

FACTORIAL STRUCTURE OF SILL REVISITED: ADAPTATION OF SILL FOR ESTONIAN EFL LEARNERS

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Abstract. The present study aims to contribute to the understanding of the taxonomy of language learning strategies (Oxford 1990: 14–22) and its measuring instrument, the Strategy Inventory for Language Learning (SILL), through the adaptation process of the Estonian version. The translated version of the SILL was pilot-tested with a sample of 337 tertiary students. Cronbach's alpha (0.91) reveals an acceptable reliability of the instrument. The t-test that was conducted in addition to descriptive analysis, to check for gender differences, did not reveal any significant differences. The results of the exploratory factor analysis did not support the 2- or 6-factor structures but the 9-factor analysis provides a good comparison to similar studies published in 1995 (Oxford, Burry-Stock 1995). The ethnic and gender differences of the results are discussed from the cultural perspective.*

Keywords: exploratory factor analysis, questionnaire, reliability, t-test, English, Estonian

1. Introduction

Foreign language skills have become self-evident in today's globalized world. Although foreign language acquisition has not become substantially easier compared to decades ago, learning a foreign language is becoming faster and more efficient through the use of new methods (Ariza 2002, Jiamu 1997, Ellis 2013). The progress of language learning can be assessed in several ways. One of the most efficient is assessing the use of language learning strategies (LLSs) (Hsiao, Oxford 2002), which are believed to be connected with language proficiency and have much potential for enhancing learning. Language learning strategies are believed to play a vital role as they assist learners in mastering the forms and functions required for reception and

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production in the foreign language and thus affect achievement (see e.g. Bialystok 1979, Douglas 2001). The use of appropriate LLSs improve proficiency and achievement and, at the same time, enable students to take charge of their own learning by enhancing learner autonomy, independence and self-direction (Wong 2011).

Several researchers have produced different classifications of strategies (Rubin 1975, Stern 1975, O'Malley, Chamot 1990), giving their input to the six-strategy taxonomy designed by Oxford (1990: 14–22). The use of language learning strategies may be measured using different methods, from observation or interviews to diaries and think-aloud protocols. Student-completed, summative rating scales have been reported to be the most time-saving and cost-effective. Moreover, being self-scoring, they enable students to discover a great deal about themselves, giving valuable feedback about their learning habits (Oxford, Burry-Stock 1995). Even though self-report questionnaires have often been reported to suffer from serious validity problems (Veenman et al. 2014), we have chosen to utilize it because it provides a) information about learners' memories and interpretations of their actions and b) their explanations of cognitive and metacognitive processes researchers cannot observe (Turner 1995). The most widely used and analysed instrument in the domain of foreign language acquisition, the Strategy Inventory for Language Learning (SILL), has been translated into more than 20 languages and been validated by many researchers. Despite the wide use of the SILL, its factor analyses have still not provided acceptable results (Park 2011, Tragant et al. 2013). The poor fit to the data of factor analyses has been justified by high correlation among the constructs (Park 2011) as well as by national and cultural influences (Oxford, Burry-Stock 1995). Therefore, the authors of this article support Park's idea of undertaking more studies using participants from different cultures and learning contexts to clarify the most suitable factor model for the SILL (Park 2011). Also, research on strategy classification could help to understand the nature of LLSs and decide which classification system accounts best for them (Park 2011).

The current study was conducted in Estonia. English as a foreign language (EFL) has been taught in Estonian schools since the 1930s. During the Soviet period, the grammar-translation method was mainly used. In recent years, this has been replaced by a communicative approach, which involves changes in teaching methods, learning materials and learners' LLSs. Based on these facts and also that in Estonia the assessment of LLSs has not been purposefully dealt with, mainly because of the lack of a reliable LLS measuring instrument in the Estonian language, our goal is to contribute to the development of the taxonomies of LLSs, shedding light on the cultural distinctness of East-European EFL learners, as in the case of Estonia.

1.1. Language learning strategies and SILL

Strategies are the learner's toolkit for active, conscious, purposeful and attentive learning, and they pave the way towards greater proficiency, learner autonomy and self-regulation (Hsiao, Oxford 2002). According to Oxford (1990: 1-2), LLSs have the features of contributing to the main goal, allowing learners to become more self-directed, expanding the role of teachers, being problem-oriented, including

specific actions taken by the learner, involving many aspects of the learner, not just cognitive, supporting learning both directly and indirectly, being not always observable, being conscious, possible to be taught, flexible, and influenced by a variety of factors. According to Jones (1998), the system of LLSs developed by Oxford is believed to be more comprehensive and detailed than earlier classification models by her predecessors.

Language learning strategies research has gone through the development from simple lists of strategies to much more sophisticated investigations (Oxford, Crookall 1989). Oxford's SILL has been the most widely used instrument in the field of LLS research. The items of the SILL are divided into six strategy groups according to the results of early factor analysis (Oxford, Burry-Stock 1995). The groups are: memory (9 items), cognitive (14 items) and compensation (6 items) strategies, and metacognitive (9 items), affective (6 items) and social (6 items) strategies. The activities characteristic to certain strategies have been presented in Table 1. The first three subdivisions – memory, cognitive and compensation strategies, are direct strategies that involve direct learning and use of the subject matter, in this case a new language. The last three subdivisions – metacognitive, affective and social are indirect strategies that contribute indirectly but powerfully to learning (Oxford 1990: 14). The subdivisions designed to elicit students' use of metacognitive, affective and social strategies can also be used to assess the degree to which students report them having control of their own learning activities (Benson 2011: 98-99).

Table 1. Strategy groups (based on Oxford 1990: 16–17)

| Strategy groups | Strategies | Activities |
|--|---|--|
| Direct strategies: directly involve the target language, such as reviewing and practising | Memory strategies: aid in entering information into long-term memory and retrieving information when needed for communication | <ul style="list-style-type: none"> • Creating mental images • Applying images and sounds • Reviewing well |
| | Cognitive strategies: used for forming and revising internal mental modes and receiving and producing messages in the target language | <ul style="list-style-type: none"> • Practising • Receiving and sending messages • Analysing and reasoning • Creating structure for input and output |
| | Compensation strategies: needed to overcome any gaps in knowledge of the language | <ul style="list-style-type: none"> • Guessing intelligently • Overcoming limitations in speaking and writing |
| Indirect strategies: provide indirect support for language learning, such as planning, cooperating and seeking opportunities | Metacognitive strategies: help learners exercise executive control in planning, arranging, focusing, and evaluating their own learning process | <ul style="list-style-type: none"> • Centring your learning • Arranging and planning your learning • Evaluating your learning |
| | Affective strategies: enable learners to control feelings, motivation and attitudes related to language learning | <ul style="list-style-type: none"> • Lowering your anxiety • Encouraging yourself • Taking your emotional temperature |
| | Social strategies: facilitate interaction with others, often in a discourse situation | <ul style="list-style-type: none"> • Asking questions • Cooperating with others • Empathizing with others |

It has been stated that the factors of the SILL are correlated rather than orthogonal (Hsiao, Oxford 2002) whereas particular strategies could be viewed as related to more than one category (Oxford 1990: 17, 22) with the categories mutually supporting each other (Hsiao, Oxford 2002). Hsiao and Oxford (2002) believe that there will probably never be a strategy taxonomy in which intercorrelations among particular strategies are totally eliminated, because such a taxonomy would not reflect reality. However, this partial overlapping and strong intercorrelation are considered to be the main reason why the factors do not obtain clear outlines (Park 2011).

1.2. Former studies on validating SILL and their cultural distinctions

The SILL is considered to be a useful instrument as it has clearly indicated the relationship between strategy use and language performance, giving reasons for the belief that enhancing strategy use could improve language performance (Oxford, Burry-Stock 1995). The psychometric characteristics of the SILL have been widely explored and tested (Tragant et al. 2013, Ehrman, Oxford 1989, Fazeli 2012, Alhaisoni 2012, Wong 2011, Green, Oxford 1995, Griffiths 2003). Green and Oxford (1995) quote the reliability of the total instrument of the SILL using Cronbach's alpha for internal consistency as 0.93 to 0.98, and for subscales 0.68–0.80 (Tragant et al. 2013). Reliability of the SILL was slightly lower when not being administered in the native language of the respondents but in English (Oxford, Burry-Stock 1995). The lower reliability seems to be caused by measurement errors due to the language effect (Oxford, Burry-Stock 1995). This was also the reason why it was considered to be important to translate the questionnaire into Estonian for Estonian learners and not use the original English version.

To validate the SILL's underlying structure, confirmatory factor analysis (CFA) was used for the investigation of the hypothesized measurement structures of scales by Hsiao and Oxford (2002). Results showed that the six-factor strategy taxonomy was most consistent with learners' strategy use. However, the authors admitted that the model did not produce "a fully acceptable fit to the data" and that the format and structure of the whole instrument should be further revised (Hsiao, Oxford 2002).

However, several researchers still question the reliability of the instrument as no valid evidence has been found to support the six-fold classification of LLSs in the form of subclass reliabilities (Woodrow 2005, Park 2011, Rose 2012). According to Park (2011), the popularly used two-construct and six-construct classification systems of the SILL do not fit the data and the classification systems should be reinvestigated to understand better the structures of the SILL.

To explain the poor results of the factor analyses, Bedell and Oxford emphasize that nationality or ethnicity influences strategy use (1996: 47–49). This may also be the reason why the same SILL factor structure might not be appropriate for all people who are learning English as the second language (ESL) or as a foreign language (EFL). While European students are reported using LLSs more frequently than students of other nationalities (Griffith, Parr 2000), Taiwanese students seem to be aware of various LLSs but only a few of them report using these (Yang 1998, Griffiths 2004). Almost the same claims have been made by Politzer and McGroarty (1985), who compared Asian students' strategy use to that of Hispanic students.

Japanese students are typically regarded as passive learners and not very eager to use different LLSs (Usuki 2000, Griffiths 2004). Malaysian EFL learners can be considered quite frequent strategy users (Wong 2011), especially when compared to Saudi (Alhaisoni 2012) or Korean learners (Magno 2010). The way strategies are used may indicate a cultural habit. Lengkanawati (2004) points out that remembering difficult words is not as effective for Australian students as for Indonesians, who confess that they have a habit of rote learning behaviour. Bell (1995) and Porte (1988) admit, based on research as well as their own personal learning experience, that when learning a foreign language, the choice of strategies is also affected by those that the learner has used when learning a previous language or even their first language. Bell (1995) warns against the wholesale transfer of assumptions from first language literacy that can complicate the process of acquiring second language literacy. From this it may be concluded that, for example when learning English or Chinese, the same strategies do not work in the same way and the earlier language learning experience may complicate second language learning (Griffiths 2003).

National and cultural differences exist in the use of LLSs, even though an individual may not fully reflect the trends. As a solution, Oxford and Burry-Stock (1995) suggest creating country-by-country SILL norms around the world based on large-scale factor analyses.

Studies that have examined the relationship between gender and strategy use have come to mixed conclusions. There are several (Ehrman, Oxford 1989, Oxford, Nyikos 1989, Green, Oxford 1995) that have discovered distinct gender differences in strategy use. Females more often than males are claimed to use LLSs consciously, especially metacognitive, affective and social ones (Oxford, Ehrman 1995). Politzer (1983) found that social strategies are more popular with female learners and this may be attributed to their greater social orientation, which is also a sign of their need for social approval (Oxford et al. 1988). The studies of Ehrman and Oxford (1990) and Wong (2011), however, failed to discover any evidence of differing LLS use between the sexes. It might be concluded, perhaps, that although men and women do not always demonstrate differences in LLS use, where differences are found, women tend to use more LLSs than men (Griffiths 2004). Women's higher use of strategies has been associated with their deeper engagement in language related activities (Lynn, Mikk 2009). However, there are also studies that have shown that women use fewer LLSs than men (Tran 1988). A study on the usage of individual LLSs in Malaysia shows that males surpass females in the use of social, compensation and memory strategies (Wong 2011).

Despite the criticisms of the SILL's construct validity and poor factorial fit (Douglas 2001, Tragant et al. 2013), it is still the most widely used measure of LLSs at the moment. Construct validity is the degree to which a test measures what it claims, or purports, to be measuring (Cronbach, Meehl 1955), and that is why it is necessary to indicate it when estimating the quality of a measure. Moreover, thanks to its widespread use, in almost all continents and different cultures it provides good material for comparison, which may finally result in its reinvestigation and restructuring into an even more reliable instrument.

In this study we seek to investigate whether the SILL, translated and adapted for Estonian EFL learners, reflects two-, six- or nine-construct classification, and to compare the results with other similar studies conducted in different cultures. We

will also see if gender differences appear in the comparison of using LLSs. Proceeding from that the hypotheses that will be tested are: (H1) the structure of the SILL translated and adapted for Estonian learners reflects the two-factor structure of direct and indirect strategies; (H2) the structure of the SILL translated and adapted for Estonian learners reflects the six-factor structure of memory, cognitive, compensation, metacognitive, affective and social strategies; (H3) the structure of the SILL translated and adapted for Estonian learners reflects the nine-factor structure of LLSs comparable to the outcome of Oxford and Burry-Stock (1995).

2. Methodology

In Estonia, the issues of LLSs have not been studied regularly, partly because of the lack of a reliable means of measurement. This was one of the reasons for starting the adaptation process of the SILL. When translating a measuring instrument into another language, it is necessary to critically evaluate an instrument that has been designed and validated in one cultural context, in the context of another culture. Differences when interpreting certain terms determine the necessity to adapt them to make them understood in a different culture. The aim of the adaptation process is to achieve the highest possible unequivocalness and equivalence (Guillemin et al. 1993). Cross-cultural adaptation includes translating the original instrument while assuring the validity and reliability of the adapted version.

In the adaptation process of the SILL into Estonian, we used the adapted version of Guillemin's five-step methodology (Guillemin et al. 1993), which covered 1) translating the original instrument into Estonian by one translator, 2) back-translation by three independent translators to check if the translated version reflected the same content of terms used in the original version, 3) assessing, analysing and comparing all back-translations and the source text, 4) semantic editing and correcting the Estonian version, 5) linguistic editing by an Estonian language expert, 6) asking the respondents to assess the overall usability of the adapted instrument and the unequivocalness of terms while pre-testing.

2.1. Participants

To pilot-test the Estonian version of the SILL, data was collected from the students of the University of Tartu in March and April, 2013. The participants were majoring in different domains – economics, social work administration, teacher training, science, mathematics, law, psychology, etc. The students of philology were not included in the study. The sample was 374 students (the total number of students was 18,000), of which 337 sent back their questionnaires filled in completely. The 37 questionnaires that were not complete were not included in the study. Although the sample may not represent the population in general, it gives a good overview of all levels of tertiary students in Estonia's biggest university. The following diagram (Figure 1) presents the social-demographic traits of the sample.

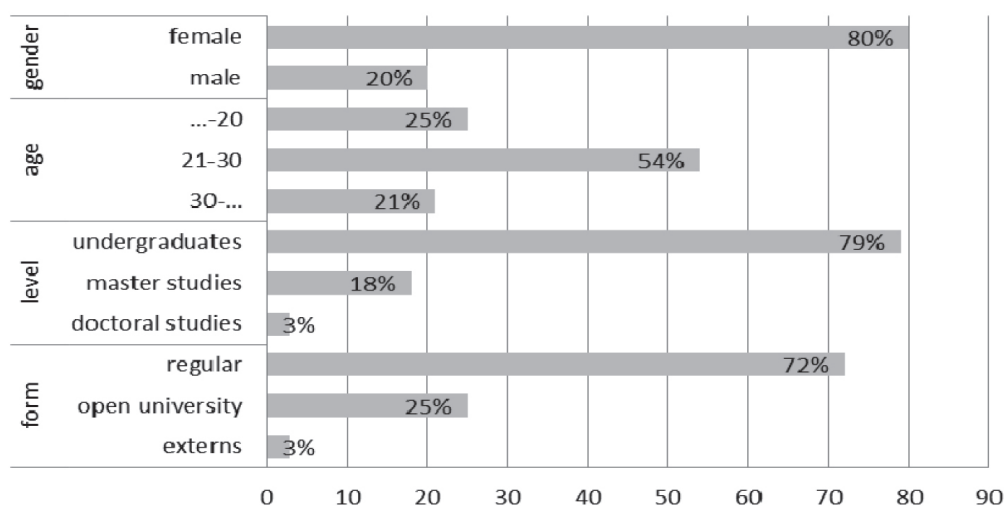


Figure 1. Sample division by gender, age, level and form of studies (numbers given in percentage)

2.2. Instrument

The self-report questionnaire SILL (see Appendix) translated and adapted for Estonian learners involves 50 items. These are statements that express learners' activities or learning strategies while learning a foreign language. The items are divided into six groups according to the division of strategies by Oxford (1990: 293–297): memory strategies – 9 items, cognitive strategies – 14 items, compensation strategies – 6 items, metacognitive strategies – 9 items, affective strategies – 6 items, and social strategies – 6 items. The students assess all items in the Likert-type scale from 1 to 5 where 1 stands for *Never or almost never true of me*, and 5 *Always or almost always true of me*. The questionnaire starts with a brief introduction where respondents are explained the idea of the instrument. They are also encouraged not to answer how they think they should be as there are no right or wrong answers to the statements.

2.3. Data collection

Data was collected on a voluntary basis, partly in the classroom and partly electronically. In the classroom setting participants completed the SILL individually with the test leader present who instructed the participants beforehand. For electronic questionnaire the environment LimeSurvey was used. The respondents were addressed and the URL of the questionnaire was forwarded via study departments. In the electronic form of the questionnaire the statements were presented in one page similarly to the print-out form. This made it possible for students to see all questions at a time, move backwards and forwards, and make corrections if they considered it necessary. Completion of the questionnaire took the students approximately 25–30 minutes.

2.4. Data analysis

Data analysis involved a reliability assessment using Cronbach's alpha for internal consistency, descriptive statistics, independent-samples t-test and exploratory factor analysis (EFA). Even though several previous studies have conducted confirmatory factor analysis to check the factor structure of the SILL, exploratory factor analysis was considered more appropriate in the current case as after translating the instrument into Estonian it was necessary to explore which the underlying factor structure in the case of this sample is. The analysis was conducted with SPSS 19.

Before the statistical analysis, the respondents' answers were standardized to search for outliers. One of the easiest standardization methods is to use two statistical parameters – empirical average and standard deviation – to find z-scores that will give the characteristic of normal distribution $N(0;1)$, which is centralized and standardized, and enables the comparison of characteristics with different content (Kreyszig 1979: 880). There were a couple of outliers in the database of the present study; one of these gave a reason for omitting one item. The original inventory of the SILL includes 50 items but, in the adapted Estonian version of the SILL, it was decided to omit item number 43 in the group of affective strategies – *I write down my feelings in a language learning diary*. The item was deleted based on feedback from participants in the pilot study referring to it as the one that could not be understood and responded to because they had never used a learning diary and could not even imagine what it was, and because of the outlier that emerged in the standardization process. The reason why Estonian students had difficulties assessing the item on learning diaries lies in Estonian pedagogical practice where using learning diaries is not widespread and this has left the students without the experience of self-reflection in the form of a learning diary.

3. Results

3.1. Reliability

The Cronbach's alpha coefficient of the total SILL is 0.91, supporting previous studies with a similar consistent result (Park 2011, Hsiao, Oxford 2002, Green, Oxford 1995). The Cronbach's alpha of the constructs of the SILL was investigated for measuring the internal consistency of the items within each construct. The results reveal that the only alpha coefficient that remained below the acceptable level of 0.60 was for memory strategies with 0.59; the other strategies were above it (Table 2). This finding indicates that the items within each construct of the SILL measure similar characteristics about LLSs.

Table 2. Cronbach's alpha coefficients of strategy groups

| Strategies | Cronbach's α | Number of items in each strategy group |
|---------------|---------------------|--|
| Memory | 0.59 | 9 |
| Cognitive | 0.80 | 14 |
| Compensation | 0.65 | 6 |
| Metacognitive | 0.84 | 9 |
| Affective | 0.61 | 5 |
| Social | 0.77 | 6 |
| Total | 0.91 | 49 |

3.2. Descriptive statistics

Table 3 gives an overview of the means and standard deviations of all six strategy groups. The overall mean of the use of strategies as estimated with the Estonian version of SILL was 3.23, with a standard deviation of 1.27. Considering the ranges of low (less than 2.5), medium (2.5–3.5) and high (over 3.5) frequency, the overall use of LLSs in the case of Estonian EFL learners is medium. Social strategies as a group are used with the highest frequency with a mean of 3.54, and memory strategies with the lowest (2.85).

Table 3. The means of strategy groups

| Strategies | Overall | | Gender | | | | Age groups | | | | | |
|---------------|---------|------|--------|------|------|------|------------|------|-------|------|--------|------|
| | | | Female | | Male | | ...–20 | | 21–30 | | 31–... | |
| | Mean | SD | Mean | SD | Mean | SD | Mean | SD | Mean | SD | Mean | SD |
| Memory | 2.85 | 1.32 | 2.88 | 1.32 | 2.68 | 1.31 | 2.79 | 1.28 | 2.87 | 1.34 | 2.86 | 1.29 |
| Cognitive | 3.33 | 1.23 | 3.35 | 1.23 | 3.22 | 1.22 | 3.17 | 1.19 | 3.43 | 1.22 | 3.25 | 1.27 |
| Compensation | 3.42 | 1.27 | 3.42 | 1.30 | 3.43 | 1.14 | 3.30 | 1.27 | 3.58 | 1.25 | 3.14 | 1.27 |
| Metacognitive | 3.34 | 1.19 | 3.37 | 1.19 | 3.21 | 1.20 | 3.33 | 1.19 | 3.39 | 1.19 | 3.24 | 1.18 |
| Affective | 2.90 | 1.30 | 2.92 | 1.30 | 2.80 | 1.31 | 2.86 | 1.29 | 2.97 | 1.32 | 2.75 | 1.25 |
| Social | 3.54 | 1.17 | 3.56 | 1.18 | 3.43 | 1.11 | 3.48 | 1.15 | 3.63 | 1.15 | 3.37 | 1.22 |
| Overall means | 3.23 | 1.27 | 3.25 | 1.27 | 3.13 | 1.25 | 3.16 | 1.24 | 3.31 | 1.27 | 3.10 | 1.27 |

When analysing the items separately, 20 items out of 49 (41%) have got a high range of use, 24 (49%) medium and 5 (10%) low. The highest scores go to using a similar word or phrase if a foreign language word cannot be thought of (4.26), asking someone to slow down or to say it again if something cannot be understood (4.12) and paying attention when someone is speaking in foreign language (4.08). The lowest scores go to physically acting out new foreign language words (1.52), using rhymes to remember new words (2.01) and using flashcards to remember new words (2.02).

The comparison of means based on gender gives rather predictable results, with females having slightly higher points than males. Similar results have been reported in several studies (Ehrman, Oxford 1989, Green, Oxford 1995, Hong-Nam, Leavell 2006). The only category where Estonian males slightly outperform females

is that of compensation strategies (Table 3). To exclude the possibility that women's predominance of strategy use has been caused by a bias of the sample to women, independent-samples t-test was conducted. However, the t-test did not reveal any significant differences ($p \geq .05$) and that is why they have not been reported here in greater detail.

The means of strategies in the comparison of three age groups (≤ 20 , 21–30, ≥ 31) are a little surprising. The EFL students aged from 21 to 30 outperform the other age groups in all strategy groups. The result may be considered surprising because the frequency of using, for example, cognitive and metacognitive strategies is usually expected to increase with age (Kolić-Vehovec et al. 2010, Khezrlou 2012) but these results do not support this. However, the period between 21 and 30 can still be considered the most active time of learning, when young people usually do not have any significant family or professional responsibilities as yet.

3.3. Exploratory factor analysis

For exploratory factor analysis, principal axis factoring, varimax rotation was conducted. According to the Kaiser rule of eigenvalues, up to a 14-factor analysis could have been conducted. The Kaiser rule is applied to drop the components with eigenvalues under 1.0 – this is the eigenvalue equal to the information accounted for by an average single item (Larsen, Warne 2010). We chose the 2-, 6- and 9-factor analysis (with eigenvalues of 3.48, 1.59 and 1.35 respectively) to test the hypotheses; the first two with the purpose of checking the possible factor structures according to the division of Oxford's classification (1990: 16), and the last one with the purpose of making it possible to compare the results with the analyses conducted by the researchers in Puerto Rico, Taiwan, China, Japan, Egypt and the United States (Oxford, Burry-Stock 1995).

To test the first hypothesis on two-factor structure of the SILL, exploratory factor analysis on two factors was conducted. Factor loadings greater than or equal to 0.4 accounted for over 25% of the variance that explains just a quarter of the strategy use being represented by the items in the SILL. In the case of the two-factor structure, it might have been assumed that two big strategy groups – direct and indirect ones – would form. Results of the factor analysis did not support this. The groups that formed were mixed, having 17 items of direct strategies and 7 items of indirect strategies in one factor, with the items for the other factor being 12 and 13 respectively. Therefore, it has to be admitted that the analysis on two factors did not give a satisfactory result and the first hypothesis is rejected.

To test the second hypothesis on six-factor structure of the SILL, exploratory factor analysis on six factors was conducted. Factor loadings greater than or equal to 0.4 accounted for over 46.3% of the variance, which explains a little less than half of the strategy use being represented by the items in the SILL. The factors that formed do not coincide with the taxonomy proposed by Oxford (1990: 16), however the result could be considered interesting.

Factor 1 characterizes the independent language learner with active language use mostly outside the classroom. Factor 2 comprises predominantly metacognitive strategies. Factor 3 covers strategies characterizing analytical activities like looking

for patterns and similarities between languages, dividing the words into parts and predicting the meaning. Factor 4 covers mostly social strategies. Factor 5 contains mostly cognitive strategies and Factor 6 forms the combination of memory, social and affective strategies. In brief, it has to be admitted that the six factors revealed in the current study do not coincide with the original taxonomy presented by Oxford (1990: 16) and therefore the second hypothesis on the six-factor structure also has to be rejected.

To test the third hypothesis on nine-factor structure of the SILL, exploratory factor analysis on nine factors was conducted. Factor loadings greater than or equal to 0.4 accounted for over 52% of the variance, which explains over half of the strategy use being represented by the items in the SILL. To make the factors formed in this analysis comparable with other similar studies (Oxford, Burry-Stock 1995), the following overview is presented, similar to the ones given for Puerto Rico, China, Japan, Egypt, Taiwan and the US (Table 4).

The Estonian study produced the following factors.

Factor 1 consisted basically of the strategies of active language use (similar to Puerto Rico, China, Japan and the US (Oxford, Burry-Stock 1995)) including reading for pleasure, watching TV and films in English, writing notes and messages and looking for opportunities to read as much as possible.

Factor 2 stood for metacognitive planning (similar to Puerto Rico, China and the US (Oxford, Burry-Stock 1995)), covering four strategies out of the nine in SILL Part D and comprising thinking about the progress in learning a foreign language, having clear goals for improving skills, being determined to become a better language learner and planning the schedule.

Factor 3 comprised the social strategies (partly similar to Puerto Rico, China and Egypt (Oxford, Burry-Stock 1995)) like asking for help from other foreign language speakers, asking others to correct errors while talking, asking others to slow down or say it again, asking questions in foreign language, practising it with other students and looking for people to talk to.

Factor 4 on analysis included finding patterns, dividing the word into parts to find its meaning, thinking of relationships between new and old and looking for words in one's own language resembling new words.

Factor 5 on cognitive and memory strategies included using foreign language words in different ways, summarizing information heard or read, using new words in a sentence to memorize the words better, remembering new words by using mental pictures, trying to talk like native speakers and practising the sounds of the foreign language.

Factor 6 (partly similar to Japan (Oxford, Burry-Stock 1995)) was mostly made up of the metacognitive, social and compensation strategies of paying attention when someone is speaking, asking the person to slow down or say it again if the sentence cannot be understood, noticing mistakes and trying to do better, and using synonyms if the right word cannot be thought of.

Factor 7, affective strategies, resembled the research results in Taiwan (Oxford, Burry-Stock 1995) and included noticing tension when using the foreign language, rewarding oneself in the case of success, talking to others about the feelings when the foreign language is learned and trying to relax when being afraid to use the foreign language.

Factor 8, covering the strategies of repetition and revision, included saying or writing new words several times and reviewing foreign language lessons.

Factor 9, sensory memory strategies, covered using rhymes and connecting the sound and image to remember new words, and physically acting out new words (similar to Egypt (Oxford, Burry-Stock 1995)).

As the table 4 reveals, the factors that evolved in the factor analysis of the Estonian version of the SILL are somewhat comparable with the results of other studies in different cultures. The grey cells in the table indicate the factors that coincide with the factors of these studies (Oxford, Burry-Stock 1995). Even though they do not present the best taxonomy for the LLSs, there are certain concurrencies with the outcomes of other similar studies. Therefore, it can be stated on the basis of the results of the exploratory factor analysis on nine-factor structure, the third hypothesis cannot totally be rejected.

4. Discussion

In this study we sought to investigate whether the SILL, translated and adapted for Estonian EFL learners, reflected two-, six- or nine-construct classification, and compare the results with other similar studies conducted in different cultures. Proceeding from that three hypotheses were tested: (H1) the structure of the SILL translated and adapted for Estonian learners reflects the two-factor structure of direct and indirect strategies; (H2) the structure of the SILL translated and adapted for Estonian learners reflects the six-factor structure of memory, cognitive, compensation, metacognitive, affective and social strategies; (H3) the structure of the SILL translated and adapted for Estonian learners reflects the nine-factor structure of LLSs comparable to the outcome of Oxford and Burry-Stock (1995).

The results revealed that the exploratory factor analysis used to test Oxford's two-construct and six-construct taxonomy of the SILL did not provide a fully acceptable fit to the data, and therefore H1 and H2 were rejected. This has been explained with high correlations among the constructs (Park 2011). In the case of the current study, the sample ($n = 337$) could be considered sufficient according to Zhao (2009). The nine-construct analysis provided nine factors relevant for comparison with the results of the study conducted by Oxford and Burry-Stock (1995) on Puerto Rico, Taiwan, China, Japan, Egypt and the US, and therefore H3 was not rejected. The factor structure of Estonian research has most overlappings with Puerto Rico and PR China; the least with Taiwan and Japan (Table 4).

When comparing the data on gender differences collected within the study, it can be said that similarly to the results of many other studies (Wong 2011, Green, Oxford 1995), Estonian females demonstrated a slightly more frequent use of LLSs compared to males. Although many researchers have explained the gender differences within cultural or ethnical contexts (Oxford, Nyikos 1989), few have given a substantial explanation for these distinctions. When looking for reasons why Estonian females use more LLSs than males, we should look at the statistics describing education in Estonia. Estonian women seem to be valuing education and higher qualifications more than men, and are probably have more aspirations

Table 4. The comparison of results of 9-factor analysis between Estonia and six countries compared by Oxford and Burry-Stock (1995)

| Factor/ location | Estonia | Puerto Rico | Taiwan | PR China | Japan | Egypt | Combined US |
|-----------------------------|-----------------------------------|-----------------------------------|---------------------------|-----------------------------|-----------------------------------|---------------------------------------|------------------------------|
| 1 | Active language use | Active language use | Metacognitive planning | Active language use | Active language use | Metacognitive planning | Active language use |
| 2 | Metacognitive planning | Metacognitive planning | Active language use | Metacognitive planning | Sensory memory strategies | Sensory memory strategies | Metacognitive planning |
| 3 | Social | Affective and social | Memory and analysis | Affective and social | Metacognitive/social/affective | Affective and social | Affective strategies |
| 4 | Analysis | Reflection (analysis and anxiety) | Formal oral practice | Sensory memory strategies | Compensation and analysis | Active language use | Sensory memory strategies |
| 5 | Cognitive and memory | Sensory memory strategies | Social strategies | Compensation in reading | Formal oral practice | Request and repetition | Social strategies |
| 6 | Metacognitive/social/compensation | Social/cognitive conversation | Compensation in reading | Metacognitive and affective | Affective strategies | Sensory memory and anxiety | Compensation and analysis |
| 7 | Affective strategies | Sensory (visual) memory | Affective strategies | Sensory (visual) memory | Compensation in speaking | Compensation in reading and listening | Metacognitive planning |
| 8 | Repetition and revision | Cognitive and relaxation | Compensation in speaking | Attention to key details | Attention to key details | General memory strategies | General memory strategies |
| 9 | Sensory memory strategies | General compensation | General memory strategies | General memory strategies | Reflection (analysis and anxiety) | Sensory memory strategies | Compensation and nonanalytic |

when acquiring education. This has been confirmed at the level of secondary education already, and in tertiary education even more (Leoma 2011). According to the data presented by Eurostat (2013), the gender gap in education in Estonia is one of the biggest in European countries. The percentage of 30–34-year-old males having successfully completed tertiary education is 28.1%, whereas for the same age range in females it is 50.4%. The same tendency has been noted in almost all European countries (Eurostat 2013). Moreover, this explanation is supported by the sample division of the present research as well having only 20% of the sample male and 80% female. Males' relatively small presence in tertiary education does not determine the success of the country, but shows what may be the educational balance of males and females in the country in the future (Leoma 2011). The greater use of LLSs by women in Estonia could also be related to their bigger commitment to acquiring education.

At the same time, it is interesting to see how language teaching methodology has changed in Estonia over time. During the Soviet period, the grammar-translation method was mainly used. Due to its behaviouristic theoretical base – habit formation via repetition and reinforcement – it supported using mostly memory and cognitive strategies. Developing analytical skills was not encouraged, which led to metacognitive strategies being underexploited. As the grammar-translation method does not support developing active language use, people felt tense and nervous when they had to communicate in English. At present, the situation outside schools has changed a lot – borders are open, there is a tremendous information explosion and people have many opportunities to use the language – and that is one of the reasons why young people are highly motivated to learn English. This has caused the change in the use of LLSs – the role of social and compensation strategies has grown and metacognitive strategies are accruing gradually.

5. Limitations of the study and recommendations for further research

The first limitation of the current study is the uneven sample because not all of the respondents were active EFL learners at the moment of questioning – some students had actively participated in EFL courses some time ago; some were currently learning. That may have affected the reliability of students' reporting on their learning strategies to a small extent, but certainly not so much that it influenced the overall results as, when studying at the tertiary level, students are still expected to work with English study materials and articles. This, and the fact that a large amount of data was collected electronically, will lead us to the second limitation, which is the lack of opportunity to check the validity of the instrument related to language proficiency. Comparing the results according to language proficiency would have given a better picture in the comparison with other similar studies. Thirdly, as measuring language proficiency was not included in the study, it was not possible to assess the efficiency of strategy use but only the frequency of strategy use.

Despite these limitations, the study has contributed to clarification of the factor model of LLSs. Having many overlaps with the nine-factor model described by Oxford and Burry-Stock (1995), it provides good material for comparison with

similar studies conducted before. But, although we consider it reasonable to continue gathering similar data from different countries as it would shed light on cultural and regional features, it has also turned out to be necessary to reinvestigate and restructure the existing taxonomy as many studies have reported its unacceptable fit (Park 2011).

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Appendix. Strategy Inventory for Language Learning (SILL)

This form of the strategy inventory for language learning (SILL) is for students of a foreign language (FL). Please read each statement and circle the score of the response (1, 2, 3, 4, or 5) that tells HOW TRUE THE STATEMENT IS.

1. Never or almost never true of me
2. Usually not true of me
3. Somewhat true of me
4. Usually true of me
5. Always or almost always true of me

Answer in terms of how well the statement describes you. Do not answer how you think you should be, or what other people do. **There are no right or wrong answers** to these statements.

| Part A | | Score | | | | |
|--------|---|-------|---|---|---|---|
| 1 | I think of relationships between what I already know and new things I learn in the SL | 5 | 4 | 3 | 2 | 1 |
| 2 | I use new SL words in a sentence so I can remember them | 5 | 4 | 3 | 2 | 1 |
| 3 | I connect the sound of a new SL word and an image or picture of the word to help me remember the word | 5 | 4 | 3 | 2 | 1 |
| 4 | I remember a new SL word by making a mental picture of a situation in which the word might be used | 5 | 4 | 3 | 2 | 1 |
| 5 | I use rhymes to remember new SL words | 5 | 4 | 3 | 2 | 1 |
| 6 | I use flashcards to remember new SL words | 5 | 4 | 3 | 2 | 1 |
| 7 | I physically act out new SL words | 5 | 4 | 3 | 2 | 1 |
| 8 | I review SL lessons often | 5 | 4 | 3 | 2 | 1 |
| 9 | I remember new SL words or phrases by remembering their location on the page, on the board, or on a street sign | 5 | 4 | 3 | 2 | 1 |
| Part B | | Score | | | | |
| 10 | I say or write new SL words several times | 5 | 4 | 3 | 2 | 1 |
| 11 | I try to talk like native SL speakers | 5 | 4 | 3 | 2 | 1 |
| 12 | I practice the sounds of SL | 5 | 4 | 3 | 2 | 1 |
| 13 | I use the SL words I know in different ways | 5 | 4 | 3 | 2 | 1 |
| 14 | I start conversations in the SL | 5 | 4 | 3 | 2 | 1 |
| 15 | I watch SL language TV shows spoken in SL or go to movies spoken in SL | 5 | 4 | 3 | 2 | 1 |
| 16 | I read for pleasure in the SL | 5 | 4 | 3 | 2 | 1 |
| 17 | I write notes, messages, letters, or reports in the SL | 5 | 4 | 3 | 2 | 1 |
| 18 | I first skim an SL passage (read over the passage quickly) then go back and read carefully | 5 | 4 | 3 | 2 | 1 |
| 19 | I look for words in my own language that are similar to new words in the SL | 5 | 4 | 3 | 2 | 1 |
| 20 | I try to find patterns in the SL | 5 | 4 | 3 | 2 | 1 |
| 21 | I find the meaning of an SL word by dividing it into parts that I understand | 5 | 4 | 3 | 2 | 1 |

| | | | | | | |
|---------------|---|--------------|---|---|---|---|
| 22 | I try not to translate word for word | 5 | 4 | 3 | 2 | 1 |
| 23 | I make summaries of information that I hear or read in the SL | 5 | 4 | 3 | 2 | 1 |
| Part C | | Score | | | | |
| 24 | To understand unfamiliar SL words, I make guesses | 5 | 4 | 3 | 2 | 1 |
| 25 | When I can't think of a word during a conversation in the SL, I use gestures | 5 | 4 | 3 | 2 | 1 |
| 26 | I make up new words if I do not know the right ones in the SL | 5 | 4 | 3 | 2 | 1 |
| 27 | I read SL without looking up every new word | 5 | 4 | 3 | 2 | 1 |
| 28 | I try to guess what the other person will say next in the SL | 5 | 4 | 3 | 2 | 1 |
| 29 | If I can't think of an SL word, I use a word or phrase that means the same thing | 5 | 4 | 3 | 2 | 1 |
| Part D | | Score | | | | |
| 30 | I try to find as many ways as I can to use my SL | 5 | 4 | 3 | 2 | 1 |
| 31 | I notice my SL mistakes and use that information to help me do better | 5 | 4 | 3 | 2 | 1 |
| 32 | I pay attention when someone is speaking SL | 5 | 4 | 3 | 2 | 1 |
| 33 | I try to find out how to be a better learner of SL | 5 | 4 | 3 | 2 | 1 |
| 34 | I plan my schedule so I will have enough time to study SL | 5 | 4 | 3 | 2 | 1 |
| 35 | I look for people I can talk to in SL | 5 | 4 | 3 | 2 | 1 |
| 36 | I look for opportunities to read as much as possible in SL | 5 | 4 | 3 | 2 | 1 |
| 37 | I have clear goals for improving my SL skills | 5 | 4 | 3 | 2 | 1 |
| 38 | I think about my progress in learning SL | 5 | 4 | 3 | 2 | 1 |
| Part E | | Score | | | | |
| 39 | I try to relax whenever I feel afraid of using SL | 5 | 4 | 3 | 2 | 1 |
| 40 | I encourage myself to speak SL even when I am afraid of making a mistake | 5 | 4 | 3 | 2 | 1 |
| 41 | I give myself a reward or treat when I do well in SL | 5 | 4 | 3 | 2 | 1 |
| 42 | I notice if I am tense or nervous when I am studying or using SL | 5 | 4 | 3 | 2 | 1 |
| 43 | I write down my feelings in a language learning dairy | 5 | 4 | 3 | 2 | 1 |
| 44 | I talk to someone else about how I feel when I am learning SL | 5 | 4 | 3 | 2 | 1 |
| Part F | | Score | | | | |
| 45 | If I do not understand something in SL, I ask the other person to slow down or say it again | 5 | 4 | 3 | 2 | 1 |
| 46 | I ask SL speakers to correct me when I talk | 5 | 4 | 3 | 2 | 1 |
| 47 | I practice SL with other students | 5 | 4 | 3 | 2 | 1 |
| 48 | I ask for help from SL speakers | 5 | 4 | 3 | 2 | 1 |
| 49 | I ask questions in SL | 5 | 4 | 3 | 2 | 1 |
| 50 | I try to learn about the culture of SL speakers | 5 | 4 | 3 | 2 | 1 |

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KEELEÕPPESTRATEEGIATE MÕÕTEVAHENDI (SILL) FAKTORSTUKTUURI UURING: SILL-I ADAPTEERIMINE EESTI INGLISE KEELE ÕPPIJATE JAOKS, KEELEÕPPESTRATEEGIATE KASUTAMISE KULTUURILISED ISEÄRASUSED

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Tartu Ülikool

Keeleõpe on kaasaegses globaliseeruvast maailmas muutunud iseenesestmõistetavaks sõltumata õppijate taustast, asukohast või elualast. Keeleõppe edukust saab hinnata erinevalt, kuid üheks enamlevinud viisiks on teha seda õppijate keeleõppestrateegiate hindamise kaudu (Hsiao, Oxford 2002). SILL on maailmas enim kasutatud enesekohane küsimustik, millega mõõdetakse inglise keele kui võõrkeele õppimisel kasutatavaid õpistrateegiaid. See põhineb Oxfordi (1990) loodud taksonoomial, mis eristab kaht suuremat strateegiate gruppi (otsesed ja kaudsed) ning 6 alagruppi: mälu-, kognitiivsed, kompensatsiooni, metakognitiivsed, afektiivsed ja sotsiaalsed strateegiad. Ometi on mõned uuringud näidanud 2- ja 6-faktorilise struktuuri sobimatust keeleõppestrateegiate mõõtmiseks (Park 2011). Käesoleva uuringu eesmärgiks on panustada keeleõppestrateegiate taksonoomia ja selle mõõtevahendi SILL paremasse mõistmisse selle eestikeelse versiooni kohandamisprotsessi kaudu.

Eesti keelde tõlgitud ja kohandatud küsimustikku hinnati 337 üliõpilasest koosneva valimiga. Viidi läbi uuriv faktoranalüüs, mille tulemused ei toetanud ei 2- ega 6-faktorilist struktuuri, mida eeldanuks originaalstruktuur. 9-faktorilise analüüsi tulemused pakuvad huvitavaid võrdlusmomente sarnase uuringuga, mis viidi läbi 1995. aastal (Oxford, Burry-Stock 1995). Lisaks Oxfordi pakutud kuuele faktorile (1990), eristusid käesolevas uuringus aktiivse keelekasutuse strateegiad, mis on omased kommunikatiivsele keeleõppele, samuti analüüsi oskust eeldavad ja uute struktuuride loomisel varasemate teadmiste aktiveerimist eeldavad strateegiad. Mälustrateegiad jagunesid kahte eraldiseisvasse faktorisse: sensoorsed mälustrateegiad ja kordamisstrateegiad.

Võtmesõnad: uuriv faktoranalüüs, küsimustik, reliaablus, t-test, inglise keel, eesti keel