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## Sense of competence and optimism as resources to promote academic engagement

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### Abstract

This study investigated what kinds of studying profiles could be identified in terms of achievement strategies (optimism, task avoidance) and experienced challenge-competence balance, and whether such profiles are related to students' academic engagement or disengagement. The participants (n=785) were Finnish undergraduate students from University of Helsinki (teacher education, chemistry, theology, law) and Aalto university (engineering). Three profiles were identified by K-means cluster analysis: *pessimistic*, *bored* and *optimistic*. *Pessimistic* expressed the highest task avoidance and lowest optimism and competence. *Optimistic* reported the lowest task avoidance and highest optimism and competence. *Bored* experienced the lowest challenge as compared to both *pessimistic* and *optimistic*. ANOVAs revealed that *optimistic* expressed the highest engagement, whereas *pessimistic* were the most disengaged. *Bored* students' problem appeared to be lack of interest rather than any other study problems.

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**Keywords:** academic engagement; achievement strategies; higher education; challenge; competence

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### 1. Introduction

In the research of higher education, the interrelations between emotional and motivational dimensions, well-being and successful studying have been the target of increasing interest during the past few decades. They are also supposed to have an essential role in explaining learning and studying (for example, see Pintrich, 2004; Volet, 2001; Lonka & Ketonen 2012; Ketonen & Lonka 2013). However, more research is needed to profoundly understand the

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dynamic interplay between students' well-being and the experiences students have of the learning environment and themselves as a student. Research on well-being, engagement and burnout has traditionally been focused on work life (Schaufeli, Martinez, Pinto, Salanova & Bakker 2002; Salmela-Aro, Kiuru, Leskinen & Nurmi 2009; Salmela-Aro, Tolvanen & Nurmi 2009), whereas the workforce of the future, i.e. students, have been less frequently studied. Furthermore, as the focus on the field of study orientations has often been in study success or preventing drop out (Mäkinen, Olkinuora & Lonka 2004), we were interested in students' experiences and well-being in particular. Engagement, as well as experienced demands and resources in studying indeed are important for success, but they also have value per se.

### 1.1. The demands and resources in studying

*The Job Demands-Resources model* (JD-R; Bakker & Demerouti 2007; see also Demerouti, Bakker, Nachreiner & Schaufeli 2001) states that every work environment poses demands that require sustained effort to cope with, and on the other hand, every work environment as well as the workers in this environment has their physical, social, organizational or psychological resources that can buffer against the demands. It is essential to note that demands may not be negative in nature, but can turn into stressors, when coping with them leads to an imbalanced situation where the effort required is too high to adequately recover (Bakker & Demerouti 2007). Resources, in turn, are important not only in preventing the negative outcome of the demands, but they also have intrinsic value for motivation, learning and engagement. Furthermore, resources have been proven to support well-being and engagement, also among students (Salmela-Aro & Upadaya 2012). Ouwenel, Le Blanc and Schaufeli (2011) aimed at more profound understanding on this combination as they surveyed the *personal resources* that students have (i.e. hope, self-efficacy and optimism). They did not find a cross-lagged relation between positive emotions and academic engagement, but it seemed that personal resources could be mediating factors between them. It is difficult to point out causal connections in this kind of psychological structures that are of a dynamic nature. Thus a reciprocal motivational gain cycle between positive emotions, personal resources and engagement could be an appropriate model (Ouwenel, Le Blanc & Schaufeli 2011).

Higher education, as the working environment for students, poses lots of demands, especially for the freshmen resettling in the new ways of studying and taking responsibility of their learning. The higher the level of education, the more active information processing is needed; also the society calls for high performance and prompt transition into working life. Demands that are experienced too high to deal with can build an imbalanced situation leading to overstress, diminished mental health and disengagement (Salmela-Aro & Upadaya 2012). However, on the high-demanding situation lies also the possibility to high engagement. Bakker, Hakanen, Demerouti and Xanthopoulou (2007) stated that resources particularly influence engagement when demands are high. This builds the assumption that not only do the demands and resources have their negative and positive effects on well-being, "but also their combination is predictive of the degree of work engagement" (Bakker et al. 2007, p.282).

The situation where both demands and resources are high can also be referred to *optimal motivational experience* or *flow* (Csikszentmihalyi 1988; 1990; see also Hektner, Schmidt, & Csikszentmihalyi 2007), in which high challenge is typically experienced together with strong sense of competence, leading to deep involvement and intensive concentration. As the experience of challenge refers to the level of demands in studying, it is, according to JD-R model, not of a negative nature until student has sufficient resources (e.g., sense of competence) to deal with it. In addition, according to Csikszentmihalyi (1990), without an appropriate challenge, people will simply get bored. On the other hand, sense of competence can be seen as a relation between knowledge and studying habits: students with a strong sense of competence are likely to cope with the challenging situations, exceed themselves and get engaged in studying (Newmann, Wehlage, & Lamborn 1992).

When facing demands, some students apply active, task-focused strategies and believe in their success, while others intentionally seek to avoid challenging situations. As the experiences of challenge and competence refer to realistic situations and earlier experiences, *achievement strategies* or *cognitive and attributional strategies* represent more of a systematic ways of acting in demanding situations (Salmela-Aro, Tolvanen & Nurmi, 2009). In this study

we operationalised the different strategies as *optimism* and *task avoidance*. It has been stated that *optimistic* strategy is related to contentment in studying, positive attitude to challenges (Cantor 1990; Eronen, Nurmi & Salmela-Aro 1998) as well as to explaining success as a result of hard work rather than inner ability (Nurmi, Aunola, Salmela-Aro & Lindroos 2003; Martin, Marsh & Debus 2003). This leads to active, task-focused actions without a fear of failure, or, if a failure occurs, it is seen to result from insufficient practice (Martin, marsh & Debus 2003). On the opposite, students applying a *task-avoidant* strategy seldom experience positive emotions when facing a challenge. They are likely to be dissatisfied and perform poorly in their studies (Cantor 1990; Nurmi et al. 2003). Avoiding tasks is also one way of diminishing the fear of failure or anxiety of uncompleted work (Salmela-Aro, Tolvanen & Nurmi 2009). Thus, *optimism* refers to student's personal resources, and *task avoidance* to lack of them.

### 1.2. The dimensions of engagement and disengagement

Studying has often been referred to working when addressing well-being (Schaufeli et al. 2002; Salmela-Aro, Tolvanen & Nurmi 2009); for example academic engagement has been proven to represent "students' work engagement" (Schaufeli et al. 2002). Engagement has been described through three dimensions: *energy*, *dedication* and *absorption* (for example, see Schaufeli et al.2002; Salmela-Aro et al. 2009; Salmela-Aro & Upadaya 2012). On the opposite, burnout has also been described through three dimensions that have been proven to interrelate negatively with academic engagement: *exhaustion*, *cynicism* and *inadequacy* (Schaufeli et al. 2002; Salmela-Aro et al. 2009). In the present study, our assessment of disengagement can be seen reflecting analogical dimensions as for burnout: *exhaustion*, *lack of interest* and *lack of regulation of learning*.

*Energy* and *exhaustion* represent the opposite ends of emotional dimension of engagement and disengagement, as *energy* (or *vigor*; Schaufeli et al.2002) has been described with a high mental resilience, enjoyment and interest in challenges when working (Schaufeli et al. 2002; Salmela-Aro & Upadaya, 2012). In turn, *exhaustion* refers to intense, chronic fatigue that can degrade life quality and performance and can lead to a process of losing the meaning and sense of studying (Maslach & Jackson 1981; Schaufeli et al.2002). Permanent feeling of being buried under the burden of studies is also typical of *exhaustion* (Salmela-Aro et al. 2009).

*Dedication* and *lack of interest* (referring to *cynicism*) can be seen as the opposite ends of cognitive dimension of engagement and disengagement. A student with strong *dedication* values studying high and is willing to learn (Schaufeli et al. 2002; Salmela-Aro & Upadaya 2012), whereas *lack of interest* leads to cynicism: studies are seen non-gratifying and meaningless (Mäkinen, Olkinuora & Lonka 2004). *Lack of interest* also predicts drop out in studying (Mäkinen, Olkinuora & Lonka 2004).

Thirdly, behavioral dimension of engagement and disengagement is here represented by *absorption* and *lack of regulation of learning* (referring to *inadequacy*). When feeling *absorbed* in studying, full concentration, active presence in studies and experience of time flying is often reported (Schaufeli et al. 2002; Salmela-Aro & Upadaya 2012). As for *inadequacy*, it may be difficult to get absorbed, if one is not feeling capable enough to face the challenges of studying (Schaufeli et al.2002; Salmela-Aro et al. 2009). In this study, *lack of regulation* is referring to this kind of inadequacy, as it is defined by student's problems in evaluating their learning, specifying if they have studied adequately, and assessing functional studying practices (Vermunt, 1998). Furthermore, high self-regulation is interrelated with constructive conceptions of learning and deep processing of knowledge (Vermunt, 1998) as well as with strong academic engagement (Reeve et al. 2004).

Academic engagement is essential for studying: it is an enduring state of active involvement and well-being that gets a student into action (Salmela-Aro, Tolvanen & Nurmi 2009; Ouweneel, Le Blanc & Schaufeli 2011). Academic engagement also interrelates with students' *achievement strategies*: high and increasing optimism during university studies has been proven to predict high levels of work engagement after several years (Salmela-Aro, Tolvanen & Nurmi 2009). On the other hand, it is certainly clear that no one is constantly in a state of deep interest

and endless enthusiasm; high-level and engaged studying does not require the complete absence of negative dimensions, but the deep commitment on studying makes hard work worthwhile (Schaufeli et al. 2002).

### 1.3. Aims of the present study

The aim of the present study is to produce more information about the interrelations between undergraduate university students' personal resources and their academic engagement/disengagement. We applied a person-oriented approach to see what kinds of profiles could be found in terms of the students' perceptions of the demands of the academic environment, and of themselves as students (i.e. experienced *challenge*, *sense of competence*, *optimism* and *task avoidance*). Of these perceptions, challenge can be seen referring to experiences of demand in studying, sense of competence and optimism to personal resources, and task avoidance to lack of the resources. It can also be assumed that as freshmen resettle into a new learning environment, the demands they confront are high and different than before, and that their personal ways of dealing with this kind of challenging situations are essential, besides the support that are provided by the environment, teachers etc. It is important to note that we measured specifically students' *experience* of challenge in their studies, not an absolute level of challenge, as we were interested in how do the students' interpretations of the demands of the academic environment interact with engagement and disengagement.

## 2. Methods

### 2.1. Participants and procedure

Our participants were 785 undergraduate (first and second year) university students that were selected from the total of 1478 students who answered. The selection was made to examine what kind of studying profiles could be found among undergraduate students. The participants represented five different contexts: Teacher education ( $n=73$ ), Chemistry ( $n=117$ ), Theology ( $n=119$ ), Law ( $n=163$ ) at University of Helsinki, and Engineering ( $n=313$ ) at Aalto University. The ages ranged from 18 to 54 years (mean 22.6, SD 5.12), and 46.4 % were female, 53.6 % male. The participants form a highly selected group: in Finland, the number of applicants for universities is multiple of the intake, and students are selected through subject-specific entrance examinations.

The data were collected in spring and autumn 2012 by using a questionnaire that was oriented to the participant's context (e.g. "*How do you consider the Law studies at the moment?*" / "*How do you consider the Theology studies at the moment?*"). The questionnaire included a covering letter, in which the purpose of the study was clarified. The participants were also informed that the involvement was voluntary and that their anonymity would be maintained.

### 2.2. Materials

Challenge and Sense of competence. Two single-item measures were used for assessing the level of challenge experienced in studying ("*How challenging do you consider your studies?*") and sense of competence ("*How competent do you feel in your studies?*"). These items were rated with a seven-point Likert scale ranging from 1 (not at all) to 7 (very much).

Students' achievement strategies, as well as disengagement, were assessed using sections adopted from MED NORD instrument, a previously validated tool for measuring study orientations and well-being of medical students in Nordic countries (Lonka et al. 2008).

Achievement strategies. The scales were based on a modified version of *Strategy and Attribution Questionnaire* (SAQ) (Nurmi et al. 1995), comprising of nine items reflecting two different scales: Optimism (four items, e.g. "*When I get ready to start a task, I am usually certain that I will succeed in it.*") and Task avoidance (five items, e.g. "*If something begins to go wrong with my school work, I quickly disappear to the cafeteria or to some other place.*"). All items were rated with a six-point Likert scale ranging from 1 (completely disagree) to 6 (completely

agree). The reliability for Optimism was only .52, and leaving out the item “*When I go into new situations, I usually expect I will manage*” the Cronbach’s alpha improved into .81. Thus the Optimism composite scale finally consisted of three items.

*Disengagement.* was measured by nine items: four items on exhaustion (Lonka et al. 2008; e.g. “*I feel I’m working too hard on my studies*”), two items on lack of interest (based on *Inventory of General Study Orientations, IGSO*) (Mäkinen et al. 2004; e.g. “*The contents of my studies do not motivate me*”), and three items on lack of regulation of learning (Lonka et al. 2008; e.g. “*It is difficult for me to judge whether I can the study material well enough*”). The questions were rated with a five-point Likert scale ranging from 1 (completely disagree) to 5 (completely agree).

*Academic engagement* was measured using a previously validated Finnish instrument constructed on the basis of *Utrecht Work Engagement Scale – students (UWES-S)* (Schaufeli et al. 2002; Salmela-Aro et al. 2009; Salmela-Aro, 2009b).. This tool consists of nine items measuring the three dimensions of engagement (Schaufeli et al. 2002), three items on each dimension: energy (e.g. “*When studying, I am bursting with energy*”), dedication (e.g. “*I find studying full of meaning and purpose*”), and absorption (e.g. “*Time flies when I am studying*”). All items were rated with a six-point Likert scale ranging from 1 (completely disagree) to 6 (completely agree).

### 2.3. Statistical analysis

The data analysis began with a descriptive analysis and calculating Cronbach alphas for the composite scales. In order to find out what kind of subgroups could be found in terms of personal resources and demands, we applied a person-oriented approach. A Cluster analysis using a K-means algorithm and standardized values of the scales, was carried out exploratively, without making a decision of the number of the clusters beforehand. This was due to the large *n* of cases that would have made a hierarchical cluster analysis hard to explicate. Alternative solutions for the number of clusters were observed and the three-cluster solution proved to be the most sensible one as it also reflects earlier person-oriented studies on the field (for example, see Heikkilä et al. 2011; Ketonen & Lonka 2013). To examine between-group differences across the grouping variables as well as across the engagement and disengagement, ANOVAs were conducted.

## 3. Results

### 3.1. Reliability and descriptive analysis

Table 1 presents the number of items comprising each scale, Cronbach alphas, mean scores, standard deviations and the range of scales. As the mean scores indicate, the students experienced their studying rather challenging but expressed also sense of competence, optimism and academic engagement. Lack of regulation appeared to be the most frequent of the measured study problems.

**Table 1.** The reliabilities of the composite scales, item means, standard deviations, scale ranges, and the number of cases.

| Scale                      | n of items | Cronbach $\alpha$ | Item means | SD   | Scale | n of cases |
|----------------------------|------------|-------------------|------------|------|-------|------------|
| Challenge                  | 1          |                   | 4.81       | 1.21 | 1-7   | 773        |
| Sense of competence        | 1          |                   | 4.88       | 1.16 | 1-7   | 775        |
| Optimism                   | 3          | .81               | 4.43       | 0.74 | 1-6   | 782        |
| Task avoidance             | 5          | .76               | 2.79       | 0.78 | 1-6   | 784        |
| <b>Academic engagement</b> |            |                   |            |      |       |            |
| Energy                     | 3          | .79               | 3.88       | 0.87 | 1-6   | 779        |
| Dedication                 | 3          | .84               | 4.51       | 0.85 | 1-6   | 778        |
| Absorption                 | 3          | .72               | 3.60       | 0.86 | 1-6   | 781        |
| <b>Disengagement</b>       |            |                   |            |      |       |            |
| Exhaustion                 | 4          | .78               | 2.50       | 0.84 | 1-5   | 783        |
| Lack of interest           | 3          | .73               | 2.07       | 0.94 | 1-5   | 783        |
| Lack of regulation         | 2          | .65               | 2.72       | 0.88 | 1-5   | 783        |

### 3.2. Studying profiles

The studying profiles differed statistically significantly on all grouping variables; effect sizes ( $\eta_p^2$ ) were ranging from .27 to .54 (see table 2).

Group 1 ( $n= 272$ ), scored high on optimism and sense of competence and the lowest on task avoidance. On the opposite, group 3 ( $n= 269$ ) reported the lowest optimism and sense of competence, and the highest task avoidance. Interestingly, quite high experienced challenge did not discriminate group 1 and 3, meanwhile group 2 ( $n= 229$ ) was characterized by the lowest experienced challenge. Still, group 2 did not differ from group 1 in terms of optimism nor sense of competence, but expressed more task avoidance. The learning profiles were labeled according to the score mean profiles, as (1) *optimistic* (34.6 %), (2) *bored* (29.2 %) and (3) *pessimistic* (34.3 %).

**Table 2.** Standardized means, standard deviations and ANOVA results for group differences on challenge, sense of competence and achievement strategies.

| Variable            | Group 1.<br>Optimistic<br>( $n=272$ ) |      | Group 2.<br>Bored<br>( $n=229$ ) |      | Group 3.<br>Pessimistic<br>( $n=269$ ) |      | F (2,767) | p    | $\eta_p^2$ |
|---------------------|---------------------------------------|------|----------------------------------|------|--|------|-----------|------|------------|
|                     | M                                     | SD   | M                                | SD   | M                                      | SD   |           |      |            |
| Challenge           | .40 <sub>a</sub>                      | 0.61 | -1.13                            | 0.64 | .55 <sub>a</sub>                       | 0.77 | 454.82    | .000 | .54        |
| Sense of competence | .48 <sub>a</sub>                      | 0.70 | .45 <sub>a</sub>                 | 0.72 | -.87                                   | 0.87 | 263.35    | .000 | .41        |
| Optimism            | .52 <sub>a</sub>                      | 0.68 | .39 <sub>a</sub>                 | 0.72 | -.86                                   | 0.91 | 254.05    | .000 | .40        |
| Task avoidance      | -.59                                  | 0.74 | -.08                             | 0.86 | .66                                    | 0.96 | 144.04    | .000 | .27        |

Note: Means within a row denoted with the same subscripts are **not** significantly different at the  $p < .05$  level. Based on the Levene's test, the equality of error variance could not be assumed in any of the grouping variables. Hence, the Tahmane correction was used for pairwise comparisons for all the variables.

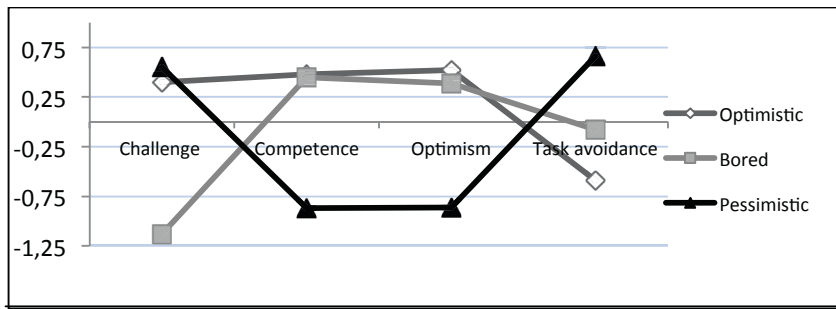


Figure 1. Studying profiles in terms of Experienced challenge, Sense of competence, Optimism and Task avoidance.

### 3.3. Differences between profiles in academic engagement and disengagement

The studying profiles differed statistically significantly on all variables measuring engagement and disengagement. Effect sizes ( $\eta_p^2$ ) were ranging from .09 to .17 (see table 3).

Overall, *optimistic* reported higher engagement and lower disengagement than other profiles, whereas *pessimistic* reported lower engagement and higher disengagement. As for *bored*, this profile scored in between the two others on all variables, except for exhaustion and lack of regulation, where they did not differ from *optimistic*.

Table 3. Standardized means, standard deviations and ANOVA results for group differences on Engagement and Disengagement.

| Variable             | Group 1. Optimistic |      | Group 2. Bored    |      | Group 3. Pessimistic |      | F (2,766) | p    | $\eta_p^2$ |
|----------------------|---------------------|------|-------------------|------|----------------------|------|-----------|------|------------|
|                      | M                   | SD   | M                 | SD   | M                    | SD   |           |      |            |
| <i>Engagement</i>    |                     |      |                   |      |                      |      |           |      |            |
| Energy               | 4.29                | 0.73 | 3.91              | 0.83 | 3.43                 | 0.82 | 79,911    | .000 | .17        |
| Dedication           | 4.85                | 0.71 | 4.49              | 0.88 | 4.16                 | 0.82 | 50,930    | .000 | .12        |
| Absorption           | 3.90                | 0.77 | 3.57              | 0.89 | 3.30                 | 0.83 | 36,327    | .000 | .09        |
| <i>Disengagement</i> |                     |      |                   |      |                      |      |           |      |            |
| Exhaustion           | 2.29 <sub>a</sub>   | 0.80 | 2.32 <sub>a</sub> | 0.79 | 2.85                 | 0.81 | 40,309    | .000 | .10        |
| Lack of interest     | 1.64                | 0.74 | 2.07              | 0.93 | 2.47                 | 0.92 | 40,309    | .000 | .14        |
| Lack of regulation   | 2.44 <sub>a</sub>   | 0.84 | 2.46 <sub>a</sub> | 0.81 | 3.20                 | 0.78 | 73,153    | .000 | .16        |

Note: Means within a row denoted with the same subscripts are **not** significantly different at the  $p < .05$  level. Based on the Levene's test, the equality of error variance could not be assumed in Lack of interest. Hence, the Tahmane correction was used for pairwise comparisons for this variable; for the other variables, Tukey's correction was used.

## 4. Discussion

Broadly, our participants experienced their studying relatively challenging; at the same time their sense of competence, optimism and academic engagement were high, whereas task avoidance and disengagement were clearly lower. In other words, they seemed to have strong resources for facing the demands of studying. Personal resources, well-being and academic engagement have earlier been stated to appear together and strengthen each

other as well as study success (Ouweneel, Le Blanc & Schaufeli 2011). Our findings are encouraging, as we measured students' experiences in general level (Lonka, Olkinuora & Mäkinen 2004), trying to reach a wider significance that students see in their studies.

On average, the participants were quite optimistic and engaged. However, a more precise examination through a person-oriented approach revealed different studying profiles among the participants: *optimistic* (34.6 %), *bored* (29.2 %) and *pessimistic* (34.3 %). These profiles can be referred to earlier studies assessing study-related motivational and emotional factors using person-oriented approach. Often, when using person-oriented approach among Finnish novice university students, three different profiles have been identified, one of which is distinguished with high well-being, engagement and success, one on the opposite with high problems in well-being and studying, and one, in turn, relaxation and maybe optimism but still disengagement or poor success (for example, see Heikkilä et al. 2011; Ketonen & Lonka 2013). Studying profiles identified here can be described with experienced challenge-competence balance. *Optimistic* students experienced high challenge along with as high sense of competence and optimism as well as low task avoidance. They scored high on academic engagement and low on disengagement. This kind of balance, where both the challenge and personal resources to face the challenging situations are high, fits well in for example Flow theory (Csikszentmihalyi 1988; 1990; see also Hektner, Schmidt, & Csikszentmihalyi 2007) and Job Demands-Resources model (Bakker & Demerouti 2007; Bakker et al. 2007). Reasonable demands and challenges in studying activate the students and may push them out of their "comfort zone".

As for *bored* and *pessimistic* students, two types of imbalance can be pointed out: lower challenge compared to high personal resources (*bored*) and, on the opposite, higher challenge compared to low personal resources (*pessimistic*). *Bored* students reported the lowest challenge but had as high optimism and sense of competence than *optimistic*. However, *bored* experienced lower engagement and higher lack of interest. According to Csikszentmihalyi (1990), too low challenge leads to boredom or apathy. *Bored* students here have perhaps difficulties seeing the meaning of their studies as lack of interest refers to cynical attitude towards studying. Typical of *pessimistic* students, in turn, was as high challenge as *optimistic* experienced, but together with low competence and optimism and high task avoidance. Such an imbalance with too high challenge can lead to anxiety (Csikszentmihalyi, 1990). *Pessimistic* students reported the lowest engagement and the highest disengagement. These results confirm the idea that not the single negative or positive effects of resources, but their *combination* is important (Bakker et al. 2007). The interrelations between studying profiles and academic engagement/disengagement are in line with previous research: it has been found that academic engagement is in relation to positive emotions by forming a reciprocal gain cycle, where personal resources would have an intermediating role between those two (Ouweneel, Le Blanc & Schaufeli 2011). Interestingly, *bored* students reported lower academic engagement than *optimistic*, but did not score higher than them on exhaustion nor lack of regulation; only lack of interest was higher. In other words, their problem appeared to be lack of experienced meaning rather than other study problems.

#### 4.1. Limitations and future research directions

Firstly, as we used only self-report measures without objective outcome variables (such as performance measures, exam grades), the validity of the results may be declined. However, our results are well in line with current theories and earlier research. Furthermore, as Eccles (1983) has stated, students' perceptions (for example self-efficacy, appreciative attitude towards studying, interest) are more crucial to expectations, values and regulation of learning than earlier experiences, such as grades. To have the richest perspective on learning, should both the objective outcome and subjective experiences be taken into account.

Our participants came from different faculties; studying and teaching methods can be very different between different domains or even between different major subjects. These background variables were not controlled here. Qualitative assessment would shed more light on the role of learning environment as well as the deeper experiences, meanings and attributions that students give to their studying. More research is also needed to reliably generalize our results, as our data consisted of Finnish novice students from Helsinki area, from certain domains.



A measure carried out in the beginning of studies cannot fully predict the further development of student's resources and engagement; we do not assume these to be inner abilities that will not develop along studying. For example, growing expertise may enrich motivation and interest, which leads to higher commitment and more active learning (Hidi & Renninger 2006). The learning environment has also its crucial role in developing study skills. This means support that is made proportional to students' abilities and orientations, aiming at students' autonomy and self-regulation (Vermunt & Verloop 1999). More longitudinal research is needed to assess the development or continuance of personal resources and engagement. We have also collected follow-up data of the participants, and in the future we are able to gather information about the development of the dimensions measured here.

As for our instrument, the questionnaire was constructed based on instruments that have been widely used and validated. The results of our person-oriented approach are in line with the factor analyses conducted in earlier studies using the original instruments and variable-oriented approach (for example, see Lonka et al. 2008; Schaufeli et al. 2002; Salmela-Aro et al. 2009; Salmela-Aro & Upadaya 2011).

#### 4.2. Conclusions

The entity of emotional, motivational and cognitive dimensions in learning is of a dynamic and complex nature; moreover, learning and studying should never be considered in vacuum but in intensive interaction with the environment (for example, see Vermunt & Verloop 1999; Lindblom-Ylänne & Lonka 2000; Vekkaila, Pyhältö & Lonka 2013, Ouweneel, Le Blanc & Schaufeli 2011). For example motivation, emotions and achievement strategies always arise and actualize vis-à-vis the challenges, demands, resources and rewards offered by teachers, curriculum and learning institution (Lindblom-Ylänne & Lonka 2000; Shernoff et al. 2003; Lonka & Ketonen 2012). Whether this interaction between the learner and the environment is characterized by fit or misfit, is crucial to learning, optimal experiences, academic engagement and persistent effort (Vekkaila, Pyhältö & Lonka 2013). This is important to point out, as teachers often think that their possibilities to influence their students' interest are minor (Hidi & Renninger 2006).

Then again, the student is not just a target of learning environment. A skillful student knows how to work efficiently in different environments by varying their strategies and regulating and reflecting their learning (Heikkilä & Lonka 2006). They might even have an ability to convert an extrinsic, structured situation into a subjective, engaging setting (Csikszentmihalyi 1990) and create the balance between the demands and resources as well as the fit between themselves and environment. However, teachers need to support students, especially novice students who are confronted by the whole new learning environment, developing optimistic learning strategies. As our results indicated, the problems may not always lie in overwhelming challenges or inadequate studying skills, but in the lack of interest and experienced meaning.

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