. positive) was used for both experiments. The participants were randomly assigned to one of the four groups in each experiment, while both experiments measured learning results and perceptions of cognitive load. In sum, 100 students participated in the first experiment and 92 in the second. The results of the first experiment demonstrated that a positive decorative picture fostered learning when shown in the first section. Additionally, a positive picture shown in the second section decreased a perception of cognitive load. In the second experiment, there were no significant differences between the conditions. Different results between the experiments are explained by the positioning of pictures within the materials.

Exploring Relationships Between Instructional Climate, Control, Value, and Emotions

Keywords: Motivation, Emotion and affect, Teaching approaches, Learning approaches

Presenting Author:Patrick Beymer, Michigan State University, United States; **Co-Author:**Kristy Robinson, Michigan State University, United States; **Co-Author:**Jennifer Schmidt, Michigan State University, United States

We investigated the relationships between instructional climate, students’ appraisals of control and value, and emotions in Out-of-School Time (OST) programs focused on STEM content. Research questions included: 1) How does instructional climate relate to control, value, and emotions in OST STEM programs? 2) To what extent do control and value appraisals mediate the relationships between instructional climate and emotions? Results of structural equation models suggest that instructional climate was not predictive of students’ appraisals of control and value; however, momentary emotions did vary based on instructional climate. Students experienced less boredom and stress when positive climate was rated as high by trained observers. Students also experienced less stress when the quality of feedback was rated as high. Students’ reporting high appraisals of control experienced high levels of happiness and excitement and low levels of stress, while students’ reporting high appraisals of value reported high levels of stress. Results provide an important test of control-value theory’s posited role of context in a novel learning environment, with implications for supporting students’ motivation and emotions during science learning activities.

Designing for Pleasant Emotions and Decrease in Procrastination in Literature-Based Inquiry Learning

Keywords: Motivation, Self-regulation, Emotion and affect, Learning approaches

Presenting Author:Julia Eberle, Ruhr-Universität Bochum, Germany; **Co-Author:**Tim Schönfeld, Ruhr University Bochum, Institute of Educational Research, Germany; **Co-Author:**Nikol Rummel, Ruhr University Bochum, Institute of Educational Research, Germany

Literature-based inquiry learning is a common form of instruction in the Humanities and Social Sciences but usually lacks the necessary support. This often leads to procrastination in the process and unpleasant emotions. In a quasi-experimental study we compared the effects of a virtual environment to support literature-based inquiry with scaffolds and prompted learning diaries, to unguided literature-based inquiry. As dependent measures we assessed emotional valence towards literature-based inquiry processes, perceived psychological ownership for the written product, and procrastination. Comparing the virtual environment condition (N = 16) to the control group (N = 27), we found a significant decrease in procrastination and a significant increase in perceived psychological ownership and positive emotions. The main data collection is currently in progress and will add to these findings.

Fostering Parent-Adolescent and Parent-School Relationship through Math Homework

Keywords: Motivation, Emotion and affect, Teaching approaches, Learning approaches

Presenting Author:Macarena Santana, Pontificia Universidad Católica de Chile, Chile; **Co-Author:**Miguel Nussbaum, Pontificia Universidad Católica de Chile, Chile; **Co-Author:**Patricia Imbarack, Pontificia Universidad Católica de Chile, Chile; **Co-Author:**Sebastian Piza, Pontificia Universidad Católica de Chile, Chile

It is known the importance of cultivating quality relationships between parents and adolescents. Schools, however, have not taken a leading role as positive mediators of this relationship favoring the adolescent development. The objective of this article, based on a perspective that builds theory instead of reflecting or testing theory, is to qualitatively study parents’ perception on the experience of participating with their children in academic school interventions, without explicit curricular content, in the context of their relationship with the child and the school. We explored the perceptions and reactions of parents in their participation in Curricular Scaffolding Activities in Math. The academic objective of the activities was that the student can approach a formal mathematical ability content or, through daily life experience. Parents were contacted by telephone to conduct semi-structured interviews in order to know their general perception and their behaviors during the experience. We discovered that an important part of the parents valued the opportunity to communicate and approach adolescents, representing an opportunity to know more about the student and empathize with them. In addition, it is reported that parents appreciate an access to the school environment, as it constitutes an opportunity for the emergence of conversation topics related to school with their child. We conclude that generating interaction spaces within the family environment using activities which exclude formal curricular mathematics content, can generate changes in the way in

which the subjects interpret, live and experience the parents-child relationship.

Paper Session E 3

17 August 2018 14:15 - 15:45

Nobel 1481-237

Single Paper

Motivational, Social and Affective Processes

Teaching Approaches

Keywords: Achievement goal theory, Emotion and affect, Motivation, Self-determination theory, Teaching approaches

Interest group: SIG 08 - Motivation and Emotion

Chairperson: Judith Harackiewicz, University of Wisconsin-Madison, United States

Autonomy-supportive and controlling teaching practices as predictors of academic integrity

Keywords: Motivation, Achievement goal theory, Self-determination theory, Teaching approaches

Presenting Author:Julien S. Bureau, Université Laval, Canada; **Co-Author:**Geneviève A. Mageau, Université de Montréal, Canada; **Co-Author:**Frederic Guay, Laval University, Canada; **Co-Author:**Geneviève Morneau-Vaillancourt, Université Laval, Canada

Cheating in school is an important ethical and moral issue. To prevent this problematic phenomenon, decades of investigation have helped understand the personal and contextual factors can explain cheating behaviors. In this study, we explore how teachers' autonomy-supportive and non-controlling practices foster academic integrity, as well as the mediating role of achievement goals in explaining this association. Participants were 710 college-level students from the Province of Quebec in 31 single-teacher groups. Students answered questionnaires on teacher behaviors of autonomy support and control (ASvsCTL), achievement goals for the subject as well as past cheating and cheating intentions. Results from structural models using bifactor ESEM revealed that perceived autonomy-supportive and controlling teaching significantly predicted student cheating (total effect: $\beta = -.09, p = .02$). Results further showed that indirect effects from ASvsCTL to cheating were mediated by achievement goals ($\beta_{\text{indirect}} = -.04, p = .03$), more specifically through a variation in mastery goals. Indeed, ASvsCTL predicted mastery goals in the class ($\beta = .26, p < .001$) which in turn negatively predicted cheating ($\beta = -.16, p = .01$). These results are in line with results from other researchers showing an association between autonomy support and mastery goals, as well as between mastery goals and cheating. Although effects were small, this research shows that teachers can influence cheating behaviors among their students and, as a result, need to incorporate positive teaching practices that can foster constructive and effective learning in their classrooms, while avoiding more controlling practices that can encourage cheating behaviors.

Antecedents of a controlling style: the role of an evaluative and performance oriented context

Keywords: Motivation, Emotion and affect, Self-determination theory, Teaching approaches

Presenting Author:Sofie Morbée, Ghent University, Belgium; **Co-Author:**Nathalie Aelterman, Ghent University, Belgium;

Co-Author:Leen Haerens, Ghent University, Belgium; **Co-Author:**Maarten Vansteenkiste, Ghent University, Belgium

The detrimental impact of a controlling style on a wide range of outcomes, such as motivation and performance, has been investigated rather extensively. Yet, up until today, the antecedents that elicit a more controlling motivating style have remained fairly understudied. In the current cross-sectional study, we investigated whether sport coaches who experience to be in an evaluative and performance oriented context, are more likely to engage in a controlling coaching style. In addition, we examined whether this relation is mediated by experiences of need frustration.

In total, 585 coaches filled out validated questionnaires on controlling coaching and perceived pressure from above (e.g. perceived degree of being judged and evaluated based on their performances). In a subsample (N = 211) we also measured experienced need frustration. In line with the tenets of Self-Determination Theory (Ryan & Deci, 2002), structural equation modeling revealed a positive relationship between the degree to which coaches experience the context as more evaluative and performance oriented and their engagement in controlling coaching. This relationship was significantly mediated by experienced need frustration.

The results highlight how an evaluative and performance oriented context may impact upon coaches' interpersonal style, such that they are more inclined to enact in a controlling way. Furthermore, the results underline the role of psychological need frustration in this process. Thus, if we want to design interventions to prevent a controlling motivational style, it is crucial to involve the specific context.

Motivating impact of choice and competence enhancing feedback: an experimental study

Keywords: Motivation, Emotion and affect, Self-determination theory, Teaching approaches

Presenting Author:Femke Van Duyse, Ghent University, Belgium; **Co-Author:**An De Meester, Ghent University, Belgium;

Co-Author:Nathalie Aelterman, Ghent University, Belgium; **Co-Author:**Gert-Jan De Muynck, Ghent University, Belgium;

Co-Author:Bart Soenens, Ghent University, Belgium; **Co-Author:**Leen Haerens, Ghent University, Belgium

According to Self-Determination Theory (Deci & Ryan, 2000), students will be more autonomously motivated, when their teachers adopt an autonomy supportive (Haerens et al., 2015) and structuring teaching style (Vansteenkiste et al., 2012). One aspect of teachers' autonomy support is the provision of choice, while one facet of a structuring style is the provision of

competence enhancing feedback (Mouratidis, Vansteenkiste, Lens, & Sideridis, 2008). Relying on an experimental design, this study aimed to examine the motivational effects of both choice and positive feedback. In this study, 267 (7th grade) students out of 10 different schools were randomly assigned to one of four experimental conditions (2 by 2 design). Students were asked to imagine how they would experience being a student in the videotaped lesson. Two factors were manipulated in the videos, that is 1) whether or not students could choose the level of difficulty of their exercises, and 2) whether or not the teachers used positive feedback when discussing which elements of the handstand could be improved. After the experimental induction, students completed validated questionnaires on their anticipated psychological need satisfaction and autonomous motivation. Firstly, results suggested that when choices are provided, students anticipate more autonomy, competence and relatedness satisfaction and autonomous motivation and less competence and relatedness frustration. Secondly, when positive feedback is given in addition to corrective feedback students anticipate less autonomy, competence and relatedness frustration. No significant interaction effect between choice and feedback type was found.

Clarity on the assessment criteria fosters autonomous motivation

Keywords: Motivation, Emotion and affect, Self-determination theory, Teaching approaches

Presenting Author: Leen Haerens, Ghent University, Belgium; **Co-Author:** Christa Krijgsman, Utrecht University, Netherlands; **Co-Author:** Athanasios Mouratidis, Hacettepe University, Greece; **Co-Author:** Lars Borghouts, Fontys University of Applied Science, Netherlands; **Co-Author:** Nathalie Aelterman, Ghent University, Belgium

According to Self-Determination Theory (SDT; Ryan & Deci, 2002), students are better motivated when teachers clarify their expectations because in that way students better comprehend what is requested from them. The purpose of the present study was to investigate how knowledge of the assessment criteria relates to students' need-based experiences, and in turn to their motivation and whether these relationships were moderated by teachers' autonomy support. A convenience sample of 659 students (55.54% boys, age 14.72 years, SD=0.94), out of 40 classes from 32 schools in Flanders filled out validated questionnaires directly after they had participated in their lesson. Multilevel (students nested in classes) structural equation modeling in MPlus was used to investigate the proposed relationships. Results. Awareness of the criteria was significantly positively related to autonomous motivation and negatively to amotivation. Results further revealed that need satisfaction mediated these relationships. Interestingly, a statistically significant interaction effect between awareness of the criteria and autonomy support was found in relation to need frustration, with need frustration being lower when students reported being highly aware of the assessment criteria and simultaneously rated their teacher as highly autonomy-supportive. Conclusions. The findings suggest that when teachers create transparency on the assessment criteria and adopt an autonomy-supportive style, students' autonomous motivation would be fostered, while amotivation would drop because students would experience greater need satisfaction and lesser need frustration.

Paper Session E 4

17 August 2018 14:15 - 15:45

Nobel 1483-251

Single Paper

Motivational, Social and Affective Processes, Teaching and Teacher Education

Motivation and Engagement

Keywords: Achievement goal theory, Engagement, Goals, Learning approaches, Motivation, Self-determination theory, Teaching approaches

Interest group: SIG 08 - Motivation and Emotion

Chairperson: Thomas Lösch, University of Bamberg, Germany

Relationships among goal orientations, online learning pattern, and achievement in a flipped course

Keywords: Motivation, Engagement, Achievement goal theory, Goals

Presenting Author: Zhiru Sun, University of Southern Denmark, Denmark; **Co-Author:** Kui Xie, The Ohio State University, United States

The flipped classroom is a unique instructional model with in-class activities being heavily dependent on pre-class learning engagement. Practitioners and researchers have well recognized the critical role of the pre-class learning on students' success in the flipped class. However, little research has investigated students' pre-class learning behaviors and relevant factors that could impact such the behaviors. Based upon the achievement goal theory, this study first used latent profile analysis to identify homogeneous pre-class learning profiles or patterns, and then employed multivariate analysis of variance method to examine the impact of the learning patterns on students' four exam performances throughout a semester. Last, multinomial logistic regression was conducted to investigate the influence of students' goal orientations on their learning patterns. The results revealed three types of pre-class learning patterns, which were referred to as "*lecture-completing group*" (Profile 1), "*time-consuming group*" (Profile 2), and "*homework-attempting group*" (Profile 3). No significant difference was found on the 1st and 2nd exam, but significant differences were observed on the 3^d and final exam among the three profiles. In particular, profile 2 achieved significantly lower than the other two profiles on the last two exams. In addition, achievement goal orientations, especially performance-approach and performance-avoidance goals,

significantly impacted students' profile membership. Specifically, students who are more performance-approach goal oriented are more likely to belong to profile 1 or 3, while those who are more performance-avoidance goal oriented are more likely to belong to profile 2. The implications of the results are discussed in the conclusion section.

The Role of the Facilitator in Adult Learning: A Self-Determination Theory Perspective

Keywords: Motivation, Engagement, Self-determination theory, Learning approaches

Presenting Author: Ib Ravn, The Danish University of Education, Denmark

"Death by PowerPoint" remains a poignant trope, especially in conferences, seminars and professional development workshops. This paper explores the usefulness of group facilitators in such adult learning arenas. A facilitator may use simple and efficacious learning techniques as a supplement to traditional lectures. Also, the role of the facilitator in enabling conversations between many participants is key. The effect of using group facilitation in the adult learning arena can be accounted for by Self-Determination Theory. SDT argues that people are spontaneously motivated when their basic psychological needs for autonomy, competence and relatedness are addressed, through an approach known in SDT as needs support. The paper will demonstrate that the art of the facilitator lies in supporting the participants' psychological needs. For example, midway through a long lecture, a facilitator may ask the audience "What has been useful to you in the lecture so far? Please discuss this with someone you don't know for 10 minutes". This allows everyone to be active and speak their minds (autonomy), recognizes their valuable experience and invites them to apply it (competence) and helps them meet and interact meaningfully with a stranger (relatedness). Thus, the paper contributes to the study of adult learning in large arenas by proposing a theoretical framework to explain why group facilitation works, and it contributes to Self-Determination Theory by showing how learning in an arena hitherto unexplored by SDT—in particular, the professional conference—may be enhanced in a most SDT-like fashion through the decades-old discipline of group facilitation.

Predicting Students' Perception of Instruction by Contextual and Individual Determinants

Keywords: Motivation, Engagement, Self-determination theory, Teaching approaches

Presenting Author: Barbara Otto, Psychology, University of Landau, Germany; **Co-Author:** Natalie Vannini, Goethe-Universität Frankfurt, Germany; **Co-Author:** Nir Madjar, School of Education, Bar-Ilan University, Israel

So far, little is known about the specific factors that have an impact on teachers' need supportive behavior in the classroom. Therefore, the current study aimed at investigating the specific role of teachers' autonomy support at work as well as students' personality for students' perceptions of need supportive classroom instruction. In order to answer this research question data of 141 classes and their associated mathematics and German language arts teachers were assessed. Students had to report on their perception of need supportive instruction in both subjects as well as on two scales of personality traits, whereas their teachers had to indicate their level of perceived autonomy support at work. Data were analyzed by two-level Hierarchical Linear Modeling. The analyses on level-2 revealed a significant effect of teachers' perceived autonomy support on students' perception of need supportive instruction in both subjects. Moreover, the results of level-1 revealed a significant effect for obedience, meaning that students with higher obedience reported higher levels of perceived teacher support in both domains. The findings are discussed with regard to their practical implications.

Self-determination and personal achievement goals in traditional and nontraditional students

Keywords: Motivation, Engagement, Achievement goal theory, Self-determination theory

Presenting Author: Marina Lemos, University of Porto, Portugal; **Co-Author:** Ana Rothes, Faculty of Psychology and Educational Sciences, University of Porto, Porto, Portugal, Portugal; **Co-Author:** Maria Teresa Goncalves, Universidade do Porto, Portugal

Students' level of self-determination and the goals they pursue in class are important factors in their engagement and learning. The aims of this study were to provide an integrated model connecting students' regulation of motivation and personal achievement goals to their behavioral/emotional engagement and use of deep-learning strategies, in traditional and nontraditional students. Path analysis for the total sample revealed that mastery goals mediated the relationship between autonomous regulation and all educational outcomes, and that performance goals (approach and avoidance) had no significant relationship to the outcomes. Multiple-group path analysis showed a stronger pattern of relationships for nontraditional students, both between SDT and AGT variables, and between this set of variables and the outcomes. Practical implications of the study are discussed.

Paper Session E 5

17 August 2018 14:15 - 15:45

Nobel 1481-264

Single Paper

Motivational, Social and Affective Processes

Self-determination Theory

Keywords: Achievement, Engagement, Expectancy-value theory, Learning approaches, Measurement, Motivation, Self-determination theory

Interest group: SIG 08 - Motivation and Emotion

Chairperson: Paul O'Keefe, Singapore

Can the gender gap in reading comprehension be traced to differences in school engagement?

Keywords: Motivation, Engagement, Self-determination theory, Achievement

Presenting Author: Kristján K. Stefansson, Visar research ehf., Iceland; **Co-Author:** Sigrún Jónatansdóttir, Foldaskóli, Iceland; **Co-Author:** Steinunn Gestsdóttir, University of Iceland, Iceland; **Co-Author:** Freyja Birgisdóttir, University of Iceland, Iceland

The gender gap in reading comprehension and school engagement, favoring girls, is relatively well-known in many countries. However, gender differences in the relation between school engagement and reading comprehension are less well-known. The aim of the current research was (1) to examine the expected gender gap in reading comprehension and school engagement among adolescents in Iceland, (2) to examine to what extent the gender gap in reading comprehension could be explained by the gender gap in school engagement (a mediation hypotheses), and (3) to examine whether school engagement was equally important as a predictor for reading comprehension for girls and boys (moderation or differential effects hypothesis). 561 adolescents participated in the research. Measurements on school engagement were conducted with the use of a self-reported questionnaire at the beginning of Grade 9 and reading comprehension was measured as a part of a standardized test in Icelandic language skills at the beginning of Grade 10. A structural equation model was used to test study hypotheses. Girls outperformed boys in reading comprehension ($d = 0.34$) and showed more school engagement than boys ($d = 0.35$). School engagement was a strong predictor for reading comprehension for the whole group ($\beta = 0.45$), and contributed equally for girls ($\beta = 0.44$), and for boys ($\beta = 0.43$). In this study, school engagement fully mediated the relationship between gender and reading comprehension, where all gender difference in reading comprehension could be explained with gender difference in school engagement.

Fuel for motivation: influence of context on motivation of postgraduate medical education trainees

Keywords: Motivation, Engagement, Self-determination theory, Achievement

Presenting Author: Wieke van der Goot, University Medical Center Groningen / University of Groningen, Netherlands; **Co-Author:** Sayra Cristancho, Schulich School of Medicine and Dentistry, University of Western Ontario, London, Ontario, Canada., Canada; **Co-Author:** Marco Antonio de Carvalho Filho, Department of Emergency Medicine, School of Medical Sciences, University of Campinas, Brazil., Brazil; **Co-Author:** Debbie Jaarsma, University Medical Center Groningen/University of Groningen, Netherlands; **Co-Author:** Esther Helmich, University Medical Center Groningen/University of Groningen, Netherlands

Postgraduate medical education takes place in complex clinical environments. Motivation is needed to learn and perform effectively in these environments. While context influences trainees' motivation, little is known about which aspects of these complex environments are important. Therefore, our research question was: how do complex clinical environments influence trainees' motivation? As a methodology we used constructivist grounded theory. Fifteen trainees participated in this study. They drew a rich picture about a motivating situation in their training, and were interviewed afterwards. Rich pictures are visual representations that capture participants' perspectives of a specific situation. Data collection and data analysis were performed iteratively, using open, focused, and selective coding strategies, and memo writing. Results show that trainees drew meaningful situations of their clinical practice. Trainees were motivated in situations in which they acted themselves. They drew situations that really matter, clinically or interpersonally. Trainees also drew situations in which they were able to reduce the complexity of clinical practice. This study begins to show that people and structures in complex environments are intertwined. Furthermore, it shows the tension between the reality of complex clinical practice (that contains many tasks that are perceived as corvée/servitude, therefore not motivating) and those situations that motivate trainees during their work, such as performing a surgery or resuscitation autonomously, breaking bad news to patients, or working in night shifts with an experienced team. Ongoing analysis will focus on formal and hidden structures in complex clinical environments, and how trainees engage in or influence these environments.

Profiles of teachers' need support: how do they cohere and predict learning outcomes?

Keywords: Motivation, Self-determination theory, Achievement, Measurement

Presenting Author: Kim Stroet, Leiden University, Netherlands; **Co-Author:** Lisette Hornstra, Utrecht University, Netherlands; **Co-Author:** Desirée Weijers, Kohnstamm Institute, University of Amsterdam, Netherlands

According to Self-Determination Theory (SDT: Deci & Ryan, 2000), teachers' provision of need support (autonomy support, structure, and involvement) fosters students' motivation. Although a wide array of SDT-research is available on each dimension of need support, only in recent years authors have begun arguing that support for each of the three dimensions cannot be considered in isolation. As such, profiles of need support should be researched (e.g. Jang et al., 2010). In the present study, we examined naturally occurring profiles of need support, thereby comparing both teacher and student reports. Further, we researched relationships between these naturally occurring profiles and several motivational outcomes and school achievement. For this aim, we collected data from questionnaires among 287 grade-7 students and their teachers. Findings indicated that profiles of student perceived need support were well balanced and represented mostly quantitative differences. This suggest that the dimensions of need support as perceived by students are interdependent and the perception of high support of one need can boost the experience of support of the other needs. Data on teacher reported need support per student suggested much less balanced profiles. In general higher levels of need support were associated with higher levels of motivation and achievement, while data on teacher reported need support seemed to suggest that high levels of support in the other two dimensions could not compensate for a lack of autonomy-support. In

conclusion, these findings suggest the importance of taking an integrative approach not only in research, but also in educational practice.

The Power of Choice: Does Adding Choice Improve the Effectiveness of a Utility Value Intervention?

Keywords: Expectancy-value theory, Self-determination theory, Achievement, Learning approaches

Presenting Author: Emily Rosenzweig, University of Wisconsin-Madison, United States; **Co-Author:** Judith Harackiewicz, University of Wisconsin-Madison, United States; **Co-Author:** Stacy Priniski, University of Wisconsin - Madison, United States; **Co-Author:** Cameron Hecht, University of Wisconsin-Madison, United States

Utility-value interventions, which ask students to make connections between their course material and their lives, are useful for improving students' academic outcomes. Researchers have suggested that these interventions are successful in part because they afford students autonomy while they complete intervention activities (Yeager & Walton, 2011). It is possible that these interventions would be even more effective if researchers add *additional* supports for students' autonomy into them. The present study examined whether a utility value intervention condition that provided students with more choices, in order to promote autonomy, was more effective than one that provided fewer choices. College students in an introductory biology course (n = 406) were assigned randomly to a high-choice intervention condition (choose between writing an essay or letter about how your course material relates to your life), one of two low-choice intervention conditions (complete either an essay and then a letter, or vice versa), or a control condition (summarize what you are learning in the course). Students in the high-choice condition reported significantly higher utility value and interest for at least one of the topics studied in the course, and for biology overall, compared to students in the low-choice conditions. There were also significant indirect effects of choice on students' final course grades and likelihood of enrolling in the next course in the biology sequence, through their utility value and interest. Results suggest that adding choice into social-psychological interventions is a resource-efficient way to increase their effectiveness.

Paper Session E 6

17 August 2018 14:15 - 15:45

Nobel 1481-231

Single Paper

Motivational, Social and Affective Processes

Motivation and Self-efficacy

Keywords: Achievement, Achievement goal theory, Attitudes and beliefs, Emotion and affect, Goals, Measurement, Motivation, Self-efficacy

Interest group: SIG 08 - Motivation and Emotion

Chairperson: Toni Rogat, Purdue University, United States

Development and Validation of a New Multidimensional Language Learning Anxiety Scale

Keywords: Emotion and affect, Attitudes and beliefs, Achievement, Measurement

Presenting Author: Gulsah Kutuk, Edge Hill University, United Kingdom

This study reports on the construction, reliability and validity of the Multidimensional Language Learning Anxiety Scale (MLLAS) which is designed to assess second/foreign language learners' anxiety regarding four language learning skills (listening, reading, writing and speaking) and testing. The scale is consisted of 30 items which were created based on Pekrun et al.'s (2011) Achievement Emotions Questionnaire (AEQ). The initial items were piloted with 323 Turkish students studying English as a Foreign Language at university in Turkey. The revised questionnaire was administered to 585 Turkish students in the main study. All data were analysed in Mplus Version 7.4 (Muthen & Muthen, 1998-2015).

Confirmatory factor analysis revealed that a bifactor model with correlated residual variance yielded a better fit to the data in both studies than the other five models tested (a bifactor model without correlated residual variance, a lower order factor model with three method factors, a lower order factor model with correlated residuals, a higher order factor model with correlated residuals, and a higher order factor model with three method factors). The overall results provided preliminary evidence for the reliability and validity of the data collected using the new scale. Directions for future research and implications for foreign language teaching and learning are discussed. **Keywords:** Foreign language learning, anxiety, skill-based approach, psychoeducational assessment

Fear of Failure and Self-efficacy are in the eyes of the Beholder

Keywords: Motivation, Self-efficacy, Emotion and affect, Achievement goal theory

Presenting Author: Lisenne Giel, Erasmus University Rotterdam, Netherlands; **Co-Author:** Gera Noordzij, Erasmus University College, Netherlands

In this study, we examined how the fit between personal achievement goal orientation and the perceived performance-approach climate predicted fear of failure and self-efficacy amongst students at a highly selective college. We administered questionnaires amongst 192 first year students to measure their achievement goal orientation, the perceived academic climate, fear of failure, and self-efficacy. Using polynomial regression analysis and three-dimensional response surface plots we examined the effects on fear of failure and self-efficacy of a match and a mismatch between personal achievement goal orientation and perceived performance-approach climate. The results show that fear of failure increased and self-

efficacy decreased when students perceived the achievement climate as highly competitive and performance-oriented. These results were similar for students adhering to different achievement goal orientations. However, the detrimental effects of a perceived performance-oriented climate were worse for students that try to avoid a demonstration of incompetence. The debilitating effect of an educational climate that places a strong emphasis on performance and in which failure is defined as negative and something to avoid was made evident. Even students that adhere to a beneficial achievement goal orientation are affected in a negative manner by such an educational climate. As such, educational institutes might want to shape their culture to allow for a climate in which students are encouraged to make mistakes and focus on their own learning.

A Participatory Approach to Measure Students' Achievement Goals

Keywords: Motivation, Self-efficacy, Achievement goal theory, Goals

Presenting Author:Marko Lüftenegger, University of Vienna, Austria; **Co-Author:**Lisa Bardach, University of Vienna, Austria; **Co-Author:**Barbara Schober, University of Vienna, Austria; **Co-Author:**Christiane Spiel, University of Vienna, Austria

Even though numerous achievement goal measures exist, a comprehensive instrument that adequately reflects recent theoretical advancements, i.e. taking both normative and appearance components of performance goals into account, is lacking. Furthermore, the potential of participatory approaches in which researchers and students work together to develop items has not yet been fully realized in this area. The present study thus relied on a participatory approach to develop and validate an achievement goal questionnaire consisting of goal scales assessing mastery approach, normative and appearance performance-approach, and normative and appearance performance-avoidance. The newly developed scales showed good psychometric properties (structural validity, reliability) in a validation study with 3223 Austrian students. To test for external validity links between the five achievement goal types and constructs (implicit theories, self-efficacy, reactions to errors) that have been shown to be both conceptually and empirically important in prior work on achievement goals were investigated.

Students' school motivation profiles in primary education: A latent class analysis.

Keywords: Motivation, Self-efficacy, Achievement goal theory, Achievement

Presenting Author:Hanke Korpershoek, University of Groningen, Netherlands; **Co-Author:**Maaïke van Rooijen, Verwey-Jonker Instituut, Netherlands; **Co-Author:**Quint Oga-Baldwin, Waseda University, Japan

Literature suggests that students pursue several achievement goals in learning situations, and thus differ in their school motivation. The present study focuses on identifying differences in school motivation profiles among a large sample ($N \approx 10,000$) of primary school students. School motivation was measured by the Inventory of School Motivation (ISM; Ali & McInerney, 2004), including four motivation dimensions: mastery, performance, social, and extrinsic motivation. The following research questions were addressed: *How many latent clusters represent 6th grade students' motivation profiles? To what extent do the clusters differ regarding students' academic self-efficacy and their academic achievement?* Latent cluster analysis (a person-centred approach) was used to identify relatively homogeneous groups of students sharing similar motivational characteristics. The results showed acceptable model fit for the 3- and 4-cluster solutions. The 3-cluster solution consisted of: (A) an average group, (B) an above-average group, and (C) a group with relatively low scores on performance and extrinsic motivation. The 4-cluster solution additionally distinguished (D) a group with relatively low scores on all motivation scales. Analysis of variance revealed small, inconclusive, yet statistically significant differences across groups regarding students' academic self-efficacy, and their scores on an arithmetic test and reading comprehension test. No clear favourable or less favourable motivation profile could be distinguished on the basis of the ISM among the sample of primary school students.

Paper Session E 7

17 August 2018 14:15 - 15:45

Nobel 1483-354

Single Paper

Higher Education, Lifelong Learning, Motivational, Social and Affective Processes

Self-efficacy and Motivation

Keywords: Attitudes and beliefs, Interest, Metacognition, Motivation, Self-determination theory, Self-efficacy

Interest group: SIG 08 - Motivation and Emotion

Chairperson: Jolene van der Kaap-Deeder, Ghent University, Belgium

Master's students' motives and perceived barriers to pursue a PhD

Keywords: Motivation, Self-efficacy, Interest, Attitudes and beliefs

Presenting Author:Els van Rooij, University of Groningen, Netherlands; **Co-Author:**Marjon Fokkens-Bruinsma, University of Groningen, Netherlands; **Co-Author:**Ellen Jansen, University of Groningen, Netherlands

Pursuing a PhD is a challenging experience and many students who start the doctoral journey fail to obtain the PhD degree. To stay motivated throughout the PhD trajectory and eventually successfully obtain the degree it is important that PhD students start with adequate expectations regarding the nature of the work and the skills and attitude it requires, and

realistic outcome expectations such as the current career prospects of PhD holders. Not much research has been undertaken regarding master's students' motives and perceived barriers to embark on a PhD, and many of the existing studies were qualitative and used small samples. Moreover, usually these samples consisted of current PhD students, which implies a lack of information from people who did not choose to do a PhD. To address these shortcomings, this quantitative study uses a sample of 551 students of master's programmes at a Dutch university and investigates these potential PhD students' motives and barriers to pursue a PhD. We identified seven dimensions of motives and barriers. Most strongly related with plans to pursue a PhD were intrinsic motivation, having the belief that doing a PhD matches one's abilities, having had positive research experiences, and aspiring an academic career. The latter may be a problematic motive for starting a PhD trajectory in the current academic landscape where only about 20 percent of all PhD holders (can) stay in academia.

First-year medical students' motivation for research and factors influencing their motivation

Keywords: Motivation, Self-efficacy, Attitudes and beliefs, Self-determination theory

Presenting Author:Belinda Ommerring, Leiden University Medical Center, Netherlands; **Co-Author:**Floris van Blankenstein, Leiden University Medical Center, Netherlands; **Co-Author:**Friedo Dekker, Leiden University Medical Center, Netherlands

AimThe medical field is currently facing a physician-scientist shortage. A possible solution could be to engage students in research in early phases of medical education. To do so, knowledge is needed on how to motivate students for conducting research. Therefore, the aim of this study is to investigate if students are motivated for research, and to identify factors influencing intrinsic and extrinsic motivation for research among first-year medical students.

Method We surveyed first-year medical students at the beginning of their bachelor's program in 2016. On a 7-point Likert scale, students reported their motivation for research, self-efficacy, perceptions of research, curiosity, and need for challenge. Regression analyses were used to examine the influence of these factors on students' motivation for research. **Results** 315 out of 316 students participated (99.7%). On average, students scored 5.49 on intrinsic, and 5.66 on extrinsic motivation for research. All factors significantly and positively influenced intrinsic and extrinsic motivation for research, also after adjusting for gender and age. Cumulative regressions showed that these factors explained 39.6% of the variance in intrinsic, and 14% in extrinsic motivation for research.

Discussion and practical significance All factors play an important role in influencing intrinsic and, to a lesser extent, extrinsic motivation for research. These findings are of practical significance by providing insights in how to keep students motivated for and engage them in research. By stimulating positive self-efficacy, positive perceptions of research, and curiosity, students' motivation for research could be enhanced. Furthermore, students with a need for extra challenges could be directed towards conducting research.

Relationships between Student Motivation and Persistence in Engineering

Keywords: Motivation, Self-efficacy, Attitudes and beliefs, Metacognition

Presenting Author:Lisa Benson, Clemson University, United States

Student motivation towards their activities and tasks in engineering (both present and future) can interact with their academic choices, including decisions to persist in an engineering degree program. This quantitative study explores the following questions: How do measures of students' perceptions of the future and attitudes about studying and pursuing careers in engineering correlate with the likelihood that they will persist in an engineering degree program? A survey assessing student motivation to pursue engineering studies was distributed to all first-year engineering students at a single institution. The survey comprised eight constructs based on Expectancy – Value, Goal Orientation, and Future Time Perspective (FTP) theories, as well as metacognitive strategies and problem-solving self-efficacy. Comparisons were made between survey scores for different groups of students, and correlations were calculated between survey scores and student persistence in engineering majors three years later. Our findings show that students with high expectations of success in their first year engineering course and positive perceptions of the future are more likely still be in an engineering degree program several years later, indicating that FTP is a relevant theory for examining interactions between student motivation and persistence in engineering. These findings indicate the need for engineering educators to provide students with experiences that build confidence in their ability to complete course work and that contribute to positive perceptions of their future in engineering.

Further specification of the Transfer of Learning System through motivational theory

Keywords: Motivation, Self-efficacy, Attitudes and beliefs, Self-determination theory

Presenting Author:Joost Jansen in de Wal, University of Amsterdam, Netherlands; **Co-Author:**Frank Cornelissen, University of Amsterdam, Netherlands

The learning transfer system (LTS) provides an explanation for why content of training that employees participate in finds its way to their work practices or not. The basic assumption of the LTS is that characteristics of trainees, the training, and the work environment determine transfer of training via motivation to transfer. This study seeks to further specify the LTS on the basis of recent developments in motivational theory. Specifically, we employ the unified model of task specific motivation to explain why elements from the LTS should be related to autonomous and controlled motivation to transfer. We argue that characteristics of the work environment that are relevant predictors of motivation to transfer can be interpreted as 'perceived freedom of action' and 'perceived external support'. Therefore, we expect that the effects of these

characteristics can be explained through employees' sense of personal autonomy, sense of personal competence, and subjective norm. To test our hypotheses, three waves of questionnaire data are collected among 120 judges and legal assistants, from five courts in the Netherlands, who participated in a training day. Data is collected just before the training, right after the training and two weeks after the training and is analyzed using latent growth curve analysis. Preliminary results show a large consistency in developmental patterns across LTS elements, personal sense of autonomy, personal sense of competence, subjective norm, autonomous motivation and controlled motivation to transfer. This provides initial indications of the accuracy of our hypotheses and the value of our model for theory development.