Strategic Competence and Foreign Language test Performance in Iranian Context

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Abstract
A number of studies have accounted the integral role of foreign/second language learning and learner strategy use. However, a few of these studies have considered the relationships between strategic competence and its use and foreign language performance (FLP). This study applied structural equation modeling to deeply investigate the relationships between test takers‟ strategy use and their performance on foreign language tests. For this purpose, 147 EFL learners from three well-known branches of a private language institute in Tehran, Iran were chosen. These participants also responded to an 80-item Cognitive and Metacognitive strategy questionnaire and took an 81-item Key English Test (KET). Consequently the hypothesized model of strategic competence vis-à-vis FL test appeared with following findings. First, metacognitive processing (MP) had no direct effect on FLP but a significant, direct influence on cognitive processing (CP), which supports the interaction notion of Bachman and Palmer‟s (1996) communicative competence . Second, due to the Iranian EFL context in which Iranian students and teachers show more tendencies toward memorizing vocabulary and analyzing grammar, practicing naturalistically was insignificant and deleted while the translating variable was added, which was highly significant. Third, CP had no significant effect on listening ability which shows that listening ability is much more dependent on contextual factors rather than background knowledge and strategic competence.

Keywords: strategic competence, cognitive processing, metacognitive processing, foreign language performance, structural equation modeling.

Investigating learners‟ strategy development has been among one of the heated discussions since the 1980s. Therefore, plenty of research has been dedicated to the learning process and the products of foreign language achievement (FLA). A number of studies have examined the underlying factors of cognitive and metacognitive processes (e.g., Chamot & Kupper, 1989; O‟Malley, Chamot, & Kupper, 1989; Oxford, 1986; Phakiti, 2003). Although many of these studies identified learning strategy taxonomies, a few studies elaborated on the relationship between learning strategies and foreign language (FL) test performance regarding a well-grounded statistical procedure.

There are also various numbers of cognitive theories of L2 acquisition. While, some focus on the role of input and input processing mechanism (e.g., Dulay & Burt, 1974; Larsen-Freeman, 1975; MacWhinney, Bates, & Kligell, 1984), other theories focus on production (e.g., Pienemann, 1998), and yet others on the role of explicit knowledge (e.g., Dekeyser & Sokalski, 1996). These theories differ in the extent to which they are capable of predicting as well as explaining acquisition. Therefore, in order to systematize these assorted cognitive theories, the attention would be directed toward taxonomies of communication strategies (e.g., Dörney &

Scott, 1997; Tarone, 1977; Littlemore, 2003) especially strategic competence. A large number of investigations have been done to classify the strategies used by the learners (e.g., O‟Malley & Chamot, 1990; Oxford, 1990; Purpura, 1999; Cohen & Chi, 2001). And also much effort has gone to find the relationship between learning strategies and language learning (e.g., Bialystok, 1981; Cohen & Aphek, 1981, Politzer & McGroarty, 1985). But a general problem with many of the correlational study is that it is not really possible to predict and determine the actual cause and effect among variables. In addition, the processes and procedures in strategy use are very complicated that cannot be summarized in a simple linear relationship to achievement in a foreign/second language (McDonough, 1999). The state-of-the-art views regarding learning strategies insist on the integral role of a variety of strategies, with metacognition as a crucial element which determines use of a particular strategy to achieve specific learning goals (Macaro, 2006).

Testing researchers have also been willing to explore the connection between language testing and variables concerning the cognitive process. As a result, some models of SLA (e.g., Dulay, Burt, & Krashen, 1982; Ellis, 2008; McLaughlin, 1987; Skehan, 1989) or models of SLA proficiency (Bachman & palmer, 1996; Canale & Swain, 1980; Oller, 1979) appeared and accepted the leading role of cognitive processes in SL strategy use.

Furthermore, most of these studies examined cognitive processing and second language performance through using observation, questionnaires, and verbal report protocols to investigate learner strategies and second language performance (e.g., Anderson, 2002; Cohen, 1984; Oxford, 1986; Reiss, 1985; Rubin, 1981; Victori, 1992). However, some other researchers used reliability analyses and exploratory factor analyses to discover underlying factors considering interaction between cognitive processing and FL strategy use (e.g., Oxford, 1986). Therefore, a more sophisticated procedure was needed to not only examine the inter-relationships between a number of independent and dependent variables at the same time but also identify the links between the constructs and explain their causal connections (Purpura, 1997). Hence, in order to use a multivariate technique to confirm hypothesis-testing approach and also consider both observed and latent variables, structural equation modeling (SEM) was used (Byrne, 2001).

Cognitive processing and foreign/second language learning

Cognitive processing refers to the procedures that operate directly on incoming information in ways that enhance learning (Richards & Schmidt, 2002). Cognition is not only a faculty for processing information but also for applying knowledge, changing preferences, producing and understanding language, problem solving, and decision making (Blomberg, 2011). It is also used to explain attitudes, attribution, and groups' dynamics (Sternberg & Sternberg, 2009). Cognitive processes should be accounted on the grounds of how the learners use them in communication. Presumably, the reciprocal interaction between learners‟ strategy development and foreign language achievement could increase cognitive processing.

As a result, cognitive processing has become an interesting area of research during the past 30 years. And also a similar trend has occurred in language testing research as researchers examined the enhancing interest in relation to test takers‟ strategic competence that may influence language test performance. Moreover, A number of researchers claimed that investigating cognitive processing would predict second/foreign language performance (e.g., Cohen & Aphek, 1981; Ganschow & Sparks, 2001; Pishghadam & Khajavi, 2013; Rubin, 1981; Victori, 1992; Wenden, 1987).

Metacognitive processing and foreign/second language learning

Writings on metacognition can be traced back at least as far as the Parva Naturalia of the Greek philosopher Aristotle (Oxford Psychology Dictionary, metacognition). Metacognition is defined as "the knowledge about when and how to use particular strategies for learning or for problem solving" or simply knowing about knowing (Metcalfe & Shimamura, 1994).
Furthermore, metacognitive strategies would enable people to perform cognitive tasks more systematically (Metcalfe & Shimamura, 1994). These techniques which improve metacognition are: thinking aloud while performing a task, self-questioning, and making graphic representation of one‟s thought and knowledge.

Researchers have found a great amount of relationship between metacognitive processing and learning (e.g., Coutinho, 2007; Flavell, 1979; Kruger & Dunning, 1999). Learners with wide range of metacognitive strategies outperform those with low range of strategies regarding their performance on tests and task completion (e.g., Kruger & Dunning, 1999). Swanson (1990) came to the result that learners with a high-metacognition have used fewer strategies, but solved problems more competently than low-metacognition learners, irrespective of their prior knowledge or intelligence quotient (IQ).

Listening comprehension strategies

While second language strategy research has progressed greatly in recent years, the number of studies in relation with listening comprehension strategies is to some extent diminutive. However, some studies have recently focused on the differences between effective and less effective listeners‟ metacognitive strategy use and their success in second language listening. Moreover, few studies discovered that students‟ performance in foreign and second language learning would be increased provided that there will be instruction in strategy use. For instance, O‟Malley and Chamot (1990) investigated the influence of strategic competence instruction on academic listening. The result indicated that strategy instruction could be effective in maximizing initial learning, and also teachers would do more by simply matching learning strategy instruction with listening tasks. Another example related to strategic competence training could be shown through the study by Thompson and Rubin (1996). They examined the effects of cognitive and metacognitive strategy instruction on the listening comprehension performance of university students of Russian. They came to the result that instruction in strategies can improve their performance on listening tasks.

Therefore, this study tried to include listening items in the suggestive FL achievement construct in order to observe the effects of strategic competence on listening module.

Hypothesized model

On the basis of the substantive theories and previous empirical studies a model of strategic competence including cognitive and metacognitive processes were constructed including four variables: COMP (comprehending processes), MEM (memory processes), RET (retrieval processes), and MP (metacognitive processes). In the base model designed by Purpura (1997), the foreign language performance of the intermediate level learners were measured by means of the FCE Anchor Test, developed by the UCLES including two latent variables: Reading ability and Grammar ability. Whereas, in this study, the researchers attempt to assess the elementary level learners‟ achievement through KET test developed by the UCLES.

The rudimentary model was hypothesized based on the following studies. The initial phase was developed based on communicative language ability model proposed by Bachman (1990) and Bachman and Palmer (1996). Moreover, strategic competence is regarded as one of the fundamental components of communicative language ability (ibid, 1990). However, strategy

use has been investigated in relation with the processes of second language learning (e.g., Cohen, 1984; Hosenfeld, 1976; O‟Malley, Chamot, & Kupper, 1989; Oxford, 1990). Also strategy use influenced test taking processes directly or indirectly (Bachman, Cushing, & Purpura, 1993; Dörnyei, 1995). Secondly, an information processing model has been accounted for to consider a strong association between cognitive and metacognitive processing while the integration of these two constructs will lead to a great performance and achievement in FLA.

On that account, Gagne, Yekovich, and Yekovich‟s (1993) model of human information processing is used as a guideline for the stages in learning process and the relationship between metacognitive processing (MP) and cognitive processing (CP). The hypothesized model is shown in Figure 1

The purpose of the current study is to investigate Iranian EFL learners‟ strategic competence comprising metacognitive and cognitive processing in relation to foreign language achievement. However, regarding learners‟ failures before and during examinations, diagnosing the underlying factors involving and influencing the language learners‟ performance seem to be axiomatic. Therefore, the present study is a response to such a necessity. In addition, the researchers are trying to examine the proposed model to see whether it fits our sample data. We also respecifiy the model with a new test and a different learners‟ level of ability. The following research questions are therefore proposed:

1) Is the proposed model of strategic competence appropriate for the Iranian EFL learners?
2) Does each of the components of strategic competence (SC) influence foreign language performance (FLP) directly or not?

Methodology

Participants

A total number of 147 EFL learners (81 females, 66 males) from three well-known branches (Pasdaran, Tajrish, and Niavaran) of the Iran Language Institute in Tehran, Iran participated in this study. All the participants were selected randomly from these institutes regarding their true level of study. Their ages were between 15 and 20 (mean= 18.27, SD= 1.42). All these learners were in elementary level. American English File series (Oxenden and Latham-Koenig, 2007) were taught in these institutes. All the participants have studied in these institutes from the basic levels. And they all have been placed in these classes through Oxford placement tests (Allan, 2003) held at the beginning of the program.

Instruments

Cognitive strategy. In order to elicit the learners‟ cognitive strategies, Purpura‟s 40-item questionnaire was used (Purpura, 1997). This questionnaire is accompanied by a 6-point scale ranging from never to always. And it includes three latent variables. The first variable is Comprehending Processes (CP) consisting of analyzing inductively, clarifying, inferencing, and translating. The second latent variable is Memory Processes (MEM) consisting of associating, linking with prior knowledge, repeating, and summarizing. And the third variable is retrieval processes (RET) consisting of applying rules, practicing naturalistically, and transferring. The taxonomy of the abovementioned variables is shown in Table 1.

Metacognitive strategy. Another 40-item questionnaire with a 6-point scale ranging from never to always designed by Purpura (1997) was used to elicit information regarding learners‟ metacognitive strategies. It includes one latent variable, i.e., metacognitive processing (MP)

consisting of four measured variables: assessing the situation, monitoring, self-evaluating, and self-testing. The taxonomy of these variables is shown in Table 2.

Foreign language achievement. A photocopiable version of Cambridge Key English Test (KET) was used to measure the elementary learners‟ foreign language performance (Cambridge Key English Test, 2003). KET contains Reading, Writing, and listening sections. Part A includes 9 parts with 56 questions for Reading and Writing, and part B contains 5 parts with 25 questions for Listening. The detailed summary of the KET test items is indicated in Table 3.

Procedure

In order to maximize the return rate, both the cognitive and metacognitive questionnaires were translated to Persian, the mother tongue of the respondents. Back-translation, which is translating the original instruments into Persian and translating them back to English, was used to ensure the accuracy of translation and the validity of the translated version. Two translation experts were asked to translate the questionnaire. The result of the back-translation showed that the translated version was highly equivalent to the original text.

In this study, a series of reliabilities and exploratory factor analyses were used to give assurance to the current constructs and variables in the questionnaire. Therefore, Cronbach‟s α for (CP) was .88, and for (MEM) was .92, for (RET) was .90, and total Cronbach‟s α was .93. And also Cronbach‟s α for (MP) in the second questionnaire was .91. The KET test was given to the learners in one session. Regarding the reliability of the test, KR-21 showed a reliability of .83.

Consequently, In order to collect data for this study, we first talked to the English teachers for permission to distribute the questionnaires in each classroom. Therefore, six classes were given the questionnaires within one session each. In order to increase respondents‟ motivation to fill in the questionnaire with care, we assured them with the confidentiality of the responses and that they would be informed of the result of the questionnaire in future sessions. Participants completed the cognitive and metacognitive strategy questionnaires in their L1 (Persian) in 1 hour in February 2013. Second, students in each of these classes responded to the KET items in 1 hour and 30 minutes in March 2013.

Results and Discussion

In order to analyze the descriptive statistics and correlations between cognitive processing, metacognitive processing, and foreign language achievement, SPSS 17 was used. There were twenty three measured variables and three total latent variables in the study. The mean, standard deviation, and correlation matrix are presented in Table 4.

As it is indicated in Table 4, the correlation between total cognitive processes and foreign language achievement () is significant, but the correlation between total metacognitive processes and foreign language achievement is not significant (). However, there cannot be an exact prediction on the basis of correlation coefficient. Therefore, in order to explore more about the role of strategic competence comprised of cognitive and metacognitive processing in foreign language achievement, structural equation modeling (SEM) is used.

In order to answer the first question, AMOS 16 (Analysis of Moment Structures) statistical package was employed to take a confirmatory hypothesis-testing approach for the proposed structural theory.

According to Byrne (2001, p.81), a central point in structural equation modeling is the degree to which a hypothesized model “fits, or adequately describes the sample data”. Therefore, to investigate whether the base model suits the Iranian learners, goodness-of-fit measures in AMOS are used to examine the single effects of metacognition and cognition processes. The

goodness-of-fit indices for the base model are: comparative fit index (CFI)=.898, goodness-of-fit (GFI) index=.85, and adjusted goodness-of-fit (AGFI) index=.81, and root mean square error of approximation (RMSEA)=.06, which indicates poor fit indices (except CFI). An acceptable model indices are shown by $x^2 /df < 3$, GFI>.95 , AGFI>.95 , CFI>.95 , and RMSEA< .06 (Hu & Bentler, 1999). As it was mentioned in advance, considering the three latent variables in the base model, there were twenty three measured variables as well. Therefore, as Cohen, et al. (2007) describe regarding factor analysis, in order to detect structures and commonalities in the relationships between variables and also to identify where different variables are addressing the same underlying factors, especially to explore previously unknown groupings of variables and patterns, a series of exploratory factor analyses and reliabilities were conducted in SPPS, and three of these paths in the model were insignificant. As a result, one of the paths from these variables, including practicing naturalistically was deleted and the translating variable was added. The revision model is shown in Figure 2.

This time, the goodness of fit indices was calculated for the revised model and showed appropriate fit indices: $x^2 /df =$ 1.54 (x^2=304, df=197, CFI=.96, CFI=.98, AGFI=.94, RMSEA=.04. These base and revised indices are presented in Table 5.

Consequently, we can claim that the revised model indicates an acceptable strategic competence model vis-à-vis FL performance construct. The reason for these revised paths is because of contextual factors. That is, the prevailing policy of English material development in Iran is extremely dependent on the outdated methods of English teaching such as Grammar-translation. Therefore, the EFL learners in Iran have a tendency toward memorizing vocabulary and analyzing grammar which leads to learning English as an exercise of translation (Dolati and Mikaili, 2011). Further, Hashemi and Khali sabet, (2013) came to the result that teachers should use L1 judiciously in FL classrooms whenever possible and beneficial to relieve anxious, frightened, and reluctant students. In addition, (Noora, 2008) studied 192 non-English major undergraduates to state their views on how they prefer learning English in the „General English" class. The result indicated that students" language learning preferences considering Grammar-translation method do not differ significantly.

Furthermore, to answer the second question, which attempts to find out the existence of the relationship between CP and MP, and their effect on the FLA, significant positive paths were analyzed. In other words, the results showed that MP by itself cannot have a direct impact on FLA, unless MP implements on one of the components of CP (regression coefficient= .73 between MP and RET, and regression coefficient= .81 for MP and MEM). That is, MP acts as a mediator between CP and FLA. As a result, the current model reiterates the interactive notion of Bachman and Palmer"s (1996) communicative competence which exists between strategic competence and language ability. This finding also supports the claims of O"Malley (1987) and Wenden (1987) and Purpura (1997), who came to the conclusion that the interrelationship and integrative consolidation of cognitive and metacognitive strategies would maximize the learning.

Moreover, the effects of COM, RET, MEM on listening were analyzed and no significant, direct strategic effect was found on listening ability. This finding is in line with Fujio"s (2010) study which investigated the role of strategic competence on listening comprehension. Fujio came to the result that participants relied more on contextual clues than background knowledge and also found that those participants who had limited linguistic and strategic competence achieved a higher level of comprehension. Further, this finding is in contrast with Thompson & Rubin (1996). On the other hand, the effects of CP"s components on FLA appeared to be interesting. For instance, The MEM construct had a significant, positive effect on Reading and writing ability, and the RET construct also showed a significant, positive effect, whereas, the

COM construct had no significant impact on Reading and Writing ability. These findings are in agreement with Purpura‟s (1997), but he found a negative effect of MEM on grammar ability. It means that Iranian test takers would use their memory strategies (e.g., associating, linking with prior knowledge, etc) while answering the test. Perhaps the reason is due to the EFL context of Iran. First, this is due to the dominant view of audiolingualism method which emphasize the repetition and relying on repertoire of grammatical knowledge and accuracy (Ghonsooly, et al., 2012; Kiany, et al., 2004; Underwood, 2012). Second, lack of treating English language as a competence rather than a scientific subject, made them to memorize the rules and just try to pass the final exams (Huebner, 1964; Abu-Melhim, 2009).

These findings have also meaningful implication for the strategic competence model in Bachman‟s (1990) and Bachman and Palmer‟s (1996) model of language ability. In other words, the present study indicated that the concept of strategic competence would not be considered individually in terms of the metacognitive components, more properly, strategic competence is explained through the combination of CP and MP.

Conclusion

The above-mentioned study investigated the crucial role of strategic competence (SC) and its influence on foreign language performance (FLP) in the context of Iran. A SC model including cognitive and metacognitive processing components was proposed. Further, the construct of FLP obtaining Reading, Writing, and Listening modules was used to indicate the effect of Iranian learners‟ SC on FLP. This model showed a very good data fit indices. It also supported the claims of a number of researchers who believed that the association of cognitive and metacognitive processing would increase learning (e.g., O‟Malley, 1987; Wenden, 1987; and Purpura, 1997). Moreover, this model restates the mutual relationships which exist between SC and language learning ability (Bachman and palmer, 1996). Three paths (practicing naturalistically, applying rules, association) were not significant in the base model; therefore they were not considered in the model and the translating variable was added. This revision was done due to the Iranian EFL context in which, Iranian students and teachers show more tendencies toward memorizing vocabulary and analyzing grammar which lead to translating texts.

Consequently, the final model is in line with Brown and Palinscar (1982), O‟Malley (1987), Purpura (1997), and Wenden (1987) who suggested that metacognitive processing by itself cannot predict and influence FLP but it would affect cognitive processing and then this processing could influence FLP. In addition, cognitive processing components could predict Reading and Writing but not listening module greatly.

This study was conducted among Iranian EFL learners. Further studies might examine the current model for other EFL contexts. Considering the FLP construct, just the Reading, Writing, and listening modules were examined. Future research would look attentively at other skills and modules.

Implications

As it was meticulously explained, there is a complicated relationship between strategy use and FLP. Even it is probable to claim that this complexity and interconnectedness could cause multiple interactions between and among measured and latent variables of the current study. Therefore, this paper includes plenty of implications for language testing research.

Broadly speaking, the present study attempted to find out proper insight with respect to strategic competence, test-taking style and FLP. It indicated that advantageous effects of the explained strategies depend on both skills and types of tasks and on the appropriate association of

strategies which the test takers pick out. More noteworthy, this study equips the researchers and teachers with a descriptive process for assessing test-taking style and also for justifying how language testing items is recognized, analyzed, and responded in relation to strategy competence and use. Finally, the study‟s findings would eventually enable the language learners to be familiar with sufficient information on beneficial language learning and test-taking strategies. However, this objective is not achieved unless FL educators will be provided with a scheme of strategy instruction into their FL materials, curricula and classrooms.

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