Cognitive and Metacognitive Strategies as Predictors of Language Learning Outcomes

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Inconsistent findings in earlier research on language learning strategies and their relations with language proficiency motivated this deeper exploration of the effects language learning strategies have on learning outcomes. The aim of the study was to explore the potential effects of cognitive and metacognitive language learning strategies on learning outcomes. The investigation involved self-reported data from a sample of 269 final-year students of upper-secondary schools (aged 18.4) analysed with the results of the standardized English as a foreign language exam. The analysis revealed a linear relationship between language learning strategies and learning outcomes based on learners’ perceptions. Structural equation modelling indicated that cognitive strategies have a direct effect on learning outcomes, whereas metacognitive strategies affect outcomes indirectly.

**Key words:** language learning strategies; language proficiency; structural equation modelling

**Highlights:**

- Language learning strategies are related to learning outcomes.
- Cognitive strategies affect learning outcomes directly.
- Metacognitive strategies have indirect effect on learning outcomes.

There is a growing body of literature that recognizes the importance of enhancing the use of learner strategies in order to achieve better learning outcomes (Ardasheva et al., 2017; Benson, 2011; O’Malley & Chamot, 1990). This approach originates from the assumption that the use of learning strategies and learning outcomes are related. However, there is no common understanding of the relationship between learner use of learning strategies and learning success, or whether and how strategy use is reflected in test results.

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Researchers have approached the issues of learning strategies from different perspectives. The most dominant approach proceeds from the use of language learning strategies (LLS) as an assumption of language performance (e.g., Akkakoson, 2013; Magno, 2010; Park, 1997). The studies focusing on relations between LLS and language performance have produced contradictory findings on account of which it is not clear whether the relations are linear or curvilinear (Park, 1997). Other researchers focus on proficient language learners exploring the strategies that bring success (Bruen, 2001; Wharton, 2000). Reciprocal relations between strategy use and learning outcomes have also been investigated (Bremner, 1999). This approach indicates that strategy use and language performance may both be causes and outcomes of each other (Song, 2006).

The inconsistent findings in earlier research on language learning strategies and their relations with language proficiency provided the impetus for this further exploration of the effects of language learning strategies on learning outcomes.

Cognitive and Metacognitive Strategies

Learning strategies have been described in several different ways. Weinstein and Mayer (1986) defined them as behaviours or thoughts the learner engages in while learning that are intended to influence the encoding process. Hsiao and Oxford (2002) described learning strategies as the learner’s toolkit for active, conscious, purposeful, and attentive learning, paving the way towards greater proficiency, learner autonomy and self-regulation. Cohen and Griffiths (2015) emphasized the aspect of choice describing learning strategies as the processes that are consciously selected by the learner. Cognitive psychologists describe learning strategies as “combinations of cognitive (thinking) skills implemented when a situation is perceived as one demanding learning” (Schmeck, 1988 p. 17).

According to Oxford (1990), language learning strategies 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 but conscious, possible to be taught, flexible, and influenced by a variety of factors.

Learning strategies have been classified in many different ways. The predominant way is distinguishing cognitive and metacognitive strategies. Cognitive strategies are operations which are carried out on the material to be learned while metacognitive strategies use the knowledge of cognitive processes to regulate the learning process (Benson, 2011). O’Malley and Chamot (1990) described cognitive strategies as those in which the learner interacts with the material by manipulating it mentally (e.g., making mental images) or physically (e.g., grouping, taking notes). Oxford (1990) was more specific in her classification distinguishing memory and compensation strategies from cognitive...
ones. In her taxonomy, memory strategies have a highly specific function helping students store and retrieve new information. Cognitive strategies enable learners to understand and produce new language by many different means, while compensation strategies allow learners to overcome limitations in their language skills. In other taxonomies (e.g., O’Malley & Chamot, 1990), these strategies are brought together as one group of cognitive strategies. Cognitive psychologists have contributed to linguistic research with the concept of entrenchment (Schmid, 2017) – reorganizing and adapting the linguistic and communicative knowledge by the influence of social interactions. This theory unites the human capacity to produce language with his fundamental cognitive abilities, mostly perception, memory, and attention allocation. It deals with the mechanisms of storing information in long-term memory, and influences its retrieval and activation in ongoing language processing (Schmid, 2007).

Metacognitive strategies involve executive processes in planning for learning, monitoring comprehension and production, and evaluating how well a learning objective has been achieved (O’Malley & Chamot, 1990). Oxford (1990) described metacognitive strategies as the ones which allow learners to control their own cognition – to coordinate the learning process by using centering, arranging, planning, and evaluating. Metacognitive strategies are considered essential for successful learning (Oxford, 1990).

Research on language learning strategies has evolved in three main directions: 1) identification and classification of strategies; 2) correlation of strategy use with other individual difference variables and learning outcomes, and 3) strategy training (Benson, 2011). The current research focuses on the second direction exploring the relations of learner strategy use and their learning outcomes. The research relies on Oxford’s theoretical framework on the classification of LLS (1990) focusing predominantly on cognitive and metacognitive strategy groups.

The Relations of Language Learning Strategies and Learning Outcomes

Progress in studies that can be measured using tests is influenced by two kinds of strategies: learning strategies and test-taking strategies (Cohen, 2006). Even though it has been shown that strategy use and academic advancement are related, these relations are highly complex, and they are difficult to comprehend and describe (Wesche, 1987). One of the reasons for this is that the construct is multidimensional by nature as are the interactions with the variables (Chamot et al., 1988). Another reason is connected with more complicated learning assignments, which assume the simultaneous use of several learning strategies and activating different mental processes at a time (Dansereau, 1985). Metacognition is believed to play an important role in the process of language learning (Chamot, 2005; Victori & Lockhart, 1995). But the way metacognitive learning strategies are related to cognitive ones, and how they contribute to learning outcomes, is not unambiguously comprehended (Zhang et al., 2014).

Park (1997), who studied the use of LLS and learning outcomes in Korean students, found that cognitive and social strategies were more predictive of the
test scores than any other categories of strategy. Magno (2010), on the contrary, stated that only compensation strategies could significantly predict English proficiency. Bruen (2001) showed in her study that more proficient students used more cognitive and metacognitive strategies.

Purpura (1997), who studied the relations of cognitive and metacognitive learning strategies and the results of reading tests, found that cognitive strategies did not affect reading efficiency directly but through vocabulary-grammar skills. Memory strategies were reported to be directly and negatively related to vocabulary-grammar skills. Therefore, it may be assumed that using memory strategies in a tense test-taking situation might worsen the test results. Surprisingly, metacognitive learning strategies were not found to be directly related to learning outcomes. However, they were related directly and positively to the use of cognitive strategies affecting the test results indirectly through cognitive strategies (Purpura, 1997). A similar relation between cognitive and metacognitive strategies was also shown by Phakiti (2003). Bachman and Palmer (2010) showed that the learner’s use of metacognitive strategies determines how well the language ability can be realised in language use. Language ability is conceptualised as the combination of learner’s language knowledge and strategic skills or metacognitive skills (Bachmann & Palmer, 2010). Flavell (1979) also noted that metacognition has an important role when performing many cognitive activities in language learning, language use, and test-taking situations. All studies mentioned above had been conducted to measure language learners’ reading and vocabulary-grammar competencies, which are related to each other. Whether such relations of learning strategies can be expanded to all language competencies (listening, writing, speaking, and reading), was the scope of the current research.

The current study aims to explore the potential effects of student-reported cognitive and metacognitive strategies on learning outcomes. Three main research questions guided the study: 1) RQ1 – What is the use of cognitive and metacognitive language learning strategies among final-year students based on their own perception?; 2) RQ2 – What is the relationship between language learning strategies and learning outcomes?; 3) RQ3 – How do cognitive and metacognitive learning strategies affect learning outcomes?

Proceeding from the theory the following hypotheses were addressed: 1) H1 – The EFL learners with higher frequency of strategy use achieve higher learning results; 2) H2 – Cognitive learning strategies have a direct impact on learning strategies while metacognitive learning strategies affect learning outcomes indirectly through cognitive ones.

**Hypothesized models and their theoretical justification**

When creating the models, earlier research results were taken into account. The first, a unitary model (Figure 1) was created where all strategy groups contribute directly to the results of all four language competencies. In other words, it was assumed that cognitive and metacognitive strategies perform in synergy to affect the test results.
For the second model, correlations between the language competencies were considered. To avoid multicollinearity between highly correlated variables, a latent variable was included to describe all four language competencies as a whole. As the four-item factor (Exam results) gave good model fit indices ($\chi^2 = 3.97$, df = 2, CMIN/DF = 1.98, CFI = .99, RMSEA = .06), we continued to find the most suitable solution proceeding from the logic of a hierarchical model (Figure 2).
The third, mediated-hierarchical model (Figure 3), drew on theories on learning strategies affecting learning outcomes directly and indirectly (Purpura, 1997; Zhang et al., 2014). This model was based on the results of the correlation analysis. The correlation coefficients revealed that metacognitive and compensation strategies were related to other strategy groups but not learning outcomes. Therefore, it became important to test whether the metacognitive and compensation strategies affected learning outcomes directly or indirectly through other strategy groups.

Figure 3. Mediated-hierarchical model.

In order to test the hypothesis all three models were tested and analyzed.

Method

Participants

The sample for the study recruited 383 year twelve students from five upper secondary schools in a medium-sized town in Estonia – 269 of them (71% of all year twelve students in this town) were present this day to fill out the questionnaire. All schools are general schools, one of them is private, the others are municipal schools. All 269 questionnaires were complete and included in the study. Although the sample may not represent the population in general, it gives a good overview of final-year students in one of Estonia’s medium-sized towns. The average age of the students was 18.4 (SD = 0.5). The number of girls and boys was nearly equal (55% were female, 45% were male). By racial composition the group was 100% Caucasian. By the time they answered the questionnaire, they had been studying English for approximately 10 years (M = 10.22, SD = 1.3).
Procedure

Before going to the schools, permission was sought from the local governing bodies. Data were collected on a voluntary basis. Students were told the aim and procedure of the study. They were informed that with their agreement, the data collected using the questionnaire would be analysed along with the results of their English state exam that they would write two months later. The students confirmed their consent by signature. The participants completed the self-report questionnaire SILL (Oxford, 1990) individually in a class setting with the test leader present. The test leader instructed the participants. The completion of the questionnaire took the students approximately 25–30 minutes.

Two months later the students wrote the English state exam. In agreement with the Innove Foundation, which is responsible for administering the state exams and with the students’ written consent, the authors had access to the results of the students’ state examination in English for further analyses.

Instrument

In order to collect data about the students’ use of strategies in language learning, the Estonian version of SILL, Est-SILL was used. It was translated and adapted for Estonian EFL learners by the authors (Saks & Leijen, 2016). The validity of the study provided a sound factor structure. The Goodness of Fit statistics fell within the established criteria ($\chi^2 = 201.40$, $df = 103$, CMIN/DF = 1.95, CFI = .92, RMSEA = .06) indicating an adequate model fit. A model is estimated acceptable if CMIN/DF < 3.0, CFI ≥ .9, and RMSEA ≤ .06 (Hu & Bentler, 1999). RMSEA bigger than .08 is not an acceptable error (Brown, 2006). Est-SILL has 17 statements divided into six factors – active language use, metacognitive, social, compensation, memory, and connecting strategies. Proceeding from the content of statements, active language use, compensation, memory, and connecting strategies are considered cognitive strategies in the current study. The students assessed their strategy use on 1–5 Likert-type scale.

Student language proficiency was assessed using the English state exam. This is a standardised test administered and scored centrally. Its aim is to warrant nation-wide comparability of exam results, provide students with a more objective understanding of their learning outcomes, get an overview and give feedback on the efficiency of teaching and learning at school, support curriculum application, and check the attainment of learning outcomes defined within Estonian national curriculum when understanding oral speech (listening competencies), oral communication (speaking competencies), understanding written texts (reading competencies), and written communication (writing competencies) (Tasemetööde, 2010). The exam is based on the national curriculum for basic schools and secondary schools, and the Common European Framework, and corresponds to the descriptions of the European Council’s language levels B1 and B2.

Data Analysis

In order to answer the first research question on student-reported use of language learning strategies, descriptive statistics were generated for all strategy groups. The differences between the strategy groups were analyzed using paired samples $t$ test.

For the second research question on the relations between strategy use and language proficiency, the sample was divided into three groups of more or less similar size according to their average strategy use. The cut-off points for the groups were 3.2 and 3.7. The group with low strategy use had 86 students, the group with medium strategy use had 87 students, and the group with high strategy use had 96. The range score remained between 1 and 5. The groups were compared on the basis of their average strategy use and exam scores.

For the third research question, a correlation analysis was applied to explore the relations between student strategy use and exam results. Based on the correlation coefficients, three structural equation models – unitary, hierarchical, and mediated-hierarchical were created and tested. The analyses were performed using SPSS 20 and AMOS.
Results

Descriptive Statistics

The respondents assessed their use of language learning strategies on a five-point Likert-type scale where 1 stood for never or almost never true of me and 5 always or almost always true of me. If the students’ strategy use was investigated, it could be seen that social strategies and compensation strategies had the highest frequency, whereas memory strategies the lowest (Table 1). This finding was rather expected as memory strategies are mostly used by beginners but this sample consisted of people who had learned English for 10 or more years on account of which they can be considered advanced language learners.

Table 1
Descriptive statistics on strategy use (N = 269)

<table>
<thead>
<tr>
<th>Strategy groups</th>
<th>Mean</th>
<th>SD</th>
<th>Skewness</th>
<th>Kurtosis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social strategies</td>
<td>3.73</td>
<td>1.07</td>
<td>-0.69</td>
<td>-0.06</td>
</tr>
<tr>
<td>Compensation strategies</td>
<td>3.53</td>
<td>0.88</td>
<td>-0.21</td>
<td>-0.41</td>
</tr>
<tr>
<td>Active language use</td>
<td>3.44</td>
<td>0.93</td>
<td>-0.14</td>
<td>-0.61</td>
</tr>
<tr>
<td>Metacognitive strategies</td>
<td>3.40</td>
<td>1.05</td>
<td>-0.37</td>
<td>-0.45</td>
</tr>
<tr>
<td>Connecting strategies</td>
<td>3.30</td>
<td>0.77</td>
<td>-0.24</td>
<td>0.19</td>
</tr>
<tr>
<td>Memory strategies</td>
<td>1.45</td>
<td>0.71</td>
<td>2.01</td>
<td>4.88</td>
</tr>
</tbody>
</table>

The paired samples t test revealed statistically significant differences between social strategies and all other strategy groups: compared to compensation strategies ($t = 2.68, p = .008$), active language use strategies ($t = 3.92, p = .000$), metacognitive strategies ($t = 4.39, p = .000$), connecting strategies ($t = 5.82, p = .000$), and memory strategies ($t = 31.11, p = .000$). Compensation strategies differed statistically significantly from connecting ($t = 3.64, p = .000$) and memory strategies ($t = 32.4, p = .000$). The strategies of active language use had statistically significant differences from connecting ($t = 2.53, p = .012$) and memory strategies ($t = 29.11, p = .000$). The difference between connecting and memory strategies was also significant ($t = 30.94, p = .000$).

Considering the ranges of low (less than 2.5), medium (2.5–3.5), and high (over 3.5) frequency (Oxford, 1986), the overall use of LLS in the case of the current sample was medium – 3.14 (0.52).

The item with the highest mean was a metacognitive strategy – “I try to find out how to be a better learner of SL” ($M = 4.19, SD = 0.96$). This was followed by social strategies – “If I do not understand something in SL, I ask the other person to slow down or say it again” ($M = 3.99, SD = 1.02$) and “I ask for help from SL speakers” ($M = 3.69, SD = 1.16$), and a compensation strategy – “To understand unfamiliar SL words, I make guesses” ($M = 3.63, SD = 1.03$). The strategies with the least frequency belonged to the group of memory strategies – “I use flashcards to remember new SL words” ($M = 1.42, SD = 0.79$), “I physically act out new SL words” ($M = 1.47, SD = 0.82$), and a metacognitive strategy – “I plan my schedule so I will have enough time to study SL” ($M = 2.62, SD = 1.04$). Out of 17 items in the Est-SILL, 13 had an average value over three (on scale 1–5), only four items had a value below three.
The average score of the students’ state examination was 74.22 (SD = 21.42) out of 100; the minimum score was 22.63 and maximum 98.75. Compared to the general average score in Estonia in 2014, 67.5 points (Kriisa, 2014), the results of the current sample were significantly higher.

**Relations between Language Learning Strategies and Learning Outcomes**

In order to explore the relations between LLS and learning outcomes, the independent samples t test was first employed to compare groups with low, medium, and high strategy use. The results revealed significant differences in strategy use between the groups. The students in the group of medium strategy use, reported applying LLS significantly more than the students in the low strategy use group: $t(105) = 14.8$, $p = .000$. The students in the high strategy use group outran the medium group students: $t(158) = 20.6$, $p = .000$. The exam scores of the three groups were not significantly different from each other. However, the comparison of the student-reported use of LLS and exam scores revealed a linear relationship (Figure 4) allowing to assume that more frequent use of LLS may lead to better results in a language test.

![Figure 4. Relations between strategy use and exam scores.](image)

**Structural Equation Modelling**

In order to test the predictive validity of Est-SILL, Spearman’s 2-tailed correlation analysis was first conducted to find out how the learners’ self-reported use of LLS was related to their language performance (Table 2). The data on student LLS use was correlated with their results in the state examination. Spearman’s rank-order correlation showed predominantly weak and moderate correlations between exam results and strategy groups.
Table 2
The results of correlation analysis (Spearman’s ρ)

<table>
<thead>
<tr>
<th></th>
<th>act_lg_use</th>
<th>metacognition</th>
<th>social</th>
<th>compensation</th>
<th>memory</th>
<th>connecting</th>
<th>exam results</th>
</tr>
</thead>
<tbody>
<tr>
<td>act_lg_use</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>metacognition</td>
<td>.38</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>p</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>social</td>
<td>.30</td>
<td>.29</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>p</td>
<td>.000</td>
<td>.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>compensation</td>
<td>.26</td>
<td>.16</td>
<td>.19**</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>p</td>
<td>.000</td>
<td>.008</td>
<td>.002</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>memory</td>
<td>.089</td>
<td>.23</td>
<td>.094</td>
<td>.12</td>
<td>1.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>p</td>
<td>.153</td>
<td>.000</td>
<td>.133</td>
<td>.051</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>connecting</td>
<td>.43</td>
<td>.35</td>
<td>.15</td>
<td>.25</td>
<td>.17</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>p</td>
<td>.000</td>
<td>.000</td>
<td>.016</td>
<td>.000</td>
<td>.007</td>
<td></td>
<td></td>
</tr>
<tr>
<td>exam results</td>
<td>.38</td>
<td>-.04</td>
<td>-.17</td>
<td>.03</td>
<td>-.08</td>
<td>.23</td>
<td>1.00</td>
</tr>
<tr>
<td>p</td>
<td>.000</td>
<td>.503</td>
<td>.005</td>
<td>.572</td>
<td>.217</td>
<td>.000</td>
<td></td>
</tr>
</tbody>
</table>

The language learners’ self-reported use of learning strategies and the relationship between this and learning outcomes was analysed using structural equation modelling (SEM). Drawing on the theory and the results of the correlation analysis, three alternative models were created: unitary, hierarchical, and mediated-hierarchical. The unitary model (Figure 1) was based on the assumption that all six strategy groups contribute to the outcomes of language competencies directly. In the case of the hierarchical model (Figure 2), the four language competencies (writing, listening, reading, and speaking) were drawn together into one latent variable. The third mediated-hierarchical model (Figure 3) was based on the theory that certain strategies do not contribute to learning outcomes directly but indirectly through other strategies. When creating this model the correlation coefficients of the strategy groups were taken into consideration. As it can be seen in Table 3, all three models fit the data rather well.

Table 3
Indicators of model fit based on SEM

<table>
<thead>
<tr>
<th></th>
<th>χ²</th>
<th>df</th>
<th>CMIN/DF</th>
<th>CFI</th>
<th>RMSEA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unitary model</td>
<td>257.63</td>
<td>152</td>
<td>1.70</td>
<td>.95</td>
<td>.05</td>
</tr>
<tr>
<td>Hierarchical model</td>
<td>304.76</td>
<td>168</td>
<td>1.81</td>
<td>.94</td>
<td>.06</td>
</tr>
<tr>
<td>Mediated-hierarchical model</td>
<td>326.96</td>
<td>177</td>
<td>1.84</td>
<td>.96</td>
<td>.04</td>
</tr>
</tbody>
</table>

Although the model fit indices for all models were equally good, considering the theoretical background and the correlation coefficients of strategies and learning outcomes, we proceeded with the analysis of the mediated-hierarchical model. First of all, we focused on the relations between strategy groups and learning outcomes, and their direct and indirect effects. In
the course of the analysis it appeared that active language use strategies had the strongest positive direct effect on learning outcomes (Figure 5). The effect of social strategies on learning outcomes was direct but negative. This means that the less social strategies were used in the learning situation, the better the corresponding results in the state exam. The effects of memory and connecting strategies were not statistically significant.

![Image: Standardized direct and indirect effects of learning strategies.](image)

Indirect effects on learning outcomes were revealed in the use of metacognitive and compensation strategies. While the effects of metacognitive strategies were negative in the case of learning outcomes, the effects of compensation strategies were positive. However, none of these effects were statistically significant. To understand what the indirect effects of metacognitive and compensation strategies on learning outcomes really mean, the effects of these strategies on other strategy groups were identified. It appeared that compensation strategies had a significant direct positive effect on active language use, and social and connecting strategies (Figure 5). Metacognitive strategies also had a significant positive effect on these 3 strategy groups – active language use, and social and connecting strategies. The direct and indirect effects will be discussed below.

**Discussion and Limitations**

The aim of the study was to analyse the potential relations between LLS and learning outcomes using a sample of final-year students, and to test the impact of self-reported LLS on learning outcomes. The learners’ use of LLS was
analysed against the results of the English state exam which was written two months after self-reporting their use of LLS.

To describe the relations between strategy use and language performance, three groups of strategy use (based on the self-reported questionnaire) – low, medium, and high were compared to their exam results. The relations proved to be linear similarly to the study conducted by Park (1997). This finding does not support the speculations of learning strategies becoming automatized and subconscious at a certain level of proficiency (Green, 1991) or the opinion that more advanced learners do not need to use so many strategies (Phillips, 1991). The communicative approach focusing on learners’ interaction and learner-initiated free and active use of language seems to encourage their high-quality language production and more efficient strategy use.

In order to identify the effects of the self-reported strategy use on learning outcomes, three models were designed – unitary, hierarchical, and mediated-hierarchical which were tested using SEM analysis. Even though all three models revealed acceptable model fit indices, the mediated-hierarchical model was used as this model drew on the theoretical knowledge about the connections and mutual effects of cognitive and metacognitive learning strategies (Phakiti, 2003; Purpura, 1997; Zhang et al., 2014). As no statistically significant correlation coefficients were revealed between metacognitive and compensation strategies and learning outcomes, it became important to explore their direct and indirect effects on learning outcomes as well as on other strategy groups. Similar to earlier studies (Park, 1997; Purpura, 1997; Zhang et al., 2014), it appeared that cognitive (active language use) and social strategies contributed directly to learning outcomes. The active language use strategies that converge the learner-initiated activities and are the best examples of the communicative approach, are the basis of language proficiency. The more the learners can be supported to implement these strategies, the better the results they will achieve in their language studies. While the effects of active language use on learning outcomes were positive, the effects of social strategies were negative. The social strategies that were included in Est-SILL were virtually directed to seeking help and using peer help. Help-seeking strategies are predominantly applied by learners who may not be as skilful as their peers. To keep up with others, they may need peer help. Therefore, applying these strategies in the learning situation may not benefit the test results. Although some theories refer to the importance of metacognitive strategies in acquiring language proficiency (Benson, 2011; O’Malley and Chamot, 1990; Phakiti, 2003), several studies have indicated (i.e., Purpura, 1997) that metacognitive strategies do not contribute directly to the learning outcomes but indirectly through cognitive strategies. As the correlation coefficients revealed in the current analysis allow us to presume indirect effects also in the case of compensation strategies, how these two strategy groups, metacognitive and compensation, acted in the context of learning outcomes and other strategy groups was investigated in more detail. While the indirect effect of compensation strategies on learning outcomes was positive, those of
metacognitive strategies were negative. To better comprehend the indirect effects and the mediating strategy groups, we focused on investigating the direct effects of metacognitive and compensation strategies. Both strategy groups revealed significant positive effects on cognitive and social strategies. In other words, the learner’s skillful metacognitive activities enable him to implement social strategies more efficiently when he needs to assess the necessity of asking for help from peers and using peer help. Conscious use of compensation strategies supports the learner’s active language use and applying connecting strategies, and through this achieve positive learning outcomes. Hence, metacognitive strategies, which are generally considered to be important in the learning process and support learner development, do not seem to impact directly on test results. It can rather be stated that the skills of using metacognitive learning strategies support the more efficient use of cognitive and social strategies in the learning process which in turn impacts the results in the state exam. The findings described above were unexpected in some respects, as a greater impact of metacognitive strategies on learning outcomes was expected. Even though the results of the English state exam have been comparatively high in recent years [2011 – 72.0, 2012 – 68.6, 2013 – 72.0, 2014 – 67.5 (Kriisa, 2014)], they do not seem to be related to learner use of metacognitive strategies in the learning process. As the current study did not give an unequivocal explanation, it may be discussed whether the efficiency of language acquisition is influenced mostly by the strategies of active language use, or whether the tasks of the state exam have been compiled in such a way as to measure specific knowledge and skills, and do not assume that metacognitive strategies have been applied. To have a more profound understanding of the dynamics of learning outcomes and their connections with the learning strategies used in the learning process, it is necessary to explore the process of preparing the state exam as well as language learner strategy use when taking tests.

**Conclusion**

In conclusion, it can be said that the current study revealed the role of cognitive and metacognitive strategies in learning outcomes. The study confirmed the direct effect of cognitive strategies on test results, but the effect of metacognitive strategies was indirect and needs further research considering the entire learning process and test-taking strategies. A fuller understanding of the relations between LLS and learning outcomes enables to implement the knowledge in university pedagogy to facilitate language studies and in teacher education to train language teachers. Another practical implication refers to the necessity of enhancing language use strategies in order to achieve higher results in standardized language tests. The interrelations of cognitive and metacognitive learning strategies also support the idea of their combined instruction and usage in the learning process which has also been brought out as a primary assumption of supporting learners’ self-regulation (Saks, 2016).
References


Kognitivne i metakognitivne strategije kao prediktori ishoda učenja jezika

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Nekonzistentni nalazi prethodnih istraživanja na temu strategija učenja jezika i njihove povezanosti sa jezičkim veštinama bili su motiv za dublje istraživanje efekata koji strategije učenja jezika imaju na ishode učenja. Cilj ovog istraživanja bio je da se ispituju mogući efekti kognitivnih i metakognitivnih strategija učenja jezika na ishode učenja. Istraživanje je uključivalo podatke dobijene samoprocenom na uzorku od 269 učenika završnog razreda srednje škole (starosti 18.4 godine) koji su u analizi povezani sa rezultatima standardizovanog ispita engleskog jezika kao stranog. Analiza je pokazala postojanje linearnog odnosa između strategija učenja jezika i ishoda učenja zasnovanih na opažanjima učenika. Strukturalno modelovanje ukazalo je da kognitivne strategije imaju direktn efekat na ishod učenja, dok metakognitivne strategije utiču na ishode indirektno.  

Ključne reči: strategije učenja jezika, jezičke veštine, strukturalno modelovanje

RECEIVED 21.01.2018.  
REVISION RECEIVED 17.04.2018.  
ACCEPTED 10.05.2018.

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PSIHOLOGIJA, 2018, Vol. 51(4), 489–505
Appendix

Est-SILL [adapted by Strategy Inventory for Language Learning (SILL) by Oxford (1990)]

This form of the strategy inventory for language learning (Est-SILL) is for students of a foreign language. Please read each statement and fill in the bubble 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.

<p>| | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
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<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>I ask questions in SL.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>2</td>
<td>I start conversations in SL.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>3</td>
<td>I try to find as many ways as I can to use my SL.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>4</td>
<td>I try to talk like native SL speakers.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>5</td>
<td>I think about my progress in learning SL.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>6</td>
<td>I plan my schedule so I will have enough time to study SL.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>7</td>
<td>I try to find out how to be a better learner of SL.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>8</td>
<td>I have clear goals for improving my SL skills.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>9</td>
<td>If I do not understand something in SL, I ask the other person to slow down or say it again.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>10</td>
<td>I ask for help from SL speakers.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>11</td>
<td>I ask SL speakers to correct me when I talk.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>12</td>
<td>To understand unfamiliar SL words, I make guesses.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>13</td>
<td>When I can’t think of a word during a conversation in the SL, I use gestures.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>14</td>
<td>I use flashcards to remember new SL words.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>15</td>
<td>I physically act out new SL words.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>16</td>
<td>I use new SL words in a sentence so I can remember them.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>17</td>
<td>I think of relationships between what I already know and new things I learn in the SL.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>