

**ZMATH 2016d.00138**

**Niculescu, Alexandra C.; Tempelaar, Dirk T.; Dailey-Hebert, Amber; Segers, Mien; Gijsselaers, Wim H.**

**Extending the change-change model of achievement emotions: the inclusion of negative learning emotions.**

Learn. Individ. Differ. 47, 289-297 (2016).

Summary: Drawing upon the Control Value Theory of Achievement Emotions (CVTAE), this study tests the assumption that antecedents of learning-related emotions (LREs) change over the duration of a mathematics and statistics course. Our study focused on academic control as an antecedent of LREs. We investigated enjoyment (the positive emotion) and three negative LREs: anxiety, boredom and hopelessness. Using a repeated measures design for first year university students ( $N = 908$ ), we found that academic control and the levels of LREs remain, on average, stable over the duration of the course. Second, changes in academic control were positively related to changes in the positive emotion enjoyment, and negatively related to changes in the three negative emotions. These findings offer evidence to confirm the CVTAE change-change assumption that changes in control appraisals go together with changes in positive, as well as negative, LREs.

*Classification:* C25 C35

*Keywords:* academic learning-related emotions; perceived academic control; change-change model; first year of university; mathematics and statistics course

doi:10.1016/j.lindif.2015.12.015