

Higher education students' learning challenges and regulatory skills in different learning situations

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### **Abstract**

First year higher education (HE) students experience different challenges during their studies. These challenging learning situations can trigger students self-regulated learning (SRL) skills, and by these skills students can handle these situations. The aims of this study are to investigate (a) first year HE students cognitive, motivational and emotional challenges experienced in both individual and collaborative learning situations and (b) what is the relationship between SRL skills and experienced learning challenges. Participants were 107 first year pre-service teachers. Data consisted of students' self-reports via (a) open-ended answers on a challenge questionnaire and (b) likert-scale items from MSLQ and MRS questionnaires. Based on the students' SRL profiles, differential effects on the challenges experience were investigated. The results show that different aspects related to students' cognition, motivation, emotions and also wellbeing are challenging the students. Also, Connections were found between students' SRL skills and the types of the experienced learning challenges. High SRL students reported less learning challenges related to motivational aspects of learning and more challenges related to cognitive aspects of learning than low SRL students.

**Keywords:** Self-regulated learning; Higher education students; Learning challenges; Emotional challenges

## Introduction

Students struggle through different challenges during their studies (Webster & Hadwin, 2013). If the struggling continues for a long time, students can start to see themselves through the lens of failure. In the worst cases challenges can inhibit learning by causing problems in aspects such as cognitive skills, motivation, emotions or wellbeing (Boekaerts, 2011; Tuominen-Soini, Salmela-Aro & Niemivirta, 2012; Zimmerman and Cleary, 2009). This situation is especially relevant in higher education (HE) as it is a highly demanding context in which students' are expected to be independent and study under different teaching and learning methods than in lower educational levels (Anderman and Midgley, 1997; Middleton, Kaplan & Midgley, 2004). In HE autonomy is presumed because teachers are less directive and a large proportion of the work is done outside of classroom. In other words, skills of self-regulated learning are needed for HE students (Goldfinch & Hughes, 2007). Logically, first year HE students are the ones that need more specific support to adapt to the new learning environment (Anderman & Midgley, 1997; Middleton et. al., 2004; Nelson, Smith & Clarke, 2012). A successful transition to university will influence their future academic performance and success (Hughes & Smail, 2014). Unfortunately, much is unknown still about how first year HE students experience such transition. That is the aim of this study to explore the challenges those students experience when starting the university and how their self-regulated learning (SRL) skills affect to those challenges occurrence.

### ***What creates challenges for first year HE students' learning?***

Learning is bursting with situations that challenge students' abilities (Greeno, Collins & Resnick, 1992). This is logical as learning is a complex mental process in which students' cognitive skills, motivation, emotions, and wellbeing are interconnected and influenced by different contextual features in the environment (Zimmerman, 1989; 2000). In situations where there is an educational level change (e.g. start of secondary education), apart from the

more advanced knowledge students need to acquire, they have to face a different learning context: new teachers, new learning and teaching methods, new classmates, etc. Especially in the transition to HE it is important to support the students as the change will defy their educational progress and university teachers can oversee how challenging the transition can be.

Research on first year HE students' experiences has found that students' cognitive skills and motivation (Webster & Hadwin, 2013), emotions (Boekaerts, 2011; Pekrun, Frenzel, Goetz & Perry, 2007), wellbeing (Danna & Griffin, 1999; Heikkilä, Lonka, Nieminen & Niemivirta, 2012; Tuominen-Soini et al., 2012) and different social aspects of learning (Blumenfeld, Marx, Soloway & Krajcik, 1996) are connected to students' learning and academic achievement. Therefore, the interventions for a successful transition to the university need to consider these aspects and be comprehensive in their approach to the challenges.

In terms of the common challenges that HE students face, these belong to different contextual changes in teaching methods, learning environment and the new learning topics (Anderman & Midgley, 1997; Middleton et. al., 2004). Among all of these, previous research has pointing out motivational challenges as the most prevalent among HE students. Webster and Hadwin (2013) investigated HE students' learning challenges by asking students' to report one learning challenge every week for one semester by using readymade drop-down list which included six main challenges (motivation, goal management and planning, strategies, cognitive challenges, self-management and other challenge) and examples of specific challenges in each category. This investigation obtained valuable information about task specific challenges, such as students who reported the same learning challenges from week to week are no less adaptive than their peers who's challenges varied between weeks. However, this result could be misleading because it is proved that several factors are

influencing students learning (Zimmerman, 1989). That is why there is need to investigate a more wide range of challenges students are experiencing.

Additionally, it is important to consider aspects such as emotions and well-being which relationship to students' learning is not always salient in educational interventions. For example, Pekrun, Frenzel, Goetz and Perry (2007) have found some connections between students' negative emotions (like anger, anxiety, shame, hopelessness and boredom) and academic learning achievement. Similar results have also found by Hughes and Smail (2015) who found that focusing on negative thoughts, poor sleep habits, alcohol, lack of physical activity, or isolation, have a strong negative impact in academic achievements being these aspects that are not directly address in HE contexts and interventions. In other words, positive thoughts and feelings and also positive and proactive organization, taking time to relax, exercising, seeking support and socializing are important factors in a successful transition from secondary school to HE (Hughes & Smail, 2007). In sum, this line of research shows that not only changes in teaching methods and learning context are needed (Heikkilä et. al., 2012; Middleton et. al., 2004) but also students' living choices and behavior has a crucial impact in the transition to HE as students experience more freedom and responsibility of their own actions (Hughes & Smail, 2015).

A final important feature of educational challenges is their comorbidity. In other words, challenges can appear together in different areas because one challenge triggers another (e.g. lack of cognitive understanding reduces students' learning goals). Research has found that students' motivational problems can affect other aspects of learning, such as to students' strategic choices (Zimmerman & Cleary, 2009), which influence students' emotions (Boekaerts, 1996), and have a connection to school burnout (Tuominen-Soini et al., 2012). If students do not regulate their emotional states, these influence not only students' cognitions and actions, but also their motivation, engagement, performance and wellbeing (Boekaerts,

2011; Schutz & Pekrun, 2007). Therefore, we need to conceptualize challenges by the impact they have on the students' learning interconnected system, something that is analysed by the self-regulated learning theory, as we will present in the next section.

In sum, it is known that there is a significant number of aspects that defy first year HE students, and there is evidence that challenges emerge when students' skills are not enough to cope with such challenges (Schweinle, Turner & Meyer, 2008). However, more is needed on exploring what those specific challenges are, when they happen and what is their type of nature. We will explore this via our first research question.

### ***How self-regulated learning can help students to handle different learning challenges?***

Probably the most powerful representation of the interconnection between self-regulated learning and challenges is that research suggests that learning challenges offer an opportunity for students to regulate their learning (Hadwin, Järvelä & Miller, 2011; Järvelä & Hadwin, 2014; Perry, 1998; Pintrich, 2000; Zimmerman, 2000). The situations when students realize something is not going in the right direction have the most potential to activate students' skills to overcome the challenge (Winne & Hadwin, 2008). For this to happen, students should be active in their learning process: monitoring and controlling their cognition, motivation, emotions and behaviour guided by their learning goals and their interpretation of the contextual features (Pintrich, 2000).

Unfortunately, we do not know much about the specifics in the relationship between challenges and SRL, but we do know some things. It is known that self-regulatory skills help students to achieve better learning results but also to better handle challenging learning situations (Perry, 1998; Pintrich, 2000; Zimmerman, 2000). For example, Heikkilä et al. (2012) have investigated how students self-regulated learning and cognitive strategies during individual learning situations are connected to students' wellbeing, epistemological beliefs,

and study success in teacher education context. They found that students who are more self-directed succeed better in their studies and faced less challenges with the academic stress and exhaustion than non-regulatory students. This could be caused since self-regulated students are often more engaged into their learning tasks (Perry, VandeKamp, Mercer & Nordby, 2002), and show more motivation and willingness to learn (Boekaerts, 1996; Pintrich, 1999; Zimmerman, 2011). Also self-regulated students ability to use task specific strategies when it is needed can help them to face learning challenges better (Zimmerman, 2002). For example, Perry and Winne (2006) highlighted that self-regulated students have a repertoire of tactics and strategies where they choose from depending on the challenges they face.

Therefore, even if there is still much more to investigate, there has been established a relationship between self-regulated learning skills and challenging individual learning situations. However, it has been suggested that students' self-regulated learning skills could also have an impact during challenging collaborative learning situations as well (Hadwin, Järvelä & Miller, 2011; Järvelä & Hadwin, 2014). For example, Panadero, Kirschner, Järvelä, Malmberg & Järvenoja (2015) have found that groups which included better individual self-regulators showed higher levels of regulation in collaborative group work as well. Also, Järvelä, Malmberg & Koivuniemi (2016) have found some connections between individual students self-regulated learning skills and groups learning results. This points out that it is equally important to investigate relationship between learning challenges and students' self-regulated learning skills during individual and collaborative tasks. For that reason, this study is investigating that connection in both, individual and collaborative learning situations.

A final consideration is that, in order to develop their SRL skills, students usually need help, especially direct instruction and modelling (Azevedo & Cromley, 2004; Zimmerman & Kitsantas, 2005). In this sense, Perry and her colleagues (2002) found that students who did not get support for their regulatory processes from their teachers avoided challenging learning

tasks. On the other hand, the students who got support did not fear to choose and perform challenging learning tasks. This emphasizes how the instructional help to promote SRL can encourage students to meet challenging learning situations better. Consequently, it is crucial to consider SRL training when it comes to the HE transition.

In sum, it is known that learning challenges happen in HE transition, but we need to know more about what specific challenges students face in individual and collaborative learning situations. That is this study's first research question. Additionally, while we know there is a relationship between challenges and SRL, less is known about the specific situations which really put students to regulate their actions. More specifically, here it will be addressed how the students' SRL influences the number and perception of the challenges. That is our second research question. In fact, it looks like we are in front of a bidirectional relationship: challenging instances trigger students' self-regulatory skills, and at the same time, these skills are needed to solve those challenges. Understanding this relationship is needed because learning challenges can inhibit the learning process (Malmberg et al., 2014) but they can also make learning more effective if students' skills and abilities match with the challenges they face during their learning (Schweinle et al., 2008).

### **Research questions**

This study will explore the following two research questions:

1. What type of challenges does first year HE students' experience in individual and collaborative learning situations?
2. What is the relationship between the students' self-regulatory strategies and the type of challenges they experience?

### **Method**

#### ***Participants***



Participants were first year university students ( $N = 107$ ) from Finland (Age  $M = 24.33$ ,  $SD = 4.55$ ). The sample was made up of 91 females (85.05%) and 16 males (14.05%) The participants were students from the field of education, representing two different university programs: 1) teacher education ( $N = 90$ ), and 2) educational sciences ( $N = 17$ ).

### ***Procedure***

Data was collected during the first semester of participants' studies, in a compulsory course on Learning Theories lasting six weeks. The study was conducted in such course to make sure participants were engaged and motivated to take part in this study. Data collection was planned so that it (1) gave the students a chance to become more aware about their regulatory skills and the challenges they experience, and (2) give basic information through the lectures about the learning processes in a theoretical level.

Data was collective via online questionnaires including ten times of measurement during the six week-period. This way students' answered ten times (once during the first and last week, and twice during each of the other weeks) to questionnaires which were measuring learning challenges students were facing during six week course. Additionally, in the first measurement occasion the students also filled out the questionnaires which were aiming to measure students self-regulated learning skills. Lastly, at the end of the course the students were asked to do a collaborative examination in small groups (3–4 students). This was conducted to ensure students experienced collaborative learning during data collection period to explore two different scenarios (individual and collaboration).

### ***Instruments***

Two different types of data were collected. Firstly, data about learning challenges, which was collected using a Challenge questionnaire (CQ) created by the researchers. Secondly, data about self-regulated learning skills was collected using the Motivated Strategies for Learning Questionnaire (MSLQ) and Motivational Regulation Strategies

(MRS) questionnaires. The items of the challenges and the MSLQ and MRS questionnaires were formulated at a general level (for example, reporting challenges and SRL skills in general educational contexts) and did not refer to the specific course context to ensure getting a general overview about the different challenges students can experience during their first semester. Next, we present more information on the three instruments.

*Insert Figure 1 around here*

*Challenge questionnaire.* This questionnaire was specifically created for this study focusing on the learning challenges higher education students experienced during the data collection. It features six different questions, focusing on three different types of challenges: cognitive, motivational and emotional (Appendix 1). The questions were open-ended, aiming to obtain descriptive information from the challenges students experienced. The students were first asked to report what type of learning challenges they have faced during the last days, and then to specify if the challenges were experienced during individual or collaborative learning situations.

*Motivated Strategies for Learning Questionnaire (MSLQ;* Pintrich et al., 1993) is a questionnaire designed to assess the use of learning and motivation strategies by college students. It is composed of 81 items divided in two sections, with a total of 15 scales with reliabilities ranging from .52 to .93 (Cronbach's  $\alpha$ ) –as reported in the original validation– using a 7-point Likert-scale (1 not at all true of me – 7 very true of me). The learning strategy section includes 50 items: 31 on (a) cognitive and metacognitive strategies and 19 on (b) student management of learning resources. The other 31 items are divided into three motivation scales: (a) value components, (b) expectancy components and (c) affective components. As a whole the MSLQ provides a quite accurate picture in the use of self-regulatory strategies covering a wide range of them: cognitive, metacognitive, regulatory actions and motivation.

*Motivational regulation strategies (MRS; Wolters and Benzoni, 2013)* measures the use of different strategies for the self-regulation of motivation in the form of a 7-point Likert-scale (1 strongly disagree – 7 strongly agree). The instrument is composed of 31 items, in six scales ranging in reliability from .71 to .91 (Cronbach's  $\alpha$ ): (a) Regulation of value, (b) Regulation of performance goals, (c) Self-consequating, (d) Environmental structuring, (e) Regulation of situational interest, and (f) Regulation of mastery goals. In sum, this questionnaire was used to investigate students' self-regulatory skills on motivation.

### **Data analysis**

The CQ data was analysed using theory directed content analysis (Hsieh and Shannon, 2005) to obtain an overall picture of the challenges. Self-regulated learning theory had an important role during the analysis process, as with different concepts related to this theory there was a need to support the assumptions made during data categorisation:-

The analysis process had three phases. *Firstly*, the data was separated into two different parts: individual learning challenges and collaborative learning challenges. Individual learning challenges referred situations where students were studying individually, and collaborative learning challenges, referred to situations where students were studying in small groups with their peers. *Secondly*, all the data was organised into three main categories that has been also suggested to be the aspects students can affect by regulating their own behaviour (Pintrich, 2000; Zimmerman, 2011): (a) cognitive learning challenges, (b) motivational learning challenges, and (c) emotional learning challenges. Cognitive learning challenges referred to descriptions where students were describing challenges which were related to students or groups skills and knowledge. Motivational learning challenges referred to descriptions which brought up problems which were related to students will and ability to learn and study. Emotional learning challenges referred to descriptions where students described challenges which were related to students' feelings and emotions which were

affecting to their studying. However, during the second organisation phase we noticed that students reported a lot challenges related to tiredness, stress and health, which could not directly define as an cognitive, motivational or emotional challenge. This is why a fourth category was created, named (d) wellbeing. *Thirdly*, sub-categories were created for the four main categories which were created during the second coding round (Table 1). This was done in four different phases. First, similar challenges (e.g. “For me it was really hard to understand what the teacher was asking me to do” and “I didn’t understand what I have to do”) were roughly placed into same category. During the second round researcher started to label the categories based on the challenges which were described in students’ answers (For example these two “For me it was really hard to understand what the teacher was asking me to do” and “I didn’t understand what I have to do” were called Task understanding challenges). Third, it was checked the frequencies of the sub-categories and whether there was need to combine some categories. Finally, all together 24 sub-categories were identified (cognitive learning challenges include 4 sub-categories, motivational learning challenges include 8 sub-categories, emotional learning challenges include 9 sub-categories, and wellbeing challenges include 3 sub-categories) (Table1).

*Insert Table 1 around here*

Two independent researchers double coded 30 % of the data to determine inter-rater reliability of the coding. Cohen’s Kappa was used for this purpose and acceptable kappa values for this type of data were reached (Fleiss, J., 1981; Landis & Koch, 1977). There was a substantial agreement for the four main categories (cognitive challenges  $\kappa = .713$ , motivational challenges  $\kappa = .663$ , emotional challenges  $\kappa = .752$ , and wellbeing challenges  $\kappa = .867$ ), and also for the all subcategories ( $\kappa = .627$ ). Finally, contradictory findings were negotiated and the coding principles specified until 100% consensus was reached.

To explore the relationship between the students' self-regulated learning skills and the challenges they experienced, the participants' scores in the MSLQ and MRS were calculated and ranked them in quartiles to explore the students' SRL-profiles. Students in the highest quartile and the lowest quartile (IVs) were compared by running one-way ANOVAs on their reported challenges (DVs) in the eight challenge categories mentioned above.

## Results

### *What kind of challenges do students encounter in individual and collaborative learning situations?*

Most of the challenges reported by the students were experienced during individual learning situations. During the six-week period students reported a total of 2747 learning challenges. The challenges were mostly experienced in individual learning situation ( $f = 2543$ ; 92.6%) and only a small proportion in collaborative situations ( $f = 204$ ; 7.4%). The students reported confronting motivational challenges the most ( $f = 1073$ ; 39.1%), followed by cognitive challenges ( $f = 703$ ; 25.6%), wellbeing challenges ( $f = 546$ ; 19.8%) and emotional challenges ( $f = 425$ ; 15.5%). Next we will present the data for the subcategories.

*Challenges in motivation.* In the category "motivational learning challenges" ( $f = 1003$ ) the major challenges in individual learning were related to time management (29.2%), concentration (28.5%) and maintaining motivation to study (15.4%). Task value beliefs were reported the least (1.7%). The major motivational learning challenges ( $f = 70$ ) in collaborative learning were related to time management (27.1%), cooperation (25.7%), and concentration (14.3%). The challenges that were reported the least frequently related to level of difficulty of a task (8.6%), lack of motivation (8.6%) and interest (4.3%). Challenges related to task value were not reported. (Table 2).

*Challenges in cognition.* In the category "cognitive learning challenges" the major challenges in individual learning ( $f = 646$ ) were related to prior knowledge (52.6%), and

cognitive strategies (40.2%). Challenges related to task understanding were reported the least (7.6%). The major cognitive learning challenges in collaborative learning ( $f = 57$ ) were related to prior knowledge (36.9%), and knowledge construction (29.8%). Challenges related to task understanding (19.3%), and cognitive strategies (14.0%) were reported the least. (Table 2).

*Challenges in wellbeing.* In the category “wellbeing” ( $f = 531$ ) the major challenges in individual learning were related to tiredness (68.4%). Stress (25.6%) and health (6.0%) aspects were not experienced as often as a learning challenge. The major learning challenges related to wellbeing ( $f = 15$ ) in collaborative learning were tiredness (66.7%). Students didn't experience learning challenges related to stress (26.7%) and health (6.6%) as often. (Table 2).

*Challenges in emotions.* In the category “emotional learning challenges” ( $f = 363$ ) the major challenges in individual learning were related to feelings of frustration (36.4%), inferiority (15.4%) and anguish (15.2%). Emotions such as depression (3.6%), joy and enthusiasm (2.2%), and fear and excitement (3.3%) were reported the least. The major emotional learning challenges ( $f = 62$ ) in collaborative learning were related to frustration (32.2%), fear and excitement (22.6%), and inferiority (17.7%). Challenges related to depression (1.6%), disappointment (1.6%) and joy and enthusiasm (1.6%) were reported the least. (Table 2).

*Insert Table 2 around here*

***Relationship between the high and low SRL-profile students' strategic skills and the types of the challenges they experienced***

When we compared students' SRL skills and frequencies of the reported learning challenges, some differences were found between high and low SRL profile students' learning challenges. However, we found only three significant differences between the high and low SRL profile students (see Table 6). Students who reported being more self-regulated

in the MSLQ also reported a higher number of cognitive challenges during individual learning situations ( $F(1, 51) = 6.470, p = .014, 1^{\text{st}} Q M = 6.69, 4^{\text{th}} Q M = 5.15$ ). There was no other significant difference in reported challenges when using the MSLQ quartiles as an independent variable. Additionally, students who reported less regulation of their motivation using MRS reported a higher number of motivational learning challenges in individual learning situations ( $F(1, 50) = 4.141, p = .047, 1^{\text{st}} Q M = 8.56, 4^{\text{th}} Q M = 10.78$ ). Also students who were profiled low-group in the MRS questionnaire reported individual learning challenges in wellbeing more often ( $F(1, 50) = 3.370, p = .072, 1^{\text{st}} Q M = 3.96, 4^{\text{th}} Q M = 5.41$ ).

*Insert Table 3 around here*

### **Discussion**

This study investigates first year university students' cognitive, motivational and emotional challenges experienced in individual and collaborative learning situations, and what is the relationship between these challenges and the students' SRL skills. The results show that students experienced challenges in four main areas, cognition, motivation, emotions and wellbeing. Additionally, our results suggest that the most common challenges are motivational in nature for the first year HE students. This result is in line with earlier findings by Webster and Hadwin (2013) who investigated very context specific challenges HE students faced. This indicates that students' motivational factors are important in learning despite the context where students are studying. Furthermore, our study also suggested that HE students are experiencing high number of challenges related to their wellbeing (e.g. tiredness, stress and different aspects of health). This could be explained with previous findings which suggest that poor sleep habits, lack of physical activity, isolation, or focusing on negative thoughts can have affects in first year HE students learning (Hughes & Smail, 2015). All this suggest that changes in teaching methods and the learning context are not

enough if the aim is to support students' transition to HE. It seems that there is also need to support students in their living choices.

When it was explored which learning challenges were mostly reported in individual learning situations the most frequently were prior knowledge, tiredness, time management, concentration and cognitive strategy use. This suggests that the students faced knowledge areas they knew little about, and they did not have sufficient strategic knowledge to approach the topics. Providing support for regulatory processes, such as planning and strategy use might offer a solution for students who are tackling these challenges (Perry et al, 2002).

The most usual challenge in collaborative learning situations were motivational ones followed by emotional, cognitive and wellbeing challenges. If we compare the individual and collaborative situations challenges, our results show that challenges are slightly different in these two situations. This may be due to interactive nature of collaborative learning (Blumenfeld, Marx, Soloway & Krajcik 1996; Järvenoja & Järvelä, 2009) For example, Järvenoja and Järvelä (2009) found that especially challenges related to team work and collaboration were the most common ones during collaborative learning situations. In practice these can be situations where group members have problems to work together and commit equally to the group project. It seems that experienced learning challenges during collaborative learning are more or less related to students' individual differences (Ainley, 2007). Based on our results, it seems that especially individuals learning skills and prior knowledge are related to the challenges groups are experienced during collaborative learning. This can be seen in subcategory level where the most reported learning challenges are related to students' prior knowledge, frustration, time management, cooperation and knowledge construction. This stronger the fact that when investigating collaborative learning it should be also take account individual students point of view and not only concentrating for the groups shared processes.



In regards to our second research question, it seems that self-regulated learning and learning challenges are connected. Our results show that high and low self-regulators perceived different challenges. Earlier investigations have already given indications about this. For example, Heikkilä et al. (2012) found that students who do not self-regulate their learning express more stress, exhaustion, and lack of interest compare to students who are more self-directed in their learning. However, what was missing was how students can actually help themselves to cope with these situations. This study suggests that students can have different ways to self-regulate their learning, with different strategies helping to cope with different challenges. For example, students with high scores of MSLQ reported more individual cognitive challenges. This refers that the more self-regulated students are, the more they use different learning strategies during their learning, therefore the easier for them to identify the specific cognitive challenges that affect their learning. Also, it was found here that students with high scores on the MRS reported fewer individual motivational and wellbeing challenges. Based on this it seems that the more self-regulated students are on their motivation the less their motivation and emotions were affected by their learning. Meanwhile low self-regulators struggled more with their willingness to study and the feelings around learning. Therefore, intervening to increase different aspects of SRL would have positive effects on the nature of challenges the students will experience also during HE context.

When it comes to the non-significant relationships between the MSLQ and MRS and the challenges perceived in collaborative tasks two aspects need to be consider. First, MSLQ and MRS are questionnaires tailored for individual learning situations. For that reason, they might not relate to self-regulation in collaborative learning situations. Second, nevertheless, as shown in recent research, individual self-regulatory skills do have an impact in collaborative learning regulation but it is not the only variable affecting in those situations (Panadero, Kirschner, Järvelä, Malmberg & Järvenoja, 2016; Panadero & Järvelä, 2015). In

sum, it seems that individual regulatory skills might not be the only variables affecting the occurrence of these challenges.

This study has two main limitations. First, data is self-reported which presents some important implications for the accuracy of students SRL reports (Boekaerts & Corno, 2005). Previous research has shown us that students can present their own self-regulated behaviour in a better light than it actually is (e.g. Panadero, Alonso-Tapia & Huertas, 2012). Nevertheless, university students have a better knowledge of their SRL and challenges as they have had more educational training, so it can be expected more accuracy than in others educational contexts. Additionally, and even more importantly, to access the students' challenges it is needed to ask the participants directly because this study aim was to clarify what represent problems for students, and therefore self-report was an optimal option. The second limitation is that we did not control the frequency of collaborative activities that the students performed during those six weeks. Students probably were lacking of the collaborative learning situations at that time because at the end of the course were students were required work collaboratively the amount of reported collaborative learning challenges were raising. That could explain the lower frequencies for collaborative activity challenges when compared with the individual ones.

There are several practical implications of this study which all are important especially for the first year HE students. First, because students SRL skills and experienced challenges differ from each other's it increases the role teachers' awareness of students' different needs. For example, usually students who have lower SRL skills are less aware (or prone to notice) of those challenges, teachers should help them realizing what is hindering their learning (Azevedo & Cromley, 2004). However, it is not enough that students' awareness of the challenges is supported. It is also important to support students' awareness of different SRL skills like cognitive strategy use, motivation regulation and emotion regulation. Doing so it

can be helped HE students to cope with the challenges which are related to different emotional and wellbeing aspects which have been proved to be problem for HE students learning (e.g. Hughes & Smail, 2015; Tuominen-Soini et al., 2012). Second, it is important to remember that students are studying learning in social context where they can't always control the learning situations that well. For example, students are in many cases forced to study certain things and also to use predefined learning methods like collaborative learning methods which are determined by teachers or educators. This suggest that it is not only students' SRL skills which are affecting to students learning, but the factors on the design of learning environment, such as teachers choices, peers or in some cases collaborative small groups which can affect to students learning (Rahimi, Berg & Veen, 2015).

In terms of future research, there are a number of aspects that need further investigation. First, even though this study suggests that learning challenges and students' regulatory skills have some connections, more research on the relationship between SRL skills and challenges is needed. One future line is to explore what are the students SRL strategies when facing the challenges. In other words, what strategies they use when facing different challenges. Second, future research should also explore SRL in combination with other interpersonal variables, such as peer support, level of sharedness of goals, plans and strategies among the group members (Järvelä, Järvenoja, Malmberg & Hadwin, 2013) within collaborative work and challenges perceived.

As a conclusion, the results of this study suggests that first year HE students experience different challenges in their transition to the university, and that these challenges are mediated by the students self-regulated learning skills. The results point out to the needs for supporting higher education students' self-regulatory, but in future also co-and socially shared regulatory processes (Järvelä & Hadwin, 2013) to be able to face the challenges they are experiencing.

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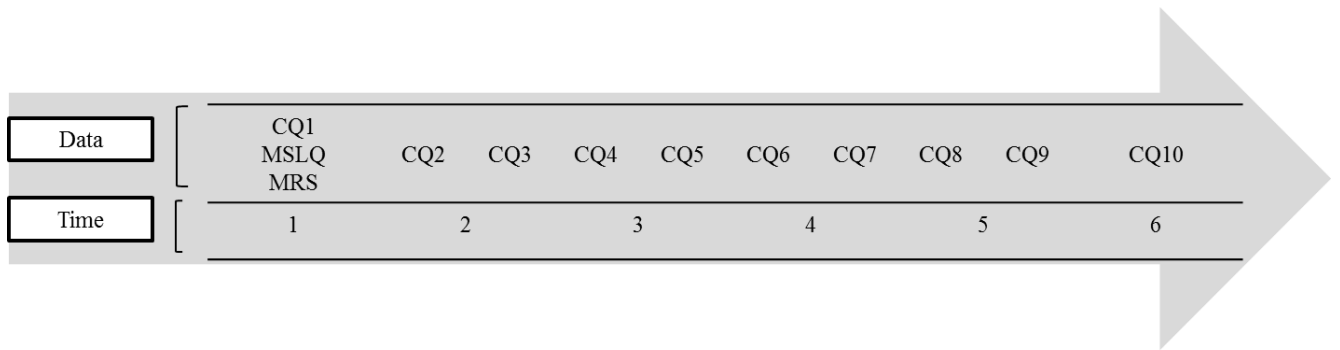


Figure 1. Data collection procedure. CQ = Challenge Questionnaire. MSLQ = Motivated Strategies for Learning Questionnaire. MRS = Motivation Regulation Strategies questionnaire.

Table 1  
Coding categories and examples of learning challenges reported by the students

Main category	Sub categories	Examples
Cognitive learning challenges		
	Prior knowledge	“I don't have prior knowledge about the subject” “New knowledge doesn't fit with my prior knowledge”
	Cognitive strategies	“I don't remember the things I try to study” “I have no idea how to get an overall picture of the subject” “I don't know how to use the knowledge in practice”
	Task understanding	“I don't understand the task”
	Knowledge construction	“It was challenging to construct a congruent answer in a group exam” “It was challenging to understand what others were saying”
Motivational learning challenges		
	Maintaining	“It is hard to start studying” “I leave the things until the last day”
	Task value beliefs	“I don't know why we have to learn these things” “I'm not sure that these things are important to me”
	Concentration	“It is hard to concentrate” “It is hard to maintain concentration” “There are more “important things” to do” “Other students spoke too loudly in the classroom”
	Interest	“The things being taught are not interesting at all”
	Difficultness of the task	“Studying feels too hard/easy” “I'm not sure if I'll survive the tasks”
	Lack of motivation	“Lack of motivation”
	Time management	“For me it is hard to plan how to use my time” “My schedules are not working” “Rush”
	Cooperation	“Division of the responsibilities during the task wasn't equal” “Cooperation was hard” “The different roles in the group were challenging”
Emotional learning challenges		
	Anguish/Anxious	“I'm anxious because I have too much to do”
	Suspicion	“Feelings of despair” “Feelings of uncertainty”

Inferiority	“I’m not as good as others” “I’m not good enough for this school” “Feelings of insufficiency”
Depression and sadness	“I feel depressed” “My thoughts were wandering because I was really sad”
Disappointment	“I’m really disappointed to myself” “Failure”
Joy and enthusiasm	“My thoughts were wandering because I was too happy”
Frustration	“I’m really frustrated”
Irritation	“I’m really irritated”
Fear and excitement	“Fear” “Performing for the others is exciting”
Wellbeing challenges	
Tiredness	“Tiredness”
Physical health	“I have flu, and it makes studying harder”
Stress	“Stress”

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Table 2  
Descripted learning challenges during individual and collaborative learning situations

	Individual learning		Collaborative learning	
	F	%	F	%
Cognitive challenges				
Prior knowledge	337	52.2	21	36.9
Cognitive strategies	260	40.2	8	14.0
Task understanding	49	7.6	11	19.3
Knowledge construction	-	-	17	29.8
<b>Total</b>	<b>646</b>	<b>100</b>	<b>57</b>	<b>100</b>
Motivational challenges				
Maintaining	154	15.4	8	11.4
Task value beliefs	17	1.7	-	-
Concentration	286	28.5	10	14.3
Interest	81	8.2	3	4.3
Difficultness of the task	49	4.9	6	8.6
Lack of motivation	122	12.1	6	8.6
Time management	294	29.2	19	27.1
Cooperation	-	-	18	25.7
<b>Total</b>	<b>1003</b>	<b>100</b>	<b>70</b>	<b>100</b>
Emotional challenges				
Anguish	55	15.2	6	9.7
Suspicion	25	6.7	3	4.9
Inferiority	56	15.4	11	17.7
Depression	13	3.6	1	1.6
Disappointment	22	6.1	1	1.6
Joy and enthusiasm	8	2.2	1	1.6
Frustration	132	36.4	20	32.2
Irritation	40	11.1	5	8.1
Fear and excitement	12	3.3	14	22.6
<b>Total</b>	<b>363</b>	<b>100</b>	<b>62</b>	<b>100</b>
Wellbeing challenges				
Tiredness	363	68.4	10	66.7
Health	32	6.0	1	6.6
Stress	136	25.6	4	26.7
<b>Total</b>	<b>531</b>	<b>100</b>	<b>15</b>	<b>100</b>

Table 3.  
One-Way ANOVAs exploring the relationship between high (1st quartile) and low (4th quartile) and experienced challenges

Main categories of the learning challenges	MSLQ		MRS	
	Sig.	M	Sig.	M
Cognitive individual	.014	1 <sup>st</sup> Q. 6.69 4 <sup>th</sup> Q. 5.15	.610	1 <sup>st</sup> Q. 6.24 4 <sup>th</sup> Q. 5.89
Motivation individual	.602	1 <sup>st</sup> Q. 9.08 4 <sup>th</sup> Q. 9.70	.047	1 <sup>st</sup> Q. 8.56 4 <sup>th</sup> Q. 10.78
Emotion individual	.625	1 <sup>st</sup> Q. 3.62 4 <sup>th</sup> Q. 3.26	.598	1 <sup>st</sup> Q. 3.72 4 <sup>th</sup> Q. 3.30
Wellbeing individual	.366	1 <sup>st</sup> Q. 4.12 4 <sup>th</sup> Q. 5.00	.072	1 <sup>st</sup> Q. 3.96 4 <sup>th</sup> Q. 5.41
Cognitive social	.235	1 <sup>st</sup> Q. .65 4 <sup>th</sup> Q. .41	.471	1 <sup>st</sup> Q. .56 4 <sup>th</sup> Q. .41
Motivation social	.130	1 <sup>st</sup> Q. .54 4 <sup>th</sup> Q. .96	.702	1 <sup>st</sup> Q. .52 4 <sup>th</sup> Q. .63
Emotion social	.919	1 <sup>st</sup> Q. .64 4 <sup>th</sup> Q. .69	.553	1 <sup>st</sup> Q. .67 4 <sup>th</sup> Q. .42
Wellbeing social	.695	1 <sup>st</sup> Q. .12 4 <sup>th</sup> Q. .16	.131	1 <sup>st</sup> Q. .21 4 <sup>th</sup> Q. .04
Cognitive all	.008	1 <sup>st</sup> Q. 7.35 4 <sup>th</sup> Q. 5.56	.483	1 <sup>st</sup> Q. 6.80 4 <sup>th</sup> Q. 6.30
Motivational all	.420	1 <sup>st</sup> Q. 9.62 4 <sup>th</sup> Q. 10.67	.042	1 <sup>st</sup> Q. 9.08 4 <sup>th</sup> Q. 11.41
Emotional all	.782	1 <sup>st</sup> Q. 4.24 4 <sup>th</sup> Q. 3.96	.516	1 <sup>st</sup> Q. 4.33 4 <sup>th</sup> Q. 3.73
Wellbeing all	.411	1 <sup>st</sup> Q. 4.23 4 <sup>th</sup> Q. 5.08	.169	1 <sup>st</sup> Q. 4.21 4 <sup>th</sup> Q. 5.40

Q. = Quartile.

Appendix 1.  
Challenge questionnaire.

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Cognitive challenges	Motivational challenges	Emotional challenges
What kind of challenges related to understanding the things to be learned you have face during last days in your studies?	What kind of challenges related to maintaining your own learning you have faced during last days in your studies?	What kind of challenges related to your feelings you have faced during last days in your studies?
Did you face the challenge during individual or collaborative work?	Did you face the challenge during individual or collaborative work?	Did you face the challenge during individual or collaborative work?

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