

Teacher-student interaction and lower secondary school students' situational engagement

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Student engagement

- multidimensional construct that focuses on students' involvement and commitment with school in ways that promote their learning
- typically defined in terms of three distinct, yet interrelated, components: behavioral, emotional, and cognitive engagement
 - / Behavioral engagement: students' participation and involvement with learning and academic tasks (e.g., attending and contributing the class discussions), students' positive conduct (e.g., following rules and norms), and participation in other school-related activities (e.g., school governance or other extra-curricular activities)
 - / Emotional engagement: students' sentiments toward school and learning and their sense of belonging with other students, teachers, and school
 - / Cognitive engagement: students' cognitive investment in learning reflected e.g., in independent working styles, ways of responding to challenges, mastery of knowledge and skills, and the use of metacognitive strategies

(e.g., Appleton et al., 2006; Fredricks et al., 2004; Martin et al., 2015; Reeve & Lee. 2014; Skinner et al, 2009; Wang, Witter, & Eccles, 2011)



Student engagement

- presumed to be malleable and thus may vary on a situational basis
- research on engagement has typically been based on ratings of engagement as a general or overall trait (i.e., ratings of overall engagement across typical school situations).
- Students' situation-specific engagement (i.e., ratings of lesson-by-lesson experiences) has been seldom studied (Eccles & Wang, 2012; Finn & Zimmer, 2012;).

Factors influencing student engagement



- student-related factors (e.g., gender, academic ability or age)
- The existing literature suggests that students' engagement is formed in transaction with the context in which they study and learn (Eccles & Wang, 2012).
- structural features of the classroom (e.g., different subjects, time, class sizes)
- Teacher-student interactions (Teaching through interaction framework, Hamre et al., 2013)
 - / Emotional support: teachers' support for students' social and emotional functioning in classrooms
 - / Classroom organization: effective ways of organizing and managing classroom situations
 - Instructional support: ways in which the teacher fosters students' cognitive skills and learning

(e.g., Fredricks et al., 2004; Hamre et al., 2013; Lam et al., 2015; Lam et al., 2012; Pöysä et al., 2016; Rimm-Kaufman et al., 2014; Skinner et al, 2009; Skinner & Pitzer, 2012; Virtanen et al., 2013)

AIMS



- The aim was to examine the extent to which the teacher-student interactions (emotional support, classroom organizational, and instructional support) in particular lesson are associated with students situation-specific engagement at the end of the same lesson.
- In addition, to examine whether associations between the teacher-student interactions and situational engagement would differ between boys and girls.

Classroom Assesment Scoring System – Secondary (CLASS-S)



- Teacher-student interactions were assessed using observational method Classroom Assessment Scoring System –Secondary (*CLASS-S*; Pianta et al., 2012).
- CLASS-S contains eleven dimensions, which can be organized under three domains
 - / Emotional Support contains three dimensions: Positive Climate, Teacher Sensitivity, and Regard for Adolescent Perspectives
 - / Classroom Organization contains three dimensions: Behavior Management, Productivity, and Negative Climate (reversed for analysis).
 - Instructional Support contains five dimensions: Instructional Learning Formats, Content Understanding, Analysis and Inquiry, Quality of Feedback, and Instructional Dialogue
 - / CLASS-S includes an additional dimension not belonging to the domains: **Student Engagement**
- Each of the dimensions is rated individually on a 7-point range (based the indicators and behavioral markers provided by the CLASS-S manual, Pianta et al., 2012). Scores 1-2 describe *Low quality*, 3-5 *Mid quality*, and 6-7 *High quality*.

InSituations (InSitu) Instrument

(Lerkkanen, Vasalampi, & Nurmi, 2013)



InSitu instrument was developed to assess students' situation-specific engagement.

- → Used in a form of a mobile application
- → The application was pre-programmed into smart phones which were handed out to the students at the end of each lesson

The InSitu instrument (Mobile application "Välkky") consisted of:

- Background information (name, school, class)
- 18 items rated on a 5-point scale (1 = not at all, 5 = very much)

Five factor solution (EFA & CFA)

- Behavioral/cognitive engagement
- Emotional engagement
- Disaffection
- Competence experiences
- Help-seeking

Validation study for InSitu instrument:

Vasalampi et al. (2016). Assessment of students' situation-specific classroom engagement by an InSitu Instrument. *Learning and Individual Differences, 52,* 46-52.

Participants and data



- Students:
 - / **First Steps study** (longitudinal study investigating children's academic and motivational development from the pre-primary to 9th grade)
 - / Grade 7 students (average age: 13 years and 2 months (SD = 4 months) at the beginning of Grade 7)
 - / 709 participants (338 girls, 371 boys)
 - / from 26 lower secondary schools and 59 classrooms from four Finnish towns
- Teachers:
 - / Subject teachers (language arts and mathematics)
 - / 51 participants (35 female, 16 male)
- Total of **155 lessons** (90 language arts and 65 mathematics lessons) were videorecorded during spring 2014.
- Students rated their situation-specific experiences at the end of each videorecorded lesson
 - / Total of 1,647 time-stamped ratings of students' situation-specific

experiences (M = 2.32 ratings for a student, range 1-9, SD = 1.56).

Statistical analyses



- Cross-classified two-level hierarchical model
 - / Mplus statistical program (version 7.3; Muthén & Muthén)
 - / Bayesian estimation
 - / The reason for using cross-classified hierarchical modelling was to separate variation due to variation between subjects and variation between teachers.
- Due the multicollinearity concerns three different models were constructed.
 - / Model A for Emotional Support, Model B for Classroom Organization, and Model C for Instructional support
 - / Models were identical compared to each other despite the included CLASS-S domain that varied in each models
 - / Each cross-classified hierarchical model provided a good fit according to Bayesian posterior predictive checks (Model A: p = .413; Model B: p = .219; and Model C: p = .316).



- Within-level modelled the extend to which the observed teacher-student interactions predicted variations in student's situational engagement (intraindividual variation).
 - / Gender interaction effects
- Between-level modelled variations between students and between teachers





Results

To what extent is variation in students' situation-specific engagement associated with the observed quality of teacherstudent interaction, i.e., a) emotional support, b) classroom organization, and c) instructional support?



- Emotional support was found to be **positively** related to students' situation-specific engagement.
 - / Observed emotional support was found to have a significant main effect on students' self-rated **situational emotional engagement, and help-seeking** (β = .140, 95% CI [.068, .214] and β =.109, 95% CI [.037, .181], respectively).
 - / No significant relations emerged between teacher's emotional support and students' behavioral engagement or disaffection.



Figure 1. Cross-classified hierarchical model for emotional support. Estimates are standardized. Positive values from gender to factors of situation-specific engagement in the between level (students) mean that boys have reported higher values than girls, and negative values mean that boys have reported lower values than girls.

To what extent is variation in students' situation-specific engagement associated with the observed quality of teacherstudent interaction, i.e., a) emotional support, b) classroom organization, and c) instructional support?



- Classroom organization was found to be positively related to students' situation-specific engagement
 - / However, significant main effects were found only for observed classroom organization and situational **behavioral/cognitive** engagement ($\beta = .079, 95 \%$ CI [.005, .154]).



Figure 2. Cross-classified hierarchical model for classroom organization. Estimates are standardized. Positive values from gender to factors of situation-specific engagement in the between level (students) mean that boys have reported higher values than girls, and negative values mean that boys have reported lower values than girls. To what extent is variation in students' situation-specific engagement associated with the observed quality of teacherstudent interaction, i.e., a) emotional support, b) classroom organization, and c) instructional support?



 The results did not show any significant main effects for students' situation-specific engagement and observed instructional support.



Figure 3. Cross-classified hierarchical model for instructional support. Estimates are standardized. Positive values from gender to factors of situation-specific engagement in the between level (students) mean that boys have reported higher values than girls, and negative values mean that boys have reported lower values than girls.



Gender as a predictor and moderator

- The results showed that
 - / boys reported significantly higher levels of disaffection and help-seeking than girls, and
 - / Girls reported significantly higher behavioral/cognitive engagement than boys.
- Finally, results showed one statistically significant interaction effect for gender
 - / Girls seemed to benefit more from high emotional support than boys for their situational emotional engagement (β = -.088, 95% CI [-.161, -.018].



Figure 1. Cross-classified hierarchical model for emotional support. Estimates are standardized. Positive values from gender to factors of situation-specific engagement in the between level (students) mean that boys have reported higher values than girls, and negative values mean that boys have reported lower values than girls.

Conclusion



- Overall, the results indicated that students experiences of situational engagement vary from lesson to lesson, and that students' situational engagement can be seen as an outcome of teacher-student interactions.
- The results indicated that' situational engagement of girls was significantly higher than that of boys, and girls appeared to benefit more from classroom interaction with high-quality emotional support than boys.
- This study is among the first empirical studies which provide information on the relation between teacher-student interaction and students' situational engagement.
- The findings can be applied
 - \rightarrow in research focusing on situational variation in classrooms
 - → in schools to guide ways of supporting student engagement
 - in teacher education to endorse importance of high-quality teachers-student interaction



Thank you!

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