

Hidden in plain sight : capturing freshmen emotional experiences and their effects on performance at university

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Valorisation addendum

The results of our work are particularly relevant and have direct application for Maastricht University (UM). To understand how the knowledge gained in this research can be practically used, through this chapter, we will place our findings in context. Our efforts were pointed to solving an urgent problem encountered at UM in general and, School of Business and Economics (SBE), in particular: the prevention of dropout among first year students. For this purpose, we have first tried to get more insight into the factors that play role in student dropout. Second, by knowing which factors matter most in freshmen's experiences, we tried to suggest practical ways which could improve success at course level.

The research described in our thesis originates from the UM project "Study success in the first year". Its aim was to support freshmen in passing their first year. For this purpose we initially conducted research to understand the adaption problems specific for the first year transition period (the adaptation problem and the theoretical approaches to address it were discussed extensively in Chapter 1). In a first study (Niculescu, Nijhuis, Gijsselaers, 2010), we examined how international first year students – as compared to local students – adapt to two different kinds of programs: the fixed curriculum at SBE versus the free curriculum at University College Maastricht (UCM). The results of this study indicated that is not the students' nationality but the type of curricula that plays a role in their adaption to university. The fact that SBE students who follow a fixed curriculum adapted better than those following a free curriculum at UCM represented an interesting finding. We concluded from this work that further research is needed to elucidate the role of nationality in adaptation without ignoring the learning environment in which this process takes place. Knowing that a fixed curriculum, as an educational factor, played a role in how first years at UM adapt, we further looked into more changeable individual factors which could give additional insight into what contributes to adaptation and further academic success at UM. In this respect, we developed an e-tool which could detect students at risk of dropping out. The instrument, called "The Students Self-Assessment", could provide insight into weaknesses and strengths with regard to study situations and learning, academic and social and personal life. It was designed to generate personalized computer feedback, which could be used for self-reflection or for starting a discussion with a study adviser. The instrument was used at SBE as well as other faculties within the UM. Overall, these initiatives represented the starting point for finding the best predictor of academic success and dropout – which, potentially, could be integrated in curriculum design at SBE.

In a second attempt of becoming more precise into which factors should be investigate for the best prediction of how SBE students perform, we moved from a program level to a course level. In this context, we chose to conduct our main research in the setting of QM I, a course notoriously known among freshmen for being particularly difficult and unattractive for most students. Another important factor for this choice was that failing QM I – the first of the required QM courses – has consequences on study delay and even exclusion from the educational program at SBE. In addition, we considered that this entry course was not sufficient in giving an overview of the entire first year at university experience, so we also included Finance, as the last course in the program to capture this picture. The results of our studies are presented in detail over Chapter 2 – 5, so we only briefly summarize the added value of our main findings below:

Chapter 2 provided extra empirical evidence on the role of role of achievement emotions experienced in learning-related situations on learning outcomes in QM I course. In addition, it tried to identify the differences in emotional experiences between students who attended as compared to those who were absent at the final exam. What was particularly relevant was that these differences were already visible in week four, half-way through the course. This knowledge offered the opportunity to intervene early in an educational setting, using these emotions as potential indicators for early withdrawal at the course level.

Chapter 3 provided a new approach to understand students' emotional experiences when they first enter a university study. In this respect, the two theories we used for this study were complementary: on one side our results were an empirical validation of the CVTAE; on the other side, the concepts operating in the MES could provide practical solutions on how to facilitate educational change in the classroom by using the influence these variables have in the experience of emotions.

Chapter 4 provided compelling evidence on how the changes in negative LREs and their appraisal antecedents are related. As a consequence, it offered valuable knowledge on how the levels of negative emotions can be decreased.

Chapter 5 went beyond the course level to create the longitudinal aspect of changes in LREs over different course subjects in the first year of university. We therefore incorporated but also went beyond the changes encountered over the duration of only one course, which is a novelty in this own. Overall, this study showed that contemporary theories of emotions provide a more detailed picture of freshmen's emotional experiences at university, covering the entire first year of study.

Overall, in order to be able to design interventions that can account for the role of students' emotional experiences and perceptions about the educational environment, the findings presented in this thesis point to the necessity of assessing as early as possible in a course and then afterwards through the first year at university. This can be achieved by the use of longitudinal designs, implemented at the course level.

The last part of our work, which was only briefly mentioned in this thesis, concerns the authors' course design efforts within the project "Feedback in the first blocks" at SBE which was aimed to enhance learning and prevent dropout among freshmen. The reason these efforts are mentioned here together with the findings from this thesis is that these course – redesigns were based on the insights from the research on emotions.

To give an overview, in the "Feedback in the first blocks" project, the main task was to advise SBE about how to change course formats in such a way that student performance can improve. From a content horizon, the central mechanism for these course-redesign interventions was the feedback provided by the tutors. A complementary mechanism was the tasks (problems or exercises) students were supposed to solve, inspired from the so-called "shadow cases" used in medical education, designed to promote the transfer of knowledge. We experimented with different types of feedback (performance or process types of feedback, provided for a group or at an individual level) and a variety of problems specific for the subject of each course redesigned. Our results showed that depending on the type of feedback provided we could achieve about 1 point (on a scale 1-10) higher in performance for the students who took part in the experiments. This effect increased with frequency of delivering the feedback and

the participation of students in the tutorials. In addition, the interventions were designed to be robust enough to how students feel about a course.

More precisely, after conducting the research in the QM I course, in the next academic year we designed a feedback intervention in the same course based on these insights. This course intervention (Niculescu et al., 2014) strengthened collaboration and facilitated the transfer of knowledge by providing structured feedback on tasks jointly prepared by students. Using an experimental design, we found that students who received feedback in a structured manner scored significantly .4 grade point higher (on a scale from 1 to 10) than students in the control condition. However, the intervention was effective after taking into account how students appraised the tasks to be solved and their learning emotions towards the course. In particular, only Learning Enjoyment and Hopelessness appeared as significant covariates. We concluded that future interventions could be improved by including more individual factors, such as students' learning emotions, which could blind the intervention impact if not accounted for.

On a related note, the results from the research described in this thesis about students' emotional experiences in QM I were used to re-design the Macroeconomics course, in period 3 of the same academic year. This experiment (Niculescu et al., 2012) showed that the frequency of providing structured feedback by the tutors as well as, the amount of attendance in course can give an extra half to 1 point on the final exam. As shown in the course evaluations, this intervention was very well received by the students and course planning group and, as a consequence, was adopted in structure of the course for the following academic year. Overall, we can conclude that these efforts were successful and helped the ERD Department to take the lead in a series of projects dedicated to reducing drop-out rates through improved feedback practices.

Finally, the results of the studies described in Chapters 2-5, together with the course design interventions, show that student success can be improved at SBE. From our perspective, it requires a few important conditions such as: applying the basic principles of Problem Based Learning when designing various courses (for instance, providing frequent and structured feedback, encouraging team work and tasks which are reflected in the final assessment) as well as accounting for how students receive both cognitively and emotionally the educational settings with its requirements. We consider these necessary conditions to engage the students in their learning in order to make the necessary efforts necessary for obtaining success.