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MA THESIS

Motiváció, önszabályozás és autonom tanulási viselkepés az angol mint idegennyelv tanulás során

Motivation, self-regulation and autonomous learning behaviour in an EFL context

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Abstract

Motivation, self-regulation and autonomy have been widely researched but very few studies have investigated how motivational orientations relate to self-regulation and autonomous learning behaviour (Kormos & Csizér, in press). Thus, the relationship between the concepts has remained inconclusive. This thesis aims to investigate how the concepts are connected in an EFL context in Finland and what characterizes the students' behaviour in relation to them. The participants were 133 Finnish secondary school students aged between 16 and 19. Quantitative methodology was applied and a questionnaire was developed measuring some of the constructs identified in previous research (Benson, 2001; Noels, Pelletier, Clément & Vallerand, 2003; Tseng, Dörnyei & Schmitt, 2006). The findings indicate that motivation, self-regulation and autonomous learning behaviour are connected in an intricate pattern and dichotomies are needed between internal and external self-regulation and autonomous learning behaviour inside and outside formal setting.

Keywords: motivation, self-regulation, autonomy, EFL

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1. Introduction

Achieving a high level of proficiency in a foreign language setting depends on many factors and individual variables. Motivation is one of the most prominent concepts and it might influence all the other individual variables to some extent (Dörnyei, 2005). In addition, motivation and other affective variables have been shown to be at least as important as aptitude for predicting achievement (Gardner, 1985). Therefore, an apparent need to investigate motivation exists in the field of foreign language learning and over the past decades it has been widely researched all over the world.

In the context of foreign language learning, students lack exposure to English in an everyday setting and for this reason achieving a high level of proficiency is not possible unless the students effectively regulate and take responsibility for their own learning behaviour outside the classroom (Kormos & Csizér, in press). Hence, research about self-regulation and autonomy is increasingly important in addition to motivation. Moreover, researching these concepts is beneficial for interdisciplinary purposes: knowledge about self-regulation in language learning can help researchers in the field of psychology to understand the concept better. Autonomy on the other hand is crucial because it does not only help the learners to become more proficient but helps them to develop into more responsible members of their communities (Benson, 2001).

According to the self-determination theory, motivational orientations are closely linked to self-regulated learning and autonomy (Vandergrift, 2005). This suggests that the concepts of motivation, self-regulation and autonomy influence one another. However, only a few studies have examined how motivational orientations influence self-regulation and autonomous learning behaviour (Kormos&Csizér, in press) and even the studies that

have tried to link these three concepts differ from one other in their conclusions. For this reason, this thesis explores the relationship between motivation, self-regulation and autonomous learning behaviour. The aim is to map how the concepts are connected in an English as a foreign language (EFL) context in Finland and what disposition students show towards them.

The first part of the thesis consists of definitions of motivation, self-regulation and autonomous learning behaviour, and a review of pieces of literature which have addressed these constructs. In addition, the first part of the thesis provides a summary and evaluation of studies which have drawn conclusions about the connection between motivation, self-regulation and autonomous learning behaviour. It will aim to provide a comprehensive account on the concepts themselves and connections between them as they have been found in previous research. The second part seeks to empirically explore motivation, self-regulatory strategies and autonomous learning behaviour of the students and test the relationship between the concepts by using quantitative method.

2. Background

2.1 Motivation

Motivation has been conceptualized in different ways by different researchers. This thesis uses the concept as defined by Dörnyei and Ottó (1998, p. 64): "In a general sense, motivation can be defined as the dynamically changing cumulative arousal in a person that initiates, directs, coordinates, amplifies, terminates, and evaluates the cognitive and motor processes whereby initial wishes and desires are selected, prioritized, operationalized and (successfully or unsuccessfully) acted out." This definition was selected because it allows us to view motivation as dynamic and multi-faceted construct. As Dörnyei and Ottó (1998)

point out, motivation is not a static state but an entity which changes and evolves dynamically. Based on this, the results of the motivational disposition of the students cannot be taken as constant and final states. Moreover, it is important to consider motivation as a multi-faceted construct because it is possible that the different aspects of it are relevant in relation to other constructs, such as self-regulation and autonomous learning behaviour.

Several studies on motivation have been conducted in different countries during the past decades. The starting impetus in the field of L2 motivation was the work carried out by Gardner and Lambert in 1959 (Gardner & Lambert, 1959) who formulated a model which relied mainly on the distinction between integrative (desire to learn L2 in order to communicate and perhaps identify with L2 community) and instrumental (desire to learn L2 in order to achieve some practical goal such as course credit) motivation. The concept of integrativeness has been often challenged and its limitations have been emphasized because whereas in Gardner's setting in Canada there is an L2 community into which the learner might wish to integrate, in foreign language settings this community is absent (Dörnyei, 2010). However, in the past two decades there have been many attempts to re-conceptualize integrativeness and as Dörnyei (2003) argued, the absence of the L2 community in FL setting might not be a problem if the identification associated with integrative disposition is generalized to the cultural and intellectual values associated with the language. The conceptual problems in the field have led to many scholars attempting to create alternative models, not to replace Gardner's model but to complement it (Noels, Pelletier, Clément, & Vallerand 2003).

Self-determination theory has been one of the most prominent theories in the field of language learning motivation. According to Noels et al. (2003), self-determination theory (SDT) offers a parsimonious and internally consistent framework which can

systematically describe many orientations in a comprehensive manner. Moreover, the theory has considerable explanatory power for understanding why certain orientations are better predictors of relevant variables such as effort (Noels et al. 2003). Thus, this thesis uses the SDT as a framework for motivation.

SDT holds an assumption that people are active by nature (Reeve, Ryan, Deci, & Jang, 2008). Moreover, people have a tendency to engage the environment, assimilate new knowledge and skills, and integrate these into a coherent psychological structure (Reeve et al. 2008). Self-determination theory focuses on intrinsic and extrinsic motivation and their subtypes (Dörnyei, 2005). Intrinsic motivation refers to motivation to engage in activity because of the pleasure and satisfaction the activity gives (Noels et al. 2003) and therefore it can be associated with the concept of integrative motivation from Gardner's famous theory (Dörnyei, 2005). On the other hand extrinsic motivation refers to motivation to engage in activity in order to achieve some instrumental end (Noels et al. 2003) and hence it can be associated with Gardner's instrumental motivation (Dörnyei, 2005). It is important to note that the types of motivation are not categorically different but rather different ends of a continuum where the types show to what extent the individual is self-determined (Noels et al. 2003). Based on the SDT this thesis measures motivation on the extrinsic-intrinsic continuum.

2.2 Self-regulation

Similarly to motivation, self-regulation has been defined in different ways by different researchers. Generally, self-regulation is referred to as control of one's behaviour based on motives which are related to goal or ideal one has set to oneself (Zimmerman & Schunk, 2008). However, in order to clearly differentiate between self-regulation and

autonomous learning behaviour, this thesis defines self-regulation as self-regulatory strategies. These strategies are used by students to manage and control their learning. For example, an EFL student who is given a task to present a short text will plan how to manage the task, what is the best way to complete it and which resources to use.

According to Reeve et al. (2008), it is generally accepted that self-regulation refers to the process in which learners organize and manage their capacities; for example, their thoughts, emotions, behaviours and their social context. This description can be connected to the definition offered in previous paragraph: this organizing and managing is accomplished by the use of strategies. Therefore, the definition of the concept as self-regulatory strategies can be claimed to be an underlying notion in more general definitions as well.

It is important to observe that theories of self-regulation often vary in their focus (Reeve et al. 2008). Three categories of theories can be distinguished: "why theories"; "what theories" and "how theories". The first category, "why theories", seeks to answer the question: "for what reasons do people engage in certain behaviour?" The second one, "what theories", aims to answer the question: "what goals do people seek to attain for themselves?" Finally, the last category, "how theories", aims to answer the question: "how do people enact effective self-regulation?" (Reeve et al. 2008). Viewing self-regulation as self-regulatory strategies is clearly based on "how theories" in this taxonomy. This distinction supports the definition of self-regulation as self-regulatory strategies and links this study to the previous research by situating it within "how theories". Moreover, it highlights the change of focus from the product to the process of self-regulatory learning, which according to Tseng, Dörnyei and Schmitt (2006) is an important shift in the field.

In his foundational work Kuhl (1987) defined six self-regulatory strategies: selective attention, encoding control, emotion control, motivational control, environmental

control and parsimony of information processing. Kuhl's work has been a basis for Dörnyei's (2001) taxonomy of control strategies which includes five types of control strategies: commitment control, which regulates the commitment to the learning goal; metacognitive control, which regulates focus in learning; satiation control, which manages the sense of boredom; emotion control, which regulates emotions during learning, and environmental control, which regulates the learning environment. Learners use these strategies to plan, monitor and evaluate their learning.

Other researchers have also attempted to identify strategies self-regulated learners use. For example, Corno (1993) has identified strategies learners use to control their motivation (i.e. setting of goals) and their volition processes. Evidently, different researchers have created different taxonomies of self-regulatory strategies depending on the focus of their research. However, taxonomies such as Dörnyei's (2001) offer a general and comprehensive summary of the most important strategies part of self-regulation and hence make it the most useful for research about the concept.

Defining self-regulation as self-regulatory strategies requires a clear distinction to be made between these strategies and language learning strategies. The concept of language learning strategies has been widely researched in past decades (Tseng et al. 2006). In their research, Tseng et al. (2006) claim that the real problem with learning strategies is to how to make a clear distinction between strategic and normal learning. For instance, many attributes assigned to strategic learning such as "effortful" learning can also characterize motivated learning in general without any strategic element (Tseng et al. 2006). As a result of the conceptualization problem, broadening of perspective has occurred and self-regulation is seen as constructed from integrated and interrelated micro-processes, including learning strategies as one component. Researching all the components of self-regulatory strategies is beyond the scope of this thesis; therefore, only

strategies which are directly connected to the learners' behaviour to regulate their learning as a means of control will be included.

2.3 Autonomous learning behaviour

Even though Yves Châlon is often considered the father of autonomy in language learning, the key document in the field was written by Henri Holec in 1981 (Benson, 2001). This thesis uses Holec's (1981) definition of autonomy as ability to take charge of one's own learning. Even though this definition is not very recent, it has proved to be a useful description and therefore it remains the most widely used definition in the field (Benson, 2007). It is important to note that autonomy is not simply a method to learn but rather an attribute of the learner as Holec's (1981) definition shows (Benson, 2001). Thus, the autonomous learner takes full control and responsibility for their learning even outside the classroom. For example, in addition to attending English classes, a student might read books in the language or use technology in order to improve their proficiency. In contrast, a self-regulated learner uses strategies to control learning tasks and situations but lacks the full responsibility, and is less likely to engage in activities such as reading books in foreign language. In addition to the basic definition, this thesis uses terms autonomy and autonomous learning behaviour synonymously. This is based on the assumption that autonomy as defined by Holec (1981) is likely to manifest as behaviour.

Researching autonomous learning behaviour is a newer notion than motivation and many other concepts in the field of foreign language learning. Today autonomy research can be considered part of the mainstream research in language education. As Benson (2001) observes, communicative teaching, learner-centredness and autonomy all place the learner as the key agent. This connection between autonomy to communicative teaching

might play a role in it becoming part of mainstream research as a result of the popularity of communicative teaching.

It is important to note that autonomy does not mean learner's independence from teacher, peers and context, despite some researchers using the terms synonymously (Benson, 2001). For example, Dickinson (1987) refers to full autonomy as a situation when the learner is completely independent from teachers and materials. However, it is not difficult to imagine a learner who is completely independent in their learning and still fails to develop autonomy. For example, a learner who does not attend formal instruction in a classroom setting is completely independent but not necessarily successful because they have not taken full control and responsibility for their learning (i.e. developed full autonomy). In a similar vein, some researchers have stated that autonomy does not mean absence of external influences but one's subscription to these influences (Ryan & Deci, 2006). For this reason, it seems more plausible to talk about interdependence rather than independence. Kohonen (1992) defines interdependence as taking responsibility in one's own conduct but in social context. This means that the learners have to cooperate. Similarly, Little (1996) claims that collaboration is essential for the development of autonomy. Moreover, research shows that people tend to depend upon other people who support their autonomy (Ryan & Deci, 2006).

Because this research is conducted in different context than most of the previous work in the field, an important notion in connection to autonomous learning behaviour is whether it can be seen as a universal concept or contextually bound. It has been claimed that autonomy, individualism and independence are Western values and therefore can only predict behaviour in that context (Ryan & Deci, 2006). Moreover, some researchers assert that claims in connection to autonomy in SDT have been widely disconfirmed (Iyengar & DeVoe, 2003). However, as pointed out previously, autonomy does not equal

independence and it seems that these results of disconfirming autonomy in SDT stem from the fusion of autonomy with independence and individualism (Ryan & Deci, 2006). Many studies in the past 10 years have been conducted in order to confirm the validity of the concept of autonomy across diverse cultures. For example, in their study Chirkov, Ryan, Kim and Kaplan (2003) revealed that the issue of autonomy is similarly understood across cultures and suggest that autonomy is a basic concern for humanity. Therefore, it can be claimed that autonomy as a concept, when well-defined as separate from individualism and independence, is a universal concept. Hence, the concept of autonomous learning behaviour will be valid in the EFL context in Finland used in this study.

2.4 Relationship between motivation, self-regulation and autonomous learning behaviour

2.4.1 Motivation and self-regulation

The relationship between motivation and self-regulation seems to be rather straightforward because of the apparent link between the concepts as can be seen from self-regulation referred to as control of behaviour based on motives related to goal or ideal (Zimmerman & Schunk, 2008). In fact, many researchers have established a connection between them; for example, Zimmerman and Schunk (2008) claim that student efforts to regulate their learning are initiated, guided and sustained by motivational processes. Most importantly, if we view motivation as a dynamically changing concept, it becomes evident that the regulation processes the learner employs will have a role in shaping the motivational outcome (Dörnyei, 2005). Moreover, an evident link between the concepts exists in the fact that motivational self-regulation can be seen as a part of the concept of regulation. Winne and Hadwin (2008) claim that regulating motivational states is a similar process to regulating other aspects of learning.

There are many reasons motivation is important for student's efforts to self-regulate their learning. Firstly, highly motivated students seem to be more attentive to the learning process and outcomes (Zimmerman & Schunk, 2008). Moreover, any student could be taught strategies to self-regulate their learning; for example, teaching monitoring as a cognitive process. However, a student who is not motivationally attentive to the feedback is unlikely to keep monitoring their learning (Zimmerman & Schunk, 2008).

Evidence from research suggests that not only the relationship between these concepts exists but motivation seems to precede self-regulation. Firstly, as Pintrich (1999) highlights, self-regulation takes time and effort. Therefore, an amotivated learner is not likely to engage in the self-regulatory processes. Moreover, Pintrich (1999) and Vandergrift (2005) have both found out in their studies that the more self-determined the motivation of the student is the more time and effort they are willing to invest in self-regulatory learning. Finally, Pintrich (1999) also claims that intrinsic motivation in learning leads to more effective self-regulation.

In addition to evidence of motivation preceding self-regulation, research has found evidence for the opposite as well. For example, Zimmerman and Schunk (2008) list four functions of motivation in relation to self-regulation: precursor, mediator, concomitant of outcomes and primary outcome. Several sources of motivation have been found to be related to self-regulation either as a concomitant of outcome or primary outcome. These sources include goal orientation, self-efficacy, causal attributions and intrinsic motivation (Zimmerman & Schunk, 2008). In relation to the sources of motivation as an outcome of self-regulation, Zimmerman and Schunk (2008) also point out that various self-regulatory strategies can be used for increasing behaviour forms of motivation. Conversely, increasing implies existing motivation; therefore, motivation cannot be a primary outcome

of self-regulation. Consequently, it can be concluded that it is more likely for motivation to precede self-regulation than vice versa.

In spite of the previously mentioned connections between the concepts, some research suggests that self-regulation sustains motivation. For example, Wolters (2003) suggests that even if the learner has initial motivation, academic tasks can be challenging and therefore the learner's ability to keep the control of their motivational disposition is an important determinant for their learning. Moreover, as mentioned earlier, Zimmerman and Schunk (2008) claim that motivational processes not only initiate and guide the efforts to self-regulate learning but also sustain. Therefore, the conclusion can be made that motivation precedes self-regulation but once initiated, the concepts sustain each other. In addition to sustaining motivation, self-regulatory training can enhance motivation (Zimmerman & Schunk, 2008). Hence, strong evidence for these concepts being bidirectional exists.

2.4.2 Motivation and autonomous learning behaviour

The relationship between motivation and autonomy is complex and multidirectional. Self-determination theory of motivation assumes a direct connection to autonomy by stating that it is a theory that differentiates motivation in terms of being autonomous and controlled (Deci & Ryan, 2012). Many other researchers have suggested links between the two concepts; however, unlike the relationship between motivation and self-regulation, the connection seems to be less straightforward.

Evidence for the close connection between motivation and autonomous learning behaviour comes from Holec's (1981) definition of autonomy, more specifically his elaboration on the definition. He claims that an autonomous learner takes responsibility for

making decisions about determining the objectives of learning. It is evident that in order to determine the objectives, the learner needs to be motivated and motivation also influences the decision. Moreover, Holec (1981) claims that the autonomous learner is capable of making decisions concerning the learning with which he wishes to be involved. Only a motivated learner will wish to be involved in learning; therefore, it is possible to claim that based on Holec's (1981) definition of autonomy, motivation is an inherent part of the concept.

Some pieces of research seem to suggest that autonomy can lead to motivation. For example, Noels (2001) has maintained the view of self-determination theory and claims that autonomy precedes motivation. In her study she found that the more controlling the teacher was, the less perceived autonomy students had and therefore less intrinsically motivated they were. Similarly, Wu (2003) claims that perceived autonomy leads to intrinsic motivation. Moreover, Deci, Schwartz, Sheinman and Ryan (1981) found in their study that learners whose teachers were autonomy supporting became more intrinsically motivated. Finally, further evidence for autonomy preceding motivation comes from work of Deci and Ryan (1985), who hypothesized that if the person is free to choose (i.e., have perceived autonomy), they will seek activities and challenges (i.e., initiate process).

Despite many studies showing autonomous learning behaviour preceding motivation, some researchers claim the opposite. Ushioda (1996, p.2) states that "autonomous learners are by definition motivated learners", implying that autonomous learners are underlyingly motivated. Furthermore, Ushioda (2006) suggests that the learners who take responsibility for their learning tend to be more intrinsically motivated. Even though this might seem to suggest the relationship being autonomy preceding motivation, it is more likely that the intrinsically motivated learners tend to take

responsibility for their own learning. The most straightforward evidence comes from Spratt, Humphrey and Chan (2002) who found that motivation to learn the language will lead to autonomy. In their study they found that motivation has a strong impact on readiness to be an autonomous learner (Spratt, Humphrey & Chan, 2002).

Further evidence for supporting the latter views comes from the issues of time and effort. As mentioned in the case of motivation and self-regulation, Pintrich (1999) suggests that self-regulated learning takes time and effort and hence an amotivated learner is not likely to engage in such processes. Similarly, autonomous learning is not automatic but requires time and effort; hence, it would seem unlikely for a learner without initial motivation to engage in autonomous learning.

However, the relationship between the concepts seems to be very similar in its direction to the relationship between motivation and self-regulation. Several researchers (Noels et al, 2003) suggest that autonomy supporting environment will likely foster motivation. This means that motivation is the initial concept needed for autonomy but autonomy may sustain motivation the same way self-regulation does. Further evidence for this comes from autonomy support as defined by Reeve, Ryan, Deci and Jang (2008). According to these authors autonomy support is interpersonal behaviour which provides support for one's motivational resources. Hence, the initial motivation of the learner is present and is fostered or sustained usually by the teacher in the classroom setting.

Moreover, SDT states that perceived autonomy is a necessary condition to intrinsic motivation (Ryan & Deci, 2006). Thus, at least in the case of intrinsic motivation, autonomy is needed to sustain it. Moreover, according to Deci and Ryan (1994) autonomy is best supported by removal of external controls such as pressure or reward. This suggests that extrinsic motivation should not be connected to autonomy to a same degree as intrinsic motivation.

2.4.3 Self-regulation and autonomous learning behaviour

A strong relationship exists between self-regulation and autonomous learning behaviour. The connection between the concepts is already evident from the definitions and they have often been treated synonymously in research. For example, self-determination theory distinguishes between heteronomy, which is also referred to as controlled regulation, and autonomy, which is also called true self-regulation (Ryan & Deci, 2006). However, autonomy can be said to refer to the learner's broad approach to the learning process, not the particular mode of teaching or learning (Benson, 2001). This distinction works for separating autonomy and self-regulation: autonomous learning behaviour is a broad approach (in addition to full control and responsibility), whereas self-regulation applies to particular situations or modes of learning. Nevertheless, the concepts remain closely intertwined.

As Benson (2001) suggests, autonomy is grounded in a natural tendency for the learner to take control and according to him, evidence for control in the normal course of learning exists. This evidence includes facts such as learners routinely managing their learning; learners tend to follow their own learning agendas even within the context of formal instruction and learners tend to control the psychological factors which influence their learning, particularly motivation (Benson, 2001). This evidence is clearly self-regulation. Therefore, self-regulation must be grounded in the natural tendency to exercise control over one's learning. Moreover, this evidence suggests that autonomy is constructed from self-regulation: the strategies the learner uses to regulate different aspects of their learning are pieces which construct the broader concept of autonomy and therefore it seems that self-regulation is prerequisite of autonomy.

Autonomy and self-regulation seem to be connected also in Holec's (1981) elaboration on his definition: taking charge means having responsibility for all decisions made concerning all aspects of learning. These include determining objectives, defining contents, selecting methods, monitoring and evaluating. These aspects clearly overlap with self-regulation. This supports the view of self-regulation as constructing autonomy. Moreover, "all aspects of learning" (Holec, 1981, p. 3) also include self-regulatory strategies. Therefore, self-regulation has to be an inherent part of autonomy. This thesis maintains the view of the inherent nature of self-regulation in autonomy and aims to test this hypothesis.

2.5 Research questions

To summarize the previous research in the field, many theories and definitions of motivation, self-regulation and autonomous learning behaviour have been established. As a result of different definitions, conceptual problems have often emerged and affected results of studies. Self-determination theory is used in this thesis as a framework of motivation. In addition, a clear distinction is made between self-regulation and autonomous learning behaviour by defining self-regulation as self-regulatory strategies and autonomy as taking charge of one's own learning with an emphasis on the learner's broad approach to learning and taking full responsibility of it. The concepts have been found to be linked to one another; however, the direction of the relationship has not always been conclusive. Based on the theoretical considerations discussed in this chapter, this thesis aims to answer the following research questions:

1. What characterizes the self-reported behaviour of EFL students in Finland in relation to motivation, self-regulation and autonomous learning behaviour?
2. What is the relationship between motivation, self-regulation and autonomous learning behaviour in an EFL context in Finland?

3. Research design and method

3.1 Participants

The participants of the study were 133 Finnish secondary school students aged between 16 and 19. The school chosen is an average monolingual secondary school, in which students come from diverse social backgrounds. This school was selected because in bilingual or specialized schools the results might not reflect the average situation in an EFL classroom. All the students have been learning English for at least 5 years and on average the participants started to learn English at the age of 8. The reason for choosing only one school was purely practical because access to more schools was not possible for the researcher. In addition, it was thought that because of the complex nature of the constructs, results of students who attend the same learning environment would be more reliable.

The groups were naturally formed in the school and age and gender variation exists within the groups. 87 of the participants were female and 42 male. 4 participants did not provide information on their gender. Majority of the participants (n=103) were aged between 17 and 18. Most of the participants are also learning Swedish at school and 47 participants reported that they are also learning a third language at school. Only 14 percent of the participants are learning foreign languages outside the school and the most common

language learned outside school was English. 11 participants had been living in an English speaking country for over 6 months (9 of them in the USA).

3.2 The instrument

A standardized paper-and-pencil questionnaire was used for data collection. The questionnaire was compiled using several sources. The questions were based on 10 constructs identified in previous research (Benson, 2001; Noels, Pelletier, Clément & Vallerand, 2003; Tseng, Dörnyei & Schmitt, 2006). The first two constructs were related to motivation: constructs of extrinsic and intrinsic motivation were adapted from Noels et al. (2003). The original research divides these two constructs into subscales of external regulation, introjected regulation, identified regulation, knowledge, accomplishment and stimulation; however, this was not done in this thesis due to limitation of length in the questionnaire.

Five constructs of self-regulation are based on Dörnyei's taxonomy of control strategies (2001) and were adapted from Tseng et al. (2006). These constructs are commitment control, metacognitive control, satiation control, emotion control and environmental control. Finally, the last three constructs were related to autonomous learning behaviour and adapted from Benson (2001). These were technology based approaches which measures to what extent the learners use technology in order to improve their proficiency; resource based approaches which measures the resources the students use independently for language learning, and classroom based approaches which addresses control and planning in the classroom.

The final questionnaire included 42 statements measured in a 5-point Likert scale and 8 background questions. The scale reached from 1 (not at all true) to 5 (completely

true). The questions were translated into the participants' mother tongue (i.e. Finnish) and a back translation was provided by a native Finnish speaker fluent in English. Finally a think-aloud procedure was conducted to test the questionnaire. A problem occurred with two questions due to the translation and these items were reworded before the data collection. The full English version of the instrument can be found in Appendix A.

3.3 Data collection procedures

The school and the English teachers were contacted in advance. The questionnaire was administered by the researcher during regular English classes to 5 groups of students in January 2014. Participation to the research was voluntary. All the questionnaires were anonymous and in order to get sincere answers, the students were promised that the data would be handled confidentially by the researcher without releasing any data to the English teachers or other staff of the school.

3.4 Data analysis procedures

All the questionnaires were computer-coded and the data was analyzed by using SPSS (Statistical Package for Social Sciences) version 20. First, Cronbach Alpha was calculated to determine the reliability of the scales. Secondly, descriptive statistics were computed. Other statistics procedures conducted were independent samples T-test, paired samples T-test, one-way analysis of variance (ANOVA), Pearson correlation coefficient and linear regression analysis. In order to conduct certain procedures such as ANOVA, the data was sub-grouped according to the scores. In all statistical procedures the level of significance was set for $p < .05$.

4. Results and discussion

4.1 The internal reliability of the investigated constructs

Cronbach alpha analysis showed that seven scales reached the satisfying alpha above .70 and were therefore reliable (See Table 1). Three constructs which did not reach the satisfying internal consistency were metacognitive control, satiation control and resource based approaches. In the case of the two self-regulation constructs, metacognitive control and satiation control, it is possible that because the items were adopted and transferred from the instrument developed by Tseng et al. (2006) to research self-regulation in vocabulary learning, they did not give reliable results in the context of language learning in general. Moreover, in the case of metacognitive control, two of the items appeared problematic during the think-aloud procedure and in spite of correcting them, the wording of the items might have caused a problem during data collection; thus resulting in an unreliable scale.

In the case of satiation control the low alpha (Cr. Alpha =.27) was unexpected due to the wording of the items being rather similar (three out of four items addressing directly the sense of boredom). However, it is possible that secondary school students in Finland are not used to feelings of boredom while learning English and therefore the questionnaire items tapping into this construct were difficult for them to conceptualize. Finally, the low internal consistency of resource based approaches might be a result of questions addressing concepts which are irrelevant to the students, such as books and course books. Secondary school students in Finland are likely to be highly advanced technologically. For this reason, conceptualizing their course book as a source to find a solution to their language related problems or reading books in order to improve their proficiency is not applicable to these students.

Table 1

The Internal Reliability Coefficients of the Constructs

Scale	Cronbach Alpha values
Intrinsic motivation	.78
Extrinsic motivation	.82
Commitment control	.70
Emotion control	.74
Environmental control	.72
Technology based approaches	.72
Classroom based approaches	.71

4.2 Descriptive statistics

Descriptive statistics show only minor variation between the learners in connection to all the constructs. The motivation constructs (intrinsic and extrinsic motivation) obtained the highest mean values (M=3.3, SD= .84 for intrinsic motivation and M=3.3, SD= .81 for extrinsic). The lowest mean value was found in technology based approaches (M=2.6, SD= .95). The results seem to indicate relatively low motivation, use of self-regulatory strategies and autonomous learning behaviour. Regarding motivation, the result is consistent with results obtained by Teravainen and Varga (2013) who found similar mean values in motivation and concluded that Finnish secondary school students have comparatively low motivation to learn English.

It is possible that the low mean values of certain constructs inform us that the learners do not know how to employ the strategies to self-regulate their learning. This is especially possible with emotion control, which has the lowest mean value among the self-regulation constructs. The result might reflect the inability of some students to cope with their emotions, such as stress. Teaching such control strategies in the classroom might be

seldom practiced and hence the students do not know how to use them. Interestingly, this is unlikely to be the case with autonomy constructs. The low mean value of technology based approaches is more likely to be an indication of the students simply not being autonomous learners in this respect than lack of knowledge. Today, technology is largely available and particularly people aged between 16 and 19, who grew up using technology, are aware of the possibilities of it. Therefore, it can be assumed that all the students have the capacity to use technology for learning; however, they are unwilling to do so.

Table 2

Descriptive Statistics: the Mean and Standard Deviation Values

Scale	Mean value	SD
Intrinsic motivation	3.3	.84
Extrinsic motivation	3.3	.81
Commitment control	3.0	.82
Emotion control	2.9	.89
Environmental control	3.2	.77
Technology based approaches	2.6	.95
Classroom based approaches	3.2	.89

4.3 Comparing group-related differences

An independent samples T-test was conducted to find possible gender and age differences. A significant gender difference was found for emotion control ($t= 3.48$, $p= .001$). The result suggests that males have higher use of emotion control strategies ($M=3.2$, $SD= .85$) than females ($M=2.7$, $SD= .86$). This unexpected finding can be a result of several factors. Firstly, it is possible that males feel more stressed about learning English and therefore have higher need for these control strategies. On the other hand, it is also

possible that the females are less familiar with use of these strategies and simply do not know how to employ them; for example, to reduce stress. Finally, it is possible that the females are less likely to admit having disruptive feelings about learning languages. The reason behind this might simply be social desirability or higher association of these feelings (e.g. stress) with failure. Differences between males and females were not significant in other five scales.

Two groups were created for age: 16-17 years old as younger learners and 18-19 years older learners. The results revealed that no significant differences exist between the younger and older learners. The result was unexpected because it was thought that younger learners would demonstrate different autonomous learning behaviour and self-regulation. Younger learners have less experience and therefore have had less time to learn to use control strategies and become autonomous. In addition, the older learners are preparing for their matriculation examination which could be expected to result in at least use of more self-regulatory strategies. A possible explanation for the lack of significant difference is the fact that the age gap was not large enough. It is probable that difference could be found between considerably younger learners and the secondary school students.

4.4 Mean-related differences among the scales

Paired samples T-test indicated significant difference in three pairs of constructs. Commitment control and environmental control were found to have significant difference in mean values ($t= -2.66$, $p= .009$). Moreover, environmental control and emotion control were found to have significant difference in their mean values ($t= -3.69$, $p < .001$). Environmental control being significantly different from the other self-regulation constructs has lead to a hypothesis that the construct is different compared to the others.

This is possibly a result of the difference in the type of factor being controlled by the strategies (i.e., whether the controlled factor originates inside or outside the learner). Commitment control and emotion control are both used to manipulate factors which originate inside the learner. On the other hand, environmental control is not used to control any inner action but something originating outside the learner. This distinction in inside and outside self-regulatory strategies can explain difference in their usage.

Finally, the autonomy constructs technology based approaches and classroom based approaches differed significantly ($t = -5.02$, $p < .001$). Similarly to the case of environmental control differing significantly from the other self-regulation constructs, the difference in autonomy constructs might be a result of the different nature of the constructs: inside and outside formal setting. Technology based approaches are more likely to be used outside the formal setting whereas classroom based approaches (as the name already suggests) are used in formal setting. This dichotomy between inside and outside formal setting is possibly an important defining factor of autonomous learning behaviour of the EFL learners as the significant difference between the constructs suggests.

Extrinsic motivation and intrinsic motivation did not show significant difference in mean values. This is not surprising because both of the constructs tap into the same underlying system of motivation. Similarly, significant difference was not found between commitment control and emotion control. This seems to indicate that the students with high use of commitment control strategies are also aware of the importance of emotion control strategies and use them to support their learning.

4.5 Comparison of motivation groups

One-way analysis of variance (ANOVA) was conducted to see whether differences emerge in connection to self-regulation and autonomy constructs as based on the motivation level of the students. In order to make this computable, the sample participants were was sub-grouped based on the score in their intrinsic motivation and extrinsic motivation. For intrinsic motivation (IM), three groups were created: low motivation group (score 1-2.6), moderate motivation group (score 2.7-3.6) and high motivation group (score 3.7-5). Similarly, three groups were created for extrinsic motivation (EM): low motivation (score 1-2.8), moderate motivation (score 2.9-3.6) and high motivation (score 3.7-5). These cut-off points were chosen on the basis of the cumulative percentage of the scores in order to make the groups similar in size. The groups were labelled as follows: high motivation= 1, moderate motivation= 2, low motivation= 3 (See Table 3).

Table 3

Group-related differences

Scale	IM	EM
Commitment control	1 > 2,3	1 > 3
Emotion control	1 > 3	
Environmental control	1 > 2,3	
Technology based approaches	1 > 2 > 3	

In relation to intrinsic motivation, several significant differences emerged in the data. In general, the students who have high intrinsic motivation, have higher mean values in all the self-regulation and autonomy constructs (see Table 4a). This indicates that on the whole, high intrinsic motivation seems to be related to higher use of self-regulatory

strategies and stronger tendency to autonomous learning behaviour which is in accordance to the theoretical background of this study.

The intrinsic motivation groups differed significantly in their use of commitment control ($F=20.3$, $p < .001$). Interestingly, the low motivation group and moderate motivation group did not differ significantly from each other but both differed from the high motivation group. The mean value for the high motivation group is considerably higher than for the two other groups. This finding is not surprising: the higher the student's intrinsic motivation is, the more commitment control strategies they will use to achieve their goal.

Similarly to commitment control, the low motivation group and moderate motivation group did not show significant difference in connection to environmental control; however, significant difference occurred between them and the highly intrinsically motivated learners ($F=11.2$, $p < .001$). This again suggests that the higher the intrinsic motivation is, the more the student is aware of their learning environment and attempts to control it. Moreover, the highly intrinsically motivated students obtained higher mean value in environmental control than in any other self-regulation or autonomy construct ($M=3.5$, $SD=.71$). This result shows that the highly motivated students use more environmental control than other self-regulatory strategies. This could be a consequence of these students being so intrinsically motivated that their need for commitment strategies is not excessive. Likewise, the intrinsic motivation can overrun disruptive emotions and less need for emotion control strategies exist. Thus, it can be claimed that highly intrinsically motivated learners have more substantial need to control outside influences rather than influences from inside.

The IM groups also differed in relation to emotion control ($F=9.3$, $p < .001$). The case is different from the other self-regulation constructs because no significant difference

exists between the moderately motivated and highly motivated learners or between the moderately motivated and low motivation learners. The only significant difference in the use of emotion control strategies occurs between the low motivation group and the high motivation group. The result indicates that the students with higher intrinsic motivation use more emotion control strategies; however, this is not as gradual a difference as with the use of commitment control strategies and environmental strategies as no significant difference was found with the moderate motivation group. Thus, it can be hypothesized that no drastic change happens in the student's use of emotion control strategies as their intrinsic motivation grows until the motivation is relatively high. This can be taken into account in self-regulation strategy training.

Also technology based approaches revealed variance between the groups. In this case all the groups differed significantly from each other ($F=32.6$, $p < .001$). The lowest mean value was obtained by the low motivation group ($M=1.9$, $SD=.60$) and the highest by the highly motivated students ($M=3.3$, $SD=.75$). This result indicates that student's intrinsic motivation can gradually increase their use of technology based approaches. Therefore, more intrinsic motivation is related to higher use of technology based approaches.

Difference between self-regulation and autonomous learning behaviour seems to exist in the case intrinsic motivation: students with low or moderate intrinsic motivation do not differ significantly in their use of self-regulatory strategies; however, students in all levels of motivation differ from each other in demonstrating technology based approaches. Considering theoretical background of self-determination theory as a continuum and strong connection between autonomy and self-determination, this finding is not surprising. As Deci and Ryan (2012) state, self-determination theory is a theory which differentiates motivation in terms of being autonomous and controlled. In this light, it would be expected

to find difference in autonomous learning behaviour in all parts of the motivation continuum and on the basis of the data this seems to be the case.

Finally, no significant difference exists between the groups in relation to classroom based approaches. This indicates that how the students demonstrate autonomy by using classroom based approaches is not depended on the level of the student's motivation. Based on the theoretical considerations highlighted in the previous paragraph, classroom based approaches would be expected to show difference in relation to the motivation level of the student. However, this was not proved with the data. A possible explanation for the unexpected result can be provided by the previously mentioned difference between the nature of these approaches: technology based approaches are mainly related to non-formal setting and classroom based approaches to formal (i.e. classroom) setting. Thus, it can be hypothesized that autonomy cannot be connected to motivation as promptly as previous research suggests. It seems that the different layers or types of autonomous learning behaviour are connected to motivation in different ways. It is possible that certain types such as classroom based approaches are demonstrated by students regardless of their motivation and the defining factor for being autonomous in this sense is some other affective variable, such as attitude towards the course itself or the social dimension of learning, such as attitudes towards the teacher and relationship with the peers.

Table 4a

Mean Values of IM Groups

Scale	High IM		Moderate IM		Low IM			
	Mean	SD	Mean	SD	Mean	SD	F	p
Commitment control	3.4	.76	2.9	.74	2.5	.64	20.3	<.001
Emotion control	3.2	.93	2.9	.79	2.4	.79	9.3	<.001
Environmental control	3.5	.71	3.1	.74	2.8	.69	11.2	<.001
Technology based approaches	3.3	.75	2.6	.93	1.9	.60	32.6	<.001
Classroom based approaches	3.3	.90	3.2	.87	3.0	.90	1.2	.292

Extrinsic motivation seems to be less differentiating factor in the student behaviour. Four of the five scales showed no significant difference between the groups which were based on the students' degree of extrinsic motivation (See Table 4b). Because the behaviour of the students is not considerably different based on their extrinsic motivation, it can be hypothesized that extrinsic motivation has less influence than intrinsic motivation on self-regulatory and autonomous learning behaviour. However, it is surprising that the highly extrinsically motivated students do not differ from those with barely any extrinsic motivation. Logically, a student with strong external influence and goals would still demonstrate considerably higher use of strategies and autonomous learning in order to efficiently achieve their goals. The reason could be that the students with high extrinsic motivation do not see the importance of using self-regulatory strategies and autonomous learning because they are willing to invest less time in their learning than intrinsically motivated students who are more self-determined by default.

The only scale that revealed significant difference between the groups was commitment control ($F=5.8$, $p=.004$). The difference was found between the students who have low extrinsic motivation and those with high extrinsic motivation. The group in the

middle did not differ significantly from the other groups. It is logical that the one construct revealing significant difference is commitment control. A learner with low extrinsic motivation does not have as strong goals as a highly extrinsically motivated learner; thus, they have less need for use of strategies to control their commitment to their goals. In addition, this result in the significant difference between the groups of high and low EM is similar to the case of emotion control and intrinsic motivation: the change in the behaviour is not gradual as extrinsic motivation increases but the use of commitment control strategies increases considerably when extrinsic motivation is strong. This should be taken into account in teaching, particularly in supporting the student's strong extrinsic motivation. If their strong extrinsic motivation is maintained, their use of commitment control strategies is likely to be maintained as well.

Table 4b

Mean Values of EM Groups

Scale	High IM		Moderate IM		Low IM			
	Mean	SD	Mean	SD	Mean	SD	F	p
Commitment control	3.2	.72	3.0	.74	2.6	.91	5.8	.004
Emotion control	2.8	.88	2.8	.86	2.9	.97	.13	.881
Environmental control	3.3	.78	3.2	.78	3.0	.73	1.5	.232
Technology based approaches	2.7	1.0	2.7	.87	2.6	.98	.42	.656
Classroom based approaches	3.2	.99	3.3	.88	3.1	.78	.28	.755

Interestingly, when subgroups (low, moderate and high) were created based on the intrinsic and extrinsic motivation combined, further differences can be observed (See Table 4c). The groups were created based on the following logic: the IM and EM scores of the students were combined to result in one total motivation group. The low total

motivation group included students who scored low both in IM and EM, those who scored moderate in IM and low in EM, and those who scored low in IM and moderate in EM. The moderate total motivation group consisted of students who scored high in IM and low in EM, moderate in both IM and EM, and low in IM and high in EM. Finally, the high total motivation group was created of students who scored moderate in IM and high in EM, high in IM and moderate in EM, and both high in IM and EM.

Significant difference was found in commitment control ($F=17.9$, $p < .001$), environmental control ($F=8.4$, $p < .001$) and technology based approaches ($F=10.9$, $p < .001$). The difference in commitment control was highly expected because of the results of the groups in relation to both intrinsic and extrinsic motivation. Furthermore, it is not surprising that the groups differ in environmental control and technology based approaches because these constructs were found to differ significantly in the case of intrinsic motivation and it is evidently a part of the total motivation score.

The interesting result which emerged in relation to total motivation groups is the lack of significant difference in emotion control. The students with high intrinsic motivation were found to be significantly different in their results in emotion control from those with low intrinsic motivation. In terms of total motivation this result is absent. Moreover, the students did not differ in their use of emotion control strategies based on their extrinsic motivation. This seems to indicate that extrinsic motivation can contribute to intrinsic motivation and remove differences in students' behaviour. This means that in connection to emotion control strategies extrinsic motivation can overtake the effects of intrinsic motivation. It is not plausible that students with low total motivation perform closer to the highly motivated students; thus, the explanation for this surpass can be found in the behaviour of the highly motivated students. Students who do have high intrinsic motivation combined with high extrinsic motivation probably use less emotion control

strategies than the students with just high intrinsic motivation and this causes the difference to the low motivation group be less trivial. The possible reason for this can be found in the fact that the students with high overall motivation are so strongly motivated that this can remove some of the disruptive feelings and thus they have less need for emotion control strategies.

Table 4c

Mean Values of Total Motivation Groups

Scale	High IM		Moderate IM		Low IM			
	Mean	SD	Mean	SD	Mean	SD	F	p
Commitment control	3.3	.71	3.0	.77	2.4	.72	17.9	<.001
Emotion control	3.0	.85	2.9	.95	2.6	.83	2.9	.057
Environmental control	3.4	.72	3.2	.81	2.8	.64	8.4	<.001
Technology based approaches	3.1	.83	2.5	1.1	2.2	.74	10.9	<.001
Classroom based approaches	3.3	.88	3.2	.99	3.0	.76	.97	.381

Comparing the mean values of the students who were placed in the high intrinsic motivation group and high total motivation group revealed interesting results. In the case of self-regulatory strategies, it seems that students with high overall motivation use fewer strategies to control their commitment and emotions than those with high intrinsic motivation alone. Particularly the result of commitment control is unexpected because it would seem plausible that those students who are learning English because of both internal and external reasons would use the most commitment strategies in order to achieve their goals. Moreover, the result is surprising because extrinsic motivation was also found earlier to have an effect on commitment control. The case of emotion control on the other hand echoes the explanation provided in the previous paragraph: the motivation of these

students is so strong that it can prevent disruptive feelings to some extent and less need for emotion control strategies exists.

Interestingly, in the case of environmental control, the mean values of the students with high intrinsic motivation were lower than those with high total motivation. This seems to follow the original expectation that those with high total motivation would use more self-regulatory strategies. The difference can be a result of preferred or needed strategies used by the students depending on the type of motivation they have. It is possible that those with solely higher intrinsic motivation prefer to use other strategies over environmental control. In addition, the result is in accordance with the previously made hypothesis that environmental control is different from the other self-regulation constructs and the highly motivated students have more need for strategies to control outer influences than their commitment or emotions (i.e. inner influence).

Similarly to the self-regulation constructs, the mean values of technology based approaches of those with high overall motivation are lower than those with high intrinsic motivation alone. Therefore, it seems that if the student is learning English purely because of inner reasons and does not have any external influence affecting them, they will be more autonomous. This supports the view of self-determination theory that autonomy is connected to intrinsic motivation.

4.6 The relationships among the scales

Correlations in the data were measured by using Pearson correlation coefficient (See Table 5). The data revealed several positive significant correlations at a 0.01 significance level. The highest correlation was found between intrinsic motivation and technology based approaches (.60). This result shows that motivation is indeed linked to

autonomy. Moreover, it seems logical that students with intrinsic motivation take responsibility of their learning and this is manifested by their use of technological resources in order to improve their English proficiency (mostly outside classroom). Intrinsic motivation did not correlate significantly with the other measure of autonomy, classroom based approaches. This seems counter-intuitive if the theoretical claims of autonomy and intrinsic motivation being connected are considered. However, this can be an indication that the classroom does not in fact allow the students to learn autonomously.

Intrinsic motivation was also found to have positive significant correlation with all the measures of self-regulation. This indicates that at least intrinsic motivation is indeed in close relationship with self-regulation. The correlation between intrinsic motivation and commitment control was rather high (.51). It seems plausible that intrinsically motivated students use these strategies to maintain their commitment to the goals they have set for themselves; thus, this result was not unexpected. In addition, the correlation between intrinsic motivation and emotion control, and intrinsic motivation and environmental control were expected. In spite of these correlations not being very strong (.38 and .41, respectively), it seems logical that an intrinsically motivated student attempts to control their emotions and learning environment.

Extrinsic motivation was found to have significant correlation with commitment control (.40) and environmental control (.23). Thus, it can be suggested that motivation as a concept is indeed closely connected to self-regulation as the theoretical background suggests. It is not surprising that extrinsically motivated students use strategies to maintain their commitment to the goals which they have set for themselves in relation to learning English. It would be expected that a student who learns English because of some external influence (e.g. getting a good job in the future) commits to their learning and hence uses strategies to persist in approaching their goals. Similarly, the correlation between extrinsic

motivation and environmental control is logical because in order to reach their learning goals, the student needs to be aware of the influence of their learning environment and attempt to control it for better learning results. Finally, a positive significant correlation was found between the types of motivation (.27). This is not unexpected because of both of the concepts being part of the self-determination theory continuum of motivation. Nonetheless, the relatively weak correlation shows that the concepts are indeed distinct ends of the continuum and they are clearly separate: increase in one type of motivation would not necessarily suggest an increase in the other one.

No significant correlations were found between extrinsic motivation and the measures of autonomy. This suggests that connection between motivation and autonomy only exists in the case of intrinsic motivation. This is in accordance with the pieces of research which have made claims about the relationship between motivation and autonomy: researchers have often connected autonomous learning behaviour and intrinsic motivation (e.g. Noels, 2001; Ushioda, 2006; Wu, 2003); however, no evidence for the connection specifically between extrinsic motivation and autonomy seems to exist. Therefore, no significant correlations between them would have been expected.

The self-regulation constructs also correlated positively with technology based approaches. The highest correlation was found between commitment control and technology based approaches (.39). This result is not surprising: a student who uses strategies to maintain their commitment to their learning would also be likely to demonstrate willingness to use technology as their advantage in order to achieve their goal. In addition, both of these constructs showed high positive correlation also with intrinsic motivation and thus, it seems plausible that these three constructs are interrelated. In general, it can be hypothesized that self-regulation strategies are linked to autonomous learning behaviour outside the classroom. The evidence for this comes from the significant

correlation between technology based approaches and both environmental control and emotion control, in addition to the correlation between commitment control and technology based approaches. Even though these correlations were not particularly strong (.28 and .38, respectively), the results show that self-regulation strategies are connected to autonomous learning behaviour.

Interestingly, classroom based approaches only showed one positive correlation in the data. This correlation was found with environmental control (.26). It can be hypothesized that familiarity with strategies used to control one's learning environment extends to the classroom and therefore these two are closely linked. For example, a student who is used to control their own learning environment at home will control their environment in the classroom as well and therefore demonstrate autonomous learning in the classroom. Nevertheless, it is interesting that classroom based approaches did not show strong correlation with any of the measurements of self-regulation and motivation. This supports the hypothesis presented in the previous paragraph that self-regulation strategies are linked to autonomy outside classroom. Moreover, the lack of significant correlation between the autonomy constructs indicates that a possible conceptual problem exists within the construct. Being part of the same construct, technology based approaches and classroom based approaches would have been expected to correlate in the data.

Table 5

Correlations

	IM	EM	Commitment control	Emotion control	Environment control	Technology approaches	Classroom approaches
IM	1	.23**	.52**	.38**	.41**	.60**	.15
EM		1	.40**	.02	.23**	.14	-.01
Commitment control			1	.46**	.46**	.39**	.17
Emotion control				1	.38**	.38**	15
Environment control					1	.28**	.26**
Technology approaches						1	.00
Classroom approaches							1

Note: **Correlation is significant at the 0.01 level (2-tailed)

4.7 Regression analysis

Regression analysis was conducted in order to map causal relations between the constructs. As the theoretical background suggests, motivation is likely to precede self-regulation; therefore, it was hypothesized that the motivation constructs can predict the self-regulation constructs. Moreover, based on previous research and theoretical considerations, it seems plausible that motivation precedes autonomy and thus, the motivation constructs were also expected to predict the autonomy constructs. For these reasons intrinsic motivation and extrinsic motivation were set as independent variables and self-regulation and autonomous learning behaviour constructs as dependent variables. As a result five regression equations were run with self-regulation and autonomy constructs being dependent scales one by one.

In general, the results show that intrinsic and extrinsic motivation predict the use of self-regulation and autonomous learning behaviour in different ways. In accordance to expectations, intrinsic motivation was found to be a better predictor of the students' behaviour in relation to their use of strategies to self-regulate their learning and being autonomous. Intrinsic motivation was found to be able to predict all the self-regulation constructs and technology based approaches. On the other hand, extrinsic motivation was found to have significant linear relationship only with commitment control. This is not surprising in the light of the previous findings of this study.

Intrinsic motivation was found to have significant linear relationship with all the self-regulation constructs (See Tables 6a, 6b and 6c). Intrinsic motivation seems to predict particularly commitment control (β= .45). This result is not surprising: as mentioned in the previous section, significant positive correlation exists between the constructs. Based on the significant linear relationship and theoretical suggestions of motivation preceding self-regulation, it is hypothesized that intrinsic motivation is a very good predictor of the student's use of commitment control strategies when learning English. This is further supported by the results of ANOVA which revealed that students show significantly different behaviour in terms of commitment control if their intrinsic motivation is strong.

As mentioned above, all the constructs of self-regulation were found to have linear relationship with intrinsic motivation. Thus, environmental control and emotion control can also be predicted by intrinsic motivation (β= .41 and β= .38 respectively). These results are significant and considering the nature of the constructs being complex and psychological in nature, with many underlying factors affecting them, the value of the predictions can be interpreted as strong. This suggests that the constructs are closely connected and intrinsic motivation predicts environmental control and emotion control. To summarize, it can be claimed that intrinsic motivation predicts the use of self-regulatory

strategies. Despite the study not being longitudinal and therefore limitations to the analysis of predictions exist, the result is supported by theoretical considerations of motivation preceding self-regulation as detailed in chapter 2 and previous results presented in this chapter.

Table 6a

Significant results of the regression analysis of the intrinsic and extrinsic motivation with commitment control as the dependent variable

Scale	Beta	t	p
Intrinsic motivation	.45	6.22	<.001
Extrinsic motivation	.30	4.91	<.001
R^2	.355		

Table 6b

Significant results of the regression analysis of the intrinsic and extrinsic motivation with environmental control as the dependent variable

Scale	Beta	t	p
Intrinsic motivation	.41	5.19	<.001
R^2	.171		

Table 6c

Significant results of the regression analysis of the intrinsic and extrinsic motivation with emotion control as the dependent variable

Scale	Beta	t	p
Intrinsic motivation	.38	4.65	<.001
R^2	.142		

Even though it could be established that motivation precedes self-regulation, the case is rather different with extrinsic motivation than with intrinsic motivation. No significant linear relationship was found between extrinsic motivation and environmental control or emotion control. For this reason, it cannot be claimed that motivation in general predicts the use of self-regulatory strategies. The only self-regulation construct which can be predicted by extrinsic motivation was found to be commitment control. These constructs were found to have positive linear relationship (β= .30). This shows that of all the self-regulatory strategies, motivation has the strongest influence on commitment control whereas only intrinsic motivation influences environmental and emotion control strategies.

Based on these results, it can be hypothesized that motivation in general does not precede self-regulation but only intrinsic motivation can be said to predict the use of self-regulatory strategies. The exception to the hypothesis is commitment control which can be predicted by extrinsic motivation as well. Therefore, it is possible that even though only intrinsic motivation precedes self-regulation in general, certain strategies are preceded by extrinsic motivation.

A possible explanation for extrinsic motivation predicting only certain strategies is the fact that certain self-regulatory strategies might be unfamiliar to the learners and thus motivation in general cannot predict their use very well. This means that only students with intrinsic motivation will learn to employ most strategies successfully. However, it is interesting that commitment control did not reach the highest mean value of the self-regulation constructs; therefore, this finding cannot simply be reflection of the learners knowing how to employ commitment strategies. Another plausible explanation could be offered based on the needs of the learners in different ends of the self-determination continuum. Whereas intrinsically motivated learners are likely to use all the strategies

available to them, extrinsically motivated students are more likely to engage in using only certain types of strategies. It seems sensible that motivation in general is a predictive variable of commitment control: if motivation is defined as "initiating, directing, coordinating, amplifying and terminating processes" (Dörnyei & Ottó, 1998, p. 64), commitment to an activity is embedded in the definition. Thus, it can expected that the motivated learner, regardless of their position in the self-determination continuum, employs strategies to maintain this commitment.

To summarize the relationship between motivation and self-regulation, a clear pattern seems to exist. Intrinsic motivation appears to be a strong predictor of employment of all self-regulatory strategies. Thus, intrinsic motivation precedes self-regulation. However, it cannot be claimed that motivation in general precedes self-regulation because extrinsic motivation was not found to be a strong predictor of emotion control or environmental control. On the other hand, commitment control was found to be predicted also by extrinsic motivation. This led to a hypothesis that extrinsic motivation precedes certain self-regulatory strategies. However, it is likely that the predictive value of extrinsic motivation is never as strong as the predictive value of intrinsic motivation.

In relation to autonomous learning behaviour, the data shows that intrinsic motivation has a significant linear relationship with technology based approaches (See Table 7). This relationship is very resilient ($\beta = .60$) and thus it seems that intrinsic motivation is a very good predictor of technology based approaches. Considering the theoretical background, this result is expected. The more intrinsic motivation the learner has, the more autonomous they are in their learning. Interestingly, classroom based approaches were found to have no significant relationship with intrinsic motivation. On the other hand, extrinsic motivation was not a good predictor of either technology based approaches or classroom based approaches.

Table 7

Significant results of the regression analysis of the intrinsic and extrinsic motivation with technology based approaches as the dependent variable

Scale	Beta	t	p
Intrinsic motivation	.60	8.64	<.001
R^2	.363		

These results are expected when considering the rather inconclusive results of previous research on the relationship of autonomy and motivation. The data of this research suggests that in general motivation cannot be said to be a predictor of autonomous learning behaviour. However, the opposite cannot be claimed either. The data does, however, suggest a strong relationship between intrinsic motivation and technology based approaches, which indicates that while extrinsic motivation cannot predict autonomy, intrinsic motivation can be seen as a strong predictor of autonomous learning behaviour. The lack of significant relationship between intrinsic motivation and classroom based approaches is not necessarily a problem for this hypothesis: because of the potential conceptual problem discussed in the previous section, it is possible that the classroom based approaches do not, in fact, reflect true autonomous learning behaviour. Moreover, it is possible that intrinsic motivation can only predict certain type of autonomous learning behaviour. This echoes the suggestions made in the case of paired samples T-test: dichotomy exists between approaches inside and outside formal setting. Thus, it can be concluded that autonomy and motivation are strongly linked to each other, with intrinsic motivation preceding at least certain types of autonomous learning behaviour, mainly approaches which extend outside the classroom.

Regression analysis was also conducted between the measures of self-regulation and autonomous learning behaviour to investigate whether self-regulation is a prerequisite of autonomy and inherent part of it as the theoretical background suggests. The hypothesis was established that if self-regulation is a prerequisite of autonomy and grounded in the tendency to exercise control over one's learning, the self-regulation constructs would be predictors of the autonomy constructs. To measure this, the three self-regulation constructs were set as the independent variables and the two autonomy constructs as dependent variables. As a result two regression equations were run with the autonomous learning behaviour constructs being dependent variables one by one.

The results show that self-regulation predicts autonomous learning behaviour in a complex manner (See Tables 8a and 8b). Commitment control and emotion control were found to affect technology based approaches ($\beta = .28$ and $\beta = .25$, respectively). Commitment control was expected to obtain the highest beta because it can be seen as the most directly connected to autonomous learning behaviour. As discussed in chapter 2, the definition of autonomy includes full control and responsibility for one's learning and thus in order to manage this, the student has to have mastered the use of commitment control strategies. Therefore, it was expected for commitment control to predict technology based approaches. Furthermore, the positive linear relationship between commitment control and technology based approaches, and emotion control and technology based approaches show that at least certain self-regulation constructs seem to affect autonomous learning behaviour.

On the other hand, technology based approaches could not be predicted by environmental control. This result was unexpected based on the correlation between the constructs. Moreover, it is interesting because learning autonomously especially outside classroom would logically require the mastery of strategies which are used to control

learning environment. A possible explanation for the unexpected finding is the fact that environmental control strategies are associated with controlling the learning environment in formal setting of learning and therefore they will not lead to technology based approaches as this type of autonomous learning behaviour is mostly associated with outside formal setting.

Only environmental control was found to have positive linear relationship with classroom based approaches (β= .26). This result supports the explanation offered in the previous paragraph for the lack of linear relationship between environmental control and technology based approaches. Thus, environmental control leads to classroom based approaches and can be also seen as prerequisite of at least certain types of autonomy.

Table 8a

Significant results of the regression analysis of the self-regulation constructs with technology based approaches as the dependent variable

Scale	Beta	t	p
Commitment control	.28	3.13	.002
Emotion control	.25	2.83	.005
R^2	.201		

Table 8b

Significant results of the regression analysis of the self-regulation constructs with classroom based approaches as the dependent variable

Scale	Beta	t	p
Environmental control	.26	3.08	.002
R^2	.068		

Interestingly, the results of regression analysis appear to support the earlier proposed dichotomies between internally and externally-related self-regulatory strategies and autonomous learning inside and outside formal setting. Based on the results it can be hypothesized that self-regulatory strategies which are used to control influences from inside lead to autonomous learning behaviour outside classroom. Similarly, self-regulatory strategies used to control outside influences lead to autonomous learning behaviour inside the classroom. As discussed in relation to the results of intrinsic motivation and classroom based approaches, it is possible that classroom based approaches do not reflect true autonomous learning behaviour. Thus, it can be hypothesized that not all self-regulatory strategies are prerequisites of true autonomy but this seems to be the case only with the internally-related strategies. This is plausible as it is expected that taking full responsibility of one's learning strategies is not possible without controlling one's emotions and commitment to learning.

The results show that self-regulation and autonomous learning behaviour are entwined, and as the theoretical background suggests, self-regulation can be seen as a prerequisite and an inherent part of autonomy. However, the relationship between the constructs seems to be even more complex than expected. The self-regulation strategies used to control inside influences appear as good predictors of autonomy outside classroom but the value of these predictions is not particularly strong as none of the relationships reached $\beta = .30$. The case is similar with environmental control and classroom based approaches. Thus, it is impossible to claim with absolute certainty that self-regulation is a prerequisite and an inherent part of autonomy. It can be claimed, however, that a close connection between the constructs exists. It is possible that the complicating factor in the relationship of the constructs is circularity: self-regulation can lead to autonomy and enhance it but autonomous learning behaviour can also enhance the use of self-regulation.

5. Conclusion

To answer the first research question, the concepts of motivation, self-regulation and autonomy are characterized by relatively low mean values and low standard deviation suggesting lack of variation within the students. Finnish EFL students do not show age difference in the concepts and gender difference was found only in connection to emotion control strategies. Rather unexpectedly, males were found to be using more of these strategies. Future research could aim to investigate this difference in more detail.

In connection to the second research question the results of this study are more complex and show that the concepts of motivation, self-regulation and autonomous learning behaviour are connected in an intricate pattern in the EFL context in Finland. The most important findings include environmental control being different from the other self-regulation constructs suggesting that the self-regulation strategies can be possibly divided into internal- and external-influence strategies based on the factor controlled by them. This means that the distinction should be made between strategies which control inside-influences (e.g. emotion control) and those which control influences from outside (e.g. environmental control). Similarly, the study found that classroom based approaches and technology based approaches differ from each other. A possibility was raised that based on the lack of correlation between them, a conceptual problem might exist in the case of autonomous learning behaviour construct implying that classroom based approaches do not in fact reflect true autonomy. However, because the scope of this study cannot counter-validate the scales, an alternative explanation is provided for the difference between the constructs: a dichotomy between autonomy inside and outside formal setting.

These dichotomies in self-regulation and autonomy constructs can explain many of the findings of this study. As discussed in the results section, the students' demonstration

of classroom based approaches seems not to be dependent on motivation as expected in the case of autonomy but the possibility exists that autonomy inside a formal setting is dependent on factors other than motivation. Further research should explore this dichotomy and attempt to outline the factors affecting this type of autonomy. Furthermore, the dichotomy in self-regulation strategies also explains the high use of environmental control strategies of the highly intrinsically motivated students: their need to control outside influences seems to be more substantial.

High intrinsic motivation was found to influence the use of self-regulation, highly motivated learners using more strategies. Moreover, the highly motivated learners seem to have more substantial need for strategies to control outside influences (i.e. environmental control strategies). In addition, the use of emotion control seems to grow gradually with no drastic difference occurring until the intrinsic motivation of the student is very high. On the other hand, extrinsic motivation was found to have less influence on self-regulation. It was only found to have an effect on and to predict commitment control. This should be considered in the classroom and the teachers should aim to protect the student's extrinsic motivation as it can lead to higher use of commitment control strategies. However, extrinsic control also correlated with environmental control and it was found to overtake the effect of intrinsic motivation in the case of emotion control of the high total motivation students. Based on these findings, it can be concluded that motivation is in fact connected to self-regulation.

Intrinsic motivation was also found to be connected to and predicting technology based approaches. This proves that intrinsic motivation is connected to autonomous learning behaviour as expected. Moreover, high intrinsic motivation was found to be leading to more autonomy; therefore, the extent of autonomous learning is different in all parts of the self-determination continuum. The lack of connections between classroom

based approaches and intrinsic motivation shows that motivation is not connected to autonomy inside formal setting. Extrinsic motivation on the other hand was found to be neither connected to autonomy nor a good predictor of it. This confirms the previous studies which suggest that intrinsic motivation is connected to autonomy.

Self-regulation and autonomy were also found to be interacting. As hypothesized, self-regulation seems to be a prerequisite and an inherent part of autonomy; however, because of the low predictive values of the constructs and lack of relationship between the inside-influence self-regulatory strategies and classroom based approaches and between environmental control and technology based approaches the results are not straightforward. The relationship is complex as expected and requires more investigation in future research. Particularly the relationship between different types of self-regulatory strategies and different types of autonomy should be researched. This research should be done based on the dichotomies suggested in this thesis in order to test whether only inside-influence strategies affect autonomy outside formal setting and the strategies used to control outside influences affect autonomy inside formal setting.

This study has several limitations. First, the results cannot be generalized beyond schools similar to the one investigated because only single school participated in the study and the results might merely reflect tendencies in this particular school rather than tendencies of this population. In addition, as always with questionnaire studies, social desirability has to be taken into account as a possible factor influencing the answers of the participants and therefore the results. Finally, it is possible that the nature of the relationships between the concepts is circular, particularly between autonomous learning behaviour and self-regulation. Quantitative research is not capable in determining this circularity and hence further research could target qualitatively to explore the issue of circularity.

Concerning some future research directions, qualitative investigation could be used in order to try to understand the intricate relationships among the constructs. Interviews should be conducted in order to confirm the findings of this study; particularly the proposed dichotomies in self-regulation and autonomy should be further investigated. In addition, further research could focus on the role of the concepts sustaining each other. Finally, more schools should be included into the analysis in order to be able to generalize the results into the whole population.

The results of the study offer pedagogical implications. As the mean values of the students were relatively low, the sample seems to include students with low motivation, low use of self-regulation and minimal autonomous learning behaviour. This indicates that the students would benefit from motivational training as intrinsic motivation leads to autonomy and use of self-regulation strategies and thus more likely to successful learning. Furthermore, the students could benefit directly from training to use the self-regulation strategies. Finally, the teacher could practice more autonomy support in the classroom in order to encourage autonomous learning behaviour.

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Appendix A: Questionnaire constructs and items

Motivation (Noels et al. 2003)

1. Extrinsic motivation
    - I study English in order to get a better job in the future.
    - I study English because a good citizen because I can speak English.
    - I study English because in order for me to be an educated person, I have to be able to speak English.
    - I study English to get a better salary later on.
    - I study English because I would feel guilty if I didn't know English.
2. Intrinsic motivation
    - I like learning new things, that's why I choose to study English
    - I study English for the enjoyment I experience when I grasp a difficult construct in English.
    - I study English because I enjoy the feeling of acquiring knowledge about English speaking countries and their way of life.
    - I study English for the pleasure I get from hearing English spoken.
    - I study English for the "high" feeling I experience while speaking English.

Self-regulation (Tseng et al. 2006)

3. Commitment control
    - When learning English, I have special techniques to achieve my goals.
    - When learning English, I believe I can achieve my goals more quickly than expected.
    - When learning English, I persist until I reach the goals that I make for myself.

- I believe I can overcome all the difficulties related to achieving my English learning goals

4. Metacognitive control

- When learning English, I have special techniques to maintain my concentration.
- When learning English, I think my methods of controlling my concentration are effective.
- When it comes to learning English, I have my special techniques to prevent procrastination.
- When it comes to learning English, I think my methods of controlling procrastination are effective.

5. Satiation control

- Once the novelty of learning new thing in English is gone, I easily become impatient with it.
- During the process of learning English, I feel satisfied with the ways I eliminate boredom.
- During the process of learning English, I am sure I can overcome any sense of boredom.
- When feeling bored while learning English, I know how to regulate my mood in order to invigorate the learning process.

6. Emotion control

- When I feel stressed about learning English, I know how to reduce the stress.
- I feel satisfied with the methods I use to reduce the stress of learning English.
- When I feel stressed about learning English, I simply want to give up.
- When I feel stressed about learning English, I deal with this problem immediately.

7. Environmental control

    - When I'm studying English and the learning environment becomes unsuitable, I try to sort out the problem.
    - When learning English, I know how to arrange the environment to make learning more efficient.
    - When learning English, I am aware that the learning environment matters.
    - When I study English, I look for a good learning environment.

Autonomy (Benson, 2001)

8. Technology based approaches

    - I often chat in English on the Internet in order to improve my proficiency.
    - I frequently write emails in English in order to improve my proficiency.
    - I use social networking sites such as Facebook in English to develop my proficiency.
    - I read blogs in English in order to improve my proficiency.

9. Resource based approaches

    - If there is something I do not understand in English class, I try to find the answer to my question in the coursebook myself.
    - I read books in English in order to develop my proficiency.
    - If there is something that I do not understand in the English class, I find the answer on the Internet
    - If there is something that I do not understand in the English class, I make efforts to find out more about it.

10. Classroom based approaches

    - I like it if the teacher allows us to choose which task we would like to do.

- I concentrate more in class if we are allowed to choose what tasks we will do.
- I pay more attention in the homework if we were allowed to choose it.
- I like it if the teacher involves us in planning what we will do in class.

Appendix B: Questionnaire

English Learner Questionnaire

This study is conducted in Eötvös Lórand University (Budapest, Hungary) to better undestand the thoughts and beliefs of learners of English. Please read the instructions before writing your answers. This is not a test so there are no „right" or „wrong" answers. You don't have to write your name on the paper. The results of this survey will be used only for research purpose so please give your answers sincerely. Thank you very much for your help!

In this section there are going to be some statements some people agree with and some people don't. I would like to know to what extent they describe your own feelings or situation. After each statement you have five boxes. Please circle the number that best expresses how true the statement is about your feelings or situation

	Completely true	**Mostly true**	**Partly true, partly not**	**Not really true**	**Not at all true**
I like apples.	(5)	4	3	2	1

There are no „right" or „wrong" answers – I would like to know your opinion

	Completely true	**Mostly true**	**Partly true, partly not**	**Not really true**	**Not at all true**
1 I study English for the pleasure I get from hearing English spoken.	5	4	3	2	1
2 When it comes to learning English, I have my special techniques to prevent procrastination.	5	4	3	2	1
3 I read blogs in English in order to improve my proficiency.	5	4	3	2	1

		Completely true	Mostly true	Partly true, partly not	Not really true	Not at all true
4	When I study English, I look for a good learning environment.	5	4	3	2	1
5	I like it if the teacher involves us in planning what we will do in class.	5	4	3	2	1
6	I read books in English in order to develop my proficiency.	5	4	3	2	1
7	I like learning new things, that's why I want to study English.	5	4	3	2	1
8	I study English in order to get a good job in the future.	5	4	3	2	1
9	I study English because I would feel guilty if I didn't know English.	5	4	3	2	1
10	When learning English, I believe I can achieve my goals more quickly than expected.	5	4	3	2	1
11	During learning English, I feel satisfied with the ways I eliminate boredom.	5	4	3	2	1
12	I use social networking sites such as Facebook in English to develop my proficiency.	5	4	3	2	1
13	I concentrate more in class if we are allowed to choose what tasks we will do.	5	4	3	2	1
14	I study English because a good citizen can speak English.	5	4	3	2	1
15	When learning English, I have special techniques to achieve my goals.	5	4	3	2	1
16	When learning English, I persist until I reach the goals that I make for myself.	5	4	3	2	1

	Completely true	Mostly true	Partly true, partly not	Not really true	Not at all true
17 I feel satisfied with the methods I use to reduce the stress of learning English.	5	4	3	2	1
18 If there is something that I do not understand in the English class, I make efforts to find out more about it.	5	4	3	2	1
19 When I feel stressed about learning English, I simply want to give up.	5	4	3	2	1
20 Once the novelty of learning new thing in English is gone, I easily become impatient with it.	5	4	3	2	1
21 When it comes to learning English, I think my techniques of controlling procrastination are effective.	5	4	3	2	1
22 I study English because I enjoy the feeling of acquiring knowledge about English speaking countries and their way of life.	5	4	3	2	1
23 I believe I can overcome all the difficulties related to achieving my English learning goals.	5	4	3	2	1
24 During learning English, I am sure I can overcome any sense of boredom.	5	4	3	2	1
25 I study English to get a good salary in the future.	5	4	3	2	1
26 I pay more attention in the homework if we were allowed to choose it.	5	4	3	2	1
27 When learning English, I am aware that the learning environment matters.	5	4	3	2	1

		Completely true	Mostly true	Partly true, partly not	Not really true	Not at all true
28	I frequently write emails in English in order to improve my proficiency.	5	4	3	2	1
29	I study English because in order for me to be an educated person, I have to be able to speak English.	5	4	3	2	1
30	When feeling bored while learning English, I know how to regulate my mood in order to invigorate the learning process.	5	4	3	2	1
31	If there is something I do not understand in English class, I try to find the answer to my question in the coursebook myself.	5	4	3	2	1
32	I like it if the teacher allows us to choose which task we would like to do.	5	4	3	2	1
33	When I feel stressed about learning English, I deal with this problem immediately.	5	4	3	2	1
34	When learning English, I know how to arrange the environment to make learning more efficient.	5	4	3	2	1
35	When learning English, I have special techniques to maintain my concentration.	5	4	3	2	1
36	I study English for the “high” feeling I experience while speaking English**.**	5	4	3	2	1
37	I often chat in English on the Internet in order to improve my proficiency.	5	4	3	2	1
38	I study English for the enjoyment I experience when I grasp a difficult construct in English.	5	4	3	2	1

	Completely true	Mostly true	Partly true, partly not	Not really true	Not at all true
39 When I feel stressed about learning English, I know how to reduce the stress.	5	4	3	2	1
40 If there is something that I do not understand in the English class, I find the answer on the Internet	5	4	3	2	1
41 When I'm studying English and the learning environment becomes unsuitable, I try to sort out the problem.	5	4	3	2	1
42 When learning English, I think my methods of controlling my concentration are effective.	5	4	3	2	1

Finally, please answer these few personal questions

1. Gender? 1-Male 2-Female
2. Age? ……years
3. What foreign language(s) do you learn at school? ……
4. Have you learnt any foreign languages outside school? …….
5. If yes, which ones? …….
6. At what age did you start to learn English? ……
7. Have you ever been abroad for longer than 6 months? (e.g., when your parents worked there) ……
8. If yes, where? ……

Thank you for your cooperation!